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Mahaweli Water Security Investment Program

Semi Annual Environmental Monitoring Report (SAEMR) No. 07 (January to June) for Upper Elaheera Canal Project (UECP)



Ministry of Irrigation
Sri Lanka



November 2020
Final Report

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
AIS	Alien Invasive Species
BOQ	Bill of Quantities
CEA	Central Environmental Authority
CECB	Central Engineering Consultancy Bureau
CS	Cross Section
D&B	Drill and Blast
D/S	Down Stream
DS	Divisional Secretary
DWC	Department of Wildlife Conservation
EARF	Environmental Assessment Review Framework
ECP	Environmental Contingency Plan
EEAP	Environmental Emergency Action Plan
EEP	Emergency Environmental Plan
EHS	Environment Health & Safety
EIA	Environmental Impact Assessment
EIR	Environment Incident Records
EMP	Environmental Management Plan
EMS	Environmental Method Statements
	Environmental Monitoring Specialist
	Environment Noncompliance Records
E-NCR	Environmental Officer
EO	Environmental Protection License
EPL	Facility Administration Manual
FAM	Forest Department
FD	Grama Niladhari
GN	Government of Sri Lanka
GoSL	Grievance Redress Committee
GRC	Geological Survey and Mines Bureau
GSMB	Health & Safety Officer
HSO	International contractor bidding
ICB	Industrial Mining License
IML	Kaluganga Moragahakanda Transfer canal
KMTC	Longitudinal Section
LS	Mahaweli Authority of Sri Lanka
MASL	Minipe Left Bank Canal Rehabilitation Project
MLBCRP	Ministry of Mahaweli Development and Environ- ment
MMDE	Memorandum of Understanding
MoU	Mahaweli River Basin
MRB	Mahaweli Water Security Investment Program
MWSIP	New Austrian Tunnelling Method
NATM	National Contractor bidding
NCB	North Western Canal Project
NWPCP	Program Director/Project Director
PD	Public Health Officer
PHI	Project Implementation Unit
PIU	Project Management Design Supervision Con- sultant
PMDSC	Program Management Unit
PMU	Provisional Sum Order
PSO	Resident Engineer
RE	Regional Forest Officer
RFO	Right Hand Side
RHS	

SAEMR
SEO
SPS
STC
T1 and T2
TBM
UECP
WMP

Semi Annual Environmental Monitoring Report
Senior Environmental Officer
Safeguard Policy Statement
State Timber Cooperation
Tunnel 1 and Tunnel 2
Tunnel Boring Machine
Upper Elahera Canal Project
Wildlife Management Plan

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1 INTRODUCTION

1.1 Scope of the Report

1. This Semi Annual Environmental Monitoring Report (SAEMR) No. 7 is prepared to update the progress of Upper Elahera Canal Project (UECP) with respect to environmental safeguard aspects for the period of January to June 2020, which fulfils the Asian Development Bank (ADB) requirement to submit SAEMR to ADB and Central Environmental Authority (CEA) for the “Category A” projects as documented in FAM¹ and EARF.² The reporting period (January to June 2020) was a challenging period due to the COVID-19 pandemic situation, which impacted the MWSIP progress, and many activities including construction work. The sites were isolated by restricting labor migration to the project area, as a preventive measure of control spreading of the virus, and few critical site operations in the Minipe Anicut area was attended under the strict observations and adopting all possible precautions complying with the quarantine law of GoSL.

2. The purpose of this report is to ensure that the Project is implemented with due concern for environmental 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 with the requirements of ADB.

3. Further, this report is to assess the progress with implementation of the program in complying with the approved Environmental Impact Assessment (EIA)³ including Addendum to the EIA: UECP Tranche 1 packages (August 2017) and Environmental Management Plan (EMP) as per the stipulation No. 14.3 of the EIA approval No. 08/EIA/WATER/07/2012 issued by CEA on 23 February 2016, renewed approval by CEA on 23 May 19 by Letter Ref. Ref.08/EIA/Water/07/2012/Vol IV until 31 March 2022, and approval for the addendum (Ref.08/EIA/Water/07/2012/Vol III dated 23 April 2018).

4. This SAEMR is prepared addressing the following aspects, based on the available information as of the monitoring period from January to June 2020:

- (i) Background/context of the monitoring report (adequate information on the project, including physical progress of project activities, scope of monitoring report, reporting period, and the monitoring requirements including frequency of submission as agreed upon with ADB);
- (ii) Qualitative and quantitative monitoring data.
- (iii) Monitoring results compared against previously established benchmarks and compliance status (e.g., obtaining necessary approvals for establishment of certain facilities, timeliness and adequacy of environmental mitigation measures; and training, capacity building, etc.);
- (iv) Corrective action plan in any case of non-compliance or any major gaps identified.
- (v) Proposed items of focus for the next reporting period and due date.

5. This SAEMR for UECP is prepared by the Environmental Specialist of PMDSC based on the monthly monitoring and progress reports received from the Environmental Monitoring Specialists (EMS), and the updates that were received from the Environmental Specialist of PMU and Senior Environmental Officer for PIU of UECP.

1.2 Overall Progress of UECP as of June 2020

6. There are two contract packages of UECP-ICB-1 and UECP-ICB-2B financed under MWSIP Tranche 1 and 2 for which construction work started. The key details related to the active construction packages are summarized in **Table 1-1**.

¹ Paragraph 60 of Facility Administration Manual (FAM), June 2015 prepared by MMDE.

² Paragraph 111 of Environmental Assessment Review Framework (EARF) November 2014 (updated in June2017).

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

Table 1-1: Summary of ongoing construction packages in the UECP

Item	UECP-ICB-1	UECP-ICB-2B
Contract No.	MMDE/MWSIP/ADB/UEC/ICB-1/3267-3268-SRI/ICB/2016/002	MMDE/MWSIP/ADB/UECP/ICB-2B/P47381-005-SRI/ICB/2016/026
Contractor	M/s. CML-MTD Construction Ltd.	M/s. Sinohydro Corporation Ltd.
Commencement Date	11 January 2017	14 September 2018
Value of Contract	LKR 3,742,442,875.47 (incl. VAT)	LKR 8,218,957,075.94 (incl. VAT)
Original Completion Date	08 January 2020	10 September 2021
Updated Completion Date	26 May 2021 (as per amendment agreement 2)	-

7. Details related to the package to be awarded, and their progress of bidding process in summarized under the **Table 1-2**.

Table 1-2: Progress of Upcoming packages under UECP as of June 2020

Tranche	Package	Status	Remarks
2	UECP-ICB-2A	Financial evaluation ongoing	Technical Bid Evaluation Report approved by ADB on 04 September 2019. Financial bids opened on 11 September 2019. Draft FBER was sent to TEC for review.
3	UECP-ICB-3	Revised according to the SCAPC comments and submitted on 30 April 2019. ADB comments received on 11 July 2019. Bidding Documents completed to submit in early next quarter 2020.	
3	UECP-ICB-4	Revised version in accordance with SBD June 2018 was submitted to PMU on 21 May 2019. Bidding Documents complete.	
Phase 2	UECP-ICB-5	Feasibility Study Report is completed and was submitted in 06 December 2019.	Will be completed after Feasibility Study is approved; has been moved into Phase 2 for implementation

1.2.1 UECP-ICB-1

8. Construction of Upper Elahera Canal from 0+100 km to 3+980 km comes under the UEC-ICB-1 contract package, located within an ecologically sensitive, Elahera – Girithale sanctuary area, and the relevant corridor of the canal to be constructed as a cut and cover conduit, is temporary released by the Department of Wildlife Conservation (DWC) to the Ministry of Mahaweli Development (Mahaweli Authority of Sri Lanka – MASL).

9. The actual construction progress of the UECP-ICB-1 is reported as 58% and the **Figure 1-1** shows the graphical representation of the overall progress and **Table 1-3** shows the progress of the key construction work of the UECP-ICB-1 package by end June 2020.

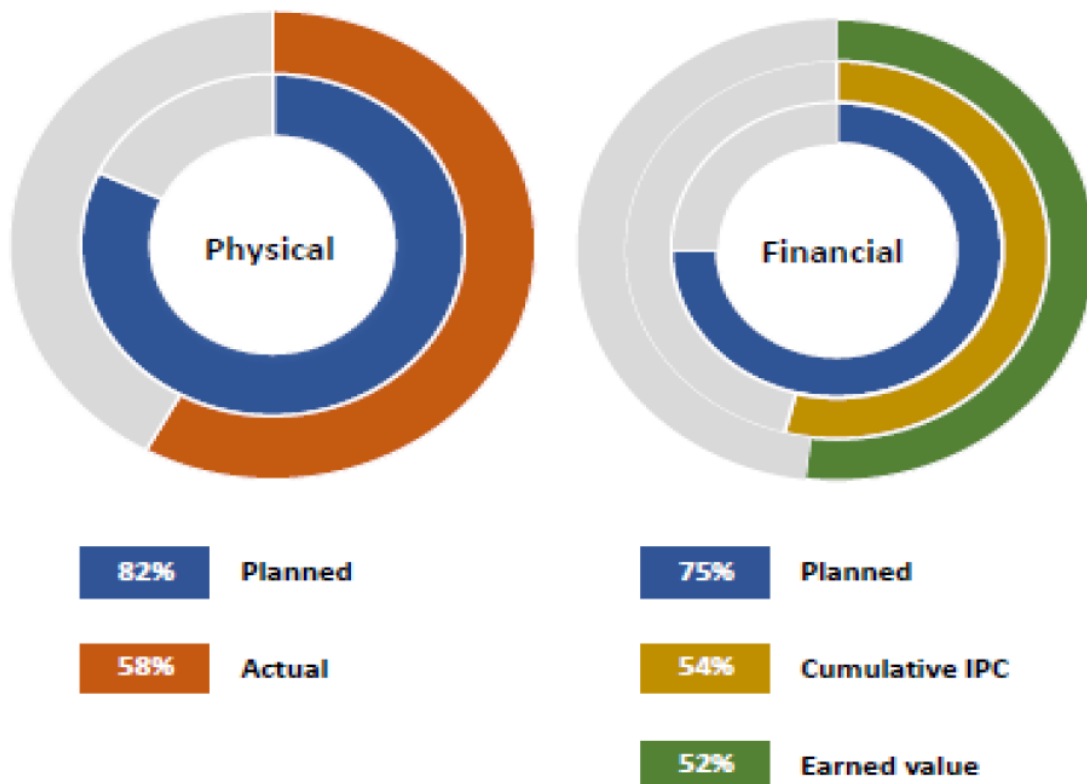


Figure 1-1: Overall package progress of UECP-ICB-1 as of end June 2020

Table 1-3: Details of the physical progress of key project interventions in UECP-ICB-1 by end June

Deliverables:	Being received, discussions & approvals ongoing
Construction programme:	Received and accepted
Topographic surveys:	Ongoing; progress LS 85% & CS 85%
Preparation of Construction drawings by Contractor:	Ongoing; completed Construction Drawings for rectangular and circular conduits - progress 65%.
Ongoing Construction work:	Site clearing, tree felling - progress 100%.
	Excavation – progress 67%;
	Reinforcement and concrete <ul style="list-style-type: none"> ▪ Rectangular conduit Base - progress 74% ▪ Rectangular Conduit Wall - progress 66% ▪ Rectangular Conduit Slab - progress 62% ▪ Circular conduit Base- progress 35% ▪ Circular conduit Wall- progress 27%
	Backfilling works with Reforestation: - 24%

1.2.2 UECP-ICB-2B

10. Construction of the Kaluganga – Moragahakanda link tunnel including short open canal and 2 aqueducts is the scope of work under the UECP-ICB-2B contract package. The two tunnels traverse through Forest Department (FD) lands: Tunnel 1 of 1,910 m long (chainage 0+557.77 to 2+467.77 km) and with overburden varying between 5 and 80 m; Tunnel 2 of 6,040 m long (chainage 2+732.77 to 8+772.77 km) and with overburden varying between 6 and 378 m.

11. The actual construction progress as of end June 2020 is recorded as 37% which is below the planned progress, and hence the engineer’s estimated completion date is 30 June 2022.

12. **Table 1-4** shows the physical progress of ongoing construction activities and **Figure 1-2** shows the graphical representation of the overall progress of the UECP ICB 2B package by end June 2020.

Table 1-4: Details of the physical progress of key project interventions in UECP-ICB-2B by end June

Topographic surveys:	Completed 100%
Preparation of Construction drawings by Contractor:	Tunnel excavation support works 100%, Bridge 50%, Tunnel permanent support 0%, Open canal 50% , Access road 20%
Construction work:	Completed 28.50%
Concrete batching plant:	Leloya - 100% , Kambarawa - 100%
Construction activities	<ul style="list-style-type: none"> • Tunnel 1: 766.60 m/1910 m Excavation • Tunnel 2: 1776.00 m / 6040 m Excavation • Tunnel Portal of T2 Inlet, T2 Outlet and T1 Outlet excavations completed and T1 Inlet portal clearing works in progress. • Other structures: Cut and cover excavation completed Ch: 2620-2720, construction of Bridge no 2 - 60% completed

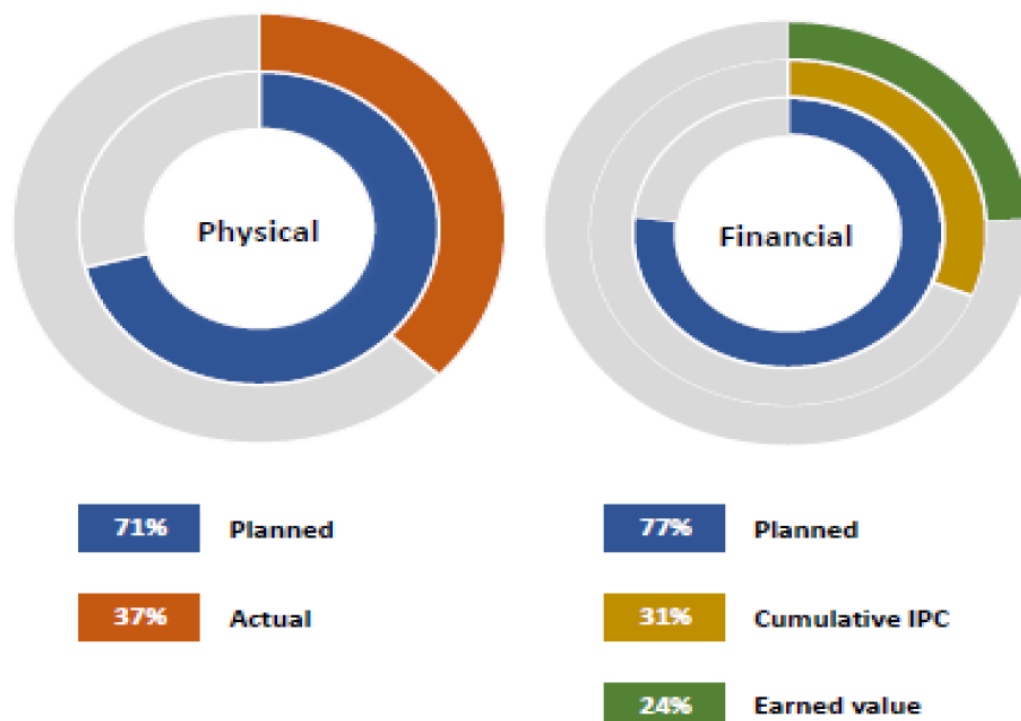


Figure 1-2: Overall package progress of UECP-ICB-2B as of end June 2020

2 CHANGES IN PROJECT SCOPE AND ADJUSTED SAFEGUARD MEASURES

2.1 Scope changes due to COVID-19 pandemic situation

13. The project scope was changed mainly related to the effect of COVID-19 pandemic situation faced by Sri Lanka, and hence the construction sites were almost abandoned from March to May 2020. Site closure period with the limited staff anticipated several environmental impacts, where the construction packages falls within environmentally sensitive areas (Wildlife, forest protected areas etc.) related to UECP-ICB-1 and UECP-ICB-2B packages.

14. Considering the anticipated impacts, PMDSC prepared an Environmental Emergency Action Plan (EEAP)⁴ (Refer **Annex 1**) and shared with the contractors directing them to submit their site-specific environmental action plan for the regular site maintenance to prevent any environmental risks. In addition, site specific environmental monitoring was attended by the EMS of PMDSC and the Resident Engineer (RE) staff, on regular intervals by arranging special permission during the lockdown period, through the ministry for site visits adopting required safety arrangements. EMS produced regular monitoring records to update RE on significant environmental issues.

15. Obtaining startup plans from the contractors were arranged incorporating environmental safeguard requirements from early May 2002, and to facilitate the contractor, PMDSC prepared Guidance Note on updating Contractor's Environmental Management Plan (CEMP) adhering to the ADB requirements and guidelines (Refer **Annex 2**) on 21 May 2020.

2.2 Package specific scope changes

2.2.1 UECP-ICB-1

16. The performance of the contractor, CML MTD, on UECP-ICB-1 package was not steady with respect to environmental management, as well as construction progress, and the construction site is almost isolated by end June by only engaged with urgent site maintenance work with least number of resources by all means.

17. It was recorded a poor site maintenance, and lack of contractor's capacity to implement the Contractor's Environmental Management Plan (CEMP) including its subsequent amendments prepared by the Contractor based on the Environmental Management Plan (EMP). Also there was no Environmental Officer (EO) from the contractor to engage with required activities, and it was mainly the EMS of PMDSC with the support of Health and Safety Officer (HSO) of the contractor attended urgent site maintenance to prevent major environmental issues.

18. The possible site isolation without completing the construction work, leaving the deep excavated sections, unattended natural stream diversions, blocking the migratory path for animals by erecting electric and other fencing arrangements, leaving stockpiles, disposed excavated material etc. created an environmental risk situation in UEC-ICB-1 sub-project area and the surrounding protected wildlife habitat, inhabitant with critical species, including the associated socio-culturally sensitive environment. The Engineer's staff along with the support of DWC Range office, Elahera attend continuous supervision and maintaining electric fence to avoid wildlife deaths specially during the lockdown period.

19. Hence, a meeting with DWC, FD relevant officers was held on 26 May 2020 chaired by RE, with the participation of PIU, PMDSC relevant officers to discuss the DWC/FD involvement during site isolation and preparation of the Environmental Contingency Plan (ECP) and BOQ considering environmental risk and site maintenance due to possible contract termination.

⁴ Environmental Emergency Action Plan (EEAP) prepared by PMDSC and submitted to PMU on 28 March 2020 and report addressing ADB and PMU comments were issued to the contractors in early April 2020.

20. PMDSC prepared the ECP on UECP-ICB-1, assessing the possible environmental, health and safety (EHS) risks, and criteria to manage the construction area after handing over to the employer, with minimum environmental damage, until a new contractor resuming the construction work selected through the MWSIP competitive bidding process and submitted to PMU on 30 June 2020 through letter Ref. 26.4/7.23_L03931. The ECP is given in **Annex 3**.

2.2.2 UECP-ICB-2B

There was an additional area required for the construction of open canal which required additional 286 trees to be removed. The approval for the tree felling was obtained on 23 Sept 2019 from the FD, and the tree removal commenced in June 2020.

3 ENVIRONMENTAL MONITORING FINDINGS

21. This section summarizes the key environmental issues recorded during the monitoring period from January to June 2020, and the corrective actions taken by the Contractor.

3.1 Qualitative records

3.1.1 UECP-ICB-1

22. As described in the earlier sections, UECP-ICB-1 site had significant amount of environmental issues due to lack of continuous progress of the construction work, and having limited manpower, resources to implement CEMP. **Table 3-1** summarizes the specific issues noted and status of contractor's response attending required corrective actions. As indicated in the Table 3-1, progress of attending required preventive actions are delayed, despite of the time targets given by the engineer, and hence the Engineer has already proposed the employer for a contract termination. Engineer already prepared an Environment contingency Plan addressing all relevant issues and submitted to the employer by end June 2020.

Table 3-1: Summary of the monitoring findings related to UECP-ICB-1 with specific issues

Location ⁵	Issue recorded	Corrective measure proposed by PMDSC	Progress by the CML
Section -1	Stream flow at 1+203 km is disturbed due to the canal construction	<ul style="list-style-type: none"> ▪ Arrange drainage over crossing with adequate erosion control measures ▪ Stream bypass as per appropriate engineering design 	Pending for past 1 year
	No maintenance work in the area where habitat enrichment attended after backfilling	<ul style="list-style-type: none"> ▪ Watering, weeding as per a schedule considering wet and dry period ▪ Submission of monthly progress reports updating plant growth, survival rate etc. 	<ul style="list-style-type: none"> ▪ Allocated laborer for weeding and watering, on 24.06.2020 but not continued ▪ No progress reports submitted for past 6 months
Section -2	Poor housekeeping and untidy work site	<ul style="list-style-type: none"> ▪ Regular site maintenance to avoid water stagnation, dust, erosion and siltation issues 	<ul style="list-style-type: none"> ▪ Attended time to time, but no plan to attend regular maintenance due to lack of required resources
	Disturbances for the animal movements	<ul style="list-style-type: none"> ▪ Backfilling and removing elephant fence keeping passage for movements 	<ul style="list-style-type: none"> ▪ Backfilling started
	Found malfunction energizer in power unit of electrical fence	Replaced with new energizer on 23 rd June 2020	
	Abandoned safety net erected for protection of small animals	<ul style="list-style-type: none"> ▪ CML to repair the safety net 	Not attended during the monitoring period
	No necessary accessories such as springs, tighter for electrical fence	<ul style="list-style-type: none"> ▪ CML to provide required material and equipment for continuous operations of the electric fence 	
Section 3	Edge of the canal collapsed due to heavy rain	<ul style="list-style-type: none"> ▪ CML to provide slope protection, erosion control measures 	Not attended during the monitoring period
	Abandoned safety net erected for protection of small animals	<ul style="list-style-type: none"> ▪ CML to repair the safety net 	
	Pit at 3+980 km resulted due to construction work create risk for animals	<ul style="list-style-type: none"> ▪ CML to provide with required animal protection to prevent animal falling into the pit 	

⁵ Section 01 - From 0+916 to 1+420; Section 02 - From 1+420 to 2+320; Section 03 - From 2+320 to 3+980; Section 04 - From 0+100 to 0+916

Location ⁵	Issue recorded	Corrective measure proposed by PMDSC	Progress by the CML
	No necessary accessories such as springs, tighter for electrical fence	<ul style="list-style-type: none"> ▪ CML to provide required material and equipment for continuous operations of the electric fence 	
Section 4	Stream at 0+794 km is disturbed due to the canal construction	<ul style="list-style-type: none"> ▪ Arrange drainage over crossing with adequate erosion control measures ▪ Stream bypass as per appropriate engineering design 	Not attended during the monitoring period
	Pit at 0+810 km resulted due to construction work create risk for animals	<ul style="list-style-type: none"> ▪ CML to provide with required animal protection to prevent animal falling into the pit 	
	Collapsed riverbank of Ambanganga at 0+150 km	<ul style="list-style-type: none"> ▪ CML to provide slope protection, erosion control measures 	
Campsite/Batching and Crusher plants/Contractor's yard/ disposal sites	<p>There are number of issues in the area used for contractor facilities as follows:</p> <ul style="list-style-type: none"> ▪ Isolation of explosive magazine ▪ Isolation of contractor facilities, machineries, camp sites etc. results construction waste, oil spilling of machineries, storage areas ▪ Site isolation will trigger theft, vandalism etc. ▪ Batching plant area with materials storage will result dust due to wind, and the desilting ponds, curing tanks will result water stagnation creating mosquito breeding sites. ▪ Isolated buildings like labor camps, canteen areas will attract bats, birds for nesting 	<ul style="list-style-type: none"> ▪ CML to attend regular maintenance and contractor facilities to be maintained as agreed in CEMP, relevant MS, and as per engineer's instructions issued in the updated EMP 	Not attended during the monitoring period

23. The summary of the Environment Noncompliance Records (NCR) or Environment Incident Records (EIR) during the reporting period is given in the **Table 3-2**.

Table 3-2: Summary of NCR and EIR issued during the monitoring period for UECP-ICB-1

NCR / Env Incident records (Ref. No. & Date)	Subject	Response from the contractor (Ref/Date)		Corrective actions attended	
		Ref No.	Date	Action	Date completed
PMDSC-UEC-site/ICB-1CML MTD-731 on 14 Jan 2020	EIR for washed out debris such as cements, earth, boulders sand and vegetative parts from upstream and deposited in the forest at 0+940 km	UEC/CML/PMDSC/L857	17 January 2020	Not attended during the monitoring period	
PMDSC-UEC-site/ICB-1CML MTD-746, 04 February 2020	EIR for abandoned damaged electrical fence and safety net	UEC/CML/PMDSC/L883 dated	17 June 2020	Not attended during the monitoring period	

24. In addition to site-specific corrective actions, issues highlighted above, following good practices and general mitigation measures were adopted by the contractor's EHS team under the guidance and support from Employer and the Engineer.

(i) Submission of Emergency Environmental Plan (EEP) considering site closure due to Covid 19 pandemic	Contractor submitted EEP following the engineer's guidelines (Ref-UEC-CML-PMDSC-L-25 dated 18 th April 2020) during the shutdown period of the site due to Covid-19
(ii) Response for EIR No. 024	Submission of response for EIR was issued for depositing debris such as earth, sand, boulders, vegetative and other solid waste in the adjacent forest land both side of Elahera-Naula Main road (Ref. UEC/CML/PMDSC/L883 dated 17 June 2020)
(iii) Submission of proposal for stone pitching for erosion controlling	Submission of proposal for Stone pitching for erosion controlling in backfilling section from 1+150 km to 1+200 km RHS (Ref. UEC/CML/PMDSC/L888)
(iv) Submission of start-up plan for resumption of works	The Contractor submitted a start-up plan for resuming the works of UEC-ICB-1 contract package (Ref. UEC/CML/PMDSC/L-930 dated 13 May 2020)
(v) Inspection of site by the MOH-Naula	The Contractor arranged an inspection for site and facilities by the MOH Naula (Ref. UEC/CML/PMDSC/L-932 dated 14 May 2020)

25. The Photographic evidences for the environmental issues and incidents recorded by PMDSC in the UECP ICB 1 area during environmental monitoring period is shown in **Figure 3-1**.



Collapsed canal banks in section 3 (May 2020)



Concrete wastes are left in the site (Since March 2020)



Unsafe location for large animals at section 3 (Since January 2020)



Collapsed safety net at section 2 (Since March 2020)



Increased Elephant movements during the site isolated period (Since March 2020)



Abandoned new replanting area in section 1 (Since March 2020)



Figure 3-1: Photographic records of Environmental Monitoring in UECP-ICB-1

3.1.2 UECP-ICB-2B

26. The environmental performance by the Sinohydro has significantly improved except for some operational environmental issues observed during the monitoring period from January to June 2020. **Table 3-3** summarizes the specific issues noted and status of the Contractor’s response attending on the required corrective actions.

Table 3-3: Summary of the monitoring findings related to UECP-ICB-2B with specific issues

Location	Environmental Issue	Date of record	Corrective Measure	Date Attended
Tunnel 1 inlet	Not appointed operator for electric fence maintenance / operation erected by the Contractor	19 May 2020	Appointed an Operator	27 June 2020
	286 trees to be removed for additional area required for open canal construction	23 Sept 2019	Obtained approval from FD for removing the trees through State Timber Corporation (STC)	10 June 2020
Tunnel 2 outlet	There was no system for solid waste management	14 Jan 2020	Waste separation, and adopted appropriate solid waste management system in the Tunnel 2 outlet area	16 Jan 2020
	Damaged tarpaulin sheet used to cover the slope failure section near the bridge no. 02 at end of section- f ace road	27 Feb 2020	This area needs a permanent slope protection measure Contractor was informed through NCR before 1 year, but not yet attended	N/A
Tunnel -2 inlet-Lel Oya	Oil leaking generators observed at the site	26 th June 2020	Removed leaked oil and cleaned the site	27 th June 2020
	Water stagnated locations recorded	26 th June 2020	Actions not taken for dewatering until end June 2020	N/A
Batching plant at Lel Oya	Sand and quarry dust stockpiles exposed and scouring No dust covers, no erosion protection adopted	26 th June 2020	Action was not taken till end June	N/A
	Visual observations indicated that the treatment process is incomplete in the sedimentation tank	Since March 2020	Proposed to apply Alum power for increasing coagulations and produce clean water, but not attended the corrective action	N/A
Entire project	Not resumed environmental quality monitoring task	Since March 2020	Planned to restart by 2 nd week of July 2020	Pending

27. In addition to above, following concerns were notified during the reporting period related to UECP-ICB-2B contract package:

- (i) No site resumption until end May 2020 by Sinohydro due to the safety reasons made as a company policy to prevent COVID-19. Kabarawa site (tunnel 2 outlet) had been fully closed covering with barb wire fence since March 2020 and hence was unable to carry out site monitoring from March to May 2020.
- (ii) A joint field visit held with DWC officers on 19 May 2020 to observe the elephant fence at tunnel 1 inlet area and directed the contractor to attend required mitigation measures during site isolation period to avoid disturbances to the animals moving in the area.
- (iii) Environmental recommendation from CEA for disposal sites 01, 02 and 03 have been expired by 17 March 2020, 15 March 2020, and 14 March 2020 (Ref. PMDSC-KMTC-RE ICB-2B/ShCL/L793 dated 12 May 2020), and Engineer informed the contractor and the employer to renew as applicable.
- (iv) The Provisional Sum Order (PSO) No. 10 for carrying out environmental quality monitoring in the UECP-ICB-2B area for 10 sample locations of surface water quality, 06 sample locations of ground water quality, 04 sample locations each of ambient air quality, noise and vibration in accordance with the sub-clause 13.5 of the contract using Bill No. 6.2.2 was issued through the PMDSC Letter No. PMDSC-KMTC-RE ICB-2B/ShCL/L415 on 12 July 2019. The contractor engineer informed the consent for the selected sub-contractor (CECB) to carry out the environmental quality monitoring, but Sinohydro was unable to complete the work until end June 2020.

28. The summary of the NCR and EIR recorded during the reporting period is given in the **Table 3-4**.

Table 3-4: Summary of NCR and EIR issued during the monitoring period for UECP-ICB-2B

NCR / Env Incident records (Ref. No. & Date)	Subject	Response from the contractor (Ref/Date)		Corrective actions attended	
		Ref No.	Date	Action	Date completed
PMDSC-KMTC-RE/ICB-2B/ShCL/L531 on 24 th September 2019	NCR-006 Untidy conditions of the Batching Plant and Crusher Plant premises in Lel Oya	L-KMTC-2019422	2 Oct. 2019	Removed unwanted materials and cleaned site and improved the sedimentation tank	NCR Closed on 09 Jan 2020
PMDSC-KMTC-RE/ICB-2B/ShCL/L498 on 12th September 2019	NCR No. 004 for Disposing excavated earth materials on the slope of access road section -f	L-KMTC-2019422	2 Oct 2019	Contractor was directed to remove all disposed material, and restore the area with adequate erosion protection measures	Pending

29. In addition to above site-specific corrective actions, issues, PMDSC recorded following good practices and general mitigation measures adopted by the contractor's EHS team under the guidance and support from Employer and the Engineer:

(i) Submission of EEP considering site closure due to Covid 19 pandemic	The Contractor submitted EEP following the engineer's guidelines (Ref-L-KMTC 2020089 dated 11 th April 2020) during the shutdown period of the site due to Covid-19.
(ii) Setting of monitoring Benchmark for tunnel 2 outlet	The Contractor informed about starting the monitoring of benchmark for both sides of copper dam, edge of the berm on the left of the bridge no. 2 and end of road section - f (Ref. L-KMTC-2020002 dated 03 January 2020)
(iii) Habitat restoration in the damaged area in the Beligoda FR	The Contractor informed that rehabilitation and restoration works are continuing at the damaged Beligoda forest reserve (L-KMTC-2020002 dated 22 nd January 2020).
(iv) Submission of updated CEMP	CEMP has been updated including plan prepared for environmental emergency for isolated period due to Covid-19 (Ref. I-KMTC-2020118 dated 6 th June 2020)

30. Some photographic records on the key environmental issues, corrective actions attended during the environmental monitoring by PMDSC under UECP-ICB-2B are shown in **Figure 3-2**.

	
<p>Air pollution due to dust emission at Kabarawa site 19 February 2020</p>	<p>Deployed water bowser for dust controlling 21 Feb. 2020</p>
	
<p>Untidy environment in batching plant premises on 19 February 2020</p>	<p>After attending site cleaning on 21 February 2020</p>
	
<p>Improper disposal of the sludge - 19 February 2020</p>	<p>After attending rectification by storing in a proper manner until send for reuse - 21 Feb. 2020</p>



Figure 3-2: Photographic records of Environmental Monitoring in UECP-ICB-2B

4 ENVIRONMENTAL SAFEGUARD COMPLIANCE STATUS - UECP

31. The overall environmental safeguard compliance implementing the recommendations and conditions given in the EIA for UECP, conditional approvals issued by CEA and other stakeholder agencies such as DWC, FD and the ADB requirements are addressed by the Employer and the PMDSC, simultaneously with the environmental monitoring and supervision carried out on the contractor's CEMP implementation.

32. The activities and measures carried out during the monitoring period from January to June 2020 are briefly described under this chapter, and the photographic records related to the content of this chapter is given under **Annex 4**.

4.1 Compliance Status Related to the CEA Approval Conditions

33. **Table 4-1** summarizes the approvals updated during the monitoring period for UEC-ICB-1 and ICB-2B construction packages, with the involvement of PMU and PIU.

Table 4-1: Key Actions in Compliance with the CEA approval conditions

Area of concern in UECP	ex A Major approval condition	Compliance status	Remarks
Entire UECP	CEA conditional approval based on the EIA and the addendums completed for EIA for UECP	Complied	Valid up to 31.03.2022
UECP ICB 2B (KMTC)	Approval of land for construction Activities related to UEC ICB2B (KMTC) by the Forest Department (FD)	Complied	For the project period
	Approval of land for Accommodation of UEC ICB - 2B by the FD	Expired by 23 May 2020	Renewal in progress
	EPL for Lel Oya Accommodation from CEA	Complied	Valid up to 08.04.2022
	EPL for T2 Outlet Accommodation by CEA	Complied	Valid up to 09.06.2022
	Recommendation for Disposal area No. 1 by the CEA	Expired by 17 March 2020	Renewal in progress
	Recommendation Disposal area No. 2 by the CEA	Expired by 14 March 2020	
	Recommendation Disposal area No. 03 by the CEA		
	Recommendation for Crusher Plant-Leloya by the CEA	Complied	Valid up to 05.12.2020
	Recommendation for Batching Plant-Leloya by the CEA		Valid up to 10.11.2020
	Recommendation for Batching Plant-T2 outlet by the CEA		Valid up to 10.11.2020
	Explosive License from the Ministry of Défense		Valid up to 02.08.2020 (Underground Excavation) 23.09.2020 (Open Excavation)
	Industrial Mining License from Geological Survey and Mines Bureau (GSMB)		Valid up to 07.07.2020
	EPL Crusher Plant-Leloya by the CEA		Valid up to 05.12.2020
	EPL for Batching Plant-Leloya by the CEA		Valid up to 10.11.2020
EPL for Batching Plant-T2 outlet -CEA	Valid up to 10.11.2020		
Approval for Ground water extraction from Tube wells - WRB	For the project period		
UECP ICB 1	EPL for contractor's accommodation by CEA		Expired by 04.06.2021
	Handling of explosives by the ministry of defence	Complied	Valid up to 24.09.2019
	Land for accommodation facilities by the DWC	Expired by 01.03.2020	Renewal in progress
	IML for rock excavation from the GSMB	Complied	Valid up to 27.07.2020
	EPL for concrete batching plant by CEA	Complied	Valid up to 19.12.2020

34. The Contractor made a non-compliance of the EIA approval condition by clearing a land of a 0.5 Ha in Beligoda forest reserve in Naula range in Mathale division of the Forest Department in December 2018. The progress of implementing the corrective actions as per the Corrective Action Plan in December, 2019 (CAP) that was agreed between Forest Department and Contractor of UECP-ICB-2B package (M/s. Sinohydro Corporation Ltd.) and accepted by the ADB and CEA were periodically presented to the ADB and CEA by the PMU (by submittals reference MMDE/MWSIP/PMU/ENV/UECP /Gen-Vol. 4, dated 21/01/2020 & 17/06/2020). The progress of actions of implement CAP (December 2019) during the reporting period are summarized in the **Annex 5**.

4.2 Progress of implementing Wildlife Management Plan in UECP

35. The Employer (PMU and PIU) undertakes the implementation of Wildlife Management Plan (WMP) with the necessary support from the PMDSC and relevant stakeholder agencies like Department of Wildlife Conservation, Forest Department, Irrigation Department, Agrarian Development Department and the Divisional Secretariat etc.

36. The overall execution methodology of the WMP including action implementation as well as institutional mechanism for monitoring and guidance is presented in the **Annex 6.1**.

37. The main objective of implementing WMP is to mitigate escalation of Human Elephant Conflict (HEC) due to UECP construction as well as resultant land use change (increasing cropping intensity) as mentioned in the EIA approval stipulations to the Project. The expected outputs of WMP are briefly as follows.

<u>Enrich ecosystem to mitigate adverse impacts on wildlife likely to cause by Project works</u>	
<ul style="list-style-type: none"> • Degraded forests restoration • Village tank ecosystem restoration • Eradication/Control of invasive range expanding flora species 	
<u>Reduce escalation of Human-Elephant conflict due to the Project</u>	
<ul style="list-style-type: none"> • Annex undeclared forests to protected areas expanding elephant ranges • Introduce Elephant Corridors facilitating undisturbed elephant movements • Introduce Human-Elephant “Co-existence” mechanisms replacing “Conflict” <ul style="list-style-type: none"> ○ Village fencing with Elephant passages ○ Farmland fencing with Elephant passages ○ Stake holders & Community Awareness and Capacity building 	
<u>Mitigate direct negative impact on wildlife</u>	} <i>Implemented as part of the Construction program</i>
<ul style="list-style-type: none"> • Introduce “Animal Passing” & “Escape Structures” to the canals • Conservation of priority fauna/ flora species in impact zones 	
<u>Existence of inter-agency coordination mechanism for HEC management</u>	
Annex A Introduce and ensure sustenance of adopted mitigations through interagency coordination mechanism	

38. The “Action Plan” for executing mitigation actions in the WMP-UECP (December, 2017) was revised in consultation with the regional level officials of the key stake holder agencies (i.e. Regional Review Committee) and ground verification findings in 2019 as given in the **Annex 6.2**.

39. This “action plan” was again revised during the reporting period in order to identify mitigation actions on priority order (to be implemented through the limited budget available) in consultation with the national level officials of the key stake holder agencies (i.e. National Review Committee held on 25.02.2020) and the revised action plans (as Priority & Non-priority actions) are given in the **Annex 6.3**. Funds are available with PMU-MWSIP

through the ADB for the “Priority actions”, that are now being implemented whilst funds to be found for implementing the Non-priority actions.

40. The progress of implementing the mitigation actions during the reporting period against the planned actions to be implemented is summarized in the **Table 4-2** below.

Table 4-2: Progress of implementing WMP in UECP area

No.	Actions in the WMP	Physical Progress	Estimate/LKR & progress
(i)	Reforestation		
	Reforestation of 20 Ha, at Rajaela and Moragolla Forest Reserves, Naula in Matale DFO division (Out of 20 Ha, 7 Ha at Rajaela & 13 Ha at Moragolla)	Planting 10,000 native plants in 10 ha. (As 7Ha in Rajaela & 3 Ha in Moragolla) Maintenance of 3650 plants in the nursery for further planting. Maintenance of 10 Ha. Of reforested land with establishment of 3 Km length fire belt. <i>Refer Annex 6.3A-Location Map</i>	29,209,928/= 20.53%
	Reforestation of 30 Ha, at Rambukoluwa Forest Reserve, Laggal in Matale DFO division	Planting 15,000 native plants in 15 ha. Maintenance of 15 Ha of reforested land with establishment of 3 km length fire belt. Production of 16,500 seedlings in the nursery for replanting the balance 15 Ha. In 2020. <i>Refer Annex 6.3B- Location Map</i>	
	Reforestation of 200 Ha in Elehera and Hurulu Forest Reserve in Polonnaruwa DFO division	Development of Plant nursery at Erigeoya in Polonnaruwa DFO division. Production of 15,000 seedlings in the Nursery. 5 Awareness programs for School children & 3 programs for the Community <i>Refer Annex 6.3C-Location Map</i>	133,506,067/= 0.61% Program was ceased due to suspension of package ICB 2A.
(ii)	Restoration of water holes under habitat enrichment within Protected Areas (PA).	Field surveys were completed and prepared the estimate for restoration of Olumaduwa Tank in Kaudulla National Park managed by DWC <i>Refer Annex 6.3D- Location Map</i>	Cost: LKR 5,982,243.16 Expenditures for preparatory work was minor

(iii)	Ecological Restoration of five tanks in Galapitagala Forest Reserve in Anuradhapura district	Site maps and estimate were prepared by FD for establishment of Gasgomaman and Kattakaduwa with native plants (100 Ha) <i>Refer Annex 6.3E- Location Map</i>	Program was ceased due to suspension of package ICB 2A.
(iv)	Removal of Invasive Alien Species (IAS) (<i>Mimosa Pigra</i>) in Elehera wildlife Sanctuary in Polonnaruwa District.	Preparation of Site plan with the DWC for removing invasive <i>Mimosa pigra</i> in an extent of 10 Ha. is in progress.	No expenditure for activities undertaken in reporting period
(v)	Establish a buffer strip along the canal trace	2 % in progress	Implemented by the UECF ICB 1 contractor
(vi)	Annexing identified forest patches to existing Protected Areas	Identified and mapped the forest patches with GPS coordinates. Declaration under FFPO/FO is in progress. <i>Refer Annex 6.3G Location Map</i>	No expenditures for activities undertaken in reporting period
(vii)	Establishment of Elephant Corridors (EC)	Ground verification and regional level stakeholder consultation were undertaken for establishment of Hurulu-Thumbikualama elephant corridor in Anuradhapura District. (Preparation site maps in progress. Partly prepared site map for Hurulu Thumbikulama Elephant corridor is Annexed. <i>Refer Annex 6.3H- Location Map and Annex 6.3I for the minutes of the meeting</i>	Expenditures for preparatory work was minor

^{*} In line with the WMP implementation action plan for the reporting period

41. **Annex 6.4** presents the summary of key stake holder participatory sessions held in relation to implementation of the WMP.

4.3 Stakeholder consultation, awareness meetings and joint inspections completed in UECF during the monitoring period

42. **Table 4-3** summarizes the construction-based activities involved by the Employer and the PMDSC with the Contractor and other key stakeholder agencies during the monitoring period.

Table 4-3: Construction based events carried out during the monitoring period

Date	Activity	Location
04.02.2020	Workshop on preparation of action plan for 2020 of WMP	Polpithigama

Date	Activity	Location
10.02.2020	Field visit to Laggala forest range on supervision of replanting programme under the WMP	Laggala
11.02.2020	Field visit to Laggala forest range on supervision of replanting programme under the WMP	Rambukoluwa
12.02.2020	Field visit to Naula forest range on supervision of replanting programme under the WMP	Naula
13.02.2020	Field visit to Kekirawa forest range on preparation of MOU with FD Kekirawa	Kekirawa
14.02.2020	Field visit to Kakirawa forest range on preparation of MOU with FD Kekirawa	Kekirawa
20.02.2020	Field visit for site selection for ecological restoration under the WMP	Kekirawa
26.02.2020	Awareness programme on WMP for DWC officers Anuradhapura	Anuradhapura
02.03.2020	Field visit to Kahatagasdiliya forest range for MOU with FD for ecological restoration	Kahatagadiiliya
05.03.2020	Field visit to Kahatagasdiliya forest range for MOU with FD for ecological restoration	Kahatagadiiliya
11.03.2020	Field visit to Polonnaruwa forest range for preparing MOU with FD for ecological restoration	Polonnaruwa
12.02.2020	Field visit to RFO office-Kekirawa for preparing MOU with FD	Kekirawa
06.05.2020	Field visit carried out with PHI to get the instructions for the medical actions to be taken against Covid-19 for commencing construction work	Kabarawa worksite
18.05.2020	Field visit to Naula and Laggala forest range to supervise the replanting programme	Laggala
27.05.2020	Meeting on progress review of ecological restoration under WMP	Matale
19.05.2020	Field visit with DWC officials, Contractor, Engineer and Employer to observe the elephant fence	Tunnel 1 inlet area
09.06.2020	Joint site inspection was carried out to find the possibility of resuming the construction work	Kabarawa site
10.06.2020	Joint site inspection was carried out EMS, SEO and Contractor to find the suitability of the earlier proposed disposal site	Lel oya site
15.05.2020	Field visit carried out with PHI to get instructions for the medical actions to be taken against Covid-19 for commencing construction work	UEC ICB-1
19.06.2020	Field visit carried out with PHI to get the instructions for the medical actions to be taken against Covid-19 for commencing construction work	Lel Oya worksite

43. There are number of meetings, training programs carried out during the monitoring period with the participation of relevant officers representing PMU, PIU, Engineer, PMDSC and the Contractor. A summary of the details is given in **Table 4-4**.

Table 4-4: Summary of the meetings and training conducted during the monitoring period

Date	Activity	Location
06.02.2020	Special progress review meeting UEC ICB 1 the PD PMU	Conference room Moragahakanda
28.01.2020	Site inspection and Monthly Environmental Progress review meeting KMTC	Sinohydro meeting room-KMTC
06.02.2020	Special progress review meeting UEC ICB 1 the PD PMU.	Conference room Moragahakanda

Date	Activity	Location
11.02.2020	Grievance discussion on the Hiru TV news related to house cracks with the participation of GSMB Officers, CEA and Grama Niladharis	Lel Oya
07.04.2020	Meeting with Contractor UEC ICB-1, PMDSC	Online
25.04.2020	Meeting with PMDSC and PMU	Online
20.04.2020	Special meeting with the Contractor -UEC ICB1	RE's office, Elahera
13.05.2020	Special meeting with Contractor for resuming the construction work after shutting down -UEC ICB -1.	RE's office, Elahera
19.06.2020	Structural construction meeting	RE office -KMTC

4.4 Grievance Redress Committee (GRC) Activities

44. The summary of the Grievance Redress Committee meetings carried out in the KMTC area are given in the **Table 4-5** during the reporting period.

Table 4-5: Summary of the GRC meetings carried related to Environment Matters

Type of committee	GRC-Name	Members	No of meetings
Level 1	Illukkumbura/ Kahagala established on 16.09.2019	Illukkumbura GN division: Grama Niladhari- Illukkumbura, SEO- PIU- MWSIP, Three other nominated villagers of Illukkumbura Kahagala GN division: Grama Niladhari- Kahagala, SEO- PIU- MWSIP, Three other nominated villagers of Kahagala	Not held
GN Level committee meeting	GRC Committee Meeting (Puwakpitiya/ Pottatawela)	Puwakpitiya GN division: Grama Niladhari- Puwakpitiya, SEO- PIU- MWSIP, Three other nominated villagers of Puwakpitiya Pottatawela GN division: Grama Niladhari- Pottatawela, SEO- PIU- MWSIP, Three other nominated villagers of Pottatawela	Not held

45. In addition, a grievance was raised on 05 January 2020 by the community living in Lel oya & Wellevela villages (in Laggala Divisional Secretariat area) which are located nearly 2 km away from the Lel oya Portal site, regarding ground vibration with potential risk of affecting their houses and a temple due to the tunnel blasting activities.

46. Although the Grievance Redress Committee was not established since no potential affected parties are within the impact zone of the Project, this grievance was well responded by informing the community through Divisional Secretariat to participate as observers for a test blast undertaken by the Geological Survey and Mines Bureau (GSMB; the Government Authorized agency) to measure ground and air vibration impacts.

47. The GSMB confirmed that blasting for Tunnel construction has not caused vibration impacts on the referred area. The relevant documents are given in the **Annex 7**.

4.5 Other Project Related Activities

48. An ecological survey commenced with the contribution of officers of Department of Forest Conservation on 22.01.2020 in Tunnel 1 Inlet area to understand any changes of the ecological environment due to the tunnel construction activities.

49. Access road clearing was attended on 20. 05.2020, due to the tree falling occurred because of natural disaster of “Amphan cyclone”. There were considerable number of trees and branches fallen to Tunnel 2 outlet portal access roads of Section ‘d’, Section ‘e’ and Section ‘f’.

5 PROPOSED ACTIVITIES FOR NEXT REPORTING PERIOD (JULY TO DECEMBER 2020)

50. Following key activities shall be carried out by the employer, PMDSC jointly for the next reporting period is summarized in the **Table 4-1**.

Table 5-1: Key activities planned for next reporting period

Task	Date of Commencement	Expected Date of completion
Wildlife Management plan implementation		
- Wildlife Management plan implementation	01.01.2020	Continue in 2020
- Reforestation work in coordination with Forest Department	01.01.2020	Continue in 2020
Construction related		
- Tree Removing -Open canal Area ICB 2B	13.07.2020	17.07.2020
- Environmental Quality Monitoring (Air/ Noise/ Vibration) in UECP ICB2B area through the contractor	17.07.2020	July 2020
- Property Condition Survey (Access road- Section 'd')	04.08.2020	07.08.2020
GRC		
Conduct GRC Meetings	01.01.2020	Continue in 2020

Annex 7

Letter issued by GSMB confirming that Tunnel vibration is within the standard limits

Annex 1

Environmental Emergency Action Plan

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Mahaweli Water Security Investment Program

Emergency Environment Action Plan for Construction Site Closure due to COVID-19 Outbreak



**Ministry of Mahaweli
Development and Environment
Sri Lanka**



April 2020

Revised Draft Report

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Contingency Environment Action Plan

Project Number H.503409
 Subject Project Report
 Project Director Dr. Beau Freeman
 Country Sri Lanka

Project Title: **Mahaweli Water Security Investment Program**

Client Ministry of Mahaweli Authority for Development and Environment

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1 INTRODUCTION

1. With the GoSL decision to restrict movements of the public as a measure to control spreading of COVID-19 disease, the construction sites were immediately closed from 20 March 2020. The sudden site closure resulted in various environmental issues due to lack of site maintenance, and inability to carry out monitoring by the contractors' and the Engineer's staff. The enforcement of curfew and travel restrictions out of the district boundaries created a difficult situation with regard to arranging staff for the regular supervision and monitoring work.

2. An emergency environmental incident is a sudden and immediate threat to the wellbeing of the physical, social, and biological environment associated with the construction sites under MWSIP, and this action plan will address the key areas that need attention to manage adverse consequences.

3. However, keeping the minimum required staff (with necessary approvals from GoSL, which will be assisted by PMDSC and Client on request) to ensure due maintenance of site safety and security including environmental emergency management is a Contract obligation of the Contractor. The Contractor's method for managing such emergency is presented in the "Emergency Response Plan", approved by the Engineer/ Consultant.

4. With complete site closure, no routine construction, material transportation, operation of plant or machineries will be permitted, and no full staff with the workforce will be available at the sites. With the site isolation unauthorized and unforeseen releases of hazardous, polluting substances, as well as entry of unpermitted people into the wildlife / forest protected areas for poaching, hunting and making wildfires, potential "Health & Safety risks" to the public, such as "spread of COVID-19" from limited staff mobilized by Project, road accident at barricaded canal crossing or detour location or collapsing excavated canal banks, risking property/ life and wild animals (elephants) entering into villages from the gates managed by the Project can happen. These actions can cause immediate, unacceptable short-term or long-term threats to the environment and persons in the surrounding area.

1.1 Purpose

5. Environmental safeguards are triggered if a project is likely to have potential environmental risks and impacts, due to the regular project implementation cycle not being in place. The ongoing COVID-19 Outbreak led GoSL to limit the exposure of people to the virus by enforcing curfew and travel restrictions inside the country as well as internationally. As a result, site operations were temporarily stopped.

6. Hence, as a part of ADB SPS (2009) it is required to prepare an action plan considering the potential emergency risks at similar accidental, emergency situations. This Contingency Environment Action Plan will include (i) Environmental Management System (EMS) in place; (ii) anticipated environmental risks; (iii) emergency environment response actions.

7. This document, hence, will ensure providing due guidance and support the Contractors to avoid, minimize, control and mitigate environmental incidents under the emergency context. A separate report addressing health and safety risks similar to this action plan is being prepared by PMDSC.

1.2 Scope

8. The purpose of this action plan is to document the procedures and actions to be implemented during an emergency situation, to manage the potential environmental risks in the construction sites.

9. This emergency Environment Action Plan will be a supplement to the site specific EMPs, with the aims to:

- i. Ensure that all specific environmental measures as listed in the EMP/ CEMP are in place at the site level;
- ii. Facilitate with environmental compliance requirements as per the GoSL Environmental regulations, and ADB SPS (2009);
- iii. Support the contractors and the PMDSC contract supervision and management following occurrence of any emergency situation or sudden site closure;
- iv. Provide a Framework for MWSIP to prepare for and respond to emergency environmental incidents, communicate with the appropriate parties in the event of emergency environment incidents, investigate cause, and mitigate the environment incident as required without permitting it to become a disaster.

2 ENVIRONMENT MANAGEMENT SYSTEM TO BE IN PLACE

10. The existing Organization and Environmental Management system is described in Figure 2-1. However, with the travel restrictions, the full-scale environment management and monitoring system cannot be fully practised.

11. Since the GoSL advised to both public and private sector to work from home with the enforcement of curfew, the safeguards cell in the Program Management Unit (PMU), and Program Implementation Unit (PIU) are not active. The environmental team of the Program Management Design Supervision Consultant (PMDSC) is subject to restrictions of movement following the government's decision on working at home, but will be partially activated coordinating with contractors to attend to required mitigatory work and actions required to manage high and moderate risk situations. Permissions for curfew waivers for key staff are currently being agreed with the PMU.

12. The two counterpart personnel of Environmental Specialist in PMU, and Senior Environmental Officer (SEO) assigned to the Project Director (PD) of PIU will be available remotely or on site as required to assist and make required coordination between key stakeholder agencies and counterpart staff at the village level.

13. PMDSC's obligations include administering and supervising the contracts, under the Team Leader (TL) and Chief Resident Engineer (CRE), though respective Resident Engineers (RE) assigned to each contract package with a selected team of staff to work intermittently. The RE assumes primary responsibility for ensuring the environmental safeguard management at the site level, and the relevant activities will be guided and facilitated by the Environmental Specialist (ES) of PMDSC and 3 Environmental Monitoring Specialists (EMS) of the PMDSC assigned for the 3 project areas, Minipe, Upper Elahera Cana, and North Western Province.

14. Table 2.1 summarizes the roles and responsibilities during the emergency situation to manage the possible environmental risks in the site levels, including contact details of the relevant key personnel.

Table 2-1: Key PMU/PIU and PMDSC staff relating to safeguard compliance

Entity	Position	Name / Contact details	Role and responsibilities at the emergency period
PMDSC	<ul style="list-style-type: none"> Environmental Specialists (ES) 	Name: Dr. Anusha Kasige Contact details: +94777589470	<ul style="list-style-type: none"> The overall coordination with the 3 EMS to manage site monitoring Notify outside authorities if assistance required through PMU/PIU environmental team (through TL of PMDSC) Responsibility for coordinating actions among the PMDSC team in accordance with the environmental needs of the situation

Entity	Position	Name / Contact details	Role and responsibilities at the emergency period
	<ul style="list-style-type: none"> • Environmental Monitoring Specialist (EMS) for NWPCP • EMS - UECP • EMS - MLBCRP 	<p>Name: Nalinda Peries Contact details: +94773250897</p> <p>Name: R. M. Premawardena Contact details: +94773693762</p> <p>Name: Sucharitha Kannangara Contact details: +94717113477</p>	<ul style="list-style-type: none"> • Status update to the TL and CRE of PMDSC copying to respective REs • PMDSC to obtain an inventory of key environmental/ social and safety issues observed with respect to each contract along with mitigation measures that have been adopted/ are in place. • EMS with environment / safety officer of the Contractor to assess each such action and decide on issues/ project sites which would need special focus (e.g.. cut slope sections which could collapse in an event of rain/ flood, open cut sections through wildlife areas) • Obtain Contractors overall plan for managing site & time specific potential environmental hazards as per Emergency redress plan, Method statements and Compliance requirements. • Periodical site monitoring to oversee the situation • Report, record and update on any environmental issue to RE/ES PMDSC • Coordinate with the Contractor to manage the situation • Take overall responsibility for implementing relevant mitigation actions through the contractor / responsible party of the emergency response work force • Supervise the actions of the Emergency Response Team to ensure all environmental aspects are out of danger/risk. • Notify PMU/PIU if assistance required
PMU	<ul style="list-style-type: none"> • Environmental Specialist • Social and Resettlement Specialist 	<p>Name: P. Moonamale Contact details: +94771035020</p>	<ul style="list-style-type: none"> • Facilitate and ensure compliance with SPS (2009), all government rules and regulations regarding permits as well as any other relevant approvals required for works for which they are responsible

Entity	Position	Name / Contact details	Role and responsibilities at the emergency period
			<ul style="list-style-type: none"> • Liaise with the environmental agencies and seeking their help to solve the environment-related issues
PIU	<ul style="list-style-type: none"> • Senior Environmental Officer (SEO) - NWPCP 	Name: Rohana Bandara Contact details: +94718323227	<ul style="list-style-type: none"> • Conduct ongoing consultation with the community • Grievance Redress Mechanism (GRM) to be modified to solve the environmental issues during the site closure period and monitor that it is operated satisfactorily coordinating with the relevant stakeholder groups and community • Liaise with the environmental agencies and seek their help to solve the environment-related issues • Assist with Engineer to the Contractor to disseminate warnings and information as required to ensure all people in the immediate area have been warned and evacuated either by alarms or by word of mouth.
	<ul style="list-style-type: none"> • SEO - UECP 	Name: Sanjeewa Kosgolla Contact details: +94774403117	
	<ul style="list-style-type: none"> • SEO - MLBCRP 	Name: Gayani Herath Contact details: +94702698328	

15. In addition to the above, key personnel, essentially the Contractor's Representative are to be engaged with site monitoring and attend to required corrective actions to mitigate the key issues. Project Manager (PM) of the Contractor is specified as the focal point from contractors' organisations who has the authority to manage resources under the respective contractors, and PM shall be assisted by the EO of each contractor to engage with implementing emergency environment action plan.

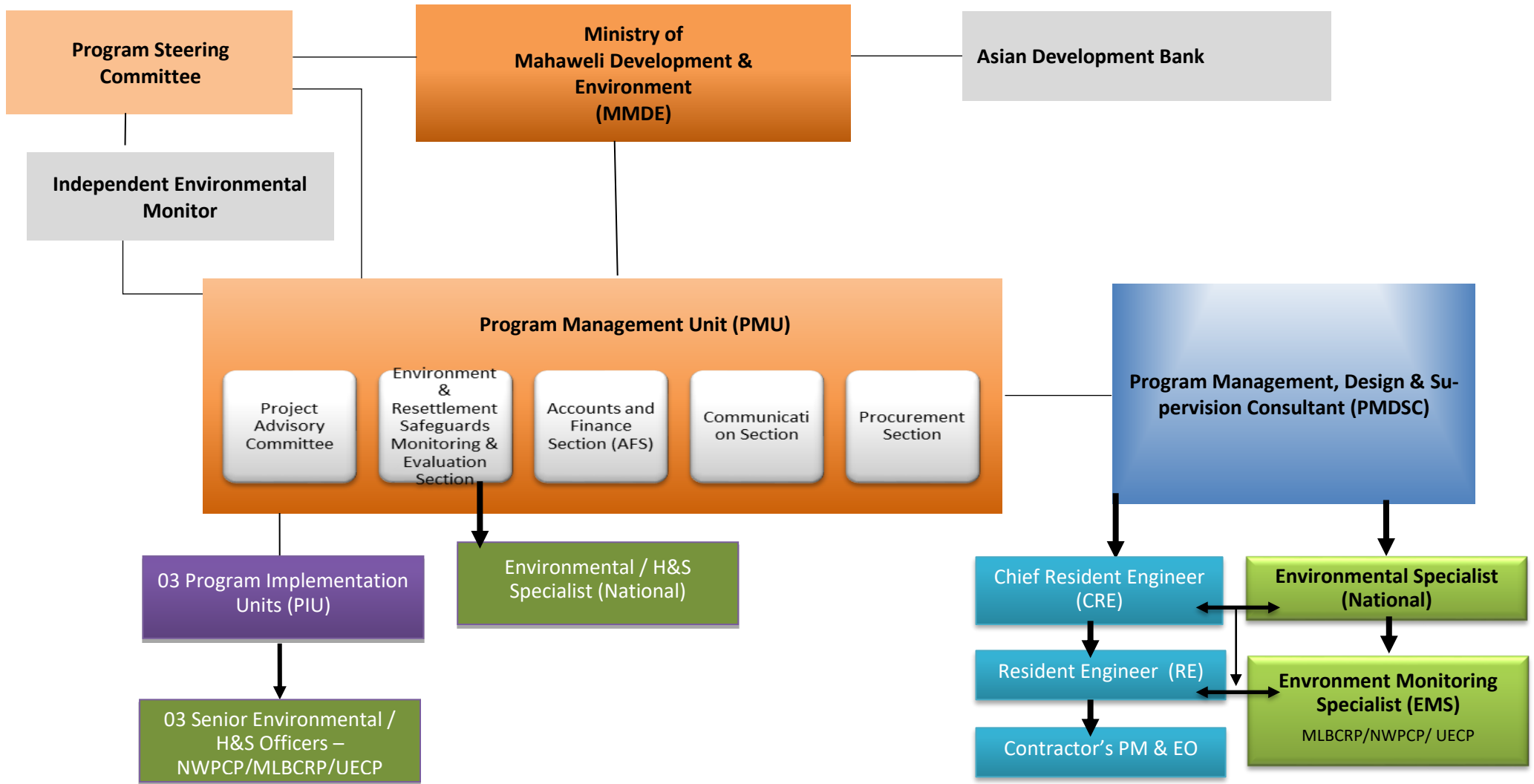


Figure 2-1: MWSIP Environmental Management Organization Chart

3 ANTICIPATED ENVIRONMENTAL RISKS DURING SITE CLOSURE

3.1 Legal status and Responsible Stakeholder Agencies

16. Summary of the required compliance status in line with the ADB SPS (2009) and conditions and recommendations given in the Environmental Approvals issued by Central Environment Authority (CEA) and other stakeholder agencies, such as Department of Wildlife Conservation (DWC) and Forest Department (FD) adhering to the National Environment Act (NEA) and relevant environmental regulations, policies and frameworks described in the respective Environment Impact Assessment Reports (EIAR) prepared for NWPCP and UECP, Initial Environment Impact Assessment reports (IEER) for MLBCRP under MWSIP, and the relevant package specific updated EMPs.

17. Information about the key stakeholder agencies based on the land ownership where the contract packages are located is important for decision making and implementing actions in addition to the requirements of the Central Environment Authority (CEA). Table 3-1 summarizes those key agencies that need to be informed at the emergency period through the PMU or PIU.

Table 3-1: Environmental Risk Level and Key Stakeholder Agencies to be contact at Emergency

Construction package	Ownership of the project area	Level of Environmental sensitivity	Environment Risk level
MLBCRP-ICB-1	<ul style="list-style-type: none"> ▪ DWC ▪ ID, CEB, DS Hasalaka, MASL are the other stakeholder agencies involved in management 	<ul style="list-style-type: none"> ▪ Located in a protected area (Victoria Randenigala Rantambe – VRR sanctuary), with wildlife movements to a certain extent under the jurisdiction of FFPO ▪ High risk due to safety of cofferdam / breached anicut, temporary deep cut for the bypass canal ▪ High risk due to presence of explosive magazine / oil tanks etc. ▪ Elephant fence is maintained by DWC established around the site ▪ Public road, few residential houses located around the site 	HIGH

MLBCRP packages	<p>NCB</p> <ul style="list-style-type: none"> ▪ ID ▪ Relevant DS, GN and PS authorities 	<ul style="list-style-type: none"> ▪ Residential area – Socially sensitive ▪ NCB-4 package overlaps with the wildlife protected area (National park) 	<p style="text-align: center;">MODERATE</p>
NWPCP-NCB-1	<ul style="list-style-type: none"> ▪ ID ▪ Relevant DS, GN and PS authorities 	<ul style="list-style-type: none"> ▪ Wemedilla tank and canal area is within a residential area with rural community 	<p style="text-align: center;">MODERATE</p>
NWPCP-ICB-2	<ul style="list-style-type: none"> ▪ DWC & FD ▪ Relevant DS, GN and PS authorities 	<ul style="list-style-type: none"> ▪ About 3 km of the canal is associated with the Kahalla Palkelele Sanctuary and Forest Reserve with significant amount of wildlife movements ▪ Risk of wildfires during dry weather conditions ▪ Risk of poachers, hunters entering into protected areas ▪ If the fence is damaged, elephants will invade villages ▪ Elephant fence & gates maintained through security personnel ▪ Residential, with rural community at a risk 	<p style="text-align: center;">HIGH</p>
UECP-ICB-1	<ul style="list-style-type: none"> ▪ DWC & FD ▪ MASL 	<ul style="list-style-type: none"> ▪ Entire canal with excavated, open sections is within the Elehera Giritala sanctuary and Forest reserve with significant amount of wildlife movements ▪ Risk of falling animals into excavated sections ▪ Presence of explosives ▪ Risk of poachers, hunters entering into protected areas ▪ Risk of wildfires during dry weather conditions 	<p style="text-align: center;">HIGH</p>
UECP-ICB-2B	<ul style="list-style-type: none"> ▪ FD / DWC ▪ MASL 	<ul style="list-style-type: none"> ▪ The project area is within the protected forest reserves associated with 	<p style="text-align: center;">HIGH</p>

		<p>Knuckles Forest range and wildlife sanctuary</p> <ul style="list-style-type: none"> ▪ Sensitive stream network ▪ Presence of explosives ▪ Risk of poachers, hunters entering into protected areas ▪ Possibility of wildlife fires 	
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ID- Irrigation Department, FD- Forest Department; DWC – Department Wildlife Conservation; DS – Divisional Secretary; GN – Grama Niladhari; RDA – Roads Development Authority; FFPO – Fauna Flora Protection Ordinance; CEB – Ceylon Electricity Board; MASL – Mahaweli Authority; PS – Pradeshiya Sabha

3.2 Anticipated Environmental Risks at the emergency situation

18. The main causes for the possible risks are summarized in Table 3-2 below for the active packages under MWSIP, depend on the site locality.

19. Limiting or eliminating such causes will help to reduce the probable environmental risk during this emergency period, engaging limited number of workforces for implementation and monitoring.

Table 3-2: Overall Risk Assessment for the active packages under MWSIP at the emergency situation

Project Area Cause	MLBCRP	NWPCP	UECP
Lack of regular maintenance of the sites (oil spills, contamination with other chemicals, hazardous waste material)	ICB 1 NCBs	ICB 2 NCB 1	ICB 1 ICB 2B
Lack of sufficient security arrangements	ICB 1 NCBs	ICB 2 NCB 1	ICB 1 ICB 2B
Lack of dust controlling and regular watering (material stockpile areas, access roads, construction sites associated with residential /public areas etc.)	ICB 1 NCBs	ICB 2 NCB 1	ICB 1 ICB 2B
Unlawful behaviors of the contractors (operating sites without notice to Engineer, nonpayment for the regular staff attend routine maintenance etc.)	ICB 1 NCBs	ICB 2 NCB 1	ICB 1 ICB 2B
Lack of proper slope protection in the excavated section, or canals under construction	ICB 1 NCBs	ICB 2 NCB 1	ICB 1 ICB 2B
Lack of appropriate erosion control, silt traps measures	ICB 1 NCBs	ICB 2 NCB 1	ICB 1 ICB 2B
Loss of pipeline integrity, and lack of proper site drainage arrangements	ICB 1 NCBs	ICB 2 NCB 1	ICB 1 ICB 2B
Hindrance to natural drainage and surface runoff and possible local flooding, property damages during heavy rains	ICB 1 NCBs	ICB 2 NCB 1	ICB 1 ICB 2B
Not managing large stockpiles (lack of strengthened base of stockpile, no proper drainage arrangements, no dust covers etc.)	ICB 1 NCBs	ICB 2 NCB 1	ICB 1 ICB 2B
Improper waste management	ICB 1 NCBs	ICB 2 NCB 1	ICB 1 ICB 2B
Unmanaged explosives, magazines, stores with flammable chemicals etc. during hot weather conditions	ICB 1 NCBs	ICB 2 NCB 1	ICB 1 ICB 2B
Lack of maintenance of electric and other fencing causes aggravation of Human Wildlife Conflicts	ICB 1 NCBs	ICB 2 NCB 1	ICB 1 ICB 2B
Lack of proper communication procedures adopted during emergency site closure	ICB 1 NCBs	ICB 2 NCB 1	ICB 1 ICB 2B
Lack of ground water management procedures / dewatering etc. in the deep excavated sections, which cause possible ground water depletion, community unrest due to well water level lowering during dry weather conditions	ICB 1 NCBs	ICB 2 NCB 1	ICB 1 ICB 2B
Contractor and the site are not prepared for natural disasters (flood, wildfires etc.)	ICB 1 NCBs	ICB 2 NCB 1	ICB 1 ICB 2B
Major facility faults (batching plant, chemical stores, waste treatment facilities, coffer dams etc.)	ICB 1 NCBs	ICB 2 NCB 1	ICB 1 ICB 2B
Non-routine reforestation site maintenance	ICB 1 NCBs	ICB 2 NCB 1	ICB 1 ICB 2B

High – H; Moderate – M; Low – L; Not Applicable – N/A

20. The site closure will prevent from the spreading of deadly COVID-19 disease, and community, and the work force is protected from the risk of contamination with the virus. However, at any active labour camps with gangs, the labour force is at a risk, and unrest in the community in the area is likely, due to the movements of labour in the village areas.

4 EMERGENCY ENVIRONMENT RESPONSE PLAN

4.1 Emergency Response Actions

21. The measures provided in the sections below apply to all environmental incident scenarios. These measures will be executed in response to an environmental emergency to:

- i. Reduce the threat to human life or injury
- ii. Protect against environmental damage; and
- iii. Preserve infrastructure, product, equipment and natural resources

22. Accordingly, following “Emergency Response Action” the responsibilities of the relevant parties are shown in **Table 4-1**;

Table 4-1: Responsibilities of Parties

No.	Responsibilities
I	<p>Contractor shall:</p> <ul style="list-style-type: none"> ▪ Plan the proper site closure at emergency (i.e. due placement of safety infrastructures, notification, safe parking of equipment fleet & storage of material and organize minimum required staff for regular site monitoring and maintenance with preparedness to follow GoSL special guidelines under the context and CEMP, Health Safety Plan and to duly activate the “Emergency Response Plan” protocols in case of emergency, ▪ Submit the same plan (may be a draft to be updated later) to Engineer and establish communication links during closure, ▪ Seek necessary assistance as required from Engineer/ Employer (like curfew permit)
II	<p>Engineer shall:</p> <ul style="list-style-type: none"> ▪ Obtain the “emergency site closure plan” of the Contractor and communicate with Employer to facilitate to Contractor as necessary, ▪ Ensure “site closure with complying to Contract obligations” (securing Employers obligations towards ADB and GoSL), ▪ Organize for monitoring arrangements on Contractor’s site management at closure period and submit to Employer, ▪ Establish communication link at closure period with Contractor and Employer
III	<p>Employer shall:</p> <ul style="list-style-type: none"> ▪ Obtain both Contractor’s and Engineer’s emergency closure plan, facilitate liaising with GoSL Agencies to execute same and monitoring implantation (may be drafts to be updated later), ▪ Organize to facilitate the same plans with mobilizing necessary human/ other resources, ▪ Establish communication links with key GoSL stakeholder agencies at site closure, ▪ Ensure preparedness to activate “Grievance Redress Mechanism” as suitable, ▪ Disseminate necessary information as per the “emergency site closure plan” of Contractor to the potentially vulnerable communities in addition to relevant GoSL Authorities etc.

23. More specific actions related to each construction site will be dependent on the type and location of the emergency environmental incident and may be managed by referring to the updated Environmental Management Plan (EMP).

4.1.1 Emergency response actions to be undertaken by the Contractor

24. Emergency is an unforeseen situation that threatens the employees under each contract, or the public due to disrupts or shuts down site operations which causes environmental damage.

25. Hence, the priority action required from the contractor is to submit the updated plan based on the “Emergency Response plan” that deals with all types of environmental issues specific to the construction areas.

26. The environmental risk assessment carried out to prepare the CEMP based on your construction program and detail construction activities will provide a guideline to determine the content of the emergency action plan, and must include a minimum of the details shown in :**Table 4-2.**

Table 4-2: Actions to be Taken

Category	Action to be Taken
Environment Risk and re-quired mitigations	<ul style="list-style-type: none"> • Obtain an inventory of key environment/ social and safety issues observed with respect to each contract along with mitigation measures that had been adopted/ in place referring to updated EMP/CEMP and particular MS approved by Engineer • assess each such action and decide on issues/ project sites which would need special focus (E.g. cut slope sections which could collapse in an even of rain/ flood, risk on animals due to open cut sections through wildlife areas etc.)
Site closure plan	<ul style="list-style-type: none"> • Plan for the proper site closure at emergency (i.e. due placement of safety infrastructures, due arrangement for stream diversions, drainage arrangements, personnel for security, relevant notification, safe parking of equipment fleet & storage of material in line with the Health Safety Plan, “Emergency Response Plan” etc. • Environmental management system to be in place, including procedures for employees who remain to perform or shut down critical plant operations, operate fire extinguishers, or perform other essential services that cannot be shut down • The site lay out plan with above relevant details and also indicating active and shut down areas, traffic plan for public during site closure, emergency escape procedures, indicating route maps, refuge areas
Monitoring & Maintenance mechanism	<ul style="list-style-type: none"> • Plan to organize minimum required staff for regular site monitoring and maintenance indicating list of names of the responsible personnel, with preparedness to follow GoSL special guidelines under the context of Covid 19
Communication and reporting procedure	<ul style="list-style-type: none"> • Updated list of key personnel such as the plant managers, EHS officers in order of priority, to notify in the event of an emergency during off-duty hours

Category	Action to be Taken
	<ul style="list-style-type: none"> • Display for public when the site is located in a residential or public area; • An alternative communications centre to be used in the event of a fire or explosion; and a secure on- or offsite location to store originals or duplicate copies of documents, emergency contact lists, and other essential records • Reporting procedure (same as before using updating Environment issue log, grievance log and share with the engineer/EMS through e-mail; daily, weekly, monthly reporting as applicable through e-mail, phone etc.)
Availability of other resources to response at emergency situations	Refer section 4.2 of EEAP

4.1.2 Role of Engineer / PMDSC at the emergency situation

27. ES and EMS of the Environmental team will be alert on the situation, and random site visits shall be made to monitor the site conditions, and update to the CRE, RE to inform the PMU/PIU safeguard cell;

28. Community consultation and contacts with the contractor’s Environment Officer will be maintained regularly to obtain any information related to possible environmental risks;

29. Reporting and communication procedure will be followed as described in this action plan.

4.1.3 General response to an emergency environmental incident

30. General response measures are outlined in Table 4-1.

Table 4-3: General response measures to be adopted at an emergency environmental incident

(1) Evacuate	<ul style="list-style-type: none"> ▪ All Non-essential people ▪ Any critical / endangered fauna/flora species on the life threat ▪ Any critical natural resources
(2) Eliminate	<ul style="list-style-type: none"> ▪ Sources of ignition, sparks etc.
(3) Stop and Coordinate	<ul style="list-style-type: none"> ▪ Stop Source of the incident (e.g. spill) and coordinate shut down of relevant equipment, if possible
(4) Notify	<ul style="list-style-type: none"> ▪ Internal and external notifications <ul style="list-style-type: none"> (a) All emergency environmental incidents must be reported to the RE immediately, and RE to notify the CRE, ES/EMS of PMDSC, PIU/PMU (b) Contractor’s EO to attend regular environmental incident reporting and inform the ES/EMS to monitor (c) ES/EMS will Carry out Environment Incident Reporting (EIR) following the normal procedures after visiting the site and notify to the RE to instruct the Emergency Task force of the contractor to implement
(5) Identify	<ul style="list-style-type: none"> ▪ Identify appropriate mitigatory measures following applicable safety precautions, regulatory requirements and relevant stakeholder agencies to inform etc.

(6) Mitigate / isolate	<ul style="list-style-type: none"> ▪ Adopt applicable mitigatory measures to manage the situation ▪ If unable to mitigate, set up perimeter to isolate the area and barricade until permanent mitigations are adopted
(7) Evaluate	
(8) Document	
(9) Investigate and remediate	

4.2 Resources for Response Action

4.2.1 Key contact list

31. Table 2-1 summarizes the key contacts of the environmental task force active during the emergency situation. In addition, the key contact list of the key relevant response personnel from the PMDSC, PMU, Contractor’s staff to be circulated among the MWSIP members and notified / displayed at all the sites.

4.2.2 Emergency equipment

- Necessary emergency response equipment, such as water bowsers, sandbags, extinguishers, barricade tape, alarms etc. as determined from the risk assessment of the individual sites must be available to respond to emergency environmental incidents. EMS coordinate with contractors to see such equipment are available under the emergency equipment list.
- All emergency equipment must be (a) well placed, installed in accordance with the manufacturer’s instructions, relevant standards; (b) readily accessible and within a reasonable distance from the source of hazard, (c) and have appropriate signage and lighting
- Emergency equipment inventory shall be regularly inspected, tested and maintained in accordance with relevant legislative requirements
- Relevant personnel will be trained, and competent to use the emergency equipment

4.3 Environmental Monitoring

32. Environmental monitoring will be conducted in response to an emergency environmental incident. The specific aspects of the environmental monitoring shall be determined by the Environmental Monitoring Specialist (EMS) and ES of PMDSC depending on the location, nature, significance of the environmental issue with inputs from counterpart staff of PIU and PMU, who may also consult relevant Government Authorities as necessary. The plan shall be implemented on emergency basis with the approval of PMU .

33. More robust sampling, analysis will be conducted in the post incident investigation, assessment, and, if required, remediation activities. This will include implementation of environmental monitoring programs (e.g., when contaminants have been released to land or water) with the participation of relevant authorities and organizations recognized by CEA.

4.4 Communication

34. Depending on the significance of the environmental incident, the required level of communication will vary, and communication protocols are set forth under PMDSC Environmental management system with the coordination of the employer, PMU and PIU, as shown in Table 4-2. PMDSC Communication specialist will be made aware by the ES-PMDSC on any environmental emergency situation.

35. Internal communication, within the MWSIP Environment team will be done regardless of the level of environment significance of the issue.

Table 4-4: Communications Protocol

Category	Required Action
Internal Notifications	<ul style="list-style-type: none"> ▪ The observer recorded of the environmental incident should notify to the RE and EMS of PMDSC immediately over the phone or e-mail. ▪ All emergency environmental incidents shall be recorded in a form of “Environment Incident Record” by ES/EMS of PMDSC and inform to RE, and RE to inform contractor, PMU, PIU ▪ Contractor to register all environmental incidents in the Environmental issue log and share with the RE and RE to inform PMDSC Environment team
Regulatory notifications & reporting Stakeholder notifications	<ul style="list-style-type: none"> ▪ Notifications to the regulatory bodies (CEA, GSMB etc.), relevant stakeholder agencies (DWC, FD, Local Government Authorities etc) including ADB (financing agency) will be submitted through the employer (PMU, PIU) once the incident is reported by the Engineer/PMDSC to the employer ▪ Follow-up reporting regarding the incident details, impacts, in a form of corrective action plan shall be prepared by the employer (PMU/PIU) with the assistance of the PMDSC ▪ Compensations on the damages and the corrective actions shall be implemented through the contractor as per the contractual requirements, and if it’s a violation of the GoSL regulations (FFPO or Forest Ordinance) penalties will be charged through the department legal provisions after notifying to the Employer
Community notifications (to and from)	<ul style="list-style-type: none"> ▪ Community notifications occur both ways. If any environmental risk, emergency situation observed by the community, community will inform the project through the GRM, or notify to the SEO of PIU, EMS of PMDSC, Contractor’s EO ▪ If any environmental hazard, or risk which have an impact on the community, Contractor jointly with the PIU and GS of GND, under the guidance of PMDSC ES/EMS will be communicated to the relevant community, residents, villagers by means of notices, verbally etc.

Annex 2

Guidance Note on updating Contractor's Environmental Management Plan (CEMP)

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MAHAWELI WATER SECURITY INVESTMENT PROGRAM

Subject: GUIDELINE FOR UPDATING CEMP

Date: 21 May 2020

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Annex 1 - ADB directions related to the application at the workplace to prevent Covid 19

Annex 2 - CEMP guidance note issued at contract mobilization

Annex 3 – WHO guidelines for public health and social measures in the workplace in the context of COVID-19

1 Why CEMP Needs to be Updated

1. “Contractor’s Environmental Management Plan” (CEMP) is a 'live' document that are reviewed and updated at regular intervals throughout the project life cycle by the contractor, to ensure that CEMP includes all required mitigatory measures as per the ongoing construction program, as well as it address all regulatory compliance requirements.
2. The amendments to the CEMP will be required at following circumstances:
 - (i) When country or project area experience an emergency situation due to a natural disaster, communicable disease outbreak like Covid 19, conflict situation where the workers, or the surrounding community is vulnerable to any health or environmental hazard (ADB SPS (2009));
 - (ii) If any design change, deviation of the project footprint, or change of construction methodology etc.
 - (iii) If the license, permits are expired for the key construction related activities (mining / blasting, operation of Contractor’s facilities like batching plant, disposal areas,
 - (iv) Where unanticipated environmental impacts become apparent during project period (ADB SPS (2009));
 - (v) When the work program and scheduled construction period is outdated;
 - (vi) If additional construction work is included for the construction program which were not originally planned etc.
 - (vii) If the Central Environmental Authority (CEA), ADB or any other stakeholder agency identify the requirement of revising or updating the EMP by PMDSC, subsequently the contractor requires to update the CEMP based on the content updated in the EMP

2 Directions by ADB SPS (2009)

3. ADB Safeguard Policy Statement (SPS) 2009 is one of the key governing documents in the MWSIP, as the project is funded by ADB, and hence comply with the directions of the ADB safeguard policies is a mandate for all the contracts.
4. Safeguard policies are generally understood to be operational policies that seek to avoid, minimize, or mitigate adverse environmental and social impacts, including protecting the rights of those likely to be affected or marginalized by the development projects.
5. With the outbreak of Covid 19 pandemic in Sri Lanka, it was considered as an unanticipated environmental impact which arises the need of updating the safeguard documents indicating relevant emergency responses, mitigation measures prior to start up the site work.
6. Hence, following are the ADB directions related to the CEMP update, as well as adopting required safeguard management measures in the worksite and project affected areas responding the emergency situation.

Reference to SPS (2009)	Directives related to ESS
Appendix 1, Para 23	<ul style="list-style-type: none"> ▪ Where unanticipated environmental impacts become apparent during project implementation, the borrower will update respective safeguard documents (EIA and EMP, CEMP etc.) to assess the potential impacts...and outline mitigation measures.
SPS Environment Policy Principal 10	<ul style="list-style-type: none"> ▪ Provide workers with safe and healthy working conditions and prevent accidents, injuries, and disease.

Reference to SPS (2009)	Directives related to ESS
	<ul style="list-style-type: none"> ▪ Establish preventive and emergency preparedness and response measures to avoid, and where avoidance is not possible, to minimize, adverse impacts and risks to the health and safety of local communities.

7. Accordingly, when updating the CEMP;

- (i) Identify and assess the risks and potential impacts on the environment and safety aspects,
- (ii) Establish preventive measures and include in the safeguard plans (CEMP, Emergency Preparedness and Response Plan, Health & Safety Plan etc.) to address the identified risks and impacts, mitigation measures, monitoring plans including monitoring checklists to be adopted as per the H&S and environmental safeguard requirements (i.e. Daily checklist introduced to verify the health status of the workers and not affected with Covid 19)
- (iii) Disclose the plans to the affected communities through governing bodies (PMDSC, PIU/PMU etc.)

8. Refer **Annex 1** which indicate ADB directions related to the application at the workplace to prevent Covid 19.

3 How to revise or update the CEMP

9. The purpose of a CEMP is to outline how to avoid, minimise or mitigate environmental risks results due to project activities on the direct and indirect project affected areas. The general Guideline for the preparation of CEMP is included in the Environment Impact Assessment (EIA) for NWPCP¹ and UECP² or Initial Environment Examination (IEE) for Minipe³ as well as in the pamphlet issued to the contractors for their easy reference (Refer **Annex 2**) prepared addressing both ADB⁴ and CEA requirements.

10. The amendments to the CEMP need to be attended depending on the requirement as explained under the paragraph 2, referring to the sample Table mentioned below:

	Requirement for the CEMP update	What needs to be included and sections to be amended
(i)	When country or project area experience an emergency situation due to a natural disaster, communicable disease outbreak or conflict situation	<p>Update the CEMP:</p> <ul style="list-style-type: none"> ▪ Include “Site specific Emergency preparedness and response measures” under separate Chapter, that needs to be followed based on the specific emergency situation (i.e. Covid 19 referring to the Contractor’s Health & Safety plan) as well as referring to the ADB SPS (2009) requirements highlighted in the Section 2 of this guidance note. ▪ Revise “Risk Assessment Matrix”, indicating any unanticipated environmental impacts / risk that can be arise due to the aforesaid emergency situation, identifying required mitigations, additional facilities such as contract camps, health, safety facilities, Public health and social measures in

¹ Refer Chapter 09 Section (iii) of EIAR for NWPCP (June 2015)

² Refer Section 9.2 of EIAR for UECP (June 2015)

³ Refer Part H of IEER for MLBCRP (April 2015)

⁴ Environment Management for Construction Handbook, prepared by Safeguard Unit Central & West Asia Department of ADB

	Requirement for the CEMP update	What needs to be included and sections to be amended
		<p>the construction site, area of influence in the context of Covid 19 as per WHO guidelines⁵ (Refer Annex 3) etc;</p> <ul style="list-style-type: none"> ▪ Include or revise the existing “Monitoring program” to verify that the CEMP is implemented effectively at site level with the necessary supporting documents (daily checklist for H&S aspects, periodical monitoring checklist use to monitor day today site environmental management etc.) ▪ Update “applicable key environmental regulations, approval requirements, institutional arrangements” as per the updated date, also including any additional approval requirements as per the “emergency situation” ▪ Include “Updated Construction Program” as per the update date of CEMP
(ii)	<p>When any design change, deviation of the project footprint, or change of construction methodology;</p> <p>License, permits are expired;</p> <p>Work program is extended due to additional work, or inability of completing the work during the agreed construction period</p>	<p>Update the CEMP:</p> <ul style="list-style-type: none"> ▪ Revise “Risk Assessment Matrix”, indicating any unanticipated environmental impacts / risk that can be arise due to the aforesaid design change, change of footprint or construction methodology; ▪ Indicate any required mitigations, additional facilities such as disposal areas, material requirements, additional stream diversions, access roads, fencing arrangements, facilitating wildlife movements etc; ▪ Update regulatory requirements, construction program up to date as required.
(iii)	<p>If the Central Environmental Authority (CEA), ADB or any other stakeholder agency identify the requirement of revising or updating the EMP by PMDSC</p>	<p>Contractor requires to update the CEMP based on the content updated in the EMP, and as per the requirements highlighted by the relevant stakeholder agency</p>

4 Whom to approve and implement CEMP

11. Preparation of CEMP and approval from the Engineer / Project Manager of PMDSC is a contractual requirement which is recommended in the approved EIA for NWPCP and UECF or IEE for Minipe and for all the contract packages including National Competitive Bidding (NCB) and International Competitive Bidding (ICB) contracts prior to commence the site work, including establishment of contractor facilities, site clearing, site preparation and carry out all construction work.
12. All ICB contracts includes BOQ item in Bill No.01 under the General requirements to make partial payment (preferably 40 %) as decided by the RE, ES – PMDSC depending on the acceptability of the first draft of the CEMP prior to commence the construction work. The balance shall be paid as 10 % for each acceptable updated version of CEMP including the required amendments up to maximum 6 revisions.
13. The implementation of CEMP, complying with all required GoSL and ADB environmental requirements, regulations and safeguard policies is an obligation of the respective contractor, through a qualified, dedicated Environmental Officer.

⁵ Considerations for public health and social measures in the workplace in the context of COVID-19 (10 May 2020), WHO

COVID 19 - PANDEMIC APPLICATION OF INTERNATIONAL GOOD PRACTICE OHS AT THE WORKPLACE

Webinar by SDSS supported by HSG, OGC & PPFD
(14/05/2020)

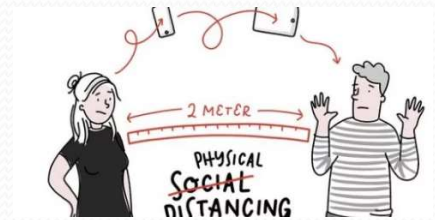
What Are the Issues?



What support do DMCs need?

Health & Safety Plans

What is our duty of care?



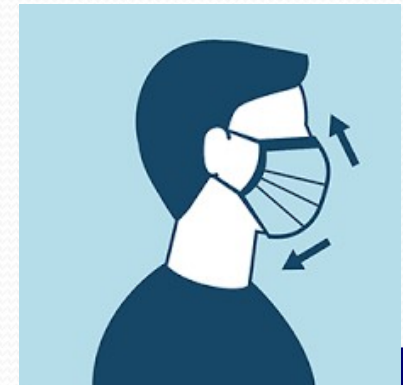
Update of H&S Plans
- Physical distancing
Hand washing,
enhanced worker
screening etc.
Site specific plans
needed



Management of risks to
workers, community,
vulnerable groups



Unanticipated Risks -
Potential infection and
spread of virus



What does the SPS Say?

- ❑ **SPS Environment Policy Principle 10:**
 - **Provide workers with safe and healthy working conditions and prevent accidents, injuries, and disease.**
 - **Establish preventive and emergency preparedness and response measures to avoid, and where avoidance is not possible, to minimize, adverse impacts and risks to the health and safety of local communities.**

- ❑ **Appendix 1, para 23:** Where **unanticipated environmental impacts** become apparent during project implementation, the borrower will update the **EIA and EMP** to assess the potential impacts...and outline mitigation measures.



COVID 19 impacts are unanticipated impacts

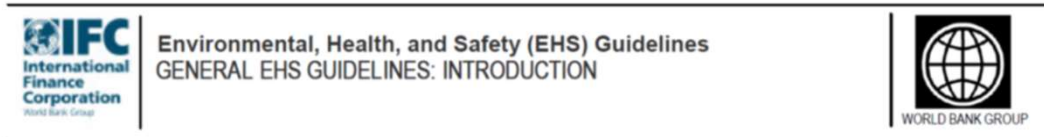
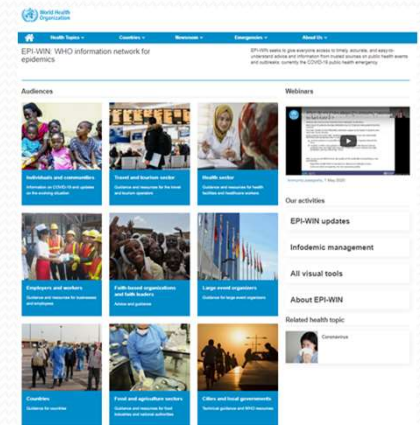
What does the SPS Say?....

10. Health and Safety

a. Occupational Health and Safety

40. The borrower/client will provide workers¹² with a safe and healthy working environment, taking into account risks inherent to the particular sector and specific classes of hazards in the borrower's/client's work areas, including physical, chemical, biological, and radiological hazards. The borrower/client will take steps to prevent accidents, injury, and disease arising from, associated with, or occurring during the course of work by (i) identifying and minimizing, so far as reasonably practicable, the causes of potential hazards to workers; (ii) providing preventive and protective measures, including modification, substitution, or elimination of hazardous conditions or substances; (iii) providing appropriate equipment to minimize risks and requiring and enforcing its use; (iv) training workers and providing them with appropriate incentives to use and comply with health and safety procedures and protective equipment; (v) documenting and reporting occupational accidents, diseases, and incidents; and (vi) having emergency prevention, preparedness, and response arrangements in place.

41. The borrower/client will apply preventive and protective measures consistent with international good practice, as reflected in internationally recognized standards such as the World Bank Group's *Environment, Health and Safety Guidelines* (footnote 7).



Environmental, Health, and Safety
General Guidelines

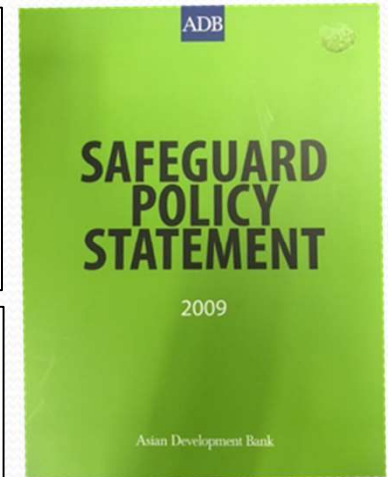


What does the SPS Say?.....

b. Community Health and Safety

42. The borrower/client will identify and assess the risks to, and potential impacts on, the safety of affected communities during the design, construction, operation, and decommissioning of the project, and will establish preventive measures and plans to address them in a manner commensurate with the identified risks and impacts. These measures will favor the prevention

43. The borrower/client will inform affected communities of significant potential hazards in a culturally appropriate manner. The borrower/client will be prepared to respond to accidental and emergency situations. This preparation will include response planning document(s) that addresses the training, resources, responsibilities, communications, procedures, and other aspects required to respond effectively to emergencies associated with project hazards. Appropriate information about emergency preparedness and response activities, resources, and responsibilities will be disclosed to affected communities.



		Severity/Consequence		
		Slightly harmful (1)	Harmful (2)	Extremely harmful (3)
Likelihood	Highly unlikely (1)	Trivial risk (Score 1)	Tolerable risk (Score 2)	Moderate risk (Score 3)
	Unlikely (2)	Tolerable risk (Score 2)	Moderate risk (Score 4)	Substantial risk (Score 6)
	Likely (3)	Moderate risk (Score 3)	Substantial risk (Score 6)	Intolerable risk (Score 9)

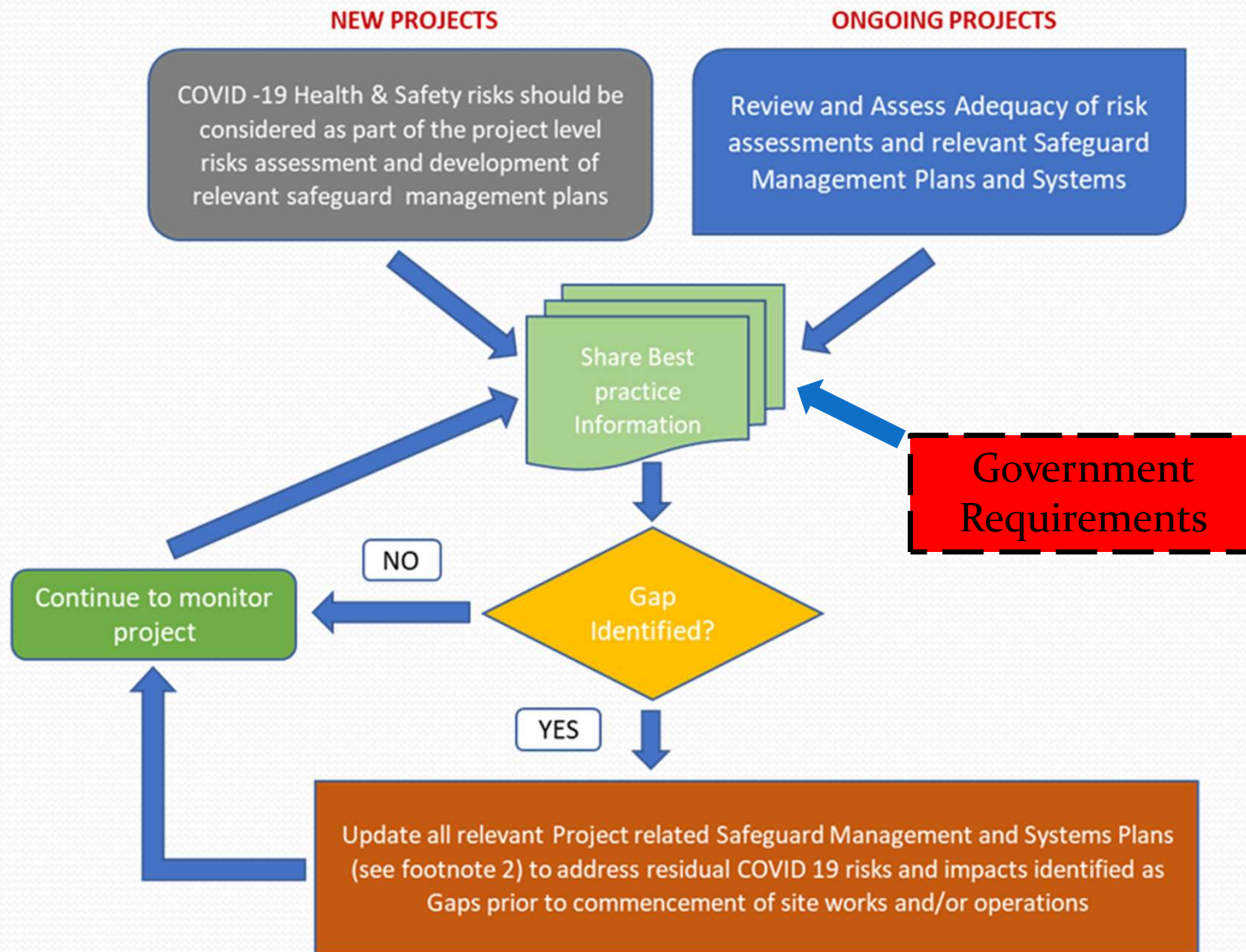
Workplace Risk Assessment is Key

What is the hazard- COVID 19 Virus

What is the likely of spreading at the workplace - **High**

What is the severity of impact should the hazard occur - **High**

What Needs to be done?....



Safeguard Management Plans

Adopt A Risk Based Approach

Environment Management Plan
[EMP]

Construction EMP

Operations
EMP

Health and Safety Management Plans

Site Specific H&S
Plan

Work Specific H&S
Plan

Operations
Maintenance H&S
Plan

What about Category “C” rated Projects??

- Endorsed by ADB at Project approval.
- Will require high level update by **PMU**–
- Note Disclosure Requirements following update

It is very important to ensure that these Plans have been updated by the **Contractor/ Sup Engineer**

CAP and H&S Plan may be required following review & Risk Assessment

Options To Consider.....

Depends on the stage of project implementation and nature of works

EMP

- High level update
- PMU may lack the capacity to update
- Utility in addressing COVID 19 may be limited.
- ESIA/Addendum may be required

Corrective Action Plan (CAP)

- High Level update as well
- CAP Technically brings EMP into compliance due to COVID 19 unanticipated impacts
- Comparatively easier to update and disclose
- Regular Monitoring Report to assess effectiveness of implementation

PMU

Either route may be okay from the safeguard perspective but may depend on legal, nature and stage of project implementation

Needs to be cascaded by PMU to Contractor Level

Health and Safety Management Plan

Site specific H&S Plan

Work Specific H&S Plan

Operations Maintenance H&S Plan

Contractor/Engineer

Maybe called different names. Critically important PMU ensures its been updated as part of EMP obligation

COVID Good Practices At Workplace

Preventive measures

- Physical Distancing
- Respiratory and Hand Hygiene



Detection measures

- Enhanced worker screening protocols
- Continuous monitoring at workplace

Response Measures

- Workers with COVID symptoms
- Workplaces reported to have been contaminated by infected persons

The New Normal at the workplace

ADB

Hand Hygiene



- Regular and thorough handwashing with soap and water or hand hygiene with alcohol-based hand-rub
 - before starting work, before eating, frequently during the work shift, especially after contact with co-workers or customers,
 - after going to the bathroom, after contact with secretions, excretions and body fluids, after contact with potentially contaminated objects (gloves, clothing, masks, used tissues, waste), and immediately after removing gloves and other protective equipment but before touching eyes, nose, or mouth.
- Hand hygiene stations, such as hand washing and hand rub dispensers, should be put in prominent places around the workplace and be made accessible to all staff, contractors, clients or customers, and visitors along with communication materials to promote hand hygiene.

Respiratory Hygiene

COUGH & SNEEZE ETIQUETTE



COVER WITH
TISSUE

WEARING
A MASK

COVER WITH
YOUR ELBOW

- Promote respiratory etiquette by all people at the workplace. Ensure that medical face masks and paper tissues are available at the workplace, for those who develop a runny nose or cough at work, along with bins with lids for hygienic disposal.
- Develop a policy on wearing a mask or a face covering in line with national or local guidance. Masks may carry some risks if not used properly.
- If a worker is sick, they should not come to work. If a member of staff or a worker feels unwell while at work, provide a medical mask so that they may get home safely.
- Where masks are used, whether in line with government policy or by personal choice, it is very important to ensure safe and proper use, care and disposal.

Physical distancing



- Keep a distance of at least 1 meter between people and avoid direct physical contact with other persons (i.e. hugging, touching, shaking hands), strict control over external access, queue management (marking on the floor, barriers)
- Reduce density of people in the building (no more than 1 person per every 10 square metres), physical spacing at least 1 meter apart for work stations and common spaces, such as entrances/exits, lifts, pantries/canteens, stairs, where congregation or queuing of employees or visitors/clients might occur.
- Minimize the need for physical meetings, e.g. by using teleconferencing facilities
- Avoid crowding by staggering working hours to reduce congregation of employees at common spaces such as entrances or exits
- Implement or enhance shift or split-team arrangements, or teleworking
- Defer or suspend workplace events that involve close and prolonged contact among participants, including social gatherings.

Reduce and manage work-related travels



- Cancel or postpone non-essential travel to areas with community transmission of COVID-19
- Provide hand sanitizer to workers who must travel, advise workers to comply with instructions from local authorities where they are travelling, as well as information on whom to contact if they feel ill while travelling.
- Workers returning from an area where COVID-19 transmission is occurring should monitor themselves for symptoms for 14 days and take their temperature twice a day; if they are feeling unwell, they should stay at home, self-isolate, and contact a medical professional.

Regular environmental cleaning and disinfection



- Cleaning (soap, water, and mechanical action) to remove dirt, debris, and other materials from surfaces. Disinfection of dirty surfaces and objects only after cleaning
- Most common disinfectants – sodium hypochlorite (bleach) of surface at concentration 0.1% or alcohol at least 70% concentration for surfaces which can be damaged by sodium hypochlorite.
- Priority disinfection of high-touch surfaces - commonly used areas, door and window handles, light switches, kitchen and food preparation areas, bathroom surfaces, toilets and taps, touchscreen personal devices, personal computer keyboards, and work surfaces.
- Disinfectant solutions must always be prepared and used according to the manufacturer's instructions, including instructions to protect the safety and health of disinfection workers, use of personal protective equipment, and avoiding mixing different chemical disinfectants.
- Spraying or fogging of disinfectants in indoor workplaces and large-scale spraying or fumigation outdoors is not generally recommended.
- Spraying and fogging of people with disinfectants (such as in a tunnel, cabinet, or chamber) is not recommended under any circumstances.

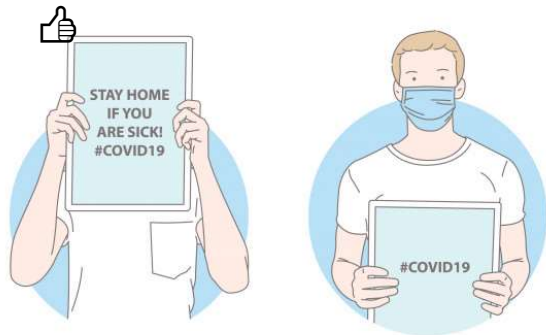
Risk communication, training, and education



- Provide posters, videos, and electronic message boards to increase awareness of COVID-19 among workers and promote safe individual practices at the workplace, engage workers in providing feedback on the preventive measures and their effectiveness.
- Provide regular information about the risk of COVID-19 using official sources, such as government agencies and WHO, and emphasize the effectiveness of adopting protective measures and counteracting rumours and misinformation.
- Special attention should be given to reaching out to and engaging vulnerable and marginalized groups of workers, such as those in the informal economy and migrant workers, domestic workers, subcontracted and self-employed workers, and those working under digital labour platforms.



Management of people with COVID-19 or their contacts



- Workers who are unwell or who develop symptoms consistent with COVID-19 to stay at home, self-isolate, and contact a medical professional or the local COVID-19 information line for advice on testing and referral (consider telemedicine and flexible sick leave policy).
- All workers to self-monitor their health, possibly with the use of questionnaires, and take their body temperature regularly.
- Thermal screening at the workplace to be considered only in the context of a combination of measures for prevention and control of COVID-19 at the workplace and along with risk communication.
- Standard operating procedures to be prepared to manage a person who becomes sick at the workplace and is suspected of having COVID-19, including isolation, contact tracing and disinfection.
- People who were in close contact at the workplace with persons with laboratory-confirmed COVID-19 should be quarantined for 14 days from the last time of the contact in accordance with WHO recommendations.

Additional measures for workplaces and jobs at medium risk



- Enhanced cleaning and disinfection of objects and surfaces that are touched regularly, including all shared rooms, surfaces, floors, bathrooms, and changing rooms;
- Where the physical distancing of at least 1 metre cannot be implemented in full in relation to a particular activity, workplaces should.
 - ✓ consider whether that activity needs to continue, and if so,
 - ✓ take all the mitigating actions possible to reduce the risk of transmission through work organization and engineering control
- Enhanced hand hygiene – hand washing with soap and water or use of alcohol-based hand rub
 - ✓ before entering and after leaving enclosed machinery, vehicles, confined spaces
 - ✓ before putting on and after taking off personal protective equipment;
- Personal protective equipment and training on its proper use
- Increased ventilation rate, through natural aeration or artificial ventilation, preferably without re-circulation of the air.

Additional measures for workplaces and jobs at high risk



- Assess the possibility of suspending the activity;
- Adherence to hygiene before and after contact with any known or suspected case of COVID-19, before and after using PPE;
- Use of medical mask, disposable gown, gloves, and eye protection for workers who must work in the homes of people who are suspected or known to have COVID-19.
- Use the protective equipment when in contact with the sick person, or respiratory secretions, body fluids, and potentially contaminated waste;
- Training of workers in infection prevention and control practices and use of personal protective equipment;
- Avoid assigning tasks with high risk to workers who have pre-existing medical conditions, are pregnant, or older than 60 years of age.

Rights, duties, and responsibilities of workers and employers



- Collaborate with health authorities in the prevention and control of COVID-19.
- Employers to provide engineering and administrative controls and PPE for occupational safety and health and infection prevention and control at no expenditure on the part of workers.
- Workers to follow established measures for occupational safety and health and infection prevention and control procedures
- Co-operation between management and workers and their representatives is an essential element of workplace-related prevention measures
- COVID-19 and other diseases, if contracted through occupational exposure, could be considered as occupational diseases.

Plan of action



- Develop action plan for prevention and mitigation of COVID-19 as part of the business continuity plan, risks and epidemiology
- Protecting health, safety, and security in re-opening, closing, and modifying workplaces and work arrangements.
- Re-opening of workplaces to be carefully planned in advance and all possible risks for health and safety properly controlled.
- Monitor compliance and update regularly
- Address other occupational health and safety risk - ergonomic problems, heavy workloads and long working hours, remote working, psychosocial risks, poisonings, etc.
- Occupational health services to strengthen their capacity for infection prevention and control, medical surveillance, and psychosocial support.
- Consult workers and their representatives in developing and implementing action plans
- Local authorities and local public health authorities to provide risk communication and community engagement for non-organized groups of workers (domestic workers, workers in the informal economy, digital labour platforms)
- No discrimination in the access of workers to protective measures for prevention of COVID-19 - refugee and migrant workers should have equal access to PPE and support services
- Prevent social stigma of workers suspected of being infected, infected with, or recovered from COVID-19.

Recommendation.....

1. **Portfolio Review and Identify projects with high exposure risks to COVID 19**
 - ❖ Project sites with large workforce on site.
 - ❖ Project sites with large labor force on site and host/surrounding communities
 - ❖ Project sites with large worker accommodations on site or within host/surrounding communities.

Low exposure risk

jobs or work tasks without frequent, close contact with the general public and other co-workers, visitors, clients or customers, or contractors, and that do not require contact with people known to be or suspected of being infected with COVID-19.

Medium exposure risk

jobs or work tasks with close (< 1 m) frequent contact with the general public, or other co-workers, visitors, clients or customers, or contractors, but that do not require contact with people known to be or suspected of being infected with COVID-19.

High exposure risk

jobs or work tasks with high potential for close contact with people who are known or suspected of having COVID-19, as well as contact with objects and surfaces possibly contaminated with the virus.

2. **Notify the PMU EA/IA/PIU in charge of the identified Projects** about the need to review and prepare/update H&S Plans ahead of commencement of site works.



Support.....Need to work together



Strengthening Safeguard Implementation in ADB Projects – SSIAP TA - 53125

Technical Support : OHS Consultant currently onboarding. Will provide support with development of Sector specific Guidance documents to help manage OHS issues on our projects including COVID 19.



Training and Webinar : We recognize some PMU's may need support to translate the International best practice guidance and information notes/posters into their local languages.



Reasonable Budget Support : We recognize some PMU's may need support to translate the International best practice guidance and information notes/posters into their local languages.







Guide for the preparation of Contractor's Environmental Management Plan (CEMP)



MWSIP



Mahaweli

Water Security Investment Program

**is a Sustainable
Development Effort**



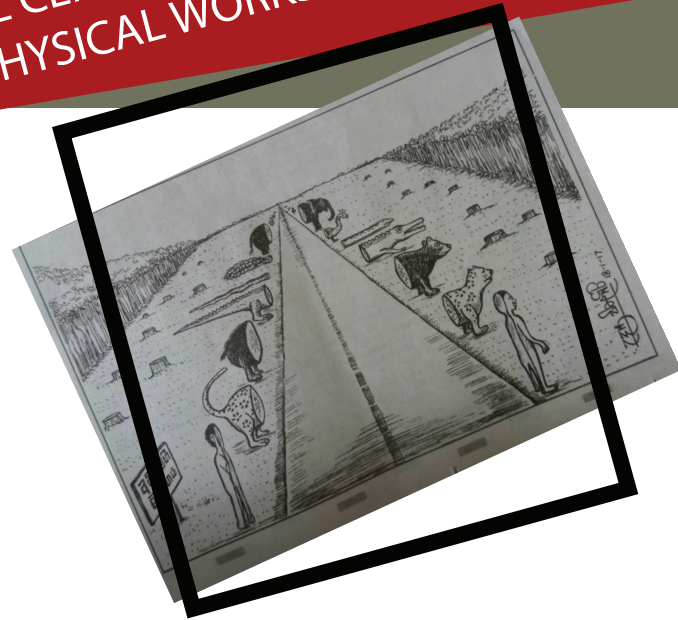
CEMPs & Constructions

**“UNTIL CEMP IS APPROVED,
NO PHYSICAL WORKS ON SITE”!**

CEMP is a site specific environmental management Plan which is applied to the actual site where construction activities will occur. CEMP is a contractual obligation, and within 56 days after the commencement date, submit the draft CEMP to the Resident Engineer (Project Manager) for review with a copy to PD-PIU (Employer)

Within 28 days after receiving the Draft CEMP, Environmental Specialist / Environmental Monitoring Specialist (PMDSC) shall review the Draft CEMP and Engineer (Project Manager) will notify the contractor of any requests for amendments. The contractor shall cooperate the amendments requested and shall issue the final CEMP for the contract which shall be binding of the Contractor.

**“UNTIL CEMP IS APPROVED NO
PHYSICAL WORKS ON SITE”!**



Most common failures of environmental management are the start of the construction before the necessary CEMP has been prepared.

When this happens, the construction team has no guidance as to what environmental management measures are required, and so there is a high probability that environmental damage will occur.

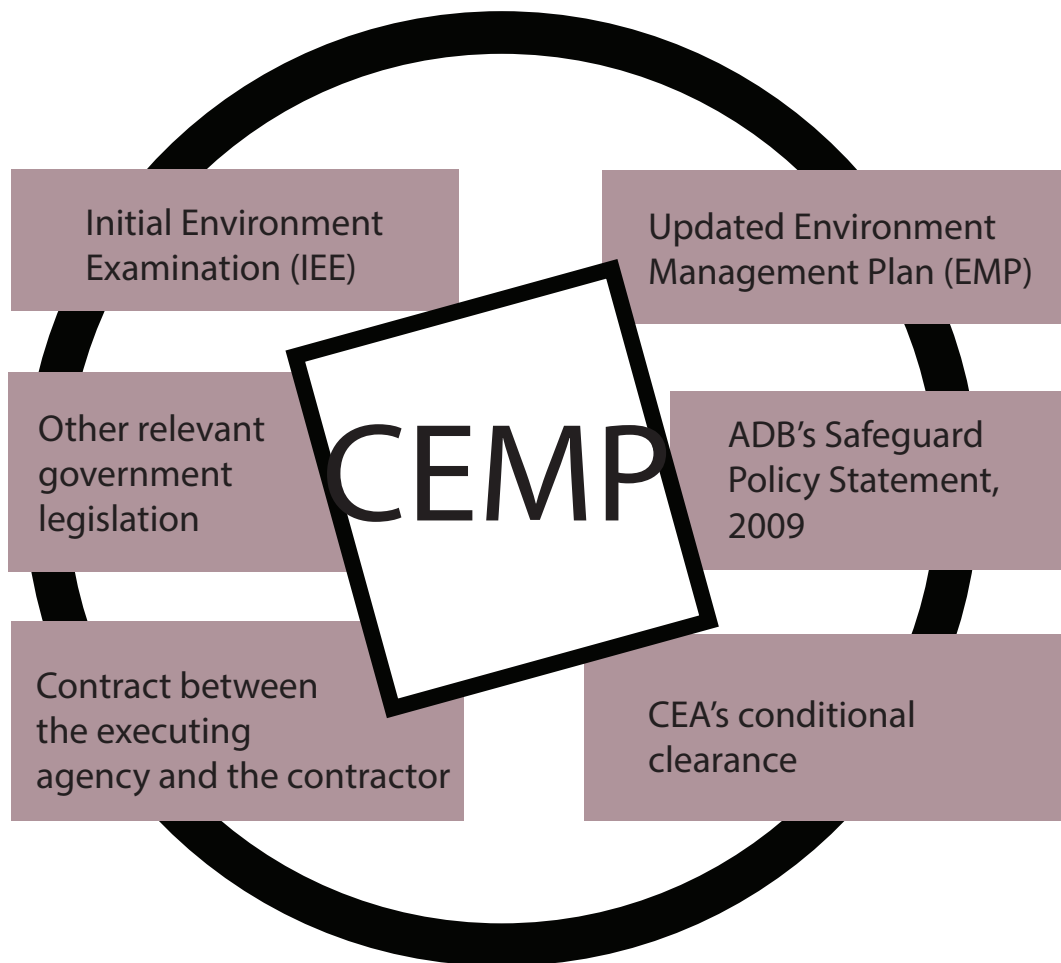
Difficult to retrofit the environmental management requirements after the construction activities have started. Proper planning therefore essential beforehand.

CEMP preparator and the implanter needs to have sense of nature and knowledge in biological components associate with the environment. So, BIOLOGIST is always preferred as the Environmental Officer of the Contractor who prepares and implement CEMP where project activities associated with sensitive ecosystems.



**"UNTIL CEMP IS APPROVED,
NO PHYSICAL WORKS ON SITE"!**

Governing Documents




Steps to Prepare a CEMP

First..

EO of the contractor to be well familiarized about the project area, project activities and construction plan.

Then..

- 
- Define boundaries (footprint – then decide if it is one EMP or multiple EMPs)
 - Identify sensitive Receivers & environment values (IEE, EMP and site visits)
 - Specify construction activity (surveying, site clearing, soil stripping, earth movement, preparing concrete mix, pouring concrete etc,)
 - Carry out Risk Assessment - Identify risks and mitigation measures.
 - Assignment of environmental management measures to implement CEMP ensuring that Env team in contractor's party are carried out all measures
 - Preparation of site plans
 - Preparation of environmental work plans
 - Self-Monitoring by the Contractor

Definition of project boundaries?

Define footprint of the construction activities, other contractor's facility locations, disposal areas, borrow areas (if any), worker camp areas, machinery yards, access roads, transportation routes of borrow, disposal material etc.)

Define footprint of the construction activities, other contractor's facility locations, disposal areas, borrow areas (if any), worker camp areas, machinery yards, access roads, transportation routes of borrow, disposal material etc.)

Identification of environmental values and sensitive receptors of the site and its surrounds

Once the site boundaries are defined, the sensitive receptors and the environmental values of the area need to be confirmed. The EIA/IEE document and the updated EMP shall often provide the necessary information. Such information can be presented as an overlay of the engineering drawings or maps

- Define boundaries (footprint – then decide if it is one EMP or multiple EMPs)
- Identify sensitive Receivers & environment values (IEE, EMP and site visits)
- Specify construction activity (surveying, site clearing, soil stripping, earth movement, preparing concrete mix, pouring concrete etc.)
- Carry out Risk Assessment - Identify risks and mitigation measures.
- Assignment of environmental management measures to implement CEMP ensuring that Env team in contractor's party are carried out all measures
- Preparation of site plans
- Preparation of environmental work plans
- Self-Monitoring by the Contractor

Specifying Construction activities

Based on the construction plan/schedule prepared, it is important to mention what the various phases of work are for each site, as different phases includes different activities and thus different environmental management requirements (ex. Site surveying, vegetation clearance, soil stripping and earth movement, excavation, coffer damming, electric elephant fencing, concrete work, blasting, painting, spraying, storing and using chemicals and hazardous substances etc.)

Environmental Work plans

The completed CEMP shall provide the details of all the environmental management requirements for all stages of the construction process. If the work is undertaken as individual work teams, the environmental work plans need to be prepared separately targeting each work team for respective work activities (e.g. clearing, excavation, concrete work, back filling, painting, sand blasting, coffer damming etc).

Preparing Risk Assessment Matrix

Risk Assessment and Environmental management measures based on the construction activities.

Risk is assessed as the likelihood that the activity will have an effect on the environment as well as the consequence of the effect occurring. Hence, it is often described as "Risk = Likelihood x Consequence"

Sample for Risk Assessment matrix

Construction activity	Issues to consider	Likelihood that the site or sensitive receptors will be affected?	Consequence of the site or sensitive receptors being affected?	Risk Score: (Consequence X Likelihood) High: 15-25 Medium: 6-10 Low : 1-5	Environmental management measures
		Score ¹	Score ²	Score ³	
Soil stripping	Damage to vegetation beyond vegetation limits	3	5	15 (High)	Limits of clearing marked with highly visible means; Monitor area for fauna prior to clearing operation; avoid spreading invasive species through proper decomposing/disposal techniques of debris; manage waste identifying proper disposal plans; burning of vegetative parts prohibited within wildlife protected areas
	Erosion of exposed areas and sediment carried into adjacent streams	3	3	9 (Medium)	Erect silt traps/fences around the perimeter of the working area; sedimentation ponds
	Loss of top soil	3	2	6 (Medium)	Stockpiles to get protective covering

Likelihood	Definition	Score
Certain	Will occur during the activity at a frequency greater than every week of the preventive measures are not taken	5
Likely	Likely to occur more than once or twice during the activity, but less than weekly, if preventive measures are not taken	3
Unlikely	May occur once or twice during the activity if preventive measures are not taken	2
Rare	Unlikely to occur during the activity	1

Consequence	Definition	Score
Catastrophic	Unprecedented damage or impacts involving the environment or surrounding communities (i.e widespread effect on ecosystem, with deaths of fauna/flora)	5
Major	Major damage to the environment or to surrounding communities	3
Moderate	Limited adverse impacts on the environment or on surrounding communities (i.e. short term minor changes in the ecosystem)	2
Minor	No or minimal adverse environmental or social impacts (i.e little noticeable effect on ecosystem)	1

Likelihood	Consequence			
	Catastrophic	Major	Moderate	Minor
Certain	25	15	10	5
Likely	15	9	6	3
Unlikely	10	6	4	2
Minor	5	3	2	1

How to include site plans

completed risk matrix provides a detailed assessment of the environmental management requirements for a construction site. The identified environmental management requirements need to be included in a site plan. The site plans range from simple line drawings to marked-up engineering drawings, to detailed overlays on aerial photographs. A site plan must cover the extent of the construction activity and should contain;

- Indication of North, and scale;
- Existing and planned supporting infrastructure (e.g., access roads, water ways, electricity supply etc.);
- Location of planned work;
- Drainage system;
- Location of sensitive receptors (e.g. animal crossings etc.)

The environmental management measures are then overlaid onto the site plan. This can be done by hand or by using computer graphics / symbols depending on what is available. ADB will not consider a CEMP to be complete unless a site plan accompanies the risk assessment matrix.



Sample Content of CEMP

- 1.0 Introduction
 - 1.1 Overview to CEMP
 - 1.2 Scope of construction package
 - 1.3 Project duration
 - 1.4 Definition of project boundaries

- 2.0 Contractor's Organization in environmental management
 - 2.1 Environmental Policy
 - 2.2 Environment management system
 - 2.3 Applicable key environmental legislations and governing documents

- 3.0 Risk Assessment
 - 3.1 Environmentally sensitive areas
 - 3.2 Construction activities
 - 3.3 Environmental Issues and impacts
 - 3.4 Environmental management strategies and mitigation
 - 3.5 Risk Assessment Matrix including site plans
 - 3.6 Site restoration plans
 - 3.7 Required approvals for each activity (provide in a table including project activity, timing, approving agency, type of licence/approval etc.)

- 4.0 CEMP Implementation, Monitoring, evaluation and reporting
 - 4.1 Construction plan
 - 4.2 Environmental responsibilities and Work plan
 - 4.3 Reporting and documentation

- 5.0 Management Review
 - 5.1 CEMP review/updates
 - 5.2 Stakeholder and communication management
 - 5.2.1 Internal communication
 - 5.2.2 External Communication
 - 5.2.3 Complaints management
 - 5.2.4 Grievance Redress mechanism

- 6.0 Annexes

Reports expected from the contractor to monitor that CEMP is properly implemented;

- 1. Environmental Method Statement (EMS)
- 2. Monthly Environmental Progress Report
- 3. Duly updated Environmental Issue Log and Grievance Log



Mahaweli Water Security Investment Program (MWSIP)
Ministry of Mahaweli Development & Environment

Considerations for public health and social measures in the workplace in the context of COVID-19

Annex to Considerations in adjusting public health and social measures in the context of COVID-19

10 May 2020



Background

In response to COVID-19, countries across the globe have implemented a range of public health and social measures, including movement restrictions, partial closure or closure of schools and businesses, quarantine in specific geographic areas and international travel restrictions. As the local epidemiology of the disease changes, countries will adjust (i.e. loosen or reinstate) these measures accordingly. As transmission intensity declines, some countries will begin to gradually re-open workplaces to maintain economic activity. This requires establishing protective measures, including directives and capacity to promote and enable standard COVID-19 prevention in terms of physical distancing, hand washing, respiratory etiquette and, potentially, thermal monitoring, as well as monitoring compliance with these measures.ⁱ

On 16 April 2020, WHO published interim guidance that provides advice on adjusting PHSM,ⁱ while managing the risk of resurgence of cases. A series of annexes was developed to help guide countries through adjusting various public health measures in different contexts. This annex is for those involved in developing policies and standard operating procedures to prevent the transmission of COVID-19 in the workplace, including employers, workers and their representatives, labour unions and business associations, local public health and labour authorities, and occupational safety and health practitioners. This document offers general guidance for non-healthcare workplaces and workers in those settings.ⁱⁱ Additional protective measures may be necessary for specialized workplaces. Specific recommendations for protection of the health and safety of some frontline public workers are also included in the existing WHO guidance for the accommodation sector,² detention centers,³ schools,⁴ food businesses,⁵ aviation sector,⁶ water, sanitation, and waste management,⁷ camps,⁸ and construction.⁹

Workplace risk assessment

COVID-19 is transmitted primarily through respiratory droplets or contact with contaminated surfaces.¹⁰ Work-related exposure can occur anytime at the workplace, during work-related travel to an area with local community transmission, as well as on the way to and from the workplace.¹¹

The risk of work-related exposure to COVID-19 depends on the probability of coming into close (less than 1 metre) or frequent contact with people who may be infected with COVID-19 and through contact with contaminated surfaces and objects. The following risk levels may be useful in carrying out a workplace risk assessment for exposure to COVID-19 and planning for preventive measures in non-healthcare workplaces. In these risk categories, persons referred to as 'known to be or suspected of being infected with COVID-19' generally refers to persons who have already had a positive test or diagnosis.ⁱⁱⁱ Although such persons should be cared for in isolation, some occupations may still have a higher risk of exposure (e.g. home care workers, personal service providers where necessary, pharmacy front-line staff).

Low exposure risk – jobs or work tasks without frequent, close contact with the general public and other co-workers, visitors, clients or customers, or contractors, and that do not require contact with people known to be or suspected of being infected with COVID-19. Workers in this category have minimal occupational contact with the public and other co-workers.

Medium exposure risk – jobs or work tasks with close, frequent contact with the general public, or other co-workers, visitors, clients or customers, or contractors, but that do not require contact with people known to be or suspected of being infected with COVID-19. In areas where COVID-19 cases continue to be reported, this risk level may be applicable to workers who have work-related frequent and close contact with the general public, visitors, or customers in high-population-density work environments (e.g. food markets, bus stations, public transport, and other work activities where physical distancing of at least 1 metre may be difficult to observe), or work tasks that require close and frequent contact between co-workers. In areas without community transmission of COVID-19, this scenario may include frequent contact with persons returning from areas with community transmission.

High exposure risk – jobs or work tasks with high potential for close contact with people who are known or suspected of having COVID-19, as well as contact with objects and surfaces possibly contaminated with the virus. Examples of such

ⁱ [Considerations in adjusting public health and social measures in the context of COVID-19 \(Interim Guidance\) \(WHO 2020\)](#).

ⁱⁱⁱ For the purposes of this guidance the term “workplace” covers all places where workers need to be or to go by reason of their work.

ⁱⁱⁱ While the general public may include pre-symptomatic or asymptomatic persons who may be infected but have not (yet) developed obvious signs or symptoms. In this case, the likelihood of exposure of a worker will very much depend on the local COVID-19 situation. Physical distancing measures in the workplace therefore protect workers from direct contact any person who may or may not have COVID-19, whether they are aware of it or not.

exposure scenarios outside of health facilities include the transportation of persons known or suspected to have COVID-19 in enclosed vehicles without separation between the driver and the passenger, providing domestic services or home care for people with COVID-19, and contact with dead bodies of persons who were known or suspected of having COVID-19 at the time of their death.

In the same work setting there may be jobs with different levels of risk, and different jobs or work tasks may have similar levels of exposure. Therefore, the risk assessment should be carried out for each specific work setting and each job or group of jobs. For each risk assessment, it is prudent to consider the environment, the task, the threat, if any (e.g. for frontline staff), and resources available, such as personal protective equipment.

Some workers may be at higher risk of developing severe COVID-19 illness because of age or pre-existing medical conditions; this should be considered in the risk assessment for individuals. Essential public services, such as security and police, food retail, accommodation, public transport, deliveries, water and sanitation, and frontline workers may be at an increased risk of exposure to occupational hazards for health and safety.

Employers and managers, in consultation with workers, should carry out and regularly update the risk assessment for work-related exposure to COVID-19, preferably with support of occupational health services.

Preventive measures

Decisions on closing or re-opening of workplaces and suspension or downscaling of work activities should be made in light of the risk assessment, the capacity to implement preventive measures, and recommendations of national authorities for adjusting public health and social measures in the context of COVID-19.

Measures for all workplaces

Universal measures for preventing transmission of COVID-19 that apply to all workplaces and all people at the workplace, such as employers, managers, workers, contractors, customers and visitors, include the following:

Hand hygiene

- Regular and thorough handwashing with soap and water or hand hygiene with alcohol-based hand-rub before starting work, before eating, frequently during the work shift, especially after contact with co-workers or customers, after going to the bathroom, after contact with secretions, excretions and body fluids, after contact with potentially contaminated objects (gloves, clothing, masks, used tissues, waste), and immediately after removing gloves and other protective equipment but before touching eyes, nose, or mouth.
- Hand hygiene stations, such as hand washing and hand rub dispensers, should be put in prominent places around the workplace and be made accessible to all staff, contractors, clients or customers, and visitors along with communication materials to promote hand hygiene.¹²

Respiratory hygiene

- Promote respiratory etiquette by all people at the workplace. Ensure that medical face masks and paper tissues are available at the workplace, for those who develop a runny nose or cough at work, along with bins with lids for hygienic disposal.¹³
- Develop a policy on wearing a mask or a face covering in line with national or local guidance. Masks may carry some risks if not used properly.¹⁴ If a worker is sick, they should not come to work. If a member of staff or a worker feels unwell while at work, provide a medical mask so that they may get home safely. Where masks are used, whether in line with government policy or by personal choice, it is very important to ensure safe and proper use, care and disposal.

Physical distancing

- Introduce measures to keep a distance of at least 1 metre between people and avoid direct physical contact with other persons (i.e. hugging, touching, shaking hands), strict control over external access, queue management (marking on the floor, barriers)
- Reduce density of people in the building (no more than 1 person per every 10 square metres),^{15,iv} physical spacing at least 1 metre apart for work stations and common spaces, such as entrances/exits, lifts, pantries/canteens, stairs, where congregation or queuing of employees or visitors/clients might occur.
- Minimize the need for physical meetings, e.g. by using teleconferencing facilities
- Avoid crowding by staggering working hours to reduce congregation of employees at common spaces such as entrances or exits
- Implement or enhance shift or split-team arrangements, or teleworking

^{iv} If a person observes the WHO recommended at least 1-meter physical distance from others, this converts to approximately 10 square meter area around them.

- Defer or suspend workplace events that involve close and prolonged contact among participants, including social gatherings.

Reduce and manage work-related travels

- Cancel or postpone non-essential travel to areas with community transmission of COVID-19, provide hand sanitizer to workers who must travel, advise workers to comply with instructions from local authorities where they are travelling, as well as information on whom to contact if they feel ill while travelling.
- Workers returning from an area where COVID-19 transmission is occurring should monitor themselves for symptoms for 14 days and take their temperature twice a day; if they are feeling unwell, they should stay at home, self-isolate, and contact a medical professional.

Regular environmental cleaning and disinfection

- Cleaning, using soap or a neutral detergent, water, and mechanical action (brushing, scrubbing) removes dirt, debris, and other materials from surfaces. After the cleaning process is completed, disinfection is used to inactivate (i.e. kill) pathogens and other microorganisms on surfaces.
- Selection of disinfectants^v should align with the local authorities' requirements for market approval, including any regulations applicable to specific sectors.
- High-touch surfaces should be identified for priority disinfection (commonly used areas, door and window handles, light switches, kitchen and food preparation areas, bathroom surfaces, toilets and taps, touchscreen personal devices, personal computer keyboards, and work surfaces).
- Disinfectant solutions must always be prepared and used according to the manufacturer's instructions, including instructions to protect the safety and health of disinfection workers, use of personal protective equipment, and avoiding mixing different chemical disinfectants.
- In indoor workplaces, routine application of disinfectants to environmental surfaces via spraying or fogging is generally not recommended because it is ineffective at removing contaminants outside of direct spray zones and can cause eye, respiratory, and skin irritation and other toxic effects.
- In outdoor workplaces, there is currently insufficient evidence to support recommendations for large-scale spraying or fumigation.
- Spraying of people with disinfectants (such as in a tunnel, cabinet, or chamber) is not recommended under any circumstances.¹⁶

Risk communication, training, and education

- Provide posters, videos, and electronic message boards to increase awareness of COVID-19 among workers and promote safe individual practices at the workplace, engage workers in providing feedback on the preventive measures and their effectiveness.
- Provide regular information about the risk of COVID-19 using official sources, such as government agencies and WHO, and emphasize the effectiveness of adopting protective measures and counteracting rumours and misinformation.¹⁷
- Special attention should be given to reaching out to and engaging vulnerable and marginalized groups of workers, such as those in the informal economy and migrant workers, domestic workers, subcontracted and self-employed workers, and those working under digital labour platforms.¹⁸

Management of people with COVID-19 or their contacts

- Workers who are unwell or who develop symptoms consistent with COVID-19 should be urged to stay at home, self-isolate, and contact a medical professional or the local COVID-19 information line for advice on testing and referral.¹⁹
- Where local community transmission is high, and work continues, allow for a telemedicine consultation where available, or consider waiving the requirement for a medical note for workers who are sick so that they may stay home.
- All workers should be urged to self-monitor their health, possibly with the use of questionnaires, and take their body temperature regularly.
- Thermal screening at the workplace should be considered only in the context of a combination of measures for prevention and control of COVID-19 at the workplace and along with risk communication.
- Standard operating procedures should be prepared to manage a person who becomes sick at the workplace and is suspected of having COVID-19, including placing the person in an isolation room, limiting the number of people in contact, using personal protective equipment, and performing follow-up cleaning and disinfection.
- It is important to contact the local health authorities and to keep attendance and meeting records in order to facilitate or undertake contact-tracing.

^v For example, sodium hypochlorite (bleach) may be used for disinfection of surfaces in workplaces at concentration 0.1% (1,000 ppm) and alcohol with at least 70% concentration for surfaces which can be damaged by sodium hypochlorite.

- People who were in close contact at the workplace with persons with laboratory-confirmed COVID-19 should be quarantined for 14 days from the last time of the contact in accordance with WHO recommendations.²⁰

Specific measures for workplaces and jobs at medium risk

In addition to the above measures, for workplaces and jobs assessed to be at medium risk, the following measures should be put in place:

- Enhanced cleaning and disinfection of objects and surfaces that are touched regularly, including all shared rooms, surfaces, floors, bathrooms, and changing rooms;
- Where the physical distancing of at least 1 metre cannot be implemented in full in relation to a particular activity, workplaces should consider whether that activity needs to continue, and if so, take all the mitigating actions possible to reduce the risk of transmission between workers, clients or customers, contractors, and visitors; such as staggered activities, minimizing face-to-face and skin-to-skin contacts, placing workers to work side-by-side or facing away from each other rather than face-to-face, assign staff to the same shift teams to limit social interaction, installing plexiglass barriers at all points of regular interaction and cleaning them regularly;
- Enhanced hand hygiene – regular hand washing with soap and water or use of alcohol-based hand rub, including before entering and after leaving enclosed machinery, vehicles, confined spaces, and before putting on and after taking off personal protective equipment;
- Provide personal protective equipment and training on its proper use – e.g. masks, disposable gowns, disposable gloves or heavy-duty gloves that can be disinfected. Provide face or eye protection (medical mask, face shields, or goggles) during cleaning procedures that generate splashes (e.g. washing surfaces).
- Increased ventilation rate, through natural aeration or artificial ventilation, preferably without re-circulation of the air.

Specific measures for workplaces and jobs at high risk

In addition to the measures above, for high-risk work activities and jobs, the following measures should be implemented:

- Assess the possibility of suspending the activity;
- Adherence to hygiene before and after contact with any known or suspected case of COVID-19, before and after using PPE;
- Use of medical mask, disposable gown, gloves, and eye protection for workers who must work in the homes of people who are suspected or known to have COVID-19. Use the protective equipment when in contact with the sick person, or respiratory secretions, body fluids, and potentially contaminated waste;
- Training of workers in infection prevention and control practices and use of personal protective equipment;
- Avoid assigning tasks with high risk to workers who have pre-existing medical conditions, are pregnant, or older than 60 years of age.

Rights, duties, and responsibilities of workers and employers

Employers, workers, and their organizations should collaborate with health authorities in the prevention and control of COVID-19. The employers, in consultation with workers and their representatives, should take preventive and protective measures, such as engineering and administrative controls and provision of personal protective equipment and clothing for occupational safety and health and infection prevention and control. Such measures at the workplace must not involve any expenditure on the part of workers.

Workers shall follow established occupational safety and health and infection prevention and control procedures, avoid exposing others to health and safety risks, participate in related training provided by the employer and report immediately to their supervisor any situation which they have reasonable justification to believe presents an imminent and serious danger to their life or health.²¹

Co-operation between management and workers and their representatives must be an essential element of workplace-related prevention measures (such as through workers' safety delegates, safety and health committees, and collaboration with providing information and training) and respecting the right and duties of workers and employers in occupational safety and health.²²

COVID-19 and other diseases, if contracted through occupational exposure, could be considered as occupational diseases.²³

Plan of action

Workplaces should develop action plans for prevention and mitigation of COVID-19 as part of the business continuity plan and according to the results of the risks assessment and the epidemiological situation.²⁴ The plan should also include measures for protecting health, safety, and security in re-opening, closing, and modifying workplaces and work arrangements. Re-opening of workplaces should be carefully planned in advance and all possible risks for health and safety should be properly assessed and controlled.

The action plan and preventive measures put in place should be monitored and updated in case of changes in local epidemiological trends, new cases of COVID-19 at the workplace, or lack of compliance by workers, visitors, and clients or customers.

The large-scale public health and social measures introduced by countries in response to COVID-19 may also amplify some other risks for health, safety, and wellbeing at work due to alternative work arrangements, job insecurity, sudden loss of income, social isolation, and fear of contagion. Actions on prevention and mitigation of COVID-19 should be implemented together with actions for addressing other occupational safety and health risks such as ergonomic problems, heavy workloads and long working hours, remote working, psychosocial risks, poisonings, and others.²⁵ Occupational health services should strengthen their capacity to carry out risk assessment, infection prevention and control, and medical surveillance and organize mental health and psychosocial support in the context of COVID-19.

In developing and implementing action plans for prevention and mitigation of COVID-19 workers and their representatives should be properly consulted and all workers should be informed about the measures introduced, using specific risk communication and community engagement approaches.

Local authorities and local public health authorities can provide up to date information and facts, support community engagement activities, and offer specific recommendations on the prevention of COVID-19 among other groups of workers, such as domestic workers, workers in the informal economy, digital labour platforms, or others.

There must be no discrimination in the access of workers to protective measures for prevention of COVID-19. Refugee and migrant workers should have equal access to personal protective equipment as well as to COVID-19 prevention, treatment and care, referral, rehabilitation, social protection, and occupational health services, including mental health and psychosocial support.²⁶ Special efforts should be taken to prevent social stigma of workers suspected of being infected, infected with, or recovered from COVID-19.²⁷

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WHO continues to monitor the situation closely for any changes that may affect this interim guidance. Should any factors change, WHO will issue an update. Otherwise, this interim guidance document will expire 2 years after the date of publication.

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Annex 3

Environmental Contingency Plan (ECP) for UECP-ICB-1

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Mahaweli Water Security Investment Program

Environmental Contingency Plan for Termination of UECP-ICB-1



**Ministry of Mahaweli Agriculture
Irrigation and Rural Development
Sri Lanka**



June 2020
Draft Report



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**Environment Contingency Plan for
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1 PURPOSE AND SCOPE

1.1 Overview to UECP-ICB-1 Construction Package

1. Construction of Upper Elahera Canal (UEC) from 0+100 km to 6+226 km was awarded to M/s. CML-MTD Construction Limited on 11 November 2016. The ICB¹ package was named as UEC-ICB-1 and the full contract name is MMDE/MWSIP/ADB/UECP/ICB-1/3267-3268-RI/ICB/2016/002.
2. Construction of the UECP-ICB-1 package commenced in January 2017 with an intended date for completion in March 2020. From the very beginning of the contract, the Contractor has fallen behind schedule and never mobilized sufficient plant and labor resources to catch-up on progress. The Contractor is currently far behind the construction programme, and there are serious concerns about the financial stability of the Contractor. In a breach of contract, a third-party investor was assigned to carry out some works and has had unauthorized personnel at site.
3. As a result, it is anticipated that the Employer will soon terminate the contract. This means the Contractor will be demobilized and the site will be handed back to the Employer, who will be responsible for security as well as compliance with all appropriate health and safety measures, including those related to environmental safeguards issues in this report.
4. The alignment of the UEC-ICB-1 traverses an ecologically sensitive area inside Elahera - Girithale Sanctuary, which comes under the jurisdiction of Fauna and Flora Protection Ordinance (FFPO)² controlled by DWC. Within the declared sanctuary area, there are lands belongs to Forest Department (FD) as well managed under the Forest Ordinance (FO)³. In addition, the area has been identified as an archeologically important one due to six locations identified as having historical artefacts during the Archeological Assessment conducted in 2013 for the preparation of Environmental Impact Assessment (EIA)⁴ complying with Antiquities Ordinance⁵ managed by the Archeological Department of Sri Lanka.
5. As the canal alignment crosses the existing Nalula – Bakamoona Main Road, and with the presence of Moragahakanda Dam office premises, there are frequent instances of people entering and crossing through the project area, which creates corresponding risks to the wildlife in the protected area. The Site's location also attracts unauthorized entry by persons who come for hunting, tree felling, vandalism etc.

¹ International Competitive Bidding

² Fauna and Flora Protection Ordinance (FFPO) No.02 of 1937 amended in 1993 and 2009 which provides for the protection and conservation of **fauna** and **flora** of Sri Lanka and their **habitats**; for the prevention of commercial and other misuse of such fauna and flora and their habitats for conservation of biodiversity of Sri Lanka.

³ Forest Ordinance (FO) NO. 16 of 1907 and its amendments and Acts No. 34 of 1951 and No 49 of 1954, which is an ordinance to consolidate and amend the law relating to the conservation, protection and management of **forest** and **forest resources** for the control of felling and transport of timber and **forest** and for matters connected therewith.

⁴ Annex X of Environmental Impact Assessment Report (EIAR) on Upper Elahera Canal Project (UECP), June 2015

⁵ Antiquities Ordinance No. 9 of 1940 and amendments which regulates the subprojects located in close proximity to any archaeological reserves

1.2 Available Environmental Assessment & Management Plans on UECP ICB 1

6. The environmental impacts associated with the construction packages of the Upper Elahera Canal Project, including UECP-ICB-1, have been covered by a single EIA report prepared in June 2015 and approved by CEA through letter reference 08/EIA/WATER/04/2012 DATED issued on 31.03.2016.

7. The subsequent changes of the design, and construction related impacts specific to the UEC-ICB-1 site, have been addressed by an updated Environmental Management Plan (EMP) and its revisions prepared by Project Management Design and Supervision Consultant (PMDSC). The 4th revision of the updated EMP was issued on 12 June 2017, which incorporated a deviated canal section from 2+820 km up to 3+860 km, which was submitted to CEA and ADB for their concurrences.

8. The Wildlife Management Plan (WMP)⁶ complying with CEA conditional approval was prepared for the entire UECP area by IUCN, with package specific recommendations, and the final report was submitted in October 2017. By the time the WMP was under preparation, the UECP-ICB-1 contract had been awarded and hence no structural mitigations were proposed, but the species translocation and habitat restoration were implemented as recommended in the WMP. Further, the WMP emphasized the requirement of properly completing stream diversions affected due to canal construction, and the stream bed and banks to be properly restored without changing the drainage patterns as a critically endangered fish species⁷ has been recorded during the study in the UEC-ICB-1 area.

1.3 Scope of Environmental Contingency Plan

9. The performance of the Contractor has not been satisfactory with respect to environmental management, as well as construction progress, and at the time this plan was prepared in June 2020, the construction site is largely abandoned with a few of the Contractor's staff only engaged with urgent site maintenance work, with very little resources. With the poor site maintenance, and a lack of Contractor's capacity to implement the Contractor's Environmental Management Plan (CEMP) including its subsequent amendments prepared by the Contractor based on the Environmental Management Plan (EMP) the situation at the site is considered critical.

10. Hence, the UEC-ICB-1 project area and the surrounding protected wildlife habitat, inhabitant critical species, and the associated socio-culturally sensitive environment are at immediate risk of becoming unsafe. Of special concern are the deep excavated sections, unattended natural stream diversions, blocking the migratory path for animals by erecting electric and other fencing arrangements, leaving stockpiles, disposed excavated material, among other issues.

11. This Environmental Contingency Plan (ECP) is intended to assess the possible environmental, health and safety (EHS) risks, and propose criteria to manage the construction area after it is handed over to the Employer (PMU), in order to result in the minimum environmental damage possible, until

⁶ Wildlife Management Plan, including Human Elephant Conflict Management and Mitigation, for the Upper Elahera Canal Project prepared by IUCN (October 2017) under the consultancy (MMDE / MWSIP/ ADB/ UECP/ 3267-3268- SRI / Consult / HECM / NCB / 2016 / 004) awarded by PMU of MWSIP

⁷ *Devario cf. aequipinnatus / Devario Pathirana* (Common name: Knuckles Danio in English; Dumbara salaya / Damkola salaya in Sinhala); Endemic and Critically Endangered (CR) as per National Red list 2012; Endangered (EN) as per IUCN Global conservation status

a new Contractor resumes the balance of construction works. It is expected that this period until the mobilization of the new Contractor may take up to 12 months.

1.4 Need of Environmental Contingency Plan

12. As per “Safeguard Requirements” for Environment under Appendix 1 of ADB Safeguard Policy Statement (SPS) 2009,⁸ when unanticipated environmental impacts become apparent during project implementation, it is required to (i) assess the potential impacts; (ii) evaluate the alternatives, and (iii) outline mitigatory measures and resources to address those impacts.

13. Hence, this ECP is prepared to address the above ADB safeguard requirements related to UECP-ICB-1 package and will include measures complying with the Condition No. 3 of the CEA approval⁹ issues for approved EIAR.

14. This ECP is submitted to the Program Management Unit (PMU) for onward transmission to other agencies as appropriate, including the Department of Wildlife Conservation (DWC) through Central Environmental Authority (CEA) and ADB for their concurrence, and in order to formalize subsequent monitoring responsibilities through Environmental Monitoring Committee (EMC) during the site closure period under the authority of the Employer.

15. Further, the DWC with the judiciary powers under FFPO to manage the Elehera – Girithale Sanctuary Area, which is fragmented for wildlife movements due to the site isolation, may review this ECP and inform their views and concerns for further considerations by the Employer, as the site cannot be handed over to the DWC until the construction work is fully completed, and site is restored as per the recommendations given in the approved EIAR and WMP prepared by the IUCN complying with CEA condition Section 2.2. The initial communication of this preparation of ECP was done at the meeting held on 26 May 2020 at RE office UEC ICB 1 at Elehera, with the participation of relevant officers of DWC Range office, Elahera, FD beat officer, PIU, PMDSC relevant officers (See the attendance list in **Annex A**).

⁸ Para 23 under Sub-section 7 of Section D in ADB SPS (2009)

⁹ conditional approval of the CEA (REF. 08/EIA/WATER/04/2012 DATED AS 31.03.2016) based on the EIAR for UECP prepared in June 2015

2 SITE DESCRIPTION

16. The UEC-ICB-1 project area is shown in the **Figure 3-1**. The most significant aspect is that the ongoing construction work is within an ecologically sensitive area - the Elahera – Girithale Sanctuary Area – which is temporarily released by DWC to the Ministry of Mahaweli, Irrigation, Agriculture and Rural Development.

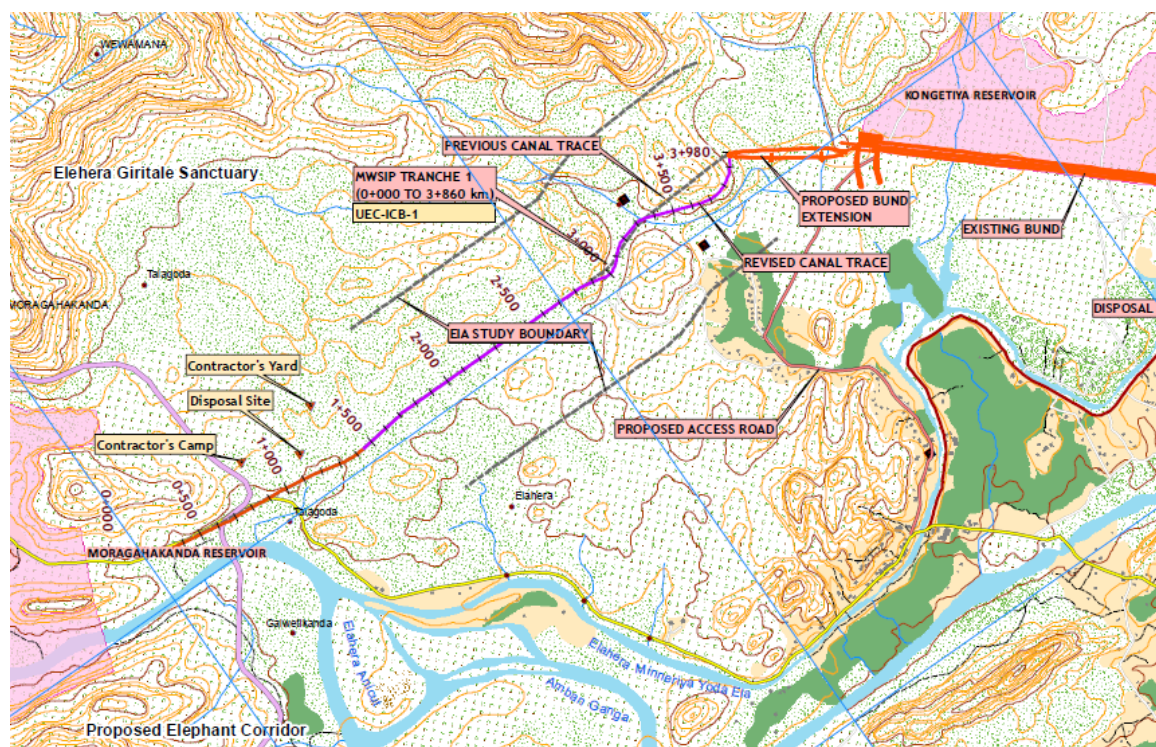


Figure 2-1: Map showing UEC-ICB-1 project area

17. The canal starting from Moragahakanda Reservoir to Kongetiya Reservoir is under construction by CML. The package is designed as a cut and cover canal with rectangular twin conduit and circular conduit structures. The diagram in **Annex B** shows the construction progress by June 2020, indicating the areas not excavated, excavated sections with incomplete conduit structures, and the backfilled areas.

18. Accordingly, out of the total length of 3+968 km, backfilling is completed or in progress in about 895 m length, which is 22.5% of the total canal trace. The excavated stretch remains fully or partly open with incomplete structures to a total length of 1,628 km, which is 41% distributed throughout the canal trace, but keeping movement passages for animals less than in every 300 m intervals¹⁰ as instructed by the Engineer at the initial stage of the construction program preparation.

2.1 Past and present land use

19. **Figure 2-2** shows the land use change in the UEC-ICB-1 area before (in 2014) and after the project (in 2018). The original land use of the project area during the EIA stage consisted of dry-mixed

¹⁰ from 0+100 km to 0+540 km; 0+580 km to 0+592 km; 0+676 km to 0+795 km; 0+800 km to 0+830 km; 0+925 km to 0+960 km; 1+390 km to 1+450 km; 1+956 km to 2+300 km; 3+400 km to 3+585 km; 3+625 to 3+840 km; 3+960km to 3+968 km

evergreen forest (undisturbed and degraded), riverine forest, marshes, scrubland, rock outcrop vegetation, grasslands etc. In addition, natural stream network is active almost throughout the year except in dry spell, associated with 3 tanks (Kirimetiya, Welankatuwa anicut and Kongketiya).

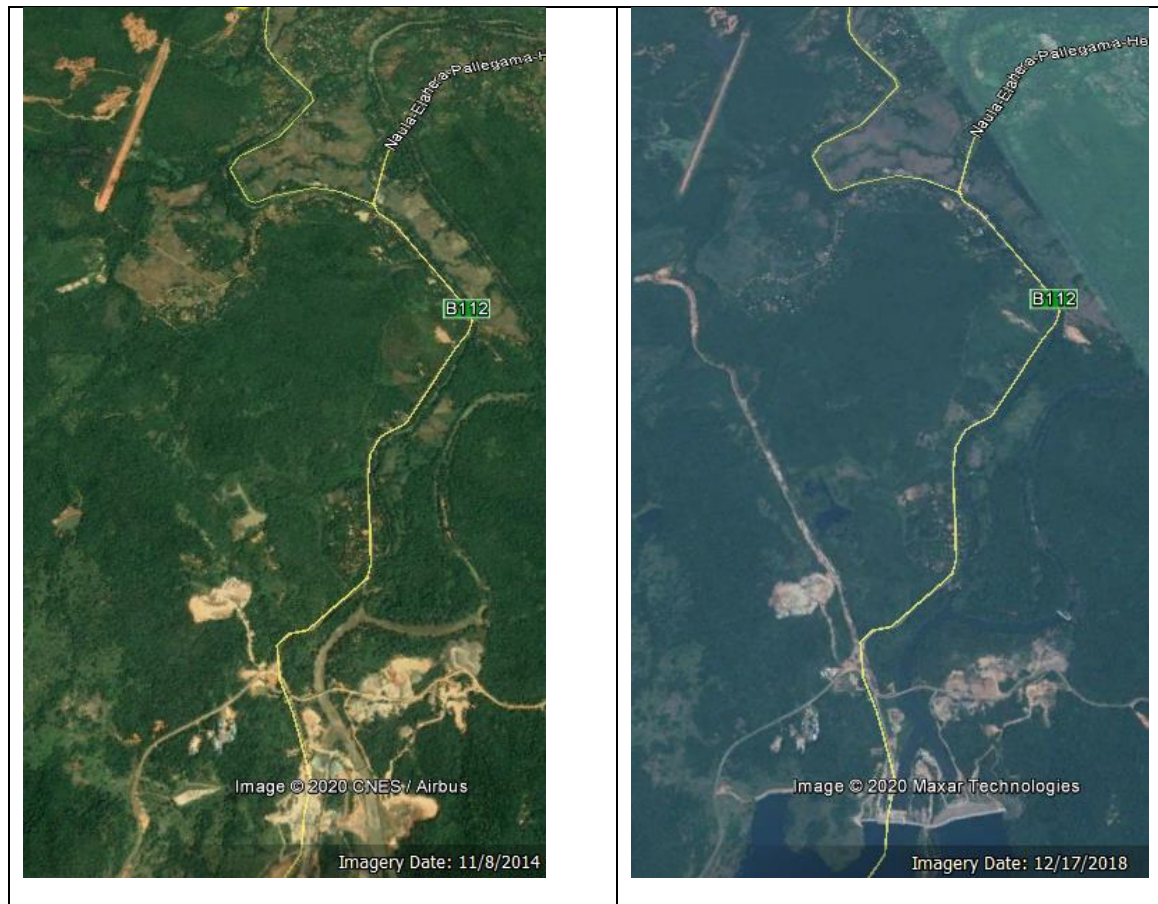


Figure 2-2: Map showing land use of the UEC-ICB-1 project area (before and after)

2.2 Climate

20. The sub-project area lies in the intermediate zones, and the major part of the rainfall is received during October to January from the northeast monsoon (Maha season) and in April and May during inter-monsoon period. The average annual rainfall received in the project area varies between 1,500 to 2,000 mm. The average temperature ranges from 22.5°C to 27.5°C.

2.3 Geology and Soil

21. This project area belongs to Highland complex of the Sri Lanka. Major rock types encountered through the excavation sections are charnockitic gneiss, garnet biotite gneiss, calc gneiss and marble. Similar rock types will be continued remaining excavation sections of the canal. Summary of the excavated quantities are mentioned in below **Table 2-1**.

Table 2-1: Excavation quantity UECP-ICB-1

Start Chainage	End Chainage	Section	Soil Excavation volume (m ³)	Rock Excavation volume (m ³)	Remarks
0 +115	0 +615	Section 4	37,038.73	986.845	
0 +615	0 +655	Section 4	0	0	to be excavated
0 +655	0 +915	Section 4	10,522.32	2486.365	
0 +915	1 +420	Section 1	31796.83	28871.695	
1 +420	1 +900	Section 2	40,716.09	42234.86	
1 +900	2+050	Section 2	0	0	to be excavated
2+050	2+320	Section 2	11238.425	33112.23	
2+320	2+505	Section 3	3853.38	24815.41	
2+505	2+840	Section 3	0	0	to be excavated
2+840	3+100	Section 3	21857.515	18326.338	
3+100	3+375	Section 3	0	0	to be excavated
3+375	3+980	Section 3	51154.925	26422.08	
Total			208,178.21	177,255.82	

22. Groundwater table varies from place to place through the canal section according to surrounding geomorphology. Two weak ground conditions were identified and improved at sections between 0+400 and 0+450 and between 0+750 and 0+800. There were no any Karstic features or any adverse Geological condition was identified.

2.4 Hydrology

23. The UECP-ICB-1 canal starting from Moragahakanda Reservoir up to the Konketiya Reservoir is within the Mahaweli River Basin, which associated with a natural stream network which feed Welankatuwa Anicut Scheme, Kirimetiya small tank, flowing into the Ambanganga River and Elahera Minneriya Yoda Ela (EMYE).

24. The stream crossings fall across the UECP-ICB-1, which is proposed as drainage over crossings or under crossings are summarized with the chainage in **Table 2-2**.

Table 2-2: Stream crossings across the UECP-ICB-1 canal trace

Chainage (m)	Nature / name of the stream	Proposed structure and construction status under UEC-ICB-1
0+794	Seasonal stream	Drainage under crossing; drawing approved but construction not yet commenced
1+203	Seasonal stream	Drainage over crossing, drawing approved but construction not yet commenced
3+310	Seasonal stream / Welankatuwa Anicut	Drainage over crossing, to be excavated the area

2.5 Ecological significance

25. As shown in **Figure 2-3**, the project area is in the middle of number of protected areas under the Forest Department (FD) and DWC, and as described above the construction area is within the Elahera Girithale Sanctuary and proposed elephant corridor, which expose the area to large gatherings of elephants.

26. The alignment of the construction works in the package traverse through an ecologically sensitive area, which is identified as a “critical habitat”¹¹ by the baseline ecological studies conducted in 2016 in the area prior to the habitat clearing.

27. As revealed from the Baseline Ecological Survey Report prepared by IUCN (**Annex B**)¹² a total of 147 fauna species and 131 plant species had been recorded in the project affected area, while the total list of fauna species had included 22 endemic species, 11 threatened species including one Critically Endangered species of fish *Devario cf. aequipinnatus*.

28. The 131 plant species recorded along the canal trace included 9 species that are endemic to Sri Lanka and 14 species listed as nationally threatened. Further, 9 species of exotic plants including 2 invasive alien plant species were also recorded.

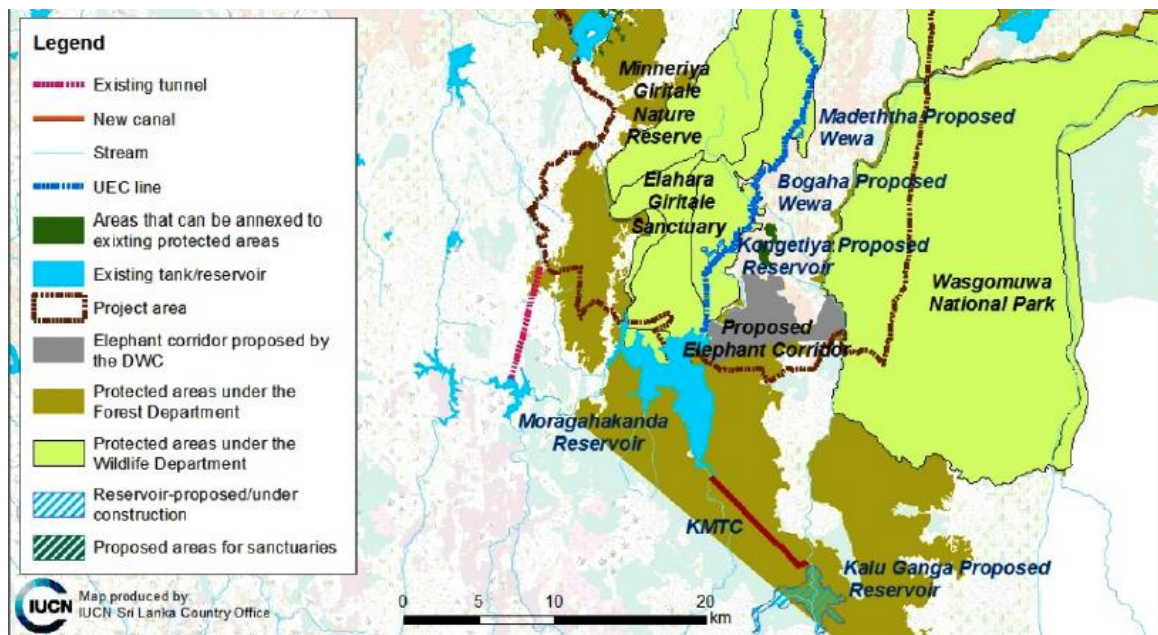


Figure 2-3: Protected areas under DWC and FD associated with UECP-ICB-1 package

¹¹ According to ADB SPS (2009) “Critical Habitat” is defined as both natural and modified habitat that deserves particular attention. Critical habitat includes areas with high biodiversity value, including habitat required for the survival of critically endangered or endangered species; areas having special significance for endemic or restricted-range species; sites that are critical for the survival of migratory species; areas supporting globally significant concentrations or numbers of individuals of congregator species; areas with unique assemblages of species or that are associated with key evolutionary processes or provide key ecosystem services; and areas having biodiversity of significant social, economic, or cultural importance to local communities.

¹² Recommendations on Priority Areas Identified for Commencement of Constructions in the Upper Elahera Canal Project – Package 1 (UEC ICB 1), December 2016 by IUCN

2.6 Socio-economic significance

29. From a socio-cultural point of view, the canal trace crosses the Elehera – Naula (B112) road and is adjacent to the Moragahakanda Site Office and the DWC range office (Elahera) are located in the close proximity to the project area. In addition, there is a total of 92 farmer families who depend on Welankatuwa anicut located at chainage 3+310 km for cultivation.

30. The archeological significance of the project area is described in the EIA report prepared for UECP and KMTC (June 2015) and as it revealed there are five sites denotes in the **Figure 2-4**, as summarized in the **Table 2-3**.

Table 2-3: Details of the archeologically significance places in the UEC-ICB-1 area

Reference code	Location		Significance
UEC/AIA/AG2	About 111 m away from the centre line of the canal in the indirect impact zone	N 07°. 71394 / E 80°.77251	Historical place with pieces of ancient pots, possible indirect impacts
UEC/AIA/AG3	Located in the direct impact zone, about 3m from the centre-line	N 07°. 71504 / E 80°.77341	Ambagahawelapitiya tank, an historical tank rehabilitated under Moragahakanda project
UEC/AIA/AG4	Located in the direct impact zone, about 8m from the centre-line	N 07°. 72289 / E 80°.77307	Rock layer with pyramidal shape patches which suspect as a place connected with historical iron industry
UEC/AIA/AG5	Located in the direct impact zone, about 65m from the centre-line	N 07°. 72910 / E 80°.77203	Anonymous historical tank
UEC/AIA/AG27	About 200 m from the right side of the Canal indirect impacts due to canal crossing the natural stream to the Welankatuwa anicut	07° N 43' 52.322 / 80° E 46' 27.460	Welankatuwa ancient anicut

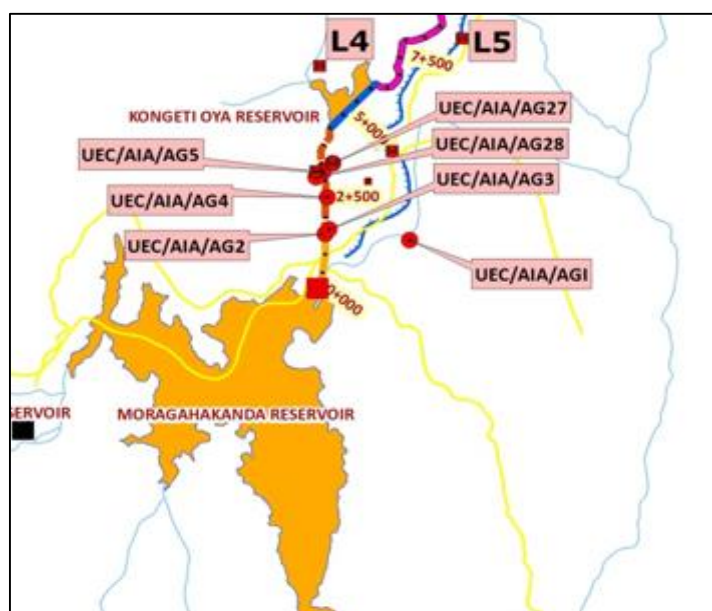


Figure 2-4: Distribution of existing archaeological significance places in the UEC-ICB-1 area

3 POTENTIAL EHS RISKS

31. The canal trace is 3.8 km in length with approximately 45 m width (covering 17 ha), which has already been cleared except for some grassland and scrublands kept without excavating for animal movements. This has already caused a habitat fragmentation effect.

32. Clearing of the site encompassed about 17 ha of vegetation, which included felling of about 650 trees with the diameter at breast height (DBH) over 30 cm in the natural forest habitat. In addition, the areas use for Contractor facilities, temporary stockpile areas and the excavated sections without completing backfilling has created a risk for the wildlife movements, as well as risk of falling into excavated areas.

33. With the site's isolation, the stoppage of construction work and site restoration as planned, the has created an emergency situation for vulnerable wildlife, their habitat, and also for the public who use the Elehera-Naula Road, including officers in the MASL premises in the adjacent Moragahakada Office.

34. The significant environmental, health and safety (EHS) risks anticipated are summarized in **Table 3-1**.

Table 3-1: Potential EHS risks during site isolation period in UECP-ICB-1 area

Cause of EHS risk	Locations/ chainage	Possible impacts/ EHS risks
(i) The elephant fence along the boundary (Naula – Elehera road) of the Elehera-Girithale sanctuary is rear-ranged along the cleared canal trace making easy access into sanctuary area up to the Kongketiya tank due to incomplete sub-project interventions	1+600 Km to 1+775 Km, 1+950 to 2+500 Km, 2+845 Km to 3+100 Km, 3+400 Km to 3+840 Km	<ul style="list-style-type: none"> ▪ Opening up of formerly relatively undisturbed areas to humans leads to increased poaching, clearance of forest patches, setting fires, removal of timber, non-timber forest products such as medicinal plants, ornamental plants, stones, sand and gravel from existing natural stream, tank beds, and introduction of alien invasive species; ▪ Threat to wildlife movements, behaviours by fencing, and possible human activities such as making traps for hunting; ▪ Risk of excavating/ steeling archeologically sensitive / protected or historical monuments in the project area by the treasure hunters
(ii) Deep excavated sections abandoned in the site without completing construction work, with halfway completed structures having sharp edges, steel rods etc.	0+100 Km -0+540 Km, 0+676 Km - 0+830 Km, 0+935 Km-0+960 Km (Diver-sion road), 1+1600 Km- 1+776 Km, 1+956 Km -2+500 Km, 2+845 Km-3+095 Km, 3+400 - Km- 3+585 Km, 3+625 Km -3+840 Km, 3+960 Km- 3+980	<ul style="list-style-type: none"> ▪ Acts as a barrier for animal movements, across the excavated sections which is detrimental to both large and small animals, with possibility of falling into the deep trenches, causing injuries/death; ▪ Long term existence of habitat fragmentation will cause edge effect to the existing ecological system in the area ▪ No possibility of escaping, coming out from the deep trenches for the small animals, and those will get trapped inside the trenches / halfway completed conduit structures without adequate ventilation. ▪ During rainy season, excavated sections will trap water, and also ground water will aggregate in the deep cut sections, which will cause water pollution, act as mosquito breeding sites which will case health and safety risks to the surrounding area; ▪ Loss of soil stability and soil erosion takes place due to the removal of vegetation cover.

Cause of EHS risk	Locations/ chainage	Possible impacts/ EHS risks
		<ul style="list-style-type: none"> ▪ With rainwater, soil material mixed with oil, grease and other effluent added during construction work are get eroded and the eroded soil materials are transported along the minor streams and these stream paths finally connect to larger streams which result siltation related issues in streams, tanks in the project area and that will affect natural aquatic habitats which inhabit critically endangered fish, amphibian species;
(iii) Isolation of stockpiles, material disposal areas, topsoil material resulted due to project interventions	<p>Stockpiles- 499606.570 N 578590.044 E DS- 1). 499566.015 N, 578748.539 E, 2). 499872.841N, 579926.227 E 3). 499870.146 N, 579490.647E, 4). 499635.906 N, 581218.182 E, 5). 499786.375 N, 581205.283, 6). 499855.964 N, 577757.004 E</p> <p>Top soli-499506.190 N, 578709.962 E</p>	<ul style="list-style-type: none"> ▪ Topsoil dump become unusable due to growth of weeds, mix with other waste and will slowly decline without maintenance, specially with the rains increasing dampness. ▪ Disposal sites which are not correctly located and landscaped, create adverse impacts on water bodies, water quality and habitats, and result small scale flooding due to blocking the natural stream paths, stormwater drainage paths etc. when this type of impact happen in the UEC ICB 1 area, significance is high as it will affect the water quality with low dissolved oxygen, high pH affecting the survival of sensitive aquatic species ▪ Hindrance to surface runoff, deterioration of water quality will affect the downstream flows for community uses, natural wetland habitats, as well as e-flow etc. ▪ Temporary disposal sites which are isolated inside the sanctuary area will be naturalized forming vegetation cover, with invasive species, and act as a barrier for wild animal movements. ▪ Aggravated spreading of invasive alien species
(iv) Blocking of natural streams, hindrance to the surface run off due to incomplete drainage or stream crossings along the canal trace	0+794 Km, 1+203 Km, 3+305 Km	<ul style="list-style-type: none"> ▪ Disturbance to natural drainage patterns in the sub-project area and water issues, deficiency of environmental flow in the downstream area fed by the natural stream network blocked by the UEC ICB 1 interventions. ▪ Impacts on riparian and aquatic natural habitats, flora and fauna.
(v) The temporary drains cut to drain the water resulted during de-watering and bypass arrangements made during the construction period to avoid flooding in the construction areas	0+150 Km, 2+010 Km, 3+095 Km, 3+9370 Km	<ul style="list-style-type: none"> ▪ Ecological impacts in the downstream due to low flows. ▪ Impacts on downstream water users for irrigation, and other purposes. ▪ Possibility of local floods inside the sanctuary area, which can be positive for water loving species, and negative impact for the slow-moving species like land snails, reptile species etc. due to temporary habitat inundation
(vi) Isolation of explosive magazine	499510.086 N, 578715.026 E	<ul style="list-style-type: none"> ▪ Risk of wildfires, destruction in the protected area due to sudden explosion
(vii) Isolation of Contractor facilities, machineries, camp sites etc.	BP-499654.892 N, 578581.370 E CP-499632.132 N, 578647.646 E, Campsite- 499504.365 N, 578628.298 E, Yard- 499615960 N, 578144.999 E	<ul style="list-style-type: none"> ▪ Result construction waste, oil spilling of machineries, storage areas. ▪ Site isolation will trigger theft, vandalism etc. ▪ Batching plant area with materials storage will result dust due to wind, and the desilting ponds, curing tanks will result water stagnation creating mosquito breeding sites. ▪ Isolated buildings like labour camps, canteen areas will attract bats, birds for nesting

Cause of EHS risk	Locations/ chainage	Possible impacts/ EHS risks
(viii) Incomplete access road via Nual – Elehera B112 road, isolated canal trace, and its access	0+935 Km -0+960 Km	<ul style="list-style-type: none"> ▪ Acts as a barrier for public use ▪ Health and safety risks for public, drivers causing accidents; Dust issues, and drainage issues. ▪ Habitat fragmentation, possible disturbances to the wildlife movements, risk of predation for the animals. ▪ Visual impacts due to changing land use, and disturbing scenic beauty
(ix) Delay of construction completion and site abundance	Head reulator-0+113 Km, Conduit work-0+348 Km, 0+808 Km, 1+760 Km, 3+476 Km, 3+644 km, 3+800 Km, 3+968	<ul style="list-style-type: none"> ▪ Economic impacts due to loan payments ▪ Long term site exposure will affect the wildlife activities, DWC responsibilities by increase Human wildlife conflicts, engagement of resources for site monitoring by DWC/FD. ▪ Loss of ecosystem services due to habitat fragmentation, delaying site restoration ▪ Spreading of invasive alien species. ▪ Damage to vegetation beyond vegetation limits. ▪ Erosion of exposed areas and sediment carried into adjacent streams
(x) Abandoning tree planted areas in the canal reservations	0+986 km to 1+128 km	<ul style="list-style-type: none"> ▪ Total of xx plants planted in the backfilled areas in the given chainages will be at a risk due to lack of maintenance, invasion by weeds and invasive species due to isolation. ▪ Not meeting the planned objectives to support ecosystem

4 ENVIRONMENTAL CONTINGENCY PLAN

4.1 EHS Risk Management

35. An emergency environmental situation has been created in the project area due to Contractor's inability to perform the construction work as per the planned program, and this is compounded by the inadequate implementation of the EMP and EIA recommendations during implementation.

36. This incident has the potential to create a significant impact on the environment, with high risk to the environment as summarized in **Table 4-1**. The table presents a risk assessment conducted by PMDSC.

37. Risk is assessed as the likelihood that the activity will have an effect on the environment as well as the consequence of the effect occurring. Hence, it is described as "**Risk = Likelihood x Consequence**". The scale to assess the **likelihood** of impact and **consequences**, and the **risk score** table is as follows:

Likelihood Scale

Likelihood	Definition	Score
Certain	Will occur during the period very often when site is isolated activity if the preventive measures are not taken	5
Likely	Likely to occur more than once or twice during the activity, but less than weekly, if preventive measures are not taken	3
Unlikely	May occur once or twice during the activity if preventive measures are not taken	2
Rare	Unlikely to occur during the activity	1

Consequence Scale

Consequence	Definition	Score
Catastrophic	Unprecedented damage or impacts involving the environment or surrounding communities (i.e widespread effect on ecosystem, with deaths of fauna/flora)	5
Major	Major damage to the environment or to surrounding communities	3
Moderate	Limited adverse impacts on the environment or on surrounding communities (i.e. short-term minor changes in the ecosystem)	2
Minor	No or minimal adverse environmental or social impacts (i.e little noticeable effect on ecosystem)	1

Risk Score Table - High Risk (15-25); Medium Risk (6-10); Low Risk (1-5)

Likelihood	Consequence			
	Catastrophic	Major	Moderate	Minor
Certain	25	15	10	5
Likely	15	9	6	3
Unlikely	10	6	4	2
Minor	5	3	2	1

Source: *Environment Management for Construction Handbook*, prepared by Safeguard Unit Central & West Asia Department of ADB

Table 4-1: Environmental risk assessment in UECP-ICB-1 and Environment Contingency Plan

Environment impact / issue to consider	Likelihood that the site or sensitive environment receptors will be affected	Consequence of the site or sensitive receptors being affected?	Risk Score: (Consequence X Likelihood) (High: 15-25; Medium: 6-10; Low: 1-5)	Environmental management measures		
				Measures to be taken	Priority time for the implementation	Remarks
(i) Opening up of formerly relatively undisturbed areas to humans leads to increased poaching, clearance of forest patches, setting fires, removal of timber, non-timber forest products such as medicinal plants, ornamental plants, stones, sand and gravel from existing natural stream, tank beds, and introduction of alien invasive species;	5	5	25	<ul style="list-style-type: none"> Security to be arranged under the guidance and supervision of DWC/FD, covering key points. Establish permanent security huts with the required facilities (electricity, water etc.) suitable for 24 hrs security with the protection from wild animals, which can be used by the DWC officers as well, during the canal operation period (due to site clearing, and making easy access to the site, protected area is vulnerable for similar impacts even during the operation stage until the ecosystem get stable and naturalized) 	Before the site is taken back from CML the arrangements should be ready as the site security is the 1 st priority	Specifications including design and BOQ to be done by PMDSC PMU to arrange funds, implementation as required coordinating with DWC/FD
				<ul style="list-style-type: none"> Site boundaries to be fenced connecting the sanctuary boundaries, with no passage for the entry of unauthorized people, without disturbing animal movements. 		-do-
				<ul style="list-style-type: none"> Display required sign boards and notices to the public / project personnel instructing the key contact personnel (Employer) at any emergency, risk areas considering wildlife and public movements, regulations to follow as per FFPO/FO/ Antiquities Act etc. 	Immediately after site is taken back from the CML	Preparation of templates for the notices, contacting DWC/FD to be managed by PMDSC prior to terminate the CML
				<ul style="list-style-type: none"> Maintain logbook for entry and exit of the site boundaries through the security personnel. Provisions to be kept for the logistic arrangements and facilities for the DWC/ FD officers to attend frequent random monitoring /patrolling to ensure safety of the sensitive habitats due to project induced impacts. 	During the site maintenance by the Employer until re-award the contract	Periodical monitoring through the Employer/ PMDSC with the participation of DWC/FD is required to ensure.

Environment impact / issue to consider	Likelihood that the site or sensitive environment receptors will be affected	Consequence of the site or sensitive receptors being affected?	Risk Score: (Consequence X Likelihood) (High: 15-25; Medium: 6-10; Low: 1-5)	Environmental management measures		
				Measures to be taken	Priority time for the implementation	Remarks
(ii) Deep excavated sections abandoned in the site without completing construction work, with halfway completed structures having sharp edges, steel rods etc. will be detrimental to the animals due to falling into pits. (iii) Habitat fragmentation will cause edge effect to the existing ecological system in the area	5	5	25	<ul style="list-style-type: none"> Complete all possible excavated sections with backfilling prior to abandoned the site (may be through a sub-Contractor) if the Contractor is unable to complete the required. Remove all the barriers for animal movements, and the passages to be kept at least of 400 m width in-between 2 excavated sections which are unable to complete. The deep sections to be encircled and protect with adequate suitable fencing, to prevent animal reaching such areas. Install / construct temporary animal escape structures (refer Wildlife Management Plan prepared by IUCN for UECP for sample animal escape structures) in the places where high-risk for animal falling (areas closer to natural streams, small tanks, grasslands etc.). EMS to identify such areas and design possible passages through engineers) Suitably enrich immediate surrounding habitats of the canal trace as per the directions of the Wildlife Management Plan for UECP, ensuring wildlife has adequate habitats for their survival until the disturbed areas is enrich after completing the project 	Immediately after site is taken back from the CML	Specifications including design and BOQ to be done by PMDSC. PMU to arrange funds, implementation mechanism as required coordinating with DWC/FD
(iv) Excavated sections will trap water, and also ground water will aggregate in the deep cut sections, which will cause water pollution, act as mosquito breeding sites which	3	2	6	<ul style="list-style-type: none"> Arrange dewatering mechanism following standard practices, and the dewatered water to be drained through silt traps. Ensure water from dewatering to be drained into the proper water path or sources without disturbing natural flow pattern of the area 	During the site maintenance by the Employer until re-award the contract	Periodical monitoring through the Employer/ PMDSC with the participation of DWC/FD is required to ensure.

Environment impact / issue to consider	Likelihood that the site or sensitive environment receptors will be affected	Consequence of the site or sensitive receptors being affected?	Risk Score: (Consequence X Likelihood) (High: 15-25; Medium: 6-10; Low: 1-5)	Environmental management measures		
				Measures to be taken	Priority time for the implementation	Remarks
will cause health and safety risks to the surrounding area						
(v) Excavated sections with deep edges result slope failure, erosion	5	2	10	<ul style="list-style-type: none"> Identify such areas, and arrange suitable erosion protection, slope stabilization measures. Arrange silt traps 	During the site maintenance by the Employer or nominated sub-Contractor until re-award the contract	Periodical monitoring through the Employer/ PMDSC with the participation of DWC/FD is required to ensure mitigations are effectively in place. Specifications including design and BOQ to be done by PMDSC under the directions of PMU
(vi) Impacts due to isolated, unmanaged stockpiles / disposal sites	5	3	15	<ul style="list-style-type: none"> All possible measures to adopt to remove unusable stockpiles from the UEC ICB 1 inside the protected area into the identified permanent disposal sites (abandoned quarry sites from Moragahakanda and Kaluganga projects approved by DWC) Usable material in the stockpiles, disposal areas to be properly landscaped with the maximum height of 3-5 m range depending on the location without disturbing animals movements, ecosystem services within the protected area, avoiding tanks beds, banks of natural streams, canals etc where animal movements are abundant The height of stockpiles should generally 	During the site maintenance by the Employer or nominated sub-Contractor until re-award the contract	Periodical monitoring through the Employer/ PMDSC with the participation of DWC/FD is required to ensure mitigations are effectively in place.

Environment impact / issue to consider	Likelihood that the site or sensitive environment receptors will be affected	Consequence of the site or sensitive receptors being affected?	Risk Score: (Consequence X Likelihood) (High: 15-25; Medium: 6-10; Low: 1-5)	Environmental management measures		
				Measures to be taken	Priority time for the implementation	Remarks
				be lower than surrounding structures. Stockpiles should generally be below fence lines when within five metres of the site boundary. <ul style="list-style-type: none"> No disposal-sites to be located (unless currently approved) or newly established within areas protected under FFPO and FO All disposal areas/ stockpile areas should be rehabilitated in accordance with the requirements/guidelines issued by the CEA and the respective local authority. 		
(vii) Topsoil become unusable	3	3	9	<ul style="list-style-type: none"> Topsoil material to be preserved for future use during habitat enrichment adopting proper measures 	During the site maintenance by the Employer or nominated sub-Contractor until re-award the contract	Periodical monitoring through the Employer/ PMDSC with the participation of DWC/FD is required to ensure mitigations are effectively in place.
(viii) Blocking of natural streams, hindrance to the surface run off due to incomplete drainage or stream crossings along the canal trace	5	5	25	<ul style="list-style-type: none"> Stream crossings (Refer Table 2-1) to be completed as designed, and stream bank stabilizations to be done using native forest species to avoid bank erosion, siltation etc. The natural drainage paths, diversions to be re-established which are blocked due to UEC ICB 1 (CML) interventions, including the streams feeding Welankatuwa anicut, and other small tanks along the canal trace. The bypass arrangements made during the construction period to avoid flooding in the construction areas to be reinstated into their natural flow path. 	During the site maintenance by the Employer or nominated sub-Contractor until re-award the contract	Periodical monitoring through the Employer/ PMDSC with the participation of DWC/FD is required to ensure mitigations are effectively in place. Specifications including design and BOQ to be done by

Environment impact / issue to consider	Likelihood that the site or sensitive environment receptors will be affected	Consequence of the site or sensitive receptors being affected?	Risk Score: (Consequence X Likelihood) (High: 15-25; Medium: 6-10; Low: 1-5)	Environmental management measures		
				Measures to be taken	Priority time for the implementation	Remarks
				<ul style="list-style-type: none"> The temporary drains cut to drain the water resulted during dewatering to be reinstated, and only the water paths which needs for dewatering to be restored as per standard engineering methods establishing proper silt traps, erosion protection measures and slope stabilization arrangements. 		PMDSC under the directions of PMU
(ix) Risk of wildfires, destruction in the protected area due to sudden explosion due to explosive magazine, and other flammable material in the stores / yards etc.	3	5	15	<ul style="list-style-type: none"> Remove all possible flammable and explosive materials and hand over to the relevant regulatory bodies with written consent indicating type of material, quantities etc. Oil inside the machineries also can cause sudden explosions, and hence the vehicle and machineries to be kept under the proper security arrangements. 	Immediately after site is taken back from the CML	Periodical monitoring through the Employer/ PMDSC with the participation of DWC/FD is required to ensure.
				<ul style="list-style-type: none"> Firefighting measures, especially adequate high-pressure water sources to be in place to control any wild fire associated with the project area 		During the site maintenance by the Employer or nominated sub-Contractor until re-award the contract
(x) Construction waste, oil spilling of machineries, storage areas and possible water pollution, poisoning wild animals, trees	3	5	15	<ul style="list-style-type: none"> The entire site, Contractor facilities to be cleaned, disposing all possible waste materials following CEA waste disposal standards Quantify the waste and keep records of handing over / disposal by EMS. If there are any hazardous waste material generated or to be generated during the 	Immediately after site is taken back from the CML	Periodical monitoring through the Employer/ PMDSC with the participation of DWC/FD is required to ensure.

Environment impact / issue to consider	Likelihood that the site or sensitive environment receptors will be affected	Consequence of the site or sensitive receptors being affected?	Risk Score: (Consequence X Likelihood) (High: 15-25; Medium: 6-10; Low: 1-5)	Environmental management measures		
				Measures to be taken	Priority time for the implementation	Remarks
			9	site isolation period, regulatory requirements to be identified and met prior to disposal / storage etc. <ul style="list-style-type: none"> ▪ Cement waste, sludge in the batching plant areas to be removed, and dispose identifying concrete processing place to use as a recycling material. EMS to keep records of the quantities and places of hand over. ▪ All possible solid and liquid waste generation sources (use by security and monitoring personnel) to be identified and plan for waste management to be displayed with waste collection arrangements, relevant contact numbers for waste collection ▪ No disposal of any waste during site cleaning or left inside the protected areas or areas with significant environmental values 		
(xi) Sources of dust generation	3	3	9	<ul style="list-style-type: none"> ▪ All possible sources for dust generation such as material storage yards of batching plant, access roads, Contractor's camp, stores and exposed construction surfaces, stockpiles, disposal areas etc. to be properly covered, and establish sprinkler systems to prevent dust. ▪ Sprinkler systems to be arranged in the stockpile areas, other areas where dust generation is possible during dry and windy weather conditions to be pre-identified and the easy operation methods to be arranged through the site security personnel 	During the site maintenance by the Employer or nominated sub-Contractor until re-award the contract	Periodical monitoring through the Employer/ PMDSC with the participation of DWC/FD is required to ensure.
(xii) Health and safety risks due to incomplete Naula – Elahera road diversion and	3	3	9	<ul style="list-style-type: none"> ▪ All possible construction work to be completed prior to site isolation as there is a high risk of accidents, localized flooding associated with this area. 	Before the site is taken back from CML	Engineer to ensure that the construction program to be

Environment impact / issue to consider	Likelihood that the site or sensitive environment receptors will be affected	Consequence of the site or sensitive receptors being affected?	Risk Score: (Consequence X Likelihood) (High: 15-25; Medium: 6-10; Low: 1-5)	Environmental management measures		
				Measures to be taken	Priority time for the implementation	Remarks
drainage arrangements				<ul style="list-style-type: none"> If unable to complete, ensure drainage arrangements are made, mitigation measures for dust, erosion are established. In addition, sign boards, lighting during night, speed limits to be displayed for the public road users. This location where the UEC ICB 1 canal cross the Naula – Elahera road is situated within the proposed elephant corridor where significant elephant movements are noticeable, and hence the completion of this stretch needs to facilitate animal movements keeping most of the structures underground and no deep sections with risk of falling animals. Also, this area is abundant with the visitors those who visit Moragahakanda dam, and all required safety measures and visual improvements need to be in place 		revised considering the urgent works to be completed by CML prior to terminate the site
(xiii) Vulnerability of the critical ecosystem due to prolonged construction work	3	5	15	<ul style="list-style-type: none"> DWC/FD need to be facilitated with required logistic, and other arrangements (fuel, cabs, firefighting measures, especially adequate high-pressure water sources to be in place to control any wildlife fire, captive and basic veterinary facilities in the wildlife range office to treat any injured animal etc.) Provisions to hire manpower required for site security, maintaining elephant fences, monitoring and patrolling etc. Establish communication facilities between DWC range office, and security points in the UEC ICB 1 area 	Before the site is taken back from CML	PMU to arrange funds, implementation mechanism as required coordinating with DWC/FD

Environment impact / issue to consider	Likelihood that the site or sensitive environment receptors will be affected	Consequence of the site or sensitive receptors being affected?	Risk Score: (Consequence X Likelihood) (High: 15-25; Medium: 6-10; Low: 1-5)	Environmental management measures		
				Measures to be taken	Priority time for the implementation	Remarks
(xiv) Spreading of Invasive Alien Species (IAS)	3	3	9	<ul style="list-style-type: none"> Prior to site isolation, remove all IAS to a most possible extent. 	During the site maintenance by the Employer or nominated sub-contractor until re-award the contract	PMU to arrange funds, implementation mechanism as required coordinating with DWC/FD Periodical monitoring through the Employer/ PMDSC
				<ul style="list-style-type: none"> Carry out the periodical ecological surveys until the site is rewarded to a separate Contractor for completion, which will be a useful source of information to understand the changes of biodiversity in the area with site isolation, and same details can be used for updating EMP to aware the next Contractor to mobilize. 	During the site maintenance by the Employer / PMDSC bi-annually	PMU to arrange funds, implementation mechanism and technical expertise by PMDSC
				<ul style="list-style-type: none"> During the periodical surveys, IAS quantification to be done, and as part of implementing Wildlife Management Plan, IAS to be removed and destroyed. 	During the site maintenance by the Employer / PMDSC bi-annually	Employer though the funds allocated for implementing WMP
(xv) Abandoning tree planted areas in the canal reservations	3	3	9	<ul style="list-style-type: none"> Arrange maintenance through a sub-Contractor for watering, weeding and gap filling 	During the site maintenance by the Employer / PMDSC bi-annually	
(xvi) Deterioration of environmental quality in the project area and surrounding due to dust, erosion, sedimentation, siltation etc.	3	3	9	<ul style="list-style-type: none"> Carry out environmental quality monitoring bi-annually (surface water quality during wet season, ambient air quality during dry/windy climatic conditions) followed by a sampling as a baseline just after site termination 	Baseline to be taken immediately after site is taken back from the CML and periodical monitoring to be	PMU to arrange funds, implementation mechanism and technical expertise by PMDSC

Environment impact / issue to consider	Likelihood that the site or sensitive environment receptors will be affected	Consequence of the site or sensitive receptors being affected?	Risk Score: (Consequence X Likelihood) (High: 15-25; Medium: 6-10; Low: 1-5)	Environmental management measures		
				Measures to be taken	Priority time for the implementation	Remarks
					carried out During the site maintenance by the Employer / PMDSC bi-annually	

38. The Health and Safety (H&S) Manual of MWSIP¹³ describes all H&S regulations, procedures, policy, emergency preparedness plans etc. for reference and action accordingly by all staff, Contractor's personnel, government employees and anyone visiting construction area of UECP-ICB-1 during possible site isolation, and environmental emergency situation described in this report.

39. Emergency Communication (EC) process to be in place with all relevant parties to communicate with essential authorities, and the EC protocol should be liaised with the set up explained in the Contractor's H&S Plan based on H&S Manual of MWSIP¹⁴ and shall be modified as required during the isolation period when the site is handed over to the Employer until rearward the contract.

4.2 Site Control and EHS Management

40. The site cleaning, maintenance and EHS management as per the Table 4-1 shall be undertaken by the Employer / PMU with the termination of the contract, and all required financial and implementation mechanism to be organized by the Employer. PMDSC as the consultant will assist the Employer/ PMU by means of technical aspects, preparing required deliverables followed by field surveys, assessments etc.

41. Environmental Specialist (ES) of PMU and the Senior Environmental Officer (SEO) of PIU for UECP shall be the key focal point on EHS management, and the ES of PMDSC, and Environmental Monitoring Specialist (EMS) of PMDSC will cooperate to take relevant measures under the directions of the Team Leader of PMDSC.

4.3 Monitoring ECP

42. The Employer represented by the ES of PMU and SEO of PIU will be responsible for the environmental compliance in the UECP-ICB-1 area, and the monitoring arrangements, and the responsibility is liaised with them until rewarding the contract. PMDSC as the consultant will assist Employer to fulfil the monitoring requirements under the guidance of Team Leader of PMDSC.

43. **Table 4-2** summarizes the site environmental monitoring and recording/ reporting events.

Table 4-2: Summary of site environmental monitoring and recording/reporting events

#	Monitoring Scope	Frequency	Purpose/ Action	Agency Responsible
(i)	Ambient Environmental quality monitoring (surface water and ambient air quality)	Bi-annual as a part of producing SAEMR for ADB	<ul style="list-style-type: none"> With the site isolation, and altering the natural drainage arrangements, vegetative cover impacts such as erosion, dust issues may significant during rainy and dry / windy climatic conditions respectively, compliance particularly for the key parameters having critical impacts 	<p>By an Independent accredited laboratory approved by CEA, contracted through the PMU.</p> <p>Technical support for preparing bid documents by PMDSC</p>
(ii)		As and when required	<ul style="list-style-type: none"> Correcting any environmental issue (i.e. oil spill, sedimentation, upon any 	-do-

¹³ Health and Safety Manual Rev 02 (Sept 2019) by PMDSC of MWSIP

¹⁴ Refer Chapter 09 and Section 10.3 of H&S Manual of MWSIP (Sept 2019)

#	Monitoring Scope	Frequency	Purpose/ Action	Agency Responsible
			complain or emergency / disaster due to flood, storm etc.)	
(iii)	Monitoring Environmental Contingency Plan (ECP) items particularly related with ecological, physical environment (hydrology, soil, erosion, slope failure, dust etc), socio-economic and conditions given by CEA Environmental approval	Monthly	<ul style="list-style-type: none"> ▪ Site Environmental monitoring walk around the site and other direct /indirect impact areas (disposal, stockpiling and Contractor's facilities) ▪ Completing the Monitoring checklist and collecting photographic evidences, public/ stakeholder consultation ▪ Accidental Environmental issues to be informed to the SEO / PIU and ES – PMU to take immediate remedial actions 	ES PMU/PMDSC jointly with SEO – PIU
(iv)	Monitoring Environmental Contingency Plan (ECP) items particularly related with ecological environment and spreading of IAS	Bi-annual	<ul style="list-style-type: none"> ▪ Carry out the periodical ecological surveys until the site is rewarded to a separate Contractor for completion, which will be a useful source of information to understand the changes of biodiversity in the area with site isolation, and same details can be used for updating EMP to aware the next Contractor to mobilize. 	PMU and PMDSC experts with personnel hired as the field assistants Employer / PMU to facilitate with financial and implementation arrangements
(v)	Reporting and reviewing	Monthly	<ul style="list-style-type: none"> ▪ Monthly compliance monitoring reports 	SEO of PIU Required technical assistance to be given by ES/EMS of PMDSC
(vi)	Site audit	Weekly-regular	Site environment monitoring walk round by SEO-PIU	SEO of PIU Required technical assistance to be given by ES/EMS of PMDSC
(vii)	Surprise site audit	Once in 2 months (minimum)	Un noticed site inspection/ document review by ES-PMU and ES-PMDSC	ES-PMU and ES-PMDSC
(viii)	Environment Monitoring Committee	Annually or as advice by CEA	Site monitoring, review of reports and mitigations adopted as decide by the EMC	ES-PMU to coordinate and required technical assistance to be given by ES/EMS of PMDSC
(ix)	Semi-Annual Environmental Monitoring Report for UECP (SAEMR)	SAEMR to ADB and EMC (CEA)	A summary of Project environment management over the last 6 months, including self-monitoring findings, issues with mitigations and independent ambient environment monitoring results,	Produce by PMDSC Review & Submit to ADB & CEA by PMU

#	Monitoring Scope	Frequency	Purpose/ Action	Agency Responsible
			progress in grievance redress and forecast for next 6 months etc.	
(x)	Progress Meeting of the Program	Monthly	Brief the key achievements, drawbacks and issues on environment management	PD-PIU, ES-PMU & PMDSC
(xi)	Steering Committee Meeting of the Program	Monthly	Brief the key achievements, drawbacks and issues with inputs from monthly progress meeting; on environment management	PD-PMU, PD-PIU (and ES-PMU & PMDSC as required)

44. The references, GoSL regulatory arrangements as national standards related to the environmental quality monitoring are shown in **Table 4-3**:

Table 4-3: Reference on the key GoSL Environmental Quality standards

Type of Licence or/ Parameter	Reference to the GoSL regulation
Environmental Protection License (EPL)	National Environmental Act, No. 47 of 1980 as amended by Act, Nos. 56 of 1988 and 53 of 2000. I,
Tolerance limits for waste discharge	National Environmental (Protection and Quality) Regulations, No. 1 of 2008
Prohibition of Polythene or any polythene product of 20 micron or below in thickness	Order published under the Gazette Notification No.1466/5 dated 10.10.2006
License for discharge, emission or disposal of waste/scheduled waste management	Regulations published under the Gazette Notification No. 1534/18 dated 01.02.2008
Municipal Solid Waste	Order published under the Gazette Notification No. 1627/19 dated 10.11.2009
Air emission, fuel & vehicle importation standards	Regulations published under the Gazette Notification No. 1295/11 dated 30.06.2003
Prohibition of Ozone depleting substances	Order published under the Gazette Notification No. 1309/20 dated 10.10.2003
List of vehicle exhaust emission standards	Order published under the Gazette Notification No. 1557/14 dated 09.07.2008
Permissible Ambient Air Quality Standards in relation to class of Air Pollutants	Regulations published under the Gazette Notification No. 1562/22 dated 15.08.2008
Air emission, fuel & vehicle Importation standards	Amended Regulations published under the Gazette Notification No. 1887/20 dated 05.11.2014 with the corrected Gazette Notification No. 1895/43 dated 02.01.2015
Noise Standards	Order published under the Gazette Notification No. 924/12 dated 23.05.1996 & Order published under the Gazette Notification No. 1738/37 dated 29.12.2011
Vibration standards	CEA interim standards (2008)
Hazardous waste disposal	Schedule VIII of Part 11 of the National Environmental (Protection & Quality) Regulation No. 1 of 2008, as amended by the gazette notification No. 1534/18 dated 01.02.2008 for the Scheduled Waste generation and disposal

45. As of ADB's SPS (2009), standards related to pollution control and emission need to be met with Environmental Health and Safety (EHS) guidelines for Air Emissions and Ambient Air Quality (2007)¹⁵ and WHO drinking water quality and effluent standards.

¹⁵ www.ifc.org/ehsguidelines

5 COST FOR IMPLEMENTING ECP

46. The Bill of Quantities (BOQ) for the EHS management cost considering the requirements addressed in the ECP is summarized in the Table 5-1 (for permanent work) and **Table 5-1** (for recurrent work). Quantities given are tentative and the final quantities and cost shall be estimated by the Employer or by the Engineer, considering the actual quantities of the work required at the contract termination.

Table 5-1: Bill of quantities for permanent Works

Item	Description	Unit	Quantity
1	Erecting Electrical Elephant Fence with Safety Net		
1.1	Erection of standard new electrical fence as per the given specifications, in section II & III	km	3.20
1.2	Protective Safety Net for small animals	km	3.20
1.3	Construction of Power room for electrical fence including all necessary equipment, fittings, wires for connections, transport, Power Room, etc. As per the engineer's requirement	No	1.00
2	Establish permanent security huts		
2.1	Construction of security huts	No	2.00
2.2	Provision of basic facilities (water, electricity, communication etc.)		
3	Display required sign boards and notices		
3.1	Preparing, printing and display arrangements of sign boards	Sum	
4	Protection for wildlife due to incomplete construction		
4.1	Complete all possible excavated sections with backfilling		
4.2	Remove all the barriers for animal movement, and the passages to be kept at least of 400 m width in-between 2 excavated sections which are unable to complete		
4.3	Deep sections to be encircled and protect with adequate suitable fencing, to prevent animal reaching such areas		
4.4	Install / construct temporary animal escape structures		
4.5	Suitably enrich immediate surrounding habitats of the canal trace as per the directions of the Wildlife Management Plan for UECP		
5	Manage stockpiles		
5.1	Remove unusable stockpiles from the UEC ICB 1 inside the protected area into the identified permanent disposal sites		
5.2	Stockpile usable material, disposal areas to be properly landscaped		
5.3	Maintain / manage topsoil areas		
6	Site cleaning		
5.1	Remove all debris which block the animal movements		

Item	Description	Unit	Quantity
5.3	Remove hazardous components such as oil, explosives, machinery etc.		
5.4	Reinstate / clean the areas where water can be stagnated		
7	Maintain planted areas		
7.1	Caretaker expenses		
7.2	Watering, weeding, gap filling of the planted area		

Table 5-2: Bill of Quantities for recurrent works

Item	Description	Unit	Quantity
1	Maintenance of Electrical Elephant Fence with Safety Net		
1.1	Allocation of an Electrician for maintenance of electrical fences	Man-Days	30.00
1.2	Allocation of an unskilled labour for cleaning of the shrub jungle along fence line and support day-to-day repairs of electrical fence to the electrician and maintenance of safety Net	Man-Days	60.00
2	Improvement / maintenance of Drainage Facilities		
2.1	Cleaning and maintenance of side drains for storm water in places where maintenance is required	Month	1.00
2.2	Temporary drains that were cut to drain the water resulting from dewatering to be reinstated		
2.3	Natural drainage paths, diversions to be re-established which are blocked due to UEC ICB 1 (CML) interventions		
3	Protection Against Soil Erosion and slope failure		
3.1	Construction of earthen bund (section of clay soil) along the edge of canal	Man-Days	5.00
3.2	Establish silt traps		
3.3	Arrange slope protection measures along the exposed deep excavated edges		
4	Protection Against Dust		
4.1	Establish sprinkler systems to prevent dust covering all possible dust generating sources including stockpile areas		
4.2	Arrangements for water bowser /s		
5	Health & safety		
5.1	Firefighting measures, especially adequate high-pressure water sources to be in place to control any wildfire	Man-Days	15.00
5.2	Stationary for maintaining logbooks etc.		
5.3	Establishment of sign boards		
6	Site Security		
6.1	Provide security person is to protection of the site, to cover 24 hrs in 02 shifts (Day and Night)	Man-Days	360.00

Item	Description	Unit	Quantity
6.2	Maintenance of blinking lights or luminous sign board at the road diversion	Man-Days	5.00
7	Site monitoring		
7.1	Carry out environmental quality monitoring (surface water quality, ambient air quality) biannual	Sum	
7.2	Carry out the periodical ecological surveys biannual	sum	
7.3	DWC/FD to be facilitated with required logistic and other facilities (fuel, cabs, firefighting measures, especially adequate high-pressure water sources to be in place to control any wildlife fire, captive and basic veterinary facilities in the wildlife range office to treat any injured animal)		
7.4	Facilitate EMC of CEA (annual)		

Annex A

Diagram showing construction progress by June 2020

Annex B

**Baseline Ecological Survey Report prepared by IUCN
in UECP-ICB-1 area**



Recommendations on Priority Areas Identified for Commencement of Constructions in the Upper Elahara Canal Project

Package I (Moragakanda Reservoir to Kongetiya Tank) Human Elephant Conflict Management Plan for Upper Elahara Canal Project MMDE / MWSIP/ ADB/ UECP/ 3267-3268-SRI / Consult / HECM / NCB / 2016 /004



December 2016

Report submitted by IUCN Sri Lanka Country Office to Mahaweli Water Security Investment Program of the Ministry of Mahaweli Development and Environment as part of the consultancy service deliverables for the 'Human Elephant Conflict Management Plan for Upper Elahera Cnal Project MMDE / MWSIP/ ADB/ UECP/ 3267-3268- SRI / Consult / HECM / NCB / 2016 /004'

Cover picture – Channel trace of UEC project package 1. Naalin Perera @IUCN Sri Lanka

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ABBREVIATIONS

BrR	Breeding Resident
CEA	Central Environmental Authority
NCS	National Conservation Status
CR	Critically Endangered
CR (PE)	Critically Endangered (possibly extinct)
DD	Data Deficient
EN	Endangered
END	Endemic Species
IAS	Invasive Alien Species
IUCN	International Union for Conservation of Nature
NT	Near Threatened
SpS	Species Status
VU	Vulnerable
WV	Winter Visitor

1. INTRODUCTION

1.1 Project Background

The Upper Elahera Canal (UEC) project of North Central Province Canal Stage 1 involves a trans-basin diversion of Mahaweli water to the North Central and Northern provinces.

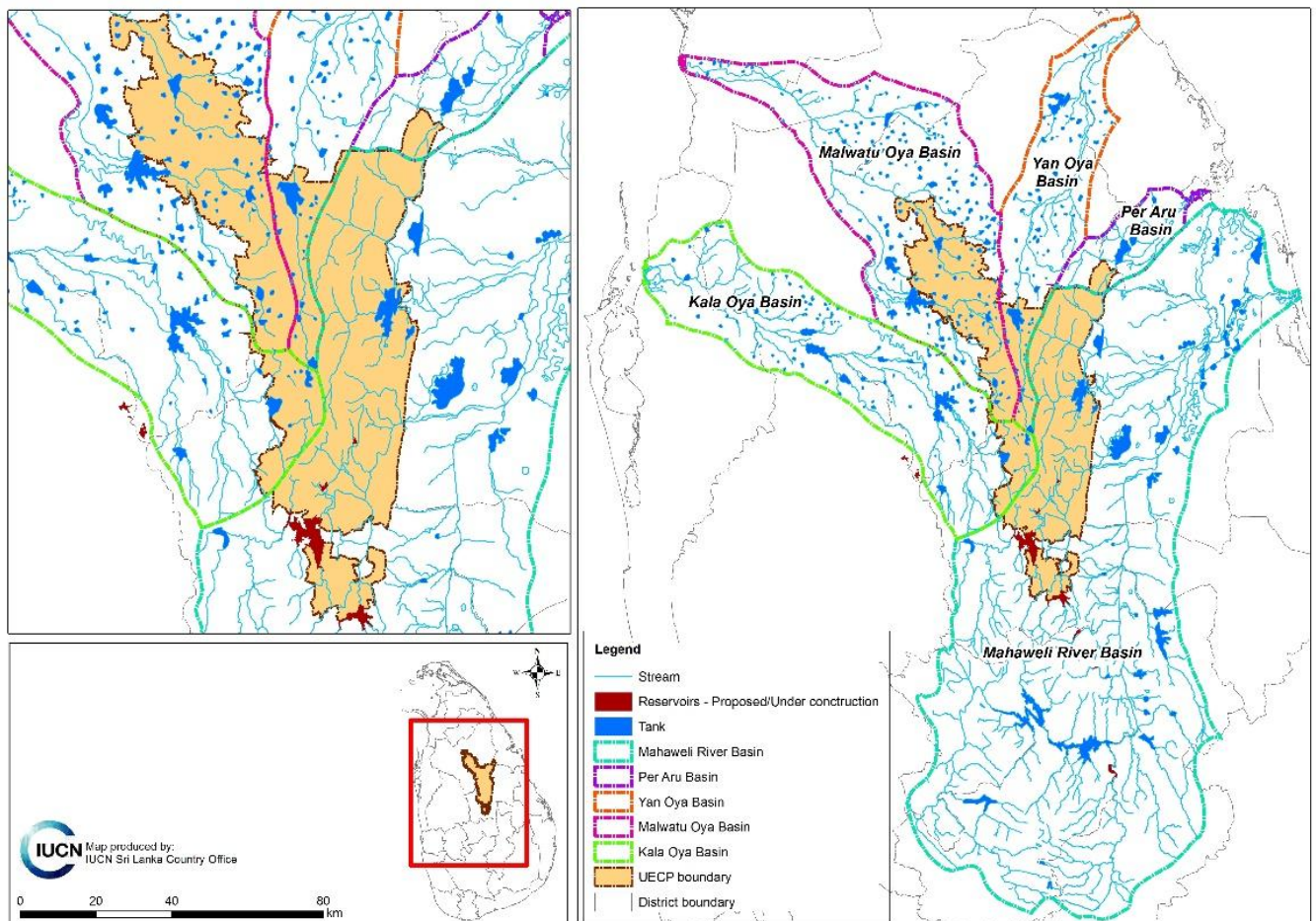


Figure 1. Location of the UEC Project

Water will be transferred from the Kalu Ganga reservoir to Moragahakanda, by the Kalu Ganga Moragahakanda Transfer Canal (KMTC). The Upper Elahera Canal (UEC) will then transfer water from Moragahakanda to Mahakanadarawa, via Mannankattiya Reservoir and Eru Wewa. It also will discharge water to Hurulu Wewa.

The main objective of the project is to provide increased water supplies to about 10,000 ha of land in water-deficit areas in the North Central Province of Sri Lanka. The water diverted will be used to augment three tanks in the upper Malwathu Oya basin and one in the Yan Oya basin. This augmentation will increase the cropping intensity of approximately 10,000 ha of land from the current level of 1.2 to 1.8 once the project is completed in 2021. The targeted cultivation areas are the command areas of:

- Mannakkattiya Reservoir (Malwathu Oya basin);
- Eru Wewa (Malwathu Oya basin);
- Mahakanadarawa Reservoir (Malwathu Oya basin); and
- Hurulu Wewa (Yan Oya basin).

1.2 Environmental impacts of the UEC project

Whilst the above activities will enhance the water availability for agriculture, thereby increasing agricultural production, as well as improving the socio-economic status of communities, the project will also have significant short and long-term environmental impacts, especially on the wildlife that inhabits the project affected area.

During the formulation of the EIA, several mitigation changes/measures were incorporated into project design to minimise impacts on the environment, such as (i) decreasing the length of the UEC within protected areas and where ever the terrain was steep (ii) changing the design from open canals to buried tunnels within protected areas and iii) changing from drilling and blasting to use of a tunnel boring machine for tunnel excavation, which has less negative environmental impacts than blasting.

However, both the KMTC and the UEC will pass through protected areas under the jurisdiction of both the Forest Department (FD) and the Department of Wildlife Conservation (DWC) and therefore, will have a substantial influence on the wildlife in the area. Sixty-eight percent of the UEC canal passes through protected areas. These are Elahera-Giritale Sanctuary, Minneriya Giritale Nature Reserve, Minneriya National Park (under the jurisdiction of the Department of Wildlife Conservation) and Hurulu Forest Reserve (under the jurisdiction of the Forest Department). Of these, the Elahera-Giritale Sanctuary will be most affected, as 40% of the canal trace passes through this sanctuary as an open canal or cut and cover sections. Here 120 ha of natural habitat will be lost (1% of the entire sanctuary). However, Minneriya National Park and Hurulu Forest Reserve are the least affected as in these areas the trace is an underground tunnel.

Based on the findings of the EIA study conducted for the NCP canal project and inception report submitted by IUCN in September 2016 three major impacts on wildlife have been identified.

These include:

Loss of habitat

The construction of the two major canals and associated structures will result in an estimated 160 ha of habitat loss in the Elahera-Giritale Sanctuary; as well as 15 ha in Minneriya National Park. In addition to this, impacts on Minneriya –Giritale Nature Reserve and Minneriya National Park due to construction activities are not significant. The canal will pass as an underground tunnel in parts of the Elehera –Giritale Sanctuary, Minneriya – Giritale Nature Reserve and along the border of Minneriya National Park.

Habitat fragmentation and loss of critical species

The project will result in the establishment of the KMTC and the UEC with estimated lengths of 9.2 km and 65.5 km respectively. Establishment of these canals will have two main impacts on the wildlife that is found in the habitats traversed by the open canal sections. Firstly, it will impair the free movement of terrestrial species, as the canal will function as a direct physical barrier. Secondly, animals attempting to cross the canal may fall into the canal, resulting in injury or death to such animals. The establishment of the canal other than the tunnel sections will also result in removal of vegetation present along the canal trace. These areas may be inhabited by critical species (rare, endemic or threatened species),

which are incapable of moving out of these areas without human assistance and therefore, will perish resulting in local or total extirpation of such species.

Escalation of Human-elephant Conflict

The area that will receive water under the project can be classified as a medium Human-elephant Conflict (HEC) area, especially the command areas of the Mahakanadarawa, Hurulu Wewa, Manakkatiya Wewa and Eru Wewa that will receive increased irrigation water under the project and the settlements and cultivations located near the Elahera-Giritale Sanctuary. The UEC project, which will enhance irrigation water availability in for the Hurulu wewa, Eru Wewa and Manakkatiya Wewa, will result in a change in the cropping intensity in the command areas of these tanks and therefore will lead to an escalation of the human-elephant conflict, which, in turn, will result in the reduction of the project benefits.

Therefore, one of the conditions imposed by the project approving agency — the Central Environmental Authority (CEA) — during project approval is to prepare and implement a Human-elephant Conflict Management Plan (HECMP), with a special emphasis on mitigation of human-elephant conflict in the area. The project proponent, in turn, contracted IUCN, Sri Lanka Country Office to prepare the said HECMP which will be completed in June 2017.

However, since the project proponent has indicated that work under the package I (a 3 km stretch from Moragahakanda reservoir or Kongetiya tank), needs to be undertaken before the completion of HECMP, it was agreed to undertake some of the work that should be done during stage 2 of the WMP such as translocation and transplanting of animal and plant species that are of conservation significance that inhabits the area affected by the project will be undertaken during Stage 1. Therefore, this study was undertaken to investigate the area affected by the package I (a 3.5 km stretch from Moragahakanda reservoir or Kongetiya tank), to determine whether there are any critical habitats or species in the areas impacted by the construction work under package 1 and if so to make changes in the construction corridor to avoid the impact and failing that to translocate/ transplant any critical species to a suitable location(s).

1.3 Objective

Objective of the present study is to identify whether the area affected by package I (a 3.5 km stretch from Moragahakanda reservoir or Kongetiya tank) will have a significant impact on critical habitats or species and if such an impact (s) was identified, to provide recommendations to avoid or minimize such impacts.

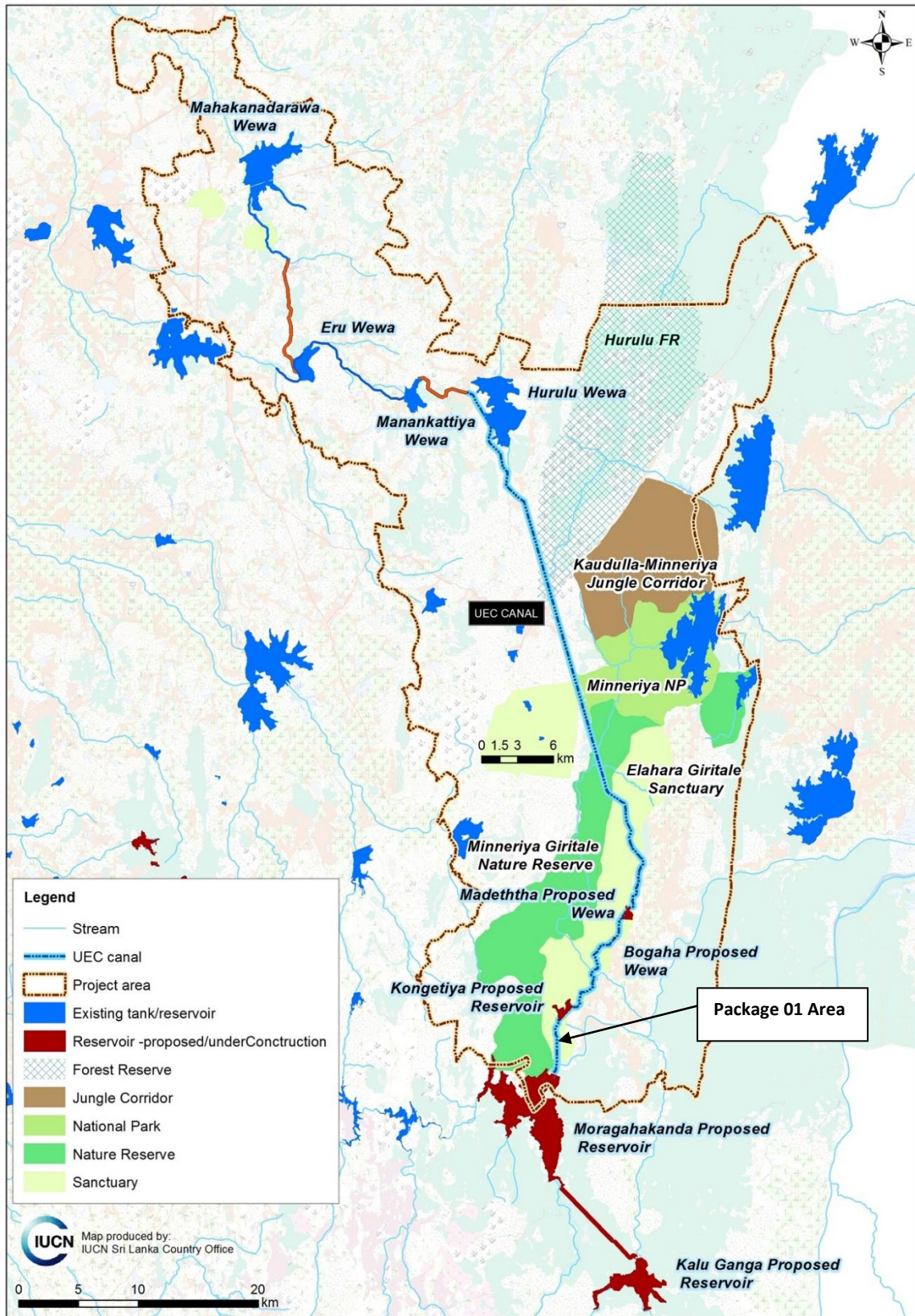


Figure 1. UEC trace with package 01 area

2. METHODOLOGY

The aim of this study has been to identify the anticipated impacts that would arise due to habitat clearance in order to establish the 3.5 m long segment of the Upper Elahara Canal starting from Moragahakanda reservoir to Kongetiya Tank under package 1.

The total length of the canal trace established under package 1 is 3.5 km long of which the first 0.75 km will pass through an already cleared or disturbed area for the construction work of Moragahakanda reservoir. The impacts arising due to this segment is already covered by the wildlife management plan of the Moragahakanda reservoir project and therefore not considered under this activity. The field investigations were carried out in the rest of the canal trace up to the Kongetiya tank.

Flora

Floral species found along the trace of the proposed UEC canal from Moragahakanda reservoir to Kongetiya Tank was studied. Species identification was based on the current field identification books listed in Table 1 as well as comparison with herbarium specimens.

Table 1: Key references used for the identification and classification of flora

Subject	Source
Invasive species	MoE 2015
Taxonomic identification	Ashton <i>et al.</i> 1997; Dassanayake and Fosberg (1980 - 1991); Dassanayake <i>et al.</i> (1994-1995); Dassanayake and Clayton (1996 -1999), Senaratne, 2001; Vlas and Vlas, 2008 & 2013.
Medicinal value	Sugathadasa <i>et al.</i> 2008.
Plant classification and conservation status	MoE, 2012.

Fauna

Faunal species were recorded by direct observation in most cases supplemented with indirect observations. Aquatic fauna as well as aquatic associates faunal species was studied based on visual observations made from the banks of the stream. Seasonal streams which cross the canal trace was filled with water due to heavy rains that prevailed during the sampling period, triggering upstream migration of fish that were observed in abundance in isolated pools. Such, fish was identified based on visual observations or when this was not possible they were collected using hand nets for the purpose of identification. Species identification was done by using the most recent field identification guides listed in Table 2.

Table 2: Key references used for the identification and classification of fauna

Subjects		Reference Source
Species Identification	Aquatic snails	Raheem and Naggs, 2006
	Dragonflies	Bedjanic <i>et al.</i> 2007; Bedjanic <i>et al.</i> 2014.
	Butterflies	D' Abrera, 1998; Jayasinghe <i>et al.</i> , 2013.
	Reptiles	Somaweera, 2006; Somaweera and Somaweera, 2009
	Birds	Harrison, 1999; Warakagoda, et al., 2012
	Mammals	Phillips, 1935; Kotagama and Goonatilake, 2013.
Nomenclature		MoE, 2012.
Conservation status		MoE, 2012.

Species Prioritization

The critical species such endemic and/or threatened species of plants and animals that show low mobility observed in the area that is identified for land clearing or seasonal streams whose flow regime is likely to be disturbed were evaluated to identify whether any of these species require translocation or transplantation to a safer site before commencing the construction work. The process of selection of priority species is a means by which species are shortlisted for translocation or transplanting. This is done based on a multi criteria analysis. For each criterion, a score is assigned based on several sub criteria. Each species was scored against the criteria, and those that receive a higher score are chosen for translocation/ transplantation.

Criteria used for flora

1. **Status of the species:** indigenous (1); common endemic or common new spp. (2); restricted endemic or restricted new spp. (3) point endemic or point new spp. (4).
2. **Distribution:** island wide (0), 4 bioclimatic zones (1); 3 bioclimatic zones (2); 2 or 1 bioclimatic zones (3); 1 Bioclimatic zone and restricted to project area (4).
3. **Use value:** Non-use (0); crop wild relative (3); other use (3); crop wild relative and other use (4)
4. **Conservation:** Nationally NT (1); Nationally DD/NE (2); Nationally VU (3); Nationally EN (4); Nationally CR (5); Nationally CR (PE) (6); Globally NT (1.5); Globally DD/NE (2.5); Globally VU (3.5); Globally EN (4.5); Globally CR (5.5); Globally CR (PE) (6.5).

Criteria used for fauna

1. **Status of species:** indigenous (1); common Endemic or common new spp. (2); restricted Endemic or restricted new spp. (3); point endemic or point new spp. (4).

2. **Distribution:** islandwide (0); 4 bioclimatic zones (1); 3 bioclimatic zones (2); 2 or 1 bioclimatic zones (3); 1 bioclimatic zone and restricted to project area (4).
3. **Impact of Project:** Positive impact (-2); no impact (0); negative impact (+2).
4. **Conservation:** Nationally NT (1); Nationally DD/NE (2); Nationally VU (3); Nationally EN (4); Nationally CR (5); Nationally CR (PE) (6); Globally NT (1.5); Globally DD/NE (2.5); Globally VU (3.5); Globally EN (4.5); Globally CR (5.5); Globally CR (PE) (6.5)

Species that receive a score of 10 or above based on the above analysis should be translocated or transplanted to suitable safer location. The methodology that should be followed for translocation or transplantation of species is given in Annex III.

3. Results

Based on the field surveys, EIA report and literature review following wildlife related issues have been identified.

A. loss of habitat

Approximately 12.5 hectares of habitats will be destroyed due to clearance of forest land within the Elehara-Giritale Sanctuary. Following habitat types have been identified along the canal trace that will be established under package 1.

1. Moist-mixed evergreen forests (Intermediate Forest)
2. Grasslands
3. Seasonal Streams
4. Rock outcrop forests
5. Scrublands

B. Habitat fragmentation and loss of critical species

The 2.5 kilometer stretch of canal (approximately 50 meter wide) that passes through the natural vegetation will be temporally fragmented. However, since this section is designed to be built as a cut and cover section the fragmentation effect will take place only during the construction phase of the project.

C. Impact on critical Species

A total of 147 faunal species and 131 plant species were recorded along the canal trace that will be impacted due to the construction work under the package 1 of the UEC project. The fauna recorded included 22 endemic species and 11 threatened species including one Critically Endangered species of fish *Devario cf. aequipinnatus*.

Table 3. Summary of faunal species observed in the areas affected by the package I of UECP

Taxonomic Group	Recorded from Sri Lanka										
	Total	Native	Endemic	Migrant	Exotic	CR (PE)	CR	EN	VU	NT	DD
Land snails	4	4	2	0	0	0	0	2	0	1	0
Dragonflies	7	7	0	0	0	0	0	0	0	2	0

Taxonomic Group	Recorded from Sri Lanka										
	Total	Native	Endemic	Migrant	Exotic	CR (PE)	CR	EN	VU	NT	DD
Butterflies	33	33	1	0	0	0	0	0	1	1	0
Crabs	1	1	1	0	0	0	0	1	0	0	0
Fishes	3	3	2	0	0	0	1	0	1	0	0
Amphibians	3	3	1	0	0	0	0	1	0	0	0
Reptiles	9	9	5	0	0	0	0	1	0	1	0
Birds	74	56	9	9	0	0	0	0	0	3	0
Mammals	13	12	1	0	0	0	0	1	2	2	0
Total	147	137	22	9	0	0	1	6	4	10	0

The 131 plant species recorded along the canal trace included 9 species that are endemic to Sri Lanka and 14 species listed as nationally threatened. Further, 9 species of exotic plants including 2 invasive alien plant species were also recorded. The detailed list of flora and fauna observed in the area that will be directly impacted due to construction work under package 1 are given in Annex 1 and 2 respectively.

Critical Species analysis:

Fauna: Altogether 12 species of fauna that are listed as endemic or threatened and will not be able to move out from the zone of disturbance without assistance was subjected for the critical species analysis (refer table 4). Four species of fauna were identified as species that require translocation from the area that will be subjected to vegetation clearance.

Table 4. Species prioritization for Endemic and/or Threatened Animal Species

Species Name	Common Name	End.	Con. Status	Dist.	Impact	Total
<i>Euplecta layardi</i>	Land Snail	2	3	3	2	10
<i>Cyclophorus involvulus</i>	Land Snail	0	3	3	2	8
<i>Theobaldius parma</i>	Land Snail	2	3	3	2	10
<i>Oziothelphusa minneriyaensis</i>	Freshwater Crab	2	4	2	2	10
<i>Devario cf. aequipinnatus</i>	Knuckles Danio	2	5	2	0	9

Species Name	Common Name	End.	Con. Status	Dist.	Impact	Total
<i>Garra ceylonensis</i>	Stone sucker	1	2	1	0	4
<i>Microhyla mihinthalai</i>	Red narrow mouth frog	1	0	1	0	2
<i>Calotes ceylonensis</i>	Painted lip lizard	1	1	2	2	6
<i>Otocryptis nigristigma</i>	Black spotted kangaroo lizard	1	0	2	2	5
<i>Eutropis greeri</i>	Bronze-green little skink	1	2	2	2	7
<i>Lankascincus fallax</i>	Common lanka skink	1	0	1	2	4
<i>Rhinophis philippinus</i>	Cuvier's earth snake	2	4	3	2	11

Flora: Altogether 21 species of plants that are listed as endemic or threatened was subjected for the critical species analysis (refer table 5). Only a single plant species was identified as species that require transplantation from the area that will be subjected to vegetation clearance.

Table 5. Species prioritization for Endemic and/or Threatened Plant Species

Family	Species	Common Name	Status	Dist	Use	Con. St.	Total
Achariaceae	<i>Hydnocarpus venenata</i>	Makulu	1	1	0	0	2
Amaryllidaceae	<i>Crinum latifolium</i>	Goda manel	0	1	0	3	3
Anacardiaceae	<i>Mangifera zeylanica</i>	Atamba	1	1	3	0	5
Annonaceae	<i>Uvaria sphenocarpa</i>		1	0	0	0	1
Begoniaceae	<i>Begonia cordifolia</i>	Gal-ambala	0	1	0	3	4
Celastraceae	<i>Cassine congylos</i>		1	2	0	3	6
Celastraceae	<i>Salacia oblonga</i>	Himbutu	0	1	3	4	8
Ebenaceae	<i>Diospyros ebenoides</i>	Kalu-habaraliya	1	1	3	4	8
Ebenaceae	<i>Diospyros ebenum</i>	kaluwara	0	1	3	4	8
Fabaceae	<i>Dendrolobium triangulare</i>		0	3	3	4	10
Fabaceae	<i>Derris parviflora</i>	Kala-wel	1	1	0	0	2

Family	Species	Common Name	Status	Dist	Use	Con. St.	Total
Loganiaceae	<i>Strychnos benthamii</i>		1	1	0	1	3
Loganiaceae	<i>Strychnos potatorum</i>	Ingini	0	0	3	3	6
Orchidaceae	<i>Vanda spathulata</i>		0	3	0	3	6
Phyllanthaceae	<i>Margaritaria indica</i>	Karawu	0	1	0	3	4
Phyllanthaceae	<i>Sauropus rigidus</i>	Ginihiriya	1	0	0	1	2
Rubiaceae	<i>Canthium puberulum</i>		1	1	0	1	3
Rubiaceae	<i>Psilanthus wightianus</i>		0	1	0	3	4
Rutaceae	<i>Chloroxylon swietania</i>	Burutha	0	1	3	3	7
Sapotaceae	<i>Manilkara hexandra</i>	Palu	0	1	3	3	7
Zingiberaceae	<i>Curcuma oligantha</i>		0	1	3	3	7

D. Escalation of Human-Elephant Conflict

Based on the previous observations of the EIA report of project and observations made during the present study, high elephant presence was observed in the canal trace. The free movement of these elephants is significantly affected due to the construction work of the Moragahakanda reservoir and settlements in the Elahera area. Construction of UEC will further aggravate this situation as it will create a bottle neck in the elephant corridor established between the Elehara-Girithale Sanctuary and forested areas of the Moragahakanda. Total width of this bottle necked stretch is approximately 500 meters and the Moragahakanda project office complex is located towards western end of this area. Naula-Elahera road is also located in this narrow forested area that elephants can use to cross over to the Elehara-Girithale Sanctuary. Therefore, the existing level of human-elephant conflict is likely to escalate due to proposed land clearance activities that will be carried out under the package 1 of UEC.



Map 2 - Map showing the bottle neck created for elephant movement and the possible impact of the UEC package 1 on the free movement of Elephants

RECOMMENDATIONS TO MITIGATE POTENTIAL IMPACT ON THE WILDLIFE INHABITING THE PROJECT AFFECTED AREA OF THE PACKAGE 1 OF UECP

A. Mitigation measures for the impact on habitats

- Habitat destruction should be minimized during the construction period and it is proposed to use existing road network as much as possible to access the canal trace.
- Restore habitats with native species is vital after the construction work. It is recommended to establish the same habitat types that existed on the canal trace before the vegetation clearance is undertaken for construction work during the restoration phase. For example grassland areas should not be converted to forest after the constructions, but restored as grasslands.
- If natural waterways or seasonal streams are affected due to construction work the streams should be restored to the preconstruction state after the construction work. Contractors should map the stream path using a GPS to facilitate identification of the original stream path after construction work is completed.
- It is recommended to implement Invasive Alien Plant species control/management programme during and after the construction period. A special emphasis should be given to control of IAS during the post project restoration period.

B. Mitigation measures for Habitat fragmentation and loss of critical species

Fragmentation of Habitat:

The fragmentation effect will be limited to the construction period as this section of the canal will be cut and cover type. Therefore, once the construction is completed the canal trace should be restored once the construction is completed.

Loss of critical species:

Based on the critical species analysis four species of animals and one plant species observed in the canal trace was identified as species that require translocation/transplantation. However, it is recommended that during vegetation clearing if an animal that is not listed below but would need assistance to move out of the disturbance area should be translocated out of the canal trace opportunistically. Since the canal trace is established inside a protected area translocation or transplantation can take place within the Elehara-Girithale Sanctuary. It is recommended that this translocation/ transplantation should be done on the right bank, beyond 1 km from the channel trace, an area which is less likely to be disturbed due to construction activity. It should be noted that translocation of animals should be done immediately prior to vegetation clearance is undertaken to prevent recolonization of the cleared areas.

Species Name	Common Name	Remarks
<i>Euplecta layardi</i>	Land Snail	This species is nocturnal and therefore night sampling may be required
<i>Theobaldius parma</i>	Land Snail	This species is nocturnal and therefore night sampling

Species Name	Common Name	Remarks
		may be required
<i>Oziothelphusa minneriyaensis</i>	Freshwater Crab	Freshwater crabs live in seasonal streams even during the dry season. Therefore, stream bed will have to be explored to collect them.
<i>Rhinophis philippinus</i>	<i>Cuvier's earth snake</i>	Generally found underneath rocks and leaf litter Therefore, litter clearance and turning over rocks and logs on the forest floor will be required to collect this species
<i>Dendrolobium triangulare</i>		This is a rare plant species and translocation will have to be done during the wet season. If it is not possible the plant must be maintained in a nursery until the onset of the wet season

C. Mitigation measures for the Human-Elephant Conflict

It is recommend to implement the recommendations given in the EIA report to minimize the human elephant conflict.

- Supply roads and any other disturbances should be limited to the left bank of the proposed canal as that area already contains supply roads. Construction of the proposed supply roads on the right bank of the first two kilometers of the proposed package 1 area should be avoided as this may block the free movements of elephants leading to the escalation of the conflict.
- It is recommended to manage the Giant Mimosa infestation in the newly constructed tank under the package 1 area to increase the food availability to elephants.
- Strengthening and continuous monitoring of the electric fence which is located along the package 1 area.
- Establish a temporary electric fence around the excavated areas to avoid accidental falling of elephants into open ditches.
- Limit noise generating activities to day time to reduce disturbance to free movement of elephants.

Further to above recommendations, design features which have been already incorporated to UEC project will help to mitigate Human elephant conflict. Water bodies and ponding areas which are created by level crossings (Kongetiya, Bogaswewa and Madaththawa) incorporated into the UEC will help to improve the access to water for wildlife. The design modification that enables large animals to climbs down into the canal from the side of the protected area but preventing them from climbing out from the side of the settlement. Creation of small reservoirs for wildlife is especially important during the dry season.

The UEC, at some points, acts as a barrier to wild animals and act as a barrier to further encroachment by people into protected areas where the canal runs along the borders.

ANNEX 1 – DETAILED LIST OF FAUNA RECORDED IN PACKAGE 1 AFFECTED AREA OF THE UEC PROJECT

Mollusks

Family	Scientific Name	SpS	CoS	0m to 900m	900m 2900m	2900m 3800m
Ariophantidae	<i>Euplecta layardi</i>	END	EN	0	1	0
Cyclophoridae	<i>Cyclophorus involvulus</i>	IND	EN	0	1	1
Cyclophoridae	<i>Theobaldius parma</i>	END	EN	0	1	1
Cyclophoridae	<i>Pterocyclus cumingi</i>	IND	NT	0	1	1

Dragonflies

Family	Scientific Name	English Name	SpS	CoS	0m 900m	900m 2900m	2900m 3800m
Libellulidae	<i>Lathrecista asiatica</i>	Pruinosed Bloodtail	IND	NT	0	1	1
Libellulidae	<i>Orthetrum sabina</i>	Green Skimmer	IND	LC	0	0	1
Libellulidae	<i>Brachythemis contaminata</i>	Asian Groundling	IND	LC	0	1	1
Libellulidae	<i>Diplacodes trivialis</i>	Blue Percher	IND	LC	0	1	0
Libellulidae	<i>Neurothemis intermedia</i>	Paddyfield Paraspl	IND	NT	0	1	1
Libellulidae	<i>Pantala flavescens</i>	Wandering Glider	IND	LC	1	1	0
Libellulidae	<i>Tramea limbata</i>	Sociable Glider	IND	LC	1	1	0

Butterflies

Family	Scientific Name	English Name	SpS	CoS	0m 900m	900 2900m	2900 3800m
Papilionidae	<i>Graphium agamemnon</i>	Green jay	IND	LC	0	1	1
Papilionidae	<i>Pachliopta aristolochiae</i>	Common rose	IND	LC	0	1	1
Papilionidae	<i>Pachliopta hector</i>	Crimson rose	IND	LC	0	1	1
Papilionidae	<i>Papilio crino</i>	Banded peacock	IND	VU	0	1	1
Papilionidae	<i>Papilio demoleus</i>	Lime butterfly	IND	LC	0	1	1
Papilionidae	<i>Papilio polymnestor</i>	Blue mormon	IND	LC	0	0	1
Papilionidae	<i>Papilio polytes</i>	Common mormon	IND	LC	0	1	1
Pieridae	<i>Appias galane</i>	Lesser albatross	END	LC	0	1	0
Pieridae	<i>Catopsilia pomona</i>	Lemon emigrant	IND	LC	0	1	0
Pieridae	<i>Catopsilia pyranthe</i>	Mottled emigrant	IND	LC	0	1	0
Pieridae	<i>Cepora nerissa</i>	Common gull	IND	LC	0	1	1
Pieridae	<i>Delias eucharis</i>	Jezebel	IND	LC	1	1	1
Pieridae	<i>Eurema hecabe</i>	Common grass yellow	IND	LC	0	1	0
Pieridae	<i>Ixias pyrene</i>	Yellow orange tip	IND	LC	0	1	1
Nymphalidae	<i>Acraea violae</i>	Tawny costor	IND	LC	0	1	0
Nymphalidae	<i>Danaus chrysippus</i>	Plain tiger	IND	LC	0	1	1
Nymphalidae	<i>Danaus genutia</i>	Common tiger	IND	LC	0	0	1
Nymphalidae	<i>Euploea core</i>	Common crow	IND	LC	0	0	1
Nymphalidae	<i>Euploea klugii</i>	Brown king crow	IND	LC	0	0	1
Nymphalidae	<i>Euploea sylvester</i>	Double-banded crow	IND	NT	0	1	1
Nymphalidae	<i>Hypolimnas bolina</i>	Great eggfly	IND	LC	0	1	1
Nymphalidae	<i>Hypolimnas misippus</i>	Danaid Eggfly	IND	LC	0	0	1
Nymphalidae	<i>Junonia almana</i>	Peacock pansy	IND	LC	0	1	1
Nymphalidae	<i>Junonia atlites</i>	Grey pansy	IND	LC	0	1	1

Family	Scientific Name	English Name	SpS	CoS	0m 900m	900 2900m	2900 3800m
Nymphalidae	<i>Junonia iphita</i>	Chocolate soldier	IND	LC	0	1	1
Nymphalidae	<i>Junonia lemonias</i>	Lemon pansy	IND	LC	0	1	1
Nymphalidae	<i>Melanitis leda</i>	Common evening brown	IND	LC	0	0	1
Nymphalidae	<i>Neptis hylas</i>	Common sailor	IND	LC	0	0	1
Nymphalidae	<i>Parantica aglea</i>	Glassy tiger	IND	LC	0	1	1
Nymphalidae	<i>Tirumala limniace</i>	Blue tiger	IND	LC	0	1	0
Nymphalidae	<i>Ypthima ceylonica</i>	White four-ring	IND	LC	0	1	0
Lycaenidae	<i>Chilades lajus</i>	Lime Blue	IND	LC	0	1	0
Lycaenidae	<i>Leptotes plinius</i>	Zebra Blue	IND	LC	1		

Freshwater Crabs

Family	Scientific Name	SpS	CoS	0 to 900m	900 2900m	2900 3800m
Gecarcinucidae	<i>Oziothelphusa minneriyaensis</i>	END	EN	1	1	1

Freshwater Fishes

Family	Scientific Name	English Name	SpS	CoS	0m 900m	900 2900m	2900 3800m
Cyprinidae	<i>Devario cf. aequipinnatus</i>	Knuckles Danio	END	CR	0	1	0
Cyprinidae	<i>Garra ceylonensis</i>	Stone sucker	END	VU	0	1	0
Cyprinidae	<i>Rasbora microcephalus</i>	Thin line Rasbora	IND	LC	0	1	0

Amphibians

Family	Scientific Name	English Name	SpS	CoS	0m 900m	900 2900m	2900 3800m
Microhylidae	<i>Microhyla mihinthalai</i>	Red narrow mouth frog	END	LC	0	0	1
Dicroglossidae	<i>Euphlyctis cyanophlyctis</i>	Skipper frog	IND	LC	0	1	1
Dicroglossidae	<i>Zakerana shyadrensis</i>	Common paddy field frog	IND	LC	1	1	1

Reptiles

Family	Scientific Name	English Name	SpS	CoS	0m 900m	900 2900m	2900 3800m
Agamidae	<i>Calotes calotes</i>	Green garden lizard	IND	LC	0	1	0
Agamidae	<i>Calotes ceylonensis</i>	Painted lip lizard	END	NT	0	1	1
Agamidae	<i>Otocryptis nigristigma</i>	Black spotted kangaroo lizard	END	LC	0	0	1
Gekkonidae	<i>Hemidactylus frenatus</i>	Common house-gecko	IND	LC	0	0	1
Scincidae	<i>Eutropis greeri</i>	Lowland Bronzegreen little skink	END	NE	0	0	1
Scincidae	<i>Lankascincus fallax</i>	Common lankaskink	END	LC	0	1	0
Varanidae	<i>Varanus bengalensis</i>	Land monitor	IND	LC	0	1	0
Varanidae	<i>Varanus salvator</i>	Water monitor	IND	LC	0	1	0
Uropeltidae	<i>Rhinophis philippinus</i>	Cuvier's earth snake	END	EN	0	1	0

Birds

Family	Scientific Name	English Name	SpS	CoS	0m 900m	900 2900m	2900 3800m
Phasianidae	<i>Gallus lafayetii</i>	Sri Lanka Junglefowl	END	LC	0	1	1
Phasianidae	<i>Pavo cristatus</i>	Indian Peafowl	BrR	LC	0	1	1
Picidae	<i>Dinopium psarodes</i>	Sri Lanka Lesser Flameback	END	LC	0	1	0
Ramphastidae	<i>Megalaima zeylanica</i>	Brown-headed Barbet	BrR	LC	1	1	1
Ramphastidae	<i>Megalaima rubricapilla</i>	Crimson-fronted Barbet	Pro: END	LC	1	1	1
Ramphastidae	<i>Megalaima haemacephala</i>	Coppersmith Barbet	BrR	LC	1	1	1
Bucerotidae	<i>Ocyceros gingalensis</i>	Sri Lanka Grey Hornbill	END	LC	0	1	0
Bucerotidae	<i>Anthracoceros coronatus</i>	Malabar Pied Hornbill	BrR	LC	0	1	1
Alcedinidae	<i>Alcedo atthis</i>	Common Kingfisher	BrR	LC	0	1	0
Alcedinidae	<i>Pelargopsis capensis</i>	Stork-billed Kingfisher	BrR	LC	0	1	0
Meropidae	<i>Merops orientalis</i>	Green Bee-eater	BrR	LC	1	1	1
Meropidae	<i>Merops philippinus</i>	Blue-tailed Bee-eater	BrRWV	NE	1	1	1
Cuculidae	<i>Cuculus micropterus</i>	Indian Cuckoo	SU	NE	1	1	1
Cuculidae	<i>Cacomantis sonneratii</i>	Banded Bay Cuckoo	BrR	NT	0	0	1
Cuculidae	<i>Chrysococcyx maculatus</i>	Asian Emerald Cuckoo	WVa	NE	0	1	0
Cuculidae	<i>Eudynamis scolopacea</i>	Asian Koel	BrR	LC	0	1	0
Cuculidae	<i>Centropus sinensis</i>	Greater Coucal	BrR	LC	1	1	1
Psittacidae	<i>Psittacula krameri</i>	Rose-ringed Parakeet	BrR	LC	1	1	1
Apodidae	<i>Cypsiurus balasiensis</i>	Asian Palm Swift	BrR	LC	1	1	1
Hemiprocnidae	<i>Hemiproctne coronata</i>	Crested Treeswift	BrR	LC	1	1	1
Columbidae	<i>Streptopelia chinensis</i>	Spotted Dove	BrR	LC	1	1	1
Columbidae	<i>Chalcophaps indica</i>	Emerald Dove	BrR	LC	0	1	1
Columbidae	<i>Treron pompadora</i>	Pompadour Green- pigeon	Pro: END	LC	0	1	0
Columbidae	<i>Ducula aenea</i>	Green Imperial Pigeon	BrR	LC	0	0	1
Burhinidae	<i>Esacus recurvirostris</i>	Great Thick-knee	BrR	LC	0	1	0
Charadriidae	<i>Vanellus indicus</i>	Red-wattled Lapwing	BrR	LC	0	1	0
Accipitridae	<i>Haliastur indus</i>	Brahminy Kite	BrR	LC	0	1	0
Accipitridae	<i>Spilornis cheela</i>	Crested Serpent Eagle	BrR	LC	1	1	1
Accipitridae	<i>Ictinaetus malayensis</i>	Black Eagle	BrR	NT	0	1	0
Ardeidae	<i>Egretta garzetta</i>	Little Egret	BrR	LC	0	1	0
Ardeidae	<i>Ardea purpurea</i>	Purple Heron	BrR	LC	0	1	0
Ardeidae	<i>Casmerodius albus</i>	Great Egret	BrR	LC	0	1	0
Ardeidae	<i>Ardeola grayii</i>	Indian Pond Heron	BrR	LC	0	1	0
Chloropseidae	<i>Chloropsis jerdoni</i>	Blue-winged Leafbird	BrR	LC	1	1	1
Laniidae	<i>Lanius cristatus</i>	Brown Shrike	WV	NE	1	1	1
Artamidae	<i>Artamus fuscus</i>	Ashy Woodswallow	BrR	LC	0	1	0
Oriolidae	<i>Oriolus xanthornus</i>	Black-hooded Oriole	BrR	LC	1	1	1
Dicruidae	<i>Dicrurus caerulescens</i>	White-bellied Drongo	BrR	LC	0	1	1
Dicruidae	<i>Dicrurus paradiseus</i>	Great Racket-tailed Drongo	BrR	NT	0	0	1
Monarchidae	<i>Hypothymis azurea</i>	Black-naped Monarch	BrR	LC	0	1	1
Monarchidae	<i>Terpsiphone paradisi</i>	Asian Paradise- flycatcher	BrR/WV	LC	0	1	1
Corvidae	<i>Corvus leucomelas</i>	Large-billed Crow	BrR	LC	0	0	1
Campephagidae	<i>Coracina melanoptera</i>	Black-headed Cuckooshrike	BrR	LC	0	1	0
Campephagidae	<i>Pericrocotus flammeus</i>	Scarlet Minivet	BrR	LC	0	1	0
Campephagidae	<i>Tephrodornis pondicerianus</i>	Common Woodshrike	Pro: END	LC	0	1	1

Family	Scientific Name	English Name	SpS	CoS	0m 900m	900 2900m	2900 3800m
Aegithinidae	<i>Aegithina tiphia</i>	Common Iora	BrR	LC	1	1	1
Muscicapidae	<i>Muscicapa daurica</i>	Asian Brown Flycatcher	WV	NE	1	1	1
Muscicapidae	<i>Cyornis tickelliae</i>	Tickell's Blue Flycatcher	BrR	LC	0	1	1
Muscicapidae	<i>Copsychus saularis</i>	Oriental Magpie Robin	BrR	LC	0	1	1
Muscicapidae	<i>Copsychus malabaricus</i>	White-rumped Shama	BrR	LC	1	1	1
Muscicapidae	<i>Saxicoloides fulicata</i>	Indian Robin	BrR	LC	1	0	1
Sturnidae	<i>Acridotheres tristis</i>	Common Myna	BrB	LC	0	1	1
Hirundinidae	<i>Hirundo rustica</i>	Barn Swallow	WV	NE	1	1	1
Hirundinidae	<i>Hirundo daurica</i>	Red-rumped Swallow	Pro: END	LC	1	0	0
Pycnonotidae	<i>Pycnonotus melanicterus</i>	Black-crested Bulbul	Pro: END	LC	0	1	0
Pycnonotidae	<i>Pycnonotus cafer</i>	Red-vented Bulbul	BrR	LC	0	1	1
Pycnonotidae	<i>Pycnonotus luteolus</i>	White-browed Bulbul	BrR	LC	0	1	1
Cisticolidae	<i>Prinia hodgsonii</i>	Grey-breasted Prinia	BrR	LC	0	1	0
Cisticolidae	<i>Prinia sylvatica</i>	Jungle Prinia	BrR	LC	0	1	1
Cisticolidae	<i>Prinia socialis</i>	Ashy Prinia	BrR	LC	0	1	1
Zosteropidae	<i>Zosterops palpebrosus</i>	Oriental White-eye	BrR	LC	0	0	1
Sylviidae	<i>Acrocephalus dumetorum</i>	Blyth's Reed Warbler	WV	NE	0	1	1
Sylviidae	<i>Orthotomus sutorius</i>	Common Tailorbird	BrR	LC	1	1	1
Sylviidae	<i>Phylloscopus trochiloides</i>	Greenish Warbler	WV	NE	0	1	1
Sylviidae	<i>Phylloscopus magnirostris</i>	Large-billed Leaf Warbler	WV	NE	0	1	1
Timalidae	<i>Pellorneum fuscocapillum</i>	Sri Lanka Brown-capped Babbler	END	LC	0	1	1
Timalidae	<i>Dumetia hyperythra</i>	Tawny-bellied Babbler	BrR	LC	1	0	0
Timalidae	<i>Turdoides affinis</i>	Yellow-billed Babbler	BrR	LC	0	1	1
Dicaeidae	<i>Dicaeum erythrorhynchos</i>	Pale-billed Flowerpecker	BrR	LC	1	1	1
Nectariniidae	<i>Nectarina zeylonica</i>	Purple-rumped Sunbird	BrR	LC	1	1	1
Nectariniidae	<i>Nectarina asiatica</i>	Purple Sunbird	BrR	LC	1	1	1
Motacillidae	<i>Dendronanthus indicus</i>	Forest Wagtail	WV	NE	0	0	1
Estrididae	<i>Lonchura striata</i>	White-rumped Munia	BrR	LC	1	1	1
Estrididae	<i>Lonchura punctulata</i>	Scaly-breasted Munia	BrR	LC	1	1	1

Mammals

Family	Scientific Name	English Name	SpS	CoS	0m 900m	900 2900m	2900 3800m
Cercopithecidae	<i>Semnopithecus priam</i>	Grey langur	IND	LC	1	1	0
Mustelidae	<i>Lutra lutra</i>	Otter	IND	VU	0	1	0
Elephantidae	<i>Elephas maximus</i>	Elephant	IND	EN	0	1	1
Bovidae	<i>Bubalus arnee</i>	Wild buffalo	IND	VU	0	0	1
Cervidae	<i>Axis axis</i>	Spotted deer	IND	LC	0	1	1
Cervidae	<i>Rusa unicolor</i>	Sambur	IND	NT	0	1	1
Cervidae	<i>Muntiacus muntjak</i>	Barking deer	IND	NT	0	1	1
Suidae	<i>Sus scrofa</i>	Wild boar	IND	LC	0	1	1
Tragulidae	<i>Moschiola meminna</i>	Sri Lanka mouse-deer	END	LC	0	1	1
Hystriidae	<i>Hystrix indica</i>	Porcupine	IND	LC	0	1	0
Sciuridae	<i>Funambulus palmarum</i>	Palm squirrel	IND	LC	1	1	1
Sciuridae	<i>Ratufa macroura</i>	Giant squirrel	IND	LC	0	1	1
Leporidae	<i>Lepus nigricollis</i>	Black-naped hare	IND	LC	0	1	1

**ANNEX 2 – DETAILED LIST OF PLANTS RECORDED IN PACKAGE 1 AFFECTED
AREA OF THE UEC PROJECT**

Family	Species	Common Name	Status	NCS
Acanthaceae	<i>Barleria prionitis</i>	Katu Karandu	N	LC
Acanthaceae	<i>Elytraria acaulis</i>		N	LC
Acanthaceae	<i>Stenosiphonium cordifolium</i>	Bu nelu	N	LC
Achariaceae	<i>Hydnocarpus venenata</i>	Makulu	E	LC
Amaryllidaceae	<i>Crinum latifolium</i>	Goda manel	N	VU
Anacardiaceae	<i>Mangifera zeylanica</i>	Atamba	E	LC
Anacardiaceae	<i>Nothopegia beddomei</i>	Bala	N	LC
Annonaceae	<i>Alphonsea sclerocarpa</i>		N	NT
Annonaceae	<i>Miliusa indica</i>	Kekili Messa	N	LC
Annonaceae	<i>Polyalthia korinti</i>	UI Kenda	N	LC
Annonaceae	<i>Uvaria sphenocarpa</i>		E	LC
Apocynaceae	<i>Calotropis gigantea</i>	Ela Wara	N	LC
Apocynaceae	<i>Carissa spinarum</i>	Heen-Karamba	N	LC
Apocynaceae	<i>Hemidesmus indicus</i>	Iramusu	N	LC
Apocynaceae	<i>Ichnocarpus frutescens</i>	Gerandi-Dul	N	LC
Apocynaceae	<i>Wattakaka volubilis</i>	Anguna	N	LC
Araceae	<i>Amorphophallus sylvaticus</i>		N	NT
Asparagaceae	<i>Asparagus racemosus</i>	Hatawariya	N	LC
Asteraceae	<i>Chromolaena odorata</i>	Podi singno maran	Ex	NE
Asteraceae	<i>Elephantopus scaber</i>	Eth adi	N	LC
Asteraceae	<i>Mikania cordata</i>	Wathu palu	Ex	NE
Asteraceae	<i>Vernonia cinerea</i>	Monorakudumbiya	N	LC
Asteraceae	<i>Xanthium indicum</i>	Wal-rambutang	N	LC
Begoniaceae	<i>Begonia cordifolia</i>	Gal-ambala	N	VU
Bignoniaceae	<i>Sterospermum colais</i>	Dunu-madala	N	LC
Boraginaceae	<i>Carmona retusa</i>	Heen-tambala	N	LC
Boraginaceae	<i>Cordia dichotoma</i>	Lolu	N	LC
Boraginaceae	<i>Ehretia laevis</i>		N	LC
Boraginaceae	<i>Heliotropium indicum</i>	Et-honda	N	LC
Capparaceae	<i>Crateva adansonii</i>	Lunuwarana	N	LC
Capparaceae	<i>Capparis rotundifolia</i>	Balal Katu	N	LC
Capparaceae	<i>Capparis zeylanica</i>	Wellangiriya	N	LC
Capparaceae	<i>Capparis sp.</i>			
Celastraceae	<i>Cassine congylos</i>		E	VU
Celastraceae	<i>Maytenus emarginata</i>		N	LC
Celastraceae	<i>Salacia oblonga</i>	Himbutu	N	EN
Colchicaceae	<i>Gloriosa superba</i>	Niyagala	N	LC
Combretaceae	<i>Terminalia arjuna</i>	Kumbuk	N	LC
Combretaceae	<i>Terminalia bellirica</i>	Bulu	N	LC
Commelinaceae	<i>Commelina diffusa</i>	Gira-pala	N	LC
Cucurbitaceae	<i>Momodica charantia</i>	Karavila	N	LC

Family	Species	Common Name	Status	NCS
Dioscoreaceae	<i>Dioscorea pentaphylla</i>	Katu-ala	N	LC
Dioscoreaceae	<i>Dioscorea sp.</i>			
Ebenaceae	<i>Diospyros ebenoides</i>	Kalu-habaraliya	E	EN
Ebenaceae	<i>Diospyros ebenum</i>	kaluwara	N	EN
Ebenaceae	<i>Diospyros malabarica</i>	Thimbiri	N	LC
Ebenaceae	<i>Diospyros oocarpa</i>	Kalu-Kadumberiya	N	NT
Ebenaceae	<i>Diospyros ovalifolia</i>	Kunumella	N	LC
Ebenaceae	<i>Diospyros vera</i>	Jabara	N	LC
Erythroxylaceae	<i>Erythroxylum moonii</i>	Bata-Kirilla	N	NT
Euphorbiaceae	<i>Croton aromaticus</i>	Wel-Keppetiya	N	LC
Euphorbiaceae	<i>Croton laccifer</i>	Keppetiya	N	LC
Euphorbiaceae	<i>Dimorphocalyx glabellus</i>	Weliwenna	N	LC
Euphorbiaceae	<i>Euphorbia antiquorum</i>	Daluk	N	LC
Euphorbiaceae	<i>Mallotus philippensis</i>	Hamparilla	N	LC
Euphorbiaceae	<i>Suregada lanceolata</i>		N	LC
Fabaceae	<i>Abrus precatorius</i>	Olinda	N	LC
Fabaceae	<i>Acacia caesia</i>	Hinguru-wel	N	LC
Fabaceae	<i>Bauhinia racemosa</i>	Maila	N	LC
Fabaceae	<i>Bauhinia tomentosa</i>	Kaha-Petan	N	LC
Fabaceae	<i>Cassia fistula</i>	Ehela	Ex	
Fabaceae	<i>Dendrolobium triangulare</i>		N	EN
Fabaceae	<i>Derris parviflora</i>	Kala-wel	E	LC
Fabaceae	<i>Erythrina fusca</i>	Yak-Earabadu	N	NT
Fabaceae	<i>Flemingia strobilifera</i>	Hampinna	N	LC
Hypoxidaceae	<i>Curculigo orchoides</i>	Bim thal	N	LC
Lamiaceae	<i>Hyptis suaveolens</i>	Ali thala	Ex	
Lamiaceae	<i>Gmelina asiatica</i>	Demata	N	LC
Lamiaceae	<i>Premna tomentosa</i>	Bu-Sera	N	LC
Lamiaceae	<i>Vitex altissima</i>	Milla	N	NT
Lauraceae	<i>Litsea glutinosa</i>	Bomi	N	LC
Loganiaceae	<i>Strychnos benthamii</i>		E	NT
Loganiaceae	<i>Strychnos potatorum</i>	Ingin	N	VU
Malvaceae	<i>Grewia damine</i>	Daminiya	N	LC
Malvaceae	<i>Grewia helicterifolia</i>	Bora-daminiya	N	LC
Malvaceae	<i>Helicteras isora</i>	Liniya	N	NT
Malvaceae	<i>Hibiscus micranthus</i>	Siriwedi babila	N	LC
Malvaceae	<i>Pterospermum suberifolium</i>	Welan	N	LC
Malvaceae	<i>Sida acuta</i>	Gas bebila	N	LC
Malvaceae	<i>Urena sinuata</i>	Heen-epala	N	LC
Meliaceae	<i>Azadirachta indica</i>	Kohomba	Ex	
Meliaceae	<i>Chukrasia tabularis</i>	Hulanhik	N	NT
Meliaceae	<i>Cipadessa baccifera</i>	Hal-Bembiya	N	LC
Menispermaceae	<i>Cissampelos pareira</i>	Diya-Mitta	N	LC
Moraceae	<i>Ficus microcarpa</i>	Panu-nuga	N	LC

Family	Species	Common Name	Status	NCS
Moraceae	<i>Streblus asper</i>	Geta-Netul	N	LC
Moraceae	<i>Streblus taxoides</i>	Gongotu	N	LC
Myrtaceae	<i>Syzygium cumini</i>	Ma-Dan	N	LC
Ochnaceae	<i>Ochna lanceolata</i>	Bo-Kera	N	LC
Oleaceae	<i>Chionanthus zeylanicus</i>	Geratiya	N	LC
Oleaceae	<i>Jasminum angustifolium</i>	Wal pichcha	N	LC
Orchidaceae	<i>Vanda spathulata</i>		N	VU
Phyllanthaceae	<i>Bridelia retusa</i>	Keta-Kela	N	LC
Phyllanthaceae	<i>Flueggea leucopyrus</i>	Katu pila	N	LC
Phyllanthaceae	<i>Margaritaria indica</i>	Karawu	N	VU
Phyllanthaceae	<i>Phyllanthus amarus</i>	Pitawakka	N	LC
Phyllanthaceae	<i>Phyllanthus polyphyllus</i>	Kuratiya	N	LC
Phyllanthaceae	<i>Sauropus rigidus</i>	Ginihiriya	E	NT
Picrodendraceae	<i>Mischodon zeylanicus</i>	Thammanna	N	LC
Poaceae	<i>Panicum maximum</i>	Gini tana / Rata tana	Ex	
Polygalaceae	<i>Polygala chinensis</i>		N	LC
Putranjivaceae	<i>Drypetes sepiaria</i>	Wira	N	LC
Rhamnaceae	<i>Zizyphus oenopila</i>	Hin-Eraminia	N	LC
Rhizophoraceae	<i>Cassipourea ceylanica</i>	Pana	N	LC
Rubiaceae	<i>Benkara malabarica</i>	Pudan	N	LC
Rubiaceae	<i>Canthium coromandelicum</i>	Kara	N	LC
Rubiaceae	<i>Canthium puberulum</i>		E	NT
Rubiaceae	<i>Catunaregam spinosa</i>	Kukuruman	N	LC
Rubiaceae	<i>Haldina cordifolia</i>	Kolon	N	LC
Rubiaceae	<i>Ixora coccinea</i>	Rath-mal	N	LC
Rubiaceae	<i>Ixora pavetta</i>	Maha-Rathambala	N	LC
Rubiaceae	<i>Mitragyna parvifolia</i>	Helamba	N	LC
Rubiaceae	<i>Oldenlandia herbacea</i>	Wal koththamalli	N	LC
Rubiaceae	<i>Psilanthus wightianus</i>		N	VU
Rutaceae	<i>Atalantia ceylanica</i>	Yakinaran	N	LC
Rutaceae	<i>Atalantia monophylla</i>	Apassu	N	LC
Rutaceae	<i>Chloroxylon swietania</i>	Burutha	N	VU
Rutaceae	<i>Glycosmis pentaphylla</i>	Dodan-Pana	N	LC
Rutaceae	<i>Pleiospermium alatum</i>	Tunpath-Kurundu	N	LC
Rutaceae	<i>Toddalia asiatica</i>	Kudu-Miris	N	LC
Sapindaceae	<i>Allophylus cobbe</i>	Kobbe	N	LC
Sapindaceae	<i>Dimocarpus longan</i>	Mora	N	LC
Sapindaceae	<i>Lepisanthes senegalensis</i>	Gal-kuma	N	LC
Sapindaceae	<i>Lepisanthes tetraphylla</i>		N	LC
Sapindaceae	<i>Schleichera oleosa</i>	Kon	N	LC
Sapotaceae	<i>Manilkara hexandra</i>	Palu	N	VU
Verbenaceae	<i>Lantana camera</i>	Ganda-pana	Ex	
Verbenaceae	<i>Stachytarpheta jamaicensis</i>	Balu-nakuta	Ex	
Verbenaceae	<i>Tectona grandis</i>	Thekka	Ex	

Family	Species	Common Name	Status	NCS
Vitaceae	<i>Cissus quadrangularis</i>	Heeressa	N	LC
Zingiberaceae	<i>Curcuma oligantha</i>		N	VU

ANNEX 3 – METHODOLOGY THAT SHOULD BE USED FOR TRANSPLANTING AND TRANSLOCATION OF SPECIES

Flora: Along the proposed canal trace

- The selected or prioritized plants have to be collected using the visual encounter method. The area targeted for construction should be criss-crossed to ensure that the entire area is examined. In this way, it is possible for the team to evaluate (look carefully for target plants) an area of 1-2 km² per day, depending on the habitat (For example, natural forests take longer while grasslands can be evaluated much faster).
- Each plant has to be tagged with a numbered metal tag, and the number and species noted against the location. Plants should be wrapped in poly bags and tied up.
- During the dry season collected plants have to be transported carefully to the project plant nurseries and maintained their till the onset of the wet season.

Selection of areas for transplanting:

- During the dry season, transplanting is not advisable as there is too little water available. Therefore, plants that have been collected should be maintained by a dedicated staff in nursery.
- Transplanting should be carried out during the wet season after careful examination of micro-locations. These sites should be listed and the list of plants in the nursery should be matched carefully with suitable habitats.
- Plants should then be clustered by location and transplanting be carried out in these locations.

Fauna: Should be undertaken immediately prior to vegetation clearance is started. Further, in addition to prioritized faunal species, other less-mobile species that cannot move out of the area of disturbance should also be removed.

1. **Translocation site selection:** Along the canal trace where the forest clearing will be occurred.
2. **Gathering baseline data:** Habitat and microhabitat (especially for snails, earth snakes) preference of targeted species to be translocated should be identified
3. **Method of capture:** Fish can be collected using seine and hand nets. Other less mobile species has to be collected by hand.
4. **Method of translocation and release:** Collected individuals should be transferred to suitable receptacle and transported to the translocation site and released. Before releasing the animals, habitats and microhabitat requirement of all translocated species has to be clearly identified at least 1 km away from the right bank of the proposed canal.

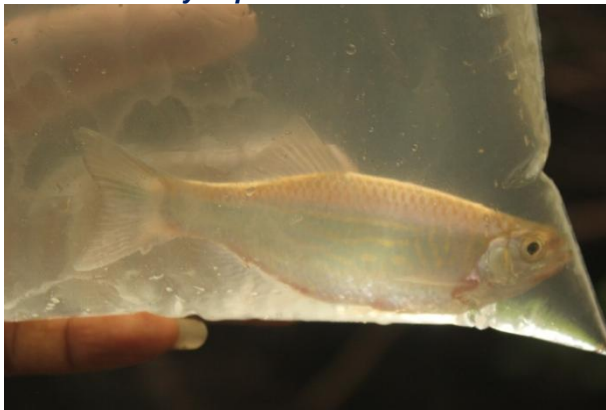
ANNEX 4 – PICTURE CATALOGUE



Land Snail - *Cyclophorus involvulus*



Freshwater Crab - *Oziothelphusa minneriyaensis*



Knuckles Danio - *Devario cf. aequipinnatus*



Stone sucker - *Garra ceylonensis*



Cuvier's earth snake - *Rhinophis philippinus*



Common lankaskink – *Lankascincus fallax*



Yak Erabudu (*Erythrina fusca*) - A near threatened tree



An Orchid – *Vanda spathulata*



A rare legume- *Dendrolobium triangulare*



A Begonia species – *Begonia cordifolia*



Gaint Memosa - *Mimoso pigra*



Tank habitat



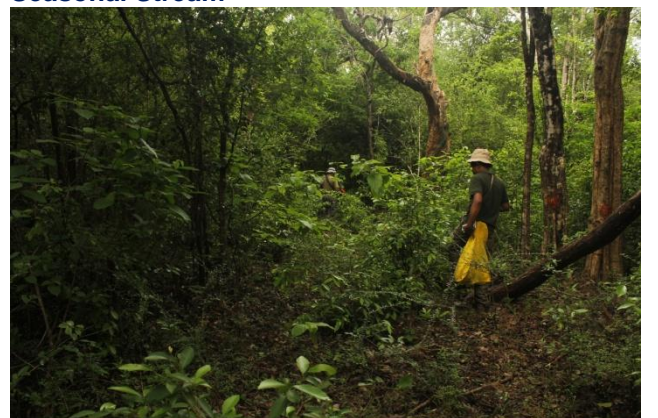
Open Grassland habitat



Seasonal Stream



Seasonal Stream in wet condition



Forest in middle section of Package 01



Upstream migrated Stone sucker *Garra ceylonensis*



Final part of the package o1 of UEC

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IUCN's work is supported by more than 1,000 professional staff in 60 offices and hundreds of partners in public, NGO and private sectors around the world. The Union's headquarters are located in Gland, near Geneva, Switzerland.

In Sri Lanka, through its Country Programme the Union seeks to fulfill this mission in collaboration with its various Commission Members, National Committee Members and Partners in Sri Lanka. IUCN in Sri Lanka commenced its operations since August 1988.



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Rhinophis philippinus (Cuvier's earth snake)
Endemic and Endangered (EN) species

Annex 4

Photographic Evidences Related to Chapter 4



Community consultation (“Tunnelling Impacts on Community) in KMTC



Joint field inspection with DWC officers in Open Canal Area and Tunnel 1 Inlet Portal area (2020.05.19) in KMTC



Access road preparation to facilitate the timber removal process by STC in KMTC open canal area



Joint field visit done by PMDSC and Contractor before starting of the works in KMTC



Arranged a site visit by PHI- Lel Oya Tunnel portal area



Joint site inspection for utility shifting and tree removal in KMTC Access road



Clearing trees fallen to access roads to Tunnel 2 Outlet area in KMTC



Arrival of PHI to UECP-ICB-1 site before resumption of work



Meeting with DWC on preparing ECP for UECP-ICB-1

Annex 5

Progress of Implementing Corrective Actions as per CAP Dec 2019 on Beligoda forest Clear

Mahaweli Water Security Investment Program

Upper Elahera Canal Project-Kaluganga-Moragahakanda Transfer Canal (ICB-2B) Construction Package

Progress of Implementing Corrective Actions on Unauthorized Clearance of Part of Forest Reserve in Beligamuwakanda as at 30/06/2020

No	Action	Description	Monitoring Program		Progress as at 30/06/2020
			Indicators/ Frequency	Responsibility	
1	Legal enforcement (paragraph 3.1 of IUCN report (June, 2019))	i. Prevention of further damage by strictly imposing adherence to FO by developer through below actions;	As follows;		As follows;
		<p><u>Corrective Action i.a:</u> The damaged site is cordoned off to prevent entrance, Contractor's personnel were educated and being regularly monitored by PMDSC & PIU.</p>	Visual observation with photographic evidence on weekly basis (To ensure no further damaging to the site)	FD Employer (PMU, PIU)	<p>Barricades were removed to made access for damaged site restoration on 17/12/'19 with FD approval and Contractor was advised to work within restoration zone. Monitoring continues regularly by FD and intermittently by PIU.</p> <p>SEO and STO of PIU inspected site with RFO and FA of FD (Naula office) and Contractor on 12/03/2020.</p> <p>SEO inspected site with Contractor on 28/05/2020.</p> <p style="text-align: center;"><i>Attachment -1 for photographic evidence</i></p>
		<p><u>Corrective Action i.b:</u> The truck was removed in 3rd week of October, 2019 along Right Bank of Kamarawa stream, in advance of adopting erosion control measures at entrance of the damaged site with upcoming rainy season, without further damaging the cleared area in consultation of FD.</p>	No further monitoring is required since this is a completed action as at end of November, 2019	Not applicable	Completed
		ii. Imposing of fines (as defined in FO) in lieu of the damage caused			

Mahaweli Water Security Investment Program

Upper Elaheera Canal Project-Kaluganga-Moragahakanda Transfer Canal (ICB-2B) Construction Package

Progress of Implementing Corrective Actions on Unauthorized Clearance of Part of Forest Reserve in Beligamuwakanda as at 30/06/2020

		<p><u>Corrective Action:</u> FD will inform Contractor the amount of penalties for violation of FO and the time line for payment of same to the FD, by 11/12/2019.</p>	<ul style="list-style-type: none"> • Written notification by the FD/ Once • Documentary evidence of payment of penalties by the FD/ Once or Periodical as per time line enforced by FD 	FD Employer (PMU)	FD informed PMU that calculation of penalties is in progress as per provisions of the FO.
2	Damage & restoration (paragraph 3.2)	<p>i. Contractor pay cash payment of 31.4 Mil LKR on top of all recommended actions they have to comply.</p> <p><u>Corrective Action:</u> FD will inform Contractor the damage cost and the time line for payment of same to the FD, by 11/12/2019.</p>	<ul style="list-style-type: none"> • Written notification by the FD/ Once • Documentary evidence of payment of penalties by the FD/ Once or Periodical as per time line enforced by FD 	FD Employer (PMU)	<p>IUCN confirmed accuracy of calculating 31.4 Mil LKR, in response to Contractors concern.</p> <p>FD confirmed PMU that amount of payment will be notified together with the penalties.</p>
		<p>ii. Contractor undertake ecological restoration of 10 Ha in same watershed (appropriate cost is estimated as 30.0 Mil LKR),</p>			

Mahaweli Water Security Investment Program

Upper Elaheera Canal Project-Kaluganga-Moragahakanda Transfer Canal (ICB-2B) Construction Package

Progress of Implementing Corrective Actions on Unauthorized Clearance of Part of Forest Reserve in Beligamuwakanda as at 30/06/2020

		<p>Corrective Action: FD expect to submit guideline to the Contractor enabling to start reforestation activity within December, 2019.</p> <p>Related subsequent events: ii.a Contractor to deposit/ submit a bank guarantee; equivalent to estimated cost of ecological restoration in FD.</p> <p>ii.b Contractor to start and complete ecological restoration as per the guideline.</p>	<p>Written confirmation from FD on receipt of acceptable financial commitment from Contractor/ Once or Periodical as per time line enforced by FD</p> <p>Issued guideline on ecological restoration to Contractor with specifications, time plan with deliverables & estimate/ Once</p> <ul style="list-style-type: none"> • Visual observation with photographic evidence/ Periodical as per FD specified time plan, • Monitoring reports of FD/ Periodical as FD scheduled, • Letter of completion from FD/ Once 	<p>FD Employer (PMU)</p> <p>FD Employer (PMU)</p> <p>FD Employer (PMU, PIU) with assistance of Engineer (PMDSC) as required</p>	<p>FD issued guideline by their letter No. 5/4/3/15/ඉහත ඇතහැර ඇත/Vol. ii, dated 13/12/'19.</p> <p>An abandoned paddy land (of Kaluganga resettled community) in Gangahenwala in Laggala RFO & Divisional Secretary zones was handed over, with action plan (refer Attachment-2 in January 2020 progress report)</p> <p>FD informed PMU that bank guarantee is pending to the date but reforestation in 10 Ha land was completed to meet specifications of FD by Mid-February 2020.</p> <p>Contractor completed planting of 10 Ha to acceptance of FD. 10,000 plants consist of <i>Kumbuk, Weera, Mango, Karanda, Palu, Damba, Wood apple, Halmilla, Attikka, Madan and Mee</i> were planted as instructed by the FD. Maintenance continues under supervision of FD as per the agreed plan. <i>Refer Attachment 2 for photographic evidence. A report from FD is awaited.</i></p> <p><i>Refer Attachment 3 for the letter No. 5/4/3-MWSIP/KMTC dated 14/02/2020.</i></p>
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Mahaweli Water Security Investment Program

Upper Elaheera Canal Project-Kaluganga-Moragahakanda Transfer Canal (ICB-2B) Construction Package

Progress of Implementing Corrective Actions on Unauthorized Clearance of Part of Forest Reserve in Beligamuwakanda as at 30/06/2020

		<p>iii.Undertake rehabilitation of damaged area (cost is estimated as 12.5 Mil LKR; IUCN-June, 2019) through below actions;</p>			
		<p>Corrective Action: iii.a: Contractor to consult DFO (Mathale)/ FD before 09/12/2019 to finalize site restoration plan and start implementation on priority basis as decide at the same meeting with regular supervision of FD officers</p> <p>Related subsequent events: Contractor to start and complete the damaged site restoration as per the action plan</p>	<p>Availability of damaged site restoration plan recommended by FD/ Once</p> <ul style="list-style-type: none"> • Visual observation with photographic evidence/ Weekly, • Monitoring reports of FD/ Periodical as FD scheduled, • Letter of completion from FD/ Once 	<p>FD Employer (PMU, PIU)</p> <p>FD Employer (PMU, PIU) with assistance of Engineer (PMDSC) as required</p>	<p>FD issued guideline, based on IUCN recommendations by their letter No. 5/4/3/15/ඉහත ඇතහැර ඇත/Vol. ii, dated 13/12/'19. (refer Attachment-4 in January 2020 progress report).</p> <p>Contractor continued site restoration since 17/12/'19 since FD agreed extending completion date from 31/12/2019 to 31/03/2020. The work continued until site closure due to COVID-19 control action of GOSL on 17/03/2020 and is now schedule to be started in 3rd week of June 2020.</p> <p><i>Refer Attachment-1 for progress of action as at 12/03/2020</i> based on site monitoring inspection by SEO and STO of PIU inspected site with RFO and FA of FD (Naula office) and Contractor.</p> <p>Site condition remains unaffected during this closure period as evident in pictures captured <i>on 28/05/2020 in Attachment 1</i> based on site monitoring inspection by SEO with the Contractor.</p> <p>To be received on completion</p>

Mahaweli Water Security Investment Program

Upper Elaheera Canal Project-Kaluganga-Moragahakanda Transfer Canal (ICB-2B) Construction Package

Progress of Implementing Corrective Actions on Unauthorized Clearance of Part of Forest Reserve in Beligamuwakanda as at 30/06/2020

		<p>Corrective Action: iii.b: Contractor to deposit LKR 12.5 million or submit a bank guarantee to FD on/ before 20/12/2019.</p>	<p>Written confirmation from FD on receipt of acceptable financial commitment from Contractor/ Once or Periodical as per time line enforced by FD</p>		<p>FD informed PMU that bank guarantee is pending to the date but instructed to start restoration.</p>
		<p>Corrective Action: iii.c: FD expect to submit guideline to the Contractor for tree planting in damaged site area at completion of structural mitigation.</p> <p>Relevant subsequent events: Contractor to start and complete ecological restoration as per the guideline.</p>	<p>Issuance of guideline for ecological restoration by FD to Contractor with specifications, time plan with deliverables & estimate/ Once</p> <ul style="list-style-type: none"> • Visual observation with photographic evidence/ Weekly, • Letter of completion from FD/ Once 	<p>FD Employer (PMU)</p> <p>FD Employer (PMU, PIU) with assistance of Engineer (PMDSC) as required</p>	<p>FD guidelines for reforestation (tree planting) after site restoration is included in their letter issued on 13/12/2019 as in Attachment-4 in January 2020 progress report.</p> <p>Ground preparation was commenced in 2nd week March 2020 and remains undisturbed as shown in <i>item 8 (RHS) in Attachment 1.</i></p>

Mahaweli Water Security Investment Program

Upper Elaheera Canal Project-Kaluganga-Moragahakanda Transfer Canal (ICB-2B) Construction Package




Progress of Implementing Corrective Actions on Unauthorized Clearance of Part of Forest Reserve in Beligamuwakanda as at 30/06/2020




3	Rehabilitation of damaged area (paragraph 4)	i. Remove abandoned truck from the Island Corrective Action: The truck was removed in 3 rd week of October, 2019 along Left Bank of Kambarawa stream.	No further monitoring is required since this is a completed action as at end of November, 2019	Not applicable	Completed action
		ii. Restoration by soil stabilization and run off water control	These are being key corrective actions in the damaged site restoration plan; please refer to respective columns under the “corrective action iii.a” under the item 2.iii in this table.		In progress. Refer corrective action 2.iii.a.
		iii. Stabilization of damaged stream beds,			Started and in progress, please refer <i>Attachment 1</i> for photographic evidence.
		iv. Stabilization of leaning trees,			Yet to be started as per the “restoration plan” issued by FD
		v. Vegetative restoration interventions;	Briefed below under relevant category;		
		a. <u>On-site</u> planting of trees (road cut area & buffer strip)	Please refer to respective columns under the “corrective action iii.c” under the item 2.iii in this table.		To be started. Refer corrective action 2.iii.c.
		b. <u>Off-site</u> planting of trees on environmental damage compensation mechanism Corrective Action: FD expect to submit guideline to the Contractor enabling to start reforestation activity within December, 2019	Please refer to respective columns under the item 2.ii in this table.		Completed and maintenance in progress. Refer corrective action 2.ii.b.




FD – Forest Department, FO – Forests Ordinance, FA – Forests Assistant, PIU – Project Implementing Unit, PMDSC – Program Management Design and Supervision Consultant, PMU – Program Management Unit, RFO – Range forests Officer, SEO – Senior Environment Officer, STO - Senior Technical Officer





Photographic presentation of the site status as at Mid of March and End of June, 2020




Along the LHS of River Bank (Kambarawa Stream)

No.	Chainage	Proposed restoration method	Current Progress	Status as a photograph	
				As at mid of March	As at end of June
1	-4m to 9m	Divert runoff water using Brush Wood Barriers	To be executed		
2	-4m to 22m	Reestablish soil cover around the root system Rubble pack or timber to stabilize cut areas towards mountain	Stone wall established up to required height some more soil amount required to cover entire root system Established up to top level of cut area with suitable rubble packing		 Remains undisturbed
3	24m (LM 02)	Gulley plug using rubble	To be established		
4	30m (LM 03)	Gulley plug using rubble	To be established		
5	30m	Bridge over the fallen tree	Cut the fallen tree as suitable to prepare work space for rehabilitation on instructions obtained on site from the RFO-Laggala		



6	35m (LM 04) to 47m (LM 05)	Rubble pack or timber to stabilize cut areas towards mountain 35m (Stream 1) - Stream path prepare with rubble	Established as required The stream path and stream bed prepared adequately		
7	47m to 58m	Rubble packing for cut slope with tree routes	Established at the moment but few rubble packing height to be executed with more soil to cover cut edge roots of trees.		 Natural regeneration of plants along gentle slope in restored area
8	58m	Gully plug using rubble	To be established		
9	58m to 78m (LM 06)	Rubble pack for cut slope	Established as required		
10	78m to 108m	Rock exists in cut slope	No requirement for slope protection		
11	108m – Stream 2	Arrange stream path using rubble	Stream path prepared as required		




12					 <p data-bbox="1451 363 1822 418">Stream path is reaching to natural stabilization</p>
13	108m (LM 7) to 138m (LM 8)	Boulder pack for cut slope	Established as required		
14	138m (LM 8)	Tree fallen	Cut the fallen tree as suitable to prepare work space for rehabilitation on instructions obtained on site by RFO- Laggala		

15	138m (LM 8) to 168m (LM 9)	LM 9 - Stream 3 path prepare with boulder arrangements Protect cut with low height using brush wood	Prepared the stream path as required Protected the cut area with rubble packing		 Land reaching natural stability with mulch & fallen brush wood
16	168m to 195m (LM 10)	Tree Fallen LM 10 - Stream 4 path prepare with rubble	Cut the fallen tree as suitable to prepare work space for rehabilitation on instructions obtained on site by RFO- Laggala Prepared the stream path as required		
17	195m (LM 10) to 208m	Small cut area protect with brush wood	Small cut area protected with rubble packing		

18	217m (LM 11)	-	-		
19	224m	Prepare Gulley plug using rubble	To be established		
20	261m (LM 12) to 284m (LM 13)	Erosion control of the slope terrain using brush wood	To be established		
21	355m (LM 15)	Stream prepare using rubble	Stream path prepared as required		
22	355m to 434m (LM 16)	Brush wood protection for erosion control LM 16 - Prepare Gulley plug using rubble	To be done		 <p>Land reaching natural stability with mulch & fallen brush wood</p>
23	450m +	Slope protection using rubble packing	Already established		
24	531m (LM 17) to 550m	Erosion control of the slope terrain using brush wood	Already established with rubble packed steps		
25	550m to 580m (Kabarawa Oya Edge)	Stone walls establish with steps	Gabion wall established		

Along the RHS of River Bank (Kambarawa Stream)

No.	Chainage	Proposed restoration method	Current Status of Progress		
1	0m to 108m (LM 1)	Replant only	-		
2	108m (LM 1) to 120m (LM 2)	Erosion control of the slope terrain using brush wood Cut slope protect with rubble stone barriers	To be established Established as required		 <p>Natural regeneration of forest started on gentle slope</p>
3	198 (LM 3)	-	-		
4	218m	Gully plug using rubble - LM 3	To be prepared		
5	274m (LM 4)	-	-		
6	317m	Prepare stream bed with rubble	Prepared the stream bed with rubble		

7					
8	358m (LM 5) to 408m (LM 6)	Slope protection using rubble	Established as required		 <p data-bbox="1457 716 1919 776">Preparation for tree planting on damaged area remains undisturbed</p>

Progress of Compensatory Reforestation as at 30/06/2020



Mee (*Madhuca longifolia*) plants



Kumbuk (*Terminalia arjuna*) plants



Mango (*Mangifera indica*) plants

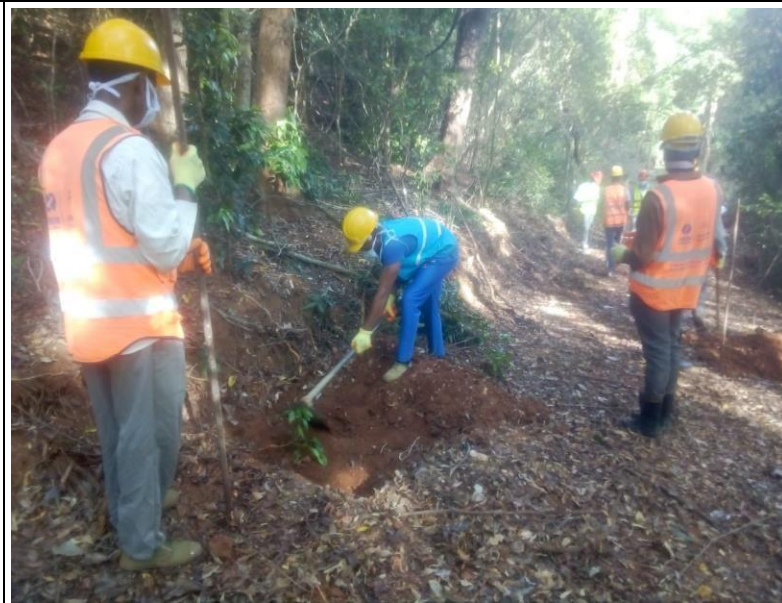


Demarcated boundary of the land

Progress of Reforestation as part of restoring the damaged zone as at 30/06/2020



Land preparation for root ball tree planting at 168m (LM 9) on LHS



Continue land preparation at 400m to 480m zone on LHS



ಲಿಪಿ ಪರಿಷ್ಕರಣೆ ಅಧಿಕಾರಿಗಳಿಗಿಲ್ಲ
FOREST DEPARTMENT
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DIVISIONAL FOREST OFFICE - MATALE
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ಲಿಪಿಲಿಲಿಲಿ ಲಿಪಿಲಿಲಿ Tel :	066 - 2222138, 2224660	ಲಿಪಿಲಿಲಿಲಿ ಲಿಪಿಲಿಲಿಲಿ Fax	066 - 2222138	ಲಿಪಿಲಿಲಿಲಿ ಲಿಪಿಲಿಲಿಲಿ E mail	dfomat@yahoo.com
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ಲಿಪಿಲಿಲಿಲಿ ಲಿಪಿಲಿಲಿಲಿ My Ref	5/4/3/MWSIP/KMTC	ಲಿಪಿಲಿಲಿಲಿ ಲಿಪಿಲಿಲಿಲಿ Your Ref		ಲಿಪಿಲಿಲಿಲಿ ಲಿಪಿಲಿಲಿಲಿ Date	2020 .02. 14
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Project Manager
 Upper Elahara Canal (Kaluganga – Moragahakanda Transfer Canal) Project

Starting of Restoration Works at Beligoda Reserve Forest

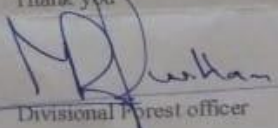
This is reference to your letter L-KMTC-SL-2020002, dated 22nd January 2020.

02. We are highly appreciate your 10 hectare restoration forest plantation works implemented in the Beligoda forest reserve to minimize environmental damages of unauthorized road construction blocks.

03. Based on the inspection done by Regional Forest Officer (RFO) Laggala, he has suggested following activities to be implement to the Established forest plantation in Beligoda forest reserve.

- Plants should be maintained for 5 year until it grow up into a natural forest
- Demarcation of the boundaries should be done to protect the established plantation
- Notice boards should be established to identify the plantation

04. Accordingly I would like to request you to make necessary requirements to implements those activities.
 Your kind co-operation on this is highly appreciated

Thank you

 Divisional Forest officer
 Matale

Copy
 Regional Forest Officer (RFO) Laggala - for your information & necessary action please

Annex 6

Progress of implementing Wildlife Management Plan in UECP

Annex 6.1 - Implementation & Monitoring Institutional Mechanism of WMP under the MWSIP

Annex 6.2 - Total Budget and Implementation of Wildlife Management Action Plan – UECP

Annex 6.3 – (i) The Budget and Implementation Schedule of Priority Actions of Wildlife Management Master Plan of UECP under the allocated ADB Funds (PAP-WMP-UECP)

(ii) The Budget and Implementation Schedule of Non Priority Actions of Wildlife Management Master Plan of UECP

(iii) Progress of implementing WMP in UECP area

Annex 6.4 - Participatory sessions for WMP implementation

Annex 6.1 - Implementation & Monitoring Institutional Mechanism of WMP under the MWSIP

Implementation & Monitoring Institutional Mechanism of WMP under the MWSIP

I. This is based on followings;

Existing institutional setup for implementing MWSIP

Mitigations proposed with implementing arrangement in the CEA approved WMP

II. Overall Institutional Mechanism

No.	Category of mitigation actions*	Responsibility		
		Implantation	Coordination	Monitor & Guide Implementation
1	Mitigations directly related to Civil works (BoQ items of the respective Contractor)			
a	Constructing mitigation structures in the WMP (WMP-section 6.6.1)	Contractor	PMDSC/ PIU/ PMU	Steering Committee of MWSIP DWC
b	Restoration of ecosystems under (WMP-section 6.5.1) as PS-BOQ item	Contractor	PMDSC/ PIU/ PMU	
c	Site preparation related activities (e.g. critical plant transplanting)	PIU	PMU/ PMDSC	
2	Mitigations not directly related to Civil works (specific fund for implementing WMPs)			
a	Improving habitat availability for wildlife (WMP-section 6.5)	PIU/ PMU Gov. Agencies Community/ CBO Experts/ NGO	PIU/ PMU	1. Steering Committee of MWSIP (Existing) Sec./MMDE, Heads of CEA, DWC, FD, NPD, MASL, ID, ADD etc. 2. National Committee - Review of WMP Implementation:- PD-PMU, D/ Operations-DWC, CF/ EM&A-FD, Dir./ Env.-MASL, Dir./ Env.-ID, Deputy Commissioner/ Develpt.-DAD, Env. Sp./PMU
b	HEC management activities (WMP-section 6.7)	PIU/ PMU Gov. Agencies Community/ CBO Experts/ NGO	PIU/ PMU	
				3. Regional Committee - Review of WMP Implementation (in NWPCP or UECP):- PD-PIU, Add. Dist. Sec (Develpt.), AD-DWC, DFO-FD, RPM-MASL, RDI-ID, Prov. Com.-DAD, Sen. Env. Officer-PIU

Note: * - Actions in WMP are taken in to 2 categories based on the institutional mechanism of the MWSIP that consists of (Employer) PMU, PIU; (Design-Supervision consultant) PMDSC and Contractor as well as Relevant Mandatory Government Institute on proposed action.

III. Specific Unit and Recruitment of Staff to MWSIP to facilitate above institutional mechanism within existing MWSIP set up:-

a) Name of the unit:

Implementation Unit of the Wild Life Management Plan (**IU-WMP**) as a part of the **Safeguard Cell of MWSIP**.

b) Responsibility:

Overall planning, implementation and monitoring implementation of the WMPs of NWPCP and UECP under the guidance of (1) MWSIP and (2) National/ Regional Review Committees of WMP Implementation.

c) Composition of IU-WMP:

3 officers having knowledge & experience in the field of Wildlife Management as follows;

- i. One (1) National Coordinator Implementing Wildlife Management Plans under the MWSIP
- ii. Two (2) Implementation Officer of WMP for NWPCP and UECP

d) These officers will be recruited under the MWSIP institutional set up as follows;

R.No.	Position	Job scope	Level-MSD Circ.	Reportable to	Responsible to
1	National Coordinator Attached to the PMU-MWSIP	Provide national level inputs and Guide for execution of the WMPs of NWPCP, UECP and MLBCRP (as required) with undertaking follow up monitoring and reporting	PS-4	ES-PMU	PD-PMU/ MWSIP
2	Implementation Officer Attached to the PIU-NWPCP	Execute the WMP of NWPCP effectively liaising with Contractors, Stake holder agencies & Communities with undertaking follow up monitoring and reporting	PS-5	SEO-PIU-NWPCP	PD-PIU-NWPCP
3	Implementation Officer Attached to the PIU-UECP	Execute the WMP of UECP effectively liaising with Contractors, Stake holder agencies & Communities with undertaking follow up monitoring and reporting	PS-5	SEO-PIU-UECP	PD-PIU- UECP

IV. The proposed implementation and monitoring responsibility with mode/ tools of monitoring:

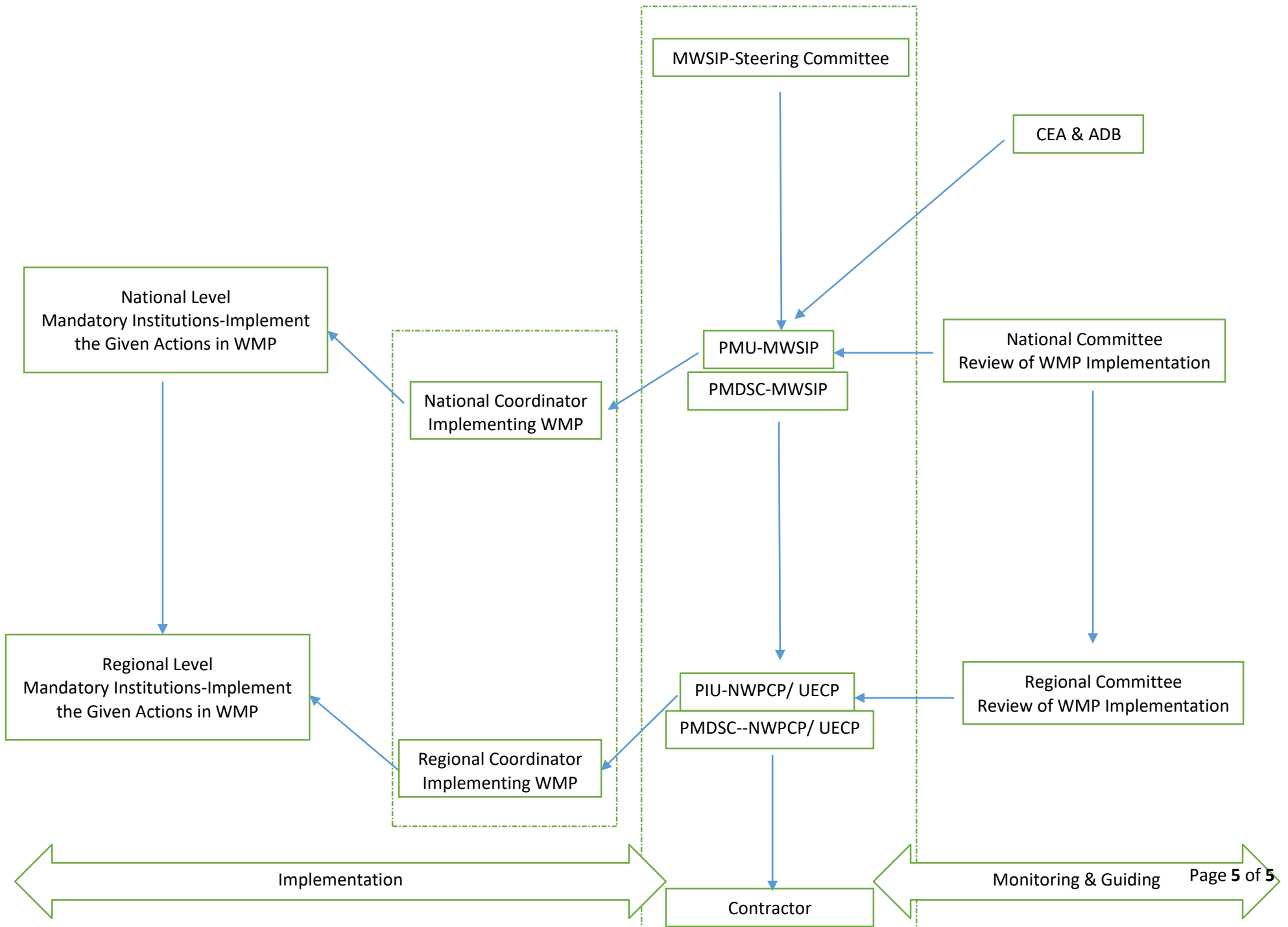
No.	Category of mitigation actions	Responsibility				
		Implementation/ Coordination		Monitoring		
		Implantation	Coordination	Self	Independent	External
1	Mitigations directly related to Project constructions					
a	Constructing mitigation structures in the WMP	Contractor	PMDSC/ PIU	Contractor PMDSC (RE/ TL) PIU/ PMU <i>Note 1</i>	Independent Environment Safeguard Monitoring Specialist <i>Note 4</i>	CEA (& DWC) ADB <i>Note 5</i>
b	Reforestation proposed in WMP under the BOQ item	Contractor	PMDSC/ PIU	Contractor PMDSC (RE/ TL) PIU/ PMU <i>Note 1</i>		
c	Site preparation related activities (e.g. critical plant transplanting)	PIU	PMDSC	PMDSC (RE/ TL) PIU/ PMU <i>Note 2</i>		
2	Mitigations not directly related to Project constructions					
a	Improving habitat availability for wildlife (WMP-section 8.5; except 1 items)	Gov. Agencies Community/ CBO Experts/ NGO	PIU/ PMU	PIU PMDSC (TL) PMU <i>Note 3</i>	Independent Environment Safeguard Monitoring Specialist <i>Note 4</i>	CEA (& DWC) ADB <i>Note 5</i>
b	HEC management activities (WMP-section 8.7; except 1 items)	Gov. Agencies Community/ CBO Experts/ NGO	PIU/ PMU	PIU PMDSC (TL) PMU <i>Note 3</i>		

“Note” presents the mode of monitoring and tools to be used for monitoring

	Mode of monitoring	Monitoring tool/s
<i>Note 1</i>	As per Table 2 of Annex 1	<ul style="list-style-type: none"> ➤ Relevant records of items 6 to 11 in Table 2 of Annex 1 ➤ Monitoring will be based on;

		<ul style="list-style-type: none"> • Contractor’s work program and • Mitigation actions in WMP
Note 2	<ul style="list-style-type: none"> ➤ Weekly/ Monthly audit by PIU & PMDSC (RE) ➤ Monthly audit by PMU& PMDSC (TL) ➤ Monthly progress meeting 	<ul style="list-style-type: none"> ➤ Relevant records ➤ Monitoring will be based on; <ul style="list-style-type: none"> • Contractor’s work program and • Mitigation actions in WMP
Note 3	<ul style="list-style-type: none"> ➤ Weekly/ Monthly audit by PIU & PMDSC (RE) ➤ Monthly audit by PMU& PMDSC (TL) ➤ Monthly progress meeting 	<ul style="list-style-type: none"> ➤ Relevant records ➤ Monitoring will be based on the “Gant Chart” of the WMP
Note 4	<ul style="list-style-type: none"> ➤ Review the existing documents, brief site audits and consultation of key parties/ agencies involved ➤ 1st month after each 6 months in each Calendar year 	Semiannual monitoring report
Note 5	<ul style="list-style-type: none"> ➤ Reviewing periodical submissions of PMU, ➤ Site audits of Environment Monitoring Committee (EMC) or ➤ Separate committee to review progress of WMP implementation, ➤ Appointing Independent monitoring Panel headed by DWC or DS etc. deem necessary by CEA and ADB in consultation with DWC 	<ul style="list-style-type: none"> ➤ Receiving monthly/ quarterly progress reports on implementing WMP from PMU ➤ Receiving dedicated section on progress of implementing WMP in Semiannual Environmental monitoring Report from PMU/ PMDSC ➤ Undertaking periodical site audits as part of EMC evaluation or through a dedicated Committee on WMP implementation as CEA & ADB wishes.

The Organogram-Implementation of the WMP for NWPCP and UECP under the MWSIP



Annex 6.2 - Total Budget and Implementation of Wildlife Management Action Plan – UECP

Total Budget and Implementation of Wildlife Management Action Plan - UECP										
WMP Ref. No	Main Objectives	Activity	PMU Budget Rs.	years						
				2019	2020	2021	2022	2023	2024	2025
6.5.1	Enrichment/Restoration of identified habitat within the existing protected area and selected tanks in the project commanding area.	a)Restoration of identified areas/ habitats for fauna (5km2) (Relevant maps in the WMP are attached)	9,900,000.00							
		b) Ecological restoration of selected tanks	7,200,000.00							
		c) Establishing a buffer strif along the canal reace	21,250,000.00							
6.5.2	Management of invasive species	a) Eradication/Control of invasive flora species and native species undergoing range expansions	800,000.00							
		b)Management of IAS	14,000,000.00							
6.5.4	Annexing adentified areas to exixting Pas	Annexing a 12 km2 area to Mahakanadarawa Sanctuary, declaring Eru Wewa and Manankattiya as new sanctuaries. It will add 23 km2 area to PA network.	3,000,000.00							
		Annexing 54.79 km2 to forest reserves managed by the Forest Department								
6.6.2	Implementing a rescue program to translocate / transplant identified animal and plant Spp.	Rescue of priority plants and animal species (specified in and any Table 37 and Table 38 other relevant species)	9,000,000.00							
		Collection of fauna and flora specimens to be deposited in the relevant agencie								
6.7.	HEC Mitigatory measures to be implemented in areas impacted by the UECP	Set up a dedicated unit in the PMU to coordinate and implement the HEC management measures	42,000,000.00							
		Set up a beat DWC office at Kitul Uttuwa.	23,280,000.00							
		Limit cultivation of paddy fields to two seasons	4,000,000.00							
		Establish reservoir water management regiment to mximise resevoir bed grasslands in dry season								
		Radio collar 20 female and 10 male elephants	33,840,000.00							
		Establish elephant corridor 1-8 identified by DWC	159,370,002.00							
		Establish additional elephant corridors and habitat linkages identified from new radio tracking data	300,200,000.00							
		Declare elephant habitat as FD reserves	5,000,000.00							
		Declare as FD /DWC reserves any additional forest patches identified from new radio tracking data as critical habitats for elephants	255,400,000.00							
		Regulate chena cultivation	10,140,000.00							
		Declare elephant range as MER under the DWC	300,000.00							
		Establish seasonal paddy field fencing programme through DAD	200,140,000.00							
		Establish permanent fencing programme around villages through DS	207,500,000.00							
		Develop and implement insurance scheme for crop damages caused by elephants	100,300,000.00							
Develop and implement awareness programme	50,500,000.00									
		Total	1,457,120,002.00							

Annex 6.3 – (i) The Budget and Implementation Schedule of Priority Actions of Wildlife Management Master Plan of UECP under the allocated ADB Funds (PAP-WMP-UECP)

(ii) The Budget and Implementation Schedule of Non Priority Actions of Wildlife Management Master Plan of UECP

(iii) Progress of implementing WMP in UECP area

The Budget and Implementation Schedule of Priority Actions of Wildlife Management Master Plan of UECP under the allocated ADB Funds (PAP-WMP-UECP)												
WMP Ref. No	Main Objectives	Activity	Estimate/LKR	Priority	Years							
					2019	2020	2021	2022	2023	2024	2025	
6.5.1	Enrichment/Restoration of identified habitat within the existing protected area and selected tanks in the project commanding area.	a)Restoration of identified areas/ habitats for fauna (5km2) (Relevant maps in the WMP are attached) Reforestation of Forest Reserves - 450 Ha -FD *Laggala Range - 20 ha } Matale FD Division *Naula Range - 30 ha } *100 ha. of Elaheera reserve forest } FD Division *100 ha. of Hurulu Conservation forest } *100 ha. Huruluwewa FR Area } Anuradhapura FD Division *100 ha. Hurulu forest }	25,019,560.00 +7,134,600.00	First Priority Two MoUs - Signed 1. FD Matale - Total Cost for reforestation activities (Rs.) 2. FD Pollonnaruwa - Total Cost for reforestation activities - Rs. (Hurulu Conservation Forest - 100 ha. and Elaheera Reserve Forest - 100 ha.) Preparation for MoU for FD Anuradhapura is in progress - 200 ha.	Reforestation Plant production, Survey & Preparation of maps, Land preparation, Seedling transportation and tree planting, *Laggala Range - 20 ha *Naula Range - 30 ha	*100 ha. of Elaheera reserve forest *100 ha. of Hurulu Conservation forest	*100 ha. Huruluwewa FR Area *100 ha. Hurulu forest	First Maintenance	Second Maintenance	Third Maintenance	Forth Maintenance	
		Restoration of eleven Tanks within Wildlife Reserves (Olumaduwa Wewa and Weheragala Wewa in Kaudulla NP / Alisthana Wewa in Ritigala SNR / Goonapaniella Wewa, Bogahadamana Wewa, Kethigannewa Wewa in Minneriya NP / Thumbikulama Wewa and Kudawewa in Thumbikulama FD Area / Mailankulama Wewa, Bogaha Wewa and Irigeoya Wewa Hurulu Conservation FD Area	First Priority	*Ground Identification and mapping *Level Survey and Designing	3 Tanks (Olumaduwa Wewa / Weheragala Wewa / Alisthana Wewa)	3 Tanks (Goonapaniella Wewa / Bogahadamana Wewa / Kethigannewa Wewa)	3 Tanks (Mailankulama Wewa / Bogaha Wewa / Irigeoya Wewa)	2 Tanks (Thumbikulama Wewa / Kudawewa)	Maintenance of Tank Bund	Maintenance of Tank Bund		
		b) Ecological restoration of selected 5 tanks (Halmillawa wewa, Ritiko wewa, Paburugas wewa, Pandithaya wewa, Etaweera wewa Buffer zone at Riitigala SNR)	First Priority	*Ground Identification and GIS mapping *Preparation of Estimate and MOU	Establishment of Gasgommana and Kattakaduwa	First Maintenance	Second Maintenance	Third Maintenance	Forth Maintenance			
6.5.2	Management of invasive species	a) Eradication/Control of invasive flora species and native species undergoing range expansions Lantana Camara 200 - Galapitagala Conservation Forest } Anuradhapura FD 100 - Huruluwewa Forest Reserve } Ha. 200 - Elaheera Forest Reserve } Pollonnaruwa FD Division Ha. 200 - Hurulu Conservation Forest } Mimosa Pigra Ha. 10 - Elaheera DWC Sanctuary	800,000.00	First Priority This item also included signed MoU	Survey and preparation of maps of invasive plant spreaded areas -	Mimosa Pigra Ha. 10 - Elaheera DWC Sanctuary	Lantana Camara Ha. 200 - Elaheera Forest Reservoir	Lantana Camara Ha. 150 - Hurulu Conservation Forest	Lantana Camara Ha. 150 - Galapitagala Conservation Forest	Lantana Camara Ha. 100 - Huruluwewa Forest Reservoir	Lantana Camara Ha. 50 - Galapitagala Conservation Forest Ha. 50 - Hurulu Conservation Forest	
		b)Management of IAS Elaheera DWC Sanctuary Kaluganga Project Area, Mahakanadarawa Sanctuary, Eruwewa, Manankattiyawewa, Huruluwewa	14,500,000.00	First Priority	Awareness program for introduce a biological control programme for Salvinia and Eicchomia	Establish an inspector to raise insects release Training for the farmers	Elaheera DWC Sanctuary Kaluganga Project Area	Mahakanadarawa Sanctuary	Eruwewa	Manankattiyawewa	Huruluwewa	
6.6.2	Implementing a rescue program to translocate/transplant identified animal and plant species.	Rescue of priority plants and animal species (specified in and any table 37 & table 38 other relevant spp) Collection of fauna and flora specimens to be deposited in the relevant agencies.	9,000,000.00	First priority								
6.7	HEC Mitigatory measures to be implemented in areas impacted by the UECP	Set up a beat DWC office at Kitul Uttuwa beat and Mahakanadarawa sanctuary	17,280,000.00	First Priority	Awareness Program of DWC staff and Preparation of BOQ	Construction of Kitul Uttuwa beat office	Construction of Mahakanadarawa sanctuary DWC beat office	DWC provide 6 new staff positions	DWC Maintain office and staff	DWC Maintain office and staff	DWC Maintain office and staff	
		Radio collar 20 female and 10 male elephants	15,840,000.00	Responsibility - PMU First Priority		05	05	05	05	05	05	
		Establish elephant corridor 1 - 10 identified by DWC and FD 1. Elaheera 12 Mile Post - Moragahakanda (DWC) 2. Manankattiya - Labunoruwa (Bathalayaya) (FD) 3. Ritigala - Labunoruwa (Unagollewa) - FD 4. Thumbikulama - Murungahitakanda (Thibalawagamameda) (FD) 5. Innamaluwa - Digampathaha (DWC) 6. Hurulu Thumbikulama (Model Elephant Corridor) (FD) 7. Minneriya - Rathmale (DWC) 8. Hurulu Halmillewa (Halmillewa Village) (FD) 9. Hurulu - Galapitagala (Weragala) (FD) 10. Habarana - Hiriwadunna (Unagolla - Thumbikulama) (FD)	46,770,000.00	First Priority	Consultative meetings with stakeholders including ID, DAD, DWC, FD, CG	Establishment of Model Elephant Corridor *Hurulu Thumbikulama (Model Elephant Corridor) (FD)	Elaheera 12 Mile Post - Moragahakanda (DWC)	Innamaluwa - Digampathaha (DWC)	Minneriya - Rathmale (DWC)	*Habarana - Hiriwadunna (Unagolla - Thumbikulama) (FD) *Hurulu Halmillewa (Halmillewa Village) (FD) *Hurulu - Galapitagala (Weragala) (FD)	*Manankattiya - Labunoruwa (Bathalayaya) (FD) *Ritigala - Labunoruwa (Unagollewa) - FD	

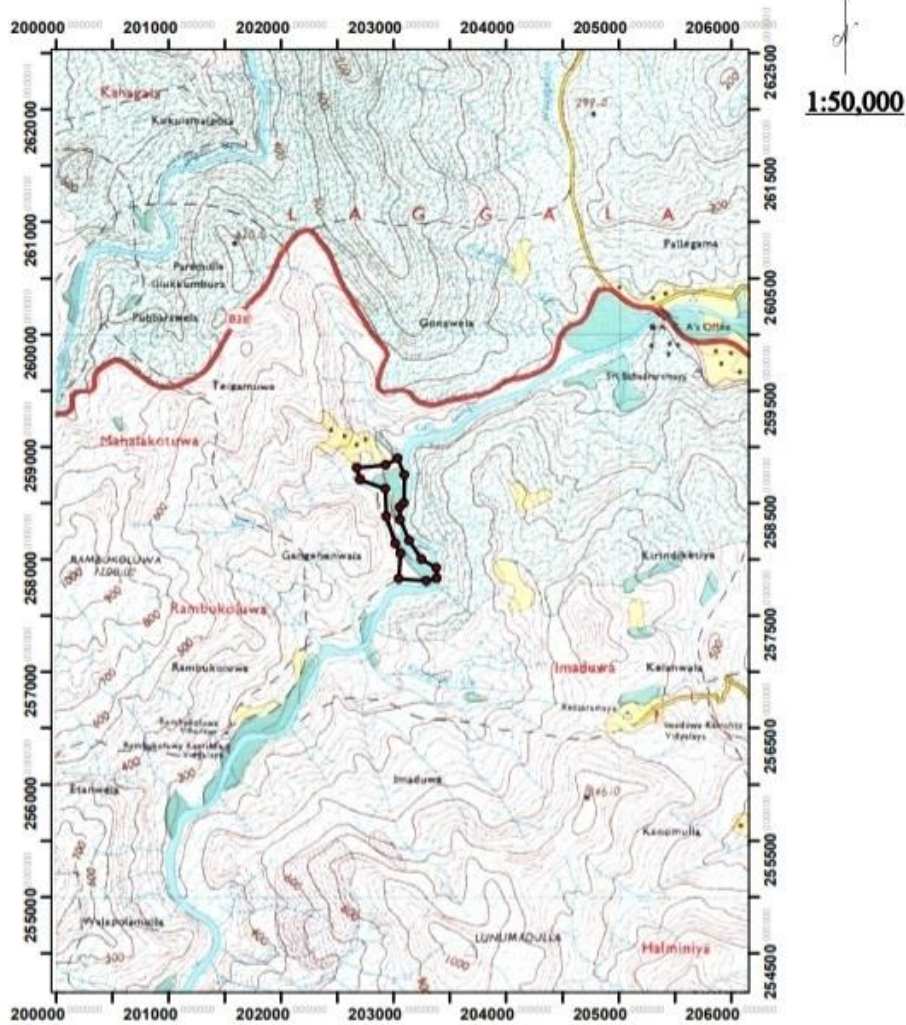
The Budget and Implementation Schedule of Priority Actions of Wildlife Management Master Plan of UECP under the allocated ADB Funds (PAP-WMP-UECP)											
WMP Ref. No	Main Objectives	Activity	Estimate/LKR	Priority	Years						
					2019	2020	2021	2022	2023	2024	2025
		Develop and implement awareness programme	10,000,000.00	First Priority	Awareness Program for stakeholders including Government Officers, School Childrens, Farmer Organizations, NGOs and relevant Community	Conduct by UEC Project Area	Conduct by UEC Project Area	Conduct by UEC Project Area	Conduct by UEC Project Area	Conduct by UEC Project Area	Conduct by UEC Project Area
Total			154,244,160.00								

The Budget and Implementation Schedule of Non Priority Actions of Wildlife Management Master Plan of UECP											
WMP Ref. No	Main Objectives	Activity	Estimate/LKR	Priority	Years						
					2019	2020	2021	2022	2023	2024	2025
6.5.4	Annexing identified areas to existing Pas	Annexing a 12 km ² area to Mahakanadarawa Sanctuary, declaring Eru Wewa and Manankattiya as new sanctuaries. It will add 23 km ² area to PA network.	3,000,000.00	Second Priority	Surveying the area to identify land ownership	Preparation of GIS maps and Boundary Demarcation	Manankattiyawewa Project Area	Eruwewa Project Area	Eruwewa Project Area	Mahakanadarawa Project Area	Mahakanadarawa Project Area
		Annexing 54.79 km ² to forest reserves managed by the Forest Department			Kekirawa FD Range Area	Kahatagasdigiya FD Range Area	Anuradhapura FD Range Area	Kekirawa FD Range Area	Kahatagasdigiya FD Range Area	Anuradhapura FD Range Area	Anuradhapura FD Range Area
6.7.	HEC Mitigatory measures to be implemented in areas impacted by the UECP	Set up a dedicated unit in the PMU to coordinate and implement the HEC management measures	15,000,000.00	Responsibility - PMU							
		Limit cultivation of paddy fields to two seasons	100,000.00	Responsibility - PMU	Consultative meetings with DI and Agrarian Service Department	Awareness meeting of inform and get the consent from the community	Eruwewa project area	Manankattiya project area	Mahakanadarawa project area	Huruluwewa project area	Huruluwewa project area
		Establish reservoir water management regiment to maximize reservoir bed grasslands in dry season	300,000.00	Responsibility - PMU		Consultative meetings with DI, PID and Agrarian Service Dept.	Awareness meeting for farmer organization	Awareness meeting for farmer organization	Monitoring and Evaluation	Monitoring and Evaluation	Monitoring and Evaluation
		Establish additional elephant corridors and habitat linkages identified from new radio tracking data	75,200,000.00	Second Priority		Consultative meetings with stakeholders including ID, DAD, DWC, FD, CGR	Kaluganga Project area	Elahera Project Area	Huruluwewa Project Area	Eruwewa - Manankattiya Project Area	Mahakanadarawa Project Area
		Declare elephant habitat as FD reserves	5,000,000.00	Second Priority		Identify any Forest patches in the UECP area under the FD and preparation of GIS map	Huruluwewa project area	Manankattiya Project Area	Eruwewa Project Area	Mahakanadarawa Project Area	Elahera Project Area
		Declare as FD /DWC reserves any additional forest patches identified from new radio tracking data as critical habitats for elephants	67,900,000.00	Second Priority		Consultative meeting with stakeholders including DWC, FD, RDA, CGR, NGO and farmer organization	Palugaswewa and Hingurakgoda DS Office area	Galenbidunuwewa and Kahatagasdigiya DS Office Area	Thirppane and Mihinthale DS Office Area	Kekirawa and Rambewa DS Office Area	Dambulla and Elahera - Bakamoona DS Office Area
		Regulate chena cultivation	440,000.00	Second Priority		Workshop with FD, ESCAMP, DWC, DSD, Elephant experts, NGOs to develop regulatory structure and mechanism	Huruluwewa project area	Manankattiya project area	Eruwewa Project Area	Mahakanadarawa Project Area	Palugaswewa and Kekirawa DS Office area
		Declare elephant range as MER under the DWC	300,000.00	Second Priority		Identify elephant range based on new radio tracking data	Identify elephant range based on new radio tracking data	Identify elephant range based on new radio tracking data	HEC expert with prior experience to analyse the data and identify areas suitable to be manage as MER in collaboration with DWC	HEC expert with prior experience to analyse the data and identify areas suitable to be manage as MER in collaboration with DWC	HEC expert with prior experience to analyse the data and identify areas suitable to be manage as MER in collaboration with DWC
		Establish seasonal paddy field fencing programme through DAD	29,140,000.00	Second Priority		Consultative meetings with DAD, ESCAMP, NGOs to develop framework	Establish seasonal paddy field fencing programme through Matale District Project area	Establish seasonal paddy field fencing programme through Pollonnaruwa District Project area	Establish seasonal paddy field fencing programme through Anuradhapura District Project area	Monitoring and maintenance program	Monitoring and maintenance program
Establish permanent fencing programme around villages through DS		Second Priority		Consultative meeting with	Establish seasonal paddy field fencing	Establish seasonal paddy field fencing	Establish seasonal paddy field fencing	Monitoring and maintenance	Monitoring and maintenance		

The Budget and Implementation Schedule of Non Priority Actions of Wildlife Management Master Plan of UECP

WMP Ref. No	Main Objectives	Activity	Estimate/LKR	Priority	Years						
					2019	2020	2021	2022	2023	2024	2025
			29,890,000.00			District Secretariat, DS, Disaster management Dept, Civil Security Dept, ESCAMP, NGOs, to develop framework, implementation mechanism and management plan including monitoring) for implementation through DS	programme through Matale District Project area	programme through Pollonnaruwa District Project area	programme through Anuradhapura District Project area	program	program
		Develop and implement insurance scheme for crop damages caused by elephants	300,000.00	Second Priority		Consultative meetings with insurance companies to develop scheme, making it compulsory for the beneficiaries of the UECP area	Implementation and Monitoring HEC conflict UEC project area	Implementation and Monitoring HEC conflict UEC project area	Implementation and Monitoring HEC conflict UEC project area	Implementation and Monitoring HEC conflict UEC project area	Implementation and Monitoring HEC conflict UEC project area
Total			226,570,000.00								

Map of proposed land for new forest plantation

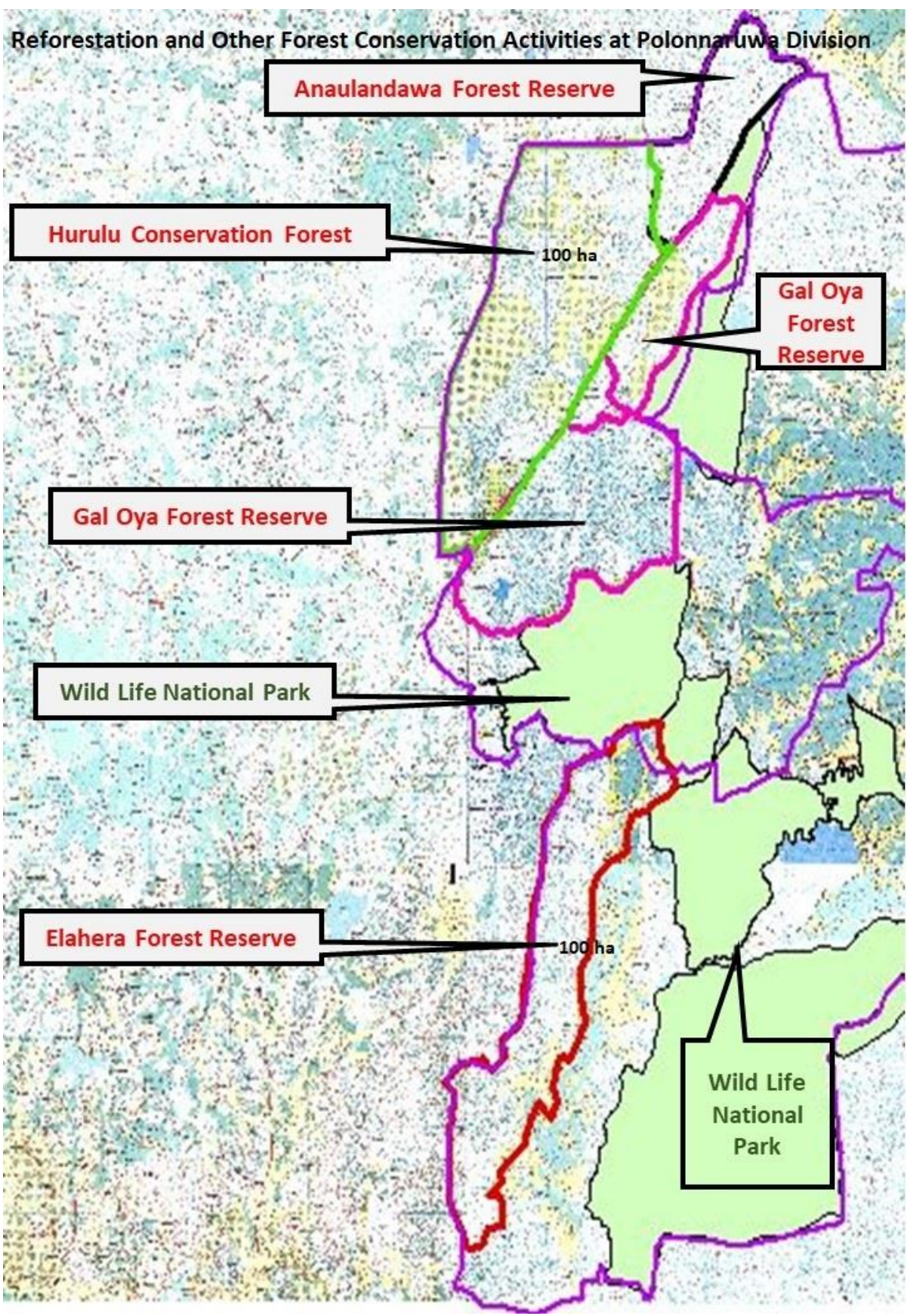


GPS CORDINATES

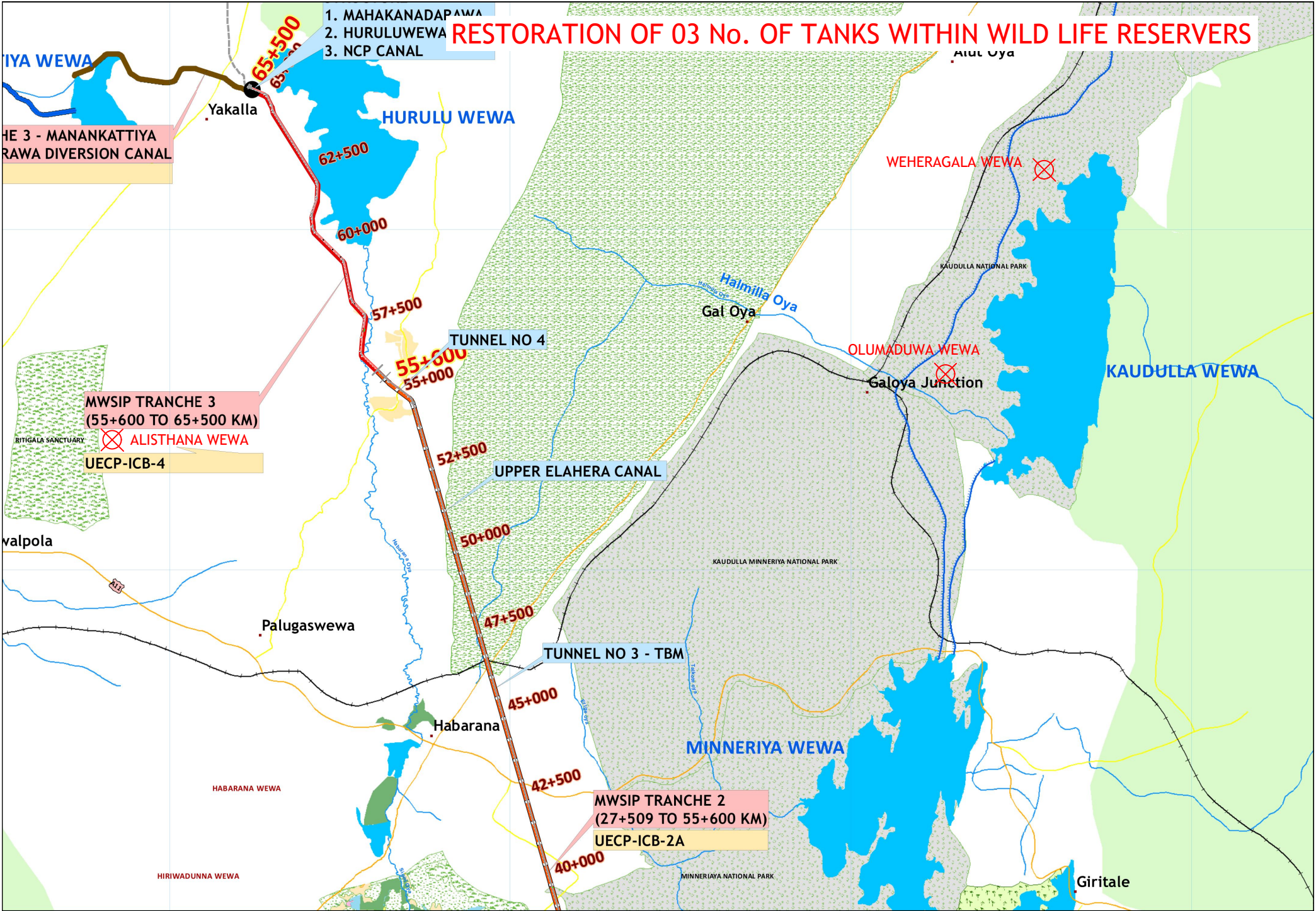
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02.	203097E	_	258749N
03.	203092E	_	258501N
04.	203053E	_	258462N
05.	203059E	_	258350N
06.	203141E	_	258167N
07.	203247E	_	258001N
08.	203380E	_	257924N
09.	203387E	_	257829N
10.	203290E	_	257810N
11.	203045E	_	257827N
12.	203065E	_	258050N
13.	203015E	_	258140N
14.	202937E	_	258382N
15.	202928E	_	258624N
16.	202701E	_	258708N
17.	202675E	_	258811N
18.	202934E	_	258838N

RANGE - LAGGALA
 BEAT - ILLUKKUMBURA
 SITE - GANGAHENWALA

Tree planting of 30 ha. from
 proposed land



RESTORATION OF 03 No. OF TANKS WITHIN WILD LIFE RESERVERS



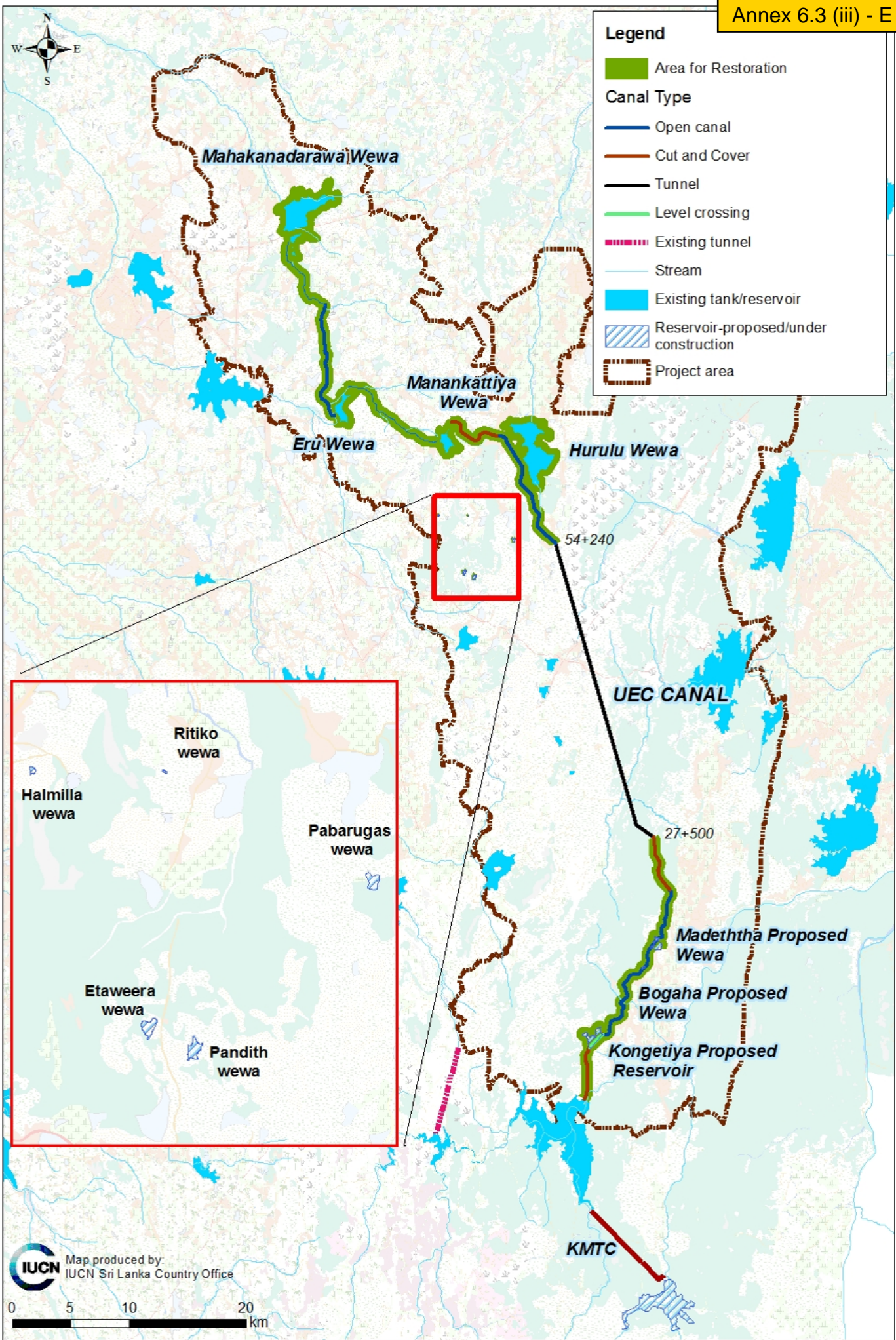
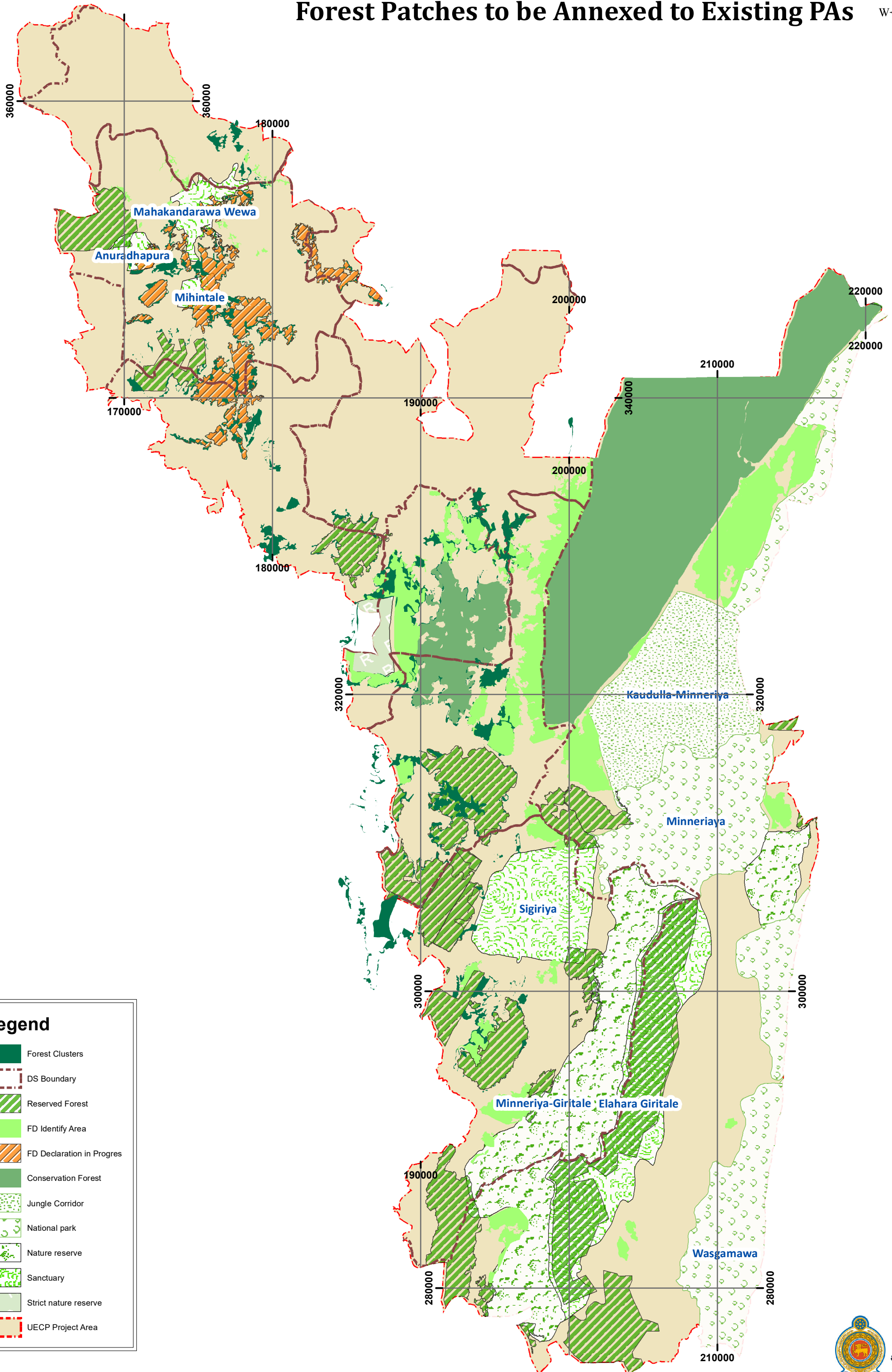
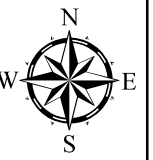


Figure 88. Map of areas that need restoration

Forest Patches to be Annexed to Existing PAs

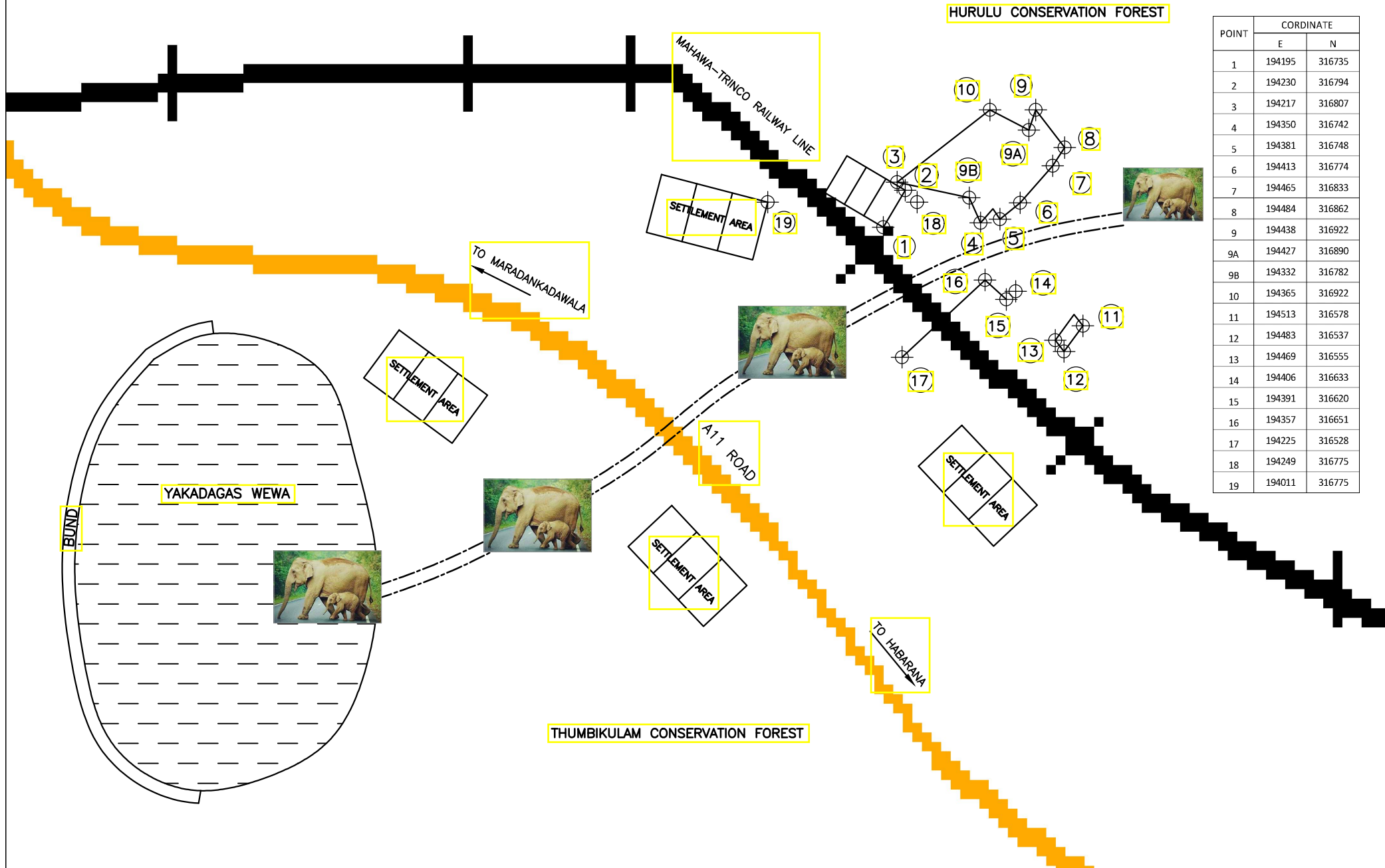


Legend

- Forest Clusters
- DS Boundary
- Reserved Forest
- FD Identify Area
- FD Declaration in Progres
- Conservation Forest
- Jungle Corridor
- National park
- Nature reserve
- Sanctuary
- Strict nature reserve
- UECP Project Area



PROPOSED MODEL ELEPHANT CORRIDOR AT HURILU-THUMBIKULAM



HURULU CONSERVATION FOREST

POINT	COORDINATE	
	E	N
1	194195	316735
2	194230	316794
3	194217	316807
4	194350	316742
5	194381	316748
6	194413	316774
7	194465	316833
8	194484	316862
9	194438	316922
9A	194427	316890
9B	194332	316782
10	194365	316922
11	194513	316578
12	194483	316537
13	194469	316555
14	194406	316633
15	194391	316620
16	194357	316651
17	194225	316528
18	194249	316775
19	194011	316775

මහවැලි කෘෂිකර්ම වාරිමාර්ග සහ ග්‍රාමීය සංවර්ධන අමාත්‍යාංශය

මහවැලි ජල සුරක්ෂිතතා ආයෝජන වැඩසටහන

වනජීවි කළමනාකරණ සැලසුම ක්‍රියාත්මක කිරීම

වනජීවි කළමනාකරණ සැලැස්ම ක්‍රියාත්මක කිරීම සඳහා වූ ජාතික සමාලෝචන කමිටුව

රැස්වීම් වාර්ථාව

දිනය - 2020.02.25

වේලාව - පෙ.ව 10.00 - ප.ව 1.00

ස්ථානය - මහවැලි ජල සුරක්ෂිතතා ආයෝජන වැඩසටහන
සහභාගීත්වය

අංකය	නම	තනතුර හා ආයතනය
1	කේ. ආර්. නීල් බණ්ඩාර	ව්‍යාපෘති අධ්‍යක්ෂ/ ව්‍යාපෘති කළමනාකරණ ඒකකය මහවැලි ජල සුරක්ෂිතතා ආයෝජන වැඩසටහන
2	ජී.ඒ. කිත්සිරි	අතිරේක දිස්ත්‍රික් ලේකම් (සංවර්ධන/ ඉඩම්), කුරුණෑගල දිස්ත්‍රික් ලේකම් කාර්යාලය
3	ජී.ඩී. කීර්ති ගමගේ	අතිරේක දිස්ත්‍රික් ලේකම් (සංවර්ධන/ ඉඩම්), අනුරාධපුර දිස්ත්‍රික් ලේකම් කාර්යාලය
4	ඩබ්ලිව්.ජී.ඩබ්ලිව්. වනසිංහ	අතිරේක දිස්ත්‍රික් ලේකම් (සංවර්ධන/ ඉඩම්), පොළොන්නරුව දිස්ත්‍රික් ලේකම් කාර්යාලය
5	ඩී.එච්.එස්. කුමරාසිරි	වන සංරක්ෂක, වන විද්‍යා හා වන කළමනාකරණ අංශය, වන සංරක්ෂණ දෙපාර්තමේන්තුව
6	මංජුල අමරරත්න	අධ්‍යක්ෂක (මෙහෙයුම්), වනජීවි සංරක්ෂණ දෙපාර්තමේන්තුව
7	ආර්.අයි. ජයසිංහ	වාරිමාර්ග ඉංජිනේරු, වාරිමාර්ග දෙපාර්තමේන්තුව
8	ප්‍රසාද් රණතුංග	සහකාර කොමසාරිස්, ගොවිජන සංවර්ධන දෙපාර්තමේන්තුව
9	පී.ජී.ඩී.ජේ. පෑබොටුව	සංරචක සම්බන්ධීකාරක(2b)/ පරිසර පද්ධති සංරක්ෂණ හා කළමනාකරණ ව්‍යාපෘතිය. (ප.ප.සං. ව්‍යාපෘතිය)
10	එම්. කිරුපාමුර්ති	නියෝජ්‍ය අධ්‍යක්ෂ (කෘෂිවිද්‍යා), ඉඩම් පරිහරණ ප්‍රතිපත්ති සැලසුම් දෙපාර්තමේන්තුව
11	මහාචා. දේවක වීරකෝන්	සෞභාදහම සහ ස්භාවික සම්පත් සංරක්ෂණය සඳහා වූ ජාත්‍යන්තර සංගමය IUCN
12	සම්පත් ගුණතිලක	IUCN
13	සී. රූපසිංහ, පරිසර	පරිසර අධිකාරිය
14	ශාන්ත ධර්මසිරි	වනජීවි කළමනාකර සැලැස්ම- ඉහළ ඇළහැර ඇළ ක්‍රියාත්මක කිරීමේ නිලධාරී
15	එම්.එච්. විත්‍රසේන	වනජීවි කළමනාකර සැලැස්ම - වයඹ පළාත් ඇළ ක්‍රියාත්මක කිරීමේ නිලධාරී
16	රෝහණ තෙන්නකෝන්	ජේෂ්ඨ පරිසර නිලධාරී, වයඹ පළාත් ඇළ ව්‍යාපෘතිය
16	පද්මසිරි මුනමලේ	පරිසර විශේෂඥ/ මහවැලි ජල සුරක්ෂිතතා ආයෝජන වැඩසටහන (ම.ජ.සු.ආ.වැ)
17	ඒ.එච්.සුමනසේන	ජාතික සම්බන්ධීකාරක/ වනජීවි කළමනාකරණ සැලසුම ක්‍රියාත්මක කිරීම- (ම.ජ.සු.ආ.වැ)

1. සාකච්ඡා සටහන් :

- I. පළමුව පැමිණ සිටි සියලුදෙනා මහවැලි ජල සුරක්ෂිතතා ආයෝජන වැඩසටහන් අධ්‍යක්ෂකතුමා විසින් පිළිගන්නා ලදී.
- II. වයඹ පළාත් ඇළ හා ඉහළ ඇළහැර ඇළ ව්‍යාපෘතිය යටතේ ක්‍රියාත්මක කරනු ලබන වනජීවී කලමනාකරණ සැලසුම් පහත සඳහන් කරුණු කෙරෙහි විශේෂ අවධානය යොමු කරමින් පරිසර විශේෂඥ පද්මසිරි මුණමලේ මහතා විසින් ඉදිරිපත්කරන ලදී.

- වයඹ පළාත් ඇළ සහ ඉහළ ඇළහැර ඇළ ව්‍යාපෘති බල ප්‍රදේශය තුළ අලි මිනිස් ගැටුම අවම කිරීම සඳහා සකස්කරන ලද වනජීවී කලමනාකරණ සැලැස්ම
- වනජීවී කලමනාකරණ සැලැස්ම ක්‍රියාත්මක කිරීමේදී අනුගමනය කරනු ලබන මූලික පියවරයන් හා මූල්‍ය කටයුතු සිදුවන ආකාරය.
- වනජීවී කලමනාකරණ සැලසුම් ක්‍රියාවට නැංවීමේදී ඇති වූ මූල්‍ය සීමාවන් හේතු කොටගෙන ප්‍රමුඛතාගත කරන ලද වනජීවී කලමනාකරණ සැලසුම්
- වනජීවී කලමනාකරණ සැලසුම් ක්‍රියාවට නැංවීමේ යාන්ත්‍රණය.
- 2019 වර්ෂය තුළ වනජීවී කලමනාකරණ සැලසුම් වලට අදාළ ප්‍රගතිය
- වනජීවී කලමනාකරණ සැලසුම් ක්‍රියාවට නැංවීමේදී මතුවී ඇති ගැටලු

තවද පාර්ශවකාර ආයතන හා එම නිලධාරීන්, වනජීවී කලමනාකරණ සැලසුම් ක්‍රියාත්මක කිරීමේදී අවශ්‍යය උපදේශනයන් හා මගපෙන්වීම් සඳහා වූ ජාතික ප්‍රගති සමාලෝචන කමිටුව ලෙස ස්ථාපනය කරන ලදී.

මෙම කමිටුව පහත සඳහන් ක්‍ෂේත්‍රයන්ට අදාළ වගකීම් දරණු ඇත.

1. වනජීවී කලමනාකරණ සැලසුම් සඳහා එකඟතාවය ලබාදීම හා අදාළ ප්‍රගති සමාලෝචනය කිරීම
2. වනජීවී කලමනාකරණ සැලසුම් යාවත්කාලීන කිරීමට අදාළ උපදෙස් ලබාදීම
3. ප්‍රදේශීය මට්ටමෙන් ඇතිවන ගැටලු ඉහළ කලමනාකරණය වෙත ඉදිරිපත් කොට විසඳුම් ලබාදීම
4. වනජීවී කලමනාකරණ සැලසුම් ක්‍රියාවට නැංවීමේදී ඇතිවිය හැකි තාක්ෂණික ගැටලු නිරාකරණය සඳහා අවශ්‍යය උපදෙස් ලබාගැනීම



අංකය	එළැඹී තීරණ	වගකීම
01	<p>වන සත්ව හා වෘක්ෂලතා ආරක්ෂණ ආඥා පනත/ වන ආඥා පනත යටතේ මෙතෙක් ප්‍රකාශයට පත් වී නොමැති වනාන්තර කොටස් එම ආඥා පනත් යටතේ ප්‍රකාශයට පත්කර ප්‍රධාන රක්ෂිතයට ඒකාබද්ධ කිරීම .</p> <p>මේ වන විට මෙම වනාන්තර කොටස් හඳුනාගෙන සිතියම්ගත කර ඇත. එම වනාන්තර පිළිබඳව පහත සඳහන් ක්‍රියාමාර්ග අනුගමනය කිරීමට කමිටුව තීරණය කරන ලදී</p> <ul style="list-style-type: none"> • මෙම වනාන්තර කොටස් වල භාරකාරත්වය හඳුනාගැනීම. • වනාන්තරවල පිහිටීම දැක්වෙන GPS කණ්ඩාංක ලබාගැනීම. • අදාළ ආඥා පනත් යටතේ ප්‍රකාශයට පත්කිරීම 	<p>වැඩසටහන් කලමනාකරණ ඒකකය (ම.ජ.සු.ආ.වැ)/ වනජීවී සං. දෙ./ වන සං. දෙ./ ව්‍යාපෘති අධ. (ව.ප.ඇ/ ඉ.ඇ.ඇ</p>

<p>02</p>	<p>වනඅලි පිවිසුම් මාර්ග ස්ථාපනය කිරීම</p> <p>වයඹ පළාත් ඇළ ව්‍යාපෘතියේ අලි පිවිසුම් මාර්ග 2ක් ස්ථාපිත කිරීම සඳහා හඳුනාගෙන ඇති අතර ඉහළ ඇළහැර ඇළ ව්‍යාපෘති බල ප්‍රදේශය තුළ අලි පිවිසුම් මාර්ග 8ක් ස්ථාපිත කිරීමට නියමිතය. අලි පිවිසුම් මාර්ග ස්ථාපිත කිරීමේදී ඒ සඳහා අවශ්‍ය ඉඩම් පවරා ගත යුතුව ඇත. එම ඉඩම් පවරා ගැනීම අදාළ පාර්ශවකාර රාජ්‍ය ආයතන වලින් හා ඊට අදාළ සම්බන්ධීකරණයන් ම.ජ.සු.ආ.වැ. මගින් සිදුකිරීම.</p> <p>ඉහළ ඇළහැර ඇළ ව්‍යාපෘතියේ, හුරුළු තුම්බිකුලම වන අලි පිවිසුමට අදාළ ඉඩම් මැනීම අනුරාධපුර දිස්ත්‍රික් ලේකම් කාර්යාලයට අනුබද්ධ රජයේ මිනින්දෝරු විසින් සිදුකර ගැනීම සඳහා ප්‍රාදේශීය ලේකම් පලුගස්වැව විසින් ප්‍රාදේශීය ලේකම් අනුරාධපුර වෙත ඉල්ලීම ලිපියක් යොමු කිරීම.</p> <p>ඉඩම් අත්පත් කරගැනීමට නොමැති වනඅලි පිවිසුම් GPS බණ්ඩාංක යොදාගනිමින් වන සත්ව හා වෘක්ෂලතා ආඥා පනත යටතේ සුදුසු රක්ෂිතයක් ලෙස ප්‍රකාශයට පත්කිරීම.</p> <p>අලි පිවිසුම් මාර්ග 01- වයඹ පළාත් ඇළ ව්‍යාපෘතිය</p> <p>මෙම වන අලි පිවිසුම් මාර්ගය ස්ථාපනය කිරීම සම්බන්ධයෙන් ප්‍රාදේශීය පරිපාලනය, ප්‍රාදේශීය දේශපාලන අධිකාරිය හා ජනතා විරෝධය පැනනැගී ඇති බැවින් එම අලි පිවිසුම් මාර්ගය ස්ථාපනය කිරීමට නොහැකි වී ඇති බව කමිටුව වෙත දැනුම්දෙන ලදී.</p> <p>කෙසේ වුවද මෙම අලි පිවිසුම් මාර්ගය අනිවාර්යෙන්ම ස්ථාපිත කලයුතු බව වනජීවී සංරක්ෂණ දෙපාර්තමේන්තුවේ තීරණය විය. එබැවින් වයඹ පළාත් ඇළ ව්‍යාපෘතිය යටතේ ස්ථාපිත කිරීමට නියමිත අලි පිවිසුම් මාර්ග සම්බන්ධයෙන් දිස්ත්‍රික් ලේකම් කුරුණෑගල හා අනෙකුත් නිලධාරීන් මෙන්ම දේශපාලන අධිකාරිය සමග සාකච්ඡාවක් පැවත්වීමට තීරණය විය.</p> <p>ඒ අනුව ව්‍යාපෘති අධ්‍යක්ෂ වයඹ පළාත් ඇළ විසින් රැස්වීමක් සංවිධානය කිරීම</p>	<p>වනජීවී සං. දෙ./ වන සං. දෙ./ දි.ලේ./ වැඩසටහන් කලමනාකරණ ඒකකය (ම.ජ.සු.ආ.වැ.)</p> <p>ව්‍යා.අ. ඉහළ ඇළහැර</p> <p>ව්‍යාපෘති අධ. (ව.ප.ඇ/ ඉ.ඇ.ඇ)/ වනජීවී සං. දෙ./ වන සං. දෙ.</p> <p>වැඩසටහන් කලමනාකරණ ඒකකය (ම.ජ.සු.ආ.වැ)/ වනජීවී සං. දෙ./ ව්‍යා.අ. වයඹ පළාත් ඇළ</p>
<p>03</p>	<p>වනඅලි රේඛීයෝ කර පටි</p> <p>GSM තාක්ෂණය යොදාගනිමින් මොරටුව විශ්වවිද්‍යාලයේ විදුලි සංදේශණ අධ්‍යයනාංශය විසින් වන අලිගේ සංචරන රටා හඳුනාගැනීම පිණිස GPS කරපටි සැලසුම් කොට නිර්මාණය කිරීම, කමිටුව විසින් පැසසුමටලක් කල අතර එම කාර්යය මොරටුව විශ්ව විද්‍යාලය මගින් ඉටුකර ගැනීමට කමිටුව විසින් නිර්දේශ කරන ලදී.</p> <p>මෙසේ නිපදවනු ලබන GPS කරපටි වයඹ පළාත් ඇළ සහ ඉහළ ඇළහැර ඇළ ව්‍යාපෘති බලප්‍රදේශ තුළ වන අලිගේ හට පලදවා අදාළ දත්තයන් විශ්ලේෂණය කොට වන අලිගේ නව සංචරන මාර්ග හඳුනා ගැනීම වනජීවී සංරක්ෂණ දෙපාර්තමේන්තුව මගින් සිදුකිරීම.</p> <p>එමෙන්ම කරපටි පැලඳවීමේ කාර්යයද වනජීවී දෙපාර්තමේන්තුව මගින් සිදුකිරීමට තීරණය විය</p>	<p>වැඩසටහන් කලමනාකරණ ඒකකය (ම.ජ.සු.ආ.වැ)/ වනජීවී සං. දෙ.</p>

<p>04</p>	<p>ග්‍රාමීය විදුලි වැට අලි මිනිස් ගැටුම කළමනාකරණය කිරීම සඳහා වනජීවී සංරක්ෂණ දෙපාර්තමේන්තුව විසින් මේ වන විට රැගෙන ඇති ක්‍රමවේද වලට සමගාමීව මෙම වැඩසටහන ඉදිරියට ගෙනයෑමට තීරණ වූ අතර ආවරණය කිරීමට සුදුසු ගම්මාන කමිටුවක් මගින් හඳුනා ගැනීම හා විදුලි වැට ඉදිකිරීම අදාළ ප්‍රාදේශීය ලේකම් වරුන්ගේ මෙහෙයවීම යටතේ ප්‍රජාමූල සංවිධාන මගින් සිදුකිරීම.</p>	<p>වැඩසටහන් කළමනාකරණ ඒකකය (ම.ජ.සු.ආ.වැ)/ ව්‍යාපෘති අධ. (ව.ප.ඇ/ ඉ.ඇ.ඇ)/ දි.ලේ/ ප්‍රා.ලේ</p>
<p>05</p>	<p>වගා හානි සඳහා රක්ෂණ ක්‍රමවේදයක් ස්ථාපිත කිරීම මීට අදාළ ක්‍රමවේද ESCAMP ව්‍යාපෘතිය මගින් හඳුන්වාදීමට කටයුතු කරන බැවින් එම ව්‍යාපෘතිය හා ඒකාබද්ධව කටයුතු කිරීමට තීරණය විය. ESCAMP ව්‍යාපෘතිය මගින් මේ සම්බන්ධයෙන් පැවැත්වීමට නියමිත රැස්වීම් සඳහා වැඩසටහන් කළමනාකරණ ඒකකය ආරාධනා කිරීමට එකඟ විය.</p>	<p>වැඩසටහන් කළමනාකරණ ඒකකය (ම.ජ.සු.ආ.වැ)/ ESCAMP</p>
<p>06</p>	<p>දැනුවත් කිරීමේ වැඩසටහන් වනජීවී කළමනාකරණ සැලැස්ම යටතේ හඳුනාගෙන ඇති දැනුවත් කිරීමේ වැඩසටහන්, ඉදිරියේදී වැඩසටහන් කළමනාකරණ ඒකකයේ පුහුණු සහ සංනිවේදන අංශය සමඟ එකාබද්ධව වැඩසටහන් කළමනාකරණ ඒකකයේ ප්‍රතිපාදන මත සිදුකිරීමට ගෙන ඇති තීරණය සඳහා කමිටුවේ එකඟතාවය පලවිය තවද දැනුවත් කිරීමට අදාළ වැඩසටහන් (වීඩියෝ videos , ජරලේඛණ Documentation) යනාදිය ESCAMP ව්‍යාපෘතිය සහ වනජීවී සංරක්ෂණ දෙපාර්තමේන්තුව සමඟ හුවමාරු කරගැනීමට තීරණය විය.</p>	<p>වැඩසටහන් කළමනාකරණ ඒකකය (ම.ජ.සු.ආ.වැ)/ ESCAMP/ ව්‍යාපෘති අධ. (ව.ප.ඇ/ ඉ.ඇ.ඇ)</p>
<p>07</p>	<p>වයඹ පළාත් ඇළ සහ ඉහළ ඇළහැර ඇළ ව්‍යාපෘති වල වනජීවී කළමනාකරණ සැලසුම් යටතේ අලි මිනිස් ගැටුම අවම කිරීම සඳහා ඉදිරිපත් කරන නිර්මිතයන් හා යටිතල පහසුකම් ඉඩම් පරිහරණ සැලසුම් වලට ඇතුළත් කිරීම. තවද එම කටයුතු ප්‍රාදේශීය ලේකම්/ ඉඩම් පරිහරණ නිලධාරී සමඟ ඒකාබද්ධව සිදුකිරීමටද තීරණය විය.</p>	<p>වැඩසටහන් කළමනාකරණ ඒකකය (ම.ජ.සු.ආ.වැ)/ ව්‍යාපෘති අධ. (ව.ප.ඇ/ ඉ.ඇ.ඇ)/ ප්‍රා.ලේ/ ප්‍රාදේශීය ඉඩම් පරිහරණ නිලධාරී</p>
<p>08</p>	<p>වයඹ පළාත් ඇළ සහ ඉහළ ඇළහැර ඇළ ව්‍යාපෘතිය යටතේ අලිමිනිස් ගැටුම අවම කිරීම සඳහා වැඩිදියුණු කරන යටිතල පහසුකම් හා ඊට අදාළව පැන නගින ගැටලු සමාලෝචනය කරමින් යාවත්කාලීනව පවත්වාගෙන යාම සඳහා ප්‍රාදේශීය පරිපාලනය සහ දේශපාලන අධිකාරියේ ප්‍රධානත්වයෙන් යාන්ත්‍රණයක් සකස්කොට පවත්වාගෙන යාම.</p>	<p>වැඩසටහන් කළමනාකරණ ඒකකය (ම.ජ.සු.ආ.වැ)/ ව්‍යාපෘති අධ. (ව.ප.ඇ/ ඉ.ඇ.ඇ)/ දි.ලේ/ වනජීවී සං. දෙ./ වන සං. දෙ./ වාරි.දෙ/ ගො.ස.දෙ ඇතුලු අනෙකුත් පාර්ශවකාර ආයතන</p>

Annex 6.4 - Participatory sessions for WMP implementation

No	Date	Activity	Place	Decision taken	Phots
1	2019.05.28	Regional Review Committee meeting on the implementation of Wildlife Management & HEC Mitigation Action Plan- UECP	Habarana	Approval for the revised Wildlife Management & HEC Mitigation Action Plan	
2	2019.07.04	Consultative Committee Meeting on the establishment of elephant corridors	DS's Office Palugaswe wa	Consent for the establishment of Hururlu - Thumbikulama model elephant corridor.	

8	2020.02.25	National Review Committee Meeting on the implementation of WMP	PMU-MWSIP Conference room	<p>Committee Approved:</p> <ul style="list-style-type: none"> a. WM & HEC Mitigation Action Plans for NWPCP/UECP b. Budget & Implementation Institutional & Fund disbursement Methodology c. Prioritize WM & HEC Mitigation Action Plans for NWPCP/UECP d. Implementation & Monitoring Institutional Mechanism of WMP under MWSIP <p><i>Annex I; Minutes of the meeting</i></p>	 
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Annex 7

Letter issued by GSMB confirming that Tunnel vibration is within the standard limits



භූ විද්‍යා සමීක්ෂණ හා පවල් කායසිංශය புவிச்சரிதவியல் அளவை சுரங்கங்கள் பணியகம் GEOLOGICAL SURVEY & MINES BUREAU

නො. 569, විපිටමුල්ල පාර,
පිටකෝට්ටේ, ශ්‍රී ලංකා.

இல. 569, எப்பிட்டமுல்ல வீதி,
பிடகோட்டே, இலங்கை.

No. 569, EPITAMULLA ROAD,
PITAKOTTE, SRI LANKA.

Our Ref: DMS/ 20/EX/033

Your Ref: UECP/PD/KMTC/01

04-03-2020

Project Director,
Upper Elahera Canel Project-ICB 1 & 2B,
Mahaweli Water Security Investment Program

Handwritten notes:
DPA
PR ~~to~~ inform
to P/s & S/s
12/3



Subject: Make aware the public on the effect of rock blasting activities to the neighboring residences from Kalugaha moragahakanda transfer cannel project

This refers to your letter UECP/PD/KMTC/01 dated 07/01/2020 on the above subject; I would hereby submit the technical clarification for your kind consideration.

Accordingly Director Mines Safety and Senior Mining Engineer have conducted two test blasts on 11th February 2020 inside two tunnels and their blast induced ground vibration & air blast over pressure was measured at complainer's house including the temple-Sri Vishuddharamaya, Leloya. Neither of those values was detected by the instrument (Blast Mate III). Minimum reading of the instrument (trigger level) was set to 0.5mm/s and 100dB as blast induced ground vibration and air blast over pressure respectively.

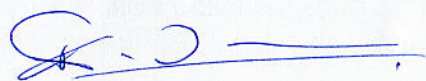
At the inception of the project, at two tunnel portals, the GSMB has conducted two test blasts and their blast induced ground vibrations and air blast over pressure values were measured at neighboring houses. It was revealed that those values were well within the permissible values promulgated by CEA. However blast induced ground vibration and air blast over pressure was continually measured at neighboring houses by an independent group for three months after first two tunnel trial blasts being conducted by the GSMB. At the very first blasts of the two tunnel portals, the air blast pressure values are the maximum. While construction of two tunnels is in progress, the effect of air blast over pressure to the neighboring houses would gradually decline.

දුරකථන : தொலைபேசி : Telephone :	සභාපති : தலைவர் : Chairman :	2886268	අධ්‍යක්ෂ ජනරාල් : பணிப்பாளர் நாயகம் : Director General :	2886271	සාමාන්‍යාධිකාරී : பொது முகாமையாளர் : General Manager :	2887826	පොදු : பொது : General :	2886289, 2886290 2887820, 2887821 2887822, 2887823	ෆැක්ස් අංකය : தொலைநகல் இல. : Fax No. :	94-011-2886273 94-011-2887824
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Having being analyzed their records, the GSMB has found that none of the recorded values have exceeded maximum values declared by the CEA.

Meanwhile as, the two tunnels mentioned above are heading outward from complainers houses as well as neighboring houses, the effects due to tunnel blasts at complainer's houses including the temple gradually would decline. So it is highly unlikely that tunnel blasting activities would be affected to the nearest houses because all measured values since the inception of project up to 11th February 2020 were well within the permissible values declared by the CEA.

So it can be concluded that the fact that was highlighted by "CIA" news bulletin has no technical grounds whatsoever.



Dr. C.H.E.R.Siriwardana

Director General

Dr. C.H.E.R. Siriwardana
Director General
Geological Survey and Mines Bureau
No. 569, Epitamulla Road, Pitakotte

- Cc: 1. Divisional Secretary: Laggala
2. Project Manager: Synohydro Corporation Ltd.
3. SD (Mining)
4. Director (EIA & Regions)



ඉහළ ඇළහැර ඇළ ව්‍යාපෘතිය
මෙල් ංලඹෙර කාල්වෘය් ත්‍රිද්දම්
Upper Elahera Canal Project
(UECP – ICB 1 & 2B)



මහවැලි, කෘෂිකර්ම, වාරිමාර්ග සහ ග්‍රාම සංවර්ධන අමාත්‍යාංශය
මහාචාර්ය, වෙළාඹෙර, තීර්ප්පාසනම් මර්තූම් ංරක වංර්ඡ්ඡි අමෙඡ්ඡකම්
Ministry of Mahaweli, Agriculture, Irrigation & Rural Development

මහවැලි ජල සුරක්ෂිතතා ආයෝජන වැඩසටහන
මහාචාර්ය තීර්ප් පාතූකාඡ්ඡ්ඡාන මුතලීද්දම් ත්‍රිද්දම්
Mahaweli Water Security Investment Program

Project Office, New Road, Guruwela, Laggala

ත්‍රිද්දම් අඹුවලකම්, ප්‍රතීය ත්‍රොද්, ඡුඹුවෙල, ලඡ්ඡක

ව්‍යාපෘති කාර්යාලය, අදුන් පාර, ඉරුඡ්ඡවල, ලංංල

මගේ අංකය }
ංනඡු ඹල } UECP/PD/KMTC/01
My No }

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Date }

Divisional Secretary
Divisional Secretariat,
Laggala

**CONSTRUCTION OF UPPER ELAHERA CANAL KALUGANGA — MORAGAHAKANDA
TRANSFER CANAL (KMTC) 0+000 KM TO 8+830 KM
CONTRACT NO.: MMDE/MWSLP/ADB/UECP/LCB-2B/P47381-005-SRL/LCB/2016/026**

CONTRACT PACKAGE UECP-ICB-2B

Subject: Make aware the public on the effect of rock blasting activities to the neighbouring residences from Kaluganga – Moragahakanda Transfer Canal project

This has reference to Director General's – Geological Survey and Mines Bureau letter no. *DMS/20/EX/033* dated *04/03/2020* on the above matter (*copy is enclosed herewith*).

Lately, a technical team from Geological Survey and Mines Bureau along with Director – Mines Safety and Senior Mining Engineer visited and conducted an investigation on the blasting effect to the neighbouring residences while performing blasting activities at our tunnel and made these conclusions which are elaborated in detail within the above letter.

Therefore, please make necessary arrangements to make aware the public, especially the residents in Leloya and Wellewela villages and your response in this regard is highly appreciated.

.....
Eng. D.B. Wijyaratne
Project Director,
Upper Elahera Canal Project - ICB 1 & 2B,
Mahaweli Water Security Investment Program

Copy:- Chairman (Pradeshiya Sabhawa - Laggala) -For your information please
Program Director (MWSIP) -For your information, please
Resident Engineer (PMDSC - KMTC) -For your information, please
Block Manager (System Moragahakanda - Wellewela) -For your information please

(Reference is made to your letter *BM/W/TS/04* dated *11/02/2020*)

File

