

# Environmental Monitoring Report

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Semi-Annual Report no. 2  
For the period covered June 2017–June 2018  
Project Number: 47381-002  
July 2018

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

Minipe Left Bank Canal Rehabilitation Project (MLBCRP)

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

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## MAHAWELI WATER SECURITY INVESTMENT PROGRAM

# ANNUAL ENVIRONMENTAL MONITORING REPORT FOR MLBCRP – No. 02

June 2018



**Program Management, Design and Supervision Consultant**

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# ANNUAL ENVIRONMENTAL MONITORING REPORT FOR MLBCRP – No. 02

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**ABBREVIATIONS**

AAQ	Ambient Air Quality
ADB	Asian Development Bank
AEMR	Annual Environmental Monitoring Report
BOD	Biological oxygen Demand
CEA	Central Environmental Authority
CEMP	Contractor's Environmental Management Plan
COD	Chemical Oxygen Demand
D/S	Down Stream
DS	Divisional Secretary
DWC	Department of Wildlife Conservation
EARF	Environmental Assessment Review Framework
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMS	Environmental Method Statements
EMS PMDSC	Environmental Monitoring Specialist PMDSC
EO	Environmental Officer
EPL	Environmental Protection License
FAM	Facility Administration Manual
FD	Forest Department
FFPO	Fauna and Flora Protection Ordinance
GoSL	Government of Sri Lanka
IAS	Invasive Alien Species
ICB	International contractor bidding
ID	Irrigation Department
IE	Irrigation Engineer
IEE	Initial Environmental Examination
IEER	Initial Environmental Examination Report
IMS	Independent Monitoring Specialist
ITI	Industrial technological Institute
KMTC	Kaluganga Moragahakanda Transfer Canal
LB	Left bank
LKR	Sri Lankan Rupees
ML	Mining License
MLBCRP	Minipe Left Bank Canal Rehabilitation Project
MMDE	Ministry of Mahaweli Development and Environment

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MoU	Memorandum of Understanding
MRB	Mahaweli River Basin
MWSIP	Mahaweli Water Security Investment Program
NCB	National Contractor bidding
NWPCP	North Western Canal Project
PD	Program Director/Project Director
PIU	Project Implementation Unit
PMDSC	Project Management Design Supervision Consultant
PMU	Program Management Unit
PPE	Personnel Protective Equipments
PSO	Provisional Some Order
RE	Resident Engineer
SEO	Senior Environmental Officer
SLS	Sri Lanka Standard Institute
SPS	Safeguard Policy Statement
SW	Surface Water
TDS	Total Dissolved Solids
TL	Trade License
TSS	Total Suspended Soilds
UECP	Upper Elahera Canal Project
VAT	Value Added Tax
VO	Variation order
VRR	Victoria/Randenigala/Rantambe

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# 1. INTRODUCTION

## 1.1 MWSIP and MLBCRP

1. The Mahaweli Water Security Investment Program (MWSIP), has completed two and half years by June 2018. The Program is being implemented under the Ministry of Mahaweli Development and Environment (MMDE) of the Government of Sri Lanka (GoSL), funded by the Asian Development Bank (ADB) (Loan No. 47381-002-SRI (SF)) and GoSL.

2. The Investment Program consists of 3 individual projects named as Minipe Left Bank Canal Rehabilitation Project (MLBCRP), North-Western Province Canal Project (NWPCP) and Upper Elahera Canal Project (UECP), divided into 17 construction packages.

3. The Program Director (PD) is the head of the Program and leads the Program Management Unit (PMU) in the Colombo office, located at 493 1/1, T. B. Jayah Mawatha, Colombo 10. The three PIU offices and the three Resident Engineers' (RE) offices are operated at site level to monitor closely the performance of Contractors constructing infrastructure of the Program. The organization structure of the MWSIP is shown in Figure 1-1.

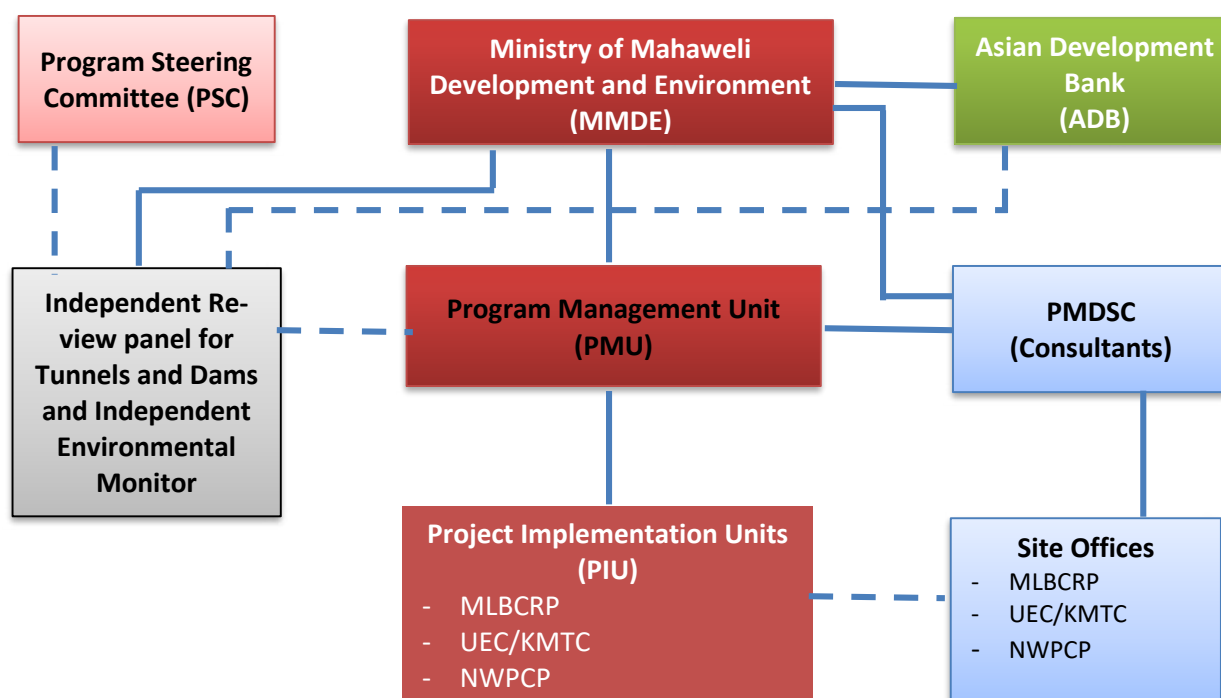


Figure 1-1 : Organization Structure of MWSIP

4. There are 6 contract packages under the MLBCRP to be completed under Tranche 1 of the development program during 2016 to 2020. All the contract packages under MLBCRP are awarded and construction is in progress at June 2018. A summary of the contract packages and key dates is given in Table 1-1.

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

<b>Contract Name</b>	<b>Contract No.</b>	<b>Contractor</b>	<b>Date of Commencement</b>	<b>Date of Completion</b>
Rehabilitation of Minipe Left Bank Canal – Stage 1 (0 + 000 km to 30 + 140 km)	MMDE/MWSIP/ADB/M LBCRP/NCB-1/	Edward & Christie	13 October 2016	13 October 2018
Rehabilitation of Minipe Left Bank Canal – Stage 2 (30+140km to 49+820km)	MMDE/MWSIP/ADB/M LBCRP/NCB-2/3267-3268-SRI/NCB/2016/011	Gamini Construction	26 April 2017	24 April 2019
Rehabilitation of Minipe Left Bank Canal – Stage 3 (49+820km to 63+650km)	MMDE/MWSIP/ADB/M LBCRP/NCB-3/3267-3268-SRI/NCB/2016/012	Nawaloka Construction Co (Pvt) Limited	28 April 2017	26 April 2019
Rehabilitation of Minipe Left Bank Canal – Stage 4 (63+650km to 73+960km)	MMDE/MWSIP/ADB/M LBCRP/NCB-4/3267-3268-SRI/NCB/2016/017	Gamini Construction	26 April 2017	24 April 2019
Rehabilitation and Electrification of Radial Gated Structures at 8 Locations and Improvements to Cross Regulators Structures at 3 Locations of Minipe Left Bank Canal	MMDE/MWSIP/ADB/M LBCRP/NCB-5/3267-3268/SRI/NCB/2016/019	Dockyard General Engineering Services (Pvt) Limited	07 February 2018	12 February 2020
Heightening of Minipe Anicut Including Water Control & Measurement Facilities for Left Bank & Right Bank Canal	MMDE/MWSIP/ADB/M LBCRP/ICB-1/326-3268-SRI/ICB/2016/031	China Gezhouba Group Company Limited	10 May 2018	12 November 2020

## 1.2 Scope of the Report

5. It is an ADB requirement to submit an Annual Environmental Monitoring Report (AEMR) to ADB and Central Environmental Authority (CEA) for the “Category B” project as documented in FAM<sup>1</sup> and EARF<sup>2</sup>. MLBCRP is a “Category B” project and hence this Annual Environmental Monitoring Report is prepared to update the progress for the period of June 2017 to June 2018. This is the Second AEMR for MLBCRP as the physical work of the project was commenced at the site towards the end 2016.

6. The purpose of this report is to ensure that the project is implemented with due concern for environment and social safeguards according to the ADB’s Safeguard Policy Statement (SPS) 2009, and specifically to ensure that these issues are adequately addressed in compliance the requirements of ADB. Further, this report is to assess the progress with implementation of the program in complying with the approved Environmental Impact Assessment (EIA) or Initial Environmental Examination (IEE) reports and Environmental Management Plan (EMP).

## 1.3 MLBCR Project at a Glance

### 1.3.1 MLBCRP Interventions

7. The scopes of work of the contract packages NCB 1 – NCB 4 are similar and include clearing vegetation, water weeds and secondary growths in the canal, common and hard rock excavation, construction of new cross regulators, rehabilitation of existing structures, construction of definition walls, curtain walls, retaining walls, gabion boxes, improvements of existing bridges, construction of bathing steps, canal lining, improvements to identified feeder canals, casting and fixing boundary posts etc. during the rehabilitation of existing Minipe Left Bank (LB) canal.

8. MLBCRP-NCB-5 contract is related to improvement of hydro-mechanical structures in the canal and includes rehabilitation and electrification of radial gated structures at 8 locations, rehabilitation and improvements to gates of cross regulator structures at 2 locations, supply and installation of 3 automatic water level recorders, supplying and fixing an automatic station at Hasalaka IE office, and establishment of a Control Centre.

9. The project intervention associated with the most significant environmental impacts is taking place under contract package MLBCRP-ICB-1 which involves heightening the Anicut Weir Crest Level from 114.0 masl to 117.5 masl (maximum height increased from 4.0 m to 7.5 m from the lowest level). The key environmental impact associated with contract package MLBCRP-ICB-1 is the inundation of about 23 ha of forest area in the Victoria Randenigala Rantambe (VRR) sanctuary under the jurisdiction of Fauna and Flora Protection Ordinance (FFPO) through Department of Wildlife Conservation (DWC). In addition, it is estimated that about 66 trees require to be cut down due to the increase in weir length from 340 m to 373 m and the construction of a temporary by-pass canal to regulate water flow along the LB canal during the weir construction period.

### 1.3.2 Staff involved in MLBCRP

10. The Resident Engineer (RE) for MLBCRP assumed his duties in October 2016, and the RE’s project office opened at Hasalaka in premises owned by the Irrigation Department. A staff of about 14 (3 Engineering Assistants; 1 Quantity Surveyor; 1 Concrete Engineer; 1 Survey Assistant; 1 Office

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

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

Manager; 1 Computer Operator; 1 office Assistant; 1 Care Taker; 3 Drivers) including Health and Safety Officer for all 3 projects are working in the RE's office.

11. The Project Implementation Unit (PIU) managed under the Project Director (PD) is located in Hasalaka, at the same premises, but operate in a separate building. The Senior Environment Officer (SEO) attached to PD-PIU resigned in December 2017, and a new SEO is to be assigned soon. In addition, the PMU Environmental Specialist oversees the safeguard requirements and attends monthly progress meetings.

12. PMDSC's Environmental Specialist makes visits to the MLBCRP area twice a month for the monitoring of Contractors' environmental safeguard compliance, while 2 Environmental Monitoring Specialists (EMS) recruited in December 2017 under the PMDSC engage with continuous site monitoring and implementing additional environmental mitigation, and surveys as required. EMS produce monthly environmental progress reports based on the periodical monitoring records and other survey and mitigatory activities carried out in the MLBCRP area and share with the Environmental Specialist of PMDSC the preparation of the monthly Environmental Progress Report for all 3 projects.

13. The Contractors' Environmental Officers appointed under each construction package are summarized in Table 1-2.

**Table 1-2: Details of the Contractor's Environmental Officers of the MLBCRP**

<b>Contract Package</b>	<b>Name</b>	<b>Contractor</b>	<b>Contact details</b>
MLBCRP NCB 1 (0 + 000 km to 30 + 140 km)	Mr. Manjula Rana-singhe	Edward & Christie	0714474144
MLBCRP NCB 2 (30+140km to 49+820km)	Mr. J. K. Samaradi-wakara	Gamini Construction	0774783313
MLBCRP NCB 3 (49+820km to 63+650km)	Mr. Janith De Silva	Nawaloka Construction Co (Pvt) Limited	0776024019
MLBCRP NCB 4 (63+650km to 73+960km)	Mr. M. S. M. Sabreen	Gamini Construction	0778436361
MLBCRP NCB 5	Ms. K. D. Sandeepani Lakmali	Dockyard General Engineering Services (Pvt) Limited	0779836890
MLBCRP ICB 1	Mr. K. A. R. Dhar-makeerthi	China Gezhouba Group Company Limited	0714290887

## 2. PROGRESS OF MLBCRP

### 2.1 Safeguard documentation and approvals

#### 2.1.1 IEE and updated EMPs

14. Two updated EMPs were prepared for LB canal rehabilitation work and anicut raising considering that the existing environmental conditions and project interventions deviated from the IEER. The updated EMP for canal rehabilitation covering MLBCRP-NCB-1 to NCB-4 contract packages was submitted in June 2016 and conditional CEA approval was granted through letter Ref. CEA/CPO/KY/07/929/12 dated 11 January 2017, which was Annexed to the AEMR No. 1. The updated EMP was shared with the contractors to use as a baseline document for preparing the Contractors' Environmental Management Plans (CEMPs).

15. The updated EMP considering MLBCRP-ICB-1 interventions was prepared in August 2016 and submitted with the bidding documents as Volume IV, and also shared with the recently mobilized contractor for contract package MLBCRP-ICB-1.

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

16. An awareness session on preparing CEMP including other related environmental safeguard documentation was carried out targeting the recently awarded contractors MLBCRP-NCB-5 and MLBCRP-ICB-1, and a detailed guidance note was prepared and shared with the contractors (Annex 1). However, obtaining an acceptable level CEMP could not be achieved by the selected contractors within 56 days and the Environmental Officers (EOs) appointed under the contractor due to lack of past experiences of preparing such documents.

17. The progress of the CEMP submission by the respective contractors of MLBCRP is given in the Table 2-1.

**Table 2-1: CEMP submission summary**

Contract No.	Date of Commencement	Date of 1 <sup>st</sup> CEMP submission	Date of CEMP approval	Number of revisions
MLBCRP NCB-1	13 October 2016	09 November 2016	04 April 2017	04
MLBCRP NCB-2	26 April 2017	16 June 2017	Nov. 2017	01
MLBCRP NCB-3	28 April 2017	15 June 2017	Nov. 2017	01
MLBCRP NCB-4	26 April 2017	16 June 2017	Oct. 2017	01
MLBCRP NCB-5	07 February 2018	09 April 2018	Revised version received on 24 May and comments submitted 3 <sup>rd</sup> week of June. Final version is awaited	
MLBCRP ICB 1	10 May 2018	Not yet received		

18. With the construction progress, updating the CEMP based on the construction methods and on changes of the ground conditions is expected from the Contractor's EO, which appears to be an unrealistic expectation.

#### 2.1.3 Contractor's Periodical Reports

19. The contractors' Environmental Officers are asked to submit the monthly Environmental Progress report on the self-monitoring and progress records of the previous month as per the format provided by the Engineer at the 1<sup>st</sup> week of every month. However, receiving timely and standard

reports is a challenging task. Continuous follow up is being made by EMS to obtain Progress reports and Environmental Method Statements on key construction activities, and to maintain records on permits, approvals, and updated Environmental Issue log, Grievance Log etc.

## **2.2 Safeguard documentation and approvals**

20. The summary of required external approvals related to Environmental Safeguards was identified by the Contractor during the CEMP preparation stage with support of the Engineer, and the RE approves commencement of construction activities upon the receipt of required key external approvals from the Contractor.

21. The summary of the approvals related to the construction activities carried out for the reporting is summarized in Table 2-2 with respect to MLBCRP-NCB-1 to MLBCRP-NCB-4, and there are no updates related to MLBCRP-NCB-5 and MLBCRP-ICB-1, since the contractors have not yet commenced their work and approvals are in progress.

Table 2-2: Approval Status of the Contractor's Facilities and Activities

Contract Package	Facility/ Activity	Location	Ownership	Licence Type	Licence details	Validity period	
					Ref. Number	From	To
MLBCRP NCB 1	Metal Quarry	Reeppayaya, Madayaya	Ruhunu Development Construction & Engineers (Pvt) Ltd	EPL	11239 (R2)	2017-08-13	2018-08-12
				Mining Licence (ML)	IML/B/HO/8793/LR/1	2019-09-07	2018-09-06
	Concrete Batching Plant	No. 35/7, Morayaya, Minipe	Edward and Christie	Environmental Recommendation for construction is issued by Central Provincial Office of CEA through the letter Ref. CEA/CPO/KY/07/1597/2016 dated as 30.12.2016			
				EPL	CE-B01282	2017-02-23	2020-02-22
				Trade Licence		2018-02-28	2018-12-31
MLBCRP NCB 2	Rubble Quarry (already over)	Viranagama, Aluththarama	D.P. Karunarathna	EPL	05610(R1) F1	2017-08-16	2018-08-15
				Trade Licence		2017-08-15	2017-12-31
				Mining Licence (ML)	IML/B/HO/6181/IR-01	2017-08-02	2018-08-01
	Concrete Batching Plant	Gamburu oya	Irrigation Department	EPL	14792(R0)	2017-12-12	2018-12-11
				Trade Licence		2018-01-10	2018-12-31
	Disposal sites	780, Meegolla, Barawardana oya	P.K.G.L. Irangani	Divisional Secretariat approval obtained			
		Nugasewana Asala Himbutuwa, Barawardana oya	S.M.W.G. Chaminda Bandara				
		Heen Ganga, Kolongoda	W.A.C.T. Wickrama Arachchi				
	Stock Yard	No.358, Canal D7, Hasalaka.	Wijeswkara Veeraman				

Contract Package	Facility/ Activity	Location	Ownership	Licence Type	Licence details	Validity period	
					Ref. Number	From	To
MLBCRP NCB 3	Rubble Quarry	Guruwelayaya	G. Ariyadasa	EPL	03410(R3)F3	2018-05-12	2019-05-11
				Trade Licence	-	2018-05-15	2017-08-15
				Mining Licence (ML)	IML/B/HO/5420/IR-03	2018-05-02	2019-05-01
	Concrete Batching Plant	Dewagiriya	W.D. Silva	EPL	11352(R0)	2018-05-17	2019-05-16
				Trade Licence		2018-01-10	2018-12-31
	Disposal sites	Divisional Secretariat Office, Wilgamuwa	State Land				
		No 103, Namini Oya	Roshan Rathnayake				
		Namini Oya	E.M Ekanayake				
	Stock Yard	No.134, Hettipola, Wilgamuwa	H.S. Perera				
MLBCRP NCB 4	Metal Crusher	Batalayaya	M.M.P.G Dasanayaka Bandara	EPL	14917(R0)	2018-01-09	2019-01-08
				Mining Licence (ML)	IML/B/HO/11107	2017-10-11	2018-10-10
	Concrete Batching Plant	Irrigation unit office, Gamaburu oya	Irrigation Department	EPL	14792 (R0)	2017-12-12	2018-12-11
	Disposal sites	No.153, Gamburu oya, Hadumgamuwa	E.A Herath menike				



Contract Package	Facility/ Activity	Location	Ownership	Licence Type	Licence details	Validity period	
					Ref. Number	From	To
		No.116, Aliyawala, Hadumgamuwa	K.G. Sumanawathi				
	Stock Yard	Irrigation unit office, Gamburu oya	Irrigation department				

## 2.3 Site Inspections, Training and Awareness

### 2.3.1 Site Inspections and Consultative sessions carried out during Monitoring Period

87. Table 2-5 summarizes the site inspections and stakeholder consultations carried out during the reporting period with the participation of the Contractor, PIU, PMU and the Engineer's staff.

**Table 2-3: Site Inspections, Consultative sessions and Meetings carried out with the Contractors active under MLBCRP during Reporting Period**

Date	Location	Participants	Objective	Outcomes/ Remarks
3 January 2018	PD-PIU office	PD PIU, RE and EMS PMDSC	Understand the areas identified by PIU for reforestation under MLBCRP, obtain Irrigation Department permission to reforest along canal bank through PD-PIU	
9 January 2018	RE Office, MLBCRP	PD-PIU and his staff, CRE, RE and his staff, PMDSC EMS	Monthly Progress Review	
22 January 2018	MLBCRP LB canal	EMS PMDSC and Contractor's EO, EA of RE	Visit identified areas along LB canal and prepare list of plant species to be planted based on the ecological conditions of the area	
24 January 2018	MLBCRP NCB 1 Reforested area	EMS PMDSC	Visit tree planting area at Morayaya School, meeting with head of the school and visit new selected location for tree planting at Morayaya school, meeting with CRE and RE Minipe to update the progress	
1 February 2018 5 February 2018 6 February 2018	MLBCRP site and RE office	EMS PMDSC	Site monitoring visit proposed reforestation area to understand site suitability prior to issue PSO; Progress meeting Minipe	
12 February 2018	MLBCRP	Independent Environmental Monitoring Specialist (IMS) (Mr.	Meeting on site monitoring, progress update, and site visit to MLBCRP area with IMS	

Date	Location	Participants	Objective	Outcomes/ Remarks
		Atygalle) and EMS PMDSC		
16 February 2018	Moragahakanda Conference hall	Secretary to the MME, relevant staff of PIU, PMU, RE and two EMS of PMDSC, Stakeholders including Wildlife Dept and Forest Dept representing 3 project areas of MWSIP	Progress review, stakeholder consultation on environmental issues	Related to Minipe, understanding requirements of Wildlife Dept. to involve with habitat restoration programs under PS budget, issues related to borrow areas, disposal areas and GSMB permits for borrow material
26 February 2018	National Herbarium, Kandy	EMS PMDSC, Head National Herbarium	Understand procedures to get involved National herbarium during habitat restoration, reforestation, and preparing arboretum in Minipe selected School areas	
7 March 2018	DWC Office at Hasalaka	RE, PD-PIU, EMS-PMDSC	Discuss releasing wildlife areas for MLBCRP-ICB-1 construction, and identify areas for reforestation under Minipe	
17 March 2018	Proposed reforestation area by FD in Wasgamuwa extension	EMS PMDSC and relevant FD officers	Visit proposed tree planting area by FD through PD-PIU, at Mailapitiya tank to prepare documents for reforestation (PSOs) under MLBCRP NCB 2, NCB 3 and NCB 4 contractors	
19 March 2018 20 March 2018	MLBCRP ICB 1 area and LB canal	EMS PMDSC and relevant Environmental Offices of the contractor	Visit the proposed by pass canal trace of MLBCRP-ICB-1 and preparation for the tree enumeration Monitoring visit including reforested areas	
21 March 2018	RE Office, Minipe	RE, EMS-PMDSC, H&S PMDSC, MLBCRP NCB	Introductory meeting and consultative session on environmental documentation and approval requirements	

Date	Location	Participants	Objective	Outcomes/ Remarks
		5 Contractor's EO and PM		
2 April 2018	PD PIU Office Minipe	PD PMU and PD PIU, RE, relevant contractors, and EMS PMDSC	Progress review and issue solving meeting for MLBCRP	
19 April 2018	RE Office, Minipe	RE, Contractor (NCB 5 Minipe) relevant officers (EO, PM, Site Engineer, Safety Officer)	Env safeguard awareness program (Full day) for the MLBCRP-NCB-5 contractor	Awareness on Env safeguard policies, regulatory requirements, documentation formats, and guidance on CEMP preparation, sharing comments on the submitted CEMP
25 April 2018	RE Office, Minipe	RE, QS of Minipe, EMS and ES PMDSC, Contractor's staff, PD-PIU	Consultative session with RE Minipe and Contractors	Discussion with MLBCRP-NCB-1 contractor on progress reforestation work; finalizing RE estimate for reforestation; special discussion arranged by RE-Mnipe with MLBCRP contractor to clarify reforestation issues on submitted PSOs
	District Forest Officer (DFO) Matale Office	DFO Matale and his staff, PD-PIU Minipe, RE Minipe, EMS, ES of PMDSC, Contractor representatives	Obtain relevant quotations for the Contractors for reforestation based on the PSOs issued	DFO disagree with MWSIP proposal to work as a subcontractor to the main contractor in reforesting, but agreed releasing lands to reforest through the contractor; Final decision to be arranged meeting Conservator Forest

Date	Location	Participants	Objective	Outcomes/ Remarks
4 May 2018	Udawela Community Hall, Minipe	Resident Project Manager, Minipe Scheme, farmer Leaders, PD PIU, IE Irrigation Dept, EMS PMDSC	Project management committee meeting - Minipe Scheme under Irrigation Dept.	Understand the corporation to receive from Farmer Organization in Reforestation program and aware the Farmer about the canal bank enrichment through reforestation under MLBCRP contracts
11 May 2018 12 May 2018	RE Office Minipe and PD PIU office Minipe	PM and Eos of MLBCRP NCB 1 -4 contracts, RE, PD PIU, QS of RE office, EMS PMDSC	Meeting to aware about reforestation under PS budget, budget negotiations and finalizing Engineers estimate on Reforestation in Minipe	
22 May 2018	RE Office Hasalaka, and MLBCRP ICB 1 Project area	PD-PIU and his staff, CRE, RE and his staff, PMDSC Environmental Specialist, EMS	Site kick off meeting MLBCRP ICB 1 and site visit in ICB 1 area identifying contractor facilities and approval requirements	Letter issued to the contractor through RE on the approval requirements and further actions related to Environmental safeguard aspects
24 May 2018 25 May 2018	MLBCRP ICB 1 construction area	RE, ICB 1 contractor and EO, EMS of PMDSC	Tree enumeration along by pass canal trace Monitoring Site visit MLBCRP area	Preparation of tree list to be cut down and submission for the approval
5 June 18	RE Office Hasalaka	PD PMU, PD PIU and their staff, CRE, RE and his staff, PMDSC Environmental Specialist, EMS	Progress Review of MLBCRP Contractors and facilitating session to solve issues	Issues related to disposal and borrow area approvals were taken up by PD PMU and agreed to provide solutions through the Secretary to the MMDE

88. In addition to above formal sessions, 2 EMS of PMDSC are attending periodical site visits, meetings to facilitate the contractors' Environmental Officers on additional environmental mitigation, reforestation activities, and site monitoring.

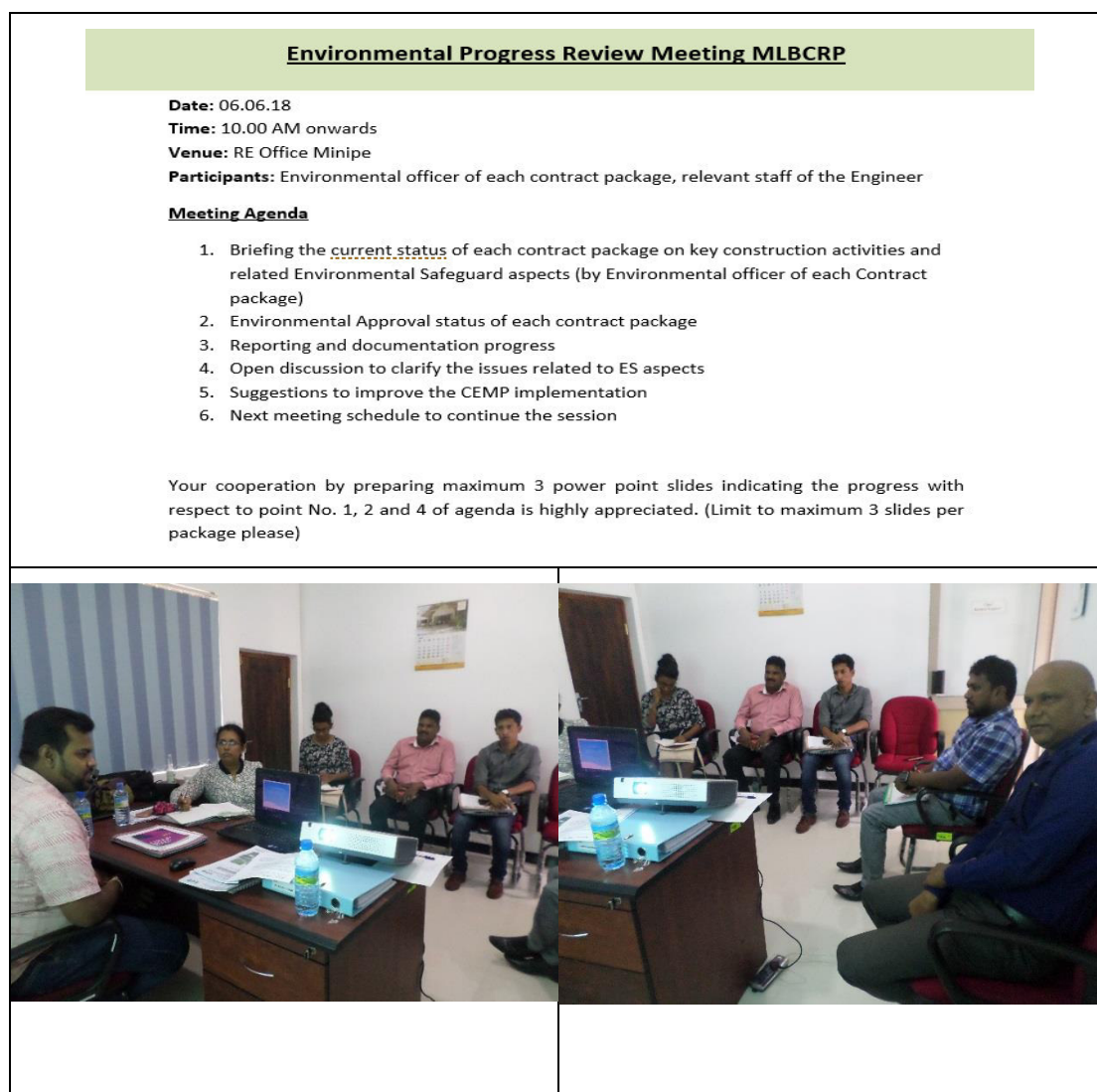
### 2.3.2 Training and Awareness Carried out during Monitoring Period

89. Once the EMS of PMDSC were mobilized in December as part of the Engineer's organisation, an awareness on CEMP implementation and documentation process has been carried out followed by a joint site inspection carried out on 28 and 29 December 2017.

90. Environmental Safeguard Training and awareness for the contractor of MLBCRP-NCB-5 was held on 19 April 2018. Detailed guidance document on preparation of Contractor's Environmental Management Plan (CEMP) was prepared and issued to the contractor (Annex 1).

91. A combined progress review and awareness session on environmental safeguard aspects was held on 06 June 2018, with participants invited through the RE of MLBCRP. All the Environmental Officers of the mobilized 6 construction packages of MLBCRP, together with Environmental Specialist and EMS of PMDSC attended the session.

92. The brief agenda for the session is shown below and this session was found to be a very useful meeting for discussing each Environmental Officer's experiences, issues and challenges working under MLBCRP. Also, the officers were told that this session was a brain storming session as well as encouragement to support each other on the approval process and finding borrow areas, disposal areas etc., which is one of the challenging issues face by the MLBCRP contractors.



**Figure 2-1: Environmental Progress Review MLBCRP**

### 3. SUMMARY OF MONITORING FINDINGS

93. All Contractors are contractually bound to implement the CEMPs and carry out independent monitoring during the construction period as per the formats agreed with the Engineer. The environmental mitigation measures adopted by the Contractors of MLBCRP packages are summarized in Table 3-1.

#### 3.1 Prioritised list of non-conformance findings and recommended corrective actions

94. Construction work carried out along the LB canal is scattered and no major environmental issues observed other than soil erosion, disposal issues along the canal bank, dust and noise impacts to the surrounding during the dry season. The soil erosion occurs due to the existing LB canal operations and water issues occur parallel to the construction work, but required mitigations are adopted.

95. Initially there was no continuous monitoring occurred due to lack of adequate resources with the Engineer. However, after recruiting the EMS in December and random site visits by the Environmental Specialist of PMDSC non-conformances and corresponding corrective actions were noted during site inspections. The Contractor was notified accordingly.

**Table 3-1: Summary of Key Environmental Issues under MLBCRP**

<b>Contract Package</b>	<b>Non-conformances Recorded during the monitoring period</b>	<b>Corrective Action and Follow up remarks</b>
MLBCRP-NCB-1	<ul style="list-style-type: none"> <li>• Soil erosion and dust issues along the construction area of LB canal</li> <li>• Dust issues in the batching plant area</li> <li>• Method Statement for restoration of disposal sites to be submitted.</li> <li>• Environmental Officer not in the site full-time</li> <li>• Use of PPE by the labours is poor</li> </ul>	<p>Erosion managed using sand bags but not 100 % effective due to the continuous flow in the LB canal</p> <p>Dust controlled by providing dust barriers surrounding the batching plant area and other areas using watering</p>
MLBCRP-NCB-2	<ul style="list-style-type: none"> <li>• Relatively high background noise at construction site</li> <li>• Gabion wall is being constructed for Renovating of flood damage at CH49+513 to be extended another 5-6m to protect existing earth wall.</li> <li>• Environmental Monitoring reports, Environmental issue log, grievance issue log not up to date</li> <li>• Use of PPE by the labours is poor</li> </ul>	<p>Contractor to be informed to carry out background noise level monitoring and fulfil relevant mitigatory measures to reduce noise. The main cause was the use of improperly maintained machinery, and contractors were advised to replace them or to carry out proper maintenance to reduce noise levels emitted from the machinery</p>

MLBCRP-NCB-3	<ul style="list-style-type: none"> <li>• Stockpiling along the canal bank adjacent to construction area is not managed properly. Metal stock pile on road verge at CH61+225 was unsafe.</li> <li>• Desilted material disposal is not regular and temporary piling up along the canal for a longer period cause water pollution, sedimentation in the canal</li> <li>• Access difficulties to the road users during feeder canal construction and safety issues</li> <li>• Dust issues crusher and concrete batching plant area</li> </ul>	<p>Stockpile height to be maintained as directed by the Engineer to a safe height and requirement of proper barricading was instructed</p> <p>Desilted material to be transported to the approved disposal sites within shorter period, once it is dried assuring required mitigatory measures</p> <p>Dust controlled by providing dust barriers surrounding the batching plant area and other areas using watering</p> <p>Treatment facility to be improved in the batching plant areas</p>
MLBCRP-NCB-4	<ul style="list-style-type: none"> <li>• Soil erosion and dust issues along the construction area of LB canal</li> <li>• Dust issues in the batching plant area</li> <li>• Method Statement for restoration of disposal sites to be submitted.</li> <li>• New Environment Officer was appointed recently and he is to follow up the required safeguard actions</li> <li>• Use of PPE by the labours is poor</li> </ul>	<p>Awareness provided to the newly appointed EO of the contractor</p> <p>Erosion managed using sand bags but not 100 % effective due to the continuous flow in the LB canal</p> <p>Informed Safety Officer to ensure labourers use PPE</p>
MLBCRP-ICB-1	<p>Contractor had initiated following activities without required permission:</p> <ul style="list-style-type: none"> <li>• No Pradeshiya Sabha approval to construct the dug well for commercial purpose in the construction area, and not barricaded properly to ensure that no risk to the wild animals in the surrounding area.</li> <li>• Central Environmental Authority (CEA) recommendations for site selection and initiation of the construction of batching plant were not obtained.</li> </ul>	<p>Informed to the contractor through RE to obtain necessary approval and barricade the area with a safety fence with small mesh</p>

### 3.2 Environmental risks and safeguard compliance

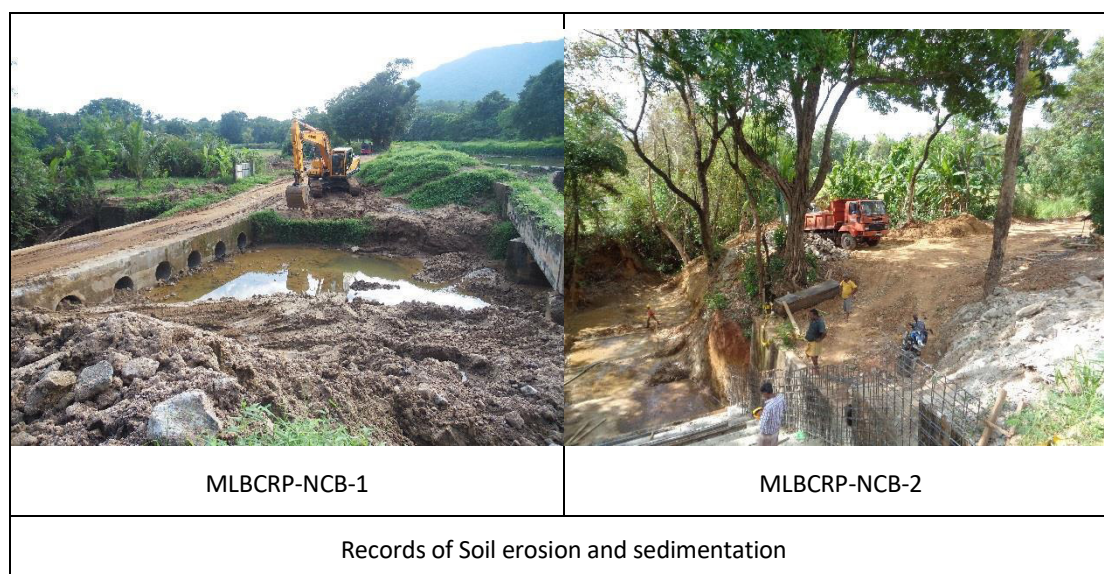
96. This section includes the information gathered through periodical site visits, Contractors' independent monitoring reports, and discussions held at the Contractors' monthly progress meetings and site observations. The main aspects are highlighted in Table 3-2.



**Table 3-2: Key Environmental Risks and Planned Follow up Actions**

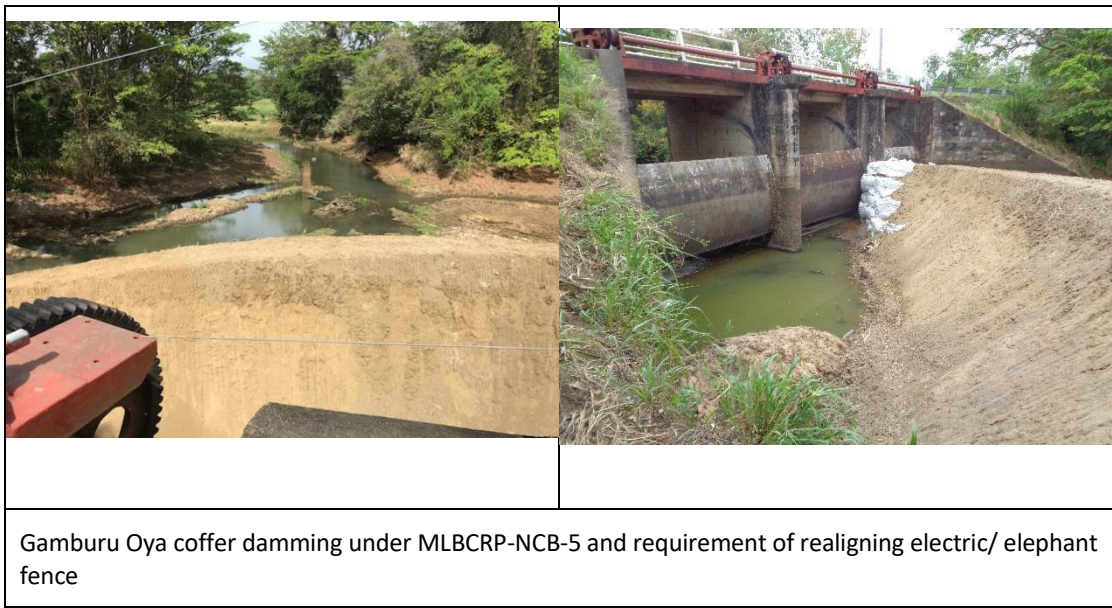
<b>Contract Package</b>	<b>Non-conformances Recorded during the monitoring period</b>	<b>Corrective Action and Follow up remarks</b>
MLBCRP-NCB-1 – NCB-4	<ul style="list-style-type: none"> <li>Due to lack of experience of the appointed Environmental Officers to the contractors, difficulty of obtaining proper Environmental Method Statements and Restoration Plans</li> </ul>	Frequent follow up meetings and awareness sessions planned to ensure receipt of required inputs and documents
MLBCRP-NCB-5	<ul style="list-style-type: none"> <li>Realignment of existing electric fence in some construction areas (Gamburu Oya Spill Gate) to ensure site safety as well as to ensure that elephants will not be trapped in the cofferdam or deep excavated sections. (Figure 3-1)</li> </ul>	Communication initiated with the Wildlife Department for the necessary actions through RE
MLBCRP-ICB-1	<ul style="list-style-type: none"> <li>Concerns to be made to facilitate releasing required Environmental Flow as conditioned in the IEE Report and Conditional Approval issued by Department of Wildlife Conservation (DWC) during construction phase</li> </ul>	No work to be commenced until the Environmental Method Statement for the Bypass canal is approved

97. Photographic evidences to show above details related to Table 3-1 and 3-2 are given under the Figure 3-1.





	
<p>Access difficulties to the road users during feeder canal construction and safety issues (MLBCRP-NCB-3)</p>	<p>Unsafe stockpiling at the road edge of the LB canal bank (MLBCRP-NCB-3)</p>
	
<p>Dust issues in the batching plant and crusher areas (MLBCRP-NCB-3)</p>	<p>Dust, soil erosion and safety issues (MLBCRP-NCB-4)</p>
	
<p>Deep dug well excavated in the construction area by MLBCRP-ICB-1. NCR raised and actions followed.</p>	<p>Installation of batching Plant in MLBCRP-ICB-1 area</p>



**Figure 3-1: Photographic Monitoring Records in MLBCRP**

## 4. ADDITIONAL MITIGATORY MEASURES

### 4.1 Other environmental safeguard actions

#### 4.1.1 Ecological restoration through Reforestation

98. Ecological restoration through Reforestation is one of the main additional environmental mitigation measures identified as per the recommendations given in the approved Initial Environmental Examination (IEE) to enrich 145 ha of lands through reforestation.

99. According to IEE recommendations, reforestation lands to be identified as per following criteria:

- (i) Minipe LB canal reservation to prevent future encroachment of the canal reservation as well as reduce sediment runoff to the canal during rainy season.
- (ii) Adjacent areas to function as an ecological corridor between three protected areas (Victoria-Randenigala-Rantambe sanctuary, Knuckles Conservation Forest and Wasgamuwa National Park) which would facilitate gene flow between forest restricted species that occupy these three protected areas.

100. The Engineer / Project Manager has now developed the appropriate mechanism for the implementation of reforestation under the corresponding Provisional Sums in the Contracts and are confident that we will be able to fulfil CEA requirements conditioned on the IEE through this mechanism.

101. Specification for Ecological Restoration through Reforestation was finalized and approved by PMU. This specification is prepared as a guideline on carrying out following activities as directed by the Engineer;

- (i) Reforestation of degraded lands (due to spreading of invasive species or other exotic tree species that does not support the sustenance of respective habitat or the ecosystem) for habitat enrichment or to prepare an arboretum.
- (ii) Ecological restoration or habitat enrichment of the identified protected areas to function as an ecological corridor to facilitate gene flow between forest restricted species that occupy in such protected areas.
- (iii) Tree planting along canal banks or other land areas to minimize erosion, prevent future encroachment of the canal reservation.

102. Based on the Specification, reforestation was initiated in the identified lands along LB canal using Provisional Sum Budget allocated under each active contract of MLBCRP (NCB-1, NCB-2, NCB-3, NCB-4), and summary of Provisional Sum Orders (PSO) issued for the identified lands are described in Table 4-1 and shown in Figures 4-1 and 4-2.



**Table 4-1: Summary of the Ecological Restoration through Reforestation in MLBCRP Area**

Contract package	Provisional Sum Order	Date of PSo Issued	Extent (ha)	Location	Progress/milestones
MLBCRP-NCB-1	PSO No. 1	08-01-18	1.00	Morayaya School (7.30819; 80.97938)	<ul style="list-style-type: none"> <li>Land preparation activities carried out with the participation of EMS PMDSC on 6 Jan 2018</li> <li>Reforestation Implemented on 10.01.2018</li> </ul>
MLBCRP NCB 2	PSO No. 1	30-03-18	1.39	Ranasinghe Premadasa National School, Hasalaka and Bandaranayake secondary school, Udawela	Implemented on 5 June
MLBCRP NCB 4	PSO No. 1	21-03-18	4.35	land along LB canal between Ch. 64+424 km & 64+475 km and between Ch. 68+200 km & 68+400 km	VO issued and Estimates under review
	PSO No. 2	02-04-18	40.00	FD land located about 4 km away from Minipe LB canal at 57+500 km (Figure 4-2)	Hold due to FD was not agreed to work as a sub-contractor to the main contractor. And Now FD has changed the proposed land to Kaluganga area.
MLBCRP NCB 3	Variation Order (VO) No. 1	10-05-18	15.00	Along LB canal bank and Maraka wewa (49+820 km to 63+650 km)	Implemented on 5 June. Contractor himself will attend reforestation work, and hence issued as a variation, through a reforestation specialist

103. In respect of the Minipe project area, there are insufficient suitable lands for the CEA-imposed area of reforestation, since all the lands in the area belong to either Department of Wildlife Conservation (DWC) or FD. In wildlife lands, thick forest cover cannot be promoted, which is a further reason to identify FD land areas.

104. The FD initially proposed 120 ha of FD lands, located in the upper catchment of a small tank (Mailapitiya tank shown in Figure 4-3), which are well suited for reforestation work, and it is in compliance with the IEE requirement to maintain the gene pool by connecting Victoria-Randenigala-Rantembe sanctuary and Wasgamuwa National Park.

105. A PSO was issued targeting these lands, but finally the FD wanted to change the proposed land to the Kalu Ganga area. PMU was requested to obtain CEA and DWC concurrence on the identified lands, which are located outside the IEE recommended area.

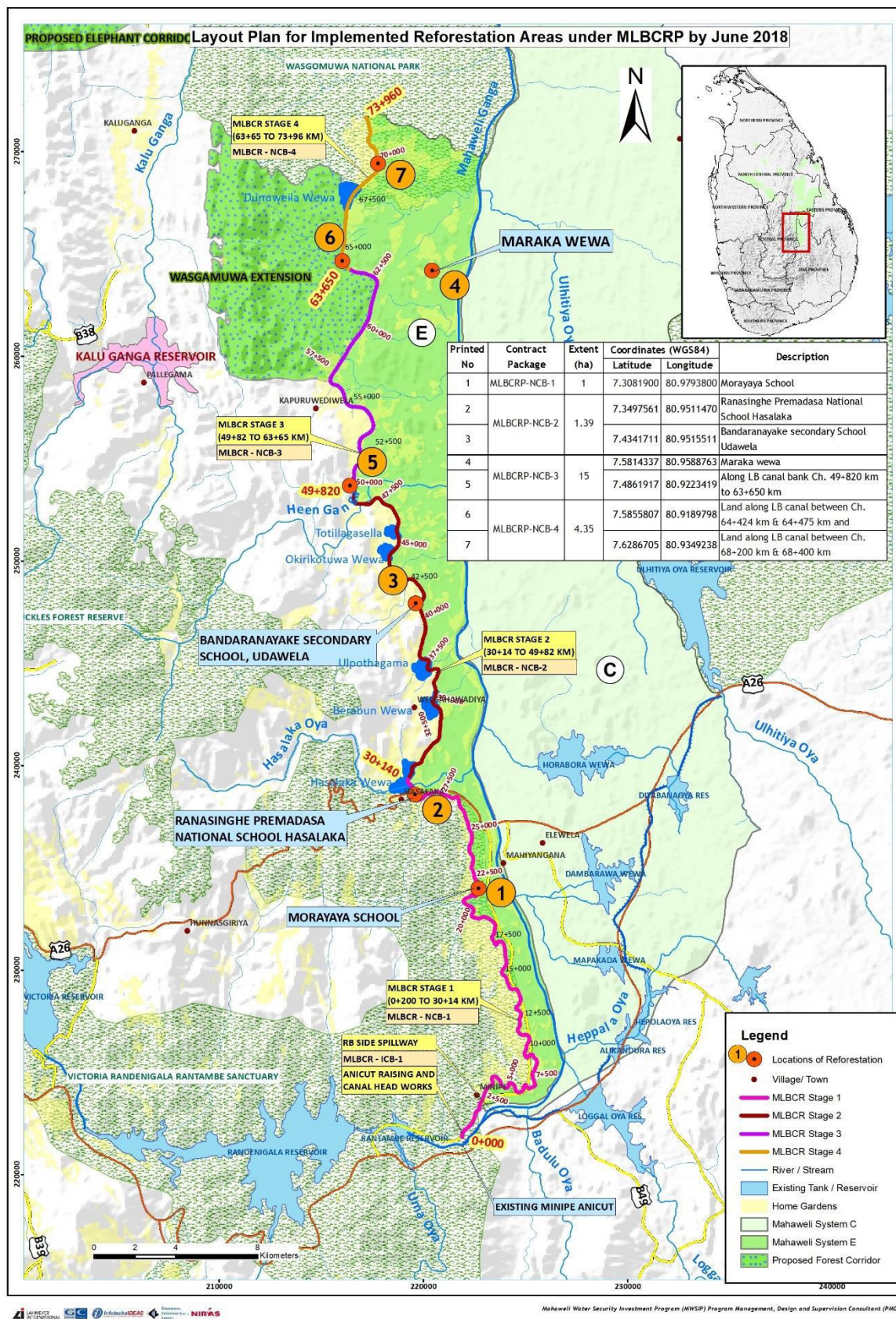


Figure 4-1: Reforestation areas implemented under MLBCRP as of June 2018



	
Reforestation under MLBCRP NCB 1 in Moraya School in January 2018	
	
Awareness program on Reforestation to Morayaya School, Hasalaka	Reforestation under MLBCRP-NCB-2
	
Nursery developed by MLBCRP-NCB-3 contractor	Reforestation in 15 ha land under MLBCRP-NCB-3

**Figure 4-2: Photographic Records of Reforestation Activities Carried out in MLBCRP area**



106. After carrying out series of discussions with the relevant parties, FD in principal has been agreed to implement reforestation through the contractors by signing a Service Agreement between the Contractor and Conservator of Forests for the contract period. A Memorandum of Understanding (MoU) is to be signed between PD PMU and Conservator Forest.

107. PMDSC has submitted recommendations relating to the required MOU and Service Agreements for the approval of PMU.

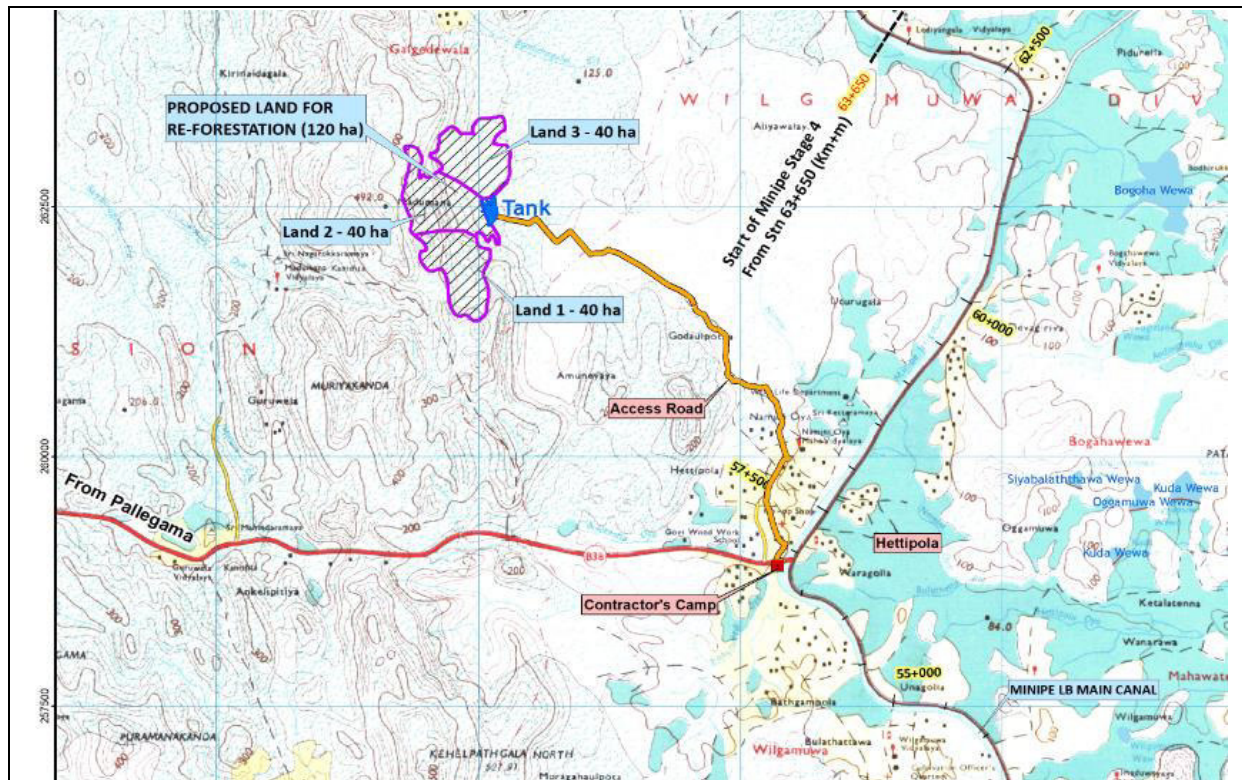


Figure 4-3: FD initially proposed 120 ha of FD lands, located in the upper catchment Mailapitiya Tank

#### 4.1.2 Environmental Baseline and Periodical Environmental Quality Monitoring

108. The baseline data collection for environmental parameters of surface water quality, noise, vibration, ambient air quality and sediment levels was carried out by Industrial Technological Institute (ITI) contracted under the Engineer and the draft report was received in December 2017.

109. The comments on the draft report was submitted and waiting ITI to submit the Final report incorporating the comments. The draft report on environmental Quality Baseline data collection in MLBCRP is given in Annex 3.

110. According to surface water quality (SWQ) analysis, the results of the MiniPE LB canal as per ITI draft report on baseline data key findings are as follows:

- (i) Turbidity of the MiniPE LB canal water is higher compared with the SLS 614:2013 specifications for potable water, whereas water samples obtained from all locations except SW173 comply with the draft inland water quality standards for Category 2.

<sup>3</sup> SW 17 - 7° 16.309'N, 80° 59.429'E - at Overcrossing Trough



- (ii) BOD and TDS of the Minipe LB canal are satisfactory.
- (iii) Except SW17, water samples obtained from all other locations comply with the SLS 614:2013 specifications for potable water for Chemical Oxygen Demand (COD). In respect of draft inland water quality standards, COD of SW 17 complies with Category 3 and exceeds the Category 2 of the same standard.
- (iv) Even though E.coli shall not be detectable as per SLS 614:2013 specifications for potable water, all surface water samples show significant E.coli content except SW144. Hence the water is not suitable for drinking.
- (v) Oil and grease was detected in water samples obtained from SW45, SW56, SW67 and SW98 and levels are higher than the SLS 614:2013 specifications for potable water and draft inland water quality standards for Category 2 and Category 3.
- (vi) Total iron content in the water samples obtained from SW19, SW210, SW311, SW1612 and SW1713 locations do not comply with the SLS 614:2013 specifications for potable water. However, when compared with the draft inland water quality standards for Category 2, only SW17 exceeds the respective standard.
- (vii) In all the surface water samples, heavy metal concentrations with respect to Cr, As, Cd and Pb are much below the respective standard of SLS 614:2013 specifications for potable water and draft inland water quality standards.
- (viii) Existing surface water quality is comparatively better at SW14 (when compared with the SLS 614:2013 specifications for potable water, only turbidity is slightly too high).
- (ix) Existing surface water quality is comparatively poor at SW17 location (end of Stage 3) as it depicted the highest turbidity, EC, TDS, COD, TSS, E. coli and total iron content.

111. Results of AAQ monitoring at selected locations are given in ITI Test Report No. SS 1717971 dated 23 November 2017, accordingly during the measurement period at all monitoring locations, the measured 24-hr PM<sub>10</sub> and PM<sub>2.5</sub>, 24-hr and 1-hr SO<sub>2</sub>, 24-hr and 1-hr NO<sub>2</sub> and 1-hr CO and O<sub>3</sub> concentrations comply with the respective local AAQ standard values stipulated by the National Environmental (Ambient Air Quality) Regulations, 1994 published in Gazette Extraordinary No. 850/4 of December 1994.

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<sup>4</sup> SW 14 - 7° 27.466'N, 80° 56.482'E - CH 45+650, Okirikotuwa Wewa (downstream)

<sup>5</sup> SW 04 - 7° 13.177'N, 80° 58.985'E - Near a school, bathing downstream, Proposed construction work: gabion wall, concrete work

<sup>6</sup> SW 05 - 7° 13.973'N, 81° 00.016'E - Ambagahapalassa 14/6 Bridge No.

<sup>7</sup> SW 06 - 7° 15.790'N, 80° 59.584'E - Handaganawa, Natural water stream (kandura) connect upstream

<sup>8</sup> SW 09 - 7° 18.188'N, 80° 58.961'E - Natural perennial water stream (downstream), Beside concrete batching plant

<sup>9</sup> SW 01 - 7° 11.915'N, 80° 58.327'E - Minipe anicut spill basin

<sup>10</sup> SW 02 - 7° 11.996'N, 80° 58.341'E - Beside Randanigala road

<sup>11</sup> SW 03 - 7° 12.025'N, 80° 58.392'E - Riverine forest near Minipe causeway

<sup>12</sup> SW 16 - 7° 28.757'N, 80° 55.418'E - CH 50+100, join Heen Ganga feeder canal

<sup>13</sup> SW 17 - 7° 34.196'N, 80° 55.959'E - Bogahawewa supply from Minipe canal, feeds 4 lakes, end of Stage 3

## **4.2 Additional Surveys carried out under MLBCRP within the reporting period**

112. The ecological conditions survey to identify the lands for the reforestation was carried out by the EMS PMDSC as per the details given in the Table 3-2.

113. In addition, tree enumeration in the proposed area for the bypass canal under MLBCRP-ICB-1 was carried out on 25 May 2018 by EMS PMDSC with the participation of the Contractors and RE representative. The prepared tree list is given in Annex 3.

## **5. KEY ACTIVITIES FOR NEXT YEAR (JUNE 2018- 2019)**

114. The key activities planned for the next year will include following:

- (i) Improve environmental monitoring system through contractors and Environmental Monitoring Specialists.
- (ii) Continue habitat restoration through reforestation in the MLBCRP project area.
- (iii) Improve environmental quality by carrying out awareness sessions in the area, with the participation of contractors and the community.
- (iv) Implement Invasive Alien Species (IAS) Management program complying with IEE recommendations through PMU/PIU.