

# Environmental Monitoring Report

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

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

North Western Canal Project (NWPCP)

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

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## MAHAWELI WATER SECURITY INVESTMENT PROGRAM

### SEMI ANNUAL ENVIRONMENTAL MONITORING REPORT FOR NWPCP

July to December 2017

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Program Management, Design and Supervision Consultant

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# SEMI ANNUAL ENVIRONMENTAL MONITORING REPORT FOR NWPCP

## July to December 2017

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## ABBREVIATIONS

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

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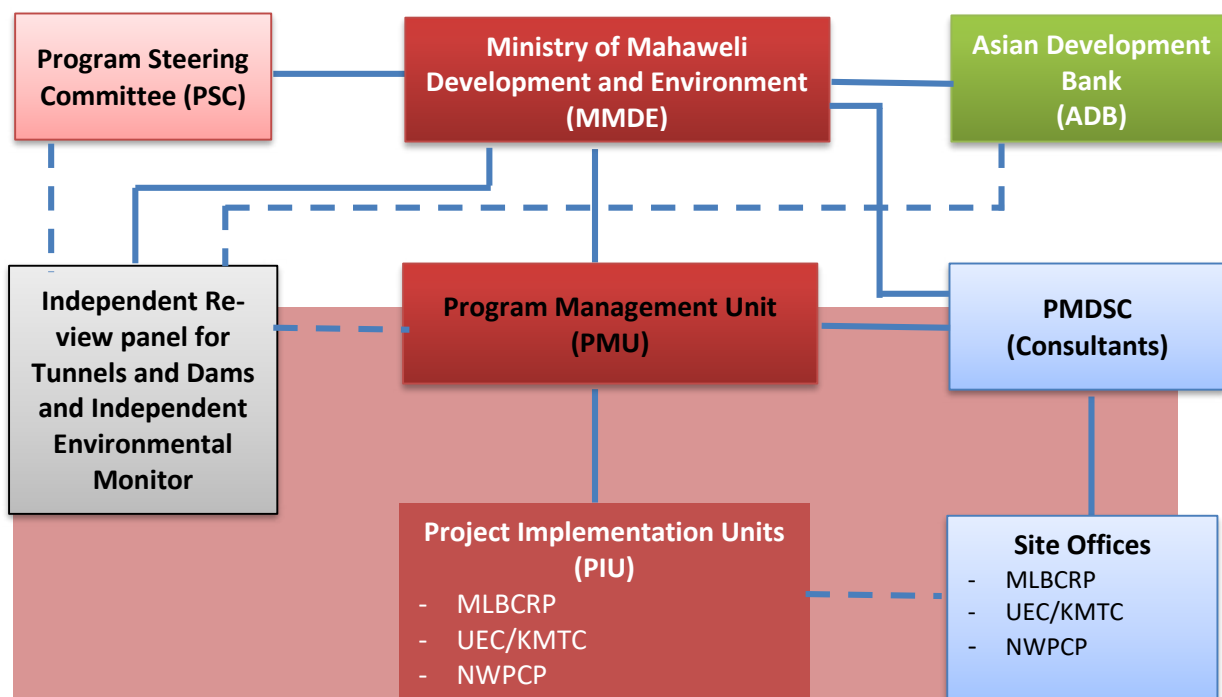
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# 1. INTRODUCTION

## 1.1 MWSIP and NWPCP

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



**Figure 1-1 : Organization Structure of MWSIP**

5. The objective of the NWPCP is to transfer Mahaweli water to water-short Upper Mi Oya irrigation systems and Hakwatuna Oya irrigation scheme in the Upper Deduru Oya basin. The project is to be implemented in two stages with transfer of 30 MCM annually from Nalanda reservoir in Stage 1 and a further 100 MCM of Mahaweli water to be diverted from Dambulu Oya below



Bowatenna Tunnel under Stage 2, on completion of Upper Elahera Canal from Moragahakanda reservoir (thereby ensuring supplies to Huruluwewa, which currently relies on the Huruluwewa feeder canal). The proposed project includes construction of conveyance canals and tunnels of combined length 91 km and two medium reservoirs namely Mahakithula and Mahakirula located in the Kahalla-Pallekele forest reserve.

6. The NWPC project area was divided into following subproject components as at the end of the reporting period and the environmental significance is high for the ICB-1 and ICB-2 of NWPCP, where construction activities are taking place within Kahalla – Pallekele sanctuary (proposed national park) area. (Note that repackaging is expected during the first quarter of 2018 to combine contracts ICB-3 and ICB-4 into one larger package ICB-3, with NWPC-ICB-5 renumbered as ICB-4)

<b>NWPC-NCB-1</b>	<b>Wemedilla Sluice and LBMC from Reservoir to Nabadagahawatta (0+000 to 5+250km)</b>
NWPC-ICB-1	Mahakithula Inlet Tunnel, Mahakithula and Mahakirula Reservoirs, Feeder Canal 3.66km
NWPC-ICB-2	Main Canal from Nabadagahawatta to Mahakithula Reservoir (5+250 to 22+500km)
NWPC-ICB-3	Mi Oya RB 1 Canal, Mahakirula Reservoir to Galgiriya (0+000km to 13+731km) and Mi Oya RB 2 Main Canal From Galgiriya to Kaduruwewa (13+731km to 21+231km)
NWPC-ICB-4	Mahakithula Reservoir to Potuwila (0+000 to 1+491km) and Upper Mediyawa (0+000 to 19+980km) and Yapahuwa Canal from Mediyawa Canal (0+000 to 11+200km)
NWPC-ICB-5	Dambulu Oya to Wemedilla LBMC and Diversion Structure (0+000 to 8+590km)

There are 3 contract packages, NWPCP-NCB<sup>1</sup>-1, NWPCP-ICB<sup>2</sup>-1 and NWPCP-ICB-2 under the NWPCP to be completed under Tranche 1 of the development program during 2016 to 2021.

## 1.2 Scope of the Report

7. This Semi Annual Environmental Monitoring Report (SAEMR) is prepared addressing following aspects, based on the available information with respect to the monitoring period from July to December 2017.

- 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);
- Changes in project scope and adjusted safeguard measures;
- Qualitative and quantitative monitoring data;

<sup>1</sup> NCB – National Competitive Bidding

<sup>2</sup> ICB – International Competitive Bidding

- d) Monitoring parameters/indicators and methods based on the EMP previously agreed upon with ADB;
- e) Monitoring results compared against previously established benchmarks and compliance status (e.g., obtaining necessary approvals for establishment of certain facilities, national environmental emission and ambient standards and/or standards set out in the WB's EHS guidelines; timeliness and adequacy of environmental mitigation measures; and training, capacity building, etc.);
- f) Monitoring results compared against the objectives of safeguards or desired outcomes documented (environmental impacts avoided or minimized, etc.);
- g) Corrective action plan in any case of noncompliance or any major gaps identified; a;
- h) Records on disclosure of monitoring information to affected communities;
- i) Identification of key issues, or grievances from affected people, or recommendations for improvement;
- j) Monitoring adjustment measures recommended based on monitoring experience/trends and stakeholders response;
- k) Information about actual institutional arrangement for implementing the monitoring program;
- l) Proposed items of focus for the next report and due date

8. This SAEMR is prepared to update the progress of NWPCP with respect to environmental safeguard aspects for the period of July to December 2017, which fulfils an ADB requirement to submit an SAEMR to ADB and Central Environmental Authority (CEA) for the "Category A" projects as documented in FAM<sup>3</sup> and EARF<sup>4</sup>.

9. 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 the requirements of ADB. Further, this report assesses the progress with implementation of the program in complying with the approved Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP)<sup>5</sup> as per the stipulation No. 14.3 of the EIA approval No. 08/EIA/WATER/07/2012 issued by CEA on 23 February 2016.

### **1.3 Adjusted institutional arrangement for implementing the monitoring program**

10. The initial arrangement as stated in the FAM of ADB was to establish a "Safeguard Cell" in the PMU to oversee overall environmental monitoring and verification of environmental and resettlement activities of the MWSIP. Further, according to FAM Program Director (PD) supported by the PMU Environmental Specialist (ES) and the Project Directors (PD) supported by the PIU

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<sup>3</sup> Paragraph 60 of Facility Administration manual (FAM), June 2015 prepared by MMDE

<sup>4</sup> Paragraph 111 of Environmental Assessment Review Framework (EARF) November 2014 (updated in June 2017) by MMDE

<sup>5</sup> Environmental Impact Assessment Report (EIAR) dated June 2015 and approved by CEA on 31.03.2016

Environmental Officers (EO) was to assume primary responsibilities for the environmental assessments as well as implementing EMPs for their respective projects and PMDSC Environmental Specialist to support them as required.

11. However, PMDSC, is the “Engineer” for the entire program construction and supervision and is responsible for managing the Contractor. It was PMU’s contention that the Engineer should take a major role in implementing EMPs as well as ensuring the Contractor’s safeguard monitoring. Due to the inadequate initial professional resources for undertaking regular monitoring responsibility, PMDSC requested approval to enhance environmental professional resources within PMDSC by providing three additional Environmental Monitoring Specialists (EMS), with one being assigned to each Project component. Approval was granted for 2 EMS to work with the PMDSC Environmental Specialist and the EMS assumed their duties in December 2017.

12. With the recruitment of 2 EMS, PMDSC Safeguard Cell was formed, dividing tasks among 3 environmental professionals in the Engineer’s organisation as follows.

PMDSC	Environmental Specialists (ES)	<ul style="list-style-type: none"> <li>• Update the environmental assessments including EMP based on detailed designs</li> <li>• Ensure EMPs are included in bidding documents and civil works contracts</li> <li>• Prepare Environmental Monitoring formats</li> <li>• Provide guidance to the Contractors to properly carry out the implementation of the EMPs</li> <li>• Provide guidance on routine environmental monitoring activities, carried out by 2 EMS of PMDSC</li> <li>• Review and evaluate the effectiveness with which the EMPs are implemented, and recommend corrective actions to be taken as necessary</li> <li>• Maintain documents for preparing periodic environmental monitoring reports to ADB/CEA with the coordination of PMU Environmental Specialist</li> <li>• Prepare due diligence reports on safeguard issues</li> <li>• Plan and undertake any necessary additional surveys and investigations to support designs and implementation</li> <li>• Plan implementation of reforestation and other required mitigatory measures through the Provisional Sum items allocated in the Contracts for specific environmental mitigations</li> <li>• Raise Contractor awareness, carry out capacity building and prepare required guidelines and training materials</li> </ul>
	Environmental monitoring specialist (EMS)	<ul style="list-style-type: none"> <li>• Assist Environmental Specialist PMDSC in carrying out additional environmental surveys in the field level</li> <li>• Approve and follow up the Environmental Method Statements (EMS) to ensure the Contractors’ preparation for the respective mitigatory measures with the assistance of Environmental Specialist PMDSC;</li> <li>• Monitor construction activities, ensuring that the Contractors have a capable environmental staff at site and that the requirements in the Contracts and proper construction practices are being followed in accordance with the EMP/CEMP;</li> </ul>

		<ul style="list-style-type: none"> <li>• Conduct frequent inspections, verifications, and monitoring as required to maintain and improve the effectiveness of Contractors' EMPs under the guidance of the ES of PMDSC;</li> <li>• Recommend corrective action for any environmental non-compliance incidents on the construction sites;</li> <li>• Coordinate and follow up the timely data collection, reporting activities related to the periodical environmental monitoring of surface water, air quality and noise &amp; vibration, suspended sediment levels followed by baseline data collection carried out by a qualified institution subcontracted through PMDSC</li> <li>• Follow up with the Contractor the updating of the environmental issue log on the site and update display charts on the worksite environmental, health and safety management</li> <li>• Compile regular reports highlighting any non-compliance issues as well as good compliance with the CEMP;</li> <li>• Follow-up and guide the Contractors regarding their own environmental monitoring and reporting activities;</li> <li>• Liaise with the Contractors to obtain the regular monitoring reports on time;</li> <li>• Assist the Engineer in the preparation and review of the progress reports and monitoring reports, and ensure that these reports meet environmental requirements;</li> <li>• Assist the Engineer to arrange required training, capacity building programs where necessary identified through the regular monitoring</li> <li>• Supervise the implementation of reforestation programs and other required additional mitigatory measures, coordinating with relevant stakeholder agencies (FD/DWC) with the assistance of the PDs-PIU.</li> </ul>
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13. Figure 1-2 shows the adopted organizational arrangement to carry out environmental monitoring activities within PMDSC.

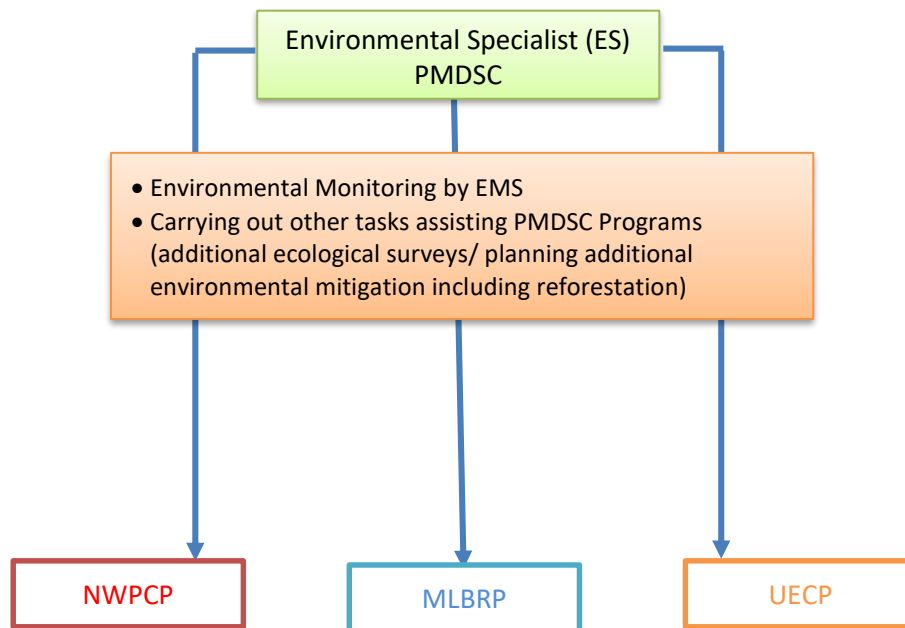
14. EMS shall prepare monthly progress reports based on their monitoring records, activities carried out and referring to the Contractors' monthly progress reports for the previous month and submit these to the ES. Environmental progress for the monthly PMDSC report submitted to ADB through PMU is prepared by ES based on EMS report including additional activities completed as per PMDSC program.

15. The SAEMR for NWPCP is prepared by the ES based on the monthly monitoring and progress reports received from EMS, and the updates received from the Environmental Specialist of PMU.

16. The following key deliverables including CEMP are to be submitted by the Contractor to their Resident Engineer (RE), with copies to PD-PIU, and comments from EMS who shall review the CEMP and submit any significant comments or corrective measures to the RE in writing or verbally at the monthly progress meeting, recorded in meeting minutes.

- i. Environmental Method Statement prepared for every main construction activity followed by the construction method statement prior to implement the relevant construction activity
- ii. Monthly Environmental Progress Report

17. In addition to the above, the Environmental Issue Log, Grievance Log and approvals renewed or newly obtained shall be checked by the EMS to ensure that those are duly updated during their site monitoring visits.



**Figure 1-2 : PMDSC Independent Environmental Monitoring and Safeguard Mechanism**

## 2. PROGRESS OF NWPCP

### 2.1 NWPCP at a Glance

18. **Table 2-1** summarizes the status of designs, contract bidding and awarding of NWPCP contract packages by end December 2017. The updated Environmental Management Plans (EMPs) have been prepared and incorporated along with the bidding documents for the packages NWPCP NCB 1, NWPCP ICB 1 and NWPCP ICB 2.

**Table 2-1: Summary of the NWPCP contract bidding and awarding**

Time	Contract Name	Status by End August 2017
<b>Tranche 1 (2015 - 2019)</b>	Improvements to Wemedilla Left Bank Main Canal up to Nabadagahawatta (0 to 5+250 km) and Construction New Sluice and Tail Canal (0 to 0+600 km) Contract Package NWPCP-NCB-1	PMU issued the Letter of Acceptance to M/s. NEM Construction (Pvt) Ltd. on 21 November 2016. The contract was signed on 01 December 2016. The Contractor mobilized on 08 December 2016.
	Construction of Mahakithula Inlet Tunnel, Mahakithula and Mahakirula Reservoirs, Feeder Canal from Mahakithula to Mahakirula Reservoir Contract Package NWPCP-ICB-1	Technical bids were opened on 18 September 2017; evaluation in progress.
	Construction of Main Canal from Nabadagahawatta to Mahakithula Reservoir Inlet Tunnel (from 5+250km to 22+500km) Contract Package NWPCP-ICB-2	The financial bids were opened on 19 October 2017 and ADB concurred the financial evaluation report and awaiting CATB approval.
<b>Tranche 3 (2018 - 2024)</b>	NWPCP-ICB-3 (former contract package NCB-2/-3); Mi Oya RB 1 Canal, Mahakirula Reservoir to Galkiriyawa (0+000 to 13+731 km) and Mi Oya RB 2 Main Canal from Galgiriya to Kaduruwewa (13+731 to 21+231 km)	Preparation of designs and bid documents in progress (60%); scheduled to finalize bidding document in February 2018.
	NWPCP-ICB-4 <sup>6</sup> (former contract package NCB-4/-5); Mahakithula Reservoir	Preparation of designs and bid documents in progress (50%) and scheduled to finalize bidding document in March 2018.

<sup>6</sup> Likely to be combined with NWPCP-ICB-3 in first quarter of 2018

Time	Contract Name	Status by End August 2017
	to Pothuwila (0+000 to 1+491 km) and Upper Mediyawa (0+000 to 19+980 km) and Yapahuwa Canal from Mediyawa Canal (0+000 to 11+200 km)	
	NWPCP-ICB-5 <sup>7</sup> (former contract package NCB-6); Dambulu Oya to Wemedilla LBMC and Diversion Structure (0+000 to 8+590 km)	Designs in progress (35%) and scheduled to finalize bidding document in March 2018.

## 2.2 Safeguard Documentation and Approvals

### 2.2.1 EIA Addendum and updated EMPs

19. NWPCP is classified as Category “A” according to ADB’s SPS (2009) and the conditional approval (EIA approval No. 08/EIA/WATER/07/2012 issued by CEA) for a period of 3 years commencing from 23 February 2016.

20. As updated in the previous SAEMR, the design changes made in comparison to the approved EIA with respect to NWPCP Tranche 1 packages was submitted as an Addendum to EIA to CEA in July 2017 and to ADB in August 2017. CEA held the Technical Review Committee (TRC) meeting on 30 November 2017 on the submitted report, and the letter summarizing comments and clarifications required were sent to PMU on 28<sup>th</sup> November 2017.

21. PMDSC carried out a rapid environmental screening in the areas where further CEA clarifications are required and the report with the responses to CEA clarifications was submitted end December to CEA. The approval for the design changes shall be granted by CEA upon the submission of PMDSC response.

22. The updated EMPs have been completed and submitted along with the bidding documents to both CEA and ADB for the following NWPCP packages NCB 1, ICB 1, ICB 2.

23. Other Safeguard Compliances

24. The compliance status related to the CEA approval conditions related to NWPCP-NCB-1 and other NWPCP packages to be awarded under Tranche 1 currently being followed up by the Senior Environmental Officer (SEO) of PIU is summarized in Table 2-2.

<sup>7</sup> Likely to be renumbered to NWPCP-ICB-4 during first quarter 2018

**Table 2-2: Compliance with the CEA approval conditions: NWPCP**

Reference to CEA conditional approval	CEA approval condition	Compliance status	Remarks
Section 1.9	The ID should coordinate closely with stakeholders	Awareness meeting and field visits conducted for the Media official, Development officers (DO), Agricultural Research & Production Assistants (ARPA), Grama Niladaries (GN) of the Galewela area	30.11.2017 for Media Officers 22.11.2017 for DOs 25.10.2017 for ARPAs 31.10.2017 for GNs
Section 3.1	Wildlife Management Plan (WMP) should be prepared	The 4 <sup>th</sup> Technical Review Committee Meeting (TRC) to evaluate the submitted draft final report was held on 12 December 2017 at the Head Office of DWC, chaired by the Director – Operations and Natural Resources Management (Mr. Manjula Amararatne).  The comments related to structural modifications as per the canal type and design details were submitted to IUCN through PMU to incorporate in the Final WMP.	<ul style="list-style-type: none"> <li>Stake holder consultative season held on 09<sup>th</sup> &amp; 10<sup>th</sup> October 2017</li> <li>TRC meeting No 03 held on 07.09.2017</li> <li>TRC meeting No 04 held on 12.12.2017</li> </ul>
Section 6.5	Income restoration plan for affected households	Program implemented on 06.10.2017	Provided 4,250 Pepper plants for 25 households in NWPCP-ICB-2 on 24.11.2017 followed by relevant training
Section 6.8	Conduct awareness meeting with PAP about project activities	Established Grievance redress committee in all affected GND and held meeting monthly	Please see Section 4.1 for details

### 2.2.2 Progress of Contractors Documentation Submission

25. The key deliverables submitted by the Contractor are Monthly Monitoring Report and Environmental Method Statements, which are to be reviewed by the Engineer with review comments if any submitted through the RE to the Contractor. The Contractor's documentation submission and status is summarized in Table 2-3.



**Table 2-3: Status of Contractor's Documentation**

<b>CEMP approval / update status</b>	<ul style="list-style-type: none"> <li>Noted that the CEMP need to be updated as per the ongoing construction work</li> <li>Environmental Method Statements (EMS) for the construction activities, submission to and approval by the Engineer need to be established</li> </ul>
<b>Self-monitoring records of the Environmental Officer</b>	<ul style="list-style-type: none"> <li>Summary report of monthly check list of environmental monitoring parameters is maintained and Annexed to the Contractor's monthly progress report.</li> <li>pH monitoring of canal water at the construction locations is recorded. However, no other environmental quality monitoring parameters being conducted by the Contractor (i.e., noise, air quality, vibration, other water quality parameters). Request to be made through RE to conduct one independent environmental quality monitoring until PMDSC commences its independent environmental quality monitoring process through selected bidder</li> </ul>
<b>Submission and approval of Environmental Method Statement</b>	Implementation of environmental protection measures as per the construction activities and the monitoring of implementation as per the CEMP/EMP is established, and prior RE approval is required before starting construction. This is being established after the recruitment of EMS, who advise RE of requirements prior to approval of Environmental Method Statement
<b>Environmental Issue Log</b>	<p>Environmental and Grievance log book is maintained in the site office and by Dec 2017, 4 grievances had been recorded and all 4 had been resolved. The summary of issues raised through grievances are as follows:</p> <ul style="list-style-type: none"> <li>one grievance for dust generation</li> <li>two grievances on access disturbance to houses</li> <li>one grievance for inappropriate relationship with village people having caused an issue</li> </ul>
<b>Grievance Log</b>	Environmental and Grievance log book is maintained at the site office

## 2.3 NWPCP Physical Progress

26. The only NWPCP construction package mobilized under MWSIP Tranche 1 is NWPCP-NCB-1, which includes construction of existing Wemedilla Left Bank Main canal from (0+026 to 5+250 km) and construction of new sluice and tail canal from 0+000 to 0+535 km) from Wemedilla reservoir to Nabadagahawatta.

27. The summary highlighting the construction progress as of December 2017 for the NWPCP NCB 1 contract package mobilized under Tranche 1 is given in **Table 2-4**. The general and Task 3 monthly reports for December 2017 include further details.

**Table 2-4: Construction Progress of NWPCP NCB 1 Contract by December 2017**

<b>Contract No.</b>	MMDL/MWSIP/ADB/NWPCP/NCB-1/3267-3268-SRI/NCB/2016/001	
<b>Contractor Name:</b>	M/s. NEM Construction (Pvt) Ltd.	
<b>Letter of Acceptance:</b>	21 November 2016	
<b>Value of Contract:</b>	LKR 926,113,863.39 (incl. VAT @ 15%)	
<b>Contractual Start Date:</b>	29 December 2016	
<b>Contract Duration:</b>	24 months	
<b>Status:</b>	Topographic surveys:	Survey works are ongoing- progress - 80%
	Preparation of Construction drawings by Contractor	Slow and ongoing - progress 70%
	Construction work:	Wemedilla sluice - 23% Canal D/S new sluice - 15% Lined canal - 16% Aqueduct - 17%

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

**i. Construction work in section 0+850 km to 2+860 km**

- Earth and rock excavation
- Aqueduct across Malawa Oya
- Construction work in section 2+860 km to 3+055 km
- Removal of trees

**ii. Construction work in section 3+500 km to 5+250 km**

- Earth excavation
- Embankment filling
- Concrete lining Drainage under crossing
- Bathing steps

**iii. Construction work in New tail canal (0+000 to 0+533 km)**

- Excavation for the rectangular open canal
- Construction of the rectangular open canal
- Construction of drop structures

**iv. Construction work in new sluice**

- Construction of the sluice barrel
- Construction of the super structure of the tower and approach bridge

**v. Blasting and concreting of conduct section (3+000-3+500)**

29. Tree removal is completed from 1+ 000 Km to 4 + 000Km except the areas where canal reservation land acquisition is pending. Tree removal in the remaining area is being conducted by State Timber Cooperation (STC) upon the request of DS-Galewela and Dambulla.

## 2.4 Approval Status

30. The summary of required external approvals 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. Approvals received to carry out construction work were summarized in the SAEMR No. 1 for NWPCP for the period of January to June 2017 and most of the approvals are still valid for the current monitoring period.

31. It was noted that several approvals will expire by January 2018, such as blasting approval (expiring on 05.01.208), and licence permit for quarry dust supply (expired on 17.12.2017).

32. The relevant site approvals for the construction work have been obtained on tree felling, Environmental Protection Licence (EPL) for disposal yards, stockpiling areas, material suppliers for quarry dust and sand, and blasting activities.

33. CEA clearances for the construction and test operation of the concrete batching plant were issued on 31 March 2017 valid until 31 March 2018, but no EPL had been granted by CEA for the concrete batching plant operations by the end of the reporting period. This has been followed up by the Engineer and the Contractor is in the process of obtaining EPL for batching plant operations. It was found that they have submitted the required applications to CEA and the CEA has visited for the inspection in November 2017, but approval letter issue has been delayed.

## 2.5 Site Inspections, Training and Awareness

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

34. Table 2-5 summarize the site inspections and contractor progress meetings carried out during the reporting period of July to December 2017 with the participation of the Contractor, PIU, PMU and the Engineer's staff.

**Table 2-5: Site Inspections and Consultative sessions, meetings carried out with the Contractor NCB 1 during Monitoring Period**

Date	Location	Participants	Objective
03.08.2017	Irrigation Department	The Engineer, PIU and NCB 1 Contractor	Monthly Project Progress Review meeting
14.08.2017	Walamitiyawa	Contractor, the Engineer and PIU staff	Site inspection - NCB1 for Safety & Environmental
16.08.2017	GS office	RE, Officials of Mahaweli authority, Contractor, other relevant officer and villagers	Grievance regress meeting at Walaswewa
31.08.2017	House of Mr. Lionel (Villager)	RE, Officials of Mahaweli authority, Contractor, other relevant officer and villagers	Grievance regress meeting at Welamitiyawa
05.09.2017	Site office	PM, HSEM, HSEO	Progress review meeting on environmental management program for the month of August

			was held on 5 <sup>th</sup> September 2017. The observations and required protection measure were noted in the Environmental Log book to be implemented in the site.
25.09.2017	NCB1 package area	Contractor, the Engineer and PIU staff	NCB 1 site inspection
04.10.2017	Irrigation Department	the Engineer, PIU and NEM Contractor	Monthly Project Progress Review meeting
13.10.2017	Site office	HSEM, Office Engineer, HSEO	Progress review meeting on environmental management program for the month of September was held on 13 <sup>th</sup> October 2017. The observations and required protection measure were noted in the Environmental Log book to be implemented in the site.
24.10.2017	NCB1/ Galewela	Contractor, ES-PMU, PIU staff, RE staff	Joint field inspection in NCB 1 package for environmental Survey
30.10.2017	Site office	Office Engineer, HSEO	Progress review meeting on environmental management program for the month of October was held on 30 <sup>th</sup> October 2017. The observations and required protection measure were noted in the Environmental Log book to be implemented in the site.
09.11.2017	RE's office	the Engineer – Project Director, CRE, RE, Design Engineer, Planning Engineer, Material Engineer, Engineer Assistant  NEM Contractor – PM, Concrete Structural Engineer, Material Engineer	Monthly Project Progress Review meeting

29.11.2017	Site/Site office	Office Engineer, HSEO	After visit the site progress review meeting on environmental management program for the month of November was held on 29 <sup>th</sup> November 2017. The observations and required protection measure were noted in the Environmental Log book to be implemented in the site.
07.12.2017	RE's Office	PIU – Project Director, CRE, RE, Design Engineer, Planning Engineer, Material Engineer, Engineer Assistant NEM Contractor – PM, Concrete Structural Engineer, Material Engineer	Monthly Progress Review
22.12.2016	Walamitiyawa	Contractor, PIU staff, RE staff	Field inspection for identified disposal sites
28.12.2017 29.12.2017	Site & Office – Walamitiyawa	the Engineer – Environment Monitoring Specialist (EMS), NEM Contractor –EO & SO.	Site inspection and monitoring environmental progress of the Site.

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

35. Awareness training on health and safety aspects has been carried out for the Contractor by the Environmental, Health and Safety Officer of PMDSC, including fire training on 26 July and 24 November 2017.

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

### 3. SUMMARY OF MONITORING FINDINGS

37. 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 Contractor for NWPCP-NCB-1 are summarized in **Table 3-1**.

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


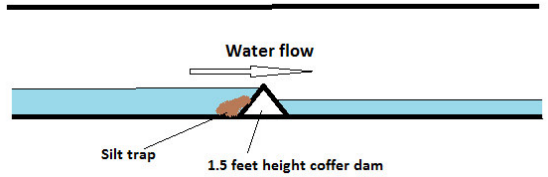
38. Initially there was no continuous monitoring occurred due to lack of adequate resources with the Engineer. However, after recruiting the EMS in December and random site visits by the Environmental Specialist of PMDSC the following list of non-conformances and corresponding corrective actions were noted during site inspections and a meeting held on 28 and 29 December 2017 at the site and the Contractor was notified accordingly.



- i. The deep excavated canal reach from ch0+000 to ch0+070 traverses jungle stretches; it is possible for animals to fall into the excavated canal so both sides should properly be covered with wire mesh.
- ii. Borrow excavation occurred in the batching plant premises without any mining approvals of the authorised agency (GSMB). The excavation work was immediately stopped.
- iii. Disorder at some of the working places along the canal and store premises was noted. Continuous monitoring of implementing waste management practices was instructed as highlighted in Table 3-1.
- iv. No solid waste management system has yet been introduced (waste sorting and proper disposal) to the project area, especially in the store premises. Labelled waste bins are introduced for each waste type, but proper management and monitoring is not yet in place.
- v. Stagnant water and used tyres are left at store premises; these places are favourable for mosquito breeding. Correction was instructed.
- vi. EPL has still not been taken for batching plant, and immediate action has been taken to contact CEA and obtain a licence through the Contractor's EO.
- vii. It was revealed that some trees (which were not marked for removal) have been removed without approval. The tree removal is taking place through a sub contract managed under PIU. It was informed to the RE to make the PIU aware about this matter, in addition the EMS is closely monitoring the tree removal to ensure such non-conformances are not repeated.
- viii. The Contractor's regular site monitoring is inadequate, as the Environmental Officer (EO) for the Contractor is not fulltime at the site.

#### 3.2 Environmental risks and safeguard compliance


39. This section includes the information gathered through periodical site visits, Contractors' independent monitoring reports, and discussions held at the Contractors' monthly progress meetings, since there is no continuous CEMP monitoring on site. Since only the NWPCP-NCB-1 Contractor had commenced their physical work on site by the end of the reporting period, the relevant details are available related to that construction package only. Summary is given in **Table 3-2**.


Table 3-1: Summary of Mitigation Measures Adopted by the Contractor against Impacts Highlighted


Month	Construction Activities	Environmental impacts of those	Mitigation measures taken	Monitoring of environmental compliance carried out and the frequency
July/August	<ul style="list-style-type: none"> <li>Construction of the New sluice and new tail canal (0+000-0+480) have been started</li> <li>Construction of the Aqueduct (1+463-1+500) is being progressed.</li> <li>Construction of the conduit section (3+000 – 3+500) is being progressed.</li> <li>Construction of the Trapezoidal canal (3+500-5+250) is being progressed.</li> </ul>	<ul style="list-style-type: none"> <li>Unsafe condition due to steep cut</li> <li>Soil erosion</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of safety precautions, installation of sign boards and awareness boards.</li> </ul>  <ul style="list-style-type: none"> <li>At two locations 1.5 feet height coffer dam was constructed before release the water to the downstream as a silt trap.</li> </ul>  <ul style="list-style-type: none"> <li>Establishment of ground vegetation at excavated/filled areas at the construction of new sluice using the native species found from the surrounding area.</li> </ul>	


Month	Construction Activities	Environmental impacts of those	Mitigation measures taken	Monitoring of environmental compliance carried out and the frequency
			 <ul style="list-style-type: none"> <li>Construction of a silt trap (sedimentation basin) for the storm water,</li> </ul>  <ul style="list-style-type: none"> <li>Re-vegetation of the open areas using tree species found from surrounding area to minimize the erosion.</li> </ul>	





Month	Construction Activities	Environmental impacts of those	Mitigation measures taken	Monitoring of environmental compliance carried out and the frequency
		<ul style="list-style-type: none"> <li>Waste generation</li> </ul>	Proper Waste management is properly maintained. (Source separation, kitchen waste sent to pig farms, papers collected to be sent to recycling centres)	Daily site monitoring by EO and monthly monitoring by Environmental Manager
September	<ul style="list-style-type: none"> <li>Construction of the New sluice and new tail canal (0+000-0+480)</li> <li>Construction of the Aqueduct (1+463-1+500) is being progressed.</li> <li>Construction of the conduit section (3+000 – 3+500) is being progressed.</li> <li>Construction of the Trapezoidal canal (3+500-5+250) is being progressed.</li> </ul>	<ul style="list-style-type: none"> <li>Unsafe condition due to steep cut</li> <li>Soil erosion</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of safety precautions, installation of sign boards and awareness boards.</li> </ul>  <ul style="list-style-type: none"> <li>Maintaining the 1.5 feet height cofferdam which was constructed previously before release the water to the downstream as a silt trap.</li> </ul>	Daily site monitoring by EO and monthly monitoring by Environmental Manager
October	<ul style="list-style-type: none"> <li>Construction of the New sluice and new tail canal (0+000-0+480)</li> <li>Construction of the Aqueduct (1+463-</li> </ul>	<ul style="list-style-type: none"> <li>Unsafe condition</li> <li>Soil erosion</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of safety precautions, installation of sign boards and awareness boards. Installed hard barricading at construction of new sluice, installed sign boards at entrance of new tail canal are maintained regularly.</li> </ul>	Daily site monitoring by EO and monthly monitoring by Environmental Manager


Month	Construction Activities	Environmental impacts of those	Mitigation measures taken	Monitoring of environmental compliance carried out and the frequency
	<p>1+500) is being progressed.</p> <ul style="list-style-type: none"> <li>Clearing works (1+500 – 1+800) are being progressed.</li> <li>Clearing works (2+400 – 2+800) are being progressed.</li> <li>Construction of the conduit section (3+000 – 3+500) is being progressed.</li> <li>Lining works of the Trapezoidal canal (3+600-3+800) are being progressed.</li> <li>Embankment filling of the Trapezoidal canal (3+800-5+250) is being progressed.</li> </ul>	<ul style="list-style-type: none"> <li>Waste generation</li> </ul>	<ul style="list-style-type: none"> <li>Maintaining the 1.5 feet height coffer dam which was constructed previously before release the water to the downstream as a silt trap also was maintained.</li> <li>Site cleaning is monitored regularly at new sluice area as it is very close to the Wemedilla reservoir.</li> <li>Hard barricading, establishment bio fence using Gliricidia stick, planting ground vegetation were day to day implemented at required locations.</li> <li>Waste management is properly maintained. Kitchen wastes are bought by the pig farmers. Therefore, only small quantity of kitchen waste would be put in to the compost bin.</li> </ul>  <ul style="list-style-type: none"> <li>Using of test cubes for the landscaping purposes.</li> </ul>	

Month	Construction Activities	Environmental impacts of those	Mitigation measures taken	Monitoring of environmental compliance carried out and the frequency
			 <ul style="list-style-type: none"> <li>A plant nursery was established at Batching plant area. The nursing plant will be used for the restoration of batching plant area and for compensate the removed trees for the project.</li> </ul>	Daily site monitoring by EO and monthly monitoring by Environmental Manager/Office engineer

Month	Construction Activities	Environmental impacts of those	Mitigation measures taken	Monitoring of environmental compliance carried out and the frequency
				
November	<ul style="list-style-type: none"> <li>Construction of the New sluice and new tail canal (0+000-0+550)</li> <li>Clearing works (2+400 – 2+800) are being progressed.</li> <li>Lining works of the Trapezoidal canal (3+600-3+800) are being progressed.</li> <li>Embankment filling (4+000 – 5+200) is being progressed</li> <li>Excavation and gravel filling (3+605-3+812) is being progressed.</li> </ul>	<ul style="list-style-type: none"> <li>Unsafe condition</li> <li>Soil erosion</li> <li>Possibility of Water pollution</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of safety precautions, installation of sign boards and awareness boards. Installed of hard barricading at construction of new sluice, installed sign boards at entrance of new tail canal are maintained regularly.</li> <li>Maintaining the 1.5 feet height cofferdam which was constructed previously before release the water to the downstream as a silt trap also was maintained.</li> <li>Site cleaning is monitored regularly at new sluice area as it is very close to the Wemedilla reservoir.</li> </ul>	Daily site monitoring by EO and monthly monitoring by Environmental Manager/Office engineer

Month	Construction Activities	Environmental impacts of those	Mitigation measures taken	Monitoring of environmental compliance carried out and the frequency
			 <ul style="list-style-type: none"> <li>A plant nursery was established at Batching plant area. Jack plant will be used for the restoration of batching plant area and for compensate the removed trees for the project.</li> </ul>  <ul style="list-style-type: none"> <li>Monitor the pH of water at several locations of the canal</li> </ul>	



Month	Construction Activities	Environmental impacts of those	Mitigation measures taken	Monitoring of environmental compliance carried out and the frequency
December	<ul style="list-style-type: none"> <li>Construction of the New sluice and new tail canal (0+000-0+550)</li> <li>Clearing works (0+250 – 0+800) are being progressed.</li> <li>Construction of Aqueduct (1+418-1+500)</li> <li>Embankment filling (2+400 – 2+800, 4+800-5+000) is being progressed</li> <li>Blasting and concreting of conduct section (3+000-3+500)</li> <li>Canal trimming (3+812-4+200)</li> </ul>	<ul style="list-style-type: none"> <li>Unsafe condition</li> <li>Soil erosion</li> <li>Waste generation</li> <li>Possibility of Water pollution</li> <li>Water stagnation of water on tarpaulin</li> <li>Unsatisfactory housekeeping due to tree removal</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of safety precautions, installation of sign boards and awareness boards. Installed of hard barricading at construction of new sluice, installed sign boards at entrance of new tail canal are maintained regularly.</li> <li>Constructed a rubble pack at reservoirs bank to prevent erosion due to excavation of new sluice.</li> <li>Site cleaning is monitored regularly at new sluice area as it is very close to the Wemedilla reservoir.</li> <li>Water stagnations were corrected at stores area</li> </ul>  <ul style="list-style-type: none"> <li>The debris were removed by the contractor for maintain a proper housekeeping.</li> </ul>	<p>ISO internal Audit</p> <p>Daily site monitoring by EO and monthly monitoring by Environmental Manager/Office engineer</p> <p>Environmental Team of the Engineer</p>

**Table 3-2: Summary of Monitoring Findings of the NWPCP-NCB-1 Contractor by the Engineer**

ITEM	COMPLIANCE STATUS	COMMENT	ACTION REQUIRED
Air Quality	Low compliance	During dry spells with wind, the dust is significant Excavated material along the canal and bund road has high dust levels	<ul style="list-style-type: none"> <li>- Frequent watering</li> <li>- covering disposal and stockpiling areas</li> <li>- barricading along canal</li> </ul>
Water Quality	Low compliance	<ul style="list-style-type: none"> <li>- Heavy erosion in some places due to incorrect excavation slopes which result siltation</li> <li>- Hindrance to canal flow create low flows</li> <li>- fouling smell in water due to fallen tree branches and leaves during tree felling</li> </ul>	<ul style="list-style-type: none"> <li>- Control erosion and siltation</li> <li>- Recommend water quality monitoring to understand pollution status</li> <li>- During tree felling, relevant authorities to be aware about the proper disposal of vegetative parts, and not to put into canal</li> </ul>
Soil	Low compliance	- Heavy erosion in some places due to incorrect excavation slopes which result siltation	<ul style="list-style-type: none"> <li>- Slopes to be cut in a proper angle</li> <li>- Erosion controlling using sand bags and covers</li> </ul>
Noise	Moderate compliance	-	-
Fauna / wildlife	Moderate compliance	The deep section at the new sluice is connected to the adjacent forest area, and there is a possibility of falling animals into the excavated parts	- The excavated area to be fenced with a small mesh and barricaded up to the ground, so that animals cannot move across to the excavated areas
Traffic Management	Low compliance	Due to the inadequate working space along the canal beside the road has local traffic issues and disturb local community	<ul style="list-style-type: none"> <li>- Alternative roads to be proposed where possible</li> <li>- Proper sign boards to be displayed</li> <li>- No machinery, vehicle parking along the canal bank road, unless which is required for construction work</li> </ul>
Waste Management & Hazardous Materials	Moderate compliance	-	-
Cultural Heritage	-	-	

40. Photographic evidences to show above list of non-conformances are given in Figure 3-1.







**Improper solidwaste management in the site**



**Water retained locations and used tyres are left at store premises**

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

## 4. DISCLOSURE AND ADDITIONAL MITIGATORY MEASURES

### 4.1 Disclosure of monitoring information to affected communities

41. PIU and PMU has conducted several community awareness and consultation programs related to NWPCP project activities, which are summarized in Table 4-1.

**Table 4-1: Summary of the Awareness Sessions and Community Consultations**

Event name	Date	Location (GN-DS)	No Participated	Resource persons
Awareness sessions	25.11.2017	Pradesiyasaba – Galgamuwa	650	PD-MWSIP, PD-NWPCP, IE, NWPCP etc. SEC & SCO of NWPCP SEC & SRO of NWPCP
	16.11.2017	Nabadagahawata	34	
	23.10.2017	GND-Galewela Pahala Bambawa GND-Galewela	15	

42. Table 4-2 summarizes the number of Grievance Redress Committees (GRC) established by PMU/PIU in the NWPCP project area.

**Table 4-2: Summary of the GRCs established in NWPCP area**

Type of committee	GRC-Name	Members	No of meetings had	Dates
GND level	Danduyaya	08	02	02.10.2017, 16.08.2017
	Pahala Bambawa	09	03	23.10.2017, 07.09.2017, 10.07.2017,
	Ranwediya	10	01	16.08.2017
	Kospotha	08	03	19.10.2017, 24.08.2017, 27.07.2017
	Hombawa	08	03	21.09.2017, 01.08.2017, 28.07.2017
	Aluthwewa	09	02	18.09.2017, 31.07.2017
	Pibidunugama	08	01	31.07.2017,
	Welamitiyawa	11	02	31.08.2017, 31.07.2017
	Walaswewa	08	02	24.08.2017, 11.07.2017
	Weragalawatta	10	01	11.07.2017
	Nabadagahawatta	09	01	13.06.2017
	Silwatgama	08	01	18.07.2017
	Pattiwela	09	01	02.10.2017

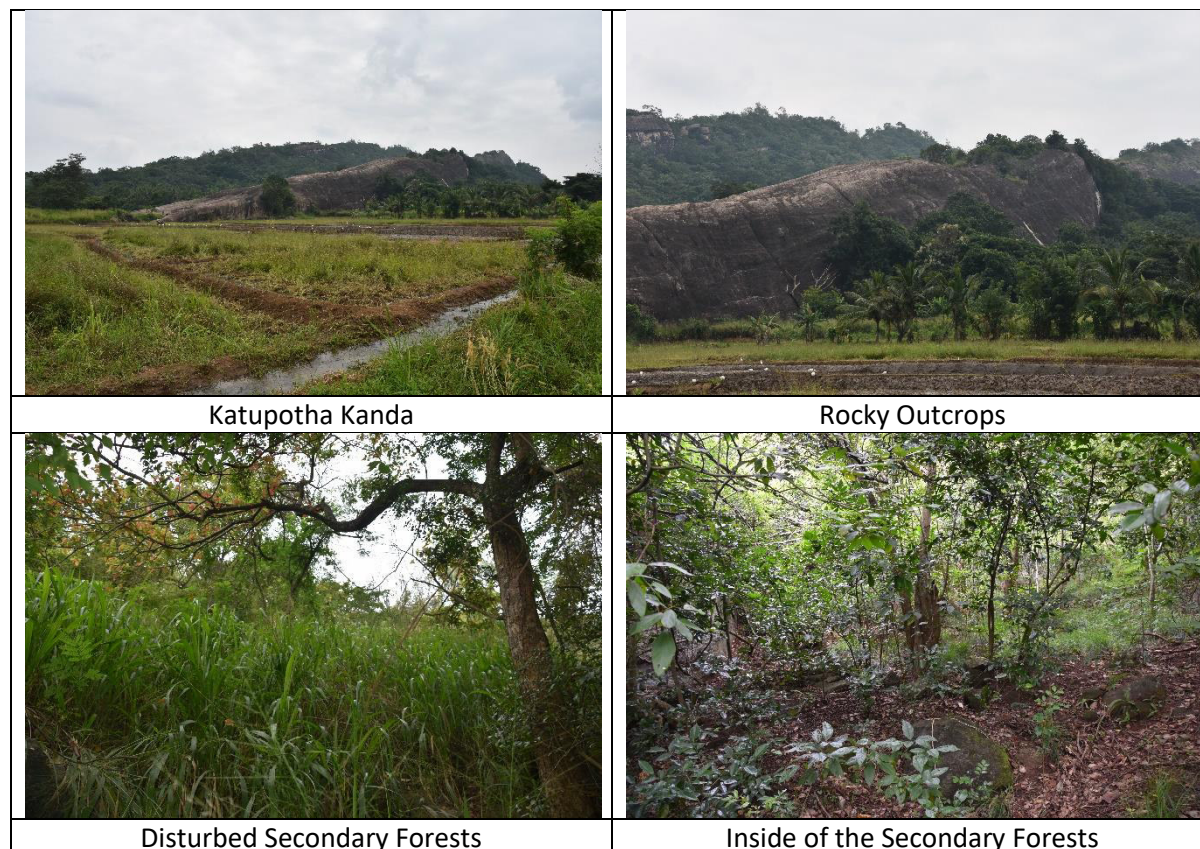
### 4.2 Additional Surveys carried out under NWPCP within the reporting period

43. **Tree Enumeration Surveys by the Engineer and Contractor:** Initially the tree survey has been carried out within required canal reservation area for the construction as acquisition for the private lands was not finalized. Later the tree survey was extended up to 20 m from Centre line, after recovering the land acquisition documents from the Irrigation department. Tree survey of some acquired sections has already commenced. Once the compensation is made to the affected parties, a separate tree survey will



be carried out along the remaining new reservation area with the support of PIU, RE staff and the tree identification shall be carried out by EMS of PMDSC in December 2017 and continued during the first quarter of 2018, as the compensation of the affected parties along the canal reservation is in progress by the PMU/PIU.

44. Additional Ecological Surveys responding to CEA clarifications made on the addendum to EIA for Tranche 1 packages were carried out in early December 2017 in the Ranwediya and Neelagama Tunnel areas to update information about the habitat conditions and biodiversity to ensure that no critical habitat or species is affected. Figure 4-1 and Figure 4-2 respectively show the habitat conditions in Neelagama and Ranwediya Tunnel areas, which form part of contract package NWPCP-ICB-2.



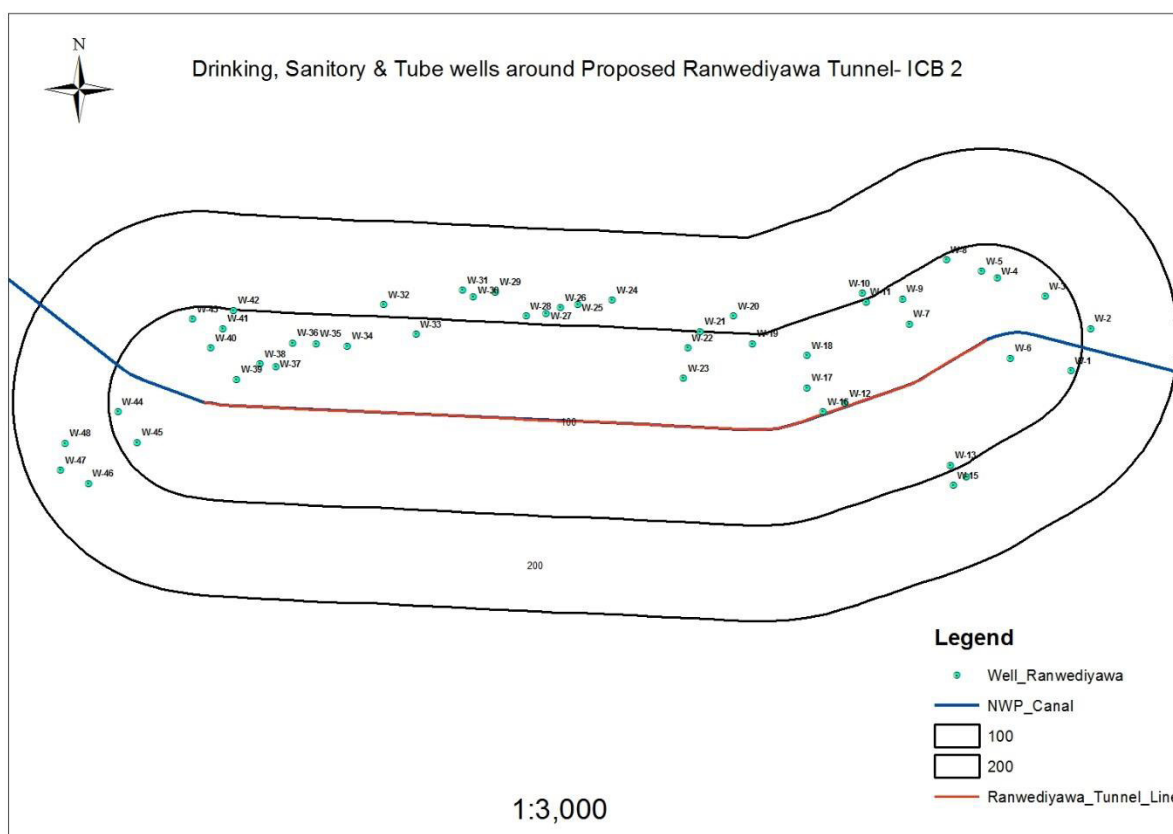
**Figure 4-1: Habitat diversity in Neelagam Tunnelling area**



**Figure 4-2: Habitat diversity in Ranwediya Tunnelling area**

45. Measurement of groundwater levels around the proposed Neelagama and Ranwediya Tunnel areas have been carried out by PIU Senior Environmental Office (SEO), to maintain baseline conditions. 50 drinking/sanitary wells have been identified within a 100m buffer zone around the proposed Ranwediya Tunnel under package NWPCP-ICB-2 for water level measurement in wells. Table 4-3 shows the details of drinking, sanitary and tube wells within 100 m zone around proposed Ranwediya Tunnel.

46. Depths to the water levels are being measuring two days per month (1st and 15th) as from 3 September 2017. These depths have been measured three times: on 3, 13 and 30 October 2017. The map of the identified wells around Ranwediya Tunnel area is shown in Figure 4-3 and the depth to the water levels and the variation with three days shown in Figure 4-4.



**Figure 4-3: Map of the tunnel area with selected wells in Ranwediya Tunnel area**

Table 4-3: Details of the Wells around 100 m zone at Proposed Ranwediya Tunnel

Well No.	Name of Owner	Address	Location		Type of Well
			E	N	
W-1	Mrs. H.M.U. Wimalawathie	Kanadana, Galewela	176,358	282,559	16'-6"Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-2	Mr. M.W. Sirisena	611-C, Keppitiya, Galewela	176,379	282,603	8'-8"Ø, Circular well; Rubble work inside; Brick work Guard wall
W-3	Mr. G.G. Kumara Nandana	611-D, Keppitiya, Galewela	176,331	282,637	5'-5"x 5'-3" size Square type; Dressed stone wall inside; Cement rendered Guard wall
W-4	Mrs. R.M. Bisomenika	Keppitiya, Galewela	176,281	282,656	4'- 8" Ø, Circular well; Rubble work inside; Cement rendered Guard wall
W-5	Mrs. R.M. Bisomenika	Keppitiya, Galewela	176,265	282,663	3'- 0" Ø, Circular well; Hume pipes inside; No Guard wall
W-6	Mr. H.E. Wimalarathne	Keppitiya, Galewela	176,295	282,572	4'- 11" Ø, Circular well; Rubble work inside; Cement rendered Guard wall
W-7	Mrs. K.A.D. Karunawathie	658, Keppitiya, Galewela	176,189	282,608	5'- 0" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-8	Mr. R.M. Jayathilaka Banda	668, Keppitiya, Galewela	176,228	282,675	5'- 2" Ø, Circular well; Rubble work inside; Brick work Guard wall
W-9	Mr. M.M. Samsun Begam	608-B, Keppitiya, Galewela	176,182	282,634	5'- 5" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-10	Common Well (Pradesiya Saba)	Keppitiya, Galewela	176,140	282,640	6'- 0" Ø, Circular well; Brick work inside; Cement rendered guard wall
W-11	Common Well (Pradesiya Saba)	Keppitiya, Galewela	176,144	282,631	6'-2"x 6'-2" size Squire type; Rubble wall inside; Cement rendered guard wall
W-12	Well at Mosque Mr. M.A.Azeez	Keppitiya, Galewela	176,122	282,525	5'- 10" Ø, Circular well; Rubble work inside; Brick work guard wall
W-13	Mr. G.M.H.K. Ekanayake	1/586, Kanadana, Galewela	176,232	282,460	6'- 0" Ø, Circular well; Rubble work inside; Cement rendered guard wall

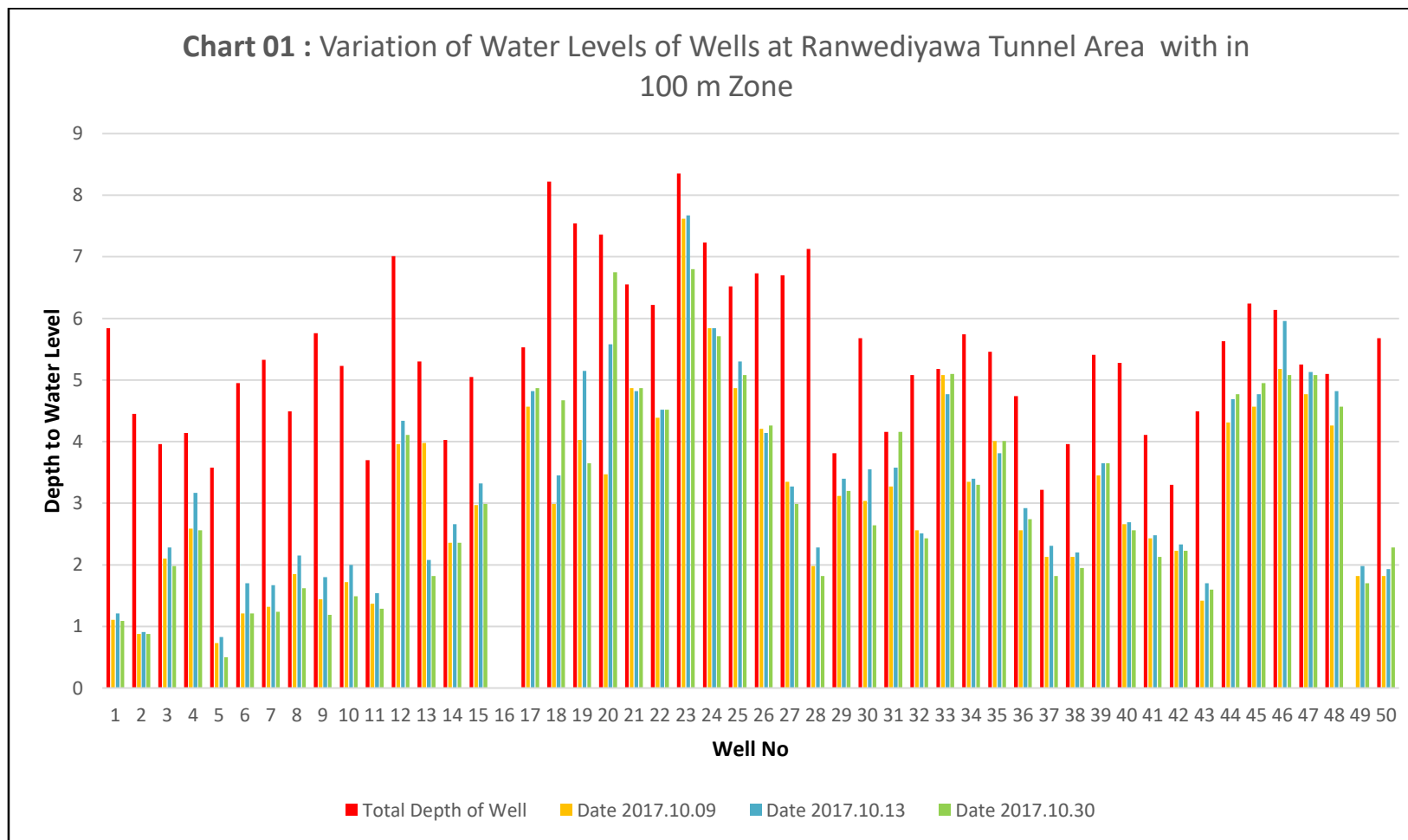
W-14	Mr. Sumith Wijesinghe	586, Kanadana, Galewela	176,249	282,448	5'- 4" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-15	Mr. A.A. Sumith Rohana	Kanadana, Galewela	176,235	282,439	5'- 8" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-16	<i>Keppitiya Muslim Maha Vidyalaya</i>	Keppiyawa, Galewela	176,099	282,516	<i>Tube Well</i>
W-17	Mr. S.L. Alabdeen	615, Keppiyawa, Galewela	176,082	282,541	6'- 4" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-18	Mr. A.C. Sapeen	638, Keppiyawa, Galewela	176,082	282,575	7'- 0" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-19	Mr. M.R.M. Rimaz	600, Keppiyawa, Galewela	176,025	282,587	5'- 3" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-20	Mr. S. Fauzer	Keppiyawa, Galewela	176,005	282,616	4'-6" Ø, Circular well; Hume pipes inside; Cement rendered guard wall
W-21	Mrs. Rahila Umma	587, Keppiyawa, Galewela	175,970	282,600	5'-0" Ø, Circular well; Hume pipes inside; Cement rendered guard wall
W-22	Mrs. Naur Pichche Rahila	592, Keppiyawa, Galewela	175,957	282,583	5'-10"x 5'-6" size Squire type; Rock excavated inside; Cement rendered guard wall
W-23	Mrs. Naur Pichche Rahila	592, Keppiyawa, Galewela	175,953	282,551	8' - 6"Ø Earth excavated Well; No walls inside & no guard wall
W-24	Mr. M. H. Siddeek Lebbe	249-A, Ranwediya, Galewela	175,878	282,633	5' - 0" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-25	Mrs. Pathima Nisayar	217-B, Ranwediya, Galewela	175,842	282,628	4'- 9" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-26	Mr. Abubakar Musim	217-D, Ranwediya, Galewela	175,824	282,625	5'- 10" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-27	Mr. A.M. Farook	336, Ranwediya, Galewela	175,809	282,619	5'- 3" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-28	Common Well (Pradesiya Saba)	Ranwediya, Galewela	175,788	282,616	6'- 0" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-29	Mrs. I. Parzana	238, Ranwediya, Galewela	175,756	282,641	3'-4" Ø, Circular well; Hume pipes inside; Cement rendered guard wall



W-30	Mr. S.M. Ismath	237, Ranwediya, Galewela	175,733	282,636	4'-0" Ø, Circular well; Hume pipes inside; Cement rendered guard wall
W-31	Mr. J.M. Asim	644, Ranwediya, Galewela	175,722	282,643	5'-0"x 5'-0" size Squire type; Rubble wall inside; Cement rendered guard wall
W-32	Mr. S.M. Jawfar	243, Ranwediya, Galewela	175,639	282,628	5'-0" Ø, Circular well; Rubble work inside; Short guard wall not plastered
W-33	Mr. M.C. Jameel	240, Ranwediya, Galewela	175,673	282,597	5'-0" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-34	Mr. A.H. Sakariya	231, Ranwediya, Galewela	175,601	282,585	5'-6" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-35	Mr. Meera Hussain	231-B, Ranwediya, Galewela	175,568	282,587	5'-0" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-36	Mr. A.G.A.M. Sainudeen	227, Ranwediya, Galewela	175,544	282,588	6'-6" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-37	Mr. T. Subardeen	Ranwediya, Galewela	175,526	282,563	5'-2" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-38	Mrs. Juneda Umma	228, Ranwediya, Galewela	175,510	282,566	5'-0" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-39	Mr. M.N. Hassan	354, Ranwediya, Galewela	175,485	282,550	5'-3" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-40	Mr. A.A. Marzook	351, Ranwediya, Galewela	175,458	282,583	4'-9" Ø, Circular well; Hume pipes inside; Cement rendered guard wall
W-41	Mr. M.N. Naleer	229, Ranwediya, Galewela	175,471	282,603	5'-6" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-42	Mrs. Pathima Beebi	340, Ranwediya, Galewela	175,482	282,622	5'-9" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-43	Mr. Saheem	Ranwediya, Galewela	175,439	282,613	8'-0" Ø, Circular well; Rubble work inside; No guard wall
W-44	Mr. Abdul Razaak	224 -C, Ranwediya, Galewela	175,361	282,516	5'-0" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-45	Mr. W.G.M. Hasim	224 -A, Ranwediya, Galewela	175,382	282,485	4'-0" Ø, Circular well; Hume pipes inside; Hume pipe guard wall

W-46	Mr. Siyaldeen	233 -B, Ranwediya, Galewela	175,330	282,441	3'- 6" Ø, Circular well; Hume pipes inside; Hume pipe guard wall
W-47	Mr. A.W.M. Mubarak	232, Ranwediya, Galewela	175,301	282,455	8'- 6" Ø, Circular well; Rubble work inside; Cement rendered guard wall
W-48	Mr. S. Najeedeen	219 -D, Ranwediya, Galewela	175,306	282,483	5'-0" Ø, Circular well; Hume pipes inside; Cement rendered guard wall
W-49	Mrs. K.A.D. Karunawathie	658, Keppitiya, Galewela	176,209	282,540	5'- 6" Ø, Circular well (abandoned, full of debris); Rubble work inside; Cement rendered guard wall
W-50	Mr. R.M. Nihal Sarath	660, Keppitiya, Galewela	176,163	282,558	0'-6" Ø, Tube Well





**Figure 4-4: Variation of water level s of wells at Ranwediya Tunnel areas within 100 m distance**

## **5. KEY ACTIVITIES FOR NEXT HALF-YEAR (JANUARY TO JUNE-2018)**

47. Several environmental and ecological surveys are planned related to Tranche 1 NWPCP packages, which include tree enumeration for the newly proposed sections, and an ecological survey to update the baseline conditions related to the critical species in the project impact area.

48. Identifying a qualified accredited laboratory to carry out periodical environmental quality data collection will be achieved through the competitive bidding process.

49. Further following actions are being planned by PMU and PIU for the next half year of the project.

### **i. EIA & Related Activities**

- Implementation of the WMP activities
- Implementation of the replanting activities
- Removing of trees under NWPCP-ICB-1 & NWPCP-ICB-2
- Releasing of DWC land for construction work

### **ii. Grievance Redress Mechanism (GRM)**

- Conduct the GR committee meeting in 13 GNDs
- Attending to any the grievances received