

Environmental Monitoring Report

Semi-Annual Report
For the period covered January to June 2017
Project Number: 47381-002
July 2017

SRI: Mahaweli Water Security Investment Program

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.

This environmental monitoring report is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature. Your attention is directed to the "terms of use" section of this website.

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.



MAHAWELI WATER SECURITY INVESTMENT PROGRAM

SEMI ANNUAL ENVIRONMENTAL MONITORING REPORT FOR NWPCP

January to June 2017

JULY 2017



Program Management, Design and Supervision Consultant

© Joint Venture Lahmeyer International GmbH – GeoConsult ZT GmbH, 2017. The information contained in this document is solely for the use of the Client identified on the cover sheet for the purpose for which it has been prepared. The Joint Venture undertakes neither any duty to, nor accepts any responsibility towards, any third party who may rely upon this document. All rights reserved. No section or element of this document may be removed from this document, reproduced, electronically stored or transmitted in any form without written permission of the Joint Venture.

SEMI ANNUAL ENVIRONMENTAL MONITORING REPORT FOR NWPCP

January to June 2017

Prepared for:

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

Prepared by:

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

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

Distribution Register:

Distribution List:	Date of Issue	Number of Copies
MMDE	July 2017	4
ADB	July 2017	2

Revision History:

Revision No.	Author	Approved by	Description of Revision
0	Dr. A.P. Kasige	M. Chegwin	Initial issue

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
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
STC	State Timber Cooperation
TBM	Tunnel Boring Machine
UECP	Upper Elahera Canal Project

Table of Contents

MAHAWELI WATER SECURITY INVESTMENT PROGRAM	1
1. INTRODUCTION	1
1.1 OVERVIEW OF MWSIP AND NWPCP	1
1.2 SCOPE OF THE REPORT	2
1.3 NWCP PROJECT AT A GLANCE	3
2. PROGRESS OF NWPCP	4
2.1 SAFEGUARD DOCUMENTATION AND APPROVALS	4
2.1.1 EIA and updated EMPs	4
2.1.2 Contractor's Environmental Management Plan (CEMP)	6
2.2 NWPCP PHYSICAL PROGRESS	6
2.3 APPROVAL STATUS	8
2.4 TRAINING AND AWARENESS	9
2.5 COMPLIANCE WITH CEA'S CONDITIONS	10
2.6 ADDITIONAL SURVEYS CARRIED OUT UNDER NWPCP WITHIN THE REPORTING PERIOD	12
3. CEMP IMPLEMENTATION & MONITORING	13
3.1 ENVIRONMENTAL RISKS AND SAFEGUARD COMPLIANCE	13
3.2 ENVIRONMENTAL ISSUES AND GRIEVANCES RECORDED	19
4. KEY ACTIVITIES FOR NEXT YEAR (NEXT HALF YEAR- 2017)	21

List of Figures

Figure 1-1 : Organization Structure of MWSIP.....	1
Figure 2-1: EIA and Addendum to EIA Tranche 1 packages	4
Figure 2-2: Photographic evidences for the site preparatory and construction work in the site	8
Figure 2-3: Training and awareness programs conducted during the period from January 2017 to June 2017 under NWPCP NCB 1 contract.....	10

List of Tables

Table 1-1: Summary of the NWPCP contract bidding and awarding.....	3
Table 2-1: Summary of the NWPCP Design Changes Highlighted in the Addendum to EIA.....	5
Table 2-2: CEMP Submission Summary of NWPCP NCB 1 Contractor.....	6
Table 2-3: Construction Progress of NWPCP NCB 1 Contract by June 2017.....	6
Table 2-4: Summary of the approval status for the construction work under NWPCP NCB 1	8
Table 2-5: Key Actions in Compliance with the CEA approval conditions	11
Table 2-6: Additional environmental surveys and studies carried out in NWPCP area from January to June 2017	12
Table 3-1: Summary of Stakeholder Engagements (May-June 2017).....	13
Table 3-2: Summary of Significant Environmental Impacts and Measures Adopted	14
Table 3-3: Waste collection record by the month of May 2017	19
Table 3-4: Summary of the Awareness Sessions and Community Consultations.....	19
Table 3-5: Summary of GRC Meetings	20

1. INTRODUCTION

1.1 Overview of MWSIP and NWPCP

1. The Mahaweli Water Security Investment Program (MWSIP) was commenced in December 2015, 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, and is aimed at achieving the goal of maximizing the productivity of the Mahaweli River Basin (MRB) water resources by transferring available water to the north and north western dry zone areas for irrigation, drinking and commercial purposes.

2. The Investment Program consists of 3 individual projects named as Minipe Left Bank Canal Rehabilitation Project (MLBCRP), North-Western Canal Project (NWPCP) and Upper Elahera Canal Project (UECP), divided in to 20 construction packages in 3 financial tranches. There are 10 construction packages under Tranche 1 (2016 -2021) to be implemented under MLBCRP (6 packages), UECP (1 package) and NWPCP (3 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

4. **Figure 1-1.**

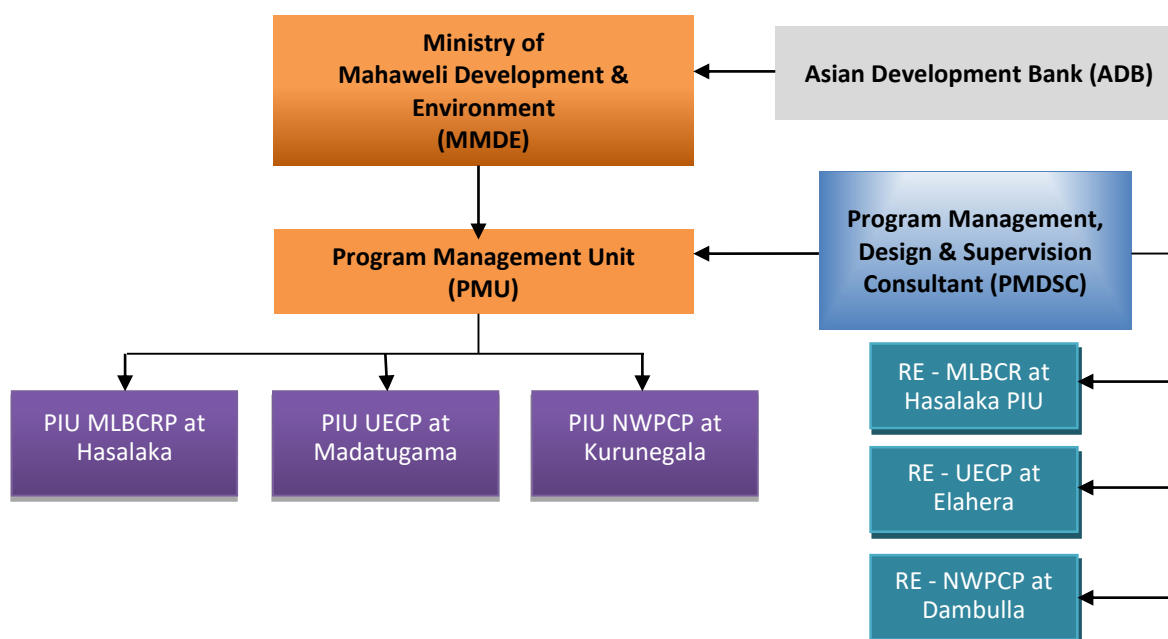


Figure 1-1 : Organization Structure of MWSIP

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 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. The proposed project

includes construction of conveyance canals of length 91 km and two medium reservoirs namely Mahakithula and Mahakirula located in the Kahalla-Pallekele forest reserve.

6. The NWPC project area is divided into following subproject components 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.

NWPC-NCB-1	Wemedilla Sluice and LBMC from Reservoir to Nabadagahawatta (0+000 to 5+250km)
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)

7. There are 3 contract packages, NWPCP-NCB¹-1, NWPCP-ICB²-1 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

8. This Semi Annual Environmental Monitoring Report (SAEMR) is prepared to update the progress of NWPCP with respect to Environmental safeguard aspects, for the period of January to June 2017, which is an ADB requirement to submit an SAEMR to ADB and Central Environmental Authority (CEA) for the “Category A” projects as documented in FAM³ and EARF⁴.

9. The purpose of this report is to ensure that the project is implemented with due concern for environment and social safeguards according to the ADB’s Safeguard Policy Statement (SPS) 2009, and specifically to ensure that these issues are adequately addressed in compliance the requirements of ADB. Further, this report is to assess the progress with implementation of the program in complying with the approved Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP)⁵ 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 NCB – National Competitive Bidding

² ICB – International competitive Bidding

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

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

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

1.3 NWCP Project at a Glance

10. The only NWPCP construction package mobilized under MWSIP Tranche 1 is NWPCP-NCB-1 which mainly 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.

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

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

Time	Contract Name	Status by End August 2017
Tranche 1 (2015 - 2019)	NWPC-NCB-1; Wemedilla Sluice and LBMC from Reservoir to Nabadagahawatta (0+000 to 5+250 km)	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.
	NWPC-ICB-1; Mahakithula Inlet Tunnel, Mahakithula and Mahakirula Reservoirs, Feeder Canal 3.66 km	Bids were invited on 19 June 2017. Awaiting submission of bids.
	NWPC-ICB-2; Main Canal from Nabadagahawatta to Mahakithula Reservoir (5+250 to 22+500 km)	Bids were invited on 05 June 2017. Site visit and pre-bid meeting were conducted respectively on 16 and 19 June 2017.
Tranche 3 (2018 - 2024)	NWPC-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 Galkiriyawa to Kaduruwewa (13+731 to 21+231 km)	Design progress: 25%; scheduled to finalize bidding document during November 2017.
	NWPC-ICB-4 (former contract package NCB-4/-5); Mahakithula Reservoir to Pot-huwila (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)	Design progress: 20%; scheduled to finalise bidding document during November 2017.
	NWPC-ICB-5 (former contract package NCB-6); Dambula Oya to Wemedilla LBMC and Diversion Structure (0+000 to 8+590 km)	Design progress: 18%; scheduled to finalize bidding document by mid of December 2017.

12. The Contractor's Environmental Officer appointed for NWPCP-NCB-1 package is advised and trained to make independent monitoring of their safeguard activities, and submit the monthly environmental monitoring report attached to the monthly construction progress report. Reviewing and carrying out progress meetings take place regularly at RE's office with the participation of relevant PMU, PIU and PMDSC staff.

2. PROGRESS OF NWPCP

2.1 Safeguard Documentation and Approvals

2.1.1 EIA and updated EMPs

13. NWPCP is classified as Category “A” according to ADB’s SPS (2009) and the conditional approval granted by CEA for a period of 3 years commencing from 16.02.2016, and significance of environmental impacts are identified as high for the NWPCP-ICB-1 and ICB-2 packages since the particular project impact area is fallen via ecologically sensitive habitats (Kahalla Palleke sanctuary (Proposed national Park) area). Hence, it is one of the conditions given by the Department of Wildlife Conservation (DWC) is to prepare a comprehensive Wildlife Management Plan (WMP) together with a monitoring program by the client (Irrigation Department -ID) in consultation with the DWC prior to commencing construction activities in the area. The preparation of WMP is its final stage, and the Draft final report to be submitted in July 2017.

14. Complying with the condition No. 14.1 of the CEA approval, the updated EMPs has been prepared for the packages which designs are completed and bidding documents are issued (Refer **Table 1-1**). The updated EMP for the NWPCP NCB 1 contract was prepared and submitted to CEA in December 2016.

15. During the design review done by PMDSC consultants, the main design changes different from the EIA study findings were assessed by conducting additional environmental surveys and the “Addendum to EIA” of NWPCP, related to Infrastructure Design Changes for Tranche 1 components was submitted to both CEA and ADB in May 2017 (**Figure 2-1**).

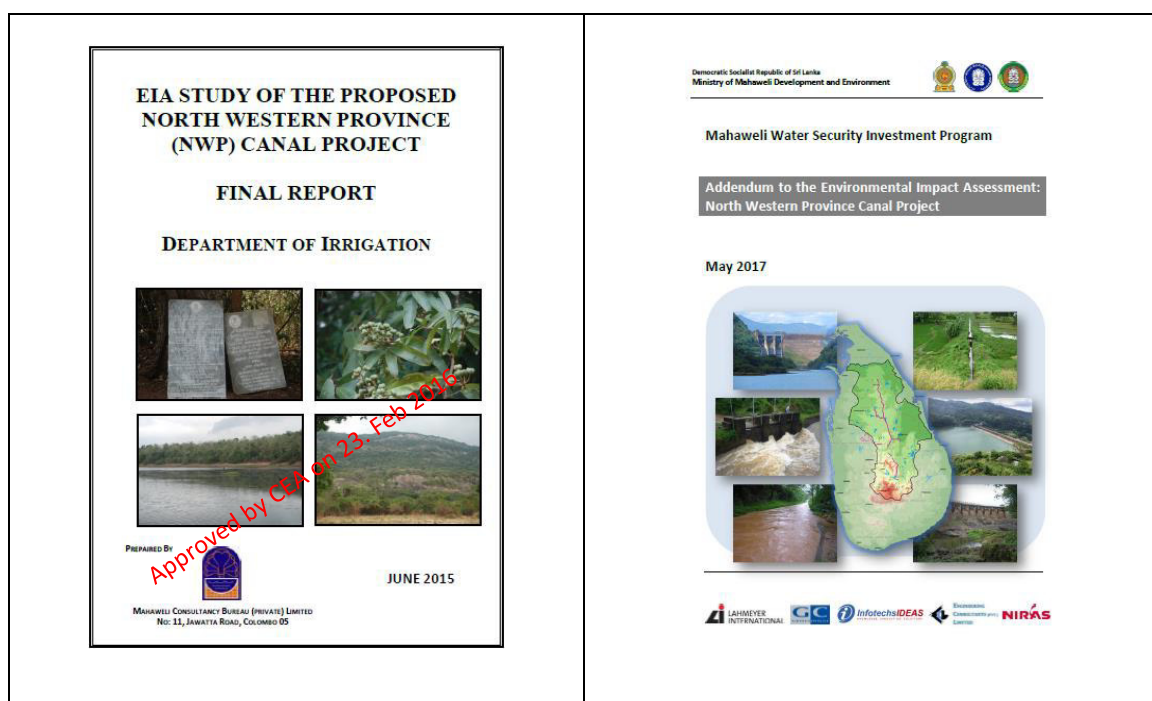


Figure 2-1: EIA and Addendum to EIA Tranche 1 packages

16. The key design changes related to NWPCP-ICB-1 and ICB-2 of Tranche 1 packages are summarized in the **Table 2-1**.

Table 2-1: Summary of the NWPCP Design Changes Highlighted in the Addendum to EIA

NWPCP-ICB-1 (Tranche 1)	<ul style="list-style-type: none"> • Optimization of Mahakithula main dam axis and Mahakithula Inlet Tunnel (MIT) by changing alignment and length to reduce the length in unfavorable geological conditions • General update of spillway designs and dam heightening of Mahakithula, Mahakirula reservoirs and Mahadambe level crossing
NWPCP-ICB-2 (Tranche 1)	<ul style="list-style-type: none"> • Implementation of Ranwediya Tunnel (at 9+060 km) to replace a deep cut-and-cover section going through Ranwediya village and thereby reduce the social impact anticipated • Change of NWP canal alignment at Nilagama Tank (13+420 km) to avoid impact on archeologically sensitive area, and replacing with new Tunnel section

17. Moreover, some design changes have been implemented as follows:

a) Related to the canal alignment and profiles in packages NWPC-NCB-1 and NWPC-ICB-2, as follows:

- The section of the tail canal downstream of New Wemedilla Sluice was modified from trapezoidal canal to a rectangular open canal to minimise the effect on the settlement area
- Modification of open canal section between 3+043 and 3+497 km to cut-and-cover profile to avoid deep cut and the existing maintenance road (following the receipt survey data from Surveying Department).
- Modified canal alignment after Dewahuwa offtake structure at 5+060 km to bypass Nebadagahawatta Tank (due to water level difference) and to avoid environmental and social issues.

b) Related to the spillways and outlets of the dams in package NWPC-ICB-1, as follows:

- General update of spillway design due to higher flood return period and thereby increased design discharge
- Re-design of spillway at Mahakithula Main Dam
- Implementation of a new spillway at Mahakithula Saddle Dam
- Re-design of spillway at Mahadambe Level Crossing
- Re-design of spillway at Mahakirula Dam
- Heightening of all dams to consider the higher HFL (due to higher spillway design discharges)
- Shifting and lowering of outlet sluice at Mahakithula Main Dam
- Shifting and lowering of outlet sluice at Mahakirula Dam

18. The above design changes were finalized having consultations with the relevant stakeholder agencies and the required approval has been obtained.

2.1.2 Contractor's Environmental Management Plan (CEMP)

19. It is a contractual requirement to submit the CEMP within 56 days of signing the contract and ADB recommended that no construction activities should be allowed for the Contractor until the CEMP is approved by the PMDSC Environmental Specialist following the guidance of ADB. The guidance note (Annex 2) was shared with the Contractor to prepare the CEMP, and consultative sessions and awareness programs were conducted to encourage the Contractor to prepare a standard CEMP. However, obtaining an acceptable level CEMP could not be achieved within 56 days by the selected Contractor and the Environmental Officer (EO) appointed under the Contractor due to lack of past experiences of preparing such documents.

20. The progress of the CEMP submission by the Contractor of NWPCP NCB 1 is given in **Table 2-3**.

Table 2-2: CEMP Submission Summary of NWPCP NCB 1 Contractor

Date of contract Award	Date of 1 st CEMP submission	Date of CEMP approval	Number of revisions	Remarks
21.11.2016	27.02.2017	06.06.2017	03	Review comments were submitted to contractor on 13.03.17, 31.03.2017, 28.04.2017 and Final CEMP was received on 06.06.2017

2.2 NWPCP Physical Progress

21. The summary highlighting the construction progress as of June 2017 for the NWPCP NCB 1 contract package mobilized under Tranche 1 is given in the **Table 2-3**.

Table 2-3: Construction Progress of NWPCP NCB 1 Contract by June 2017

Contract No.	MMDL/MWSIP/ADB/NWPCP/NCB-1/3267-3268-SRI/NCB/2016/001	
Contractor Name:	M/s. NEM Construction (Pvt) Ltd.	
Letter of Acceptance:	21 November 2016	
Value of Contract:	LKR 926,113,863.39 (incl. VAT @ 15%)	
Contractual Start Date:	29 December 2016	
Contract Duration:	24 months	
Status:	Deliverables:	Being received, discussions & approvals ongoing
	Construction programme:	Received and accepted
	Topographic surveys:	Survey works are ongoing- progress
	Preparation of Construction drawings by Contractor:	Ongoing - progress 35%
	Construction work:	Commenced at Wemedilla sluice, aqueduct, conduit and the open canal section
	Concrete batching plant:	Batching plant installed and field laboratory building finished & is being equipped. Mix design samples made and awaiting test results.

Problems:	Slow progress in submission of construction drawings
Special Event:	None

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

- (i) Survey works (Horizontal and vertical control surveys and cross section surveys)
- (ii) Establishment of project lab at NEM yard and equipment calibration completed by May 2017
- (iii) Establishment of concrete batching plant and trails were completed at the presence of CEA by May 2017
- (iv) Construction of the Aqueduct (1+463-1+500), conduit section (3+000 – 3+500) and Trapezoidal canal (3+500-3+600) has been started and the activities associated with the interventions such as Embankment filling from 3+500 to 3+590 km and excavation for Pier No 2 foundations completed by end May. Excavation work at 3+000 to 3+500 km close conduit section was in progress by end May

By end of June, site clearing of 12 ha, removal of 18 number of trees, stripping surface topsoil layer, earth excavation, embankment filling, preparation of subgrade for concrete lining, concrete canal lining, forming top surface was done in the Wemedilla Left bank main canal and in the new tail canal (0+000 to 0+600 km), site clearance of 1 ha and excavation of structure foundation was in progress.

23. Some photographic evidences for the physical work carried out in the site are given below figures.

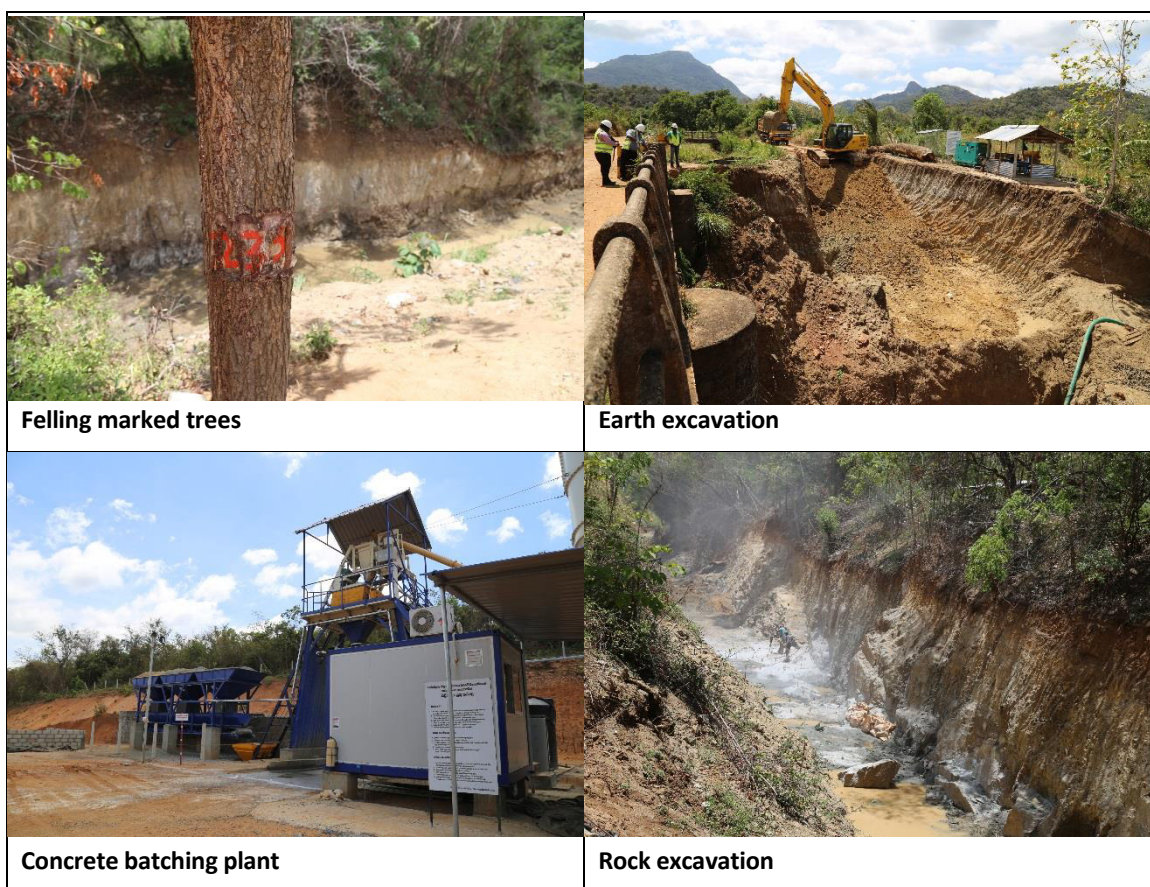




Figure 2-2: Photographic evidences for the site preparatory and construction work in the site

2.3 Approval Status

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

Table 2-4: Summary of the approval status for the construction work under NWPCP NCB 1

Facility/ Activity	Location	Ownership / responsibl e agency	Licence Type	Licence details	Validity period	
				Number	From	To
Tree felling	Not yet implemented	Divisional Secretary and Dambulla temple	Recommendation to State Timber Cooperation, from respective DS Galewela and Dambulla	Ref. 4/3/9/1/7 on 15.05.17 (Galewela DS)	15.05.17	NA
Concrete Batching Plant	Parayaya, Welamitiya, Dambulla	NEM Constructi on (Pvt)Ltd	EPL (Clearance for the construction)	Clearance issued on 31.03.2017	31.03.2017	31.03.2018
Disposal yards	Kethigana, Walswewa, Galewela	NEM Constructi on (Pvt)Ltd	Environmental Clearance	CEA/CPO/MT/Ot her/04/2017	08.09.2017	08.09.2018
Stockpiling areas	Parayaya, Welamitiyaya , Dambulla	NEM Constructi on (Pvt)Ltd	EPL (Clearance for the construction of batching plant)	Clearance issued on 31.03.2017	31.03.2017	31.03.2018
Blasting	Upgrade the Wemdilla left bank main canal and new sluice	NEM Constructi on (Pvt)Ltd	Blasting permit	256475	06.07.2017	05.01.2018

Licence/Permit of material supplier Quarry Dust	Kovilayaya Mahiyangana ya	NEM Construction (Pvt)Ltd	EPL	06721 (R3)	18.12.2016	17.12.2017
Licence/Permit of material supplier (Sand)	Amunayaya Hettipola Wilgamuwa	M.A.Sunitha	Mining Licence	AL/A/KAN/1628/LR-1	23.02.2017	22.02.2018

25. The site selection for the Contractor's facilities and relevant concurrence are being followed up by the relevant subject specialists and officers attached to PMDSC, PMU and PIU and the sites selected for the Contractor's office, laboratory, batching plant and disposal areas were inspected by the PMDSC Environmental Specialist and PIU Senior Environmental Officer on 6th February 2017.

2.4 Training and Awareness

26. An awareness program on preparing and implementing CEMP and preparing environmental activity plan for the contractor was carried out on 15th March 2017 at the RE office Dambulla.

27. The training and awareness programs carried out to improve awareness of the contractors' staff by the Environmental Officers appointed under NWPCP NCB 1 as identified in the CEMP are summarized in the following section.

i. Awareness program on Environmental Management System on 25th April 2017



ii. Awareness on Waste Management on 15th June 2017**iii. First Aid Training program conducted by PMDSC on 15th June 2017**

Figure 2-3: Training and awareness programs conducted during the period from January 2017 to June 2017 under NWPCP NCB 1 contract

2.5 Compliance with CEA's Conditions

28. The conditional approval issued (08/EIA/WATER/07/2012 dated 23.02.2016) by Central Environmental Authority (CEA) for EIAR consist of 14 conditions with detail subsections covering (i) General conditions; (ii) Ecological aspects, Social aspects; (iii) Hydrological aspects; (iv) Geological/land stability and erosion aspects; (v) Disposal of excavated material; (vi) Social aspects; (vii) extraction of construction material; (viii) Restoration, rehabilitation of construction site; (ix) Waste disposal; (x) Archaeological aspects; (xi) Noise and Vibration; (xii) Transportation of material and machinery; (xiii) Safety , emergencies and (xiv) Environmental Management Plan.

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

30. The contractor is given the awareness on the CEA conditions and ensure that contractor is complying with the conditions related to construction activities. The Department of Wildlife

Conservation (DWC) has included their conditions under the section 3 of the CEA approval emphasizing the requirement of preparing Wildlife Management Plan.

31. The following steps has been taken by the project to comply with the CEA conditions as summarized in **Table 2-5**.

Table 2-5: Key Actions in Compliance with the CEA approval conditions

No.	Approval condition	Compliance status	Remarks
1	Preparation of Wildlife Management Plan (WMP)	<p>IUCN was awarded the task.</p> <p>The Draft Final Plan was submitted and Technical Evaluation Committee Comments were sent to prepare the Final WMP.</p> <p>The Final WMP must be submitted</p>	<p>Milestones are as follows:</p> <ul style="list-style-type: none"> Submission of Interim Report on 13/02/2017 & Sending TEC comments to IUCN on 02/03/2017. Social & Ecological field surveys and Consultation of relevant government Authorities are in progress. Next deliverable; the Draft Final WMP is due in end of June 2017. CEA called comments from DWC on 10/01/2017 on the Interim Ecological Survey for NCB-1 area.
2	Establishment of "Hakwatunaweveva Elephant Corridor (Hak. E.C.)"	<p>Since this condition is out of the direct impact and purview of the Project, it was requested from CEA to change the condition.</p>	<p>Actions taken are as follows:</p> <ul style="list-style-type: none"> The draft MOU prepared by PMU was sent to DWC and DOI for review on 01/03/2017. MOU is to be signed between PMU, DWC and DOI. A reminder to DWC to proceed on MOU was sent on 07/04/2017.
		<p>In the interim, PMU and PIU actively contributed for actions related to establishing Hak. E.C. and PMU-MWSIP agreed to undertake 50% of financial expenses as well as to extend technical support to establish Hak. E.C., resettling 17 families.</p>	<p>Actions taken are as follows:</p> <ul style="list-style-type: none"> PMU and PIU of MWSIP participated for Parliamentary Subcommittee meeting summoned by Hon. Minister of Wildlife Management (WM) on 10/03/2017. Concept proposal indicating sequential steps for obtaining consent of community and establishment of corridor with resettlement package was prepared by PMU and sent to Ministry of WM at a discussion held in April 2017.

No.	Approval condition	Compliance status	Remarks
3	Informing changes to the Project from proposal in the approved EIA	Informed the proposed changes to CEA (in parallel to ADB) with a supplementary report to EIA on 29/05/2017.	<ul style="list-style-type: none"> Supplementary report (May 2017) to EIA, prepared by PMDSC contains, changes and their effects on anticipated environmental impacts, additional studies undertaken together with additional mitigations as necessary.

2.6 Additional Surveys carried out under NWPCP within the reporting period

32. As highlighted in the previous section, complying with the CEA guidelines every single change in the canal trace and additional areas identified for the construction purposes are surveyed to identify the possible environmental impacts other than the impacts identified in the EIA stage in 2015. Accordingly following additional surveys (**Table 2-6**) were carried out during the period from January to June 2017 in the NWPCP area.

Table 2-6: Additional environmental surveys and studies carried out in NWPCP area from January to June 2017

Survey	Study area	Period
Preparing environmental baseline inventory by the Senior Environmental Officer of PIU	NWPCP - NCB 1 area	January – February 2017
Tree Enumeration Survey- NWPC NCB from Wemedilla to Nebadaeahawatta f0+000 to 5+250 KM) by PMDSC Env Specialist and the team	NWPCP - NCB 1 area	April 2017
Environmental Screening by PMDSC Env Specialist and the team	NWPCP ICB 1 and NWPCP ICB 2 areas where design changes are made from the EIA stage (Refer Table 2-1)	May 2017
Ecological surveys carried out by IUCN to prepare WMP	Sample survey covering NWPCP area	Feb – March 2017

3. CEMP IMPLEMENTATION & MONITORING

33. The contractor is contractually bound to implement the CEMP and carry out independent monitoring during the construction period as per the formats agreed with the RE/PMDSC Environmental Specialist. Daily and weekly monitoring summary reports are maintained in the site as described in CEMP by the Environmental Officer of the contractor and the scheduled monthly Environmental monitoring and progress report preparation was streamlined from May 2017.

34. In addition to the CEMP, prior to each construction activity, it is compulsory to submit the Environmental Method Statement (EMS) based on the format discussed during the contractor's orientation program.

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

36. The summary of the stakeholder engagements carried out by the contractor and the Engineer (PMDSC) during the months of May and June are summarized in **Table 3-1**.

Table 3-1: Summary of Stakeholder Engagements (May-June 2017)



Date	Venue	Participants	Objective
04/05/2017	Irrigation Department	PMDSC, PIU and NEM	Monthly Project Progress Review meeting
01/06/2017	Site office	GM, PM, HSEM, HSAM,	Progress review meeting on environmental management program for the month of May was held on 1 st June 2017. The observations and required protection measure was noted in the Environmental Log book to be implemented in the site.



37. Lack of adequate technical staff under RE and not having a dedicated expert in the field level to carry out the continuous environmental monitoring in the site from the RE/PMDSC, comprise a key disadvantage, where there is a possibility of non-compliance occurring during the construction period. Alternative institutional arrangements adopted under the existing provisions to avoid or control arising non-compliances and duly contain if arise.

3.1 Environmental risks and safeguard compliance


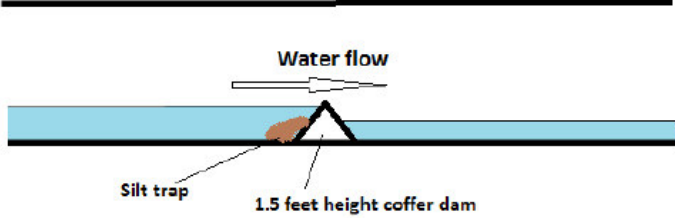
38. This section includes the information gathered through periodical site visits, contractors' independent monitoring reports, and discussions held at the contractors' monthly progress meetings, since there is no continuous CEMP monitoring take place on site. Since only the NWPCP NCB 1 contractor had 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 3-2: Summary of Significant Environmental Impacts and Measures Adopted

Activity	Observed Impact	Risk level	Adopted Mitigation measure	Effectiveness of the mitigation
Construction of the closed conduit section (3+000 – 3+500) and Trapezoidal canal section (3+500-3+600)	<ul style="list-style-type: none"> Health and safety issues of the labourers Pollution due to waste disposal and attraction of predatory animals (Crows, dogs etc) and disease spreading Foul smell for the community 	Moderate	<ul style="list-style-type: none"> Providing dining faculties to the employees, implementation of proper solid waste management system at site 	High
	<ul style="list-style-type: none"> Safety risks to the community during canal excavations 	Moderate	<ul style="list-style-type: none"> Implementation of safety precautions, installation of sign boards and awareness boards 	Moderate

Activity	Observed Impact	Risk level	Adopted Mitigation measure	Effectiveness of the mitigation
				
Construction of aqua Aqueduct (1+463-1+500)	<ul style="list-style-type: none"> Health and safety issues of the labourers Safety risks to the community during canal excavations Traffic issues along the bund road 	High	<ul style="list-style-type: none"> Providing dining facilities, proper sanitary facilities to the employees and implementing proper safety measures at aqua duct construction location (1+463-1+500) 	Low

Activity	Observed Impact	Risk level	Adopted Mitigation measure	Effectiveness of the mitigation
			 <ul style="list-style-type: none">Traffic Management allocating a dedicated person 	

Activity	Observed Impact	Risk level	Adopted Mitigation measure	Effectiveness of the mitigation
	<ul style="list-style-type: none"> Erosion and desilting in the existing water ways 	High	<ul style="list-style-type: none"> At two locations 1.5 feet height coffer dam was constructed before release the water to the downstream as a silt trap.   <ul style="list-style-type: none"> A bio fence was established using Gliricidia stick and a ground vegetation was established to minimize soil erosion and earth failures at excavation location. 	Moderate

Activity	Observed Impact	Risk level	Adopted Mitigation measure	Effectiveness of the mitigation
			  <ul style="list-style-type: none"> Construction of silt traps 	
Construction of the New sluice and new tail canal (0+000-0+480)	▪ Erosion and siltation	High	<ul style="list-style-type: none"> Establishment of ground vegetation at excavated/filled areas at the construction of new sluice using the native species found from the surrounding area. 	Moderate
	▪ Dust and noise	Moderate	<ul style="list-style-type: none"> Water spraying 	Low

39. In addition to above, waste management practices are carried out with high priority and maintaining a waste collection record. **Table 3-3** summarizes the waste collection record maintained during the month of May.

Table 3-3: Waste collection record by the month of May 2017

Waste Item	Period		Quantity (Kg)	Waste management method
	From	To		
Food	31.03.2017	01.05.2017	132	Sent to piggery
Electric waste			-	Collecting to be sent to recycling organizations
Paper			0.75	Collecting to be sent to paper recycling organizations

3.2 Environmental issues and grievances recorded

40. Environmental Issue log and Grievance Log are maintained at the site office, but there are no records for the period of January to June 2017. Grievance Redress Mechanism (GRM) is established by forming Grievance Redress Committees (GRC) for NWPCP by December 2016.

41. The contractor of NWPCP-NCB-1 is placed a Grievance Box at the site office to receive any complains and suggestions about the construction work.

42. Summary of the awareness sessions and community consultations carried out by PMU and PIU of NWPCP is summarized in the **Table 3-4**.

Table 3-4: Summary of the Awareness Sessions and Community Consultations

No.	Type of event	Purpose	Location (GN-DS)	Date	Resource persons
1	Awareness meetings	Aware the villagers	Welamitiyawa Govi sanvidanaya &	09/12/2016	IE,SEO,SRO,CO
2	Consultations	On resettlement of users of temple lands	Dambulla Temple chief Monk	09/12/2016	PIU- PD, IE,SRO
3	Awareness meetings	Aware the villagers	Kospotha GN division	24/01/2017	IE,SEO,SRO,CO
4	Awareness program for villagers at	Aware the villagers	Moragollagama, Herathgama, Ahatuwewa and Ataragalla villages	09/02/2017	IE,SEO,SRO,CO
5	Awareness program for villagers at	Aware the villagers	Polpitigama & Maho villages	24/04/2017	IE,SEO,SRO,CO

43. The committee meetings conducted by the Grievance Redress Committee (GRM) for each GRC is summarized in the **Table 3-5**.

Table 3-5: Summary of GRC Meetings

Type of committee	GRC-Name	Members	No of meetings had
GRC	Kospotha,	24/01/2017	1
	Danduyaya,	24/01/2017	1
	Nebadagahawatta	25/01/2017	1
	Pibidinugama	02/02/2017	1
	Ranwediya and	28/03/2017	1
	Danduyaya Pahala Bambawa	30/03/2017	1

4. KEY ACTIVITIES FOR NEXT YEAR (NEXT HALF YEAR- 2017)

44. Several environmental and ecological surveys are planned related to Tranche 2 NWPCP packages, which include tree enumeration for the newly proposed sections, and ecological survey to update the baseline conditions related to the critical species in the project impact area.

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

46. Implementation of standard environmental monitoring system through RE/PMDSC and implementation of the reforestation program will comprise another important activity during the next 2 quarters.

47. Further following actions being planned by PMU and PIU for the next semester of the project.

(i) EIA & Related Activities

- Obtain CEA approval for changes to Project from the proposal in EIA
- WMP preparation, obtain CEA approval and implementation
- Sign MOU for establishing Hakwatunaoya elephant corridor and implement the same
- Environmental Monitoring (Water, Noise, Dust etc) with in NCB1 package
- Environmental Mitigation activities- NCB1 package

(ii) GRM

- Continue conducting GRM meetings at GN Level and DS level for NCB-1 area

(iii) Environment Perspective of Contract Documents

- Ensure contract documents for packages to be offered include adequate provisions to fulfil environment compliance requirements.
- Ensure prospective contractors for new packages duly establish environment management set up.