

Environmental Monitoring Report

Semi-Annual Report no. 4
For the period covered July to December 2018
Project Number: 47381-002
April 2019

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 No. 4 FOR NWPCP July to December 2018

March 2019

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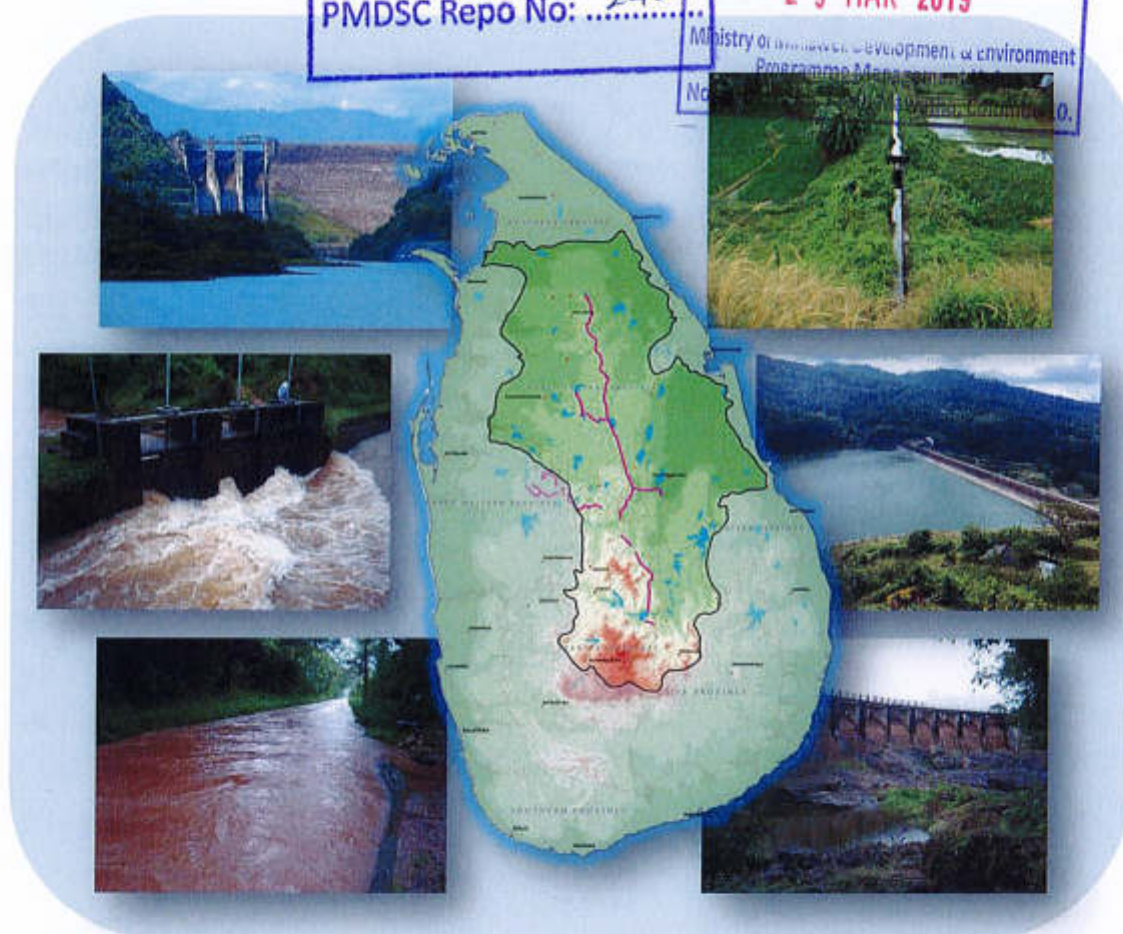
Mahaweli Water Security Investment
Programme

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Programme Management Unit
No. 1, Mahaweli Water, Colombo 10.



Program Management, Design and Supervision Consultant

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SEMI ANNUAL ENVIRONMENTAL MONITORING REPORT FOR NWPCP – JULY to DECEMBER 2019

March 2019

Prepared for:

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

Prepared by:

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

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

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ABBREVIATIONS

| | |
|----------------|--|
| ADB | Asian Development Bank |
| AIS | Alien Invasive Species |
| AN | Approved Except as Noted |
| BFO | Beat Forest Officer |
| CEA | Central Environmental Authority |
| CEMP | Contractor's Environmental Management Plan |
| DFO | District Forest officer |
| CRE | Chief Resident Engineer |
| D&B | Drill and Blast |
| D/S | Down Stream |
| DS | Divisional Secretary |
| DWC | Department of Wildlife Conservation |
| EARF | Environmental Assessment Review Framework |
| EHS | Environment Health and Safety |
| EIAR | Environmental Impact Assessment Report |
| EMC | Environmental Monitoring Committee |
| EMP | Environmental Management Plan |
| EMS | Environmental Method Statements |
| | Environmental Monitoring Specialist |
| EO | Environmental Officer |
| EPL | Environmental Protection License |
| ES | Environmental Specialist |
| FAM | Facility Administration Manual |
| FD | Forest Department |
| FFPO | Fauna Flora Protection ordinance |
| GA | Government Assistant |
| GoSL | Government of Sri Lanka |
| GRC | Grievance Redress Committee |
| GRM | Grievance Redress Mechanism |
| GSMB | Geological Survey and Mines Bureau |
| ICB | International competitive 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 competitive bidding |
| NCR | Non-Conformance Reporting |
| NWPCP | North Western Canal Project |
| PD | Program Director/Project Director |
| PIU | Project Implementation Unit |
| PMDSC | Program Management, Design and Supervision Consultant |
| PMU | Program Management Unit |
| RE | Resident Engineer |
| RFO | Regional Forest Officer |

| | |
|-------|---|
| RFQW | Request for Quotation for Work |
| SAEMR | Semi Annual Environmental Monitoring Report |
| SPS | Safeguard Policy Statement |
| SEO | Senior Environmental Officer |
| STC | State Timber Cooperation |
| TBM | Tunnel Boring Machine |
| TEC | Technical Evaluation Committee |
| UECP | Upper Elahera Canal Project |
| WB | World Bank |
| WMP | Wildlife Management Plan |

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1. INTRODUCTION

1.1 Background of North Western Province Canal Project (NWPCP)

1. The objective of the North-Western Province Canal Project (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.
2. 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 or through an alternative route via an additional tunnel from Bowatenna to Wemedilla Reservoir, on completion of Upper Elahera Canal from Moragahakanda reservoir.
3. The proposed project includes construction of conveyance canals of 91 km length and two medium reservoirs, namely Mahakithula and Mahakirula located in the Kahalla-Pallekele forest reserve.
4. There are 3 contract packages, NWPCP-NCB¹-1, NWPCP-ICB²-1 and NWPCP-ICB-2 under the NWPCP to be implemented under Tranche 1 of the Mahaweli Water Security Investment (MWSIP) program and by the end of monitoring period (from July to December 2018), two main contract packages, NWPCP-NCB-1 and NWPCP-ICB-2 had been awarded and Contractors had mobilized at the Site; the details are summarized in Table 1-1.

Table 1-1: Summary of the NWPCP Contracts Mobilized by December 2018

| Package | NWPCP-NCB-1 | NWPCP-ICB-2 |
|---|--|---|
| Work Description | 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) | Construction of Main Canal from Nabadagahawatta to Mahakithula Reservoir Inlet Tunnel (from 5+250 km to 22+500 km) |
| Environmental Significance of the Project Area | <ul style="list-style-type: none"> • The proposed work under NCB 1 package are mainly associated with an existing canal, and hence no any protected areas or ecological sensitive areas to be affected (Refer Figure 1-1). • However, the social environmental significance is fairly high since the canal is going through rural residential areas with some land acquisition impacts. • The new sluice and tail canal at the Wemedilla reservoir have some environmental significance due to the naturalized ecosystems in the surrounding areas. | <ul style="list-style-type: none"> • The two sections, 18+400 km to 19+500 and 20+700 km to 22+300 km fall within the Kahalle-Pallekele wildlife sanctuary under the jurisdiction of Fauna and Flora Protection Ordinance (FFPO). The land ownership is with the FD as the canal trace traverses through Kahalla Pallekele Forest reserve. Refer Figure 1-2. |

¹ NCB – National Competitive Bidding

² ICB – International Competitive Bidding

| Package | NWPCP-NCB-1 | NWPCP-ICB-2 |
|---------------------------------|---|--|
| Package No. | MMDE/MWSIP/ADB/NWPCP/NCB-1/3267-3268-SRI/NCB/2016/001 | MMDE/MWSIP/ADB/NWPCP/ICB-2/3267-3268-SRI/ICB/2017/003 |
| Date of Contract Award | 21.11.2016 | 06.06.2018 |
| Date Contract signed | 01.12.2016 | 05.07.2018 |
| Name of the Contractor | M/S NEM Construction (Pvt) Ltd. | M/S China State Construction Engineering Corporation Limited |
| Address | No. 629, Baseline Road, Colombo 9 | No. 15, Sanlihe Road, Haidian District, Beijing, China |
| Contract Amount LKR (incl. VAT) | 926,113,863.39 | 7,226,621,051.00 |



Figure 1-1: Land Use Plan for NWPCP-NCB-1 Package Area

5. Contract package NWPCP-ICB-1, which includes construction of Mahakithula Inlet Tunnel, Mahakithula and Mahakirula Reservoirs, and 3.66 km of Feeder Canal was retendered, and the bid documents were being reviewed by the Technical Evaluation Committee (TEC) at the end of the report period.

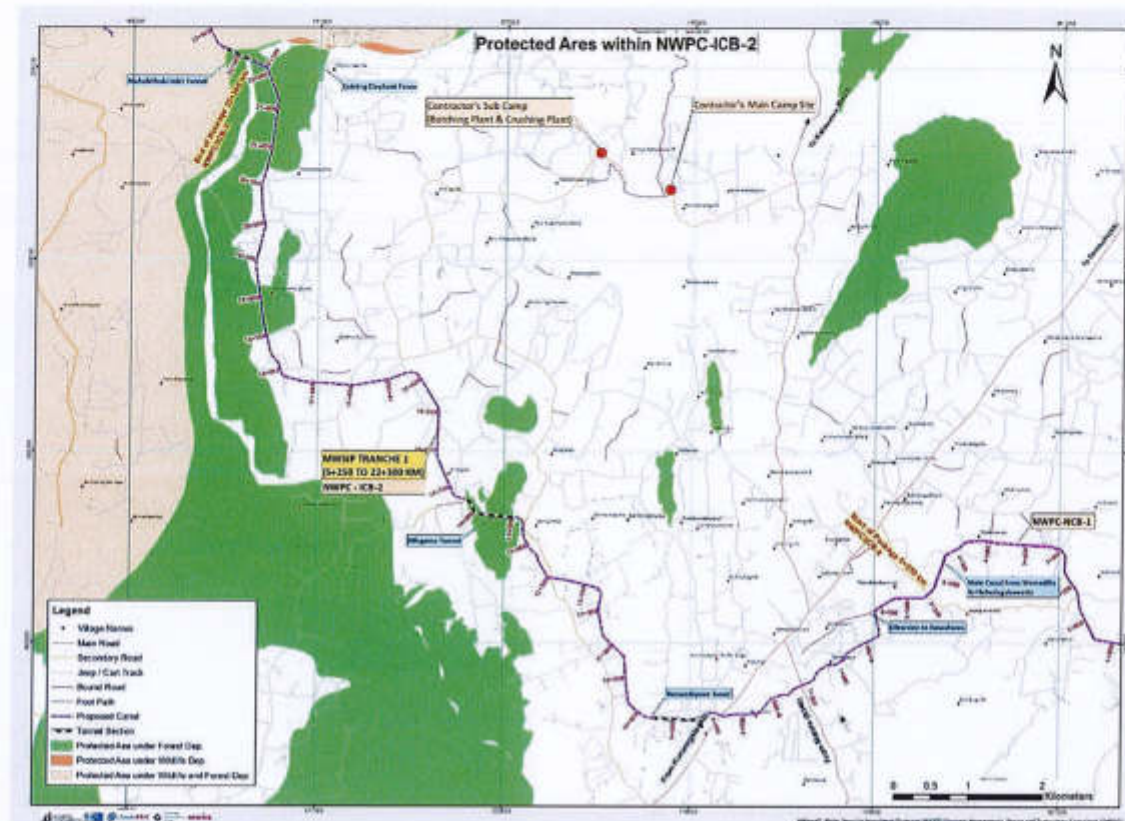


Figure 1-2: Land Use Plan for NWPCP-ICB-2 Package Area

1.2 Updates for EMPs

6. The updated Environmental Management Plans (EMPs) have been prepared and submitted to the CEA and ADB for the active construction packages, and the updated EMP for NWPCP-ICB-2 has been prepared and submitted with the bidding documents. The summary status of the updated EMP preparation is given in Table 1-2.

Table 1-2: Summary Status of the Updated EMP Preparation

| NWPCP Package Name | Date of most recent update | Revisions / updates |
|--------------------|----------------------------|---|
| NWPCP-NCB-1 | 01.12.2016 | <ul style="list-style-type: none"> 1st issue was on 27.04.2016 and was submitted with the bidding documents; Revised version was issued on 17.10.2016 incorporating Resettlement Specialist's revisions The latest update is to be done during the next reporting period, incorporating the recommendations of Environmental Committee (EMC) appointed by Central Environmental Authority (CEA) based on the visit made on 20 and 21 September 2018 and the letter from CEA (Ref. 08/EIA/WATER/07/2012 – Monitoring Vol III dated 08.11.2018) |

| NWPCP Package Name | Date of most recent update | Revisions / updates |
|--------------------|----------------------------|--|
| NWPCP-ICB-2 | 18.05.2017 | <ul style="list-style-type: none"> 1st issue was on 01.02.2017 submitted with the bidding documents; Revised version was issued on 05.04.2017 incorporating site specific environmental requirements as the basis for the preparation of Contractor's Environmental Management Plan (CEMP) The latest update was done incorporating PMU comments prior to submitting it to CEA along with the addendum to EIAR |
| NWPCP-ICB-1 | 03.05.2017 | <ul style="list-style-type: none"> 1st issue was on 03.05.2017 submitted with the bidding documents. |

1.3 Scope of the Report

7. This SAEMR No. 4 is prepared to update the progress of NWPCP with respect to environmental safeguard aspects for the period of July to December 2018, which fulfils an ADB requirement to submit a SAEMR to ADB and Central Environmental Authority (CEA) for the "Category A" projects as documented in FAM³ and EARF⁴.

8. The purpose of this report is to ensure that the Project is implemented with due concern for environmental and social safeguards according to the ADB's Safeguard Policy Statement (SPS) 2009, and specifically to ensure that these issues are adequately addressed in compliance with the requirements of ADB. Further, this report is to assess the progress with implementation of the program in complying with the approved Environmental Impact Assessment (EIA) including Addendum to the EIA: NWPCP Tranche 1 packages (May 2017) 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 and approval for the addendum (Ref.08/EIA/Water/07/2012/Vol 2 dated 11 April 2018).

9. 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 2018:

- (i) Background/context of the monitoring report (adequate information on the project, including physical progress of project activities, scope of monitoring report, reporting period, and the monitoring requirements including frequency of submission as agreed upon with ADB);
- (ii) Changes in project scope and adjusted safeguard measures;
- (iii) Qualitative and quantitative monitoring data;
- (iv) Monitoring parameters/indicators and methods based on the EMP previously agreed upon with ADB;
- (v) 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

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.

- guidelines; timeliness and adequacy of environmental mitigation measures; and training, capacity building, etc.);
- (vi) Monitoring results compared against the objectives of safeguards or desired outcomes documented (environmental impacts avoided or minimized, etc.);
 - (vii) Corrective action plan in any case of non-compliance or any major gaps identified;
 - (viii) Records on disclosure of monitoring information to affected communities;
 - (ix) Identification of key issues, or grievances from affected people, or recommendations for improvement;
 - (x) Monitoring adjustment measures recommended based on monitoring experience/trends and stakeholder's response;
 - (xi) Information about actual institutional arrangements for implementing the monitoring program;
 - (xii) Proposed items of focus for the next reporting period and due date.

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

2. PROGRESS OF NWPCP UP TO DECEMBER 2018

2.1 NWPCP-NCB-1

2.1.1 Overview of NWPCP-NCB-1 and Physical Progress

11. 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) are included under NWPCP-NCB-1 contract package implemented by M/S NEM Construction (Pvt) Ltd.

12. The construction work was commenced on 29.12.2016, and the expected date of completion was 29.12.2018. However, due to various reasons, the Contractor was able to complete only 64% total progress by December 2018, and the overall physical progress as of December 2018 is described in **Table 2-1**.

Table 2-1: Overall Physical Progress in % of NWPCP-NCB-1 by December 2018

| OVERALL PROGRESS | July | August | Sept. | Oct. | Nov. | Dec. |
|-----------------------|-----------|-----------|-----------|-----------|-----------|------------|
| Canal Lining | | | | | | |
| Program | 100 | 100 | 100 | 100 | 100 | 100 |
| Progress | 62 | 71 | 79 | 80 | 81 | 81 |
| Structures | | | | | | |
| Program | 92 | 95 | 95 | 99 | 99 | 100 |
| Progress | 23 | 24 | 26 | 31 | 32 | 32 |
| New sluice and canal | | | | | | |
| Program | 100 | 100 | 100 | 100 | 100 | 100 |
| Progress | 50 | 55 | 60 | 64 | 69 | 72 |
| Others | | | | | | |
| Program | 0 | 0 | 0 | 0 | 50 | 100 |
| Progress | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | | | |
| Total Program | 93 | 94 | 94 | 95 | 97 | 100 |
| Total Progress | 46 | 52 | 57 | 60 | 62 | 64 |

13. Tree removal as per the second list (20 trees) jointly prepared by the Contractor, Engineer and PIU for the additional working areas from 0+ 100 Km to 5+ 250 Km under NWPCP-NCB-1, was carried out during the monitoring period, and all the trees were handed over to the land owners according to Cabinet Paper No 16/2512/704/066 dated 06.12.2016.

2.1.2 Changes in the Project Scope and Adjusted Safeguard Measures

a. Temporary hold on construction work due to land acquisition issues

14. Under the NCB-1 Contract Package, there is a delay of completing land acquisition process in the areas where ongoing construction activities are located, and due to that the ADB had issued a request for temporary holding of all construction work until the land acquisition process and required ADB safeguard documentations are completed.

15. Accordingly, all the construction activities under NWPCP-NCB-1 area were suspended on 15.12.18 until 19.12.18, and again on 20.12.2018 the construction work related to the new sluice and tail canal were allowed to continue, as there are no resettlement issues to be dealt with in the new sluice and tail canal areas.

16. With the announcement of the construction work suspension, required safeguard measures such as site cleaning, barricading, measures for erosion control, siltation control of the water issue in the canal, and strengthening cofferdams at the Wemedilla tank sluice were planned and implemented with the support of the Contractor's Environmental Officer and his supporting team.
17. Further, as the canal bund road is accessed by the community, the safety measures were adopted as required with under the guidance of the Safety Officer of the Engineer.
18. In addition, already acquired areas at some locations are not sufficient for implementing design features of the canal, and to avoid delays of the construction the Engineer proposed only temporary use of land.
19. Under this process, contractors may rent land through agreement with the land owner, as long there are no lease holders on the land in question, for their use above and beyond what is made available to them under the Contract. This is then a "negotiated agreement/settlement", and not involuntary resettlement, so this would not actually come under SPS 2009.
20. Renting would be at the relevant Contractor's expense, which would include all legal and any other associated costs. It must be done through negotiation with the owner and not be forced or coerced.
21. Evidence must be provided that the rental price is satisfactory to the land owner and must be at a normal or higher rate than the current market rate. The Contractor should be able to show in writing: (i) the legal rental documents; (ii) full minutes of negotiations; (iii) full disclosure of how the land should be left post-project in same or better condition than pre-project.

b. Structural mitigation adopted to conserve bat colony inside old aqueduct

22. On 19 September 2018 the Engineer gave notification that there is a colony of bats inside the existing Aqueduct across Malawa Oya, and as per the designs the two ends of this existing aqueduct are required to be sealed to construct the proposed new transition structure (Figure 2-1).

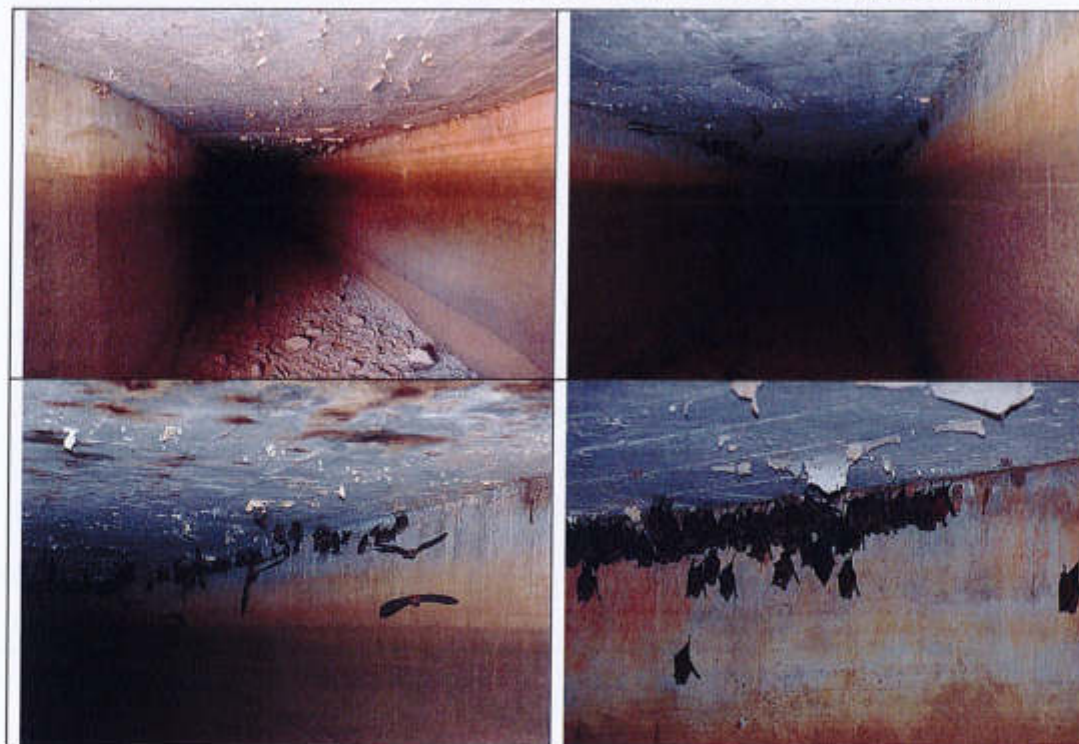




Figure 2-1: Bats and Nest of the Sri Lankan Swallow in the Old Aqueduct

23. The Environmental Monitoring Specialist (EMS) of the PMDSC carried out an initial examination to determine the inhabiting types of species, and related ecological details to propose applicable environmental mitigation measures, which has been described in detail under **Section 4.2.2** of this SAEMR.

24. With the completion of the new transition, the approved design was to seal the old aqueduct, which would affect the movement of bats and swallows.

25. Considering the ecological significance, the design team of the Engineer inspected the Site, reviewed the designs proposed for the new aqueduct, and advised completion of the construction work without disturbing the old aqueduct structure.

The design was revised ensuring the existing opening is maintained and any backfill behind the upstream transition structure will be retained by constructing shallow masonry walls to keep the approach to the access open. Then the transition wall and the opening (shown in **Figure 2-2**) will remain, and a permanent and safe fall protection towards the road shall be provided without obstructing the bats and birds from approaching the opening.



Figure 2-2: The opening to be kept at the old aqueduct

2.2 NWPCP-ICB-2

2.2.1 Overview of NWPCP-ICB-2 and Physical Progress

26. Although the contract was awarded to M/S China State Construction Engineering Corporation Limited and the contract was signed to commence NWPCP-ICB-2 construction package in early July (05.07.2018), the Notice to Commence was issued with the effect from 01 November 2018, as the resettlement and land acquisition process could not be completed.

27. Hence the **Notice to Commence** stated that access to the site shall be given independently subjected to the fulfilment of following requirements;

- (i) Implementation of Due Diligence Report No. 05 (DDR-5), including any revisions or additions required by ADB
- (ii) Amendment to the Agreement to include respective dates for new sectional hand over times; item 7 (Time for Access to Site, Vol. I, Section 8, Part A, Sub-clause 2.1)
- (iii) A letter from the Employer handing over site access, granted by section as available and cleared by PMDSC and ADB

28. The Engineer (PMDSC) notified the survey control points to the Contractor with the **Notice to Commencement**, and the Contractor was engaged with preparing and submitting an updated and detailed work program, method statements and a survey plan for the Engineer's approval.

29. No construction work as per the NWPCP-ICB-2 contract list of works was carried out during the monitoring period, and only facility establishment work for the Contractor was carried out by the Contractor as listed in **Table 2-2**.

**Table 2-2: Summary of Physical Work carried out during the Monitoring Period
(July to December 2018)**

| Work description | Approximate time period |
|--|-------------------------|
| Establishment of Batching Plant including site selection, transporting material to the site etc. | December 2018 |
| Establishment of Contractor's office | November 2018 |
| Establishment of Laboratory | December 2018 |

2.2.2 Changes in the Project scope and Adjusted Safeguard Measures

30. As the construction work was not commenced, no major changes in the project scope was identified, however changing some of the proposed disposal areas as per the bidding documents was discussed, due to unavailability of access and unclear ownerships, which will be updated in the next monitoring report.

31. During the baseline ecological survey and tree enumeration exercise carried out by the Environmental Monitoring Specialist of PMDSC, in NWPCP-ICB-2 area of the NWPCP (5+250 km to 22+300 km), it was revealed that the land ownership of the two sections from 18+500 km to 19+150 km and from 20 +750 km to 22+300 km falls within the Wildlife protected area (Kahalla – Palkelele sanctuary) in the jurisdiction of the Forest Department (FD) under the Matale District Forest Officer (DFO) (Figure 1-2).

32. Accordingly, the tree enumeration of those areas was carried out by the officers of the FD coordinated and arranged by the SEO of the PIU NWPCP.

2.3 Overall Environmental Safeguard Compliance Status on NWPCP

2.3.1 EIA Addendum and Updated EMPs

33. 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) is valid for a period of 3 years commencing from 23 February 2016.

34. As updated in the previous SAEMR, the design changes made in comparison to the approved EIA with respect to NWPCP Tranche 1 packages were prepared and the CEA and DWC approval on the EIA addendum was granted on 11 April 2018 (Ref. 08/EIA/Water/07/2012/ Vol 2).

35. Environmental Monitoring Committee (EMC) appointed by Central Environmental Authority (CEA) visited the NWPCP area on 20 and 21 September 2018 as shown in Figure 2-3, and CEA informed the Employer about the findings and recommendations of the monitoring visit through letter Ref. 08/EIA/WATER/07/2012 – Monitoring Vol III dated 08.11.2018, which is included in Annex 1.

36. The key observations highlighted by the EMC of CEA are as follows:

- (i) EMP to be updated for the relevant construction packages incorporating the CEA observations and comments, which was already completed by the time of preparing this SAEMR
- (ii) Implement adequate mitigatory measures to mitigate significant impacts with respect to health and safety and public access, free animal movements



Figure 2-3: CEA Environmental Monitoring Committee (EMC) Site Inspection

2.3.2 Compliance Status Related to the CEA Approval Conditions

37. The compliance status concerning the CEA approval conditions related to NCB-1 canal trace – followed up by the Senior Environmental Officer (SEO) of PIU and Environmental Monitoring Specialist of PMDSC – is summarized in Table 2-3.

Table 2-3: Compliance with CEA Conditional Approval

| Ref. No. to CEA Approval | Approval Condition | Compliance Status | Remarks |
|--------------------------|--|--|--|
| 1.11 | Tree removing through DWC/FD /STC | <ul style="list-style-type: none"> Tree enumeration carried out by the FD in the FD areas, and other areas were carried out by the EMS of PMDSC Species translocation program followed by ecological baseline survey is planned by PMDSC to carry out prior commence site clearing and tree felling in early March | |
| 2.5 | Monitoring Ground water table in tunnelling sections | Monitoring the water table twice a month since Oct 2017 | Ranwediya & Nilagama Tunnel area (ICB 2) within 100 m) |
| 3.1 | WMP preparation | WMP implementation work in progress | Implementation meeting held on 29 & 30 Nov 2018 |
| 3.8 | Establishment of Hakwatunaoya Elephant corridor | Action plan prepared after consultation of stakeholder agencies | Work in progress |
| 10 | Approval for Archaeological department | Approval granted for ICB2 section | Ref. No. H/Exp/AIA/NWP/2018 dated 2018.08.01 |
| 14.2 | Environmental Monitoring committee of CEA | Inspection and meeting conducted | 29 and 30 Sep 2018 |

38. Implementation of the Wildlife Management Plan (WMP) is carried out under the responsibility of the PMU/PIU, and the first meeting at the site level with the participation of all key stakeholder agencies to prepare the implementation plan was held on 29 and 30 November 2018 at the site level. The key notes of the session are included in **Annex 2**.

39. Under the reforestation and habitat enrichment prosed in the WMP, PIU has started implementing the following programs:

i. Reforestation under NWPCP

40. A total of 165 ha of the degraded forest lands in the Beligamuwakanda have been identified, which belongs to the Forest Department (FD). The area is located in the Galewela DS area and governed by the Beat Forest Officer (BFO)-Galewela under the supervision of Regional Forest Officer (RFO)-Naula & DFO-Matale.

41. The present land use of this area is 200 ha of Eucalyptus plantation planted in 1980 and 1982 by FD for using as firewood. The proposed area is shown in **Figure 2-4**.

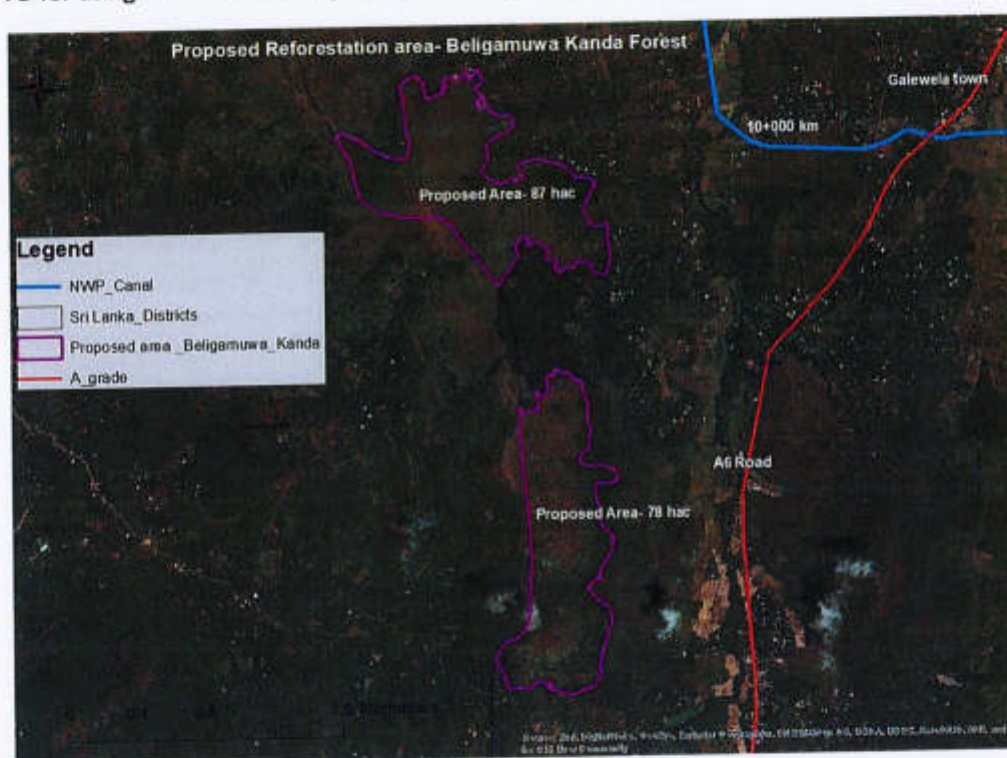


Figure 2-4: The Map showing the Proposed Area for Reforestation

ii. Restoration and habitat enrichment of 50 small tanks parallel to cascade development

42. During the first phase, seven tanks under the Kumbukulawa cascade in Polpithigama have been identified and restoration has been initiated. The details are given in **Annex 3**.

3. ENVIRONMENTAL MONITORING OF NWPCP

3.1 Environmental Monitoring Findings - NWPCP NCB 1

3.1.1 Contractor's Performance and Reporting on Environmental Safeguard Aspects

a. Contractor's performance

43. The Engineer's concern regarding lack of fulltime Environmental Officer (EO) in the site was raised at every environmental meeting, and monthly progress meetings for implementing CEMP, and as a result the Contractor appointed Eng. Mr. Ranathunge as the site Environmental Officer in addition to the Environmental Manager (Mr. Sangeeth Silva) of NEM with effect from 15 August 2018.

44. However, the expected performance was not shown by the Contractor as the appointed EO had to work both as the Mechanical Engineer to the contract as well as the EO. With the repeated reminders, and complaints made by the Engineer's Environmental Team (EMS/ES of PMDSC) and Employers' relevant officers, finally the Contractor appointed permanent fulltime EO, Mr Lakmal Siriwardena, with effect from 06 December 2018, and he has been performing well in implementing CEMP and adopting required environmental safeguard measures.

b. Contractor's reporting and documentation

45. Monthly environmental progress report is prepared by the EO of the contractor as per the format provided by the PMDSC, however the content was not updated as there was no fulltime EO in the construction site until early December 2018.

46. In addition, **Table 3-1** summarizes the reports and Method Statements (MS) prepared by the contractor complying with the Environmental Safeguard requirements during the monitoring period from July to December 2018.

Table 3-1: Summary of Documentation Submitted by the Contractor

| Type / Subject | Submission Date | Remarks |
|--|-----------------|--|
| MS - Rock excavation for structures | 11.09.2018 | <ul style="list-style-type: none"> Return for correction and resubmission on 01.10.2018, indicating comments by the Engineer Revised version incorporating comments were submitted by the contractor on 05.12.2018 |
| Report – Env protection measures for the proposed disposal yard Walaswewa | 07.09. 2018 | Approval Sheet (AN) submitted by environmental Specialist (ES/environmental Monitoring Specialist (EMS) to PMDSC on 02.11.2018 |
| Report – Env protection measures for the proposed disposal yard Nikavehera | 07.09.2018 | |
| MS for Site Restoration | 03.09.2018 | Approval Sheet (AN) submitted by ES/EMS of PMDSC on 28.10.2018 |

47. In addition to above, the Contractor submitted a detailed environmental management report for the borrow area operated at Wemedialla tank bed in July 2018, responding to the Engineer's directions sent through the letter Ref. PMDSC-NWP-Site/NCB 1/NEM/332 dated 17.09.2018 to comply with required documentation and approvals prior to operate a borrow area for construction material.

3.1.2 Approval Status of the Construction Work

48. Noncompliance related to the approval status was found on the blasting permit by GSMB and permit from explosive controller to carry out blasting activities.
49. The incident was noted on 03.09.2018 during the monitoring inspections by the EMS, and the Contractor immediately notified. The blasting work was stopped until obtaining required approvals through Letter Ref. PMDSC-NWP-Site/NCB 1/NEM/328 dated 07.09.2018 by the Project Manager (equivalent in NVB contracts to the Engineer in ICB contracts).
50. As a result, the Explosive Licence was renewed and GSMB approval for blasting work at 4+424 km was obtained by the Contractor on 23.11.2018 which was valid for 2 weeks (26.11.18 to 10.12.18).
51. The Contractor was directed either to extend the approval period for the operating disposal areas at Walaswewa (N 7.767385/ E 80.600733), which expired on 07.09.2018, or restore as per the approved restoration plan by the Consultant's Project Manager.

3.1.3 Best Environmental and Engineering Practices Implemented by NWPCP-NCB-1 Contractor

52. The Contractor makes efforts to implement and maintain environmental protection measures complying with the EMP recommendations. Photographic evidences for some of the key environmental mitigation measures adopted by the Contractor are shown in **Figure 3-1**.

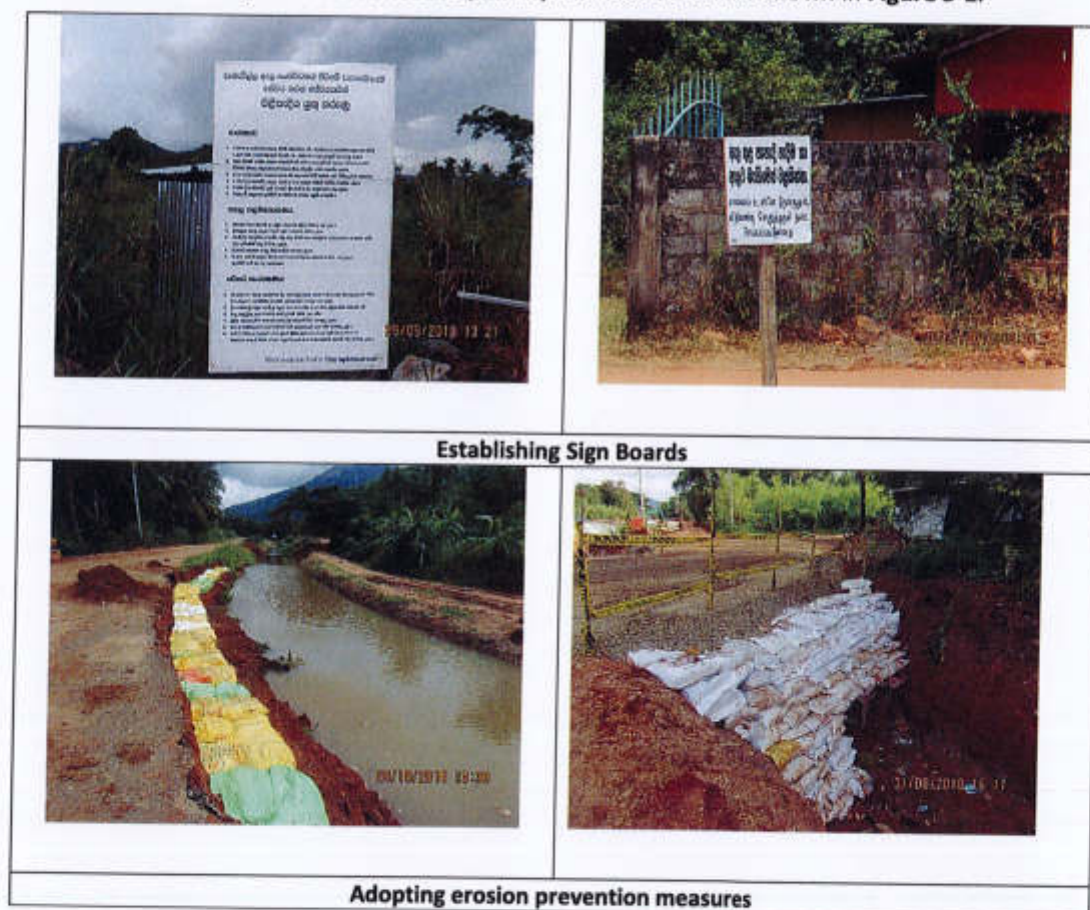




Figure 3-1: Best Environmental Practices by NWPCP NCB 1 during the Monitoring Period



3.1.4 Prioritised List of Non-Conformance Findings and Recommended Corrective Actions Related to NWPCP-NCB-1






53. The NWPCP-NCB-1 package did not result in any significant environmental non-compliance issues during the reporting period from July to December 2018, and the key concerns were noted on the following aspects:






- (i) Approvals for blasting activities (GSMB and Explosive Controller)
- (ii) Lack of material borrow areas to meet the demand for earth, as the Contractor is looking for the borrow areas in the immediate surrounding due to not costing for material transportation.
- (iii) Poor erosion control along the canal and new sluice area
- (iv) Absence of a fulltime Environmental Officer assigned to the Contractor until early December 2018




54. The prioritised list of non-conformances recorded during the monitoring period from July to December 2018 by the ES and EMS are summarised in **Table 3-2** with the corrective actions adopted by the Contractor.


Table 3-2: Non-conformances Recorded and Corrective Actions under NWPCP NCB 1 during Monitoring Period

| Non conformance issue | Non conformance issue | Corrective Action |
|--|--|--|
| <p>Water pollution due to oil leakage from the water pump at the edge of the Wemedilla tank at new sluice construction site (03.12.2018)</p> |  | <ul style="list-style-type: none"> • Motor was immediately removed from the site • Area was barricaded using sand bags to stop spreading oil in to surrounding water • Immediately removed the leaked oil and water |
| |  | <ul style="list-style-type: none"> • The contractor was advised to construct a platform to place the new motor • Followup monitoring done on 04.12.2018 and ensured that the situation was totally rectified and all mitigatory measures proposed were implemented by the contractor |

| Non conformance issue | | Corrective Action | |
|--|---|---|---|
| Unmanaged soil dumps along the canal road (26.12.2018) |  | <ul style="list-style-type: none"> The contractor was advised to manage the stock piles putting barricading, and covering to manage dust |  |
| Soil erodible areas at banks of the stream (Malawa Oya) at aqueduct construction site (13.12.2018) |  | <ul style="list-style-type: none"> Erosion protection placing sand bags (31.12.2018) |  |
| <ul style="list-style-type: none"> The water collected in the above location was dewatered using a "JCB Bucket" and emptied on to the existing access road This created an environmental risk of erosion, sedimentation, and cause inconvenience and safety risk to the general public those who use the road (23.11.2018) |  | <ul style="list-style-type: none"> Non Conformance Report (NCR) No. 015 was raised recommending corrective actions Dewatering to be done using proper engineering method and drain in to a proper drainage path, adopting a measure to avoid erosion/sedimentation (temporary silt trap using sand bags etc) and avoid muddy surfaces of the access roads used by public. The contractor rectified the issue and the NCR was closed by submitting details through Letter Ref. NEM/NWPCP/PMDSC/2017/L0738 dated as 26.11.2018 | |

| Non conformance issue | | Corrective Action |
|---|---|--|
| <ul style="list-style-type: none"> Dust generated due to cleaning of construction joints of canal lining by blowing using high pressure air. Due to this incident surrounding peoples get unrests (03.10.2018) |  | <ul style="list-style-type: none"> Immediately stopped the work, and awareness made to the contractor's staff to rectify it Contractor was advised to carry out ambient air quality testing in the area During the follow up inspections it was noted that the cleaning was done by spraying water and collecting the dust below using collection trays |
| <ul style="list-style-type: none"> Invasive flora on coffer dam at the new sluice construction site (09.10.2018) |   | <ul style="list-style-type: none"> Invasive species was removed, disposed adopting standard method and area was cleaned (25.10.2018) |
| | |   |

| Non conformance issue | | Corrective Action | |
|--|--|---|---|
| | | <ul style="list-style-type: none"> Established erosion protection measures (30.11.2018) |  |
| <ul style="list-style-type: none"> Rock blast at 4+424 without proper explosive licence, GSMB approval and method statement (03.09.2018) |  | <ul style="list-style-type: none"> All blasting work was stopped until obtaining required approvals through Letter Ref. PMDSC-NWP-Site/NCB 1/NEM/328 dated as 07.09.2018 by the Engineer. As a result, the Explosive Licence was renewed and GSMB approval for blasting work at 4+424 km obtained by the contractor on 23.11.2018 which was valid for 2 weeks (26.11.18 to 10.12.18). | |
| <ul style="list-style-type: none"> Soil erosion prone areas upstream banks of the stream (Malawa Oya) at aqueduct construction site (July 2018) |  | <ul style="list-style-type: none"> Placed sand bags along the banks of soil erosion prone area Covered the exposed soil by tarpoline sheets | |

| Non conformance issue | | Corrective Action |
|--|---|---|
| <ul style="list-style-type: none"> Debris of breached coffer dam including pipes in the stream (Malawa Oya) at aqueduct construction site (July 2018) |  | <ul style="list-style-type: none"> Removed all debris and pipes of the breached coffer dam |

3.2 Environmental Monitoring Findings - NWPCP ICB 2

3.2.1 Contractor's Performance and Reporting on Environmental Safeguard Aspects

a. Contractor's performance

55. There was no permanent construction work was carried out during the monitoring period, and only contractor facility establishment work was carried out by the contractor. The contractor performance was closely monitored jointly by EMS of PMDSC and SEO of PIU from the date of commencement. **Figure 3-2** shows some photographic evidences of the site monitoring in NWPCP ICB 2 area.

56. The Contractor's Environmental Officer (Mr Rangika Karunaratne) was approved by the Engineer through the Letter Ref. PMDSC-CRE-NWP/ICB2/CSEC/003 dated as 14.11.2018.



Figure 3-2: Photographic evidences of the joint site monitoring in NWPCP ICB 2 area

b. Contractor's reporting and documentation

57. The first draft of the Contractor's Environmental Management Plan (CEMP) was submitted by the contractor on 20 December 2018.

58. Since the CEMP was not up to the required standard, addressing the most required aspects related to environmental safeguard management including Environmental Risk Assessment, the first draft was Returned for Resubmission (RR) by the Engineer (PMDSC) with the comments and guidance to improve.

59. In addition, the contractor's EO was guided to include a separate "Environmental Management" section in each Construction Method Statement (MS) assessing the environmental risk and required mitigatory measures, monitoring plan.

60. The relevant section of the MS shall be reviewed by the EMS or ES of PMDSC and until the environmental approval is granted, the MS will not be approved by the Engineer, and the work will not be permitted to implement.

3.2.2 Adjusted Environmental Safeguard Measures to Comply with CEA / ADB Requirements

a. Pre-planning the working arrangement within the protected area under NWPCP ICB 2

61. Based on the sensitivity of NWPCP ICB 2 construction area, a joint discussion was arranged by SEO-PIU of NWPCP on 03 October 2018, at the Pibidunagama Department of Wildlife Conservation (DWC) Range Office with the participation of all relevant officers representing DWC, FD, PMDSC, PMU, PIU to understand the key concerns of the stakeholder agencies, prior arrangements required with the involvement of DWC, FD officers of the area related to the contractor's access, contractor facility establishment, realignment of elephant fence etc, and the key concerns related to manage human wildlife conflicts (Figure 3-3).



Figure 3-3: Preparatory Meeting held on 03rd Oct at DWC Office- Pibidunagama

62. As per the discussion with the relevant stakeholder agencies (DWC and FD) and confirmed by the DWC (Ref. Wa. Jee. / NWP/ NWPC/1264/18) received through PMU on 27 November 2018 (MMDE/MWSIP/PMU/ENV/NWPCP/Gen-Vol I), **Table 3-3** summarizes the requirements to be fulfilled prior to commencement of the project interventions within the protected areas.

Table 3-3: Requirements Confirmed by the DWC and FD prior to Commencing the NWPCP-ICB-2 Project Interventions within Kahalla – Pallekele

| | |
|-----------|---|
| 1. | Security during working in the protected areas (18+500 km – 19+250 km) and from 20+750 km to Mahakithula inlet tunnel) |
| 1-1 | Three security points to be established at Egodayaya, Getahinna, Korahagolla, where the electric fence to be disturbed for construction work |
| 1-2 | Establishment of the security points (3 permanent security huts), providing required equipment and facilities for the 3 security huts including water supply and electricity expected to be provided through the Contractor NWPCP ICB 2 |
| 1-3 | Recruitment / management of the security personnel shall be done through the DWC/FD and the salaries to be paid by the Contractor NWPCP ICB 2 |
| 1-4 | It is compulsory to have a temporary Identity Card for the all the workers, officers entering protected area from the project during the construction period |
| 2 | Realignment of the existing Electric / Elephant Fence |
| 2-1 | Protection for the construction area shall be provided by establishing an inner fencing, inside the existing electric fence |
| 3 | Access Roads / Disposal Sites |
| 3-1 | No additional access roads required, existing access roads connected with the protected areas can be used. Resurfacing is requiring, and the designs to be shared with the DWC prior to commence rehabilitation work of the existing access roads |
| 3-2 | No disposal sites allowed within the protected areas, and the requirements to be discussed and finalized with the coordination of DWC to avoid disturbances to the wildlife movements |
| 4 | Tree felling |
| 4-1 | Tree enumeration completed in the protected areas, and other areas along the NWPCP-ICB-2 trace. The existing access roads can be used for tree removal. |
| 4-2 | Tree removal to be done first in the section from 18+500 km to 19+600 km. |
| 4-3 | DWC / FD confirmed that the tree felling in the remaining sections within the protected areas is to be done in 3 sections to avoid disturbances to the wildlife/elephant movements |
| 4-4 | The Contractor is to do the setting out and marking of the site boundaries prior to tree felling to avoid unnecessary tree felling |

63. The meeting minutes including attendance sheet and the letter received from DWC confirming the decisions taken at the meeting are included in **Annex 4**.

b. Setting out environmental baseline conditions

64. Complying with the CEA and ADB monitoring requirements, the baseline ecological conditions and the environmental quality data are to be established in the NWPCP-ICB-2 area.

65. Understanding the above requirement, baseline ecological conditions were recorded as a part of the Tree enumeration survey carried out by a team of ecologist lead by EMS of PMDSC during the period from April to October 2018 throughout the canal trace excluding the protected areas.

66. A separate ecological baseline survey followed by the critical flora/fauna species transplanting/translocation study is planned by the PMDSC in the ecologically sensitive areas through a professionally qualified consultant individual or a company recruited through a "Request for Quotation for Works" (RFQW) as per the "ADB Shopping for Works" Procedure. The target areas to be surveyed are summarized in the **Table 3-4**.

Table 3-4: Target Areas subjected to Ecological Baseline Survey under NWPCP-ICB-2

| Canal Chainage | Existing habitat type | Type of survey |
|------------------------|---|--|
| 13+000 km to 14+250 km | Protected forest land in the Nilagama tunnel area | Only detailed biodiversity survey of associated habitats |
| 18+500 km to 19+250 km | Cut and cover canal section located within forest habitats in Kahalla – Palleke Sanctuary area. | Both <u>detailed biodiversity baseline survey and critical species translocation</u> as directed by the Engineer |

| Canal Chainage | Existing habitat type | Type of survey |
|------------------------|---|----------------|
| 20+750 km to 22+300 km | Cut and cover canal section located within forest habitats in Kahalla – Palleke Sanctuary area. | |

67. The required Request for Quotation for Work (RFQW) document, including Terms of Reference (ToR), has been prepared and submitted for PMU concurrences, and it is planned to award the contract by early March to carry out the translocation simultaneously with the tree felling and site clearing work in the protected areas shown in **Figure 1-2**.

68. An Environmental Quality Baseline Survey to establish baseline conditions for the surface and ground water quality, ambient air quality, noise and vibration levels in the NWPCP ICB 2 area is to be done through a qualified third-party laboratory hired under the PMDSC Surveys and Studies budget.

69. The relevant RFQW document including ToR has been prepared and submitted to PMU for their concurrence through letter Ref. 7.23_L02599 dated 26 December 2018, which is included in **Annex 5** of this SAEMR.

3.3 Site Inspections, Training and Awareness under NWPCP

3.3.1 Site Inspections and Consultative Sessions Carried Out during Monitoring Period

70. In order to carry out effective communication and guidance with the Contractor's Environmental Officer, a joint environmental meeting with the participation of PMDSC environmental consultants (ES and EMS), Employer's Environmental Specialist and Senior Environmental Officer (SEO) of the PIU was initiated from July 2018, and the monthly meeting is planned to be held first Monday of the every month to review the previous month's environmental performance.

71. After each meeting, a joint site inspection is carried out in the project areas where where construction work is ongoing, and significant issues to be rectified are identified.

72. A summary of the meetings, site surveys and consultative sessions carried out with the participation of the Environmental Specialist (ES) and/or the Environmental Monitoring Specialist (EMS) of PMDSC is given in **Table 3-5**.

Table 3-5: Site Inspections, Consultative Sessions, Meetings Carried Out during Monitoring Period

| Date | Location | Participants | Objective / Out come |
|------------|---|---|--|
| 04.07.2018 | RE Office NWPCP NCB 1 | <ul style="list-style-type: none"> ES – PMDSC, EMS – PMDSC, SEO – PIU, EO –Contractor | Monthly environment meeting for NWPCP NCB 1; Site inspection and monitoring environmental progress of the Site |
| 05.07.2018 | RE Office NWPCP NCB 1 | <ul style="list-style-type: none"> CRE, RE and staff, PD PIU and staff, Contractor staff, PMDSC staff including ES and EMS | Monthly progress review meeting for NWPCP NCB 1 |
| 06.07.2018 | NWPCP NCB 1 area | <ul style="list-style-type: none"> EMS of PMDSC | Site inspection and monitoring environmental progress of the Site NWPCP NCB 1 |
| 09.07.2018 | NWPCP NCB 1 area | | Site inspection and monitoring environmental progress of the Site NWPCP NCB 1 |
| 11.07.2018 | NWPCP NCB 1 area | | Visit Wemedilla burrow area at NWPCP NCB 1 |
| 16.07.2018 | NWPCP NCB 1 area | | Site inspection and follow up of implementing corrective actions for the identified issues of the Site NWPCP NCB 1 |
| 17.07.2018 | RE Office NWPCP | <ul style="list-style-type: none"> RE and staff, PD PIU and staff, Contractor staff, EMS - PMDSC | Attending Site meeting for NWPCP NCB 1 |
| 20.07.2018 | NWPCP NCB 1 area | <ul style="list-style-type: none"> EMS of PMDSC | Site inspection and monitoring environmental progress of the Site. |
| 24.07.2018 | NWPCP NCB 1 area | | Site inspection and monitoring environmental progress of the Site. |
| 30.07.2018 | RE Office NWPCP | <ul style="list-style-type: none"> ES – PMDSC, EMS – PMDSC, SEO – PIU, EO –Contractor | Monthly environment meeting for NWPCP NCB 1; Site inspection and monitoring environmental progress of the Site |
| 01.08.2018 | NWPCP ICB 1 – Proposed Mahakithula and Mahakrula reservoir area | <ul style="list-style-type: none"> CRE – PMDSC, EMS – PMDSC, Officers of DWC, Survey assistant of PMDSC | To familiarize the dam axis area of the proposed reservoirs under NWPCP ICB 1 |
| 02.08.2018 | RE Office NWPCP | <ul style="list-style-type: none"> CRE, RE and staff, PD PMU and staff, PD PIU and staff, Contractor staff, PMDSC staff including ES and EMS | Monthly progress review meeting |
| 08.08.2018 | NWPCP NCB 1 area | <ul style="list-style-type: none"> EMS of PMDSC | Site inspection and follow up of implementing corrective actions for the identified issues of the Site NWPCP NCB 1 |
| 13.08.2018 | PIU office NWPCP | <ul style="list-style-type: none"> Independent Environment Safeguards Monitoring Specialist (IESMS) of | Semi-annual progress review by the IESMS in NWPCP area |

| Date | Location | Participants | Objective / Out come |
|-------------------------------|--------------------------------------|--|--|
| | | MWSIP, ES – PMU, EMS – PMDSC, SEO – PIU | |
| 15.08.2018 | NWPCP NCB 1 area | • EMS of PMDSC | Site inspection and follow up of implementing corrective actions for the identified issues of the Site NWPCP NCB 1 |
| 17.08.2018 | RE Office NWPCP NCB 1 | • RE and staff, PD PIU and staff, Contractor staff, EMS – PMDSC | Attending Site meeting for NWPCP NCB 1 |
| 23.08.2018 28.08.2018 | NWPCP NCB 1 area NWPCP NCB 1 area | • EMS of PMDSC • EMS of PMDSC | Site inspection and follow up of implementing corrective actions for the identified issues of the Site NWPCP NCB 1 |
| 01.09.2018 02.09.2018 | NWPCP ICB 2 area | • EMS of PMDSC and fauna, flora, tree enumeration staff | Fauna, flora survey and tree enumeration at NWPCP ICB 2 canal trace |
| 03.09.2018 | RE Office NWPCP NCB 1 | • ES – PMDSC, EMS – PMDSC, SEO – PIU, EO – Contractor | Monthly environment meeting for NWPCP NCB 1; Site inspection and monitoring environmental progress of the Site |
| 04.09.2018 | NWPCP NCB 1 area | • EMS of PMDSC | Inspection of the rock blasting area at 4+424, follow up of implementing corrective actions for the identified issue (rock blasting without required approvals) |
| 06.09.2018 | RE Office NWPCP NCB 1 | • CRE, RE and staff, PMU staff, PD PIU and staff, Contractor staff, PMDSC staff including ES and EMS | Monthly progress review meeting |
| From 07.09.2018 to 11.09.2018 | NWPCP ICB 2 area | • EMS of PMDSC and fauna, flora, tree enumeration staff | Fauna, flora survey and tree enumeration at NWPCP ICB 2 canal trace |
| 13.09.2018 19.09.2018 | NWPCP NCB 1 area NWPCP NCB 1 area | • EMS of PMDSC | Site inspection and follow up of implementing corrective actions for the identified issues of the Site NWPCP NCB 1 |
| 20.09.2018 | PIU office Polpitigama | • EMC team of CEA, ES of PMU, ES of PMDSC, SEO of PIU, EMS of PMDSC | Meeting with Environmental Monitoring Committee (EMC) team of Central Environmental Authority (CEA) and other relevant stakeholder agencies at Hakwatunawa and ICB 1 site inspection |
| 21.09.2018 | NWPCP ICB 2 and NCB 1 areas | • EMC team of CEA, ES of PMU, ES of PMDSC, PD PIU, SEO of PIU, EMS of PMDSC | NWPCP ICB 2 and NCB 1 site inspection |
| 22.09.2018 | NWPCP NCB 1 area | • EMS of PMDSC | Inspection of the bats in old aqueduct over Malawa oya; follow up of implementing corrective actions for |

| Date | Location | Participants | Objective / Out come |
|------------|-------------------------------|---|--|
| | | | the identified issues of the Site NWPCP NCB 1 |
| 26.09.2018 | RE Office NWPCP NCB 1 | • ES – PMDSC, EMS – PMDSC, SEO – PIU, EO – Contractor | Monthly environment meeting for NWPCP NCB 1; Site inspection and monitoring environmental progress of the Site |
| 03.10.2018 | Pibidunagama DWC Range office | • ES – PMU, ES – PMDSC, EMS – PMDSC, SEO – PIU, AD – DWC, RO – DWC | Special discussion with the Working arrangements Inside the Sanctuary for ICB 2 |
| 03.10.2018 | NWPCP NCB 1 area | • ES – PMU, ES – PMDSC, EMS – PMDSC, SEO – PIU, H & S officer PMDSC | Joint Site inspection and monitoring environmental progress of the Site NWPCP NCB 1. |
| 04.10.2018 | RE Office NWPCP NCB 1 | • CRE, RE and staff, PMU staff, PD PIU and staff, Contractor staff, PMDSC staff including EMS | Monthly progress review meeting |
| 09.10.2018 | NWPCP NCB 1 area | • EMS of PMDSC | Site inspection and follow up of implementing corrective actions for the identified issues of the Site NWPCP NCB 1 |
| 18.10.2018 | NWPCP NCB 1 area | | |
| 21.10.2018 | NWPCP NCB 1 area (Bat Colony) | | Monitoring Bat Colony at old Aqueduct |
| 29.10.2018 | NWPCP NCB 1 area | | Site inspection and monitoring environmental progress of the Site. |
| 30.10.2018 | NWPCP ICB 2 area | • EMS of PMDSC and fauna, flora, tree enumeration staff | Fauna, flora survey and tree enumeration at NWPCP ICB 2 canal trace |
| 31.10.2018 | NWPCP ICB 2 area | | |
| 02.11.2018 | NWPCP NCB 1 area | • EMS of PMDSC | Site inspection and monitoring environmental progress of the Site. |
| 06.11.2018 | DWC office | | Meeting with DWC and Dr Padmalal (about future works in Kahalla Palkeleke Sanctuary) |
| 07.11.2018 | RE Office NWPCP NCB 1 | • ES – PMDSC, EMS – PMDSC, SEO – PIU, EO – Contractor | Monthly environment meeting for NWPCP NCB 1; Site inspection and monitoring environmental progress of the Site |
| 09.11.2018 | RE Office NWPCP NCB 1 | • CRE, RE and staff, PMU staff, PD PIU and staff, Contractor staff, PMDSC staff including EMS | Monthly progress review meeting |
| 15.11.2018 | NWPCP NCB 1 & ICB 2 area | • EMS of PMDSC | Site inspection and monitoring environmental progress of the Site. |
| 19.11.2018 | Colombo | • EMS of PMDSC and KMTC species translocated team | Meeting with KMTC species translocated team to finalize the report |
| 23.11.2018 | NWPCP area | • EMS of PMDSC | Site inspection and follow up of implementing corrective actions for |

| Date | Location | Participants | Objective / Out come |
|------------|----------------------------|---|---|
| | | | the identified issues of the Site NWPCP NCB 1, ICB 2 areas |
| 03.12.2018 | RE Office NWPCP – NCB 1 | <ul style="list-style-type: none"> ES – PMDSC, EMS – PMDSC, SEO – PIU, EO – Contractor | Monthly environment review meeting and Site inspection and monitoring environmental progress of the Site |
| 04.12.2018 | NWPCP NCB 1 area | <ul style="list-style-type: none"> EMS of PMDSC | Monitoring the status of the water pollution due to oil leakage of the water pump |
| 05.12.2018 | Pibidunagama DWC office | <ul style="list-style-type: none"> EMS of PMDSC | Meeting with DWC about future works in Kahalla Paliekele Sanctuary under NWPCP ICB 2 |
| 06.12.2018 | RE Office NWPCP NCB 1 | <ul style="list-style-type: none"> CRE, RE and staff, PMU staff, PD PIU and staff, Contractor staff, PMDSC staff including EMS | Monthly progress review meeting |
| 13.12.2018 | CRE office Dambulla | <ul style="list-style-type: none"> ES and EMS of PMDSC, NWPCP ICB 2 contractor's staff | Environmental Safeguard awareness session for NWPCP ICB 2 |
| | NWPCP NCB 1 area | <ul style="list-style-type: none"> EMS of PMDSC | Site inspection and monitoring environmental progress of the contractor facility establishment, inspect identified disposal areas etc. NWPCP ICB 2 area |
| 17.12.2018 | NWPCP ICB 2 area | | |
| 19.12.2018 | NWPCP NCB 1 area | | Site inspection and follow up of implementing corrective actions for the identified issues of the Site NWPCP NCB 1 |
| 26.12.2018 | NWPCP NCB 1 area | | |

3.3.2 Training and Awareness Carried Out during Monitoring Period

73. A full day awareness program on the Environmental Safeguard requirements under MWSIP and the guidance to prepare the Contractor's Environmental Management Plan (CEMP) was held on 13.12.2018 for the Contractor's Environmental Officer, and the Contractor's key staff members at the Dambulla CRE office.

74. The session was conducted by the Environmental Specialist and Environmental Monitoring Specialist of PMDSC.

75. The relevant reference material including the Environmental Impact Assessment Report (EIAR), addendum to the EIAR, copies of the CEA Environmental Approval letters, updated EMP, guidance note on the CEMP preparation were shared with the Contractor's EO at the awareness session.

4. DISCLOSURE AND ADDITIONAL MITIGATORY MEASURES

4.1 Disclosure of Monitoring Information to Affected Communities

76. PIU and PMU have conducted several community awareness and consultation programs related to NWPCP project activities. These are summarized in **Table 4-1**.

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

| No. | Event name | Date | Location (GN-DS) | No Participated | Resource persons |
|-----|---|----------------|---|-----------------|------------------|
| 1. | Meeting – Hakwatunaoya EC | 9 & 20.07.2018 | Government Assistant (GA) office- Kurunegala | 30 | GA/DWC/FD/DS etc |
| 2. | Meeting – Hakwatunaoya EC | 03.08.2018 | Divisional Secretary (DS) office- Polpitigama | 60 | GA/DWC/FD/DS etc |
| 3. | Meeting with Minister – Hakwatunaoya EC | 06.08.2018 | PMU- Polpitigama | 35 | GA/DWC/FD/DS etc |
| 4. | School awareness | 31.10.2018 | Ranwediyawa School | 100 | SCO/SEO |
| 5. | School awareness | 01.11.2018 | Hombawa School | 60 | SCO/SEO |

77. **Table 4-2** summarizes the number of Grievance Redress Committee (GRC) meetings conducted during the monitoring period by PMU/PIU in the NWPCP project area.

Table 4-2: Summary of the GRCs Established in NWPCP Area

| GRC-Name | No of meetings held | Dates |
|-----------------|---------------------|------------------------|
| Hombawa | 02 | 16.07.2018, 25.10.2018 |
| Aluthwewa | 02 | 16.07.2018, 25.10.2018 |
| Bambawa | 1 | 30.08.2018 |
| Weragalawatta | 02 | 30.08.2018, 16.10.2018 |
| Welamitiyawa | 1 | 30.08.2018 |
| Danduyaya | 1 | 30.10.2018 |
| Nabadagahawatta | 1 | 30.10.2018 |
| Pibidunugama | 1 | 30.10.2018 |

78. A summary of the environmental related grievances during the monitoring period is given in **Table 4.3**.

Table 4-3: Summary of Environmental Grievances Attended

| GRC - Name | No. received | No. attended | No. relevant | No. resolved | Remarks |
|---------------|--------------|--------------|--------------|--------------|--|
| Weragalawatta | 04 | 04 | 04 | 03 | House crack complaint will resolved by Contractor after particular section work finished |

4.2 Additional Surveys under NWPCP within the Reporting Period

4.2.1 Tree Enumeration Survey in NWPCP ICB 2 Area

79. Tree enumeration and ecological baseline survey was completed by the EMS of PMDSC, and the tree lists related to the entire NWPCP-ICB-2 trace from 5+250 km to 22+300 km were submitted to PMU/PIU to process with the required approval by the end of October 2018.

80. The tree lists for a total of 2,155 trees (over 30 cm DBH) were submitted as 4 sections (Section 1 – 5+250 km to Ranwediya Inlet Portal; Section 2 – from Ranwediya Outlet portal to Nilagama Tunnel Inlet; Section 3 – from Nilagama Tunnel Outlet Portal to 18+500 km; Section 4 – 19+150 km to 20+750 km) as shown in **Figure 4-1**.

81. The report on the baseline ecological survey for NWPCP-ICB-2 complying with the CEA approval condition Section C.3 (Ref. 08/EIA/Water/07/2012/Vol 2 dated as 11.04.2018) is under preparation by the EMS.

4.2.2 Initial Ecological Investigation of the Bat Colony in NWPCP-NCB-1 Area

82. A colony of bats was found during the construction work by the Contractor to be inhabiting the existing Aqueduct across Malawa Oya and was notified to the Engineer on 19 September. As per the designs, the two ends of this existing aqueduct were required to be sealed to construct the proposed new transition structure.

83. The contractor's and the Engineer's team was made aware about the **"Procedures for dealing with chance found Flora and Fauna"**, which is clearly described in **Chapter 5 of the updated EMP** by the PMDSC for NWPCP-NCB-1.

84. The Environmental Monitoring Specialist (EMS) of the PMDSC carried out an initial examination on 22 September 2018, to determine the inhabiting types of species, and related ecological details, to propose applicable environmental mitigation measures.

85. According to the survey, the roof of the old aqueduct is colonized by two bat species, *Rhinolophus rouxii* (Rufous Horseshoe Bat / Borath or Podi Ashwaladam Wavula) and *Hipposideros speoris* (Schneider's Leaf-Nosed Bat / Thum Pethi Pathnehe Wavula). In addition to the bats, one nest of endemic Sri Lankan Swallow (*Cecropis hyperythra*) was observed on the roof of the old aqueduct.

86. *Rhinolophus rouxii* belongs to family Rhinolophidae and *Hipposideros speoris* belongs to family Hipposideridae, and according to the Fauna and Flora Protection Ordinance (FFPO) of Sri Lanka, these bat species are considered as protected species. Both these species are indigenous (not endemic) to the country and are not listed species in the national red data book. *Rhinolophus rouxii* also found in India, Nepal, West Bengal and China however, *Hipposideros speoris* is only found in India and Sri Lanka. The detailed report on this Initial Examination together with resulting recommendations are given in **Annex 6**.

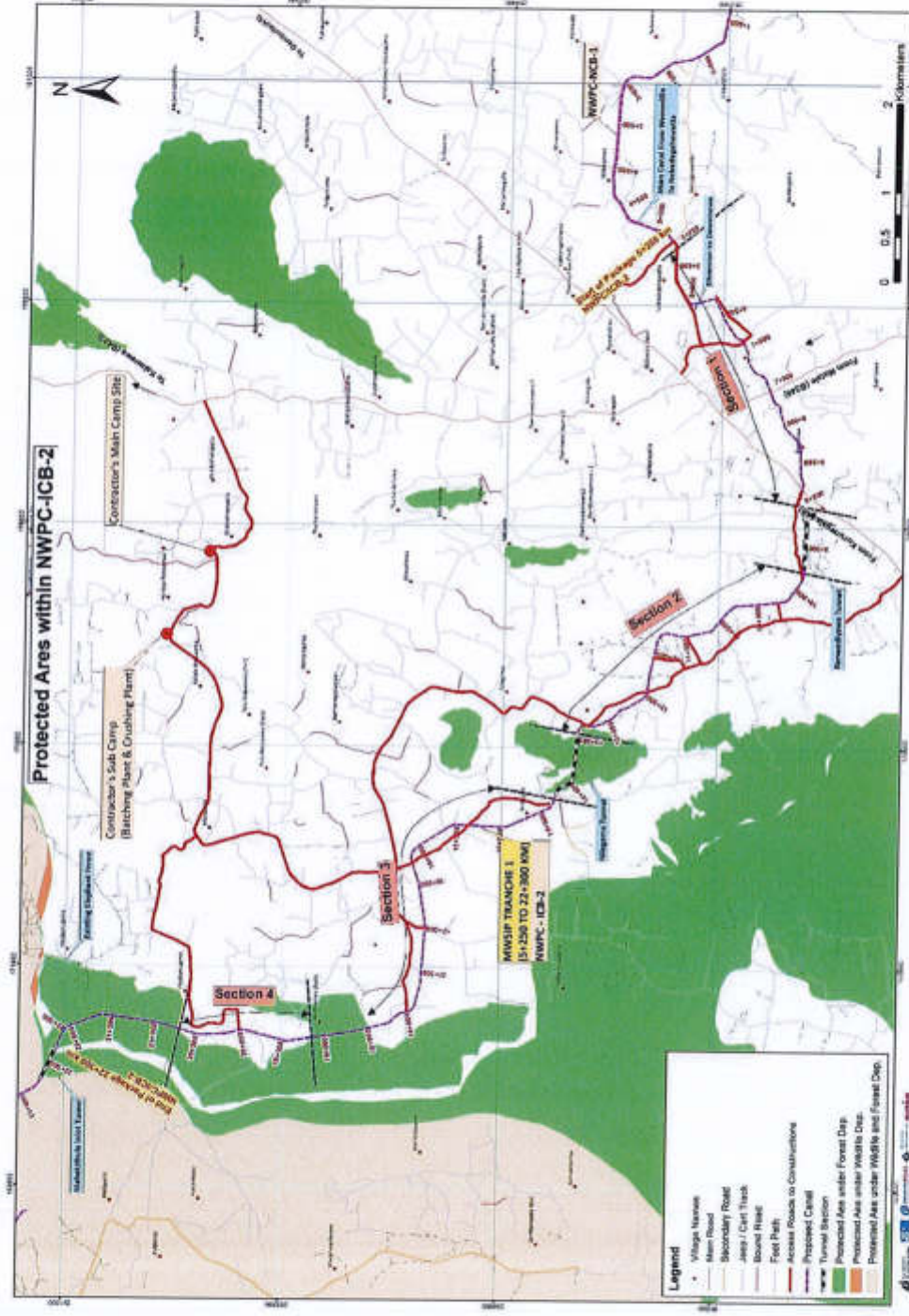


Figure 4-1: Tree survey sections under NWPCP-ICB-2 Area

5. KEY ACTIVITIES FOR NEXT REPORTING PERIOD (JANUARY - JUNE 2019)

87. Following activities are planned by PMDSC Environmental Team to comply with the ADB SP5 (2009) and GoSL environmental regulations:

- (i) Completing Ecological Baseline Survey and Species Translocation in NWPCP-ICB-2 ecologically sensitive areas identified during the tree enumeration and baseline ecological survey (by April 2019)
- (ii) Carrying out Environmental Quality Baseline survey in NWPCP-ICB-2 area (April 2019)
- (iii) Preparing addendum to the EIAs and updated EMPs for the upcoming NWPCP-ICB-3 and ICB-4 packages after carrying out required environmental surveys
- (iv) Implementing site restoration work under NWPCP-NCB-1

88. Awareness sessions will be carried out targeting the newly mobilized Contractors in the NWPCP-ICB-2 area.

89. Activities planned by the PMU/PIU Environmental Cell are as follows:

a. EIA & related activities

- (i) Tree removal – ICB-2
- (ii) WMP implementation activities
- (iii) Water quality monitoring
- (iv) Ground water level monitoring
- (v) Reforestation activities – NCB-1

b. Grievance Redress mechanism (GRM)

- (i) Conduct GRC meeting in NCB1 & ICB2 area
- (ii) Form GR Committees in ICB3 area

ANNEX 1

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மத்திய சுற்றாடல் அதிகாரசபை
Central Environmental Authority



පරිසර පිහස, 104, ඩෙන්සිල් කොබ්බෑකඩුව මාවත, බත්තරමුල්ල, ශ්‍රී ලංකාව.

"பரிசுர பியாச", 104, டென்சில் கொம்பேகடுவ மாவத்தை, பத்தரமுல்லை, இலங்கை.

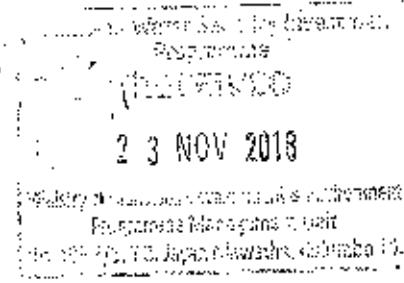
"Parisara Piyasa", 104, Denzil Kobbekaduwa Mawatha, Battaramulla, Sri Lanka. Web: www.cca.lk

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 எழுது தொழில்பா/1A/Water/07/2012
 Our Ref. Monitoring Vol-III

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 Your Ref.

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 திகதி
 Date } 08.11.2018

Program Director
 Program Management Unit
 Mahaweli Water Security Investment Program
 Ministry of Mahaweli Development & Environment



North Western Province Canal Project

This has reference to the Environmental Management Plan (EMP) submitted by you to this authority for the construction package 1 (NCB -1) and to the joint site inspection carried out on 20th and 21st September 2018 together with the monitoring committee appointed by the CEA for the above project.

1. We give below our observations on the EMP of NCB -1 package [(Wemedilla Left Bank Main canal up to Nabadagahawatta (0 to 5+250 km) and construction of new sluice and tail canal (0 to 0+600km)].

EMP should be upgraded considering the following;

- Site specific mitigation measures and connectivity with the implementation of project activities
- Financial statement for implementation of proposed mitigatory measures
- Auditing procedure for implementation of site specific mitigation measures
- Actions that need to be taken internally for non-compliances of implementation of mitigatory measures by the respective parties (eg. contractors)
- EMP review criteria during implementation of the project

2. Based on the observations made during the aforesaid inspection, we advise you to implement adequate mitigation measures for the following;

- Protection structures to avoid animal falling to deep cut sections of the canal trace during constructions.
- Locations and structures that need to be established for public access to the canal.

| | | | | | | | | | |
|-------------------------|--|-------------------------|--------------------------------|----------------------|--|---|-----------------------------|------------|----------------------------|
| Chairman | Tel : 2872361, 2872348 Fax : 2872347 | Director General | Tel : 2872359 Fax : 2872608 | General Office | Tel : 2872278, 2873447, 2873448 7877271-280 | -Complaint: 2888999 Compliance Monitoring: 2076152 | | | |
| Deputy Director General | HRD, Admin. & Finance Tel : 2865206 Fax : 2877515 | Envl. Pollution Control | Tel : 2873453 Fax : 2872605 | Envl. Mgt. & Assess. | Tel : 2872388 Fax : 2872196 | Envl. Edu. & Awareness | Tel : 2872297 Fax : 2872609 | Waste Mgt. | Tel : 287249 Fax : 2882152 |

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 See NCB
 write related
 para DSC.



- Locations and specifications of structures to be established or any modifications to the canal trace to provide free movement of animals across the canal and rescue of animals falling into the canal etc.

Therefore, you are hereby informed to submit the upgraded EMP considering the above and progress of implementation of EMP to the CEA in order for us to continue the monitoring activities.

You are also requested to submit the EMP for the rest of construction packages of the project.



Kanthi De Silva
Deputy Director General
Environmental Management & Assessment Division

CC: Director General, Irrigation Department - for your kind information
Project Director, NWP Canal Project - for information and necessary action

ANNEX 2

මහවැලි ජල සුරක්ෂිතතා ආයෝජන වැඩසටහන (ව.ප.ස.ආ.ව.)
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MMDE/MWSIP/ADB/NWPCP/3267-3268-SRI/CONSULT/HECM/NCB/2016/005

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| 2.0 | මහවැලි ජල සුරක්ෂිතතා ආයෝජන වැඩසටහන පිළිබඳ කෙටි හැඳින්වීම - කේ.ආර්.එස්. පෙරේරා (ජේ. උපදේශක- ම.ප.ස.ආ.ව.) වයඹ පළාත් ඇළ ව්‍යාපෘතිය පිළිබඳ හැඳින්වීම- ඩබ්. එම්.ඩී.විජේසිංහ (ව්‍යාපෘති ඉංජිනේරු - ව.ප.ඇ.ව) | |
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| 3.1 | වැඩසටහනේ අරමුණ පැහැදිලි කිරීම- පාරිසරික විශේෂඥ (ම.ප.ස.ආ.ව.) වනජීවී කළමනාකරණ හැඳුන්වීම ඒක ඒක කාර්යයන් ක්‍රියාත්මක කිරීමේදී ඒ ඒ ආයතන වල වගකීම හා කාර්යභාරය පිළිබඳ සාකච්ඡා කිරීම හා ක්‍රියාකාරී හැඳුන්වීම සම්පාදනය | |
| 3.2 | IUCN ආයතනය මගින් රේඛීය රාජ්‍ය ආයතන වලද අදාළ ලබාගත සම්පාදිත හැඳුන්වීම ඉදිරිපත් කිරීම හා සාකච්ඡාව, වනජීවී කළමනාකරණ හැඳුන්වීම ඒක ඒක කාර්යයන් ක්‍රියාත්මක කිරීමේදී ඒ ඒ ආයතන වල වගකීම හා කාර්යභාරය පිළිබඳ හැඳින්වීම හා එහි ක්‍රියාකාරී හැඳුන්වීම සම්පාදනය සිදුකරන ලදී. (මෙහෙයවීම- වෙරළොස් මහතා (FD), තවුපික් මහතා (DWC), සම්පත් මණ්ඩලය (IUCN), ඊකනායක මහතා (CCR) ඇතුළු සම්පත් ආයතනවලින්/ ඉදිරිපත් කිරීම- පරිසර විශේෂඥ (ම.ප.ස.ආ.ව) හා ජප.ප.හි(ව.ප.ඇ.ව.හ). | |
| අ) | මෙහිදී අදාළ ආයතන විසින් පහත යෝජනා හා අදහස් ඉදිරිපත් කරන ලදී. ව.ක.හැ.ක්‍රියාකාරී හැඳුන්වීමේ 6.5.1.2 (සතුන් සඳහා හදුනාගත් ප්‍රදේශ ප්‍රතිස්ථාපනය හා වාසතුම් සුපෝෂණය කිරීම) 1. මෙම වනාන්තර ප්‍රදේශ වල අයිතිය පිළිබඳ වෙනම හඳුනා ගැනීමක් මූලිකව සිදුකළ යුතුයි. - ව.ප.ඥ/ව.ජී.සං. දෙ 2. මෙහිදී අදහස් කරන ඇති ව.කි.මී 7.8 සමස්ත ප්‍රදේශයේ ප්‍රතිස්ථාපනය නොකළ යුතු බවත් මෙයින් වැඩි කොටසක් තෘණ භූමි ලෙස පවත්වාගත යා යුතු බවත් ප්‍රකාශ කරන ලදී- ව.ජී.සං. දෙ 3. කොරාගත් ප්‍රදේශ කිහිපයක ඇති කේන්ද්‍රික හා ඉවත් කිරීම මෙවන විටත් ආරම්භ කර ඇති බවත් රා.දැ.සං එම කටයුතු සිදුකරන බවත් දන්වන ලදී - ව.සං.දෙ 4. කේන්ද්‍රික ඉවත් කිරීමේදී මුල් සමයේ ඉවත් කළ යුතු බවත් රා.දැ.සං එසේ සිදු නොකරන බවත් දන්වන ලදී- ව.ජී.සං. දෙ/ව.ප.ඥ 5. මුල් ඉවත් කිරීම ව්‍යාපෘතියේ ව.ක.හැ ප්‍රතිපාදන වලින් සිදුකිරීමේ හැකියාව ඇති බව දන්වන ලදී - ම.ප.ස.ආ.ව. | වගකිවයුතු ආයතන හා කාර්යයන් ක්‍රියාකාරී හැඳුන්වීමේ දක්වා ඇත |

| | | | |
|-----|--|--|--|
| | | <div>2. මෙම කොට්ඨාසයේ මෙම ස්ථානයෙන් යොජනා කර ඇත්තේ ටේඩ්ලයේ කරවන ලද්දේ ලබාගත් දත්ත පදනම් කරගනිමින් ඒකාගාමීව සාමාන්‍ය සංරක්ෂණ පරිපාලන මධ්‍යස්ථානය</div> <div>3. අදාළ පාරිභෝගික ආයතන එනම් දී.ලේ හා ප්‍රා.ලේ වරින් හා අදාළ නිලධාරීන් සමඟ වෙනම සාකච්ඡා කිරීම කළයුතුයි - ම.ජ.සු.ආ.වැ</div> <div>මෙම සියලු කරුණු ද සලකා බලා ක්‍රියාකාරී කළයුතුම සංකේධනය කරන ලදී. (ඇමුණුම 3 බලන්න)</div> | |
| 3.3 | <div>ක්ෂේත්‍ර සම්ප්‍රදායික සහ සාකච්ඡාව- හක්වැටුණා සහ යෝජිත දළ පිටිසුම් ආශ්‍රිත පරිසරය හා පොකුණු වැව් අසල ප්‍රතිචාර වශයෙන් සඳහා යෝජිත ප්‍රදේශය නිරීක්ෂණය කළ අතර,</div> <div>1. එම ප්‍රදේශය හා ආවේණික ප්‍රදේශ වල සීමාවන් මුලිකව හඳුනාගැනීම සිදුකල යුතු බව වන සංරක්ෂණ දෙපාර්තමේන්තු නිලධාරීන් ප්‍රකාශ කරන ලදී.</div> <div>2. එමෙන් ආයතන සම්බන්ධීකරණය කිරීම පිණිස නිශ්චිත තහවුරක් නම් කරමින්, සැලසුම ක්‍රියාත්මක කිරීමේ ආයතනික ව්‍යුහය පිළිබඳ සාකච්ඡා කෙරිණි.</div> <div>3. තේ වැනි සංග්‍රහණ පැවති අතර, එවන් ආයතනික ව්‍යුහයක සාර්වකාන්තය පිණිස, අනන්‍ය ආයතනික සම්බන්ධතා වර්ධනය කරන මෙවන් ක්‍රමවේදවල වැදගත්කම සැලකීම පිළිගන්නා ලදී.</div> | | |
| 3.4 | පළමු දිනයේ වැඩසටහන් නිමාව | | |
| 4.0 | 2018.11.30 | | |
| | <div>වනජීවී කළමනාකරණ සැලැස්ම එක් එක් කාර්යයන් ක්‍රියාත්මක කිරීමේදී ඒ ඒ ආයතන වල වගකීම හා කාර්යභාරය පිළිබඳ සම්පාදිත සැලැස්ම ඉදිරිපත් කිරීම - පාරිකර්ම විශේෂඥ (ම.ජ.සු.ආ.වැ/ලේ. ප.නි.-ව.ප.ආ.වැ.)</div> <div>පෙර දිනයේ සාකච්ඡා කළ කරුණ වලට අදාළව සංකේධනය කරන ලද ක්‍රියාකාරී සැලැස්ම, එක් එක් ආයතන වල වගකීම හා කාර්යභාරය සම්බන්ධ ඉදිරිපත් කරන ලදී. මෙහිදී පැවති සාකච්ඡාවන් වලදී පහත සඳහන් කරුණ ඉදිරිපත් කරන ලදී.</div> | | |
| අ) | කහල්ල-පල්ලකැලේ රක්ෂිතයේ හඳුනාගෙන ඇති වැව් 10 පිළිගතර කිරීම 2019 වසරේ සිදුකල යුතු බවත් ඒ සඳහා වැ.ක.සැ ප්‍රතිපාදන වෙනස්කරන ලෙසත් වැඩසටහන් අධ්‍යක්ෂ- ම.ජ.සු.ආ.වැ ප්‍රකාශ කළ බව ප්‍රකාශ කරන ලදී. | | |
| ආ) | ප්‍රතිස්ථාපනයට යෝජිත ව.කි.මී.7.8(හෙක්.780) ප්‍රදේශයෙන් 90% ක් ම තෘණ භූමි ලෙස ප්‍රතිස්ථාපනය කළ යුතු බව නිකායා අධ්‍යක්ෂ- ව.ජ.සං.දෙප ප්‍රකාශ කරන ලදී. | වගකිවයුතු ආයතන හා කාර්යයන් ක්‍රියාකාරී සැලැස්මේ දක්වා ඇත | |
| ඇ) | යෝජිත ඇල දෙපස හරිත තිරයක් ලෙස සැකසීමේදී අවශ්‍ය වන පැළ, ව්‍යාපෘතිය හිස පිටාවට පත්වන ප්‍රජාවගෙන් මිලදී ගැනීමට වැඩ පිළිවලත් සැකසීම යොග්‍ය බවත් ඒ කුලීන් ඔවුන්ගේ ආර්ථිකය දියුණුකල හැකි බවත් වැඩසටහන් අධ්‍යක්ෂ- ම.ජ.සු.ආ.වැ ප්‍රකාශ කරන ලදී. | | |
| ඈ) | වැව් 50ක් පරිසර විද්‍යාත්මකව සැකසීමේ වැඩසටහන 2019 වසරේ සිට සිදුකල යුතු බවත් එල්ල-හා වැව් සංවර්ධන ව්‍යාපෘතිය හා සම්බන්ධ වී එකම එල්ලාගවන වැව් තොරතුරුම වඩා එළඳාගිය බවත් වැඩසටහන් අධ්‍යක්ෂ- ම.ජ.සු.ආ.වැ ප්‍රකාශ කරන ලදී. | | |
| ඉ) | දළ පිටිසුම් අංක 1 ස්ථාපනය සඳහා ප්‍රා.ලේ ගල්ගමුව, පාරිසාරික ලේගමුව හා මී සිය තේවාසික ව්‍යාපාර කාර්යාලය ඔවුන්ගේ අනුමැත්ත ගොවීන්ගේ දැඩි විරෝධය, අදහසාදන මැදිහත් වීම පැවතීම හා ප්‍රදේශයේ සාරවත්ම වෙල් යායක් වීම යන කරුණු පදනම්ව ප්‍රකාශ කළ අතර ඔවුන් දැනට යෝජිත දළ පිටිසුම් අංක 2 මී සිය පාලමේ සිට දුනට වෙනස්කර ඇති මී සිය රක්ෂිතය දිගේ පාළුකඩවල වැව් දක්වා දිගු කරන ලෙස යොජනා කරයි. මෙහිදී මීසිය රක්ෂිතයේ දැනට අනවසරයෙන් වගා කරන ගොවීන් ඉවත් කිරීමද අපහසු නොවන බව ප්‍රකාශ | | |

| | | |
|--|---|--|
| | <p>කණ්ඩායම 03 - ප්‍රාදේශීය ලේකම් කාර්යාල</p> <ul style="list-style-type: none"> සහකාර ප්‍රාදේශීය ලේකම් - පොල්විහිහම සහකාර ප්‍රාදේශීය ලේකම් - බල්ලමුට් සහකාර ප්‍රාදේශීය ලේකම් - අඹන්පොල සහකාර ප්‍රාදේශීය ලේකම් - මහව <p>කණ්ඩායම 04 - වාරිමාර්ග දෙපාර්තමේන්තුව/පළාත් වා.දෙ / ගොවිජන සංවර්ධන දෙ.</p> <ul style="list-style-type: none"> ප්‍රාදේශීය වාරිමාර්ග ඉංජිනේරු - බල්ලමුට් හා කුරුඹුගල ප්‍රධාන කාර්යාලය ප්‍රධාන වාරිමාර්ග අධිකාරී - පළාත් වා.දෙ පෝවාසික ව්‍යාපාර කළමනාකර - මී ඔය ව්‍යාපාරය ගොවිජන සේවා නිලධාරීන් - ඇහැටුරුව, මොරගොල්ලාමේ, නාගොල්ලාමේ, රබේ, මහව | |
|--|---|--|

සටහන් සහ සම්පාදනය

වි.එම්.ආර්.සේ.සේනාරත්න
ජේ.ප. නිලධාරී (ව.ප.ඇ.ව)

සටහන සහ සම්පාදනය

ටී.එම්.ආර්.කේ.තෙන්නකෝන්
ජේ.ප. නිලධාරී (ව.ප.ඇ.ව)

වැඩසටහනේ ඡායාරූප කිහිපයක්



ම.ජ.සු.අ. වැඩසටහන පිළිබඳ හැදින්වීම-
ස්වාධීන උපදේශක



ව.ප.ඇ. වියාපෘතිය පිළිබඳ හැදින්වීම-
ඉංජිනේරු (ව.ප.ඇ.ව)



පාරිසරික විශේෂඥ (ම.ජ.සු.අ.ව)
වැඩසටහන පිළිබඳ හැදින්වීම



වැඩසටහනේ අධ්යක්ෂතුමාගේ අදහස්
දැක්වීම



විශාලානි අධ්‍යක්ෂකත්‍රණයේ අදහස් දැක්වීම



කණ්ඩායම් අංක 04- කිරියාකාරකම



කණ්ඩායම් අංක 03- කිරියාකාරකම



කණ්ඩායම් අංක 02- කිරියාකාරකම



කණ්ඩායම් අංක 01- කිරියාකාරකම



කණ්ඩායම් අංක 01- ව්‍යාපෘති සංරක්ෂණ දෙපාර්තමේන්තු ඉදිරිපත් කිරීම



කණ්ඩායම් අංක 02- වන සංරක්ෂණ දෙපාර්තමේන්තු ඉදිරිපත් කිරීම



කණ්ඩායම් අංක 03- ජරා.ලේ කාර්යාල ඉදිරිපත් කිරීම



කණ්ඩායම් අංක 04- ඉදිරිපත් කිරීම



ක්ෂේත්ර නිරීක්ෂණය අතරතුර සාකච්ඡාව - පොතුච්ඡ ක්ෂේත්ර නිවහන

ඩී. ඩී. දිසානායක
 Dept. of Wildlife Conservation
 වගකිවිලි සාර්ගයන්

1. සම්බන්ධීකරණ ඉදිරිය.

$$DH \rightarrow DO \rightarrow DD(FC)$$

தேவதீக்ஷை சூத்ரம் காந்தியம்

- ① දිවුල්ල හා : කි විසි කිසි කැසිලි (සෙසි කැසි)
 ② ප්‍රාදේශීය පොතපත් කැසිලි
 ③ ප්‍රාදේශීය පොතපත් කැසිලි (සෙසි කැසි)
 ④ ප්‍රාදේශීය පොතපත් කැසිලි (සෙසි කැසි)
 ⑤ ප්‍රාදේශීය පොතපත් කැසිලි (සෙසි කැසි)
 ⑥ ප්‍රාදේශීය පොතපත් කැසිලි (සෙසි කැසි)
 ⑦ ප්‍රාදේශීය පොතපත් කැසිලි (සෙසි කැසි)
 ⑧ ප්‍රාදේශීය පොතපත් කැසිලි (සෙසි කැසි)
 ⑨ ප්‍රාදේශීය පොතපත් කැසිලි (සෙසි කැසි)
 ⑩ ප්‍රාදේශීය පොතපත් කැසිලි (සෙසි කැසි)

ಪ್ರತಿಪದ್ಯಾಚಾರ್ಯ

- ① ප්‍රතිපත්ති හා දේශීය වෙනස්කම්
- ② පරිපාලන හා ප්‍රතිපත්ති, ප්‍රතිපත්ති ප්‍රතිපත්ති
- ③ නිවැරදි ලිපි ප්‍රතිපත්ති හා ප්‍රතිපත්ති
- ④ ප්‍රතිපත්ති ප්‍රතිපත්ති ප්‍රතිපත්ති

කණ්ඩායම් 3 - ඉදිරිපත් කළ විස්තරය

- [illegible]

කණ්ඩායම් 4 - ඉදිරිපත් කළ විස්තරය

ANNEX 3

වනජීවී කළමනාකරණ සැලැස්ම ක්‍රියාත්මක කිරීම

1.කුඩාවැව් 50ක් පරිසර විද්‍යාත්මකව ප්‍රතිසංස්කරණය කිරීම

1.1 ප්‍රථම අදියර යටතේ පොල්පිනිගම කුඹුකුලාව එල්ලංගාවේ කුඩා වැව් 7 පරිසර විද්‍යාත්මකව ප්‍රතිසංස්කරණය

නියමිත ව්‍යාපෘතියක් ලෙස පරිසර විද්‍යාත්මකව ප්‍රතිසංස්කරණයට යෝජිත වැව් ලේඛණය (කුඹුකුලාව එල්ලංගාව)

| වැවේ නම | ග්‍රා.නි. වසම | ගොවි සංවිධානයේ නම | වැවේ ප්‍රමාණය(අක්කර) | වැව අයත් ගම | ප්‍රා.ලේ. කොට්ඨාශය | එල්ලංගාවකට අයත්නම් එල්ලංගාවේ නම |
|----------------------------|---------------|---|----------------------|-------------|--------------------|---------------------------------|
| කුඹුකුලාව මහ වැව | කුඹුකුලාව | කුඹුකුලාව ගොවි සංවිධානය | 56.53 | කුඹුකුලාව | පොල්පිනිගම | කීර්තිනාගොඩ එල්ලංගාව |
| ඉගළ කුඹුකුලාව වැව | කුඹුකුලාව | කුඹුකුලාව ගොවි සංවිධානය | 5.05 | කුඹුකුලාව | පොල්පිනිගම | කීර්තිනාගොඩ එල්ලංගාව |
| අමුණුකොලේ අමුණ/බෝගහමුල වැව | අමුණුකොලේ | එක්සත් ගොවි සංවිධානය- අමුණුකොලේ බෝගහමුල වැව | 17.69 | අමුණුකොලේ | පොල්පිනිගම | කීර්තිනාගොඩ එල්ලංගාව |
| මාවත වැව | පොල්පිනිගම | පැරකුම් ගොවි සංවිධානය | 5 | පොල්පිනිගම | පොල්පිනිගම | - |
| පොල්පිනිගම කුඩා වැව | පොල්පිනිගම | කීර් පැරකුම් ගොවි සංවිධානය | 7 | පොල්පිනිගම | පොල්පිනිගම | කීර්තිනාගොඩ එල්ලංගාව |
| පොල්පිනිගම මහ වැව | පොල්පිනිගම | කීර් පැරකුම් ගොවි සංවිධානය | 17 | පොල්පිනිගම | පොල්පිනිගම | කීර්තිනාගොඩ එල්ලංගාව |
| අළුත් වැව | කුඹුකුලාව | කුඹුකුලාව ගොවි සංවිධානය | 7.37 | කුඹුකුලාව | පොල්පිනිගම | |

නියමු ව්‍යාපෘතියක්

ලෙස පරිසර

විද්‍යාත්මකව

ප්‍රතිසංස්කරණය

සෞචික වැඩ (කඩකලාව එස්ලංගාව)



කුඹුකුලාව මහ වැව



මහ වැව



ආවක් වැව



මුහුකොළේ අමුණ



අළුත් වැව



හළ කුඹුකුලාව



කුඩා වැව

