

# Environmental Monitoring Report

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Project Number: 43319-033

Loan 2983-CAM (COL), Loan 8265-CAM (SCF)

Grant 0334-CAM (UEIF), Grant 0335-CAM (SCF)

Semi-Annual Environmental Monitoring Report (July to December 2021)

January 2022

## Cambodia: Greater Mekong Subregion Southern Economic Corridor Towns Development Project

### Neak Loeung Flood Control Subproject

Prepared by the Ministry of Public Works and Transport for the Asian Development Bank.

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# Environmental Monitoring Report

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The 9<sup>th</sup> Semi-Annual Environmental Monitoring Report  
(July to December 2021)  
January 2022

## CAMBODIA: Greater Mekong Sub Region Corridor Towns Development Project

(GMS: Southern Economic Corridor Towns Development Project)

**LOAN 2983(SF)/8265(SCF), GRANTS 0334(UEIF)/0335(SCF)-CAM**

### **Sub-projects of Neak Loeung**

**Prepared by:**

Project Management Unit of the Ministry of Public Works and Transport (PMU/MPWT).

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## ABBREVIATIONS

ADB	-	Asian Development Bank
CEMP	-	Construction of Environmental Management Plan
CSCS	-	Consultancy Services for Construction Supervision
EA	-	Executing Agency
ECO	-	Environmental Control Officer
EMC	-	Environmental Monitoring Consultant
EMP	-	Environmental Management Plan
EMR	-	Environmental Monitoring Report
ESMU	-	Environmental and Social Management Unit
GMS	-	Greater Mekong Sub region
IEE	-	Initial Environmental Examination
MRF	-	Material Recovery Facility
MPWT	-	Ministry of Public Works and Transport
MOE	-	Ministry of Environment
PDPWT	-	Provincial Department of Public Works and Transport
PMU	-	Project Management Unit
PIU	-	Project Implementation Unit
PISCD	-	Project Implementation Support and Capacity Development
PPE	-	Personal Protective Equipment
SPS	-	ADB Safeguard Policy Statement (2009)
WWTP	-	Wastewater Treatment Plant
UXO	-	Unexploded Ordnance

## I. EXECUTIVE SUMMARY

### Introduction:

1. This report is the 9<sup>th</sup> Semi-annual Environment Monitoring Report (SEMR) covering the period of July to December 2021 of Southern Economic Corridor Towns Development Project (SECTDP) which has been continuous updated from the 8<sup>th</sup> SEMR, and prepared to fulfill the safeguard policy requirement of ADB; the Project is Category B for environmental safeguards. This report is prepared by the Project's Environmental Safeguard Consultant.

2. The report provides information on environmental progress and concerns for the implementation stage of the sub-project. For this report presents supervision of construction work activities, the progress of the civil works of the sub project and consultant's role for the required task as defined in the scope of work of the supplementary assistance. Additionally, construction works of six (6) sub projects contracts were finished and handed over completely in 2020 as the following: 1) CW 01a: Construction of additional works for 3 MRFs building (completed on 25 April 2020); 2) Construction of MRFs Building at Battambang, Bavet & Poipet (completed on 24 August 2018) ; 3) CW5: Improvement of Urban Road Section at Bavet (completed on 30 July , 2020 and the defects liability period ended on 30 July 2021); 4) CW06: Battambang Storm Drainage (completed and handed over to Employer on 31 December 2019 and the defects liability period ended on 31 December 2020); 5) CW 07: Poipet Storm Drainage (completed on 31 July, 2020, and handed over to the Employer on 14 August 2020 and defects liability period ended on 31 July 2021); 6) CW 08: Bavet Storm Drainage (completed on 22 November 2020 and the defects liability period ended on November 2021 as the details indicated in Table 1). CW 10: Neak Loeung Flood Control subproject was awarded on 14 December 2020 and construction works started on 5 April 2021.

3. The findings are based on the reviewing of: 1) monthly engineering progress reports from Consultancy Services for Construction Supervision (CSCS), the monthly reports from July to December, 2021; 2) The Quarterly reports from Project Implementation Support and Capacity Development Consultants (PISCD); 3) monthly progress reports submitted by the Contractors; and 4) visual findings obtained during the site visit of site-specific monitoring by the Environmental Safeguards Consultant of the PMU, and PISCD Environmental Specialist.

**Table 1: Project Overview, Snapshot of Project Progress**

<b>Project Number and Title:</b>	Loan 2983–CAM(SF); Loan 8265 – CAM(SCF); Grant 0334 – CAM(UEIF); Grant 0335–CAM(SCF), GMS: Southern Economic Corridor Towns Development Project	
<b>Safeguards Category</b>	Environment	B
<b>Reporting period:</b>	01 July to 31 December 2021	
<b>Last report date:</b>	January - June 2021 (July 2021)	
<b>Key sub-project activities since last report:</b>	<b><u>Completed and Handed Over Contracts:</u></b> As of 31 December 2021, the subprojects have completed and handed over contracts as below:	

	<p>I- The construction of additional works for 3MRFs (CW01a) was completed on 25 April 2020,</p> <p>II- Construction of MRFs Building at BTB, Bavet, and Poipet, the general civil works was completed on 24 August 2018;</p> <p>III- CW05: Subproject Improvement of Urban Road Section at Bavet was completed the project on 30 July 2020 and the defects liability period ended on 30 July 2021;</p> <p>IV- CW06: Battambang Storm Drainage subproject was completed and handed over to the Employer on 31 December 2019 and the defects liability period ended on 31 December 2020;</p> <p>V- CW07: Poipet Storm Drainage subproject was completed on 31 July 2020, and handed over to the Employer on 14 August 2020; and the defects liability period ended on 31 July 2021; and</p> <p>VI- CW08: Bavet Storm Drainage subproject was completed on 22 November 2020. And the defects liability period ended on 22 November 2021.</p> <p><b><u>Ongoing Contracts:</u></b> During this period, Neak Loeung Flood Control Subproject (CW10) was contracted an award on 14 December 2020 and commencement of civil work since 05 April 2021. The overall physical progress is 17% of the civil work.</p>
<b>Report prepared by:</b>	PMU under technical support from Environmental Safeguard Consultant
<b>Report checked by:</b>	PMU-MPWT

#### Summary of Construction Progress:

4. As of 31 December 2021: CW10: Construction of Neak Loeung Flood Control Dike is at overall physical progress of 17%.

#### Summary of EMP Implementation:

5. Construction works are proceeding in accordance with the provisions of the EMP such as reviewing of monitoring report format, regulatory compliance action plan and camp layout review and preparation of site camp and approval by local authority. The Contractor's Construction Environmental Monitoring Plan (CEMP) is successfully being implemented by the Contractor through the PISCD (Environmental Expert) engaged by executive agency with the approval of PMU.

6. The field monitoring found that some of the mitigation measures are being implemented by the Contractors are:

- Protective measures against COVID-19 have been implemented in camp sites and sub-project site in Neak Loeung Flood Control (CW10);
- Use of approved borrow pit/quarry areas of subproject;
- Sprinkling of water on access roads is ongoing carried out regularly at Neak Loeung Flood Control during compaction works,

- Provision of sufficient PPE to workers, and staffs at work site,
- Facilities at workers' camp site such as proper accommodation rooms, kitchen, gender-segregated toilets, gender-segregated shower rooms, septic tank, proper electricity connection, potable water, waste bins, fire extinguisher, first aid kits and safety kits (Covid-19 prevention) are in place.
- Hiring of unskilled workers including women were observed at Neak Loeung Flood construction sites.
- Traffic signs has been using and flagmen have been working to manage the traffic.
- GRM signboards are at campsite, constructing site and commune hall.

#### Summary of Monitoring Activities:

7. The following activities were undertaken for the six (6) months (July – December 2021):

Role	Activity	Number
PIU	Consultation visit	3 times
CSCS	Monthly reports	6 reports
PISCD	Site inspections	4 times
PMU	Monitoring	6 times
ADB	Mission	None

8. Environmental quality monitoring for this period is summarized in Table 2. Note that the “EMP” columns indicate the number of monitoring rounds that are required to be carried out during this reporting period in accordance with the EMP. This table only applies to subprojects where construction contracts have been awarded and where has started.

**Table 2: Summary of Environmental Quality Monitoring July – December 2021**

Neak Loeung Flood Control Subproject (CW10)				
Issued Monitored	Location	Actual Jul-Dec. 2021	Results of Environmental Quality	National Standard
Air Quality	Two locations: - P0530903/1242067 - P0532526/1244023	05 August 2021	The results of air quality, noise level and vibration level examination are met with the ambient air quality, noise and vibration standard of Cambodia.	CO (<20), NO <sub>2</sub> (<0.1), SO <sub>2</sub> (<0.3), PM <sub>10</sub> (<0.05), PM <sub>2.5</sub> (<0.025), Pb (<0.005)
Noise	Two locations: - P0530903/1242067 - P0532526/1244023	05 August 2021		Day time (75), Evening (70), Night (50)
Vibration	Two locations: - P0530903/1242067 - P0532526/1244023	05 August 2021		Day time (65), Night time (60)
Surface	Two locations:	05	Based on the results	pH (6.5-8.5),



Water	- P0531353/1241996 - P0531022/1242066	August 2021	indicated that most of parameters are met with the standards of the water quality standard of Cambodia, except some parameters of surface water (DO and Total Coliform of SW-01) are slightly higher than the water quality standard of Cambodia. It can conclude that the water qualities of 2 stations are still in good quality.	DO (7.5-2.0), TDS (<1000), TSS (25-100), BOD <sub>5</sub> (1.0-10), COD (<50), Total Coli form (<5000)
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### Summary of Occupational Health and Safety Issues

9. CW10: Construction of Neak Loeung Flood Control subproject was observed:
- All workers are using PPE properly and regularly, e.g. The workers wear face-mask all the time.
  - Workers living in camp site are also regularly checked the temperature in every day to comply with COVID-19 prevention measures. However, in middle of August three drivers got COVID-19 infection from their families and other workers were tested with no COVID-19 infection and went into quarantine for 14 days by following the Ministry of Health's instruction.
  - The safety signages at the active construction sites are installed at the right places.

### Summary of Consultation Activities:

10. The Contractor and PMU/PIU officials have met local people and local authority in the project area to inform them about the construction works.
11. The training on Environmental Monitoring, GRM and Covid-19 prevention was conducted on 22 September 2021.

### Summary of Key Issues/Complaints, GRM and Actions in Response to Complaint:

12. Various proactive measures are being taken to implement project in compliance with requirements, prevent damage to heritage structures, coordinate with relevant agencies, communicates with the public and address grievance of the local residents. Areas such as public communications, document and reporting need further enhancement.
13. For this period (July – December 2021), there is no issue and complaint encountered during Q3&Q4 2021.

### Conclusion:

- 1) In conclusion, by the end of December 2021, Neak Loeung Flood Control subproject (CW-10) has commenced civil works since April 05, 2021. The contractors should continue the implementation of the Environmental Monitoring Plan, perform self-monitoring including

the preparation of monthly environmental monitoring report. For example: The Monthly Reports with properly documentation should be submitted on time to PMU/MPWT and the PISCD.

2) The actions recommendations during previous monitoring period (the 8<sup>th</sup> EMR) have been implemented.

- i) Conducting environmental quality monitoring by contractor as soon as possible;
- ii) Organizing training on Environmental Management Plan (EMP), and GRM as well as COVID-19 prevention measures to relevant stakeholders by National Environmental Consultant of PISCD; and
- iii) Keep good performance of Implementation of the EMP/CEMP for Neak Loeung Subproject.

3) There were not serious significant environmental impacts observed during the reporting period. Although, the health and safety plan regarding to the prevention of COVID-19 has been strictly monitored and restricted at the camp site, and construction site. In middle of August three drivers got COVID-19 infection from their families and other workers were tested with no COVID-19 infection and went into quarantine for 14 days by following the Ministry of Health's instruction. A few short-coming on follow-up with regulatory agencies, regular technical support by supervision consultant environment expert, public communications, documentation and reporting were observed on time, and providing sufficient traffic signs at construction site for Neak Louerng Flood Control subproject, GRM signboards in places. Additionally, environmental quality monitoring was conducted to comply with the EMP. Also, the training on environmental management plan and GRM as well as COVID-19 prevention measures was organized.

4) There are several follow-up activities for next reporting period are described as below:

- Conducting environmental quality monitoring by contractor according to EMP/CEMP;
- Keep implementing COVID-19 prevention measures strictly both at camp site and constructing site;
- Keep good performance of Implementation of the EMP/CEMP for Neak Loeung Subproject.

## **II. PROJECT OVERVIEW, GENERAL SAFEGUARD MATTERS**

### **1. Project Overview**

5) The project will improve urban infrastructure and service delivery has been progressing the civil works of the three subprojects of the said towns (Bavet, Battambang, and Poipet) over the period of 4 years (2017 to 2021), and the Neak Loeung Flood Control Subproject (CW-10) has been contracted an award and under construction.

6) As of December 31, 2021, construction works of six (6) sub projects contracts were finished and handed over completely in 2020 as the following 1) CW 01a: Construction of additional works for 3 MRFs building (completed on 25 April 2020); 2) Construction of MRFs Building at Battambang, Bavet & Poipet (completed on 24 August 2018); 3) CW5: Improvement of Urban Road Section at Bavet (completed on 30 July 2020 and the

defects liability period ended on 30 July 2021); 4) CW06: Battambang Storm Drain (completed and handed over to Employer on 31 December 2019 and the defects liability period ended on 31 December 2020); 5) CW 07: Poipet Storm Drainage (completed on 31 July 2020 and , and handed over to the Employer on 14 August 2020 and defects liability period ended on 31 July 2021); 6) CW 08: Bavet Storm Drainage (completed on 22 November 2020 and the defects liability period ended on 22 November 2021). The campsites for these subprojects were cleaned up and returned to owners as it states in the SEMR for July-December 2020. On the other hand, CW 10: Neak Loeung Flood Control subproject was contracted an award on 14 December 2020 and commenced construction works since on 05 April, 2021.

7) **Impact and Outcome:** The impact has been improved living environment in Project towns. The outcome has been improved municipal service delivery and urban infrastructures in the Project towns.

## 2. Project Progress

### 2.1 Contract Signed

8) In this period, Subproject for Neak Loeung Flood Control has been contracted on 14 December 2020 and commencement of civil work has started since 05 April 2021 as showing in the table below:

**Table 3: Contract Signed**

Contract Signed					
Package No.	Sub Project	Contract Period (days)	Date of start work	Date of completion	Contractors
CW10	Neak Loeung Flood Control	911	05-Apr-2021	30-July-23	M.T.A Construction Co., Ltd

Source: Monthly progress report (August, 2021) of CSCS

### 2.2 Civil Work Progress against Schedules of 31 December 2021:

9) The overall progress of physical infrastructure subprojects is considered on time despite there is a minor delay in contract award for CW-10 and updated detailed RP.

**Table 4: Civil Work Progress (%) against Schedules**

Progress as of 31 December 2021	CW-10	Total
Planned (%)	15 %	100
Actual (%)	17 %	113
(%)	+13 %	+13%

## 3. Safeguard Plans Implementation Arrangements & Documentation

### 3.1 Roles and Responsibilities in EMP Implementation and Monitoring

10) The environmental management plan (EMP) defines the institutions and responsibilities for environmental safeguards and EMP implementation as follows:

- 1) Ministry of Public Works and Transport (MPWT/PMU) is the executing agency (EA)

of the subprojects;

2) The Provincial Department of Public Works and Transport (PDPWT/PIU) at the provincial level is the implementing agency (IA) of the subprojects;

3) The project management unit (PMU) formed by the EA oversees implementation of the subproject of Neak Loeung flood control;

4) A PMU environmental control officer (ECO) is identified;

5) The ECO will form part of the environmental and social management unit (ESMU) for the subproject.

11) The roles and responsibilities for EMP implementation and monitoring are described in Table 4:

**Table 5: The roles and responsibilities of the different in EMP implementation and monitoring**

Agency	Roles/ Responsibilities
The EA/PMU	<ul style="list-style-type: none"> <li>- Overall responsibility for subproject implementation and establishment of the subproject Management Unit (PMU);</li> <li>- Approve medium term and annual rolling plans for subproject implementation;</li> <li>- Ensure compliance of Loan Covenants;</li> <li>- Approve procurement plans, bidding documents including EMP, bid evaluation and contract awards;</li> <li>- Submit regular quarterly and annual subproject reports to ADB;</li> <li>- Ensure compliance of subproject implementation with ADB's social and environmental policies and guidelines;</li> </ul>
The IA/PIU	<ul style="list-style-type: none"> <li>- Coordinate and monitor subproject activities of the PIU;</li> <li>- Support PIU in carrying out the approved annual rolling plans including EMP related activities;</li> <li>- Coordinate and provide capacity development program for PIU;</li> <li>- Obtain necessary approvals from respective departments prior to awarding of civil works contracts;</li> <li>- Support PIU in the implementation of EMPs;</li> <li>- Coordinate regular reporting of PIU to EA on EMP implementation;</li> <li>- Undertake regular quality control inspection of subproject facilities;</li> <li>- Manage the handover of subproject facilities to agencies responsible for operation and maintenance.</li> <li>- Prepare and submit regular quarterly and annual subproject reports;</li> <li>- Supervise civil works contractors;</li> <li>- Ensure that EMPs are incorporated in the detailed designs and included in civil works contracts;</li> <li>- Ensure EMP implementation; submit regular monitoring reports to IA and EA; and</li> <li>- Monitor EMP implementation</li> </ul>
Contractor	<ul style="list-style-type: none"> <li>- Preparation of CEMP, and conduct monitoring environmental items basically and follow-up all activities at the project sites, camp site, and other material yards.</li> <li>- Daily/Weekly and monthly monitoring</li> <li>- Health, Safety and Environment (HSE) report Monthly</li> <li>- Provide sufficient funding and human resources for implementation of the EMP</li> </ul>

	<ul style="list-style-type: none"> <li>- Ensure proper and timely implementation of required pre-construction and construction mitigation measures in the EMP</li> <li>- Implement additional environmental mitigation measures, as necessary.</li> </ul>
Project Implementation Support and Capacity Development Consultant (PISCD)	<ul style="list-style-type: none"> <li>- Review and update the IEE reports and EMPs;</li> <li>- Ensure that environment management plans (EMP) and related environmental considerations are factored in detailed designs and technical engineering of the urban infrastructure subprojects under the Project;</li> <li>- Conducts environmental safeguards due diligence assessments;</li> <li>- Assess the capacity development needs of Project Staff on environment safeguards measures and recommend appropriate capacity building interventions and training programs, including the preparation of TOR for independent environment monitoring, as may be necessary;</li> <li>- Ensure that environment safeguards measures are adequately considered in the bidding documents and in the evaluation criteria for selection and awarding of contracts for civil works, goods and services;</li> <li>- Coordinates, advise, assist on environment related concerns during the Project implementation and recommend appropriate action plans, and assist in monitoring implementation of environmental safeguards, including the impact environmental measure on urban sector development.</li> </ul>
Consultancy Services for Construction Supervision (CSCS)	<ul style="list-style-type: none"> <li>- Provided overall responsibility of conducting all the project work</li> <li>- Review the contractor's method statement and work program to ensure conformity with the Environment Management Plan (EMP)</li> <li>- Other safeguard regulations (including resettlement, gender and other social safeguard issues).</li> </ul>
Environmental Monitoring Consultant (EMC)	<ul style="list-style-type: none"> <li>- Review environmental indicators;</li> <li>- Verify the compliance with statutory requirements prior to construction, e.g. government approvals, permitting, certificates set by government;</li> <li>- Assess reports of internal monitoring determine if adverse environmental impacts are being mitigated properly;</li> <li>- Monitor the implementation of individual management plans;</li> <li>- Conduct periodic site inspections to ensure that measures in the EMPs are being implemented;</li> <li>- Determine the overall performance of the EMP;</li> <li>- Formulate necessary measures/actions to resolve problems to improve EMP implementation;</li> <li>- Prepare external monitoring reports (Semi-annual of Environmental Monitoring Report) submit to PMU and ADB; and</li> <li>- Prepare the completion report will highlight important findings, lesson, best practices to be considered and/or replicated in future similar undertakings.</li> </ul>

12) The following table confirms the status of the key roles for EMP implementation:

**Table 6: Status of Environmental Safeguards Roles**

Role	Status and Issues
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PISCD Environmental Specialist	Date started – April 2018 – Full Time
CSCS	Work commenced on Feb. 15, 2018 – full time
PIU – Safeguards Team/officer	PIU Safeguards Team for Neak Loeung Flood Control sub-project is in place.
PMU- Environmental Control Officer (ECO)	Date started: Feb. 2013 (date of loan sign), counterpart time
Environmental and Social Management Unit (ESMU)	2 staffs were identified for the project and started working together with PMU since loan effective on April 2013.
Contractor – Environmental staff for Neak Loeung sub-project	Start the work since 29 June 2021

13) **Contractors:** has willingness to implement environmental safeguards mitigation measures to ensure that the EMP/CEMP of the sub-project are complied with.

14) **PISCD and CSCS:** are continually providing support to the PMU/PIU and the Contractors through close inspection of implementation of the environmental management measures and daily compliance at site. The PSCD regularly submits reports to PMU on monitoring of EMP implementation and compliance of Contractors, which serve as the bases for PIU to provide close guidance at site.

15) **PMU:** Aside from assigning technicians for each package, the PMU have also assigned staff to monitor the EMP implementation for the whole Project. The PMU leaders and staff in charge of each package, have been aware of responsibilities of the implementation of environmental impacts mitigation measures of each package. The PMU staffs are in close coordination with the PIU, thus compliance to the update EMP is gradually improving.

### 3.2 Monitoring and reporting System on Environmental Safeguards

16) Project staff (PMU, PIU), and the Contractors were oriented at the beginning of the subproject implementation on environmental compliances including procedures for monitoring and reporting as well. PIU established a system with support of PISCD to monitor on environmental safeguards of the subproject including identify the indicators was set out in the monitoring plan of the EMP.

### 3.3 ADB Approvals

17) The IEE and separated EMP for the Neak Loeung Food Control Subproject were updated and submitted to ADB in January 2020. ADB issued a NOL for the updated IEE and EMP on 03 February 2020.

18) Additionally, ADB provided NOL for commencement on civil works for CW10 on 05 April 2021. The following table confirms the status of the Borrower's Environmental Management Plan for the sub-projects:

**Table 7: Status of IEE/EMP report for the subproject**

Report Type	PMU Submitted	Submitted to MOE	ADB provided NOL
IEE&EMP report of Neak Loeung Flood Control	PMU submitted the letter to MOE on May 08, 2019	<ul style="list-style-type: none"> <li>- MOE confirmed on 21 Aug. 2019</li> <li>- EMP was approved on 13 April 2020</li> </ul>	03 February 2020

### 3.4 CEMP Approvals

19) As of December 2021, CEMP for Neak Loeung Flood Control Subproject has been approved in 15 March 2021 (Table 8).

**Table 8: CEMP Approvals Status**

CW Package	Role	Status and Issues	Further Updated Needed?
CW10	Neak Loeung Flood Control Subproject	- Approved by PMU 15 March 2021	- No

## III. ENVIRONMENTAL PERFORMANCE MONITORING

20) Performance monitoring is required to assess the overall performance of the EMP. A performance monitoring system is normally developed by the EA for the entire subproject. Select indicators of major components of the environment that will be affected primarily by the construction phase are drawn from the mitigation and monitoring plans and summarized in the Table 9.

21) This section presents the compliance status of Environmental Management and Monitoring Plan of the subproject under implementation stage.

### 1. Status of EMP Implementation (Pre-Construction)

22) The subproject requires to specify in the EMP with respect to: (i) design measures and public disclosure; (ii) project boundaries/location and change alignment; (iii) environmentally responsible procurement; (iv) allocation, staff mobilization and environmental capacity development; (v) unexploded ordnances if necessary; (vi) updating EMP, and reporting.

### 2. Compliance with the EMP during Construction – Neak Loeurng Flood Control subproject

23) The following table summarizes the compliance with EMP mitigation measures for flood control sub-project at Neak Loeurng. The table uses the EMP requirements from the EMP specific to the subproject.



**Table 9: Neak Loeung Flood Control EMP Compliance – July-December 2021**

	<b>EMP Requirement</b>	<b>Compliance during this reporting period (Yes, No, Partial or Not Applicable)</b>	<b>Reasons for Not Full Compliance</b>	<b>Further Action to Take</b>	<b>Date for Action</b>	<b>Who will Implement Action</b>
1	Management of Worker camps	Yes		None		
2	Land clearing (loss of trees, vegetation, and landscape)	Yes		None		
3	Traffic Management	Yes		None		
4	Solid and Liquid Construction Waste Management	Yes		None		
5	Erosion Control	Yes		None		
6	Air, noise pollution and vibration control	Yes		None		
7	Utility and Power disruption	Yes		None		
8	Public and workers' health and safety	Yes		None		
9	Civil works – water quality & aquatic resources	Yes		None		
10	Cultural heritage/ property damage/ chance finds	Yes		None		
11	Extraction from quarries or borrow pits	Yes		None		
12	closure of construction sites	Not Applicable		Construction is still going on		

24) For all 'Partial' or 'No' compliance issues in the table above, the actions needed to solve the compliance issues are in the table below:

**Table 10: Neak Loeung Flood Control EMP Compliance Actions Needed**

	<b>EMP Requirement</b>	<b>Reasons for Not Full Compliance</b>	<b>Further Action to Take</b>	<b>Date for Action</b>	<b>Who will Implement Action</b>
	No need	-	-	-	-

25) The table below follows up on issues from previous Environmental Monitoring Reports for this subproject. This table confirms that the action was completed or that the action is outstanding.

**Table 11: Neak Loeung Flood Control – Follow Up on Outstanding Issues from Previous Reports**

<b>Issue</b>	<b>Required Action</b>	<b>Responsibility and Timing</b>	<b>Resolution</b>
None			



### 3. Health and Safety Performance Monitoring

26) Site inspection during this period (July to December 2021) was carried out on 28 December 2021, the health and safety measures have been implementing properly according to the plan in order to prevent accidents and health hazards. Based on interviewed with some workers they confirmed that PPEs (gear, helmets, jackets, boots etc.) has been provided by Contractor. Also, the hygienic conditions and facilities such as availability of sufficient drinking water, electricity, first aid, fire extinguisher, mosquito nets etc. of site camps at Neak Loeung were also monitoring. COVID-19 prevention measures have been implemented strictly and all workers are not allowed to have contact with local people or go outside the construction site and campsite as there are many cases of COVID-19 infection at Neak Loeung. Also, facial masks, alcohol/soap are provided to workers and daily temperature control is done for every worker to ensure the safety. However, in middle of August three drivers got COVID-19 infection from their families and other workers were tested with no COVID-19 infection and went into quarantine for 14days and the camp site was sprayed with anti-COVID-19 by following the Ministry of Health's instruction. After, 14 days of quarantine, the works were resumed and infected drivers came to work after 30 days from infected date with negative test results.

Table 12: Neak Loeung Subproject (Flood Control) EHS Compliance –July - December 2021

	EHS Requirement	Compliance during this reporting period (Yes, No, Partial or Not Applicable)	Reasons for Not Full Compliance	Further Action to Take	Date for Action	Who will Implement Action
1	Workers wearing PPE	Yes	None	None	July 2021	Contractor
2	First Aid Kits Available	Yes	None	None	July 2021	Contractor
3	Fire Extinguishers Available	Yes	None	None	July 2021	Contractor
4	COVID-19 Prevention Kits (Mask, Alcohol, Temperature Meter)	Yes	None	Yes	July, 2021	Contractor
5	Training on EMP, GRM	Yes	None	None	Sep, 2021	PISCD

27) For all 'Partial' or 'No' compliance issues in the EHS Compliance tables above, the actions needed to solve the compliance issues are in the table below

Table 13: All Subprojects EHS Compliance - Actions Needed

Subproject		EMP EHS Requirement	Reasons for Not Full Compliance	Further Action to Take	Date for Action	Who will Implement Action

28) The table below follows up on issues from previous Environmental Monitoring Reports for this all subproject regarding Health and Safety. This table confirms that the

action was completed or that the action is outstanding.

**Table 14: Health and Safety - Follow Up on Outstanding Issues from Previous Reports**

Issue & Subproject Location	Required Action	Responsibility and Timing	Resolution
None			

#### 4. Environment Effect Monitoring

29) Regular site visit is carried out to monitor whether the contractor has implemented proper mitigation measures discussed in the respective EMP. If any non-compliance was observed, the PISCD will inform and proposes suitable measure/s to rectify those issues. During this period (July – December 2021), site visit was made to the contract package of Neak Loeung Flood Control subproject on 28 December 2021. As of 31 December 2021, environmental quality monitoring was conducted and results of, water quality, air quality, vibration and noise was monitored by MoE's laboratory staffs is safe compared with the requirement of national standards as detail is presented in Annex 4.

30) Environmental quality monitoring (air quality, noise, vibration and surface water quality) for Neak Loeung Flood Control subproject during the construction period as defined in the respective EMP compared with the contractor's actual implementation of these monitoring requirements are conducted on 05 August 2021.

31) Results of air quality at two sites are indicating in the Table 15 and are met with the ambient air quality standard of Cambodia. The detail results are described in Annex 4.

**Table 15: Results of air quality monitoring**

No.	Parameter	Unit	Results		Standard
			Location 1 P0530903/1242067	Location 2 P0532526/1244023	
1	Carbon Monoxide (CO)	mg/m <sup>3</sup>	0.732	1.231	<20
2	Nitrogen Dioxide (NO <sub>2</sub> )	mg/m <sup>3</sup>	0.005	0.022	<0.10
3	Sulfur Dioxide (SO <sub>2</sub> )	mg/m <sup>3</sup>	0.012	0.031	<0.30
4	Methane (CH <sub>4</sub> )	mg/m <sup>3</sup>	ND	ND	-
5	PM <sub>10</sub>	mg/m <sup>3</sup>	0.036	0.048	<0.05
6	PM <sub>2.5</sub>	mg/m <sup>3</sup>	0.022	0.025	<0.025
7	Lead (Pb)	mg/m <sup>3</sup>	ND	ND	<0.005

32) Based on results of noise level indicating in Table 16, noise level of both sites is met with noise standard of Cambodia. The detail results are described in Annex 4.

**Table 16: Results of noise level**

Location	Survey Period (in average)	Noise Level dB (A)			
		LAeq	Standard (Leq)	Lmax	Lmin
P0530903/1242067	6:00-18:00	54.26	75	64.98	40.8
	18:00-22:00	49.72	70	58.75	37.95
	22:00-6:00	46.1	50	51.86	37.6
P0532526/1244023	6:00-18:00	65.82	75	72.96	51.34
	18:00-22:00	60.27	70	69.62	49.1
	22:00-6:00	49.80	50	65.44	46.8

33) Based on results of vibration level indicating Table 17, vibration level of both sites is met with vibration of Cambodia. The detail results are described in Annex 4.

**Table 17: Results of vibration level**

Location	Survey Period	Vibration Level dB			
		LAeq	Standard (Leq)	Lmax	Lmin
P0530903/1242067	6:00-18:00	37.67	65	42.79	18.07
	18:00-6:00	31.04	60	38	15.79
P0532526/1244023	6:00-18:00	40.00	65	45.1	16.10
	18:00-6:00	30.20	60	39.1	15.0

34) Based on the results of surface water quality indicating in Table 18, most of parameters are met the standards of the water quality standard of Cambodia, except some parameters of surface water (DO of both Locations and Total Coliform of Location 1) are slightly higher than the water quality standard of Cambodia. It can conclude that the water qualities of 2 stations are still in good quality. The detail results are described in Annex 4.

**Table 18: Results of surface water quality**

No.	Parameter	Unit	Results		Standard
			Location 1 P0531353/124199 6	Location 2 P0531022/1242 066	
1	pH	-	7.2	7.30	6.5-8.5
2	Dissolved Oxygen (DO)	mg/L	0.60	1.80	7.5-2.0
3	Turbidity	NTU	22.00	18.00	NV
4	Total Dissolved Solid (TDS)	mg/L	288.00	126.00	<1000
5	Total Suspended Solid	mg/L	81.00	40.00	25-100
6	Biochemical Oxygen Demand (BOD5)	mg/L	2.96	2.50	1.0-10
7	Chemical Oxygen Demand (COD)Mn	mg/L	8.74	5.72	<50
8	Total Coli form	MPN/100ml	2.4x10 <sup>4</sup>	2.1x10 <sup>3</sup>	<5000

## IV. PUBLIC CONSULTATION, INFORMATION DISCLOSURE, CAPACITY BUILDING

### 4.1 Consultation

35) During the time period from July to December 2021, informal communication with some local people were done individually by the contractor to inform about sub-project and schedule of the civil work. The monitoring was conducted on 28 November 2021 by PMU Environmental Safeguards Consultant. The camp site and construction site were visited and monitored to check the safeguards compliance in EMP of the sub-project. Mr. Tith Tykea (Project Manager), Mr. Hum Visal (Site Engineer) , Mr. Orng Leang Meng (Environmental and health safety staff), workers and truck drivers were met and discussed during the site monitoring.

## 4.2 Training

36) During the reporting period, training course on Environmental Management and Monitoring, GRM's Implementation and COVID-19 Prevention was conducted by PISCD on 22 September 2021. The training was provided to representatives from PMU, PIU, and contractor at the sub-project site. The detail training report is attached in the Annex 5.

## V. GRIEVANCE REDRESS MECHANISM

37) Based on site inspection and review monthly progress reports from July to December 2021, there is no complaint or grievance at the Neak Loeung Flood Control sub-project.

### Summary:

- Number of new grievances, if any, since last monitoring period: None
- Number of grievances resolved: None
- Number of outstanding grievances: None

**Table 19: Type of grievance redress by the relevant stakeholders within the project areas**

Type of Grievance	Details (Date, person, address, contact details, etc.)	Required Action, Responsibility and Timing	Resolution
<b>Old Issues from Previous Reports</b>			
None			
<b>New Issues from This Report</b>			
None			

## VI. CONCLUSION

38) Environmental safeguard compliance has progressed and maintained momentum, recognizing the implementation of a critical aspect of Southern Economic Corridor Towns Development Project. Environmental mitigation measures related to the sub-project are implemented in line with Environmental Safeguard Framework. Contractor has implemented the mitigation measures following the EMP/CEMP and the monitoring has also conducted by PMU-Environmental Safeguards Consultant and PIU staff such as set-up worker's camp with proper facilities (proper worker's rooms, availability of clean water and electricity with proper set-up, proper workers' eating place, segregated male and female toilets and shower rooms, concrete floor on the ground to avoid muddy in rainy season, proper oil and fuel storage and so on), proper implementation of COVID-19 prevention measures (daily temperature control, regular hand sanitation, wearing mask, workers not allow to go out site the camp and construction site, only female chef to buy foods to cook for workers), providing PPEs to all workers, traffic signs and flagmen in place and so on.

39) For this period (from July – December 2021), the civil work progress of the Neak Loeung Flood Control (CW10) sub-project is 17%.

40) Recommendation: Active areas for improvement over the next six months include the following:

- 1) Conducting environmental quality monitoring by contractor according to EMP/CEMP;
- 2) Keep implementing COVID-19 prevention measures strictly both at camp site and constructing site.
- 3) Keep good performance of Implementation of the EMP/CEMP for Neak Loeung Subproject.

**Annex 1: Field Photographs During Site visit at Neak Loeung Sub-project (CW10)**

	
<p>Worker's campsite (December 28, 2021)</p>	<p>Worker's eating place at campsite</p>
	
<p>Checking female and male toilets and shower rooms (December 28, 2021)</p>	<p>Organic waste bin and recycle waste bin (December 28, 2021)</p>
	
<p>Workers' eating place at campsite and fire extinguisher (December 28, 2021)</p>	<p>First aid box, drinking water, covid-19 post, and electricity breaker box (December 28, 2021)</p>



	
COVID-19 Poster (December 28, 2021)	Workers' rooms (December 28, 2021)
	
Workers' rooms (December 28, 2021)	Workers' rooms (December 28, 2021)

	
Female and male shower rooms at campsite (December 28, 2021)	Male shower room at campsite (December 28, 2021)
	
Female shower room at campsite	Female and male toilets at campsite
	
Male toilet at campsite (December 28, 2021)	Hand washing facility and underground septic tank (December 28, 2021)



	
Water tank	Worker's campsite at construction site
	
Petroleum storage room at campsite	Petroleum storage room at campsite
	
Project and GRM signboards at construction site (December 28, 2021)	GRM signboard at commune hall (December 28, 2021)

	
Daily worker's temperature control	Daily worker's temperature control
	
Three drivers getting COVID-19 infection	Three drivers getting COVID-19 infection
	
Anti-COVID-19 spraying at camp site	Camp site is in quarantine



	
<p>Flagman at access road to construction site</p>	<p>Water spraying for dust control</p>
	
<p>Worker wearing PPE during working hours</p>	<p>Compacting foundation with clay</p>
	
<p>Compacting foundation with clay (December 28, 2021)</p>	<p>Compacting foundation with clay (December 28, 2021)</p>



Traffic sign for safety (December 28, 2021)



Traffic sign for safety (December 28, 2021)

Annex 2: Environmental Monitoring Checklist (CW10)

CAM: GMS No. 1 – Southern Economic Corridor Towns Development Project

Project name: GMS Southern Economic Corridor Town Development Project  
 Project site: Neak Loeng  
 Environmental monitoring sheet, monitoring date: 28/12/2022

No.	Description	Location	Appropriate Facilities/ Protection method	Degree of environmental condition							
				1	2	3	4	5			
1	Leaks and spills of hazardous material	Fuel storage area	safety sign far from watercourse >20m far from drain channel >10m concrete flooring concrete curb or wall leakage				✓	✓			
2	Erosion	Construction sites	spilling				✓	✓			
		Construction sites	soil type side slope compaction re-vegetation				✓	✓			
		Borrow/quarries area	embankment retention pond				✓	✓			
3	Borrow pit/quarry	At borrow pit	shape (rectangular)				✓	✓			
			wall slope depth (m) fence				✓	✓			
		At quarry site	slope depth (m) fence				✓	✓			
4	water quarry	Project site	reclamation floating solid waste floating liquid waste				✓	✓			
5	Air quality	Project site	dust spray water				✓	✓			
		Access road	dust cover on materials spray water				✓	✓			
6	Noise	Site close to settlement	any complain				✓	✓			
7	Waste management	Project site	liquid waste solid waste/garbage human waste hazardous waste				✓	✓			
			Worker camp	liquid waste solid waste/garbage human waste hazardous waste				✓	✓		
				Storage area	liquid waste solid waste/garbage human waste hazardous waste				✓	✓	
		8			Drainage	Project site	arrangement functioning				✓
			Worker camp			arrangement functioning				✓	✓
			Storage area	arrangement functioning					✓	✓	
		9	Damage road/culvert/bridge	Access road	pavement foundation				✓	✓	
Culvert and bridge along access road	pavement structure						✓	✓			
10	Traffic	Access road	congestion accident safety sign barrier				✓	✓			
		Level crossing	pavement condition accident				✓	✓			
11	Safety	Project site	safety sign tool/equipment education/training				✓	✓			
			Quarry/workshop	safety sign tool/equipment education/training				✓	✓		
		12		Community perception	Project site	conflict with local people any complain from people				✓	✓
			Camp/quarry		conflict with local people any complain from people				✓	✓	

Note: 5 = excellent, 4 = very good, 3 = good, 2 = poor, 1 = very poor

Updated EMP for Neak Loeng Flood Control Dike



**Annex 3: COVID-19 Health and Safety Plan Checklist (Daily temperature checking\_CW10)**

GMS SOUTHERN ECONOMIC CORRIDOR TOWNS DEVELOPMENT PROJECT  
CONSTRUCTION OF FLOOD CONTROL DIKE AT NEAK LOEUNG  
MTA CONSTRUCTION CO.,LTD

**Daily Record of Worker**

Location: NEAK LOEUN

Date: 24/12/2021

No.	Name	Gender (M/F)	Position	Tele. No.	Temperature Record	Recorded by
1	ប្រីង ស្រង	M	មេការ	012 283857	35.5	មាន ចាន់សិរីអណាត់
2	ឈុយ ឆេង រុង	M	មេការ	012 458645	36.2	មាន ចាន់សិរីអណាត់
3	មាន ចាន់សិរីអណាត់	M	ស្មូករ	099 346881	35.6	មាន ចាន់សិរីអណាត់
4	វ៉ែន សុខយាង	F	កម្មករ		35.3	មាន ចាន់សិរីអណាត់
5	ថោ ចាន់សេង	M	កម្មករ		35.7	មាន ចាន់សិរីអណាត់
6	ផ្កុន ជន	M	កម្មករ		35.1	មាន ចាន់សិរីអណាត់
7	ហុក ហុង	M	កម្មករ		35.8	មាន ចាន់សិរីអណាត់
8	សាន វ៉ី	F	កម្មករ		36.7	មាន ចាន់សិរីអណាត់
9	លាង សុខ	F	កម្មករ		35.4	មាន ចាន់សិរីអណាត់
10	លាង តុ	F	កម្មករ		36.4	មាន ចាន់សិរីអណាត់
11	ពុន ស្រីឆិត	F	កម្មករ		35.3	មាន ចាន់សិរីអណាត់
12	ឃៀន ប៊ុនឆាត	M	កម្មករ		36.4	មាន ចាន់សិរីអណាត់
13	ថោ វ៉ាន់ស៊ុយ	M	កម្មករ		35.6	មាន ចាន់សិរីអណាត់
14	ឃៀន ចាន់ជី	F	កម្មករ		35.2	មាន ចាន់សិរីអណាត់
15	ឃីប រេង	F	ក្នុងភោ		36.1	មាន ចាន់សិរីអណាត់
16	ឃ្មុន ឆន	F	ក្នុងភោ		35.8	មាន ចាន់សិរីអណាត់
17	អ៊ុំង សំអាត	F	តែក្នុងឡានជីកដី		36.0	មាន ចាន់សិរីអណាត់
18	ច្រូន ភាស	M	តែក្នុងឡានជីកដី		36.2	មាន ចាន់សិរីអណាត់
19	តែ ឈាងសេង	M	តែក្នុងឡានជីកដី		35.7	មាន ចាន់សិរីអណាត់
20	ថោ ចម្បីសេង	M	តែក្នុងឡានជីកដី		35.8	មាន ចាន់សិរីអណាត់
21	ជី ចាន់ស៊ី	M	តែក្នុងឡានជីកដី		36.3	មាន ចាន់សិរីអណាត់
22	ចក់ ប៊ុន	M	តែក្នុងឡានជីកដី		35.1	មាន ចាន់សិរីអណាត់
23	មា ឆិត	M	តែក្នុងឡានជីកដី		35.5	មាន ចាន់សិរីអណាត់
24	ខន ចិន	M	តែក្នុងឡានជីកដី		36.0	មាន ចាន់សិរីអណាត់
25	មេង ផ្កា	M	តែក្នុងឡានជីកដី		36.1	មាន ចាន់សិរីអណាត់
26	សាន ម៉ាញ	M	តែក្នុងឡានជីកដី		36.3	មាន ចាន់សិរីអណាត់
27	តា សី	M	តែក្នុងឡានជីកដី		35.8	មាន ចាន់សិរីអណាត់
28	តាន តាំ	M	តែក្នុងឡានជីកដី		35.5	មាន ចាន់សិរីអណាត់
29	ជី ផានិត	M	តែក្នុងឡានជីកដី		35.6	មាន ចាន់សិរីអណាត់
30	ជី យ៉ុង	M	តែក្នុងឡានជីកដី		35.8	មាន ចាន់សិរីអណាត់
31	តាំ ខៀត	M	តែក្នុងឡានជីកដី		35.4	មាន ចាន់សិរីអណាត់
32	សេង សិត	M	តែក្នុងឡានជីកដី		35.6	មាន ចាន់សិរីអណាត់
33	តុច អោយ	M	តែក្នុងឡានជីកដី		35.7	មាន ចាន់សិរីអណាត់
34	អាន វិទូ	M	តែក្នុងឡានជីកដី		35.3	មាន ចាន់សិរីអណាត់
35	ខាយ ឆន	M	តែក្នុងឡានជីកដី		35.5	មាន ចាន់សិរីអណាត់
36	ខុច សុផាត់	M	តែក្នុងឡានជីកដី		35.7	មាន ចាន់សិរីអណាត់

អ្នកប្រតិបត្តិការ

  
មាន ចាន់សិរីអណាត់

Annex 4: Result of Air Quality, Noise and Vibration and Water Quality Testing



**ព្រះរាជាណាចក្រកម្ពុជា**  
**ជាតិ សាសនា ព្រះមហាក្សត្រ**

**អគ្គនាយកដ្ឋានគាំពារបរិស្ថាន**  
**មន្ទីរពិសោធន៍**  
**LABORATORY**

លេខ/៧: ១៩៦-1.....ព.ស

**ព្រឹត្តិប័ត្រវិភាគ**  
**ANALYSIS REPORT**

ប្រភពនៃគំរូ: Sample Source: **ក្រុមហ៊ុន MTA Construction Co., Ltd**  
 កន្លែងប្រមូលគំរូ: Survey Point: **ANV-1, ខណ្ឌកណ្តាល ភូមិព្រៃទឹក ឃុំព្រៃទឹក Neak Loeung Flood Control Subproject IUD ក្រសួងសាងសង់ និង ទឹកជំនន់**  
 កូអរដោនេ: ឃុំព្រៃទឹក ឃុំព្រៃទឹក ស្រុកស្រះចក់ ខេត្តព្រៃវែង, UTM 48 F 0530903 / 1242067  
 ថ្ងៃប្រមូលគំរូ: Sampling date: **August 05, 2021**  
 រយៈពេលប្រមូលគំរូ: Sampling Period: **08:50 AM to 08:50 AM next day**

ល.រ No	ឈ្មោះប៉ារ៉ាម៉ែត្រ Parameter	ឯកតា Unit	លទ្ធផល Result	ស្តង់ដារ Standard	វិធីសាស្ត្រវិភាគ Reference Method
1	Carbon Monoxide (CO)	mg /m <sup>3</sup>	0.732	<20 (8 វ៉ាត់)	Method Carbon Monoxide Passive Dosimeter
2	Nitrogen Dioxide (NO <sub>2</sub> )	mg /m <sup>3</sup>	0.005	<0.10 (24 វ៉ាត់)	Method Saltzman (ISO 6768:1995 (E))
3	Sulfur Dioxide (SO <sub>2</sub> )	mg /m <sup>3</sup>	0.012	<0.30 (24 វ៉ាត់)	Method Pararosaniline (ISO 6767:1990 (E))
4	Methane (CH <sub>4</sub> )	mg /m <sup>3</sup>	ND	-	Method Portable CH <sub>4</sub> gas Detector
5	PM <sub>10</sub>	mg /m <sup>3</sup>	0.036	<0.05 (24 វ៉ាត់)	Method Weight Concentration Measuring
6	PM <sub>2.5</sub>	mg /m <sup>3</sup>	0.022	<0.025 (24 វ៉ាត់)	Method Weight Concentration Measuring
7	Lead (Pb)	mg /m <sup>3</sup>	ND	<0.005 (24 វ៉ាត់)	Method 3500-Pb C) HNO <sub>3</sub> /HCl Digestion

**សំគាល់:** ១- ចំនួនប្រមូលគំរូ និង ប្រភេទប្រមូលគំរូ ត្រូវតែមានលក្ខណៈប្រកួតប្រជែង និង ត្រូវតែមានលក្ខណៈប្រកួតប្រជែង និង ត្រូវតែមានលក្ខណៈប្រកួតប្រជែង  
 ២- ប្រមូលគំរូនៅ ០.៥ ម៉ែត្រ និង ១.០ ម៉ែត្រ

ចេញនៅ ថ្ងៃទី ១៦ ខែ សីហា ឆ្នាំ ២០២១

អគ្គនាយក  
Was seen on date:  
Director General



នាយក

ចេញនៅ ថ្ងៃទី ១៦ ខែ សីហា ឆ្នាំ ២០២១

ប្រធានមន្ទីរពិសោធន៍  
Date of Issue:  
Director



លោក ជឿ

ចេញនៅ ថ្ងៃទី ១៦ ខែ សីហា ឆ្នាំ ២០២១

អ្នកវិភាគ  
Analyzer



The Heritage Techno Building, Ltd 503, Tonle Sap, Chamkarmon, Phnom Penh, កម្ពុជា 0939-090800



អគ្គនាយកដ្ឋានគាំពារបរិស្ថាន  
បង្កើនសេចក្តី  
LABORATORY

លេខ/N° : ១៩៦ - II ..... ព.ស

ព្រះរាជាណាចក្រកម្ពុជា  
ជាតិ សាសនា ព្រះមហាក្សត្រ

ព្រឹត្តិប័ត្រវិភាគ  
ANALYSIS REPORT

ប្រភពនៃការ/Sample Source: ក្រុមហ៊ុន MTA Construction Co., Ltd

កន្លែងយកសំណាក/Survey Point: ANV-1, កន្លែងសំបូងទឹកជិត គម្រោង Near Loeung Flood Control Subproject (II) ក្រសួងសេដ្ឋកិច្ច និងហិរញ្ញវត្ថុ  
ភូមិភាគកណ្តាល ឃុំប្រកលៀង ស្រុកបាគី ខេត្តប៉ៃលិន, UTM 48 P 0530903 / 1242067

ថ្ងៃយកសំណាក/Sampling date: August 05, 2021

រយៈពេល/Sampling Period: 08:50 AM to 08:50 AM next day

Survey Period		Noise Level dB(A)				Remarks
		LAeq	Standard (Leq)	Lmax	Lmin	
Day	6:00 - 7:00	54.3	75	63.9	41.9	
	7:00 - 8:00	55.3		64.2	43.6	
	8:00 - 9:00	55.0		66.3	41.0	
	9:00 - 10:00	56.2		67.3	42.4	
	10:00 - 11:00	55.9		65.7	43.3	
	11:00 - 12:00	53.3		65.7	38.2	
	12:00 - 13:00	55.0		64.6	42.6	
	13:00 - 14:00	48.7		63.1	31.6	
	14:00 - 15:00	54.0		64.3	41.0	
	15:00 - 16:00	54.9		65.9	41.1	
	16:00 - 17:00	54.7		65.5	41.1	
	17:00 - 18:00	53.9		63.3	41.8	
Evening	18:00 - 19:00	50.9	70	60.2	38.9	
	19:00 - 20:00	49.4		58.5	37.5	
	20:00 - 21:00	50.0		58.7	38.5	
	21:00 - 22:00	46.6		57.8	36.9	
Night	22:00 - 23:00	44.6	55	49.9	36.6	
	23:00 - 00:00	44.4		51.0	35.1	
	00:00 - 1:00	45.9		51.5	37.5	
	1:00 - 2:00	45.4		50.6	37.5	
	2:00 - 3:00	46.8		51.7	39.2	
	3:00 - 4:00	46.4		51.6	38.4	
	4:00 - 5:00	47.6		54.7	37.7	
	5:00 - 6:00	47.7		53.9	36.8	
24 hours Average		50.8		59.6	39.3	

ឯកសារ: ទិន្នន័យ និង លទ្ធផលនៃការវិភាគសំណាកសំបូងទឹកជិត គម្រោង Near Loeung Flood Control Subproject (II) ក្រសួងសេដ្ឋកិច្ច និងហិរញ្ញវត្ថុ ក្រសួងសេដ្ឋកិច្ច និងហិរញ្ញវត្ថុ ក្រសួងសេដ្ឋកិច្ច និងហិរញ្ញវត្ថុ (Sound Level Meter H-4200)

ចេញសេចក្តីនៅ ថ្ងៃទី ១១ ខែ សីហា ឆ្នាំ ២០២១

ចេញសេចក្តីនៅ ថ្ងៃទី ១១ ខែ សីហា ឆ្នាំ ២០២១

បានឃើញនៅ ថ្ងៃទី ១១ ខែ សីហា ឆ្នាំ ២០២១

ឈ្មោះ:

Was seen on date:

Director General

ប្រធានអង្គការ

Date of Issue:

Director

អ្នកវិភាគ

Analyzer



លោក ឌី

*[Signature]*

អគ្គនាយកដ្ឋានគាំពារបរិស្ថាន បង្កើនសេចក្តី អគ្គនាយកដ្ឋានគាំពារបរិស្ថាន បង្កើនសេចក្តី អគ្គនាយកដ្ឋានគាំពារបរិស្ថាន បង្កើនសេចក្តី The Heritage Tech Building, Lot 502, Teme Road, Chamkarmon, Phnom Penh, ភ្នំពេញ ប្រជាជាតិកម្ពុជា



ព្រះរាជាណាចក្រកម្ពុជា  
ជាតិ សាសនា ព្រះមហាក្សត្រ

អគ្គនាយកដ្ឋានគាំពារបរិស្ថាន  
មន្ទីរពិសោធន៍  
LABORATORY

លេខ/N° ២៩៦-III.....ព.ស

ព្រឹត្តិប័ត្រវិភាគ  
ANALYSIS REPORT

ប្រភពនិរន្តរៈ/Sample Source: ក្រុមហ៊ុន MTA Construction Co., Ltd

តំបន់វេយ្យាករណ៍/Survey Point: ANV-1, គម្រោងបង្ការជំនន់ទឹកជំនន់ គម្រោង Hsiek Leung Flood Control Subproject វិស័យ ក្រសួងសាធារណការ និងដឹកជញ្ជូន  
ស្ថិតក្នុងភូមិព្រែកពាស់ ឃុំប្រាសាទ ខេត្តព្រៃវែង, UTM 48 P 0530803 / 1242067

ថ្ងៃគំរាបសំណាក/Sampling date: August 05, 2021

រយៈពេលគំរាបសំណាក/Sampling Period: 08:50 AM to 08:50 AM next day

Time	Survey Period	Vibration Level dB				Remarks
		Leq	Standard (Leq)	Lmax	Lmin	
Day	6:00 - 7:00	37.3	55	41.0	17.4	
	7:00 - 8:00	35.2		40.5	17.6	
	8:00 - 9:00	36.4		40.9	19.5	
	9:00 - 10:00	35.2		46.0	18.2	
	10:00 - 11:00	37.5		41.9	17.0	
	11:00 - 12:00	40.7		46.5	18.5	
	12:00 - 13:00	36.5		42.2	18.7	
	13:00 - 14:00	38.0		41.5	18.3	
	14:00 - 15:00	38.7		43.3	17.9	
	15:00 - 16:00	37.1		39.8	19.2	
	16:00 - 17:00	39.5		45.6	17.4	
	17:00 - 18:00	39.6		44.3	18.6	
	18:00 - 19:00	34.1		40.6	15.7	
	19:00 - 20:00	31.4		39.5	15.5	
	20:00 - 21:00	31.7		40.2	15.6	
	21:00 - 22:00	31.7		41.3	14.5	
Night	22:00 - 23:00	28.7	60	31.2	14.6	
	23:00 - 00:00	31.4		40.8	14.4	
	00:00 - 1:00	31.8		41.5	14.6	
	1:00 - 2:00	30.0		37.8	14.6	
	2:00 - 3:00	30.0		39.0	14.0	
	3:00 - 4:00	30.7		39.1	14.8	
	4:00 - 5:00	30.5		38.9	14.6	
	5:00 - 6:00	32.1		41.6	15.0	
24 hours Average		34.4		41.0	16.5	

ឯកសារ និងរូបថតដែលបានកម្រិតសំឡេង ត្រូវបានរក្សាទុកយ៉ាងហ្មត់ចត់ និងបានដាក់ចូលក្នុងប្រព័ន្ធគណនេយ្យ ក្នុងរយៈពេល ១១ ខែ មករា ឆ្នាំ២០២១, Vibration Level Meter V64 - S&S

ចេញរបាយការណ៍ ថ្ងៃទី ០៥ ខែ សីហា ឆ្នាំ ២០២១

ចេញរបាយការណ៍ ថ្ងៃទី ០៥ ខែ សីហា ឆ្នាំ ២០២១

បានឃើញនៅ ថ្ងៃទី ០៥ ខែ សីហា ឆ្នាំ ២០២១

អគ្គនាយក

Was seen on date:

Director General

ប្រធានមន្ទីរពិសោធន៍

Date of Issue:

Director

អ្នកវិភាគ

Analyze

លោក ឌី

គា. ស៊ីណា

អគ្គនាយកដ្ឋានគាំពារបរិស្ថាន អគ្គនាយកដ្ឋានគាំពារបរិស្ថាន អគ្គនាយកដ្ឋានគាំពារបរិស្ថាន The Heritage Tower Building, Lot 833, Tonle Sap, Chamkarmon, Phnom Penh, ភ្នំពេញ ០១២២០០០០



អគ្គនាយកដ្ឋានគាំពារបេតិកភណ្ឌ  
បច្ចិរិកៈសោធន៍  
LABORATORY

ନେଃ/ନଂ: ୭୭-IV.....ନ.ସ

**ព្រះរាជាណាចក្រកម្ពុជា**  
**ជាតិ សាសនា ព្រះមហាក្សត្រ**

**ព្រឹត្តិប័ត្រវិភាគ**  
ANALYSIS REPORT

ប្រភពនៃគំរូ/Sample Source: **ក្រុមហ៊ុន** MTA Construction Co., Ltd

កន្លែងប្រតិបត្តិការ: Survey Point: ANV-2, ឧបករណ៍បង្កប់ទឹកជិត ឆ្នេរក្នុង Weak Lowing Flood Control Subproject ISM ក្រុមហ៊ុនសាងសង់ និងដឹកជញ្ជូន  
 ជិតឆ្នេរក្នុងកម្រិតប្រតិបត្តិការ ប៉ោមស្រោច (ស្រោចស្រាវ) នៅចន្លោះ ១៥, UTM 48 P 0532526 / 1244023

Ignition/dumping date: August 05, 2021

100:1000 Sampling Period:	10:20 AM to 10:20 AM next day
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ល.រ No	ប៉ារ៉ាម៉ែត្រ Parameter	ឯកតា Unit	លទ្ធផល Result	ស្តង់ដារ Standard	វិធីសាស្ត្រវិភាគ Reference Method
1	Carbon Monoxide (CO)	mg /m <sup>3</sup>	1.231	<0.16 (៥ វ៉ាឡែ)	Method Carbon Monoxide Passive Diffusite
2	Nitrogen Dioxide (NO <sub>2</sub> )	mg /m <sup>3</sup>	0.022	<0.16 (24 វ៉ាឡែ)	Method Saltzman [ISO 6760:1998 (E)]
3	Sulfur Dioxide (SO <sub>2</sub> )	mg /m <sup>3</sup>	0.031	<0.30 (24 វ៉ាឡែ)	Method Parosmanline [ISO 6767:1990 (E)]
4	Methane (CH <sub>4</sub> )	mg /m <sup>3</sup>	ND	-	Method Portable CH <sub>4</sub> gas Detector
5	PM10	mg /m <sup>3</sup>	0.048	<0.05 (24 វ៉ាឡែ)	Method Weight Concentration Measuring
6	PM2.5	mg /m <sup>3</sup>	0.025	<0.025 (24 វ៉ាឡែ)	Method Weight Concentration Measuring
7	Lead (Pb)	mg /m <sup>3</sup>	ND	<0.005 (24 វ៉ាឡែ)	Method 3500-Pb C (HNO <sub>3</sub> /HCl Digestion)

**សំគាល់៖**  
 ១- ប៉ារ៉ាម៉ែត្រ និង ឯកតាសរុបស្របតាមស្តង់ដារសុខាភិបាលកម្ពុជា និងស្តង់ដារសុខាភិបាលអាស៊ាន និងស្តង់ដារសុខាភិបាលពិភពលោក ប្រ.ស.ខ. ចុះថ្ងៃទី ១១ ខែ មេសា ឆ្នាំ២០១៨  
 ២- ប្រជាជនរងឈាម ០.3 m/s ជើង 3.6 m/s

ចេញមកយកនៅ ថ្ងៃទី ១១ ខែ សីហា ឆ្នាំ ២០២១

මෙහිදී ෧෧ වන කොටසේ දී

നവംബർ ൨൦൧൭ ൨൭

**WUOLAH**

Was seen on date:  
Director General

**ប្រធានមន្ទីរពិសោធន៍**


Date of Issue:  
Director:

**सुदीक्षा**


## Analyzer



১৯৬৫



**ព្រះរាជាណាចក្រកម្ពុជា**  
**ជាតិ សាសនា ព្រះមហាក្សត្រ**



**អគ្គនាយកដ្ឋានគាំពារបរិស្ថាន**  
**បន្ទីរពិសោធន៍**  
**LABORATORY**

លេខ/N°: ២៥៦-៧.....ណ

**ព្រឹត្តិប័ត្រវិភាគ**  
**ANALYSIS REPORT**

ប្រភពសំណាក/Sample Source: **ក្រុមហ៊ុន MTA Construction Co., Ltd**

កន្លែងប្រមូលសំណាក/Survey Point: **ANN-2, ក្រសួងស្វែងរក និង គម្រោង Nsok Leung Flood Control Subproject (UN) ក្រសួងសាងសង់ និង ដឹកជញ្ជូន**  
**ភូមិភាគកណ្តាល ឃុំអូរជ្រូក ឃុំអូរជ្រូក ស្រុកជ្រូក ខេត្តបាត់ដំបង, UTM 48 P 0532526 / 1244023**

ថ្ងៃប្រមូលសំណាក/Sampling date: **August 05, 2021**

រយៈពេល/Sampling Period: **10:20 AM to 10:20 AM next day**

Survey Period		Noise Level (dB(A))				Remarks
		L <sub>Aeq</sub>	Standard (L <sub>eq</sub> )	L <sub>max</sub>	L <sub>min</sub>	
Day	6:00 - 7:00	67.1	75	71.7	53.9	
	7:00 - 8:00	65.7		69.3	53.6	
	8:00 - 9:00	65.5		72.5	49.9	
	9:00 - 10:00	62.8		67.4	49.6	
	10:00 - 11:00	66.6		75.9	48.9	
	11:00 - 12:00	64.5		71.5	49.0	
	12:00 - 13:00	67.1		75.7	50.0	
	13:00 - 14:00	66.9		74.7	50.6	
	14:00 - 15:00	64.4		70.1	50.1	
	15:00 - 16:00	63.4		68.0	50.2	
	16:00 - 17:00	71.4		82.6	51.6	
	17:00 - 18:00	66.5		70.6	53.9	
Evening	18:00 - 19:00	63.6	70	67.8	50.9	
	19:00 - 20:00	66.7		75.2	49.6	
	20:00 - 21:00	55.7		67.9	48.1	
	21:00 - 22:00	55.1		67.6	47.8	
Night	22:00 - 23:00	53.0	70	67.3	47.8	
	23:00 - 00:00	53.6		69.2	47.9	
	00:00 - 1:00	51.9		65.2	47.3	
	1:00 - 2:00	51.1		65.4	47.0	
	2:00 - 3:00	54.6		64.9	46.9	
	3:00 - 4:00	54.8		65.0	47.7	
	4:00 - 5:00	53.8		67.0	47.1	
	5:00 - 6:00	50.2		62.6	45.2	
24 hours Average		60.7		69.8	49.4	


ឯកតា: ទំហំសំឡេង តាមស្តង់ដារអន្តរជាតិ (A-weighting) ដោយប្រើប្រាស់មីក្រូម៉ែត្រសំឡេងប្រភេទ ២០០ អ៊ែស ដែលមានលេខស្រាប់ (Sound Level Meter ២០០H)

បានឃើញនៅថ្ងៃទី ២០ ខែ សីហា ឆ្នាំ ២០២១

ឯកភាព:

Was seen on date:

Director General



**ប្រធាន**

បានបោះពុម្ពនៅថ្ងៃទី ២០ ខែ សីហា ឆ្នាំ ២០២១

Date of Issue:


Director



**អគ្គនាយក**

បានបោះពុម្ពនៅថ្ងៃទី ២០ ខែ សីហា ឆ្នាំ ២០២១

Analyst



**អ្នកវិភាគ**

អាសយដ្ឋាន: ផ្ទះលេខ ១២ ផ្លូវលេខ ១២ ភូមិស្រែចម្ការ សង្កាត់ស្រែចម្ការ រាជធានីភ្នំពេញ The Heritage Trade Building, Lot 122, Treme Road, Chamkarmon, Phnom Penh, កម្ពុជា ០០២២២០០០០០





អគ្គនាយកដ្ឋានគាំពារបរិស្ថាន  
មន្ទីរពិសោធន៍  
LABORATORY

ଉତ୍ତର/ନଂ: ୨୭୩-୪୮.....ପ. ୩୩

**ព្រះរាជាណាចក្រកម្ពុជា**  
**ជាតិ សាសនា ព្រះមហាក្សត្រ**

**ព្រឹត្តិប័ត្រវិភាគ**  
ANALYSIS REPORT

ប្រភពសំណាក/Sample Source: ក្រុមហ៊ុន MTA Construction Co., Ltd

**ឈ្មោះគម្រោង/Survey Point:** ANV-2, ភូមិវត្តបាទីកាំង ក្រុងសៀមរាប Neak Loeng Flood Control Subproject (U9) **អង្គការអន្តរជាតិ និងដឹកនាំ**  
**ស្ថិតនៅក្នុងដែនកំណត់:** ជុំវិញអាង ស្រះចាក់ទឹក នៅភូមិវត្ត, UTM 48 P 053256 / 1244023

Worms Sampling date: August 05, 2021

WWS/Sampling Period: 10:20 AM to 10:20 AM next day

Time	Survey Period	Vibration Level dB				Remarks
		Leq	Standard(Leq)	Lmax	Lmin	
Day	6:00 - 7:00	43.9	65	44.8	34.1	
	7:00 - 8:00	42.1		51.0	34.2	
	8:00 - 9:00	43.3		52.4	35.3	
	9:00 - 10:00	45.6		50.5	35.7	
	10:00 - 11:00	41.3		46.4	35.2	
	11:00 - 12:00	40.7		51.0	35.5	
	12:00 - 13:00	40.3		46.7	35.8	
	13:00 - 14:00	41.0		46.0	37.1	
	14:00 - 15:00	42.9		47.8	37.0	
	15:00 - 16:00	40.9		44.3	36.5	
	16:00 - 17:00	42.9		46.1	36.7	
	17:00 - 18:00	40.4		46.8	35.5	
Night	18:00 - 19:00	34.8	60	43.1	34.8	
	19:00 - 20:00	32.9		39.1	34.8	
	20:00 - 21:00	31.5		37.5	33.7	
	21:00 - 22:00	31.1		35.6	34.7	
	22:00 - 23:00	34.2		39.5	35.0	
	23:00 - 00:00	39.9		43.1	34.8	
	00:00 - 1:00	31.2		37.8	34.7	
	1:00 - 2:00	33.8		40.1	35.7	
	2:00 - 3:00	32.8		37.8	34.7	
	3:00 - 4:00	32.1		36.7	35.9	
	4:00 - 5:00	35.0		40.5	34.0	
	5:00 - 6:00	32.2		38.2	34.7	
24 hours Average		37.8		43.7	35.3	

[illegible]

மாண்புமிகு பேரவைத் தலைவர் அவர்களே, சர்க்கார்

**Abstract**

What seen on date:

Director General

argument by  $\lambda$  to  $n$

**ប្រធានាធិបតីសហគមន៍**

Date of Issue:

Director

සමුදායයා විසින් **අයි අර්ථ** නමින්

**सुनिश्चित**

### Analyzer



গোপনীয়

អាជ្ញាធរជាតិវប្បធម៌ វិទ្យា និងកីឡា ក្រសួងវប្បធម៌ វិទ្យា និងកីឡា រដ្ឋបាលនៃគណៈរដ្ឋមន្ត្រី  
The Heritage Centre Building, Lot 503, Tonle Sap, Chamkarmon, Phnom Penh, ព្រះរាជាណាចក្រកម្ពុជា





**Annex 5: Training Report on Environmental Monitoring, GRM and COVID-19**

Ministry of Public Works and Transport  
Kingdom of Cambodia

**GMS: Southern Economic Corridor Towns Development Project**

Loan 2983-CAM(SF), Loan 8265-CAM(SCF)  
Grant 0334-CAM (UEIF), Grant 0335-CAM (SCF)

# **TRAINING REPORT**

On

**Environmental Monitoring, GRM and COVID-19**

**September 22, 2021**





## 1. BACKGROUND

The Greater Mekong Sub-region (GMS) Southern Economic Corridor Towns Development Project (SECTDP) is a milestone project of the Asian Development Bank (ADB) being the first major urban sector development assistance of the ADB in the GMS that integrates urban environment improvement and economic infrastructure with institutional capacity development. The project is designed to support the regional cooperation strategy of the ADB in guiding urban development in Cambodia.

Institutional and individual capacities will be developed along the areas of project management and implementation; social, gender, resettlement and environment safeguards; project monitoring, reporting and evaluation, fundamental technical training and urban infrastructure operation and maintenance, and urban mapping. The Training Program has been designed to improve the capacity of the Executing Agency (EA) through its Project Management Unit (PMU), as well as the Implementing Agencies (IAs), Project Implementation Units (PIUs) and contractors to manage and implement priority urban infrastructure and essential support services. The training is intended to ensure not only the smooth implementation of urban infrastructure, but also to provide sustainable management and operation and maintenance of the infrastructure.

## 1. INTRODUCTION

The training on Environmental Monitoring, GRM and COVID-19 was trained by Mr. Song Kim Chhuon, Environmental Specialist. Number of participants attended in the training course is shown in Table 1 and the training schedule and attendant list is shown in annex 1 and annex 2.

Table 20: Participants of Target Group

No.	Target Groups	Number of Participant
1	Project Management Unit (PMU)	2
2	Project Implementation Unit (PIU), Neak Loung	3(1woman)
3	Construction Supervision (CS)	1
4	Contractor MTA (Neal Loeung Flood Control )	2
5	District Environmental Officer	1
6	Commune Council (Neak Loeung and Prek Khsay Khor communes)	2
	<b>total</b>	<b>11 (1 woman)</b>

## 2. OBJECTIVE AND EXPECTED OUTPUTS

The objective and expected outputs of the environmental monitoring, GRM and COVID-19 training are as follows:

- Enhance the awareness of PMU, PIU, CS, Commune Council, District Environmental Officer and contractors on environmental monitoring, GRM and COVID-19 during construction and operation.
- Cite the role of each member of the PMUs, PIUs, CS, Commune Council, District Environmental Officer and Contractors on environmental monitoring, GRM and COVID-19 prevention.

## 3. TRAINING MATERIALS



The training materials were provided to all the participants. The training presentation handout entitled Environmental Monitoring, GRM and COVID-19. All training materials, including: agenda handouts, pre-test and post-test were available to the participants. All of these documents are presented in the EMPs in each town. The materials were prepared according to the agree action plan and developed by the PISCD Consultant's Environmental Specialist. The materials were submitted to the PMU for review and approval in advance of the Training Session.

#### 4. VENUE

The training was held on 22 September 2021, PIU Office in Peam Ror district, Neak Loeung, Prey Veng Province, Kingdom of Cambodia.

**Table 2: Training Contents/Topics**

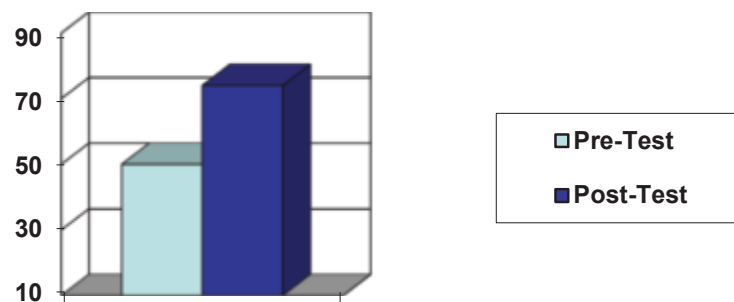
No.	Topic	Sub-Topic	Methodology	Materials
1	Registration	Arrival/Registration of Participants	<ul style="list-style-type: none"> <li>- Participants fill up registration sheets</li> <li>- Distribution of training Materials</li> </ul>	<ul style="list-style-type: none"> <li>- Registration Sheet</li> <li>- Plastic bags, note books, and pens</li> <li>- Training manual with about 35 pages</li> </ul>
2	Brief Overview of the whole project	Refresh project activities in general	<ul style="list-style-type: none"> <li>- Facilitator ask the participant to recall previous lesson</li> <li>- Power point presentation:</li> </ul>	<ul style="list-style-type: none"> <li>- White board, flip chart and markers</li> <li>- Computer and LCD</li> <li>- Handout</li> </ul>
3	Environmental Monitoring	The definition step of monitoring, role and responsibility	<ul style="list-style-type: none"> <li>- Facilitator ask the participant to recall previous lesson</li> <li>- Power point presentation</li> </ul>	<ul style="list-style-type: none"> <li>- White board, flip chart and markers</li> <li>- Computer and LCD</li> <li>- Handout</li> </ul>
4	Environmental monitoring before construction	Impact mitigation, responsibility and monitoring	<ul style="list-style-type: none"> <li>- Facilitator ask the participants</li> <li>- Power point presentation</li> </ul>	<ul style="list-style-type: none"> <li>- White board, flip chart and markers</li> <li>- Computer and LCD</li> <li>- Handout</li> </ul>

No.	Topic	Sub-Topic	Methodology	Materials
5	Environmental monitoring during construction	Impact mitigation, responsibility and monitoring	- Presentation and panel discussion	- Handout - Computer and LCD
6	Environmental monitoring after construction	Impact mitigation, responsibility and monitoring discussion	- Facilitator ask the participants - Power point presentation	- Handout - Computer and LCD - White board, flip chart and markers
7	GRM	Complaint resolution, complaint letter and record (logbook), disclosure and discussion	- Facilitator ask the participants - Power point presentation	- Computer and LCD - White board, flip chart and markers
8	Covid-19	key messages on Covid-19 to participants, prevention and mitigation measure, disclosure	- Facilitator ask the participants - Power point presentation	- Computer and LCD - White board, flip chart and markers

## 5. TRAINING EVALUATION

Five questions of pre- and post-tests were designed to assess the improvement of participants learning such as: their knowledge and skills as a result of the training. Pre-Post Test was delivered to the participants before and after module training. The result of assessment result is shown in the Figure 1. The comparison of pre-posttest is presented in Table 3.

**Figure 1: The Comparison of Pre-Post Test**



**Figure 1** is expressed the score of each participant in pre-and post-test. The score of the participant from pre-to post-test were increase only 24 percent. It has noted that this module very new and quite hard for some participants and easy understand for some participants to learn and get it.

Table 3:

Test	Poor		Fair		Good		Very Good	
	<50	%	50<60	%	60<70	%	>70	%
Pre-Test	5	45	6	55	0	0	0	
Post-Test	1	10	5	40	2	20	3	30

**Table 3: Pre-Test and Post-Test Comparison**

The maximum score of post-test are higher than pre-test. Furthermore, the maximum score of post-test is >70 (30%) and minimum score is <50 equal only 10%, It is shown that the participants' knowledge and skill of the material were increased as a result of the training.

## Appendix 1:

### Training Schedule on Environmental Monitoring, GRM and Covid-19 in Neak Loeung on 22 September, 2021

Time	Objective/Activities	Remark
<b>21 September, 2021</b>		
12:00 – 16:00	Travel from PP to Neak Loeung	
<b>22 September, 2021</b>		
08:00 – 08:30	Registration of participants	All participants
08:30 – 08:40	Speak opening	PIU Chief
08:40 – 09:00	Pre-test	All participants
09:00 – 09:10	Introduction	Environmental Specialist
09:10 – 09:30	<b>Coffee break</b>	
09:30 – 10:30	Environmental Monitoring	Environmental Specialist
10:30 -11:30	Discussion	All participants
<b>11:30 – 13:30</b>	<b>Break for lunch</b>	
13:30 – 14:00	Grievance Redress Mechanism (GRM)	Environmental Specialist
14:00 – 14:15	Discussion	All participants
<b>14:15 – 14:40</b>	<b>Coffee break</b>	
14:40 – 15:30	Covid-19	Environmental Specialist
15:30 – 15:45	Discussion	All participants
15:45 – 16:00	Wrap Up	Environmental Specialist
16:00 – 16:15	Post-test	All participants

Appendix 2: Attendant list

**មហាអនុគម័តបង្កើនតំបន់ក្រុង គម្រោងអភិវឌ្ឍន៍សេដ្ឋកិច្ចក្រុងប្រចាំខេត្តកំពង់ចាម**  
GMS: Southern Economic Corridor Towns Development Project  
កម្មវិធី បង្កើនតំបន់ក្រុង-CAM (SF) កម្មវិធី បង្កើនតំបន់ក្រុង-CAM (SCF)  
ជំនួយឥតសំណង បង្កើនតំបន់ក្រុង-CAM (UEIF) ជំនួយឥតសំណង បង្កើនតំបន់ក្រុង-CAM (SCF)

**បញ្ជីបណ្ណាល័យ**  
Attendee List  
**វគ្គបណ្ណាល័យស្តីពី ការត្រួតពិនិត្យបរិស្ថាន បណ្តុះបណ្តាល និង Covid-19**  
Training on Environmental Monitoring, GRM and Covid-19  
ថ្ងៃទី ១២ ខែ កញ្ញា ឆ្នាំ ២០២១  
ទីកន្លែង: បណ្ណាល័យ ភោជនាគារ

ល.រ No	នាមប្រាសាទ Name	ភេទ Sex	តំណ Occupation	ទូរស័ព្ទ Phone	ហត្ថលេខា Signature
១	វណ្ណ ណាង	ប	PIU	0978006010	
២	វណ្ណ ណាង	ប	PIU	0977577711	
៣	វណ្ណ ណាង	ប	ប្រតិបត្តិការ	0694012888	
៤	វណ្ណ ណាង	ប	ប្រតិបត្តិការ	088.222.6737	
៥	វណ្ណ ណាង	ប	ប្រតិបត្តិការ	093027117	

ល.រ No	នាមប្រាសាទ Name	ភេទ Sex	តំណ Occupation	ទូរស័ព្ទ Phone	ហត្ថលេខា Signature
៦	វណ្ណ ណាង	ប	ប្រតិបត្តិការ	016637555	
៧	វណ្ណ ណាង	ប	ប្រតិបត្តិការ	015283857	
៨	វណ្ណ ណាង	ប	ប្រតិបត្តិការ	070944095	
៩	វណ្ណ ណាង	ប	ប្រតិបត្តិការ	096725119	
១០	វណ្ណ ណាង	ប	ប្រតិបត្តិការ	012802553	
១១	វណ្ណ ណាង	ប	ប្រតិបត្តិការ	012916545	
១២	វណ្ណ ណាង	ប	ប្រតិបត្តិការ	012451545	
១៣	វណ្ណ ណាង	ប	ប្រតិបត្តិការ		
១៤	វណ្ណ ណាង	ប	ប្រតិបត្តិការ	011787377	
១៥					
១៦					
១៧					

**Appendix 3: Photos During The Trainings**



