

Environmental Monitoring Report

4th Semestral Report
February 2022

Cambodia: Second Greater Mekong Subregion Corridor Towns Development Project

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

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Semi-Annual Environmental Monitoring Report

KINGDOM OF CAMBODIA

Ministry of Public Work and Transport

Project Number: 46443-001

Second Greater Mekong Subregion Corridor Towns Development Project

Sub-Project

Wastewater Collection & Treatment and Urban Drainage and Landfill in Kampot Town

Reporting Period: July - December 2021

SEMR Report Number: 4

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1 ENVIRONMENTAL SAFEGUARDS SUMMARY

1. The Fourth Semi-annual Environment Monitoring Report (SEMR) covers the period of (July to December 2021) for Second Greater Mekong Subregion Corridor Towns Development. The SEMR has been prepared to fulfil the safeguard policy requirement of ADB.
2. The SEMR is prepared by support consultants and checked by PMU.

1.1 Summary of Project Progress

3. The following table gives a brief summary of the project progress for contract award/Civil Works (CW) packages, construction and key activities in this reporting period:

Table 1 Project Progress Summary

Safeguards Category	Environment	B	
Reporting Period:	July-December 2021	Date Last Report Issued:	Disclosed November 2021
Contracts Awarded to Date:	<p>SBPH ENGINEERING AND CONSTRUCTION CO., LTD (CW01-WWTP) Contract awarded: 21st October 2019 Starting date: 25th October 2019 Date of completion: 09 October 2021 Contract duration: 720 days</p> <p>Heng Sambat Co.,Ltd. Import Export Transportation and Construction (CW02-Landfill) Contract signed: May 2021 Starting date: 17th June 2021 Date of completion: 17th June 2022 Contract duration: 12 months</p>		
Construction Progress to Date:	<p>As of December 2021, the progress is</p> <ul style="list-style-type: none"> - CWO1 Kampot Wastewater Treatment Plant (WWTP) and Drainage work: 50.8 % - CW02 Kampot Controlled Landfill: 50 % 		
Key Sub-project Activities in this Reporting Period:	<p>Construction Activities CW01 For the WWTP, the Structural work of the anaerobic tank has been completed. The installation of the reinforced foundation layer for the construction of the stabilization pond embankments has been completed, there were included the Geogrids, Geotextiles and Rocks of the embankment to construct for 2 Maturation ponds and 2 Facultative ponds. The embankment filling is starting for these 4 ponds.</p> <p>Work is ongoing for the installation of the MPS-WWTP-C1 force main line. All the required pipes have been supplied to the site. 4,269m length of pipeline has been installed</p> <p>The installation of 310m section of the new u-drain line 3 is completed in December and road rectification will begin in January.</p> <p>Construction activities CWO2 Since Contract Award in this reporting period the earthworks for the 2 waste cells, the 2 leachate ponds, 1 wetland, and internal roads were 95% complete by the end of December.</p>		

1.2 Summary of EMP Implementation

4. EMP implementation is summarised in the following points, for this reporting period:
 - PPE is now adequate on the construction site.
 - No significant issues affecting project environmental performance are observed
 - CW01 WWTP construction camp has been improved and inspected by the project (PMU Project Manager).
 - For CW01, to reduce the risk of mud tracking onto public roads, the municipal and commune authorities have restricted the transport of soil by heavy trucks during and after periods of rainfall. This restriction has slowed the progress of rock/soil filling but supports the EMP.
5. In addition, COVID-19 has continued to affect project staff. In July the civil/structural engineer in the design team tested positive and went into quarantine. In October workers from CW02 Landfill tested positive and quarantined for 14 days.

1.3 Summary of EMP Monitoring

6. EMP monitoring is summarised in the following points, for this reporting period, noting that COVID-19 has impeded site visits:
 - Number of Monitoring Visits to Construction Site and wider area:
 - Every week visits by PIU as COVID-19 allowed.
 - Every day visits by CSC as COVID-19 allowed.
 - Ad hoc visits from PMU Project Manager as required.
 - Visits by PISCB team to conduct environmental survey for due diligence report updates for Variation Order.
 - Number of Environmental Samples Tested: CW01 - 3 surface water 1 wastewater sample. CW02 – 2 surface water, 2 noise, air, vibration See Annex 1.

1.4 Summary of Complaints, Issues and Corrective Action

7. Any complaints, issues and corrective action identified or implemented are summarised in the following points, for this reporting period:
 - Issues Raised: No issues raised on construction sites.
 - Grievances Raised with GRM: None.
 - Corrective Action resolutions issued by project to Contractor:
 - CW01 contractor has constructed the worker camp and toilets.
 - CW01 contractor no longer uses poor fuel storage area.
 - Corrective Action Plans are planned for early Q1 2022 based on findings in this report regarding use of PPE by workers on CW01 and late delivery of environmental monitoring for both contracts.

2 SAFEGUARDS STAFF, TRAINING AND DOCUMENTATION

2.1 Implementation Arrangements

8. The EMP defines the Environmental Safeguards roles and responsibilities. The roles are required to be filled in order to meet the EMP requirements. The following table gives the status of the key roles for EMP implementation:

Table 2. Status of Environmental Safeguard Roles

Safeguards Role	Status & Comment			
PISCB N/IES <ul style="list-style-type: none"> Provide technical advice/assistance, e.g., preparation of Semi-Annual EMR for ADB, review of results of environmental effects monitoring. Environmental related training for PMU, PIU, contractors and other stakeholders Support PMU/PIU with appropriate consultation Site visits to check on construction, EMP implementation and affected people, in collaboration with PMU 	Date Started:	February 2018	Full Time/ Part Time	[PT]
	Comment	Ms. Rachel Wildblood (International) and Mr. Chea Mong (National)		
PMU-ESO <ul style="list-style-type: none"> PMU- Environmental Safeguard Officer (ESO) Conduct inspections and spot checks to monitor the performance of the Contractor in implementing the C-EMP/EMP Review & verify (through site visits) Monthly Environmental Progress Reports of Contractor EMP implementation site visits Review environmental quality monitoring results. Prepare the Project's Semi-Annual environmental Monitoring Reports for submission to ADB. Implement the Grievance Redress Mechanism (GRM) for environmental issues Conduct appropriate consultation and monitoring of effect of construction on affected people Participate in training provided by PISCB 	Date Started:	May-2020	Full Time/Part Time	[PT]
	Comment	Mr. Penh Socheat		
PIU Environmental And Social Safeguards Staff <ul style="list-style-type: none"> Collate monthly EMRs of Contractor, and submit to the PMU. If a licensed laboratory will be engaged to do independent environmental quality monitoring, oversee & manage the quarterly conduct of the environmental effects monitoring 	Date Started:	December-2019	Full Time/ Part Time	[PT]
	Comment	Mr. Kong Rasmey		

<ul style="list-style-type: none"> Prepare the draft Semi-Annual EMR and submit to the PMU for finalization and incorporation to the Project's Semi-Annual EMR. Implement the GRM for environmental issues Conduct appropriate consultation and monitoring of effect of construction on affected people Participate in training provided by PISCB 				
CSC <ul style="list-style-type: none"> EMP monitoring during construction Preparing monthly monitoring report 	Date Started:	20-08-2020	Full Time/ Part Time	[FT]
	Comment	Mr. Sy Hayean		
Contractor Environment Health & safety Staff (CW01) <ul style="list-style-type: none"> Appoint a qualified Environment Health and Safety (C-EHS) staff member to be responsible for EMP implementation and reporting Implement mitigation measures & conduct internal EMP implementation monitoring. Conduct environmental quality monitoring as prescribed in SPS-compliant EMP. (If an independent Licensed Laboratory will not be engaged.) Prepare Monthly EMRs. 	Date Started:	01-11-2019	Full Time/ Part Time	[FT]
	Comment	Mr. Sreng Kreasna		
Contractor Environment Health & safety Staff (CW02) <ul style="list-style-type: none"> Appoint a qualified Environment Health and Safety (C-EHS) staff member to be responsible for EMP implementation and reporting Implement mitigation measures & conduct internal EMP implementation monitoring. Conduct environmental quality monitoring as prescribed in SPS-compliant EMP. (If an independent Licensed Laboratory will not be engaged.) Prepare Monthly EMRs. 	Date Started:		Full Time/ Part Time	[FT]
	Comment	Staff member will commence in July 2021.		

9. The project concludes that the environmental safeguards roles are enough to mitigate the impact from the project but communication on the contractor's requirements is hampered by COVID-19 restricting travel (national and international) and time limitations of staff given that the PISCB, PMU and PIU environmental staff are all part time.

2.2 Training & Capacity Building

10. The following table gives the planned training courses for the next six months. Note that all planned training will only be conducted if COVID-19 allows and COVID-19 has impacted on the ability of the project to provide face to face training. In this reporting period, environment related refresher training was delivered by PISCB's National Environment Specialist.

Table 3. Environmental Safeguards Training Provided and Planned

Training Course Title	Training Date	Participants	Training Provider
EMP public consultation and GRM	25-26 Nov 2021	PMU, PIU, Contractor, Site Engineer	PISCB Team
Planned Training:			
Environmental monitoring	Q1-2 2022	PMU, PIU, Contractor	PISCB Team

Note: future training is required but dates will be confirmed in compliance with any requirements for protection against COVID-19

11. The participants for the EMP training are below.

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កម្មវិធី 3314-CAM

Project Management and Implementation Support, Detailed Design and Construction Supervision (Package 1) and Capacity Building (Package 2)

បញ្ជីអ្នកចូលរួមការបណ្តុះបណ្តាល គម្រោងអភិវឌ្ឍន៍សេដ្ឋកិច្ច និងសង្គមតាមបណ្តាញប្រចាំខែ

កំរិត ថ្ងៃទី ២៦ ខែ វិច្ឆិកា ឆ្នាំ ២០២១

ល.រ No	នាមតាមភេទ Name	ភេទ Sex	តំណ Occupation	ស្ថាប័ន/អង្គភាព Institution	ទូរស័ព្ទ Phone	ហត្ថលេខា Signature
១	ឈុំ ឃីន	ប្រុស	PMU, Project Manager	ក.អ.ជ.	012 303 203	
២	ឈុំ អ៊ុន	ប្រុស	PMU	ក.អ.ជ.	012 451545	
៣	ឈុំ ឃីន	ប្រុស	PIU	អង្គភាពបណ្តុះបណ្តាល	012 239092	
៤	ឈុំ អ៊ុន	ប្រុស	PIU	អង្គភាពបណ្តុះបណ្តាល	093 71082910	
៥	ឈុំ អ៊ុន	ប្រុស	PIU	អង្គភាពបណ្តុះបណ្តាល	010 531390	
៦	ឈុំ ឃីន	ប្រុស	PIU	អង្គភាពបណ្តុះបណ្តាល	017 720 50	
៧	ឈុំ អ៊ុន	ប្រុស	PIU	អង្គភាពបណ្តុះបណ្តាល	084 775558	
៨	ឈុំ ឃីន	ប្រុស	PIU	អង្គភាពបណ្តុះបណ្តាល	093 226671	

ល.រ No	នាមតាមភេទ Name	ភេទ Sex	តំណ Occupation	ស្ថាប័ន/អង្គភាព Institution	ទូរស័ព្ទ Phone	ហត្ថលេខា Signature
៩	ឈុំ ឃីន	M	PPMS	GMS2/KCC	012 916545	
១០	ឈុំ អ៊ុន	M	Survey	H.S.B	096 5029992	
១១	ឈុំ អ៊ុន	M	Site Manager	HSB	0696665	
១២	ឈុំ អ៊ុន	M	Engineer	GMS2/KCC	012 723510	
១៣	ឈុំ អ៊ុន	M	Site Engineer	HSB	012 556380	
១៤	ឈុំ អ៊ុន	M	Site Engineer	HSB	0981227123	
១៥	ឈុំ អ៊ុន	F	Gender Specialist	GMS2/KCC	012 802551	
១៦	ឈុំ អ៊ុន	F	Assistant	GMS2/KCC	015 822828	

2.3 ADB Clearances and Safeguard Document Status

12. The following table gives information on the status of the safeguards documents. In this reporting period, the environmental safeguards documents have been updated for:

Second Greater Mekong Sub-region Economic Corridor towns development project

- CW01 WWTP VO3 has been integrated into the IEE and EMP. This was for cleaning and upgrading open canal line 4b.
 - CW02 Landfill VO2 has been integrated into the IEE and EMP. This was for an upgrade to the site access road (3km).
13. For VO2, the local project team took comprehensive photos from GPS points identified by the Environmental Safeguards Team in order to provide field data for the IEE/EMP update.
14. Further updates in 2022 will be for CW02-VO2 to upgrade the internal roads pavement to concrete pavement and CW01-VO4 for further improvements.

Table 4. Status of Environmental Safeguard Documents

Safeguards Documents	Update Issued (Latest Version)	Submitted to ADB	ADB Clearance Status
IEE – Consolidated updated with DED	-	September 2019	Cleared & Disclosed
IEE Drainage, Sewerage & WWTP (CW01)			
IEE split from consolidated IEE as requested by ADB. Update for DED and Major Scope Change and VO1 main pumping station and drainage/sewer lines works		Dec 2020	Cleared & Disclosed
Interim IEE VO3 Update for open canal line 4b	Interim – to be updated further with VO4 in 2022	October 2021	Cleared & Disclosed
EMP Drainage, Sewerage & WWTP (CW01)			
Update with DED / scope change/ VO1	Version September 2019	Sep 2019	Cleared & Disclosed
Update for DED and Major Scope Change and VO1	Version November 2020	Nov. 2020	Cleared & Disclosed
Interim update for VO3 open canal line 4b	Interim – to be updated further with VO4 in 2022	Oct 2021	Cleared & Disclosed
IEE Kampot Landfill (CW02)			
IEE split from consolidated IEE as requested by ADB. New landfill site location.		November 2020	Cleared & Disclosed November 2020
VO1 3km landfill access road and liner specification		December 2021	Cleared & Disclosed
EMP Kampot Landfill (CW02)			

EMP for Kampot landfill (CW02)	-	October 2020	Cleared & Disclosed
VO1 3km landfill access road and liner specification	To be updated with VO1 for landfill access road upgrade in 2022	December 2021	Cleared & Disclosed
Semi-Annual Monitoring Reports			
October 2019-June 2020 July-December 2020 Jan-June 2021	See ADB website	Sept. 2020 Jan 2021 Nov 2021	Cleared & Disclosed

2.4 National Approvals

15. The following table gives an update on the necessary national approvals required for the project to proceed.

Table 5. Status of National Approvals for Environmental Documents

Documents	Submitted to MoE	Approved By MoE:	Status – if not approved	Comment
Initial Environmental and Social Impact Assessment (IESIA) (Drainage and Sewerage system)	Final submission 04-09-2019	21-06-2019		
IESIA (Landfill)	First submission: 08-04-2020	23-11 2020		

2.5 Construction Environmental Management Plan (CEMP) Approvals

16. The following table confirms the status of the Construction Environmental Management Plan (CEMP) for each Civil Works package and it is confirmed by the project implementation staff that the provision of a CEMP is not impacting on the Contractor's implementation of the EMP provided in the bidding documents:

Table 6. Status of CEMP Approvals

Civil Works Package/ Subproject	CEMP Given to PMU	Approved By PMU:	Comment:
Waste water collection & Treatment and Urban drainage (CW01)	30 days after contract award	Yes 03-01-2020	Easy to monitor, generally complies with ADB.

Control Landfill (CW02)	Will be provided after contract award	26 July 2021	
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3 EMP IMPLEMENTATION

3.1 Environmental Performance

17. The following tables give the environmental impact mitigation measures in the Borrower (Project) EMP and the corresponding CEMP and how the project is progressing with implementing the mitigation measures, for each subproject.

18. The evidence for the compliance is through a combination of:

- Site visits to observe site practices.
- Regular environmental monitoring/reporting from CSC and Contractor.

Table 7. Status of EMP Compliance - CW01 (sewerage/drainage)

No	EMP Requirement (Mitigation Measure)	Compliance & Description (Yes, No, Partial)	Comment or Further Explanation if Needed	Reasons for Not Full Compliance
1	Flora	Yes	- No unnecessary flora damage is observed. Trees seen to be avoided e.g. during installation of force main.	-
2	Water Quality	Yes	- Sampling confirmed ambient water quality meets national standards	-
3	Noise and Dust Management	Yes	- Noise and dust is within tolerable levels and no night working - Watering when needed	-
4	Spoil Management Plan implementation	Yes	- The contractor arranges the site for stocking the spoil during excavation.	-
5	Waste Management Plan implementation	Yes	- The contractor provides bins and waste is collected by waste collection company. - Waste from drain clearance was taken to the Kampot existing dumpsite.	-

6	Camp Management Plan implementation	Yes	- The worker camp has been completed with evidence of fire-fighting equipment and sanitation	-
7	Community Health, Safety and Urban Access Plan implementation	Yes	- Evidence of some safety signs along public roads	-
8	Traffic Management Plan implementation	Yes	- Adequate signs are provided	-
9	Transport, Storage and Use of Construction Materials	Yes	- Trucks all covered during transport of materials - No works taking place after rain to prevent mud on road	-
10	Machinery & Equipment	Yes	- Machinery well maintained	-
11	Storage and Use of chemicals and fuels	Yes	- Contractor now uses fuel from filling station and does not store fuel in bulk on site	-

19. The PIU will visit the site specifically to confirm noise/dust and site access/community safety issues through consultation. In this reporting period there is a lack of evidence to suggest that there is no issue but there have been no complaints.

20. 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 8. EMP– Actions Needed for Compliance - CW01 (sewerage/drainage)

No.	EMP Requirement	Further Action to Take	Date for Action	Who will Implement Action	Resolution?
7	Community Health, Safety and Urban Access Plan implementation including Public consultation with local people	PIU to confirm adequate consultation by contractor prior to road works – however signage for traffic warning messages to the public are in place.	March 2021	Contractor/PIU	Current issue, and outstanding from a previous SEMR. See table below.

Table 9. EMP Compliance and Outstanding Issues from SEMR Previous Reports -CW01 (sewerage/drainage)

No.	EMP Requirement	Further Action to Take	Responsibility and Timing	Resolution	Next Required Action
2	CW01 Water Quality; Air quality, noise and Vibration	The contractor needs to conduct the sampling set out in EMP and Table 15	Jan 2021 30 September 2021 <u>New action date</u> 30 May 2022	Partially Resolved Water quality sampling complete.	Air and Noise and Vibration monitoring needed
6	Camp Management Implementation: Reconstruction of Worker Camp at WWTP	Contractor needs to reconstruct the new worker camp after flooding	-	Resolved. Camp complete	None.
7	Consultation with local people	Contractor needs to do public consultation/inform the public in every road section before starting construction. PIU is also required to conduct consultation with affected people as part of environmental impacts monitoring.	31 st January 2021 30 September 2021 <u>New action date</u> 30 May 2022	Not resolved.	Site visit to confirm with contractor on information dissemination.
11	Fuel storage on impermeable surface with bund	Contractor needs to prepare fuel storage area.	-	Resolved. Filling station used.	None.

Table 10: Status of EMP Compliance - CW 02 Landfill

No	EMP Requirement (Mitigation Measure)	Compliance & Description (Yes, No, Partial)	Comment or Further Explanation if Needed	Reasons for Not Full Compliance
1	Flora	Yes	- No unanticipated removal of flora observed	-
2	Water Quality	Yes	- Water sampling has been conducted. See Annex 1	-

3	Noise and Dust Management	Yes	- Water bowser being used to control dust and loose materials are covered in trucks when transported	-
4	Spoil Management Plan implementation	Yes	- Acceptable	-
5	Waste Management Plan implementation	Yes	- Housekeeping is acceptable	-
6	Camp Management Plan implementation	Yes	- Camp appears developed and organised	-
7	Community Health, Safety	Yes	- Warning signs in road are in place	-
8	Traffic Management Plan implementation	Yes	- Warning signs in road are in place	-
9	Transport, Storage and Use of Construction Materials	Yes	- Loose materials are covered in trucks when transported on public roads	-
10	Machinery & Equipment - maintenance	Yes	- Acceptable	-
11	Storage and Use of chemicals and fuels	Yes	Fuel storage seen on site to be adequate	-

21. For all 'Partial' or 'No' compliance issues in the table above, the actions needed to solve the compliance issues are in the table below. A number of continued non-compliances remain, from the previous monitoring report and again in this report:

Table 11. EMP– Actions Needed for Compliance -CW02 Landfill

No.	EMP Requirement	Further Action to Take	Date for Action	Who will Implement Action	Resolution?
	N/A				

22. The following table gives information on environmental performance issues from previous Environmental Monitoring Reports. This table confirms that the action was completed or that the action is outstanding..

Table 12. EMP Compliance and Outstanding Issues from SEMR Previous Report(s) -CW02 Landfill

No.	EMP Requirement	Further Action to Take	Responsibility and Timing	Resolution	Required Action
	Not Applicable				

3.2 Health and Safety Performance

23. The following table gives the Health and Safety impact mitigation measures in the Borrower EMP and how the project is progressing with implementing the mitigation measures, for all subprojects:

Table 13. Status of Community and Occupational Health and Safety Compliance - Both subprojects

No	Health and Safety Requirement	Compliance & Description (Yes, No, Partial)	Comment or Further Explanation if Needed	Reasons for Not Full Compliance
1	Occupational H&S Plan Workers Need to wear protective clothing, boot, helmet and gloves	Partial	Subproject: CW01 Poor use of PPE shown in site photos	
2	First Aid kit needed on site	Yes CW01 CW02 Not known	Subproject: CW01 First Aid Kit is visible in camp Subproject: CW02 – none observed	
3	Emergency Procedures	Yes CW01 CW02 Not known	Subproject: CW01 The fire fighting equipment available on site Subproject: CW02 – no emergency procedures observed/training	

5	Community Health and Safety Measures	Yes	Subproject: CW01 The contractor provides enough traffic sign in Force Main construction site and other construction sites.	
6	COVID-19 measures	Yes	Subproject: ALL COVID-19 training /Awareness	

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 14. Health and Safety Actions Needed for Compliance - Both subprojects

No	Health and Safety Requirement	Further Action to Take	Date for Action	Who will Implement Action	Action was in previous SEMR (Y/N)?
1	CW01 Occupational H&S Plan Workers Need to wear protective clothing, boot, helmet and gloves	Contractor to ensure all workers wear appropriate PPE	See Corrective Action Plan table	Contractor	N
3	CW02 emergency procedures and awareness training	emergency procedures need to be confirmed and awareness training of staff	30 March 2022	Contractor	N

4 EMP MONITORING

4.1 Environmental Quality Monitoring

25. Environmental quality monitoring requirements are defined in the Monitoring Plan section of the EMP and in the domestic Environmental and Social Impact Assessment (ESIA). The following table gives a summary of the environmental quality monitoring requirements for each subproject. The Executing Agency is responsible for ensuring monitoring is conducted, as required by the EMP. The Contractor is responsible for monitoring during construction.
26. The WWTP / drainage contractor has undertaken some monitoring (water) but not all. A further Corrective Action Plan will therefore be required for CW01.
27. The landfill contractor (CW02) has undertaken surface water, air quality, noise and vibration monitoring at the site.

Table 15. EMP Environmental Quality Monitoring Requirements - Both subprojects

Environmental Issue	Location / GPS	Responsible Organisation	Monitoring Timing During Construction (indicative)
CW01 Subproject WWTP			
Ambient air quality	1- Main pumping station (MPS)	PISCB / Contractor	6 monthly: April & October from April 2020
Ambient noise and Vibration	2-WWTP Site	PISCB / contractor	6 monthly: April & October from April 2020
	3-Hospital 4-Central Market		
Surface water quality	Kbal Romeas river (X=414377, Y=1176433); Prek Kampong Bay 1 (X=410301, Y=1172212) Prek Kampong Bay 2 (X=409296, Y=1173844)	PISCB / Contractor	6 monthly: April & October from April 2020
CW02 Subproject Landfill			
Ambient air quality	Receptor houses X=414163, Y=1183802	PISCB / Contractor	Quarterly from November 2021 (Every Feb, May, Aug, Nov)
Noise	Receptor houses X=414163, Y=1183802	PISCB / Contractor	Quarterly from November 2021 (Every Feb, May, Aug, Nov)
Surface Water	Nearest Agricultural Pond X=414307, Y=1183989	PISCB / Contractor	6-monthly from February 2022 (Every Feb, Aug)

Ground Water	Site g/w well	Contractor	Once after well completion
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28. CW01 undertook surface water monitoring and wastewater testing at the required sites. The location of the samples is below and the results are in Annex 1.

Table 16. EMP Environmental Quality Monitoring implemented - Both subprojects

Subproject	Environmental Issue Monitored	Location	Monitoring Date (Original)
CW01	Surface water quality	As per table above and maps below	August 2021
CW02	Surface water, air, noise, vibration	At sites shown in maps below.	November 2021

29. **Kampot WWTP CW01.** The summary of the surface water samples show Kabal Romeas to meet all of the national standards. Note that adjacent to the WWTP is a significant private sector construction site. The up and down stream samples from Kampot town, meet national standards. The downstream sample shows slightly poorer water quality than upstream with elevated values for TSS, BOD and COD, as expected when downstream of the town, but meeting the national standard.

		WWTP site	up stream	down stream	national standard
Turbidity	NTU	16.38	8.67	6.85	NV
Dissolved Oxygen(DO)	mg/L	6.50	7.24	7.39	7.5-2.0
Total Suspended Solid (TSS)	mg/L	48.00	27.00	44.00	25-100
Biochemical Oxygen Demand(BOD)5	mg/L	5.79	0.82	2.15	1.0-10
Chemical Oxygen demand (COD)Mn	mg/L	10.40	4.20	8.38	<50
Oil and Grease	mg/L	6.89	4.96	6.00	<5.0
Arsenic(As)	mg/L	0.0006	ND	0.0003	<0.01
Cadmium(Cd)	mg/L	0.0002	ND	0.0002	<0.001
Copper(Cu)	mg/L	0.0005	0.0005	ND	NV
Lead(Pb)	mg/L	ND	ND	ND	<0.01
Mercury(Total)	mg/L	ND	ND	0.0002	<0.0005
Total Coli form	MPN/100ml	2.7×10^3	2.3×10^3	3.3×10^3	<5000

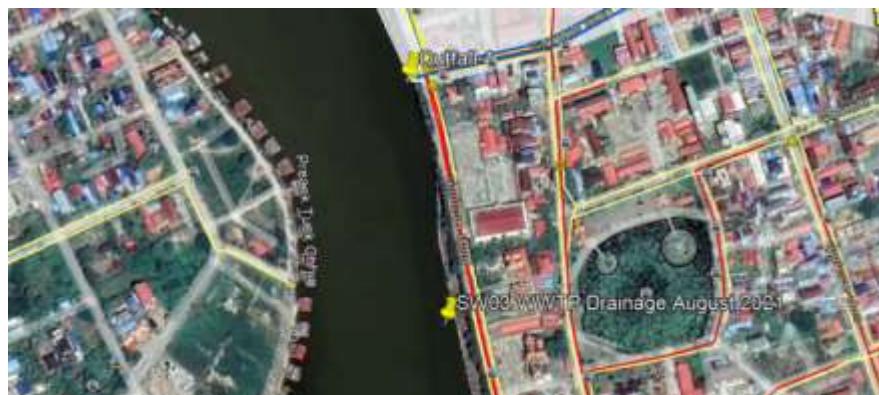
CW01 Surface Water Quality monitoring data August 2021



WWTP site and SW01 Monitoring Site Kbal Romeas



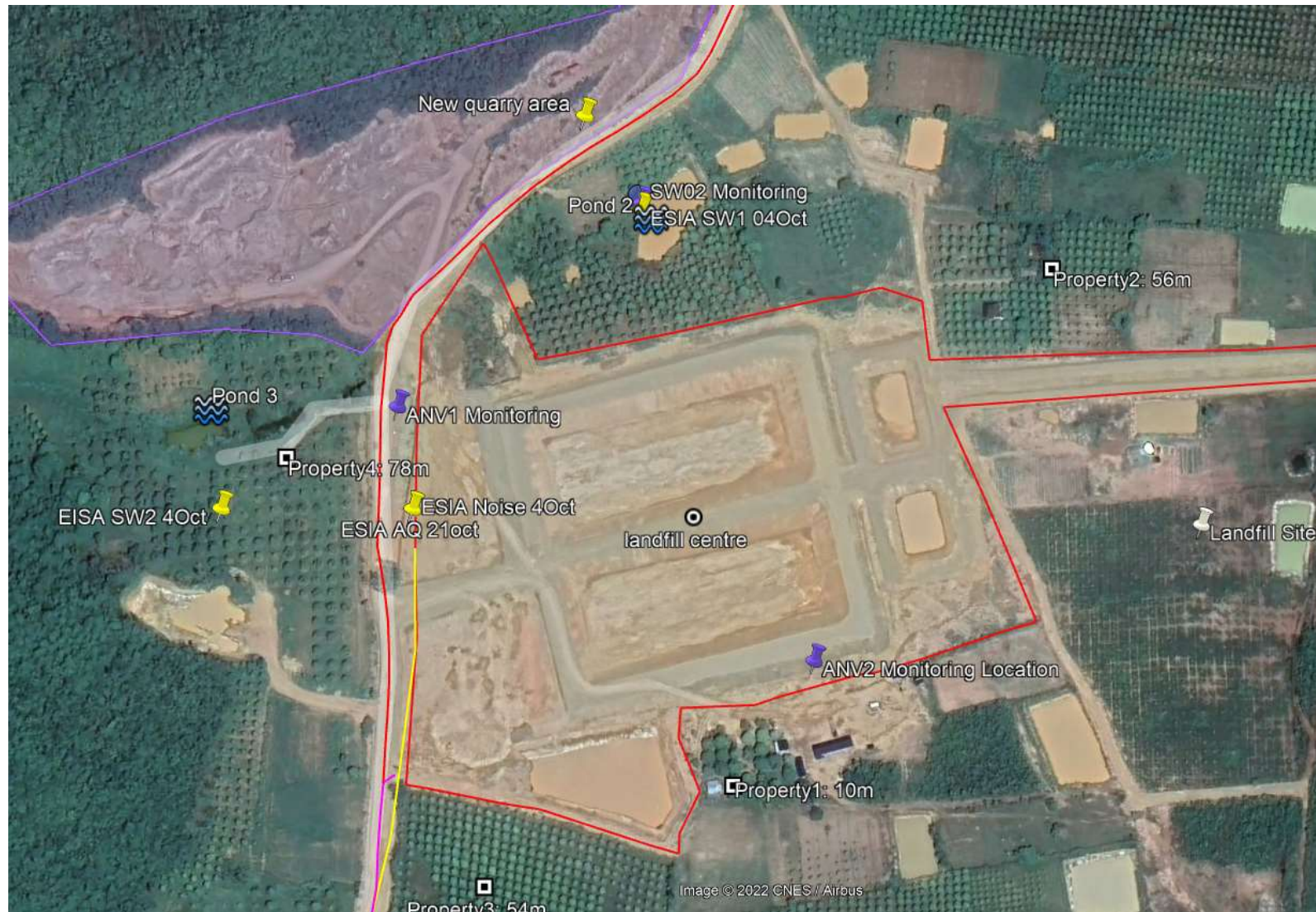
Kampot drainage site and SW02 Monitoring Site Upstream Prek Kampong Bay



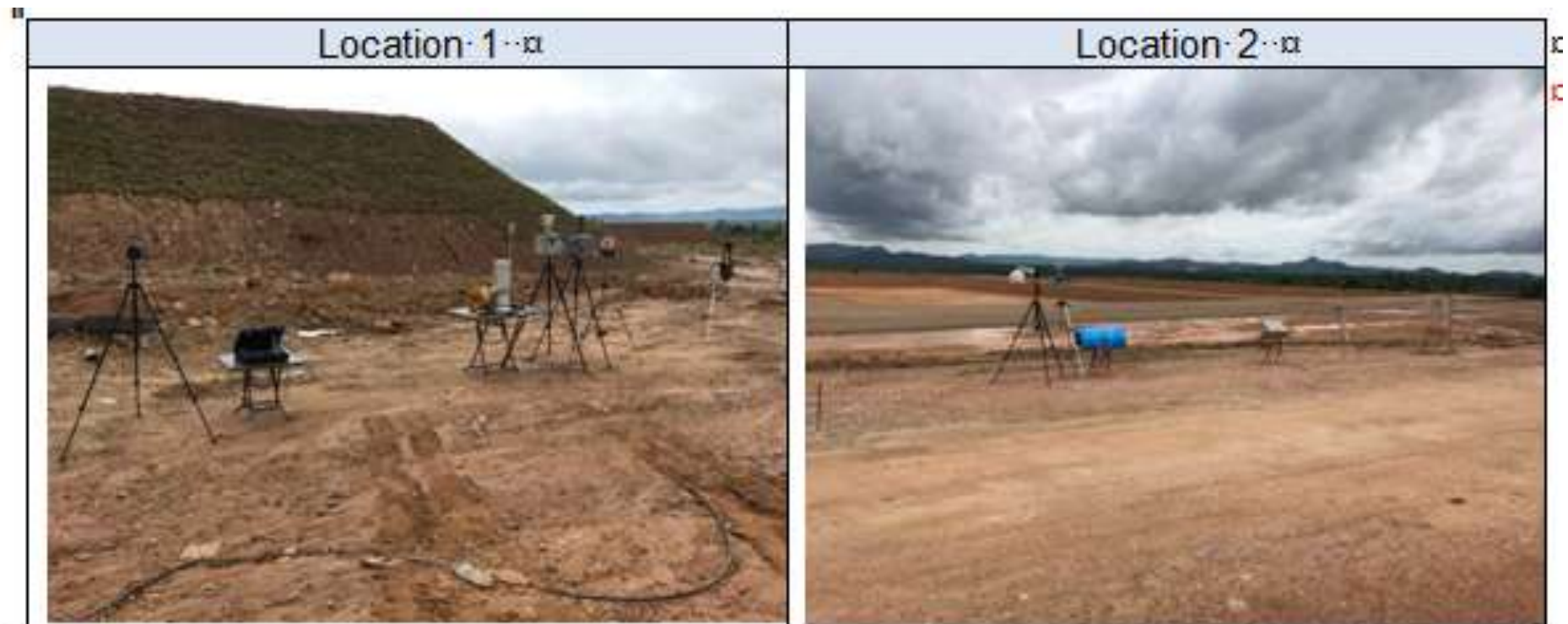
Kampot drainage site and SW02 Monitoring Site Downstream Prek Kampong Bay

30. **CW02 Landfill** undertook monitoring. The monitoring locations are below and correspond to the ESIA location for Surface Water sample 2. The Air Noise Vibration monitoring was undertaken at the boundary, not at specific receptors. This is adequate for monitoring purposes. The results are in the Annex of this Monitoring Report.
31. The results show that TSS standards are not met for SW01 (Target 1-15 mg/l, actual 47 mg/l) 42mg/l. The Baseline in this location on 4th October 2019 was 42 mg/l showing that during project construction the TSS has not significantly increased.
32. Location ANV1. For Air Quality, PM10 and PM2.5 are at or just below the threshold set in the standard. Noise and vibration standards were met.
33. Location ANV2. For Air Quality, PM10 and PM2.5 are PM10 and PM2.5 do not meet the standard but are not significantly elevated levels. The levels are elevated compared to the baseline (IESIA) which is to be expected given the landfill works and importantly, the quarry area adjacent to the road, which was not in operation when the baseline air quality sampling was taken.

mg/m3 Parameter	National Standard	November 2021 result	ESIA Baseline October 2019
PM10	<0.05	0.058	0.043
PM2.5	<0.025	0.036	0.015



SW01 Surface Water Monitoring Nov. 2021 / **ANV 1, ANV2** Air Noise Vibration Monitoring Nov. 2021



Air Noise Vibration monitoring at Landfill

Sample 1 (SW-01) - surface water



Sample 2 (SW-02) - surface water



Water sampling collection at Landfill

4.2 Construction Phase Affected People Consultation

34. During the construction phase, the following table gives information on the environmental impact related consultations that were undertaken in order to understand the impact of the project on Affected People and how effective the EMP Mitigation measures are for residents, businesses and other affected people around the construction sites. No consultation has taken place so far.

Table 17. Construction Phase Affected People Consultation

Subproject	Consultation Date	Person Consulted / Location	Outcome / Issues	Corrective Action Needed	Action Implemented by (person/date)
CW01	Q1 2022	Affected people	Ensure affected people's views on current project implementation are understood	-	To be completed by PIU with support from PISCB.

5 COMPLAINTS, ISSUES, CORRECTIVE ACTION

5.1 Information Disclosure

35. The following table gives information on any information disclosure activities undertaken during this reporting period.

Table 18. Information Disclosure

Topic / Reason for Information	Disclosure Date	Method of Disclosure	Outcome / Results
Interim IEE and EMP VO3 Update for open canal line 4b	October 2021	ADB website	-
CW02 IEE and EMP update VO1	December 2021	ADB website	-
SEMR 03 Jan-June 2021	Nov 2021	ADB website	-

5.2 Grievance Redress Mechanism

36. The Grievance Redress Committee (GRC) was established in 2017. The member of GRC include: deputy governor, director of PDPWT, director of PDE&F, director of PDLMUP&C, director of MoE, director of provincial military police, Teuk Chhou district governor, provincial town governor, Kg Trach district vice-governor, related chiefs of Sangkat/commune and chiefs of villages.
37. The GRM dissemination to Local Authorities took place through training on 14th January 2020.
38. The following table gives information on complaints about the project the Project Team is aware of, during this reporting period. PMU will log any grievances raised by members of the public, stakeholders or any affected people through all communication channels including the formal project GRM and social media. The table includes:
- Complaints made thorough GRM entry points.
 - Issues raised in consultation.
 - Issues raised any other way that the project team is aware of.
39. For issues that have already been solved, this is confirmed in the final column of the table. Where possible the project tries to solve all issues as quickly as possible through informal discussions between the affected people and the contractor.

Table 19. Project Complaints or Issues

Details of Complaint / Issue Raised	Detail of Person (Date, Name, Contact Details)	Action Needed & Date	Comment / Resolved?
No Complaints Raised			

40. The following table gives information on all issues raised in previous SEMRs which are not yet resolved:

Table 20. Project Complaints or Issues – Not resolved from previous reports

Details of Complaint	Detail of Person (Date, Name, Contact Details)	Action Needed & Date	Reason this is still not resolved
Not Applicable			

5.3 Corrective Action

41. The following table gives information on any formal corrective action that has been issued to the contractor in order to improve environmental performance. This does not include any informal corrective action that the CSC issues on site when immediate issues are presented. The Corrective Action Plans (Annex) now include environmental monitoring for both contracts and immediate improvements in using PPE for CW01 – although Q1 2022 is not within this Reporting Period, it is reported here for ease of reference:

Table 21. Corrective Action Plans Issued

No	Reason for Corrective Action	Date Corrective Action Plan Issued	Outcome	Comment / Follow Up
Corrective Action Plan Issued Q4 2021				
1	CW01 No formal worker camp at WWTP including improved sanitation and first aid kits	November 2021	Closed	Workers camp is now in place and has been checked by PMU Project Manager.
2	CW01 Improved fuel storage	November 2021	Closed	The contractor uses a filling station, and does not store their own fuel any more.
Corrective Action Plan To be Issued Q1 2022				
1	CW01 WWTP. Use of PPE	15 FEB 2022 (estimate)		Deadline in Corrective Action Plan 28 Feb 2022
2	CW01 WWTP. Monitoring (noise, air)	15 FEB 2022 (estimate)		Deadline in Corrective Action Plan 30 May 2022



Construction workers camp for CW01



First aid provision at camp for CW01

6 CONCLUSION & RECOMMENDATION

Conclusion:

42. The contractor is failing to perform on a number of issues which are recurring in monitoring reports. These will be checked by PMU and PIU and where necessary, formal corrective actions will be issued. The concerns are:

43. Health and Safety:

- Kampot Landfill CW02 First aid kits are required. Evidence is needed that they are provided and contain adequate materials in case of accidents.
- Kampot Landfill CW02 The project needs to ensure contractor has adequate emergency procedures in place e.g. for accident /injury, spillage.
- PPE use is not consistent particularly on CW01 where workers are seen doing risky activities such as compacting soil with a trench rammer in flip flops. This requires a formal Corrective Action Plan.

44. Environmental Monitoring and Consultation:

- Although not all monitoring has been undertaken by CW01, the surface water monitoring has been completed and shows that national standards both up and downstream of the drainage works are being met. Kabal Romeas at the WWTP also meets national standards.
- Kampot Landfill monitoring took place at comparable locations to the IESIA baseline. The impact of the new quarry area next to the landfill site will also contribute to noise and dust in the local area. This specific and close quarry area was not being exploited when landfill construction began.
- Affected People consultation is overdue. It is essential in order to monitor project impacts on people and is required to be conducted by PIU, with support from PISCB. This can be undertaken as the PIU conduct their regular site visits.

Recommended Actions:

1. The PMU will:

- Ensure the contractors understand the importance of completing the outstanding issues identified in this report and as outlined above in the Conclusions. This includes;
 - CW01 – use of PPE and missing monitoring and consultation.
 - CW02 – checking on first aid kit and emergency procedures / awareness amongst workers.
- Ensure environmental monitoring is completed according to the agreed frequency and locations for CW01.
- Ensure follow up on the corrective actions and other actions needed to ensure compliance with ADB's Safeguard requirements.

2. The PISCB will:

- Support the PIU in the field with conducting informal or formal consultation as part of its on-going EMP monitoring. This means joint field visits to further demonstrate in the field how consultation can be conducted and written up after.

- Support the PMU in ensuring EMP requirements are implemented across the subprojects.

3. **The PIU** will:

- Begin consultation with affected people within and around the construction sites which is overdue from the previous three SEMRs.
- Ensure site visits to check on PPE use and any outstanding Corrective Actions.

Annex 1 Environmental Quality Monitoring Results

The following gives laboratory results for CW01 August 2021

Surface Water01 UTM 48 P 0141377 m E, 1176433 m N



ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

អគ្គនាយកដ្ឋានគាំពារបរិស្ថាន
មជ្ឈមណ្ឌល
LABORATORY

លេខ/N°: ១៩៦-៤.....ព.ស

ព្រឹត្តិប័ត្រវិភាគ

ANALYSIS REPORT

ប្រភពសំណាក/Sample Source : ក្រុមហ៊ុន SBPH ENGINEERING & CONSTRUCTION CO., LTD					
ថ្ងៃ ខែ ឆ្នាំទទួលសំណាក/Date: August 02, 2021					
ប្រភេទសំណាក/Type of Sample: SW-01, Stream Water គម្រោងអភិវឌ្ឍន៍ក្រុងរៀងរដ្ឋបាលអនុតំបន់ទន្លេមេគង្គរបស់ADB (PP1A B425) ស្ថិតនៅក្នុងឃុំកំពង់សំបាង ស្រុកទឹកឈូ ខេត្តកំពត, UTM 48 P 0414377 / 1176433					
No	ប៉ារ៉ាម៉ែត្រ Parameter	ឯកតា Unit	លទ្ធផល Result	ចំណាត់ Standard	វិធីសាស្ត្រវិភាគ Reference Method
1	Turbidity	NTU	16.38	NV	Method Digital Turbidimeter
2	Dissolved Oxygen (DO)	mg/L	6.50	7.5-2.0	Method DO Meter
3	Total Suspended Solid (TSS)	mg/L	48.00	25-100	Method 2540 D
4	Biochemical Oxygen Demand (BOD)5	mg/L	5.79	1.0-10	Method 5210 B
5	Chemical Oxygen demand (COD)Mn	mg/L	10.40	<50	Method JIS K 0102
6	Oil and Grease	mg/L	6.88	<5.0	Method 5520 D
7	Arsenic (As)	mg/L	0.0006	<0.01	Method 3500-As D
8	Cadmium (Cd)	mg/L	0.0002	<0.001	Method 3500-Cd C
9	Copper (Cu)	mg/L	0.0005	NV	Method 3500-Cu C
10	Lead (Pb)	mg/L	ND	<0.01	Method 3500-Pb C
11	Mercury (Total)	mg/L	ND	<0.0005	Method ICP-MS
12	Total Coli form	MPN/100ml	2.7x10 ³	<5000	Method NF T90-413

សំគាល់: 1- ការយកសំណាក ការរក្សាទុក និងការជីកជុំសំណាកមកមជ្ឈមណ្ឌលវិភាគបរិស្ថាន (គីរាង) អនុវត្តតាមបទដ្ឋាន
2- Standards បង្អស់ និងទំហំសំណាកដែលបានកំណត់ដោយអង្គការសុខភាពពិភពលោក (ប្រកាសលេខ១២០ ប្រភពទឹកផ្ទៃដី ថ្ងៃ ខែ ឆ្នាំ ២០១០)
3- ND Mean Not Detected (Lower than LOD), NV Mean No Value
4- គោលបំណងនៃការវិភាគ តាមដានគុណភាពបរិស្ថាន។

ចេញផ្សាយនៅថ្ងៃទី ០២ ខែ សីហា ឆ្នាំ ២០២១

ចេញផ្សាយនៅថ្ងៃទី ០២ ខែ សីហា ឆ្នាំ ២០២១

បានឃើញនៅថ្ងៃទី ០២ ខែ សីហា ឆ្នាំ ២០២១

អគ្គនាយក
Was seen on date:
Director General

ប្រធានមជ្ឈមណ្ឌល
Date of Issue:
Director

អ្នកវិភាគ
Analyzer



លោក ជូ

អ្នកវិភាគ

Surface Water02



ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

អគ្គនាយកដ្ឋានគាំពារបរិស្ថាន
មន្ទីរពិសោធន៍
LABORATORY

លេខ/N°: ៣៩៩.៩.២០២១.....ព.ស

ព្រឹត្តិប័ត្រវិភាគ
ANALYSIS REPORT

ប្រភពសំណាក/Sample Source : ក្រុមហ៊ុន SBPH ENGINEERING & CONSTRUCTION CO., LTD ថ្ងៃ ខែ ឆ្នាំទទួលសំណាក/Date: August 02, 2021 ប្រភេទសំណាក/Type of Sample: SW-02, ទឹកទន្លេ គម្រោងអភិវឌ្ឍន៍ក្រុងរបៀងនៃមហាអនុវត្តបន្ទុកមេត្រូប៉ូលីស ADB (PPIA B425) ភ្នំពេញ និងសង្កាត់កំពង់ឆ្នាំង ក្រុងកំពង់ ខេត្តកំពង់, UTM 48 P 0409296 / 1173844					
ល.រ No	ឈ្មោះប៉ារ៉ាម៉ែត្រ Parameter	ឯកតា Unit	លទ្ធផល Result	ចំណុច Standard	វិធីសាស្ត្រវិភាគ Reference Method
1	Turbidity	NTU	8.67	NV	Method Digital Turbidimeter
2	Dissolved Oxygen (DO)	mg/L	7.24	7.5-2.0	Method DO Meter
3	Total Suspended Solid (TSS)	mg/L	27.00	25-100	Method 2540 D
4	Biochemical Oxygen Demand (BOD) 5	mg/L	0.82	1.0-10	Method 5210 B
5	Chemical Oxygen demand (COD) Mn	mg/L	4.20	<50	Method JIS K 0102
6	Oil and Grease	mg/L	4.96	<5.0	Method 5520 D
7	Arsenic (As)	mg/L	ND	<0.01	Method 3500-As D
8	Cadmium (Cd)	mg/L	ND	<0.001	Method 3500-Cd C
9	Copper (Cu)	mg/L	0.0005	NV	Method 3500-Cu C
10	Lead (Pb)	mg/L	ND	<0.01	Method 3500-Pb C
11	Mercury (Total)	mg/L	ND	<0.0005	Method ICP-MS
12	Total Coli form	MPN/100ml	2.3x10 ³	<5000	Method NF T80-413

កំណត់: 1- ការយកសំណាក ការរក្សាទុក និងការដឹកជញ្ជូនសំណាកមកមន្ទីរពិសោធន៍ត្រូវប្រុងប្រយ័ត្ន (តំបន់) អនុវត្តដោយខ្លួនឯង
 2- Standards បង្កើន និងទទួលបានសំណាកនៅទីតាំងប្រមូល ត្រូវបានអភិវឌ្ឍន៍ដោយមហាអនុវត្តបន្ទុកមេត្រូប៉ូលីស ADB និងសង្កាត់កំពង់ឆ្នាំង (ប្រភេទសំណាក ប្រភេទ ទឹក ទន្លេ ទឹក ខ្សាច់ ឬ ឆ្នាំង ឬ ឆ្នាំង ឬ ឆ្នាំង)
 3- ND Mean Not Detected (Lower than LDL), NV Mean No Value
 4- គោលបំណងនៃការវិភាគ តាមដានគុណភាពបរិស្ថាន ។

បានឃើញនៅថ្ងៃទី ០២ ខែ សីហា ឆ្នាំ ២០២១

អនុនាយក:

Was seen on date:

Director General

ចេញអោយនៅថ្ងៃទី ០២ ខែ សីហា ឆ្នាំ ២០២១

ប្រធានមន្ទីរពិសោធន៍

Date of Issue:

Director

ចេញអោយនៅថ្ងៃទី ០២ ខែ សីហា ឆ្នាំ ២០២១

អ្នកវិភាគ

Analyzer

ហ៊ុន សែន

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Surface Water -03



ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

អគ្គនាយកដ្ឋានគាំពារបរិស្ថាន
មជ្ឈមណ្ឌល
LABORATORY

លេខ/N°: ២៨៦ ៣ ០៧

ព្រឹត្តិប័ត្រវិភាគ

ANALYSIS REPORT

ប្រភពនៃគំរូ/ Sample Source : ក្រុមហ៊ុន SBPH ENGINEERING & CONSTRUCTION CO., LTD ថ្ងៃ ខែ ឆ្នាំនៃការប្រមូលគំរូ/ Date: August 02, 2021 ប្រភេទនៃគំរូ/ Type of Sample: SW-03, ទីកន្លែងកសាងសង់ប្រព័ន្ធបង្កាបទឹកប្រហោងប្រទេស ADB (PPIA B425) ស្ថិតនៅក្នុងសង្កាត់កំពង់កណ្តាល ក្រុងកំពត ខេត្តកំពត, UTM 46 P 0410301 / 1172212					
ល.រ No	ប៉ារ៉ាម៉ែត្រ Parameter	ឯកតា Unit	លទ្ធផល Result	បង្គោល Standard	វិធីសាស្ត្រវិភាគ Reference Method
1	Turbidity	NTU	6.85	NV	Method Digital Turbidimeter
2	Dissolved Oxygen (DO)	mg/L	7.39	7.5-2.0	Method DO Meter
3	Total Suspended Solid (TSS)	mg/L	44.00	25-100	Method 2540 D
4	Biochemical Oxygen Demand (BOD) ₅	mg/L	2.15	1.0-10	Method 5210 B
5	Chemical Oxygen demand (COD) _{Mn}	mg/L	8.38	<50	Method JIS K 0102
6	Oil and Grease	mg/L	6.00	<5.0	Method 5520 D
7	Arsenic (As)	mg/L	0.0003	<0.01	Method 3500-As D
8	Cadmium (Cd)	mg/L	0.0002	<0.001	Method 3500-Cd C
9	Copper (Cu)	mg/L	ND	NV	Method 3500-Cu C
10	Lead (Pb)	mg/L	ND	<0.01	Method 3500-Pb C
11	Mercury (Total)	mg/L	0.0002	<0.0005	Method ICP-MS
12	Total Coli form	MPN/100ml	3.3x10 ³	<5000	Method NF T90-413

សំគាល់៖ 1- ការយកសំណាក ការបង្កើន និងការដឹកជញ្ជូនសំណាកមកមជ្ឈមណ្ឌលវិភាគ (គិតតាម អនុវត្តន៍ដោយខ្លួនឯង)
 2- Standards បំរើប្រើ និងស្តង់ដារគុណភាពទឹកបរិស្ថានប្រកាស របស់ក្រសួងបរិស្ថាន និងការពារព្រៃឈើ (ប្រកាសលេខ ១២០ ប្រ.ក ចុះថ្ងៃទី ១១ ខែ កក្កដា ឆ្នាំ ២០១៨)
 3- ND Mean Not Detected (Lower than LDL), NV Mean No Value
 4- គោលបំណងនៃការវិភាគ តាមដានគុណភាពបរិស្ថាន ។

ចេញកាលបរិច្ឆេទ: ០២/០៨/២០២១

ចេញកាលបរិច្ឆេទ: ០២/០៨/២០២១

បានឃើញនៅថ្ងៃ: ០២/០៨/២០២១

អនុនាយក
Was seen on date:
Director General

ប្រធានមជ្ឈមណ្ឌល
Date of Issue:
Director

អ្នកវិភាគ
Analyzer



អេក ឌី

Signature of Analyzer

Wastewater Sample



ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

អគ្គនាយកដ្ឋានគាំពារបរិស្ថាន
មជ្ឈមណ្ឌល
LABORATORY

លេខ/N°: ២៤៦៩... ២០២១

ព្រឹត្តិប័ត្រវិភាគ
ANALYSIS REPORT

ប្រភពសំណាក/ Sample Source: ក្រុមហ៊ុន SBPH ENGINEERING & CONSTRUCTION CO., LTD ថ្ងៃ ខែ ឆ្នាំទទួលសំណាក/ Date: August 02, 2021 ប្រភេទសំណាក/ Sample Type: WW, Waste Water គម្រោងអភិវឌ្ឍន៍ក្រុងបៀងនៃមហាអនុតំបន់ទន្លេមេគង្គរបស់ADB (PIA B425) ស្ថិតនៅក្នុងភូមិកំពង់បាយ សង្កាត់កំពង់បាយ ក្រុងកំពត ខេត្តកំពត, UTM 48 P 0409862 / 1173289						
No	ប៉ារ៉ាម៉ែត្រ Parameter	ខ្នាត Unit	លទ្ធផល Result	ស្តង់ដារ I Standard.I	ស្តង់ដារ II Standard.II	វិធីសាស្ត្រវិភាគ Reference Method
1	Dissolved Oxygen (DO)	mg/L	3.80	>2.0	>1.0	Method DO Meter
2	Turbidity	NTU	160.00	NV	NV	Method Digital Turbidimeter
3	Total Suspended Solid (TSS)	mg/L	110.00	<60	<120	Method 2540 D
4	Biochemical Oxygen Demand (BOD) ₅	mg/L	88.40	<30	<80	Method 5210 B
5	Chemical Oxygen Demand (COD)Cr	mg/L	135.00	<50	<100	Method 5220 B
6	Oil and Grease	mg/L	13.60	<5.0	<15	Method 5520 D
7	Arsenic (As)	mg/L	0.006	<0.1	<1.0	Method 3500-As D
8	Cadmium (Cd)	mg/L	0.0004	<0.1	<0.5	Method 3500-Cd C
9	Copper (Cu)	mg/L	0.002	<0.2	<1.0	Method 3500-Cu C
10	Lead (Pb)	mg/L	ND	<0.1	<1.0	Method 3500-Pb C
11	Mercury (Total)	mg/L	ND	<0.002	<0.05	Method ICP-MS
12	Total Coli form	MPN/100ml	1.5X10 ⁴	<1000	<1000	Method NF T90-413
សំគាល់៖ 1- ការយកសំណាក ការរក្សាទុក និងការដឹកជញ្ជូនសំណាកមកមន្ទីរពិសោធន៍ត្រូវប្រុង (គំរោង) អនុវត្តដោយខ្លួនឯង 2- Standard.I ជាតម្លៃ និងស្តង់ដារនៃការបញ្ចូលសំណាកពីប្រភពបំបែកចូលទៅក្នុងតំបន់ទឹកសាធារណៈ ឬទៅក្នុងប្រព័ន្ធបណ្តាញ (យោងទៅតាមប្រកាស១១២ ប្រ.ក.ប.ស្ត ចុះថ្ងៃទី ១១ ខែ មេសា ឆ្នាំ ២០១៨) 3- LDL mean Lowest Detection Limit, ND Mean Not Detected (Lower than LDL), NV Mean No Value. 4- គោលបំណងនៃការវិភាគ តាមដានគុណភាពបរិស្ថាន ។						

បានឃើញនៅថ្ងៃទី ០២ ខែ សីហា ឆ្នាំ ២០២១

អនុនាយក៖

Was seen on date:

Director General

ចេញអោយនៅថ្ងៃទី ០២ ខែ សីហា ឆ្នាំ ២០២១

ប្រធានមន្ទីរពិសោធន៍

Date of Issue:

Director

ចេញអោយនៅថ្ងៃទី ០២ ខែ សីហា ឆ្នាំ ២០២១

អ្នកវិភាគ

Analyzer

Kampot landfill Air Quality Monitoring
17 November 2021



ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ



អគ្គនាយកដ្ឋានគាំពារបរិស្ថាន
មជ្ឈមណ្ឌល
LABORATORY

លេខ/N°: ១៩៥-... ព.ស

ព្រឹត្តិប័ត្រវិភាគ
ANALYSIS REPORT

ប្រភពនំសំណាក/Sample Source: **ក្រុមហ៊ុន HENG SAMBATH CO., LTD**
 កន្លែងយកសំណាក/Survey Point: ANV-1, គម្រោងសាងសង់ក្នុងតំបន់កសាង Construction of Landfill in Kampot (ការសាងសង់ទីលានចាក់សំណល់ក្នុងតំបន់) របស់
ក្រុមហ៊ុន អេងសំបាត ហ៊ិនសំបាត ស្ថិតនៅក្នុងភូមិថ្មី ឃុំថ្មី ស្រុកទឹកល្អក់ ខេត្តកំពត, UTM 48 P 0414154 / 1183865
 ថ្ងៃយកសំណាក/Sampling date: November 17, 2021
 រយៈពេល/Sampling Period: 11:00 AM to 11:00 AM next day

ល.រ No	ឈ្មោះប៉ារ៉ាម៉ែត្រ Parameter	ឯកតា Unit	លទ្ធផល Result	ចំណុចស្រប Standard	វិធីសាស្ត្រវិភាគ Reference Method
1	Carbon Monoxide (CO)	mg /m ³	1.553	<20 (8 ម៉ោង)	Method Carbon Monoxide Passive Dosimeter
2	Nitrogen Dioxide (NO ₂)	mg /m ³	0.008	<0.1 (24 ម៉ោង)	Method Saltzman (ISO 6768:1990 (E))
3	Sulfur Dioxide (SO ₂)	mg /m ³	0.021	<0.3 (24 ម៉ោង)	Method Paraoresidine (ISO 6767:1990 (E))
4	Ozone (O ₃)	mg /m ³	0.014	<0.2 (1 ម៉ោង)	Method Professional Gas Detector GT-901 03
5	Total Suspended Particles (TSP)	mg /m ³	0.080	<0.33 (24 ម៉ោង)	Method Weight Concentration Measuring
6	PM10	mg /m ³	0.048	<0.05 (24 ម៉ោង)	Method Weight Concentration Measuring
7	PM2.5	mg /m ³	0.025	<0.025 (24 ម៉ោង)	Method Weight Concentration Measuring
8	Lead (Pb)	mg /m ³	ND	<0.005 (24 ម៉ោង)	Method 3500-Pb C (HNO ₃ , HCl Digestion)

សំគាល់: 1- ព័ត៌មាន និងលទ្ធផលនៃការវិភាគត្រូវបានផ្តល់ជូនដល់អ្នកប្រគល់សំណាក ដើម្បីយកមកប្រើប្រាស់ និងសម្រេចចិត្ត (ឯកសារផ្ទៃក្នុងត្រូវបានរក្សាទុក) 9 ម៉ោង ព្រ.ក.ប.ស ចុះថ្ងៃទី ១១ ខែ ឧសភា ឆ្នាំ ២០១១
 2- ឧបសគ្គល្បឿន 0.3 – 3.0 m/s

ចេញមកយោង ថ្ងៃទី ១៧ ខែ វិច្ឆិកា ឆ្នាំ ២០២១

បានឃើញនៅថ្ងៃទី ១៧ ខែ វិច្ឆិកា ឆ្នាំ ២០២១

អនុនាយក:

Was seen on date:

Director General




នាយកដ្ឋាន

ចេញមកយោង ថ្ងៃទី ១៧ ខែ វិច្ឆិកា ឆ្នាំ ២០២១

ប្រធានមជ្ឈមណ្ឌល

Date of Issue:

Director



លោក ជេ

ចេញមកយោង ថ្ងៃទី ១៧ ខែ វិច្ឆិកា ឆ្នាំ ២០២១

អ្នកវិភាគ

Analyzer



Kampot landfill Noise Monitoring
17 November 2021



ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

អគ្គនាយកដ្ឋានគាំពារបរិស្ថាន
មន្ទីរពិសោធន៍
LABORATORY

លេខ/N°: ១៩៩-៥.....ព.ស

ព្រឹត្តិប័ត្រវិភាគ
ANALYSIS REPORT

ប្រភពសំណាក/Sample Source: **ក្រុមហ៊ុន HENG SAMBATH CO., LTD**
 កន្លែងប្រមូលសំណាក/Survey Point: **ANV-1, កំពុងសាងសង់តំបន់កសាង Construction of Landfill in Kampot (ការសាងសង់ទីលានចាក់សំណល់ឧស្ម័នកំពត រូបសំណាក)**
ក្រុមហ៊ុន សាធារណភាព និងជីវិតកម្ពុជា ព្រំប្រទល់ក្នុងភូមិភាគ ឃុំថ្មី ស្រុកទឹកឈូ ខេត្តកំពត, UTM 48 P 0414154 / 1183865
 ថ្ងៃប្រមូលសំណាក/Sampling date: November 17, 2021
 រយៈពេលប្រមូល/Sampling Period: 11:00 AM to 11:00 AM next day

Survey Period		Noise Level dB(A)				Remarks
		L _{Aeq}	Standard(Leq)	L _{max}	L _{min}	
Day	6:00 - 7:00	50.8	70	70.9	46.7	
	7:00 - 8:00	47.2		72.9	47.5	
	8:00 - 9:00	53.0		71.9	50.2	
	9:00 - 10:00	55.8		72.4	55.2	
	10:00 - 11:00	61.4		82.2	56.7	
	11:00 - 12:00	60.8		83.3	54.4	
	12:00 - 13:00	61.3		80.9	57.8	
	13:00 - 14:00	61.4		83.4	55.4	
	14:00 - 15:00	59.6		80.4	54.8	
	15:00 - 16:00	62.1		85.8	54.4	
	16:00 - 17:00	61.6		83.9	55.3	
	17:00 - 18:00	59.5		83.4	51.6	
Evening	18:00 - 19:00	53.6	65	76.5	46.8	
	19:00 - 20:00	52.8		73.8	47.9	
	20:00 - 21:00	50.0		67.9	48.1	
	21:00 - 22:00	51.9		73.2	46.7	
Night	22:00 - 23:00	50.0	50	67.4	46.6	
	23:00 - 00:00	54.2		68.3	52.1	
	00:00 - 1:00	51.7		71.3	46.2	
	1:00 - 2:00	57.1		71.6	45.7	
	2:00 - 3:00	54.5		69.3	45.8	
	3:00 - 4:00	46.8		67.9	44.7	
	4:00 - 5:00	46.3		64.3	44.4	
	5:00 - 6:00	48.2		70.6	41.8	
24 hours Average		54.7		74.7	49.9	

សំគាល់: ធាតុប្រូប ដែលបានប្រើប្រាស់ក្នុងការសង្កេតសំឡេង ត្រូវបានប្រើប្រាស់តាមប្រភេទ និងលេខបញ្ជី (ឧទាហរណ៍: ឧបករណ៍ស្រាវជ្រាវលេខ ១២០ ប្រភេទ ៥៥ ចុះថ្ងៃទី ១១ ខែ កញ្ញា ឆ្នាំ ២០១៨) (Sound Level Meter NL-42-52 10C)

បានឃើញនៅថ្ងៃទី ២៤ ខែ វិច្ឆិកា ឆ្នាំ ២០២១

អគ្គនាយក

Was seen on date:

Director General



ជ័យ ស៊ីហ្គា

ចេញកម្រិតនៅ ថ្ងៃទី ២៤ ខែ វិច្ឆិកា ឆ្នាំ ២០២១

ប្រធានមន្ទីរពិសោធន៍

Date of Issue:

Director



ផែន ឌុន

ចេញអាយុនៅ ថ្ងៃទី ២៤ ខែ វិច្ឆិកា ឆ្នាំ ២០២១

អ្នកវិភាគ

Analyzer



អាសយដ្ឋាន: ផ្ទះលេខ ៥០៣ ផ្លូវលេខ ៥០៣ ភូមិបឹងកក់ សង្កាត់បឹងកក់ ខណ្ឌបឹងកក់ ភ្នំពេញ The Heritage Techno Building, Lot 503, Tonle Bassac, Chomkham, Phnom Penh, ទូរស័ព្ទលេខ: 023 235 004 / 023 235 006

អគ្គនាយកដ្ឋានគាំពារបរិស្ថាន
មន្ទីរពិសោធន៍
LABORATORY

ព្រឹត្តិប័ត្រវិភាគ
ANALYSIS REPORT

HI:WHI Sampling Period: 11:00 AM to 11:00 AM next day

Time	Survey Period	Vibration Level dB				Remarks
		Leq	Standard (Leq)	Lmax	Lmin	
Day	6:00 - 7:00	33.8	65	39.7	16.1	
	7:00 - 8:00	31.7		39.2	16.3	
	8:00 - 9:00	32.9		39.6	17.3	
	9:00 - 10:00	31.7		44.7	16.9	
	10:00 - 11:00	34.1		40.6	15.7	
	11:00 - 12:00	37.2		45.2	17.3	
	12:00 - 13:00	35.1		40.9	17.4	
	13:00 - 14:00	34.5		40.2	17.0	
	14:00 - 15:00	35.2		42.0	16.6	
	15:00 - 16:00	33.6		38.5	16.9	
	16:00 - 17:00	36.1		44.3	16.1	
	17:00 - 18:00	36.1		43.0	17.3	
Night	18:00 - 19:00	30.6	60	39.3	15.7	
	19:00 - 20:00	30.1		38.5	15.5	
	20:00 - 21:00	30.4		36.9	15.6	
	21:00 - 22:00	30.4		40.0	14.5	
	22:00 - 23:00	25.4		29.9	14.6	
	23:00 - 00:00	30.1		39.5	14.4	
	00:00 - 1:00	30.5		40.2	14.6	
	1:00 - 2:00	28.7		36.5	14.6	
	2:00 - 3:00	29.1		37.3	14.6	
	3:00 - 4:00	29.4		37.8	14.8	
	4:00 - 5:00	29.2		37.6	14.6	
	5:00 - 6:00	30.8		40.3	15.0	
24 hours Average		31.9		39.7	15.8	

សំគាល់៖ ថ្នាក់ផ្សេងៗនៃការវាស់ស្ទង់ ដោយប្រើប្រាស់ឧបករណ៍វាស់ស្ទង់ប្រភេទផ្សេងៗគ្នា អាចមានលក្ខណៈខុសប្លែកគ្នា។ ប្រភេទឧបករណ៍វាស់ស្ទង់ប្រភេទផ្សេងៗគ្នា អាចមានលក្ខណៈខុសប្លែកគ្នា។ ប្រភេទឧបករណ៍វាស់ស្ទង់ប្រភេទផ្សេងៗគ្នា អាចមានលក្ខណៈខុសប្លែកគ្នា។ ប្រភេទឧបករណ៍វាស់ស្ទង់ប្រភេទផ្សេងៗគ្នា អាចមានលក្ខណៈខុសប្លែកគ្នា។

ចេញអោយនៅ ថ្ងៃទី ២៤ ខែ វិច្ឆិកា ឆ្នាំ២០២១

ସଂଗ୍ରହକାରୀଙ୍କ ନାମ: ଡାକ୍ତର ଶ୍ରୀମତୀ ସୁମିତ୍ରା ମହାପାତ୍ର

បានឃើញនៅថ្ងៃទី ២៤ ខែ កុម្ភៈ ឆ្នាំ២០២១

ប្រធានមន្ទីរពិភោគ

શ્રુતીગ્રાન્થ

Date of Issue:

Analyzer

Director

Seen on date



665 52

ဦးနုလောက

អាគារអគារបោះពុម្ពផ្សាយស្ថិតនៅក្នុងផ្ទះលេខ ៥០៣ ផ្លូវលេខ ៥០៣ ភូមិបាសាក់ សង្កាត់បឹងកក់ ខណ្ឌដូនពេញ The Heritage Tech Building, Lot 503, Tonle Bassac, Chamkarmon, Phnom Penh, 91151038 / 023 235 004 / 023 235 006



ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

អគ្គនាយកដ្ឋានគាំពារបរិស្ថាន
មជ្ឈិមភាគ
LABORATORY

ନେଃ/N^o: ୧୫୫/II.....ପ.ସ

ព្រឹត្តិប័ត្រវិភាគ

ANALYSIS REPORT

ប្រភពសំណាក/Sample Source: **ហ្វេងសំប៉ាត** HENG SAMBATH CO., LTD

កន្លែងធ្វើការស្រាវជ្រាវ/Survey Point: ANV-2, ការសាងសង់បឹងបង្កប់សំណល់ក្នុងតំបន់កំពត Construction of Landfill in Kampot (ការសាងសង់បឹងបង្កប់សំណល់ក្នុងតំបន់កំពត)

ក្រសួង សាធារណការ និងដឹកជញ្ជូន ស្ថិតនៅរាង្វង់ភូមិថ្មី ឃុំថ្មី ស្រុកទឹកឈូ ខេត្តកំពត, UTM 48 P Q 0414415 / 1183700

ថ្ងៃយកសំណាក/Sampling date: November 17, 2021

IRS:IR96/Sampling Period: 11:50 AM to 11:50 AM next day

ល.រ No	ប៉ារ៉ាម៉ែត្រ Parameter	ឯកតា Unit	លទ្ធផល Result	មធ្យោបាយ Standard	វិធីសាស្ត្រវិភាគ Reference Method
1	Carbon Monoxide (CO)	mg /m ³	2.519	<20(8 ម៉ោង)	Method Carbon Monoxide Passive Dosimetre
2	Nitrogen Dioxide (NO ₂)	mg /m ³	0.005	<0.1(24 ម៉ោង)	Method Saltzman [ISO 6768:1996(E)]
3	Sulfur Dioxide (SO ₂)	mg /m ³	0.023	<0.3(24 ម៉ោង)	Method Paracosamine [ISO 6767:1990(E)]
4	Ozone (O ₃)	mg /m ³	0.010	<0.2(1 ម៉ោង)	Method Professional Gas Detector GT-901 03
5	Total Suspended Particles (TSP)	mg /m ³	0.110	<0.33(24 ម៉ោង)	Method Weight Concentration Measuring
6	PM10	mg /m ³	0.058	<0.25(24 ម៉ោង)	Method Weight Concentration Measuring
7	PM2.5	mg /m ³	0.036	<0.023(24 ម៉ោង)	Method Weight Concentration Measuring
8	Lead (Pb)	mg /m ³	ND	<0.005(24 ម៉ោង)	Method 3500-Pb C (HNO ₃ , HCl Digestion)

សំគាល់: 1- ព័ត៌មាន និងលទ្ធផលនៃការត្រួតពិនិត្យតាមការស្នើសុំរបស់អង្គភាពពាក់ព័ន្ធនៃការអនុវត្តការងារនេះ គឺជាលទ្ធផលប៉ាន់ប៉ាន់ (ឯកសារផ្ទេរឯកសារស្របច្បាប់ ១២០ ប្រ.ប.ស.ស្តី ក្រចេះ ១១ ខែ មេសា ឆ្នាំ ២០១៧)
2- ឧបករណ៍វាស់ស្ទង់ ០.3 – 3.8 m/s

ଦେଖାଯାଉଥିବା ଓଡ଼ିଆ ଶବ୍ଦମାନଙ୍କର ସଂଖ୍ୟା ୧୦୦୦

編者按語：

Was seen on date:

Director General

ගෙවුණයානේ පිටි **දේ** 30.12.2019

ក្រុមការងារបង្កើនជីវភាពរស់នៅ

Date of issue:

Director

ਅੰਤਰਰਾਸ਼ਟਰੀ

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ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

អគ្គនាយកដ្ឋានគាំពារបរិស្ថាន
មន្ទីរពិសោធន៍
LABORATORY

លេខ/N° : ១៥៥... ព.ស

ព្រឹត្តិប័ត្រវិភាគ
ANALYSIS REPORT

ប្រភពនៃសំណាក/Sample Source: **ក្រុមហ៊ុន HENG SAMBATH CO., LTD**

កន្លែងយកសំណាក/Survey Point: **ANV-2, កំពែងសំបូរដីក្នុងតំបន់គម្រោង Construction of Landfill in Kampot (ការសាងសង់ទីតាំងបំពាក់សំណល់ឧស្សាហកម្ម) របស់**

ក្រុមហ៊ុន សាធារណការ និងដឹកជញ្ជូន ស្ថិតនៅក្នុងភូមិថ្មី ឃុំថ្មី ស្រុកទឹកឈូ ខេត្តកំពត, UTM 48 P 0414415 / 1183705

ថ្ងៃយកសំណាក/Sampling date: **November 17, 2021**

រយៈពេល/Sampling Period: **11:50 AM to 11:50 AM next day**

Survey Period		Noise Level dB(A)				Remarks
		L _{Aeq}	Standard(L _{eq})	L _{max}	L _{min}	
Day	6:00 - 7:00	58.2	70	76.8	45.2	
	7:00 - 8:00	58.5		77.3	46.5	
	8:00 - 9:00	60.9		79.7	44.7	
	9:00 - 10:00	58.8		81.3	45.2	
	10:00 - 11:00	60.1		81.5	47.9	
	11:00 - 12:00	57.9		72.7	46.9	
	12:00 - 13:00	57.9		73.1	47.1	
	13:00 - 14:00	57.6		74.2	47.7	
	14:00 - 15:00	57.3		76.1	47.2	
	15:00 - 16:00	56.6		69.5	47.2	
	16:00 - 17:00	57.4		76.2	46.6	
	17:00 - 18:00	57.4		75.2	48.4	
Evening	18:00 - 19:00	59.6	65	77.5	47.4	
	19:00 - 20:00	63.2		81.2	45.9	
	20:00 - 21:00	59.1		72.5	45.3	
	21:00 - 22:00	59.4		75.9	48.2	
Night	22:00 - 23:00	56.8	50	73.5	45.5	
	23:00 - 00:00	58.5		77.3	44.0	
	00:00 - 1:00	67.5		79.2	46.3	
	1:00 - 2:00	60.2		78.1	45.1	
	2:00 - 3:00	61.3		70.9	49.2	
	3:00 - 4:00	58.5		74.0	44.4	
	4:00 - 5:00	59.0		69.5	46.1	
	5:00 - 6:00	58.6		77.7	44.1	
24 hours Average		59.2		75.9	46.3	

កំណត់សម្គាល់ ទំហំកម្រិត និងស្ថានភាពសំណាកត្រូវបានវាយតម្លៃដោយប្រើឧបករណ៍វាស់ស្ទង់កម្រិតសំឡេង (ឧបករណ៍វាស់ស្ទង់កម្រិតសំឡេង 9២០ ប្រភេទ ១១ និង ២២០ ប្រភេទ ១១) (Sound Level Meter NL-42 G2 NR)

ចេញរបាយការណ៍ ថ្ងៃទី ១៨ ខែ វិច្ឆិកា ឆ្នាំ ២០២១

បញ្ជាក់របាយការណ៍ ថ្ងៃទី ១៨ ខែ វិច្ឆិកា ឆ្នាំ ២០២១

បានឃើញនៅថ្ងៃទី ១៨ ខែ វិច្ឆិកា ឆ្នាំ ២០២១

បានចេញនៅថ្ងៃទី ១៨ ខែ វិច្ឆិកា ឆ្នាំ ២០២១

បានវិភាគ

អគ្គនាយក

Date of Issue:

Analyzer

Was seen on date:

Director

Director General



ជា សុំណា

លោក ឌុំ



ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

អគ្គនាយកដ្ឋានគាំពារបរិស្ថាន
មជ្ឈិមិសាសន៍
LABORATORY

ନେଃ/N°: ୧୩୫୫-VI.....ପ.ସ

ព្រឹត្តិប័ត្រវិភាគ
ANALYSIS REPORT

ប្រភពសំណាក/Sample Source: **ក្រុមហ៊ុន HENG SAMBATH CO., LTD**

កន្លែងរកស៊ីស្រូវ: Survey Point: ANV-2, កំពង់ច័ន្ទីរក្នុងតំបន់សម្រោច Construction of Landfill in Kampot (កងសាងសង់ទីលានបាក់ស័រមេឌូកំពត របស់

ក្រុមហ៊ុន សេនាសេនា ធីនីអេកូឡូស៊ី ស្ថិតនៅក្នុងភូមិ ឃុំ ស្រុក ខេត្ត, UTM 48 P 0414415 / 1183705

ថ្ងៃយកសំណាក/Sampling date: November 17, 2021

HW:RR/Sampling Period: 11:50 AM to 11:50 AM next day

Time	Survey Period	Vibration Level dB				Remarks
		Leq	Standard (Leq)	Lmax	Lmin	
Day	6:00 - 7:00	24.1	65	34.0	18.6	
	7:00 - 8:00	24.3		42.6	12.2	
	8:00 - 9:00	22.8		39.4	18.0	
	9:00 - 10:00	21.3		37.4	18.3	
	10:00 - 11:00	22.5		45.9	19.7	
	11:00 - 12:00	25.4		44.4	18.6	
	12:00 - 13:00	24.3		40.2	19.4	
	13:00 - 14:00	24.8		38.6	17.9	
	14:00 - 15:00	23.9		39.2	19.1	
	15:00 - 16:00	24.2		39.4	17.6	
Night	16:00 - 17:00	24.8	60	45.1	18.8	
	17:00 - 18:00	24.0		38.8	17.8	
	18:00 - 19:00	23.5		41.0	15.5	
	19:00 - 20:00	24.7		41.3	17.0	
	20:00 - 21:00	23.7		41.1	14.8	
	21:00 - 22:00	24.3		44.3	15.9	
	22:00 - 23:00	23.6		38.0	14.1	
	23:00 - 00:00	22.4		42.2	13.7	
	00:00 - 1:00	21.5		39.4	14.0	
	1:00 - 2:00	22.5		39.1	14.2	
Night	2:00 - 3:00	21.8	60	42.3	14.4	
	3:00 - 4:00	22.5		41.1	14.7	
	4:00 - 5:00	23.4		39.1	14.2	
	5:00 - 6:00	22.7		40.9	14.8	
24 hours Average		23.5		40.8	16.4	

[illegible]

ପଞ୍ଚାମାସୀ ୧୫୫ ଓ ୧୫୬ ଶ୍ରୀମତୀ

បញ្ចូលរយៈពេល ថ្ងៃទី ០៩ ខែ ២០២១ ឆ្នាំ២០២១

ගනවිත්තයාලේ ඉදි කළ විහාරස්ථානය

ប្រធានទទឹងរីកសោធន៍

सुखीकाव

50 毫安 1 号电池

Date of Issue:

Analyzer

Wings seen on date:

Director

Exotic Ciguatera

and

କେନ୍ଦ୍ର ସ୍ତର

២- សីលធម៌

អាគារបុរាណជាតិ ឬស្ថានីយបណ្តុះបណ្តាលសិស្សសាលាសាមគ្គីភាពស្រី - The Heritage Techo Building, Lot 503, Tonle Sapac, Chamkarmom, Phnom Penh, កម្ពុជា ទូរស័ព្ទលេខ៖ 023 235 004 / 023 235 006

Surface Water 02



ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

អគ្គនាយកដ្ឋានគាំពារបរិស្ថាន
បណ្ឌិតសភា
LABORATORY

លេខ/N°: ០៣៣-៧.....ព.ស

ព្រឹត្តិប័ត្រវិភាគ
ANALYSIS REPORT

ប្រភពសំណាក/Sample Source : ក្រុមហ៊ុន HENG SAMBATH CO., LTD ថ្ងៃ ខែ ឆ្នាំទទួលសំណាក/Date: November 17, 2021 ប្រភេទសំណាក/Type of Sample: SW-02, ទីកន្លែងបែងចែក អនុគម្រោង Construction of Landfill in Kampot (កែសម្រួលសំណង់បែងចែកបំពង់បំបាត់សំណល់) របស់ ក្រុមហ៊ុន សាធារណការ និងដឹកជញ្ជូន ស្ថិតនៅភូមិភូមិ ប៉ុស្តិ៍ ស្រុកទឹកឈូ ខេត្តកំពង់, UTM 48 P 0414307 / 1183993					
No	ប៉ារ៉ាម៉ែត្រ Parameter	ឯកតា Unit	លទ្ធផល Result	បទដ្ឋាន Standard	វិធីសាស្ត្រវិភាគ Reference Method
1	pH (Lab)	-	6.30	6.5-8.5	Method pH Meter
2	Dissolved Oxygen (DO) (Lab)	mg/L	6.60	7.5-2.0	Method DO Meter
3	Total Dissolved Solid (TDS) (Lab)	mg/L	51.00	<1000	Method ino-Lab Meter
4	Total Suspended Solid (TSS)	mg/L	36.00	1.0-15	Method 2540 D
5	Biochemical Oxygen Demand (BOD) 5	mg/L	1.66	<30	Method 5210 B
6	Chemical Oxygen Demand (COO) Mn	mg/L	4.86	1.0-8.0	Method JIS K 0102
7	Oil and Grease	mg/L	4.60	<5.0	Method 5520 D
8	Detergent (MBAS)	mg/L	ND	<5.0	Method 5540 C
9	Sulphate (SO4)	mg/L	4.20	<300	Method 4500-SO4 ²⁻ B
10	Total Nitrogen (TN)	mg/L	0.62	0.1-0.6	Method JIS K 0102 45
11	Total Phosphorus (TP)	mg/L	0.04	0.005-0.05	Method JIS K 0102 46
12	Arsenic (As)	mg/L	0.002	<0.01	Method 3500-As D
13	Cadmium (Cd)	mg/L	ND	<0.001	Method 3500-Cd C
14	Lead (Pb)	mg/L	ND	<0.01	Method 3500-Pb C
15	Mercury (Total)	mg/L	ND	<0.0005	Method ICP-MS
16	Total Coli form	MPN/100ml	2.1X10 ³	<1000	Method NF T90-413

សំគាល់: 1- ការយកសំណាក តាមក្រុមហ៊ុន និងការដឹកជញ្ជូនសំណាកតាមបណ្តាញសំណាកប្រើប្រាស់ (គឺជាឯកតា) តាមប្រព័ន្ធនៃប្រព័ន្ធនេះ។
 2- Standard ជាតំលៃ និងលំដាប់តាមការកំណត់ សម្រាប់ប្រភេទសំណាកនីមួយៗ និងលំដាប់តាមប្រព័ន្ធនៃប្រព័ន្ធនេះ។
 3- ND Mean Not Detected (Lower than LOD), NV Mean No Value.
 4- របាយការណ៍នៃការវិភាគ គឺជាការបង្ហាញលទ្ធផលការវិភាគ

បានឃើញនៅថ្ងៃទី ២៤ ខែ វិច្ឆិកា ឆ្នាំ ២០២១

អគ្គនាយក:
Was seen on date:
Director General

ប្រធានមន្ទីរវិភាគ
Date of Issue:
Director

លោក ជួន

អ្នកវិភាគ
Analyzer



ហ៊ុន សែន

ហ៊ុន សែន

ហ៊ុន សែន

Annex 2 Photo Record – Visits, Training activities (CW01)

Activities of GAP and EMP/GRM/Consultation training were held on 25-26 Nov.2021









LANDFILL SITE



Over view of site, September 2021

 <p>Jul 31, 2021 4:30:10 PM 122° SE Unnamed Road Tuek Chhou Kampong Province Altitude: 22.9m Speed: 2.3km/h Index number: 219</p>	 <p>Jul 31, 2021 4:41:48 PM 122° SE Unnamed Road Tuek Chhou Kampong Province Altitude: 20.5m Speed: 0.0km/h Index number: 219</p>	 <p>Jul 31, 2021 4:42:02 PM 165° S Unnamed Road Tuek Chhou Kampong Province Altitude: 26.5m Speed: 1.2km/h Index number: 220</p>
<p>Fuel storage well constructed and protected</p>	<p>Worker camps</p>	
 <p>Jul 17, 2021 1:23:21 PM 74° E National Road 3 Tuek Chhou Kampong Province Altitude: 29.4m Speed: 0.0km/h Index number: 24</p>	 <p>8/2021 8:06:06 AM 341° E Unnamed Road Tuek Chhou Kampong Province Altitude: 33.0m Speed: 0.0km/h Index number: 97</p>	 <p>Aug 28, 2021 7:45:09 PM 140° NE Unnamed Road Tuek Chhou Kampong Province Altitude: 20.5m</p>
<p>Site Clearance</p>	<p>Site notice boards with contact details</p>	<p>Site, August 2021</p>

		
<p>Site October 2021</p>	<p>Site Dec 2021</p>	<p>Site Dec 2021</p>
		
<p>Covered loads</p>	<p>Using water bowser</p>	<p>Traffic Management</p>

WWTP, Drainage



Overview of Main Pumping Station, September 2021

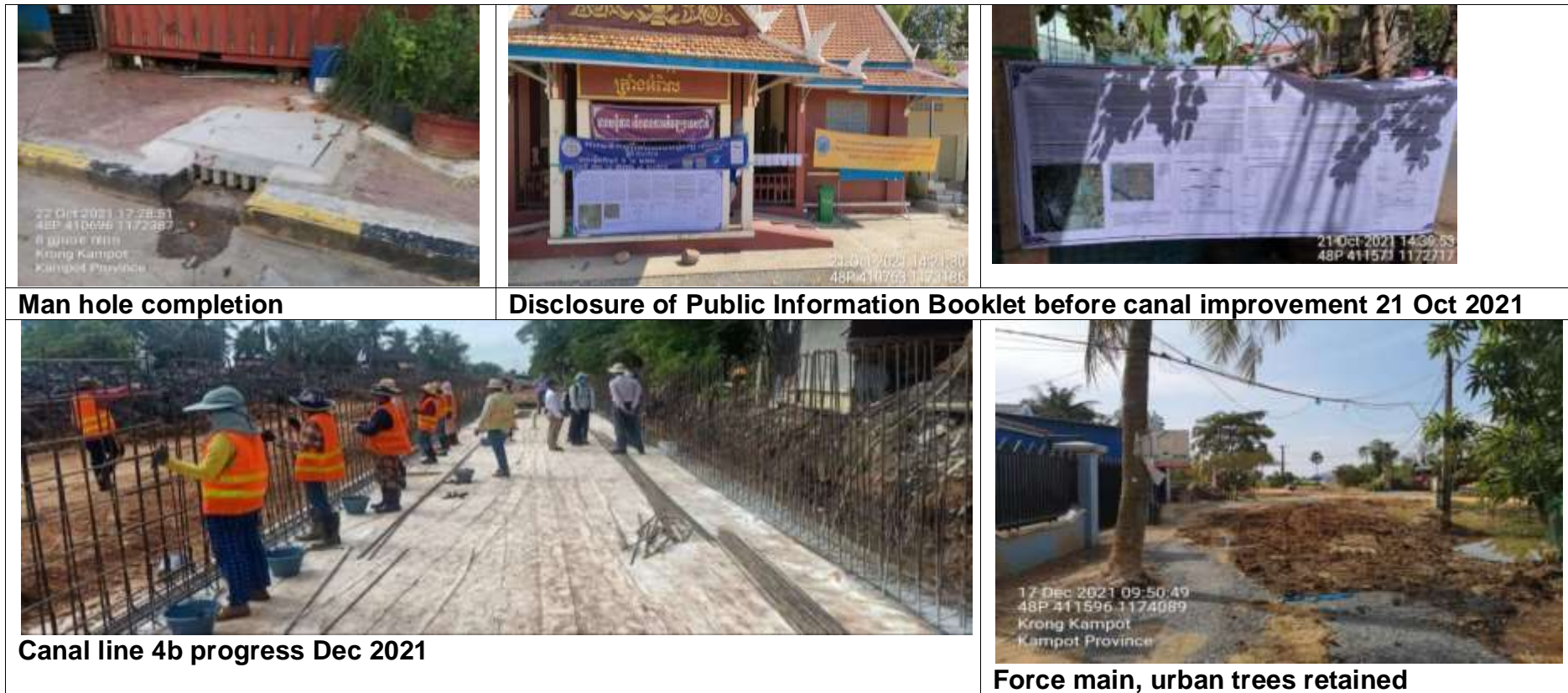


Overview of WWTP site, September 2021

<p>17 Jul 2021 16:47:38 48P 414061 1176072</p>	<p>23 Jul 2021 16:31:08 48P 414109 1176093 Unnamed Road Tuek Chhou Kampot Province</p>	<p>23 Jul 2021 16:38:45 48P 414061 1176072 Unnamed Road Tuek Chhou Kampot Province</p>
<p>WWTP Site construction</p>		

		
Force main installation		
		
U drain repair and site inspection	July 2021	Warning signs for traffic safety
		

<p>Poor use of PPE – flip flops Sep2021</p> 	<p>No PPE Sep2021</p> 	<p>Using trench rammer for soil compaction without safety footwear Sept 2021</p>  <p>Using trench rammer without safety footwear Dec 2021</p>
<p>Consultation with the Stakeholders for Resettlement review on 21-22 Sep. 2021 – for Canal line 4b Variation Order</p>		
 <p>Street warning sign</p>	 <p>Improved PPE, Oct 2021</p>	 <p>Partial PPE, Oct 2021</p>



Annex 3 Planned Corrective Action Plan to be Issued Q1 2022

CW01 Kampot drainage and WWTP

CORRECTIVE ACTION PLAN FOR:	CW01 Kampot Drainage and WWTP		
PMU Staff Responsible: (name and role)	Name: Mr Socheat Penh	Role: PMU Environment Specialist	
Date this form issued to Contractor:	15 February 2022		
Deadline for Corrective Action:	Action 1) PPE 28 FEB 2022 Action 2) Environmental Monitoring. 30 MAY 2022		
Is there an immediate risk to health and safety of people?	Yes	<input checked="" type="checkbox"/>	No
Is there an immediate risk to the environment?	Yes	<input type="checkbox"/>	No
Correct Action(s) Required:			
Details of the non-compliance with EMP	<p>1) EMP Health and Safety measures: Require that all workers are equipped with, and use Personal Protective Equipment (PPE)</p> <p>Evidence of poor use of Personal Protective Equipment, particularly high visibility clothing and safety footwear. Examples include sandals/flip flops in active construction sites and no high visibility clothing.</p> <p>2) Non-compliance with EMP requirement and legal national Environmental and Social Assessment requirements for monitoring environmental quality</p>		
Corrective Action	<p>ACTION 1) PPE. The Contractor will ensure all workers wear appropriate PPE at all times and require buying more PPE, refresher training, and better monitoring by site supervisors.</p> <p>ACTION 2) Environmental monitoring. The Contractor is required to undertake the project requirements for environmental monitoring. The outstanding monitoring as per the EMP is:</p> <p>Ambient noise and vibration monitoring at four locations during active construction works:</p> <ul style="list-style-type: none"> 1- Main pumping station (MPS) – site boundary 2-WWTP Site – site boundary 3-Hospital 4-Central Market <p>The monitoring should be undertaken when active construction takes place near the Hospital and central market. The contractor must confirm if/when works will take place near the Hospital. If works are not taking place at these sites, the contractor can select other sites such as :</p> <ul style="list-style-type: none"> Houses at Canal line 4b Houses at Force Main Houses/business near other areas of road reinstatement/excavation. 		

