

Environmental Monitoring Report

1st Semestral Report
September 2020

CAM: Integrated Urban Environmental Management in the Tonle Sap Basin 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 Works and Transport

Integrated Urban Environmental Management in the Tonle Sap Basin Project

Reporting Period: *January-June 2020*

Date: *SEPTEMBER 2020*

SEMR Report Number: *1*

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1 ENVIRONMENTAL SAFEGUARDS SUMMARY

1. The 1st Semi-annual Environment Monitoring Report (SEMR) covers the period of January to June 2020 for the Integrated Urban Environmental Management In the Tonle Sap Project. The SEMR has been prepared to fulfil the safeguard policy requirement of ADB.
2. The SEMR is prepared by the Project Management Implementation Support (PMIS) team and checked by the PMU for the Project.
3. For detailed information and background to the Project, please see main Project Documents. Only issues relevant to Environmental Safeguards are included in this report.

1.1 Summary of Project Progress

4. The following table gives a brief summary of the project progress for contract award, construction and key activities in this reporting period:

Table 1 Project Progress Summary- ALL subprojects

Safeguards Category	Environment	B	
Reporting Period:	Jan-Jun 2020	Date Last Report Issued:	Not Applicable
Contracts Awarded to Date:	CW-05 Pursat Drainage and WWTP awarded (31th December 2019) to Kiri Dangrek Construction Co. Ltd CW-06 Kampong Chhnang and Pursat Landfill Sites awarded 30th October 2019, Signed 31st December 2019 to UNG SIMSIA CONSTRUCTION CO., LTD		
Construction Progress to Date:	As of June 2020 the physical construction progress is as follows: CW-05 6 % construction completed CW-06 6 % construction completed		
Key Sub-project Activities in this Reporting Period:	Construction Activities Construction started April 11th 2020. CW-05 Soil filling, some structural part of treatment plan, complete admin building and equipment shelter Canal: Soil excavation and embankment compaction 2.8km CW-06 Mine clearance, site clearance, remove vegetation and top soil, soil filling in landfill area, access road soil filling and compaction for embankment, RC pipe manufacture for pipe culvert installation Permits or Consents Issued: IEIA Approvals from MoE CW-05 and CW-06 19th December 2019 UXO Clearance 26th June 2020		

1.2 Summary of EMP Implementation

5. EMP implementation is summarised in the following points, for this reporting period:
- EMP implementation is at an early stage with initial pre-construction measures being implemented following the start of construction in April 2020.
 - COVID has slowed the field work for the project teams in terms of delivering GRM training in advance of construction.

1.3 Summary of EMP Monitoring

6. EMP monitoring is summarised in the following points, for this reporting period:
- Number of Monitoring Visits to Construction Site and wider area: No monitoring visits to date
 - Number of Environmental Samples Tested: No sampling to date
7. The Construction work is in a very early stage, starting approximately 6 weeks prior to the end of this reporting period. Monitoring will begin following training in monitoring with PMU and PIU.

1.4 Summary of Complaints, Issues and Corrective Action

8. Any complaints, issues and corrective action that has been identified or implement is summarised in the following points, for this reporting period:
- Issues Raised: None
 - Grievances Raised with GRM: 0 grievances
 - Corrective Action issued by project to Contractor: Not applicable

2 SAFEGUARDS STAFF, TRAINING AND DOCUMENTATION

2.1 Implementation Arrangements

9. 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 for all subprojects. :

Table 2. Status of Environmental Safeguard Roles- ALL subprojects

Safeguards Role	Status & Comment		
	Date Started:	11 th May 2020	Full Time/ Part Time
PMU- Environmental Safeguards Officer	Comment	Mr Penh Socheat	PT
PIU Environmental Safeguard Counterpart (Focal Point)	Date Started:	-22 nd January 2020	Full Time/ Part Time
	Comment	Persons are recruited.	PT
Contractor Environment Health and Safety Officer/Engineer	Date Started:	22 nd January 2020	Full Time/ Part Time
	Comment	CW05 – 1 full time staff CW06 – 1 full time staff each landfill	FT
National Environmental Specialist PMIS team	Date Started:	September 2018	Full Time/ Part Time
	Comment	Working with international consultant via online communications platforms due to travel restrictions.	PT
International Environmental Specialist PMIS team	Date Started:	October 2018	Full Time/ Part Time
	Comment	Restricted international travel due to COVID quarantine requirements.	[PT]

10. The project concludes that the environmental safeguards roles are being partially fulfilled.

2.2 Training & Capacity Building

11. To date, training has not been conducted for the Project. The training material drafts were developed for PIU and contractor training, and template for reporting have also been drafted, however due to an understandable reticence to gather groups of people together and travel internally within Cambodia when the COVID-19 health pandemic emerged, training was delayed.
12. The Project recognises that now construction has started, and the knowledge and understanding on COVID has improved, training can commence. The following table gives the planned environmental safeguards training courses for the next six months with the initial emphasis on ensuring the mitigation measures are implemented as construction develops, and that the GRM is functioning,. Following this the training on consultation as part of EMP monitoring will be delivered, assuming field visits can resume unhindered and suitable social distancing can be maintained during training. Options to the training environment for COVID may include training in smaller groups or training outside:

Table 3. Environmental Safeguards Training Provided and Planned- ALL subprojects

Training Course Title	Training Date	Participants	Training Provider
EMP implementation, monitoring and reporting	September/October 2020	PMU, PIU and Contractor	PMIS National Environmental Consultant
Grievance Redress Mechanism	September/October 2020	PIU and PMU	PMIS National Environmental Consultant
Affected People Consultation	November /December 2020	PMU, PIU, contractors, Commune Councils Village Chief, Municipality	PMIS National Environmental Consultant

2.3 ADB Approvals

13. The following table gives information on the status of the safeguards documents.

Table 4. Status of Environmental Safeguard Documents- ALL subprojects

Safeguards Documents	Update Issued (Latest Version)	Submitted to MoE	Submitted to ADB
Consolidated IEE:			
Several major revisions to change scope throughout 2018 and 2019, incorporating ADB comments and removing cancelled embankment project.	IEE_TS1Consolidated-25Oct18(SK)-rev_RCW-APRIL2019.docx	Not Applicable	Version April 2019 to ADB Version 8th July 2020 to ADB direct from PMIS
June 30 th 2020 update - filled gaps noted by ADB, and inclusion of IEIA data (baseline/consultation)	IEE_TS1Consolidated- 08 JULY 2020.doc		
EMP Kampong Chhnang Landfill			
October 2018 version reviewed by ADB Nov 2018 and comments incorporated – minor amend April 2019 following ADB comment	EMP document issued by PMU	Not Applicable	23 August 2018 (with tender document)
EMP Pursat Landfill			
October 2018 version reviewed by ADB Nov 2018 and comments incorporated – minor amend April 2019 following ADB comment	EMP document issued by PMU	Not Applicable	23 August 2018 (with tender document)
EMP Pursat Urban Drainage			
Draft updated by PMIS April 2019 based on comments from ADB on previous EMPs	EMP document issued by PMU	Not Applicable	6 August 2019 (with tender document)
REA (Screening) Kampong Chhnang WWTP			
submitted and revised further with change of site location	Latest: TS1_KC WWTP ENV Screening DRAFT 31 July 2020.docx	Not Applicable	31 July 2020 to ADB direct from PMIS
IEE Kampong Chhnang WWTP			
submitted and revised further with change of site location	TS1_KC WWTP_ IEE_v1.2_ 310720.doc	Not Applicable	31 July 2020 to ADB direct from PMIS
CMEI Due Diligence Report	2020-CAM-CW09a.EIA-2.0_SC-Lr_row_Final_Draft_SC1.docx	Not Applicable	To be completed and returned to ADB August 2020

Safeguards Documents	Update Issued (Latest Version)	Submitted to MoE	Submitted to ADB
Environmental DDR completed by PMIS 28 th July 2020, First Draft			

2.4 National Approvals

14. 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- ALL subprojects

Documents	Submitted to MoE	Approved By MoE	Status	Comment
CW-05 IEIA Pursat Urban Drainage	n/a	19 th November 2019	Approved	
CW-06 IEIA Landfills	n/a	19 th November 2019	Approved	
CW-05&06 UXO Clearance	n/a	n/a	Clearance Given 26 th June 2020	Clearance for all sub-projects

2.5 Construction Environmental Management Plan (CEMP) Approvals

15. The following table confirms the status of the Construction Environmental Management Plan (CEMP) for each CW package:

Table 6. Status of CEMP Approvals- ALL subprojects

Civil Works Package/ Subproject	CEMP Given to PMU	Approved By PMU:	Comment:
CW-06 Kampong Chhnang and Pursat Landfill Sites	July 2020 (outside the reporting period)	Not yet approved	Reviewed by National and International Environmental consultants of PMIS August 2020 and comments returned to PMU

CW-05 Pursat Drainage and WWTP	17 th January 2020	25 February 2020	Reviewed by National and International Environmental consultants of PMIS 4 th February 2020 and comments returned to PMU
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3 EMP IMPLEMENTATION

3.1 Environmental Performance

16. The following table gives 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.
17. The evidence for the compliance is through a combination of documentation and discussion between the Contractor and PMU :

Table 7. Status of EMP Compliance CW-05 Pursat Drainage

	EMP Requirement (Mitigation Measure)	Compliance & Description (Yes, No, Partial, N/A at this stage)	Comment or Further Explanation if Needed	Reasons for Not Full Compliance
Before Construction Starts				
1	EMP in Bidding Documents	Yes	EMP was included in procurement package.	
2	GRM mechanism disseminated and functioning KC and PS	Partial		PMU Established GRM Committee in April 2020 for resettlement and environment. Further training is required to ensure it is fully functioning with the start of construction.
3	GRM Sign Board at Construction Site entrance	No		Contractor is made aware of requirement and will complete in September 2020.
4	CEMP provided by contractor	Yes	Supplied by contractor, and approved by PMU	PMIS team reviewed the CEMP and await a revised copy considering amendments to ensure it is compliant with the EMP requirements in bidding document.
6	All licences and permits in place	Partial	UXO certificate is awarded	No evidence of PDOE letter/permission regarding disposal of waste is provided to date.
Construction				
6	KC- Household Protection Measures	N/A		Too early to be required
7	Production, Transport and Use of materials measures for dust, resource use and water quality	Partial		Contractor just start clearing in construction sites.
8	Machinery & Equipment management for Noise and Water Quality	-	No information on status	Field visit to confirm is required
9	Landscaping	-	No information on status	Field visit to confirm is required

10	Groundworks – control of drainage, dust and chance finds	-	No information on status	Field visit to confirm is required
11	Storage and Use of chemicals and fuels – measures for spill control	Yes	Fuels stored in banded impermeable area	
12	Spoil, Solid and Liquid Waste Management – measures for waste reduction, containment and disposal	Yes		The solid waste is collected by local waste collection company.
13	Construction staging area – 50m from residential property	-	No information on status	
14	Restoration – top soil retained, sites restored as specified	N/A		Too early to be required
15	Utilities Disruption Planning	N/A		Too early to be required

18. For all 'Partial' or 'No' compliance issues in the table above, the actions needed to solve the compliance issues are in the table below. For mitigation measures where no information is available at the time of writing this SEMR, additional field visits are required to report on the missing information:

Table 8. EMP– Actions Needed for Compliance CW-05 Pursat drainage

	EMP Requirement	Further Action to Take	Date for Action	Who will Implement Action
2	GRM mechanism disseminated and functioning KC and PS	Training to ensure GRM is functioning	September/October 2020	PMIS
3	GRM Sign Board at Construction Site entrance	Install signboard at all construction sites	September/October 2020	Contractor
6	Licences/Permits	Confirmation that permission is given for disposal of construction waste at a suitable site	August 2020	PMU to ask Contractor

Table 9. Status of EMP Compliance CW-06 - landfill sites

	EMP Requirement (Mitigation Measure)	Compliance & Description (Yes, No, Partial, N/A at this stage)	Comment or Further Explanation if Needed	Reasons for Not Full Compliance
Before Construction Starts				
1	EMP in Bidding Documents	Yes	EMP was included in procurement package.	
2	GRM mechanism disseminated and functioning KC and PS	Partial		PMU Established GRM Committee in April 2020 for resettlement and environment. Further training is required to ensure it is fully functioning with the start of construction.
3	GRM Sign Board at Construction Site entrance	No	This is an EMP requirement that was part of the bidding documents for BOTH landfills.	30 September 2020 will be completed. Contractor is aware.
4	CEMP provided by contractor	Partial	Supplied by contractor	PMIS team reviewed the CEMP and await a revised copy considering amendments to ensure it is compliant with the EMP requirements in bidding document.
5	Well drilling method statement for PS and KC landfills	No		Requested again in the CEMP comments from PMIS [July 2020]
6	All licences and permits in place	Partial	UXO certificate is awarded	No evidence of PDOE letter/permission regarding disposal of waste is provided to date.
Construction				
7	KC- Household Protection Measures	N/A		Too early to be required
8	Production, Transport and Use of materials measures for dust, resource use and water quality	-	No information on status	Field visit to confirm is required
9	Machinery & Equipment management for Noise and Water Quality	-	No information on status	Field visit to confirm is required

10	Landscaping	N/A			Too early to be required
11	Groundworks – control of drainage, dust and chance finds	-		No information on status	Field visit to confirm is required
12	Storage and Use of chemicals and fuels – measures for spill control	-		No information on status	Field visit to confirm is required
13	Spoil, Solid and Liquid Waste Management – measures for waste reduction, containment and disposal	-		No information on status	Field visit to confirm is required
14	Construction staging area – 50m from residential property	-		No information on status	Field visit to confirm is required
15	Restoration – top soil retained, sites restored as specified	N/A			Too early to be required

19. For all 'Partial' or 'No' compliance issues in the table above, the actions needed to solve the compliance issues are in the table below. For mitigation measures where no information is available at the time of writing this SEMR, additional field visits are required to report on the missing information:

Table 10. EMP– Actions Needed for Compliance CW-06 - landfill sites

	EMP Requirement	Further Action to Take	Date for Action	Who will Implement Action
1	GRM mechanism disseminated and functioning KC and PS	Training to ensure GRM is functioning	September/October 2020	PMIS
2	GRM Sign Board at Construction Site entrance	Install signboard at all construction sites	September/October 2020	Contractor
3	CEMP provided by contractor	CEMP needs to be amended in line with PMIS comments/observations	September 2020	Contractor
4	Well drilling method statement for PS and KC landfills	Method statement needed as part of CEMP	September 2020	Contractor
5	Licences/Permits	Confirmation that permission is given for disposal of construction waste at a suitable site	August 2020	PMU to ask Contractor

20. 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 11. EMP Compliance Outstanding Issues from Previous Report(s) – CW-05 Pursat drainage

Issue	Required Action	Responsibility and Timing	Resolution	Required Action
Not applicable for first Report				

Table 12. EMP Compliance Outstanding Issues from Previous Report(s) – CW-06 - landfill sites

Issue	Required Action	Responsibility and Timing	Resolution	Required Action
Not applicable for first Report				

3.2 Health and Safety Performance

21. 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 Health and Safety Compliance - ALL subprojects

	Health and Safety Requirement	Compliance & Description (Yes, No, Partial, N/A at this stage)	Comment or Further Explanation if Needed	Reasons for Not Full Compliance
1	Community Health and Safety Measures – barriers, signs, mud removal	-	No information on status	Needs follow up with contractor.
2	PPE provision and use	Yes – all sites		PPE has been provided and is worn.

3	H&S signage around site	CW05 – Yes CW06 – No	CW05 – clear repeated messages in Khmer on H&S issues	CW06 None seen in photographs provided. Needs follow up with contractor.
4	H&S training delivered for staff	-	No information on status	Needs follow up with contractor.
5	H&S Accident Book on site and used	-	No information on status	Needs follow up with contractor.
6	An Environment Health and Safety qualified engineer engaged and on site	Yes – all sites		
7	Electrical safety on site is considered by contractor	Not known		Needs follow up with contractor.
8	Emergency Response Plan – in place, procedures visible and training given	Partial		Fire fighting equipment and first aid kits on site (CW05) but require evidence of training and wider emergency procedures e.g. spill emergency.
9	COVID-19 Response	Yes	This SEMR covers the start of the COVID-19 Pandemic. To date there is evidence of regular temperature checks for staff.	Hygiene awareness / practices need follow up to ensure adequacy.

22. For all 'Partial' or 'No' compliance issues in the table above, the actions needed to solve the compliance issues are in the table below. For mitigation measures where no information is available at the time of writing this SEMR, additional field visits are required to report on the missing information:

Table 14. Status of Health and Safety Actions Needed for Compliance - ALL subprojects

	Health and Safety Requirement	Further Action to Take	Date for Action	Who will Implement Action
1	Community Health and Safety Measures – barriers, signs, mud removal	Site monitoring required to check community H&S issues particularly landfill access roads	30-Sept-2020	PMU/PIU
3	H&S signage around site for CW06	Site monitoring to confirm signage is clear and occupational H&S adequate for CW06	30-Sept-2020	PMU/PIU

4	H&S training delivered for staff	Need evidence of training e.g. training notes or records for H&S	30-Sept-2020	PMU/PIU
5	H&S Accident Book on site and used	Need to see accident book or methodology for recording accidents or incidents.	30-Sept-2020	PMU/PIU
7	Electrical safety on site is considered by contractor	Need to confirm on site electricity supply and power points etc are safe e.g. elevated from flood risk	30-Sept-2020	PMU/PIU
8	Emergency Response Plan – in place, procedures visible and training given	Need evidence that staff are aware of what to do in emergency and they have had training.	30-Sept-2020	PMU/PIU

23. The table above confirms additional follow up monitoring is required to check in detail on H&S issues on all sites.

4 EMP MONITORING

4.1 Environmental Quality Monitoring

24. Environmental quality monitoring requirements are defined in the Monitoring Plan section of the EMP. The following table gives a summary of the environmental quality monitoring requirements for each subproject

Table 15. EMP Environmental Quality Monitoring Requirements during Construction CW05 Pursat drainage

Environmental Issue Monitored	Location	Responsible Organisation	Frequency
Ambient Air Quality	Housing near WWTP site Urban receptor in town (Market, Pagoda, Hospital)	Contractor/ Laboratory	Every 6 months during construction
Noise	As above	Contractor/ Laboratory	Every 6 months during construction
Surface water quality	Point 1 Upstream & Downstream (1387711.00 m N 381990.00 m E)	Contractor/ Laboratory	Every 6 months during construction

Table 16. EMP Environmental Quality Monitoring Requirements during Construction CW-06 - landfill sites

Environmental Issue Monitored	Location	Responsible Organisation	Frequency
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Integrated Urban Environmental Management in the Tonle Sap Project

Ambient Air Quality	PS Site Boundary & Tuol Mkak village nearest residential receptor KC Site Boundary & Trapeang Sbov village nearest residential receptor	Contractor/ Laboratory	Every 6 months during construction
Noise	As above	Contractor/ Laboratory	Every 6 months during construction
Groundwater quality	PS Borehole drilled on site and Tuol Mkak village KC Borehole drilled on site and Trapeang Sbov village	Contractor/ Laboratory	Every 6 months during construction
Surface water quality	PS Pond adjacent to access road: 12°31'29.89"N, 103°58'51.66"E KC Pond closest to site boundary: 12°13'50.38"N, 104°37'9.85"E	Contractor/ Laboratory	Every 6 months during construction

25. The following table gives information on the environmental quality monitoring implemented, during this reporting period. Detailed results compared to relevant national / international standards are in Annex 1.

Table 17. EMP Environmental Quality Monitoring in this reporting period - ALL subprojects

Subproject	Environmental Issue Monitored	Location	Monitoring Date	Comment On Results / Compliance
CW06 and CW05	Surface water quality	KC Landfill - pond PS Landfill irrigation canal PS River	Not known. IEIA team conducted monitoring	Irrigation canal significantly over national limit for COD, oil/grease, nitrogen, phosphorous as is the pond for arsenic. All samples are significantly over national standards (<1000) for coliforms ranging from 1500 to 2400.

CW06 and CW05	Air quality	KC Landfill site PS Landfill site PS drainage location	Not known. IEIA team conducted monitoring	National standards appear to be met. WHO standard for ozone not met but sampling time is not comparable (between national and WHO standards).
CW06 and CW05	Noise	KC Landfill site PS Landfill site PS drainage location	Not known. IEIA team conducted monitoring	WHO standards are met for most locations. Cannot compare with National Standards (dB(A) as LAeq used in reported results.

4.2 Construction Phase Affected People Consultation

26. During the construction phase, the following table gives information on the 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.

Table 18. Construction Phase Affected People Consultation- ALL subprojects

Subproject	Consultation Date	Person Consulted / Location	Outcome / Issues	Corrective Action Needed	Action Implemented by (person/date)
Not yet started due to early stage of construction					

27. The project team recognise a lack of community engagement during the reporting period, which was primarily due to lack of field work because of COVID 19 inhibiting movement and both the project team and community's concerns over attending public events or travelling.

5 COMPLAINTS, ISSUES, CORRECTIVE ACTION

5.1 Information Disclosure

28. The following table gives information on any information disclosure activities undertaken. For this first SEMR this also includes consultation undertaken in advance of this first SEMR during the DED phase:

Table 19. Information Disclosure- ALL subprojects

Topic / Reason for Information	Date / Location	Method of Disclosure	Outcome / Results
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DED phase Project awareness and consultation on views	26-3-19 Kampong Chhnang Department of Environment Office	Consultation meeting with local Government departments	Comments and discussion where relevant are addressed in the IEE
DED phase Project awareness and consultation on views	27-3-19 Pursat province, Department of Public Work and Transportation office	Consultation meeting with local Government departments	Comments and discussion where relevant are addressed in the IEE
DED phase Project awareness and consultation on views on Pursat Drainage and WWTP	22-12-19 Pursat Sangkat Prey Nji	Public meeting for village residents	Pursat Drainage and WWTP widely welcomed. Comments and discussion where relevant are addressed in the IEE
DED phase Project awareness and consultation on views on Pursat Landfill	22-12-18 in Toul Mkak Village & In Sres Srong Village	Public meeting for village residents	Landfill concerns during operation e.g. odour and leachate. Comments and discussion where relevant are addressed in the IEE
DED phase Project awareness and consultation on views on Pursat Landfill	19-12-18 in Trapeang Sbov village In Phnom Touch village	Public meeting for village residents	Landfill concerns during operation and not adhering to planned standards. Comments and discussion where relevant are addressed in the IEE

5.2 Grievance Redress Mechanism

29. The following table gives information on complaints about the project the Project Team is aware of, during this reporting period. 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.

30. 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 20. Project Complaints or Issues- ALL subprojects

Details of Complaint / Issue Raised	Detail of Person (Date, Name, Contact Details)	Action Needed & Date	Comment / Resolved?
Not applicable. None Raised in this reporting period			

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

Table 21. Project Complaints or Issues – Not resolved from previous reports- ALL subprojects

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

5.3 Corrective Action

32. The following table gives information on any formal corrective action that has been issued to the contractor in order to improve environmental performance.

33. This is regarding formal corrective actions, rather than the outstanding actions required for EMP compliance remain as presented in the EMP Implementation section of this SEMR:

Table 22. Corrective Action Issued- ALL subprojects

Reason for Corrective Action	Date Issued	Outcome	Comment / Follow Up
Not applicable. No formal actions required			

34. No formal corrective actions are issued however the actions required for EMP compliance remain

6 CONCLUSION & RECOMMENDATION

35. Conclusion:

- During this reporting period, there is limited construction activity, the emphasis has been on developing the correct safeguards documents and reporting systems to be used when construction gets underway.
- The team have recognised the impact that limited field work has had throughout the majority of this reporting period, with an understandable reticence to go and travel and have face to face meetings. However locally based PIU staff have been able to visit the sites although formal reporting of sites visits has been limited.
- Initial safeguards documentation has been developed for the change of scope regarding Kampong Chhnang WWTP. This will require full integration into the project as a whole when the relevant approvals and ADB processes have been met. It should be noted that an IEIA is anticipated to be required under Cambodian law and as such the timescales for the IEIA completion must be considered in project implementation.

36. Recommendations:

- PIU will follow up to ensure all pre-construction activities which are required in the EMP are undertaken as further monitoring is required to check on potential gaps including H&S performance and sign boards for construction sites. PIU regularly visit sites but reporting on findings needs to be strengthened.
- PMU/PMIS will ensure a regular monitoring and reporting approach is established now construction has begun.
- PMIS will begin a programme of training to ensure PMU and PIU staff and others e.g. contractors and PIU are aware of their roles in EMP implementation and reporting on progress as construction takes place.
- Preparations should be made for environmental quality monitoring which is required to take place (Under EMP and IEIA) every 6 months at all construction sites. PMU to remind contractor on requirements for monitoring.

Annex 1 Environmental Quality Monitoring Results

Surface water quality in Kampong Chhnang and Pursat from IEIA report – reported in IEE

No	Parameters	Unit	Results / Sample Number			National Standard
			Pond ⁽¹⁾	Irrigation canal ⁽²⁾	Pursat River	
1	pH	-	7.29	8.70	7.39	6.5 - 8.5
2	Temperature	°C	21.06	-	-	-
3	TDS	mg/L	710.00	257.00	34.00	< 1000
4	DO	mg/L	6.66	5.8	7.20	7.5-2.0
5	TSS	mg/L	35.00	59.00	29.00	1-15
6	(BOD)5	mg/L	1.63	24.35	1.40	< 30
7	(COD)Cr	mg/L	4.96	53.32	3.52	1.0-8.0
8	Oil and Grease	mg/L	3.46	8.49	6.39	< 5.0
9	Arsenic (As)	mg/L	0.23	0.003	0.001	< 0.01
10	Nitrate (NO3)	mg/L	0.0002	-	-	-
11	Cadmium (Cd)	mg/L	ND	ND	ND	< 0.001
12	Iron (Fe-total)	mg/L	0.27	0.03	0.07	< 1
13	Copper (Cu)	mg/L	ND	-	-	-
14	Lead (Pb)	mg/L	0.0001	ND	ND	< 0.01
15	Mercury (Total)	Mg/L	0.0002	ND	ND	< 0.0005
16	Total Nitrogen (TN)	mg/L	0.44	7.70	0.57	0.1-0.6
	Detergent	mg/L	-	0.11	ND	< 5.0
	Sulphate (SO ₄)	mg/L	-	8.64	2.75	< 300
17	Total Phosphorus (TP)	mg/L	0.02	0.96	0.02	0.005-0.05
18	Total Coli form	MPN/100	1500	2.4*10 ³	1.5*10 ³	< 1000

Air quality baseline and standards, Pursat and Kampong Chhnang from IEIA report– reported in IEE

No	Parameters	Unit	National Standard	WHO Ambient Quality Standard	Pursat drainage (1)	Pursat Landfill (2)	Kampong Chhnang Landfill (3)
1	CO	mg/m3	20 (8hr av)	-	0.54	0.12	0.28
2	NO2	mg/m3	0.1 (24hr av)	0.04 (24hr Av)	0.015	0.010	0.012

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3	SO ₂	mg/m ³	0.3 (24hr av)	0.02 (24hr av)	0.010	0.005	0.008
4	Ozone (O ₃)	mg/m ³	0.2 (1hr av)	0.1 (8hr av)	0.10	0.06	0.23
5	TSP	mg/m ³	0.33 (24hr av)	-	0.075	0.068	0.054
6	Pb	mg/m ³	0.005 (24hr av)	-	ND	ND	ND
7	CH ₄	mg/m ³	-	-	-	-	-
8	PM 10	mg/m ³	-	0.05 (24hr av)	0.035	0.036	0.025
9	PM 2.5	mg/m ³	-	0.025 (24hr av)	0.013	0.021	0.012

Noise baseline and standards, Pursat and Kampong Chhnang from IEIA report– reported in IEE

Time	National Standard dB(A)	Result, dB(A) L _{Aeq}	L _{max}	L _{min}
Pursat drainage (1)				
Day (6:00 - 18:00)	60	46.4-65.5	62.0-85.9	36.5-44.3
Evening (18:00 - 22:00)	50	51.7-59.7	54.5-75.9	46.9-52.3
Night (22:00 - 6:00)	45	49.5-58.5	53.9-71.6	44.0-49.9
Pursat Landfill (2)				
Day (6:00 - 18:00)	60	32.2-45.6	42.1-65.9	21.9-38.6
Evening (18:00 - 22:00)	50	42.7-53.1	53.1-56.3	37.0-46.9
Night (22:00 - 6:00)	45	46.7-52.0	49.3-53.8	41.1-47.2
Kampong Chhnang Landfill (3)				
Day (6:00 - 18:00)	60	39.5-46.6	56.5-104.8	46.1-51.9
Evening (18:00 - 22:00)	50	37.3-47.2	55.0-74.1	44.8-52.5
Night (22:00 - 6:00)	45	37.5-39.2	55.8-103.6	44.1-52.8
WHO Community Noise Standards Laeq (dBA)	Daytime 07:00 – 22:00	Night Time 22:00 – 07:00		
Receptor: Residential, institutional or educational	55	45		
Receptor: Industrial, commercial	70	70		

Annex 2 Construction Site Photographs CW05



Annex 3 Construction Site Photographs CW06

