

Environmental Management Plan

May 2020

Cambodia: Grid Reinforcement Project

Prepared by Electricité du Cambodge for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 13 May 2020)

Currency unit	–	Riel (KR)
KR1.00	=	\$0.00024
\$1.00	=	KR4,111

ABBREVIATIONS

ADB	–	Asian Development Bank
BESS	–	battery energy storage system
CEMP	–	Construction Environmental Management Plan
EDC	–	Electricite du Cambodge
EMP	–	environmental management plan
EPC	–	engineering, procurement and construction
IEE	–	initial environmental examination
PIC	–	project implementation consultant
PMU	–	Project Management Unit
SEPRO	–	Social and Environment Public Relations Office

NOTE

In this report, "\$" refers to United States dollars.

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1. INTRODUCTION

1.1 Purpose

1. An important objective of environmental assessment is to develop procedures and plans to ensure that mitigation measures and monitoring requirements approved during the environmental compliance review will actually be carried out in subsequent stages of the project. Key project based environmental management plan (EMP) considerations include mitigation of potential adverse impacts to the level of “no significant harm to third parties”, the polluter pays principle, the precautionary approach, and adaptive management.^{1, 2}

2. This EMP is prepared for the construction of the substation and transmission line subprojects in Phnom Penh, Kampong Chhnang, Kampong Cham and Takeo Provinces, as well as the Battery Energy Charging Station (battery energy storage system, [BESS]) within the Asian Development Bank (ADB) Solar Park site in Kampong Chhnang. This EMP identifies potential environmental impacts arising from project activities along with a corresponding schedule of mitigation measures: (i) to prevent, reduce or mitigate adverse environmental impacts; (ii) to ensure impacts are maintained at insignificant levels; and (iii) that international best practice is applied. This document also includes institutional arrangements for implementing and monitoring the EMP to ensure its effectiveness and continuous compliance.

3. The EMP will be disclosed in a timely manner prior to project appraisal and disseminated to potentially affected communities and stakeholders. This EMP document may require subsequent revisions following detailed engineering design. The draft and final EMP will be disclosed on the ADB public website (www.adb.org). The final EMP will be included as a separate annexure in all bidding, tender and contract documents. Contractors will be informed of their obligations to implement conditions set out in the EMP and are required to include EMP implementation costs in their bids for project works prior to contract award.

4. Environmental monitoring will be applied to all subproject locations to ensure periodic and systematic checking that mitigation measures have been implemented effectively during each project phase to ensure adverse environmental impacts are minimized and the overall EMP implemented. Environmental monitoring covers selected parameters, their anticipated impact, and the nature and magnitude of monitoring activities to be undertaken.

5. In addition to monitoring actual environmental impacts associated with each project phase, environmental monitoring elements that can:

- i) provide supplemental baseline data;
- ii) be used to ensure that construction, operation, decommissioning, and closure activities proceed as required;
- iii) support accurate determinations or predictions of residual impacts;
- iv) help identify unacceptable impacts, thereby, enabling the implementation of supplementary mitigation and/or corrective and preventive actions in a timely manner;
- v) demonstrate continued compliance with applicable environment legislation, policies, and guidelines as well as specific permit/license requirements; and

¹ ADB. 2009. *Safeguard Policy Statement*. Manila.

² International Finance Corporation. 2007. *Environment, Health and Safety Guidelines for Electric Power Transmission and Distribution*. Washington, D.C.

- vi) support the investigation of environmental incidents and the determination of appropriate corrective and preventive actions.

1.2 Project Implementation Organizations: Roles and Responsibilities

6. A framework for the implementation of the EMP is described in this section. Any changes to roles or responsibilities discovered during detailed design stage will be incorporated into the final documents.

7. Electricite du Cambodge (EDC) is the executing agency for the project and will be responsible for overall supervision and monitoring of project implementation and will ensure that implementation is in line with safeguard document and loan and grant covenants.

1.3 Reporting and Monitoring

8. The key institutions involved in the environmental management and monitoring of the project will be Social and Environment Public Relations Office (SEPRO) of EDC, Project Management Unit (PMU) and Project Implementation Consultants (PIC).

9. EDC with support by the project implementation consultants will be responsible for environmental reporting. An environmental monitoring report will be submitted to ADB semi-annually during the project implementation period. The environmental monitoring reports will be publicly disclosed on ADB website.

10. Engineering, procurement and construction (EPC) Contractor will be required to prepare and implement Construction Environmental Management Plan (CEMP) in accordance with the EMP. EPC Contractors will submit monthly progress reports to EDC on EMP implementation, which will form part of quarterly project progress reports submitted to ADB. The environmental management report will identify the works undertaken over the reporting period and document the environmental protection measures that have been carried out, problems encountered (if any), and follow-up actions that were taken (or will be taken) to correct any problems.

11. The PIC will be responsible for environmental monitoring. The PIC will coordinate and interact with the PMU on compliance to ADB safeguards requirements and with relevant government agencies and local authorities on permits and clearances as needed, and update and finalize the draft initial environmental examination (IEE) as needed.

12. The PMU and PIC will ensure that EPC Contractors will be informed of their responsibility of complying with the EMP and the ADB safeguards requirements. The PIC will monitor each EPC Contractors work plan relevant to EMP implementation and be responsible for the overall compliance supervision. The PMU, SEPRO and the EPC contractor will be responsible in handling complaints and/or grievances filed through the Grievance Redress Mechanism (GRM), if any.

13. During the operational phase, SEPRO will be responsible for undertaking routine monitoring, reporting and resolution of environmental health and safety issues. All monitoring and reporting activities will be sustained by EDC to ensure that mitigation measures are effectively implemented.

1.4 Training and Capacity Building

14. Training will be provided by PIC to PMU, SEPRO, and EPC contractors, and facility operators on EMP implementation and monitoring prior to start of construction. The training will focus on ADB's and Cambodia's relevant environmental, health and safety laws, regulations and policies; implementation of the EMP, environmental monitoring, requirements for information disclosure, public consultation and the project GRM. The PIC will also prepare the checklist for monitoring parameters and responsibilities and conduct consultations with affected people / households and communities together with the EPC contractors on an ongoing basis during project implementation. Table 1 presents the capacity building and training program.

15. The capacities of PMU, SEPRO and contractors to coordinate environmental management will be strengthened through:

- i) appointment of four SEPRO representatives to work with the PMU to be in charge of EMP coordination, implementation and site inspections including project GRM;
- ii) appointment of at least one environment, health and safety officer within the EPC Contractor staff to be in charge of EMP coordination, implementation, site inspections and information disclosure and consultations; and
- iii) appointment of at least one GRM focal person within the EPC Contractor staff to be in charge of project GRM coordination, handling complaints, dispute resolution, site visits and information disclosure and consultations.

Table 1: Capacity Building and Training Program

Subject Matter	Participants	Trainer	Frequency	Duration (days)	No. of Participants	Estimated Cost (\$) / Source of Fund
Orientation training on safeguards focusing on Cambodia's EHS laws, ADB Safeguard Policy Statement, and EMP (defining the mitigation measures, roles and responsibilities for monitoring, supervision and reporting)	PMU, SEPRO, EPC Contractor	PIC (MOE to be invited)	Once prior to construction	2	40	\$2,160 / PIC
GRM implementation and disclosure	PMU, SEPRO, EPC Contractor	PIC	Once prior to construction / site mobilization	1	20	\$540 / PIC

Subject Matter	Participants	Trainer	Frequency	Duration (days)	No. of Participants	Estimated Cost (\$) / Source of Fund
Environmental monitoring and reporting	PMU, SEPRO, EPC Contractor	PIC	Once prior to construction	1	40	\$1,080 / PIC
SOP Manual implementation with hands-on training	PMU, SEPRO, Facility Operators	EPC Contractor	Once prior to commissioning	2	40	\$2,160 EPC Contractor
Refresher course on SOP Manual	PMU SEPRO, Facility Operators	EPC Contractor	One year after commissioning	1	40	\$1,080 / EPC Contractor

1.5 Information Disclosure, Consultation

16. **Consultation during design stage.** Follow-up public consultation meetings will be held at each of the subproject locations. These public consultations will be designed to disclose the proposed subproject objectives, design and construction activities that may affect surrounding communities, and proposed mitigation measures to address any adverse impacts. The consultations will also provide a platform for local community members and local stakeholders to voice any project related queries or concerns. A detailed Consultation Plan will be prepared that details the schedule, location, invited participants, information to be disseminated and methods of consultation. The PIC will assist SEPRO and PMU in preparing the Consultation Plan.

17. Consultations with affected peoples (APs) will include information of the project environmental impacts (positive and negative), safeguards measures including community health and safety, project implementation schedule and process, land acquisition and compensation process, APs right to complain and the GRM.

18. Consultations with APs will provide a two-way information-sharing channel, ensuring that the concerns, questions and ideas of the APs will be discussed and responded to in an appropriate and gender inclusive way. The SEPRO and PMU will record all information dissemination and consultation activities and the results from consultations with the APs. Consultations with APs and concerned stakeholders especially the affected communities and households will continue throughout project implementation and will be open and gender inclusive.

19. **Consultations during implementation.** The PMU will undertake consultation after detailed designs are completed and will conduct consultations within 4 weeks of start of construction and then again, each month until the end of construction.

20. The monthly consultations with affected people will focus on validation of presence of complaints about community disturbance from construction activities, such as construction noise, dust, and traffic, as well as other project related concerns and access issues.

Table 2: Activity Outline for Consultation Plan

Project Implementation Schedule	Activity	Stakeholders
Design Phase	<p>Public information meetings</p> <p>Informal meetings for information updates on project schedule and activities through village leaders and commune councils</p> <p>Update of PIB / FAQ</p> <p>Community Awareness Program one month prior to civil works</p>	Affected people, communities, commune and district leaders
Construction Phase	<p>Informal meetings for information updates on project schedule and activities through Village leaders and commune councils</p> <p>Monthly consultations to validate presence of complaints and community disturbance and concerns.</p> <p>Community Awareness Program once during civil works</p> <p>PIB / FAQ made available at consultations, project construction field offices and commune</p>	
Operation and Maintenance	Project information booklet distributed to all subproject communities	

1.6 Initial Environmental Examination Disclosure

21. This IEE report will be disclosed on the ADB website (www.adb.org). A Khmer summary will also be posted on the EDC website (www.edc.com.kh), along with a link to the full report on the ADB website. A Khmer summary of the report and the EMP will be made available in hard copy at the EDC Provincial Offices. The updated IEE report with EMP based on detailed design will also be disclosed at ADB website.

1.7 Preparation of Bid Documents

22. The EMP covers the information of potential environmental impacts and the proposed mitigation measures for the transmission line and substations and the BESS. The EMP will be provided in the bidding documents and updated based on detailed engineering design. In addition to the EMP that was provided to the Bidders, the bidding document also includes some detailed instructions on the preparation of the CEMP that includes detailed plans for spoils and borrow management, noise and dust control, site management, solid waste and hazardous waste management, community health and safety, traffic management, occupational health and safety management, and chance find procedures.

1.8 Project Grievance Redress Mechanism

23. GRM is a systematic process for receiving, evaluating and addressing an AP's project-related complaints. The grievance redress procedure will comply with the requirements of ADB

Safeguard Policy Statement (2009) in addressing AP's concerns and complaints promptly and in a transparent manner.

24. The objective of GRM is to resolve any disagreements and conflicts as early and quickly as possible and at the local level through a reconciliation process, and if that is not possible, to provide clear and transparent procedures for appeal. If the AP filing the complaints will not be satisfied with the outcome of the GRM, they may also resolve the issue through the provincial authority (see Step 7 below).

25. **Modes to receive a complaint.** The existing complaint management mechanism that is in place at EDC will be adopted wherein a complaint may either be relayed by the AP to the Feedback Office of EDC or directly to the PMU or EPC Contractor. Complaints can also be received through the offices of the district, commune and provincial departments. The Feedback Office is composed of 26 staff members, of whom 8 are female staff. Complaints can be received through phone call or by sending a message to EDC's Facebook page. The Feedback Office sends a reply (Facebook message or phone) to the complainant within less than an hour. The complaint is immediately forwarded to the PMU for immediate coordination with the complainant towards the resolution of the complaint.

26. Informally, APs can lodge complaints directly to the contractor during construction and all site staff will be made aware of how to respond when an AP or member of the public has a complaint i.e. direct the person to the most senior site manager present or the GRM focal point.

27. All complaints received through the EDC Feedback Office or directly by the EPC Contractor should be recorded and submitted or forwarded PMU and PIC, together with the status and actions taken to resolve the complaint.

28. During public consultations, participants were asked for their preferred grievance mechanisms. Information obtained during consultations suggested that between 70-80% of community members had access to a smart phone and therefore online messaging at the EDC Facebook page can easily enable the GRM.

29. **Disclosure of project and grievance redress mechanism.** The PMU will ensure that public consultation meetings in subproject areas and project information booklets are distributed so that APs are fully aware of the project, their rights to complain, means to raise their grievances, and the procedures of the GRM. Any AP who is affected by land acquisition or any other impacts related to the project construction and operation, is eligible to file a complaint.

30. Under the direction of the PMU, the PIC will inform APs/ complainants on grievance redress procedure, who to contact and when, where and how to file a grievance, time likely to be taken for redressal of minor and major grievances, etc. Signboards will be placed in visible locations at all subproject sites with the contact numbers and means to raise a complaint. Project information leaflet detailing the GRM contact and procedures will be provided at each subproject local authority so that these are posted at the information boards of the offices. Grievances received and responses provided will be documented and provided to APs. The number of grievances recorded and resolved, and the outcomes will be displayed/disclosed in the project construction field offices and commune councils and provisional office (if required).

31. All costs for resolving complaints (meetings, consultations, communication and reporting/information dissemination) will be borne by EDC.

32. **Grievance redress mechanism process.** If eligible, a complaint will be responded to and resolved within 3 days. However, if assessment invalidates the complaint (i.e., reveals the complaint as ineligible or not associated with the project, the contractor shall direct the AP to the commune leader/chief who shall report the complaint to PMU/ PIC within 2 days from receipt of complaint, stating reasons for ineligibility.

33. If a complaint is eligible, but has not been acted upon within three days, or the AP is not satisfied with the resolution undertaken by the EPC Contractor, he/she can activate the formal mechanism as outlined below:

- i) **Step 1.** Affected person/household will lodge the complaint either directly or with assistance from the village chief to the commune office. The complaint can also be lodged with the contractor or PMU/ SEPRO.
- ii) **Step 2.** The commune office, contractor or PMU/SEPRO who documented the complaint will provide receipt/copy of the complaint to the AP. The complaint is then forwarded to PIC/ PMU.
- iii) **Step 3.** AP shall be informed of the eligibility of the complaint. If ineligible, AP shall be directed to the district. If eligible, AP will be informed of action timelines and as set out in the established mechanism. Eligible complaints should be immediately reviewed by the EPC contractor/operator, investigated and discussed. This process should be concluded within three (3) days and involve PIC and PMU. After review and discussion, agreement on action will take place and be appropriately documented.
- iv) **Step 4.** If the complaint is considered minor, the contractor will immediately implement the agreed action to resolve the issue. If further investigation or procurement is necessary, the contractor will: (a) immediately provide an interim measure to reduce the magnitude of the impact; and (b) start work to apply the final measure within 15 days of the lodged complaint.
- v) **Step 5.** If the complaint is resolved satisfactorily PIC/ PMU will receive written confirmation from the AP, thus signifying closure of the grievance. Copies signifying the closure of the grievance will be retained by PIC and the commune office.
- vi) **Step 6.** PIC/ PMU will monitor the effectiveness of the resolution for at least a week after the grievance was resolved. Monitoring and evaluation shall be properly documented in the EMP.
- vii) **Step 7.** If the AP is dissatisfied, then an appeal process from the district will be activated and elevated to the provincial authority. The provincial authority shall call all parties to review the history of the grievance and resolution process taken and assess the validity of the appeal.

34. If APs do not have sufficient writing skills or are unable to express their grievances verbally, it is a common practice that they are allowed to seek assistance from any recognized local nongovernment organization or other family members, village heads or community chiefs to have their complaints or grievances written for them. APs will be allowed to have access to the detailed measurement survey to ensure that all the details have been recorded accurately enabling all parties to be treated fairly. Throughout the grievance redress process, the responsible committee will ensure that the concerned APs are provided with copies of complaints and decisions or resolutions reached.

35. If efforts to resolve disputes using the grievance procedures remain unresolved or unsatisfactory, APs have the right to directly discuss their concerns or problems with the ADB

Cambodia Resident Mission (CARM). If APs are still not satisfied with the responses of CARM, they can directly contact the ADB Office of the Special Project Facilitator. The Office of the Special Project Facilitator procedure can proceed based on the accountability mechanism in parallel with the project implementation.

36. **Grievance follow-up.** EDC may contact the complainant at a later stage to ensure that the activities continue to pose no further problems. If there is a remaining problem, the issue will be treated as a new grievance and re-enter the GRM process.

37. **Confidentiality and anonymity.** An AP submitting a grievance may wish to raise a concern in confidence. If the complainant asks EDC to protect his or her identity, it will not be disclosed without consent. Details of submissions and allegations will remain secure within the team responsible for investigating the concerns.

38. **Recordkeeping and reporting.** PMU will keep a record of all the grievances received, including contact details of complainant, date the complaint was received, nature of grievance, agreed corrective actions and the date these were affected and final outcome. Documentation of the grievances filed and resolved will be summarized and reported in quarterly project progress reports and semi-annual safeguard reports.

39. **Review of the grievance redress mechanism process.** The PMU will periodically review the implementation of the GRM and record information on the effectiveness of the mechanism, especially on the EPC contractor's ability to prevent and address grievances.

1.9 Mechanisms for Feedback and Adjustment of Environmental Management Plan

40. The EMP is a living document and should be iteratively reviewed and updated. Review should be conducted at any of the following stages or if the following information becomes apparent:

- i) during final project detailed engineering design or when there are design changes;
- ii) if changes in construction methods and programming occurs; or
- iii) if unfavorable environmental monitoring results or inappropriate monitoring locations; and/or
- iv) if ineffective or inadequate mitigation measures are made apparent.

41. Based on the environmental monitoring and reporting systems in place, PMU and SEPRO (with the support of the PIC) shall assess whether further mitigation measures require corrective action, or improvement in environmental management practices are necessary. The PMU will promptly inform ADB of any changes to the project and needed adjustments to the EMP. The updated EMP will be submitted to ADB for review and approval and will be disclosed on the ADB project website.

1.10 Environmental Management Plan Cost Estimates

42. There are three types of mitigation measures and corresponding costs:

- i) measures that will permanently become part of the infrastructure such as landscaping, maintenance of irrigation channels, perimeter fencing, road signage, and permanent access to substation sites;

- ii) measures such as conducting environmental baseline surveys for noise and air quality surface and a wet season migratory bird survey;
- iii) measures during the construction stage (e.g. dust suppression by watering, use of handheld portable air and noise monitoring devices, quiet / low noise machinery and equipment, PPE, etc.) as well as measures to mitigate unforeseen impacts due to construction activities will need to be included in the tender documents to ensure that all contractors budget these items in their bids. Contractors will also bear all environmental monitoring costs during the operational stage; and
- iv) information disclosure, GRM related costs involved in resolving the complaints (meetings, consultations, communication and reporting/information dissemination) will be borne by the EDC.

43. The estimated mitigation costs are presented in Table 3.

Table 3: Estimated mitigation costs

	Description	Quantity / Time	Cost USD	Source of Budget	Notes
No	Design and pre-construction				
1	Install visibility enhancement objects such as marker balls or deflectors along transmission lines to reduce or prevent collision	185	10,175	EPC contractor	Ball marker approx. \$600 / reflector approx. \$55. (Spacing approx. 60m per marker ball).
2	UXO assessment – All sites	All subproject sites both permanent and restricted use	248, 570	EDC	EDC provided m ² cost estimate
3	Waste assessment	to be determined based on detailed design	40/80 per ton	EPC contractor	Potentially hazardous waste accumulated near to Boeng Trabak SS (SPP4/TTP3) used as a dumping ground. No hazardous waste is processed in Cambodia, the majority is shipped to Singapore.
4	Wet season survey to study migratory birds	Once	5000	PIC	Repeat survey in wet season to study migratory birds.
5	IESIA for 4 provinces	3 months	150000	EDC	EDC to cover costs and agree assessment package for additional SS at Takeo
6	Ecological walk over studies prior to construction	2 days	500	PIC	To be conducted along TLs in Phnom Penh (TTP1, TTP2, TTP3).
EMP Costs					
7	National Env. Safeguard Consultant	10 months	91,050	PIC	As set out in the project administration manual (PAM).
8	International Env. Safeguard Consultant	6 months	182,556	PIC	As set out in PAM.
9	SEPRO, PMU and EPC Contractor environmental safeguard training/capacity building	2 days	2,160	PIC	Conducted by PIC - assumed 4 members of PMU/SEPRO and 1 EPC Contractor (focal point) for 2 days.

	Description	Quantity / Time	Cost USD	Source of Budget	Notes
10	Training on environmental monitoring and reporting	1 day	1,080	PIC	Conducted by PIC - assumed 4 members of PMU/SEPRO and 1 EPC Contractor (focal point) for 1 day.
11	Conduct public disclosure information disclosure events (GRM)	490	3,920	PIC	Applied average cost of public consultation and average number of participants.
Construction					
13	Environmental monitoring costs (AQ / Noise / Water)	TBC	TBC	PIC	Discussion with MoE after IESIA
14	Costs for resolving GRM	N/A	N/A	EPC contractor	
15	Climate proofing infrastructure	N/A	part of design and civil works cost	EPC contractor	To be incorporated into EPC contract
Operation					
16	Lithium ion battery recycling	battery energy storage system (BESS) site	TBC	EPC contractor	Temporary storage area for used batteries to be designated at the BESS site for future hauling/pickup by a battery supplier/vendor under a buy-back agreement.

Table 4: EMP Responsibilities

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	Engineering Detailed Design	Tendering and Pre-construction	Construction	Operation
EDC	The Executing Agency (EA) for the project will be responsible for the overall supervision and monitoring of the project implementation and will be established with sufficient and qualified staff. The EA will ensure implementation is in line with safeguards documents and loan and grant covenants.				
PMU	<ul style="list-style-type: none"> Responsible for implementing project in accordance with the legal agreements Responsible for coordinating with line ministries to ensure efficient implementation of the project Responsible for coordinating with line ministries to ensure efficient implementation of the project Ensure compliance with all loan and grant covenants 		<ul style="list-style-type: none"> Secure technical and safeguard approvals for all civil works prior to contract award Responsible for coordinating with line ministries to ensure efficient implementation of the project Responsible for procurement of goods, works and services 	<ul style="list-style-type: none"> Responsible for coordinating with EDC province/district offices safeguard focal to disclose and disseminate information, conduct ongoing public consultation, manage grievance redress mechanism at all levels 	
PMU / SEPRO	<ul style="list-style-type: none"> Ensure compliance with ADB safeguards requirements Ensure compliance and consistency of safeguards documents with the government policy, legal and administrative framework across all jurisdictions--national, state and local 	<ul style="list-style-type: none"> Responsible for management of national IEIA approval process including engagement of MOE-registered firm Update IEE / EMP if required Check mitigation measures are 	<ul style="list-style-type: none"> Responsible for coordinating with EDC province/district offices to assign a focal person for safeguards and grievance redress committees/focal persons at all levels Responsible for obtaining Environmental Protection Contract 	<ul style="list-style-type: none"> Responsible for establishing a functional project-specific grievance redress mechanism Responsible for coordinating with EDC province/district offices to assign a focal person for safeguards and grievance redress 	<ul style="list-style-type: none"> Responsible for coordinating with EDC province/district offices safeguard focal to disclose and disseminate information, conduct ongoing public consultation,

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	Engineering Detailed Design	Tendering and Pre-construction	Construction	Operation
		<p>included in detailed design</p> <ul style="list-style-type: none"> • Confirm climate change adaptation measures have been included in the final engineering design 	<p>prior to contract award</p> <ul style="list-style-type: none"> • Responsible for coordinating with EDC province/district offices safeguard focal to disclose and disseminate information, conduct ongoing public consultation, manage grievance redress mechanism at all levels • Responsible for engaging independent external third-party to document the negotiation and settlement processes, in case of negotiated land acquisition (third-party verified due diligence reports [DDRs]) • Responsible for implementing the land acquisition and resettlement plan (LARP) before commencement of civil works, and for ensuring any civil works start strictly on land free from 	<p>committees/focal persons at all levels</p> <ul style="list-style-type: none"> • Responsible for timely submission of semi-annual safeguard monitoring reports to ADB • Responsible for overall implementation of safeguards requirements 	<p>manage grievance redress mechanism at all levels</p>

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	Engineering Detailed Design	Tendering and Pre-construction	Construction	Operation
			<p>encumbrances upon ADB's no-objection</p> <ul style="list-style-type: none"> Responsible for updating the draft RDDRs based on the detailed engineering design and submit RDDRs and DDRs for ADB concurrence and disclosure before commencement of civil works 		
PIC		<p>Confirm that mitigation measures have been included in final engineering detail design including climate risks adaptation measures and key design features for environmental management</p>	<ul style="list-style-type: none"> Responsible for supporting EDC (SEPRO) in managing IEIA approval process Responsible for supporting EDC (SEPRO) in updating RDDRs and submitting to ADB for concurrence and disclosure before commencement of civil works Responsible for supporting EDC (SEPRO) in implementing final LARP and submitting implementation compliance report to ADB before commencement of civil works 	<ul style="list-style-type: none"> Supervision of construction, final testing and commissioning Ensure compliance with safeguards requirements through effective implementation and monitoring of social and environmental safeguards Conduct orientation / briefing of workers, contractors / subcontractors and hired staff on safeguard requirements for civil works 	<ul style="list-style-type: none"> Project performance monitoring and evaluation, including preparation of progress reports, semi-annual safeguard monitoring reports, and completion report Support EDC in reviewing and approving the commissioning test reports submitted by the EPC contractors

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	Engineering Detailed Design	Tendering and Pre-construction	Construction	Operation
			<ul style="list-style-type: none"> • Ensure that the EPC contractors prepare their respective site-specific Construction Environmental Management Plans (CEMPs) based on the updated EMP based on detailed design and on actual site conditions prior to mobilizing. • Support EDC in administering the transmission line, substation and BESS contracts: certification of invoices, award of extensions of time, certification of completions, processing of variation orders, evaluation of claims, settlement of disputes and the like • Engage with MOE approved local laboratory and coordinate environmental baseline surveys (i.e. air and noise) as per the environmental monitoring plan in the approved EMP 		and attend the commissioning and testing of the transmission line and substation infrastructure

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	Engineering Detailed Design	Tendering and Pre-construction	Construction	Operation
Contractor	Prepare subproject specific CEMP			<ul style="list-style-type: none"> • Conduct air and noise baseline monitoring and submit results to PMU and PIC • Appoint GRM and EHS focal point • Implement mitigation measures 	<ul style="list-style-type: none"> • Ensure hand over of sites is in accordance with EMP
MOE	Review and approve the IESIAs			<ul style="list-style-type: none"> • Review baseline monitoring results 	<ul style="list-style-type: none"> • Conduct bi-annual monitoring checks as set out in IESIAs

Table 5: Environmental Management Plan

Subproject Activity	Environmental Impact / Issue	Mitigating Measures and Safeguards	Institutional Responsibility		Budget Source
			Implemented by	Supervised by	
230 kilovolt (kV) / 115kV / 22kV TRANSMISSION LINES, SUBSTATIONS, BATTERY ENERGY STORAGE SYSTEM (BESS) AND ACCESS ROADS					
DESIGN					
National IESIA Approval	All	1. Ensure IESIA approvals for all subprojects have been confirmed by MoE	PIC	MOE	Included in Project Cost
Design specification	Hazards from asbestos containing materials.	2. Specifications and loan covenants exclude the use of asbestos-containing materials;	EPC	EA	Included in Project Cost
Final Design	Loss of Livelihoods / Community Impacts	3. Project infrastructure to be sited on public/state land where possible to avoid impacts to communities and livelihoods. 4. Alignment and infrastructure to avoid agriculturally productive land, water bodies and other sensitive receptors (i.e. schools, hospitals, cultural heritage sites, recreational areas). 5. Subproject sites utilizing drainage areas should conduct flood assessments, as necessary, to prevent localized flooding incidence. 6. Compensation will strictly adhere to appropriate information set out in the LARF	EPC	EA	EDC
Final Design	Climate change impacts: Flooding / Increased Precipitation / Increase strength of wind / Line integrity and safety (electrocution)	7. Access roads to install suitable cross drains to allow flood and be elevated above anticipated flood level 8. All designs to consider future climate change risks and hazards associated with increased precipitation, wind strength and localized flood incidence. (Ensure that cable location and design	EPC	EA	EPC

Subproject Activity	Environmental Impact / Issue	Mitigating Measures and Safeguards	Institutional Responsibility		Budget Source
			Implemented by	Supervised by	
		<p>avoid flooding and risks of electrocution.)</p> <p>9. Substations located in proximity to storm canals must be designed to protect components from flood incidence and ensure storm canal flow dynamics are not compromised during heavy precipitation events.</p>			
UXO Clearance	UXO Incidence	EPC Contractor to engage with accredited UXO specialist to assess, map and remove ordnance prior to works.	Expert UXO team / Mine Action Planning Unit	PIC	Contractor
Update IEE and EMP	Non-Compliance to ADB Safeguard Policy Statement 2009	<p>10. Ensure IEE and EMP documents are updated after detailed design and cleared by ADB prior to civil works.</p> <p>11. Revision of IEE and EMP will reflect final detailed design and assess impacts not considered in preliminary design (i.e. access roads) and integrate further environmental protection measures as required.</p>	PMU / PIC	PIC	Included in Project Cost
Construction Environmental Management Plan (CEMP)	All	<p>12. EPC Contractor to develop subproject site CEMPs that will include the following:</p> <ul style="list-style-type: none"> • Spoil and borrow Management Plan • Solid Waste Management Plan • Community Health and Safety Plan • Traffic Management Plan • Hazardous Materials Control Plan • Noise and Dust Control Plan • Site Management Plan / Method Statement / SOP • Chance Find Procedure <p>13. The CEMP must include a map of each subproject location and show how site activities will be managed, including:</p>	Contractor	PIC	EPC Contractor

Subproject Activity	Environmental Impact / Issue	Mitigating Measures and Safeguards	Institutional Responsibility		Budget Source
			Implemented by	Supervised by	
		<p>site access, laydown areas, spoil storage area, fuel storage areas, concrete mixing (where required)</p> <p>14. All site-specific CEMPs will be approved by PMU prior to the construction phase</p>			
GRM	Community Issues and health and safety risks	<p>15. EDC to establish a complaints center which can receive complaints through phone, its website and social media. All subproject sites to place sign boards in visible locations detailing contact numbers and GRM procedures</p> <p>16. Project information leaflet detailing GRM contact and procedures to be delivered to each subproject local authority to pin to notice board</p> <p>17. PIC to provide site orientation training with EPC Contractor prior to mobilization to site to ensure awareness of on-site responsibilities and consideration for environmental and social due diligence</p>	PMU, SEPRO, Contractor	PIC	EPC Contractor
Information disclosure and community engagement	Community issues and health and safety risks	<p>18. Engage with communities at each subproject location to keep them informed about, at minimum, the following details:</p> <ul style="list-style-type: none"> • Health and safety issues • GRM • Construction scheduling and potential nuisance with construction activities (with particular attention of those residing within 250m of the sites) • Disseminate consultation summary and pin to local authority notice board. 	PMU, SEPRO	PIC	EPC Contractor

Subproject Activity	Environmental Impact / Issue	Mitigating Measures and Safeguards	Institutional Responsibility		Budget Source
			Implemented by	Supervised by	
Fauna	Collision or electrocution	<p>19. Conduct a wet season survey within the project area of influence to record if significant migratory bird species considered Near Threatened or Globally Threatened species are present at the TCKN1 site.</p> <p>20. Install deflectors along the TCKN1 transmission line to prevent or reduce bird collision or electrocution.</p>	Bird survey team	PIC	EPC Contractor
Physical Cultural Resources	Community Issues	<p>21. Avoid work during sensitive / key religious festivals</p> <p>22. Provide advance warning of activities to places of worship, such as pagodas and churches, especially those within 250m of the project site that could be affected by nuisance.</p> <p>23. Ensure activation of chance find procedure prior to construction.</p>	EPC Contractor	PIC, PMU	EPC Contractor
PRE-CONSTRUCTION PHASE					
Baseline Data Collection	Vulnerability of Environmental Aspects	<p>24. Environmental aspects measured during the IESIA (i.e. air quality, noise) will form the baseline to monitoring conducted by Contractors during the construction phase at each site.</p> <p>25. PMU will ensure that EPC Contractor is aware of monitoring and reporting responsibilities at each subproject location prior to site mobilization.</p>	Contractor	MoE, PMU	EPC Contractor
Site Management	Contractor Awareness to Safeguard Requirements	<p>26. PIC to meet with Contractors prior to site mobilization to ensure management at each subproject site applies expected safeguard and monitoring activities</p> <p>27. Compliance with Cambodia Occupational Safety and Health laws and regulations, Department of Safety</p>	EPC Contractor	PIC	EPC Contractor

Subproject Activity	Environmental Impact / Issue	Mitigating Measures and Safeguards	Institutional Responsibility		Budget Source
			Implemented by	Supervised by	
		and Health, MoLVT, 2011 should be established			
Project Delays	Ministerial or Departmental approval	28. Ensure all licenses and permits have been approved by appropriate authorities to ensure construction activities align with national level requirements.	SEPRO, PMU	National Road Safety Committee, Ministry of Public Works and Transport	Project Cost
Waste Assessment	Contamination / Impacts to Human Health	29. In coordination with municipal waste collection services (i.e. CINTRI), Phnom Penh Municipality and MoE, conduct a thorough assessment of all sites contaminated by excessive solid waste dumping (i.e. SPP4 / TPP3) 30. In coordination with CINTRI, implement a solid waste extraction plan at all affected sites ensuring the waste mitigation hierarchy where possible 31. Develop and implement clear arrangements for transportation of all hazardous and non-hazardous wastes to authorized and approved disposal site	EPC Contractor, PIC	SEPRO, PMU, MoE, Phnom Penh Municipality, CINTRI	EPC Contractor
CONSTRUCTION PHASE^a					
Site Preparation and Civil Works	Air Quality	32. Works to comply with Sub-decree ANRK.BK No.42 on Air Pollution and Noise Disturbance, MOE, 2000. 33. Monitoring of air quality to record incidences of non-compliance and rectification 34. Water suppression techniques (i.e. water spray) to be applied where fugitive dust is generated at construction sites 35. Transportation trucks will be covered with tarpaulins when carrying dry	Contractor	PMU, MoE	EPC Contractor

Subproject Activity	Environmental Impact / Issue	Mitigating Measures and Safeguards	Institutional Responsibility		Budget Source
			Implemented by	Supervised by	
		<p>construction materials such as soil, sand and gravel.</p> <p>36. All construction site vehicles to maintain speeds to levels that reduce increases in dust along access roads to sites</p>			
Civil Works	Noise Impacts	<p>37. Regulate noise impacts to uphold thresholds set out in with Sub-decree No. 42 ANK/BK.</p> <p>38. Limit construction activities to be performed between 8am and 6pm (unless in urban locations where UGC will be installed).</p> <p>39. Noise monitoring will be conducted by the contractor and noise levels captured each subproject site will be reported periodically in monthly reporting outputs</p> <p>40. All site vehicles to undertake regular maintenance</p> <p>41. PMU and SEPRO to engage with communities to inform of potential noise nuisance activities.</p> <p>42. Appropriate PPE to be used across all subproject sites by workers operating machinery or equipment</p>	EPC Contractor	PMU, PIC	EPC Contractor
Civil Works	Flora and Fauna	<p>43. Walk over ecological studies should be conducted prior to tree removal to prevent disturbance (i.e. bat roosts along TTP3) prior to work commencement</p> <p>44. Trees below 3m in height should not be cut</p> <p>45. Avoid clearing vegetation in riparian areas along irrigation ditches and storm canals and restore any disturbed area with native species</p> <p>46. Pesticide use prohibited</p>	Ecologist, EPC Contractor	PIC, PMU	EPC Contractor

Subproject Activity	Environmental Impact / Issue	Mitigating Measures and Safeguards	Institutional Responsibility		Budget Source
			Implemented by	Supervised by	
Civil Works	Traffic Impacts	<p>47. EPC Contractor to design and implement Traffic Management Plan for each subproject location, that will include at least:</p> <ul style="list-style-type: none"> • As required, design traffic scheduling to design and enforce detours or closure (authorized by National Road Safety Committee and the Ministry of Public Works and Transport) as required by works • Erect signage • Enforce speed limits • Avoid movement of project vehicles during peak times • Roads to be cleaned, repaired or rehabilitated as necessary • Trenching activities to occur at nighttime in urban areas to minimize disruption and impacts to road network 	EPC Contractor	PIC, PMU National Road Safety Committee and the Ministry of Public Works and Transport	EPC Contractor
Civil Works	Surface Water Impacts	<p>48. Compliance with sub-decree No.27 ANRK.BK on Water Pollution Control (1999)</p> <p>49. Water quality baseline will be ascertained during IESIA (where appropriate) and monitoring of water quality to be conducted by contractor bi-monthly</p> <p>50. Material and laydown areas to be set back at least 50m from storm canals and irrigation ditches</p> <p>51. All construction fluids (i.e. fuel for refueling) to be stored and handled in bunded area at least 50m from storm canals and irrigation ditches</p>	EPC Contractor, MOE, PMU	PIC	EPC Contractor

Subproject Activity	Environmental Impact / Issue	Mitigating Measures and Safeguards	Institutional Responsibility		Budget Source
			Implemented by	Supervised by	
		52. No washing of equipment or machinery within 50m of storm canals and irrigation ditches 53. Prevent water abstraction at project site 54. Apply short term drainage solutions at all irrigation channels and storm canals as required during works 55. Install temporary storm drains or ditches to contain run off from entering surface water			
Site Preparation and Civil Works	Soil Impacts	56. Develop a Spoil and Borrow Management Plan (if required after detailed design stage). The plan will include: <ul style="list-style-type: none"> • A map to highlight location of all spoil piles at each subproject location as required • A schedule defining borrow pit requirements and location of extraction • Retention of excavated topsoil to be retained, stored and reinstated during site rehabilitation. • Soil replacement around footings should be compressed to prevent erosion • Identification of areas susceptible to erosion (if any) and a plan to retain vegetation (where possible) • Revegetate disturbed areas once work is complete • Avoid construction during the wet season. If unavoidable, soil mitigation impacts should be described 	EPC Contractor	PIC, PMU	EPC Contractor

Subproject Activity	Environmental Impact / Issue	Mitigating Measures and Safeguards	Institutional Responsibility		Budget Source
			Implemented by	Supervised by	
Implementation of Solid Waste Management Plan	Contamination and Impacts to human health	<p>57. Compliance with Sub-decree No.36 ANRK.BK on Solid Waste Management (1999) (also see Chapter 3 – Hazardous waste)</p> <p>58. The Solid Waste Management Plan will include the following requirements:</p> <ul style="list-style-type: none"> • Application of the waste hierarchy to demonstrate how waste at affected sites will be recycled • Prohibit all burning of wastes • All site-related waste (i.e. concrete, wood, metal) to be properly disposed of using licensed companies to transport to a predetermined licensed waste facility (shown on map). • Excavated materials, excess materials and contaminated materials to be disposed of (some waste material may be re-used at project sites (i.e. backfill)). • Ensure complete removal and disposal of any residual wastes after works completion 	EPC Contractor	PIC, PMU	EPC Contractor
Implementation of Community Health and Safety Plan	Community Human Health and safety	<p>59. A Community Health and Safety Plan will be developed to ensure at least the following measures are applied:</p> <ul style="list-style-type: none"> • Provision of suitable security measures (i.e. signs, perimeter fences, barriers) will be enforced at all subproject sites and access areas to protect public. • Roads will to be cleaned, repaired or rehabilitated as necessary • Appropriate signs (in Khmer language) placed at each 	PMU	PIC	EPC Contractor

Subproject Activity	Environmental Impact / Issue	Mitigating Measures and Safeguards	Institutional Responsibility		Budget Source
			Implemented by	Supervised by	
		<p>subproject location to highlight relevant site dangers</p> <ul style="list-style-type: none"> Perimeter fences and barriers to be erected around all subproject sites 			
Civil Works	Power Interruptions or Outages	<p>60. EDC to create alternative power distribution plan to prevent power outages for subprojects locations</p> <p>61. Provide advance warning (at least 2 weeks) to any area to be interrupted</p>	PMU	EDC	Project cost
Implementation of an Occupational Health and Safety	Human Health and Safety	<p>62. An Occupational Health and Safety Plan will be developed to ensure at least the following measures are applied:</p> <ul style="list-style-type: none"> Establish emergency contingency plan at each subproject site to prevent: <ul style="list-style-type: none"> spillage injury fire other incidents Provide works with toolbox talks / site training and awareness sessions A trained health and safety officer will be present as a part of each construction team at each subproject site. Provide proper safety clothes and equipment to avoid accidents Incident/accident record sheet will be used to capture all site incidences Provide communication devices to allow access to designated focal points / engineers 	EPC Contractor	PMU, PIC	EPC Contractor

Subproject Activity	Environmental Impact / Issue	Mitigating Measures and Safeguards	Institutional Responsibility		Budget Source
			Implemented by	Supervised by	
		<p>63. Compliance with Cambodia Occupational Safety and Health laws, Department of Safety and Health, MoLVT, 2011 and to relevant National electrical safety standards.</p> <p>64. Compliance to SOP for Occupational Health and Safety</p> <p>65. Installation of electrical equipment using polychlorinated biphenyls (PCBs) shall be prohibited.</p> <p>66. Provisions to be made for work in or near flooded area / water body (i.e. storm canal):</p> <ul style="list-style-type: none"> • Falling in water or drowning (i.e. life jackets / buoyancy aids) • Apply bank protection • Use 220/240V power tools <p>67. Electrical safety risks will be assessed, and safety protocols developed for working at heights, electrical works etc.</p> <p>68. Specifically, for works on transmission lines</p> <ul style="list-style-type: none"> • Electrical safety risks will be assessed, and safety protocols will be developed and implemented such as for electrical works, working at heights, etc. • All works at height will be prohibited during nighttime, periods off fog and strong wind • All workers climbing towers will have a Safety Certificate of Class 3106 or above 			

Subproject Activity	Environmental Impact / Issue	Mitigating Measures and Safeguards	Institutional Responsibility		Budget Source
			Implemented by	Supervised by	
		<ul style="list-style-type: none"> All towers, steel structures and equipment will be properly earthed and equipped with lightening protection When testing electrical equipment, all unrelated works in the flagged zone – marked as danger zone- will be stopped and unauthorized workers prohibited in the zone. 			
Site Preparation and Civil Works	Impacts from Hazardous or polluting Materials	<p>69. Compliance with Sub-decree ANRK.BK No.36 on Solid Waste Management, Chapter 3 – Hazardous Waste Management, MOE 1999</p> <p>70. All equipment and materials will be certified PCB free.</p> <p>71. Storage of hazardous materials and oils will be within secured areas and dykes capable of carrying 110% volume to contain accidents and spills.</p> <p>72. Secured areas to be sited 50m from storm canals and irrigation ditches</p> <p>73. Refueling to be conducted offsite or within designated areas on permeable surface</p> <p>74. Licensed companies to collect, transport and dispose of unused hazardous materials / equipment</p> <p>75. Record all incidences of accidents, incidents and spills.</p>	EPC Contractor	PMU, PIC	EPC Contractor
Site Preparation and Civil Works	Impacts on historical, cultural or archeological finds	<p>76. A Chance Find Procedure will be put in place:</p> <p>77. If physical cultural resources are encountered during the construction phase, all works at the find site should be immediately halted.</p>	EPC Contractor,	Ministry of Culture and Fine Arts, PIC	EPC Contractor

Subproject Activity	Environmental Impact / Issue	Mitigating Measures and Safeguards	Institutional Responsibility		Budget Source
			Implemented by	Supervised by	
		<p>78. Where avoidance is not feasible, no alternatives to removal exist, and the Project benefits outweigh the anticipated cultural heritage loss from removal, the physical cultural resource should be removed and preserved according to the best available technique.</p> <p>79. Any removal should be conducted in accordance with relevant provisions of heritage protection decrees and laws.</p> <p>80. Records should be maintained of all finds, including chain of custody instructions for movable finds.</p> <p>81. All Project workers and staff should be made aware of the chance-find procedure.</p>			
OPERATION PHASE					
Operations and Maintenance of Facilities and Components – Occupational Health and Safety Plan	Human Health and Safety Risk	<p>82. Implement SOP Occupational Health and Safety Plan will include at least the following measures:</p> <ul style="list-style-type: none"> • Compliance to Prakas for electrical power standards^b and Cambodian occupational health and safety laws • Allow only trained and qualified workers to access or work on electrical equipment • Contractor and staff on site shall ensure adherence to electrical safety standards • Contractor to provide correct PPE, safety guidelines, rated equipment and other precautions specific to subproject sites (i.e. workers to observe the minimum approach distances for excavations, tools, vehicles, pruning, and other 	EPC Contractor	PIC	Project cost

Subproject Activity	Environmental Impact / Issue	Mitigating Measures and Safeguards	Institutional Responsibility		Budget Source
			Implemented by	Supervised by	
		<p>activities when working around power lines).</p> <ul style="list-style-type: none"> • Appropriate grounding or deactivation across all subproject sites must be during maintenance works • Safe handling, management and disposal requirements for any hazardous chemicals that cannot be avoided. • All workers to have routine health checks • Set up first aid treatment on each construction site • Provide and maintain correct signage • Provide communication devices to site focal point • Record and report all accidents, incidents, fatalities and near misses. 			
Operation	Public exposure to Electric and Magnetic Fields (EMF)	<p>83. Manage potential exposure to public applying reference levels developed by the International Commission of Non-Ionizing Radiation Protection (ICNIRP)</p> <p>84. Appropriate training and equipment will be provided to identify and protect against EMF levels and hazards; Monitor EMF levels in community areas and those with sensitive receptors, i.e. hospitals and schools.</p> <p>85. Implementation of action plans to address potential confirmed exposure</p> <p>86. Prevent exposure above recommended limits^c</p>	EPC Contractor	PIC	Project cost

Subproject Activity	Environmental Impact / Issue	Mitigating Measures and Safeguards	Institutional Responsibility		Budget Source
			Implemented by	Supervised by	
Community Health and Safety	Human Health and Safety Risk	<p>87. Conduct information disclosure and consultation with local communities and district and commune leaders in all subproject locations</p> <p>88. Clearly communicate potential health and safety risks within project information booklet.</p> <p>89. Record all issues raised through GRM mechanism</p>			
Subproject site Maintenance	Hazardous Materials	<p>90. Compliance with Sub-decree No.36 on Solid Waste Management, Chapter 3 – Hazardous Waste Management, MOE, 1999; and Declaration of Standard Level on Pollutants or Hazardous Substance permitted for disposal, MOE, 2015</p> <p>91. Maintain PCB free certification</p> <p>92. Use only licensed disposal companies to transfer hazardous waste or spent components to authorized sites</p> <p>93. Only trained workers to handle hazardous equipment or material (i.e. Mineral oils (non-PCB) used as an insulant in transformers and some HV switchgear; SF₆; battery electrolytes, refrigeration gas in air conditioners)</p>	EPC Contractor	PIC	EPC Contractor
Fauna	Avian and bat collision / electrocution	<p>94. Ensure deflectors and balls are suitably aligned at standardized distances (i.e. 60m)</p> <p>95. Ensure project mitigation aligns with seasonal survey results and recommendations</p> <p>96. Record and report all bird or bat collisions and deaths.</p>	EPC Contractor	PIC	EPC Contractor
Impact to Community Relationships	Community issues	<p>97. Ensure continued information disclosure and community briefing / liaison, record information gathered from all meetings (in accordance with</p>	Contractor, PMU, SEPRO,	PIC	Project cost

Subproject Activity	Environmental Impact / Issue	Mitigating Measures and Safeguards	Institutional Responsibility		Budget Source
			Implemented by	Supervised by	
		<p>established community / stakeholder plan).</p> <p>98. Community awareness programs will be conducted throughout project implementation with specific community health and safety training and leaflets distributed</p>			
Decommissioning					
Decommissioning Plan	Risk of Non-compliance	<p>99. Develop a decommissioning and site reclamation plan at least 6 months prior to subproject site closure, ensuring compliance with laws, regulations and safeguards (i.e. IFC / WBG).</p> <p>100. Decommissioning plans will include all necessary site-specific SOP (i.e. waste, hazardous material, noise control, air quality, water quality, OHS)</p>	EPC Contractor	PMU, SEPRO	Project cost
BESS	Recycling or disposing of BESS Lithium Ion Batteries	<p>101. EPC Contractor to provide a safe temporary storage area for used batteries within the BESS premises while awaiting collection by the supplier.</p> <p>102. Tender agreements with battery suppliers/vendors will be made for a “buy-back” option of the used batteries.</p>	EPC Contractor	PIC	EPC/Project

^a All construction will comply with national standards set out in No NS/RKM/1119/ 019 Law on Construction (2019)

^b Prakas on Establishment of Specific Requirement of Electric Power Technical Standards of the Kingdom of Cambodia. (2007) MIME

^c Environment, Health and Safety Guidelines for Electric Power Transmission and Distribution (2007) IFC

Monitoring Plan

44. Project monitoring conducted under the EMP includes:
- i) **Project readiness monitoring.** Monitoring to check progress on project readiness and close gaps through corrective actions.
 - ii) **Environmental quality monitoring.** To be conducted by a licensed company or MOE and will involve the collection and analyses of air quality, noise and water quality data at designated monitoring locations for assessing compliance with applicable environmental quality and emission standards during construction. The frequency of this data collection and analysis will be established after consultation with the MOE and after the submission of the IESIA reports.
 - iii) **Environmental management plan compliance monitoring.** To be conducted by the PIC and PMU to verify EMP compliance during project implementation.
 - iv) **Affected people monitoring (consultation).** This is to be conducted by PMU/SEPRO via consulting affected people on the impacts during construction.
 - v) **Operational monitoring.** This will be overseen by PIC with support from PMU/SEPRO.

Project Readiness Monitoring for All Subproject Sites

45. Prior to construction PIC will check the project's readiness based on a set of indicators shown in Table 5. This assessment will demonstrate that commitments are being carried out and environmental management systems are in place before construction commences or corrective actions will be carried out to ensure all requirements are being met.

Table 6: Checklist of Project Readiness Assessment Indicators

Indicator	Criteria	Are the Criteria Met (Y/N)	Corrective Action Required	Completion Date of Corrective Action
EMP updated	EMP updated after detailed engineering design and approved by ADB	(Y/N)		
Compliance with loan covenants	Borrower complies with loan covenants related to project design and environmental management	(Y/N)		
Public involvement effectiveness	Meaningful Consultation	(Y/N)		
	GRM established with entry points	(Y/N)		
	Focal points appointed (EPC Contractor; SEPRO)			
MOE approval	IESIA prepared and approved	(Y/N)		
Environmental monitoring	Designation of SEPRO staff to support PMU	(Y/N)		
CEMPs developed from EMP	Development of site-specific CEMPs	(Y/N)		
Safeguards Orientation of PMU, EPC Contractor	Completion of orientation training	(Y/N)		
Land acquisition and resettlement plan	Land acquisition complete and compensation paid	(Y/N)		
Wet Season Bird Survey	Completed survey	(Y/N)		
UXO Clearance	Clearances obtained	(Y/N)		
Bidding documents and contracts with environmental safeguards	Bidding documents and contracts incorporate the environmental activities and mitigation measures required by EMP	(Y/N)		
EMP financial support	Check financial support has been allocated for training /capacity building and EMP	(Y/N)		

Environmental Quality Monitoring

46. During construction, the impact on the sensitive environmental receptors will be monitored and compared against the relevant national standard.

Table 7: Environmental Quality Monitoring

Environmental Indicator	Location	Method and Frequency	Responsibility	Implementation	Estimated Costs (\$)	
			Supervision		Per Sample	Total
Construction Phase						
Air Quality including PM ₁₀ , CO ₂ , NO ₂ , SO _x	Nearest residential receptor (when construction activities occur within 250m) at substation sites in Dangkor, RUPP, Boeung Tompon, Russei Keo, Kampong Tralach, and Skun	TBC by MOE	PIC, PMU	MOE-recognized monitoring company	TBC by MOE	
Noise	Nearest residential receptor (when construction activities occur within 250m)	TBC by MOE	PIC, PMU	Licensed company / MOE	TBC by MOE	
Water Quality pH, BOD, COD, TSS, NH ₄ -N, Total Nitrogen, Total Phosphorus, Oil and grease,	In irrigation channel or storm canal (site dependent)	TBC by MOE	PIC, PMU	Licensed company / MOE	TBC by MOE	

Environmental Management Plan Compliance Monitoring

47. In order for the EMP to be effective, all its mitigation measures must be monitored to ensure they are implemented. Note this applies to construction only; during operation, it is the responsibility of the appropriate ministry or its line department to ensure monitoring of operational facilities is incorporated in the operations and maintenance manual and carried out routinely.

Environmental Indicator	Location	Method and Frequency	Responsibility		Cost
			Verification	Implementation	
Air Quality	Subproject sites	Monthly checking against mitigation measures specified in this EMP	PIC, PMU	Consultant firm / MOE	EPC Contractor
Noise	Subproject sites	Monthly checking against mitigation measures specified in this EMP	PIC, PMU	Consultant firm / MOE	EPC Contractor
Water Quality	Subproject sites	Monthly checking against mitigation measures specified in this EMP	PIC, PMU	Consultant firm / MOE	EPC Contractor
Soil	Borrow pits	Monthly checking against mitigation measures specified in this EMP	EPC Contractor	PIC, PMU	EPC Contractor
Contamination of resources	Implementation of Solid Waste Management Plan	Monthly checking against mitigation measures specified in this EMP	EPC Contractor	PIC, PMU	EPC Contractor
Human Health and Safety	Implementation of Community and Occupational Health and Safety Plans	Monthly checking against mitigation measures specified in this EMP	EPC Contractor	PIC, PMU	EPC Contractor
Community Issues <ul style="list-style-type: none"> • Environmental impacts (i.e. solid waste, pollution) • Spillages 		Monthly checking against mitigation measures specified in this EMP	PMU	PIC	EDC cost

Environmental Indicator	Location	Method and Frequency	Responsibility		Cost
			Verification	Implementation	
<ul style="list-style-type: none"> • Nuisance from construction (i.e. noise, disruption to businesses, community health and safety issues) • Traffic congestion • Application of GRM 	All subproject locations				

EDC = Electricite du Cambodge; EMP = environmental management plan; EPC = engineering, procurement and construction; GRM = Grievance Redress Mechanism; MOE = Ministry of Environment; PIC = project implementation consultant; PMU = Project Management Unit.