Environmental Management Plan

June 2015

Socialist Republic of Viet Nam: Second Greater Mekong Subregion Corridor Towns Development Project

Mong Cai Subproject

This environmental management plan forms part of the initial environmental examination. It is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature.

ABBREVIATIONS

ADB	-	Asian Development Bank
PAH	-	Project Affected Household
BOD	-	Biological Oxygen Demand
COD	-	Chemical Oxygen Demand
CPC	-	City Peoples Committee
DCST	-	Department of Culture Sport and Tourism
DOC	-	Department of Construction
DOH	-	Department of Health
DONRE	-	Department of Environment and Natural Resources
DOT	-	Department of Transport
DPI	-	Department of Planning and Investment
EA	-	Executing Agency
ECC	-	Environmental Compliance Certificate
EIA	-	Environment Impact Assessment
EMP	-	Environment Management Plan
EERT	-	External Emergency Response Team
EO	-	Environmental Officer
ERT	-	Emergency Response Team
ERTL	-	Emergency Response Team Leader
ESU	-	Environmental and Social Unit
IEE	-	Initial Environmental Examination
IA	-	Project Implementation Agency
GMS	-	Greater Mekong Sub-Region
GOV	-	Government of Viet Nam
NGO	-	Non-Government Organization
O&M	-	Operation and Maintenance
PIU	-	Project Implementation Unit
PMIS	-	Project Management Implementation Support
PPC	-	Provincial Peoples Committee
PSC	-	Project Steering Committee
SO	-	Safeguards Officer
UXO	-	Unexploded Ordnance

WEIGHTS AND MEASURES

km	Kilometre
kg	Kilogram
ha	Hectare
mm	Millimeter

Table of Contents

I. INTRODUCTION

1. The environmental management plan (EMP) for the Mong Cai subproject is one of three EMPs that have been prepared for the subprojects of the Second Greater Mekong Subregion Corridor Towns Development Project (CTDP) in Viet Nam. The other two EMPs of the CTDP in Viet Nam address subprojects in the towns of Bac Giang and Sa Pa. The three separate EMPs are comprehensive and are developed as stand-alone management tools.

2. A single Initial Environmental Evaluation (IEE) of all three subprojects in Viet Nam was prepared under separate cover. Details of the CTDP and the subprojects in Viet Nam can be found in the parent IEE.

A. Overview of Mong Cai subproject

3. The Mong Cai subproject consists two (2) new wastewater treatment plants (WWTP), riverbank protection along the Ka Long river, and improved drainage (Table 1).

Table 1. Mong Cai subproject components

Component	General Specifications[1]
Wastewater and Stormwater Improvements	• 8,000 m^3/d eastern WWTP • 4,000 m^3/d western WWTP • Anaerobic lagoons like WWTP in Bac Giang • Both WWTPs are combined systems • New and upgraded stormwater drains
Riverbank Protection	• Raise and upgrade existing riverbank protection structure and promenade on eastern bank • Construct equivalent protection structures and promenade directly across on western riverbank • Dredging of some dunes adjacent to riverbank works

II. INSTITUTIONAL ARRANGEMENTS AND RESPONSIBILITIES

4. At the feasibility stage the primary management framework[2] responsible for the implementation of the environmental management plan (EMP) for the subprojects in Mong Cai town is summarized as follows. The Quang Ninh Provincial Peoples Committee (PPC) which is the executing agency (EA) for the project will take overall responsibility for the successful implementation of the EMP, and will liaise with the ADB on the submission of consolidated environmental safeguards reports. The EA will establish a Project Steering Committee (PSC) which, *inter alia*, will provide support for implementation of the EMP

5. The Mong Cai City Peoples Committee (CPC) will be the subproject implementation agency (IA) to oversee day to day implementation of the project including EMP implementation and reporting to the EA. A project management unit (PMU) will be created to assist the IA. The PMU will appoint a project implementation unit (PIU) for each town will consist of staff with expertise in infrastructure. The PIU Director will appoint a S*afeguards Officer* (SO) who will supervise implementation of the EMP. The PIU/SO will oversee implementation of the Contractor Environmental Management Plans (CEMP)[3] for the future construction packages of

[1] Updated from Interim Report 3/15
[2] Adapted from Interim Report 3/15
[3] Contractor Environmental Management Plan prepared by contractor as part of bid documents based on updated EMP

the Mong Cai subproject. Expertise from the Department of Transportation (DOT)/Department of Construction (DOC) will be cross appointed to the PMU/PIU when necessary.

6. The civil works contractor's Chief of Construction (CCW) will be responsible for all construction activities at the construction sites, including compliance with the EMP. The CCW will assign an *Environmental Officer (EO)* to ensure the contractor's responsibilities for the EMP are met.

7. External support to the PMU/PIU for EMP updating, capacity building, and monitoring will be provided by the *International and National Environment Specialists (ES)* of the Project Management Implementation Support[4] firm (PMIS). The PMIS will have a provisional budget to engage an *Environmental Monitoring Consultant (EMC)* to conduct field sampling and laboratory analyses of field samples (e.g., water quality, air quality) as required. Provided below is a summary of key responsibilities for implementation of the EMP.

8. The responsibilities of the EA as supported by PSC include:

1. Coordinate environmental and social safeguards implementation and monitoring undertaken by the IA/PMU;
2. Liaise with ADB on the implementation of the EMP; and
3. Coordinate resolution with IA/PMU, and ADB if necessary with issues arising from the implementation of EMP.

9. The responsibilities of PMU/PIU Safeguards Officer include:

1. Assist PMIS with updating the EMP to meet final detailed subproject designs;
2. Notify IA/EA to verify GoV approvals of project are met, and that EMP is compliant with requirements of LEP (2014) as implemented by Decree 18/2015/ND-CP, and Circular 26/2011/TT-BTNMT.
3. Assist PMIS with inclusion of CEMP requirements in contractor bid documents including bid evaluations based on updated EMP;
4. Undertake day to day management of EMP implementation activities;
5. Work with EMC on implementation of monitoring plan of EMP;
6. Ensuring compliance with loan covenants and assurances in respect of all subprojects, including EMPs (as well as IPPs, GAPs, resettlement plans);
7. Lead follow-up meetings with all affected stakeholders;
8. Prepare and submit quarterly reports on EMP implementation to PSC;
9. Oversee implementation of CEMP by contractor;
10. Coordinate with ES of PMIS for EMP implementation;
11. Undertake regular construction site inspections to ensure contractor implements CEMP properly; and
12. Ensure EO/CCW of contractor submits monthly reports on construction mitigations and monitoring.

10. The responsibilities of the environment specialists (international and national) of the PMIS are detailed in the Terms of Reference for the two positions, as set out in Appendix A. The consultant's key responsibilities for the EMP are:

1. Update the EMP to meet final detailed designs of subprojects;

[4] PMIS to be defined.

2. Provide technical direction and support to PIU/SO for implementation of EMP;
3. Oversee design and delivery of capacity development and training of PIU-SO and EO of contractor(s);
4. Provide advice and support to EMC with their monitoring activities;
5. Review all environmental reports prepared by PIU/PMU/IA and EMC for ADB; and
6. Review location of any possible contaminated sites near subprojects.

11. The responsibilities of Environmental Monitoring Consultant (EMC) include:

1. Implement the environmental sampling required for monitoring plan of EMP that cannot be conducted by the contractor and PIU.
2. Perform required laboratory analyses for monitoring program detailed in EMP; and
3. Prepare and submit quarterly reports to IA/EA on monitoring activities.

12. The responsibility of Chief of Construction Work (CCW) of contractor with assistance from Environmental Officer (EO) includes:

1. Ensure implementation of the CEMP during the construction phase; and
2. Prepare and submit monthly reports on mitigation and monitoring activities of CEMP and any environmental issues at construction sites.

13. The implementation of the EMP as part of the overall environmental due diligence (DD) of the subproject is conducted alongside the separate parallel DD of the government. Table 2 reproduces the summary of environmental due diligence from the IEE which shows that the government must approve the ADB IEE and EMP by formal letter, and that approval of the ADB IEE/EMP is not contingent on compliance with any specific government regulation other than the Project Detailed Outline (PDO) which is required by the Prime Minister.

Table 2. Summary of environmental due diligence during project implementation

Design and Implementation	**Environmental DD and Approvals**			**Milestones & Notes**
	ADB / PPTA	**Viet Nam**	**PMIS / Contractor**	
Feasibility design				
Initial stakeholder disclosure & consultation	PPTA	EA assists		
Draft IEEs and EMPs	PPTA			Draft IEEs & EMPs completed
Preparation of Project Detailed Outline (PDO)		EA		Approval by Prime Minister
Finalize IEEs and EMPs	ADB review & approves IEE/EMPs			ADB approved IEE/ EMPs as per SPS (2009).
		EA reviews and approves IEE/EMPs		EA approved IEE/ EMPs with formal letter only. ***Compliance with specific GOV / EA regulations not***

Design and Implementation	Environmental DD and Approvals			Milestones & Notes
	ADB / PPTA	Viet Nam	PMIS / Contractor	
				required
Loan documents (PAM/RRP)	Document preparation, approval by ADB	Review & approval of PAM		Loan approval
Initiation of Viet Nam environmental DD		EA leads with oversight from DONRE		MONRE or DONRE approved IEE or EIA follows independently after VIE DD begins
Detailed engineering design				
Continued stakeholder disclosure & consultation		IA/PIU lead	ES support to PMIS	As per PCP (2012)[5] stakeholder disclosure and consultations continue throughout construction phase coincident with initiation of GRM[6]. ***Also satisfies consultation requirement of GOV*.**
Update EMPs		Support to ES	Lead by ES	Approval of updated EMP by EA and ADB
Tendering / contract award				
EMPs included in tender documents		Lead by EA/IU	Support by ES	
Tenders let and bids prepared		Lead by EA	Contractor drafts CEMP[7]	CEMPs prepared and included in contractor bids
Construction packages	Input from ADB		CEMPs reviewed by ES/PMIS	Construction package awards
Construction & supervision				
Implementation of mitigation and monitoring plans		Support from IU/PIU	By contractor with support from ES	CEMP implemented by contractor, other aspects of EMP overseen by ES
Continued stakeholder disclosure and consultation		IA/PIU lead	Support from ES	As part of GRM
Monitoring reporting	To ADB	IA/PIU lead preparation	Support from ES	Reports provide input for review missions

[5] ADB Public Communication Policy (2012)
[6] Grievance Redress Mechanism (see below)
[7] Construction Environmental Management Plan based on EMP in tender documents (see EMP)

Design and Implementation	Environmental DD and Approvals			Milestones & Notes
	ADB / PPTA	Viet Nam	PMIS / Contractor	
		of regular reports to ADB		

14. The Department of Natural Resources and Environment (DONRE) oversees environmental management of Quang Ninh province The DONRE with district staff in Mong Cai town provide direction and support for environmental protection-related matters including application of the Law on Environmental Protection (2014) as implemented by Decree 29/2011/ND-CP, and Circular 26/2011/TT-BTNMT, and national environmental standards and criteria. The environmental standards and criteria for Viet Nam are listed in Appendix B. See IEE for complete legal and regulatory framework for environmental management in Viet Nam.

15. The ADB provides guidance to EA with any issues related to EMP, and reviews biannual reports on EMP activities compiled and submitted by EA which are disclosed on ADB website pursuant to ADB Policy on Public Communication (2011).

A. Worker and Community Health and Safety

16. The Ministry, and counterpart provincial Department of Labour, Invalids and Social Assistance (DoLISA) prescribes regulations and guidelines governing worker and public safety in the workplace[8]. The directives of M/DoLISA must be followed throughout the construction and operational phases of the subprojects. To supplement the M/DoLISA the IFC/World Bank Environment, Health, and Safety Guidelines (2007) should be consulted when necessary.

III. SUMMARY OF POTENTIAL IMPACTS

17. The potential impacts of the construction and operation of the Mong Cai subproject components (Table 1) from the IEE which are summarized in Table 3 are caused primarily from the civil works during the construction phase of the different subproject components. The short-term construction disturbances concern noise, dust, reduced access, increased traffic and risk of traffic accidents, worker and public safety, and local soil erosion & surface water sedimentation, and solid and liquid waste. These short-term impacts can be managed and mitigated with Mitigation Plan provided below.

Table 3. Summary of potential impacts of Mong Cai subproject components

Pre-construction Phase
• Loss agriculture land and business operation land, and no relocation

[8] Example, Decree 110/2002/ND-CP, supplementing some Articles of Decree 06/1995 on Labour Code of Occupational Safety and Health, Decree 06/1995, Elaborating Provisions of Labour Code on Occupational Safety and Health.

Construction Phase
Two new WWTPs and improved drainage • Disturbances and impacts from civil works defined by dust, noise, reduced and/or blocked public access, disrupted business and recreation, noise, dust and air pollution caused by increased truck traffic and heavy equipment use, soil and Ka Long river pollution caused by equipment operation and maintenance, public and worker accidents, disruption of traffic, increased traffic accidents, land erosion & Ka Long and western rivers sedimentation, potential loss of scattered mangroves at western WWTP site, solid and domestic waste from worker camps, social issues and community problems caused by migrant workers.
Riverbank protection • Disturbances and impacts from civil works defined by dust, noise, reduced and/or blocked public access, disrupted business and recreation, noise, dust and air pollution from increased truck traffic and heavy equipment use, soil and surface water pollution caused by equipment operation and maintenance, public and worker accidents, disruption of roads traffic and boat traffic on Ka Long river, increased traffic accidents, land erosion & Ka Long river sedimentation, drainage and flooding problems, solid and domestic waste from worker camps, social issues and community problems caused by migrant workers.
Operation Phase
New WTTPs and stormwater improvements • Land, and Ka Long & western rivers pollution caused from improperly maintained WWTP systems, and design effluent quality • Raw wastewater or chemical spills on WTTP property from unmaintained equipment Riverbank protection • n/a

A. Public Consultation

18. The stakeholder consultation program that was developed for the IEE will be continued with the start of the pre-construction phase of both subprojects. The first step will be to disclose the draft IEE to the affected stakeholders that were consulted to obtain their review and comment.

Follow-up Consultation

19. As indicated by the IEE a concern of the public and stakeholders of the subproject were management of the sludge of the new WWTPs, and boast navigation disruption in the Ka Long river. These issues plus any others will be reviewed during follow-up consultations throughout the pre-construction, construction, and operation of the completed subproject components.

IV. MITIGATION PLAN

20. The impact mitigation measures of the EMP are presented in a comprehensive mitigation plan for the subproject in Table 4. Similar to IEE the mitigation plan is structured by the three development phases of the subproject defined by the pre-construction; construction; and post construction operational phase. The mitigation plan addresses the environmental issues and concerns raised at the stakeholder meetings.

21. The mitigation plan combines construction phase impacts common to all three subproject components for which single mitigation measures are prescribed. In this way common mitigation measures are not re-stated numerous times. However, impacts and required mitigations that are specific to a subproject component are also identified. Or, common mitigations that are particularly important to a subproject component are underscored.

22. The mitigation plan identifies potential impacts, required mitigations, responsible parties, location, timing, and indicative costs. The mitigation plan by design is comprehensive in order for the plan to be updated easily to meet the final detailed designs of the subproject.

Table 4. Environmental Impact Mitigation Plan

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[9] (USD)	Responsibility	
							Supervision	Implementation
Pre-Construction, Detailed Design Phase of Mong Cai Subproject (Wastewater & Stormwater Improvements, & Riverbank Protection)								
Confirmation of required resettlement, relocations, & compensation	No negative environmental impacts	1. Affected persons well informed well ahead of subproject implementation.	All affected persons in subproject areas	Before project implemented	See resettlement plans	See resettlement plan	EA/IA/SO	Resettlement/ compensation committees
Disclosure, & engagement of community	No community impacts	2. Initiate Information Disclosure and Grievance process of IEE	For all construction sites.	Beginning of project	Quarterly	No marginal cost[10]	PMU	PIU
GoV approvals	No negative impact	3. Notify DoNRE of subproject initiation to complete EA requirements, and obtain required project permits and certificates.	Entire subproject	Before construction	As required	No marginal cost	PMU/DoNRE	DoNRE

[9] Costs will need to be updated during detailed design phase.
[10] No marginal cost indicates that costs to implement mitigation are to be built into cost estimates of bids of contractors

Detailed designs of subproject,	Minimize negative environmental impacts	4. Work with PMIS[11] to complete detailed designs of the individual subproject components. Ensure the following measures are included: a) identification of spill management prevention plans, and emergency response plans for all construction sites; b) no disturbance or damage to culture property and values; c) no cutting of trees including mangroves if possible; d) locate any required aggregate borrow pits away from human settlements with fencing and access barriers; e) no, or minimal disruption to town water supplies, utilities, and electricity with contingency plans for unavoidable disruptions; f) no, or minimal disruption to normal pedestrian and vehicle traffic along all construction roads with contingency alternate routes; g) for public areas include specific plan to notify & provide residents and merchants of construction activities & schedule to minimize disruption to normal commercial and residential activities. h) review measures to prevent or minimize disturbances to households business along Ka Long riverbanks	Final siting	Before construction initiated	Once with detailed designs documents	No marginal cost	PIC	EA/IA/PMU

[11] PIC is project implementation consultant to be determined

Update EMP	Positive environmental impacts	5. Review finalized sites for new WWTPs and pipelines to minimize impact on agriculture lands, with no mangrove loss from western site and pipeline 6. Review measures that will ensure minimal to no erosion and sedimentation of Ka Long river at riverbank protection sites 7. Finalize plan for managing safe boat traffic in Ka Long river during riverbank and dredging works 8. Review effluent quality design of new WWTPs to ensure discharged effluent meets appropriated QCVN standard (#14, 2008) 9. Re-clarify with DoNRE that no known rare or endangered species inhabit the subproject areas 10. Identify any new potential impacts of subproject and include in EMP 11. Confirm solid waste disposal site(s) with DoNRE 12. Confirm WWTP sludge disposal site(s) with DoNRE 13. Update mitigation measures and monitoring requirements of EMP where necessary to meet detailed designs, and to protect affected environments. 14. Submit updated EMP with new potential impacts to ADB to review. 15. Develop individual management sub-plans for CEMP: a) Construction drainage; b) Soil erosion; c) Noise and dust; d) Contaminated spoil disposal; e) Solid and liquid waste disposal; f) Construction & urban traffic congestion; g) Utility and power disruption; h) Worker and public safety; i) Tree (including mangrove) and vegetation removal and site restoration; j) Construction materials acquisition, transport, & storage, and k) Cultural chance finds.	All sites including Ka Long river at riverbank and eastern WWTP sites	Before construction initiated	Once with detailed designs documents		PMIS	PMU/PIU
Update EMP	Positive environmental impacts	16. Update baseline water quality & presence of aquatic biota in Ka Long river at eastern WWTP and at riverbank protection sites, and of river receiving effluent from western WWTP	Ka Long river	Before construction initiated	Once with updated EMP	See Monitoring Plan below	PMIS/PIU	PMIS/SO

Confirm GoV approved construction waste disposal sites	No negative impact	17. Notify DoNRE to confirm locations of sites for borrow pits and disposal areas for construction for subprojects, and obtain required permits.	Entire subproject	Before construction	As required	No marginal cost	PMU/DoNRE	PIU
UXO survey, & removal	Injured worker or public	18. Ensure GoV military is consulted and clears subproject areas where necessary	All construction sites.	Beginning of subproject	Once	See Monitoring Plan below	IA/PMU	GoV military
Develop bid documents	No negative environmental impact	19. Ensure updated EMP is included in contractor tender documents, and that tender documents specify requirements of EMP must be budgeted. 20. Specify in bid documents that contractor must have experience with implementing EMPs, or provide staff with the experience.	All subproject areas	Before construction begins	Once for all tenders	No marginal cost	PMIS	PIU
Create awareness of physical cultural resources in area	No negative environmental impact	21. PMU/PIU to review potential locations of physical cultural resources, and explain possible PCR to contractors and PMIS	All subproject areas	Before construction begins	Once	No marginal cost	DCST	DCST
Obtain & activate permits and licenses	Prevent or minimize impacts	22. Contractors to comply with all statutory requirements set out by GoV for use of construction equipment, and operation construction plants such as concrete batching.	For all construction sites	Beginning of construction	Once	No marginal cost	PMIS	PIU & contractors
Capacity development	No negative environmental impact	23. Develop and schedule training plan for PIU/SO/EO to be able to fully implement EMP, and to manage implementation of mitigation measures by contractors. 24. Create awareness and training plan for contractors (EO) whom will implement mitigation measures.	All subproject areas	Before construction begins	Initially, refresher later if needed	No marginal cost	PMIS	PMIS
Recruitment of workers	Spread of sexually transmitted disease	25. Use local workers as much as possible thereby reducing #s of migrant worker	All work forces.	Throughout construction phase	Worker hiring stages	No marginal cost	PMU/PIU	Contractor's bid documents
Construction Phase of Wastewater and Drainage Improvements and Riverbank Protection								

Initiate EMP & sub-plans,	Prevent or minimize impacts	26. Initiate updated EMP & CEMP including individual management sub-plans for different potential impact areas that are completed in pre-construction phase (see sub-plan guidance below).	For all construction sites	Beginning of construction	Once	No marginal cost	PMIS	PIU & contractors
Worker camps	Pollution and social problems	27. Locate worker camps away from human settlements. 28. Ensure adequate housing and waste disposal facilities including pit latrines and garbage cans. 29. A solid waste collection program must be established and implemented that maintains a clean worker camps 30. Locate separate pit latrines for male and female workers away from worker living and eating areas. 31. A clean-out or infill schedule for pit latrines must be established and implemented to ensure working latrines are available at all times. 32. Worker camps must have adequate drainage. 33. Local food should be provided to worker camps. Guns and weapons not allowed in camps. 34. Transient workers should not be allowed to interact with the local community. HIV Aids education should be given to workers. 35. Camp areas must be restored to original condition after construction completed.	All worker camps	Throughout construction phase	Monthly	No marginal cost	PMIS/PIU	contractor
Training & capacity	Prevent of impacts through education	36. Implement training and awareness plan for PIU/SO/EO and contractors.	PIU office, construction sites	Beginning of construction	After each event	No marginal cost	PMIS	PMIS/PIU

Implement Construction materials acquisition, transport, and storage sub-plan	Pollution, injury, increased construction traffic congestion	37. All borrow pits should be reviewed by DoNRE. 38. Select pits in areas with low gradient and as close as possible to construction sites. 39. Required aggregate volumes must be carefully calculated prior to extraction to prevent wastage. 40. Pits and quarries should not be located near surface waters, houses, or cultural property or values. 41. All topsoil and overburden removed should be stockpiled for later restoration. 42. All borrow pits and quarries should have a fence perimeter with signage to keep public away. 43. After use pits and quarries should be dewatered and permanent fences installed with signage to keep public out, and restored as much as possible using original overburden and topsoil. 44. Unstable slope conditions in/adjacent to the quarry or pit caused by the extractions should be rectified with tree planting. 45. Define & schedule how materials are extracted from borrow pits and rock quarries, transported, and handled & stored at sites. 46. Define and schedule how fabricated materials such as steel, wood structures, and scaffolding will transported and handled. 47. All aggregate loads on trucks should be covered.	For all construction areas.	Throughout construction phase	Monthly	No marginal cost	PMIS/PIU	contractor

DBST (pavement) production, and application	Air pollution, land and water contamination, and traffic & access problems,	48. Piles of aggregates at sites should be used/or removed promptly, or covered and placed in non- traffic areas 49. Stored DBST materials well away from all human activity and settlements, and cultural (e.g., schools, hospitals), and ecological receptors. Bitumen production and handling areas should be isolated. 50. Contractors must be well trained and experienced with the production, handling, and application of bitumen. 51. All spills should be cleaned immediately and handled as per hazardous waste management plan, and according to GoV regulations. 52. Bitumen should only be spread on designated road beds, not on other land, near or in any surface waters, or near any human activities. 53. Bitumen should not be used as a fuel.	For all construction areas.	Throughout construction phase	Monthly	No marginal cost	PMIS & PIU	contractor

Implement Spoil management sub-plan	Contamination of land and surface waters from excavated spoil, and construction waste	54. Uncontaminated spoil to be disposed of in GoV-designated sites, which must never be in or adjacent surface waters. Designated sites must be clearly marked and identified. 55. Spoil must not be disposed of on sloped land, near cultural property or values, ecologically important areas, or on/near any other culturally or ecologically sensitive feature. 56. Where possible spoil should be used at other construction sites, or disposed in spent quarries or borrow pits. 57. A record of type, estimated volume, and source of disposed spoil must be recorded. 58. Contaminated spoil disposal must follow GoV regulations including handling, transport, treatment (if necessary), and disposal. 59. Suspected contaminated soil must be tested, and disposed of in designated sites identified as per GoV regulations. 60. Before treatment or disposal contaminated spoil must be covered with plastic and isolated from all human activity.	All excavation areas	Throughout construction phase	Monthly	See Monitoring Plan for contaminated soil analyses	PMIS & PIU & DoNRE	contractor

Implement Solid and liquid construction waste sub-plan	Contamination of land and surface waters from construction waste	61. Management of general solid and liquid waste of construction will follow GoV regulations, and will cover, collection, handling, transport, recycling, and disposal of waste created from construction activities and worker force. 62. Areas of disposal of solid and liquid waste to be determined by GoV. 63. Disposed of waste should be catalogued for type, estimated weigh, and source. 64. Construction sites should have large garbage bins. 65. A schedule of solid and liquid waste pickup and disposal must be established and followed that ensures construction sites are as clean as possible. 66. Solid waste should be separated and recyclables sold to buyers in community. <u>Hazardous Waste</u> 67. Collection, storage, transport, and disposal of hazardous waste such as used oils, gasoline, paint, and other toxics must follow GoV regulations. 68. Wastes should be separated (e.g., hydrocarbons, batteries, paints, organic solvents) 69. Wastes must be stored above ground in closed, well labeled, ventilated plastic bins in good condition well away from construction activity areas, all surface water, water supplies, and cultural and ecological sensitive receptors. 70. All spills must be cleaned up completely with all contaminated soil removed and handled with by contaminated spoil sub-plan.	All construction sites and worker camps	Throughout construction phase	Monthly	No marginal cost	PMIS & PIU & DoNRE	contractor

Implement Noise and dust sub-plan	Dust Noise	71. Regularly apply wetting agents to exposed soil and construction roads. 72. Cover or keep moist all stockpiles of construction aggregates, and all truck loads of aggregates. 73. Minimize time that excavations and exposed soil are left open/exposed. Backfill immediately after work completed. 74. As much as possible restrict working time between 07:00 and 17:00. In particular are activities such as pile driving. 75. Maintain equipment in proper working order 76. Replace unnecessarily noisy vehicles and machinery. 77. Vehicles and machinery to be turned off when not in use. 78. Construct temporary noise barriers around excessively noisy activity areas where possible.	All construction sites.	Fulltime	Monthly	No marginal cost	PMIS & PIU	contractor
Implement Utility and power disruption sub-plan	Loss or disruption of utilities and services such as water supply and electricity	79. Develop carefully a plan of days and locations where outages in utilities and services will occur, or are expected. 80. Contact local utilities and services with schedule, and identify possible contingency back-up plans for outages. 81. Contact affected community to inform them of planned outages. 82. Try to schedule all outages during low use time such between 24:00 and 06:00.	All construction sites.	Fulltime	Monthly	No marginal cost	PMIS & PIU & Utility company	contractor

Implement Tree and vegetation removal, and site restoration sub-plan	Damage or loss of trees, vegetation, and landscape	83. Contact DARD for advice on how to minimize damage to trees including mangroves, and vegetation. 84. Restrict tree and vegetation removal to strict WWTP site and pipeline alignments RoW area. 85. Prevent tree removals, and install protective physical barriers around trees that do not need to be removed. 86. All areas to be re-vegetated and landscaped after construction completed. Consult DARD to determine the most successful restoration strategy and techniques. Aim to replant three trees for each tree removed.	All construction sites.	Beginning and end of subproject	Monthly	No marginal cost	PMIS & PIU	contractor
Implement Erosion control sub-plan	Land erosion	87. Berms, and plastic sheet fencing should be placed around all excavations and earthwork areas. 88. Earthworks should be conducted during dry periods. 89. Maintain a stockpile of topsoil for immediate site restoration following backfilling. 90. Protect exposed or cut slopes with planted vegetation, and have a slope stabilization protocol ready. 91. Re-vegetate all soil exposure areas immediately after work completed.	All construction sites	Throughout construction phase	Monthly	No marginal cost	PMIS & PIU	contractor

Implement worker and public safety sub-plan	Public and worker injury, and health	92. Proper fencing, protective barriers, and buffer zones should be provided around all construction sites. 93. Sufficient signage and information disclosure, and site supervisors and night guards should be placed at all sites. 94. Worker and public safety guidelines GoV should be followed (DoLISA regulations & guidelines). 95. Speed limits suitable for the size and type of construction vehicles, and current traffic patterns should be developed, posted, and enforced on all roads used by construction vehicles. 96. Standing water suitable for disease vector breeding should be filled in. 97. Worker education and awareness seminars for construction hazards should be given at beginning of construction phase, and at ideal frequency of monthly. A construction site safety program should be developed and distributed to workers. 98. Appropriate safety clothing and footwear should be mandatory for all construction workers. 99. Adequate medical services must be on site or nearby all construction sites. 100. Drinking water must be provided at all construction sites. 101. Sufficient lighting be used during necessary night work. 102. All construction sites should be examined daily to ensure unsafe conditions are removed.	All construction sites.	Fulltime	Monthly	No marginal cost	PMIS & PIU	contractor

Civil works	Degradation of water quality & aquatic resources	103. Protective coffer dams, berms, plastic sheet fencing, or silt curtains should be placed between all earthworks and Ka Long river and all other surface waters. 104. Erosion channels must be built around aggregate stockpile areas to contain rain-induced erosion. 105. Earthworks should be conducted during dry periods. 106. All construction fluids such as oils, and fuels should be stored and handled well away from Ka Long and western rivers and other surface waters 107. No waste of any kind is to be thrown Ka Long and western rivers 108. No washing or repair of machinery near surface waters. 109. Pit latrines to be located well away from Ka Long and western rivers 110. All irrigation canals and channels to be protected the same way as Ka Long and western rivers	All construction sites	Throughout construction phase	Monthly	No marginal cost	PMIS & PIU	contractor
Civil works	Degradation of terrestrial resources	111. All construction fluids such as oils, and fuels should be stored and handled well away from Ka Long and western rivers	All construction sites	Throughout construction phase	Monthly	No marginal cost	PMIS & PIU	contractor
Implement Construction and urban traffic sub-plan	Traffic disruption, accidents, public injury	112. Schedule construction vehicle activity during light traffic periods. Create adequate traffic detours, and sufficient signage & warning lights. 113. Post speed limits, and create dedicated construction vehicle roads or lanes. 114. Inform community of location of construction traffic areas, and provide them with directions on how to best co-exist with construction vehicles on their roads. 115. Demarcate additional locations where pedestrians can develop road crossings away from construction areas. 116. Provide construction road and walkway lighting.	All construction sites	Fulltime	Monthly	No marginal cost	PMIS & PIU	contractor
Implement Construction	Loss of drainage & flood storage	117. Provide adequate short-term drainage away from construction sites to prevent ponding and flooding.	All areas near stream	Design & construction phases	Monthly	No marginal cost	PMIS & PIU	contractor

Drainage sub-plan		118. Manage to not allow borrow pits and quarries to fill with water. Pump periodically to land infiltration or nearby water courses. 119. Install temporary storm drains or ditches for construction sites 120. Ensure connections among surface waters (ponds, streams) are maintained or enhanced to sustain existing stormwater storage capacity..						
Civil works & Chance finds sub-plan	Damage to cultural property or values, and chance finds	121. As per detailed designs all civil works should be located away from all cultural property and values. EA identified potential sites and types of PCR in pre-con phase. 122. Chance finds of valued relics and cultural values should be anticipated by contractors. Site supervisors should be on the watch for finds. 123. Upon a chance find all work stops immediately, find left untouched, and PIU notified to determine if find is valuable. Culture section of DCST notified by telephone if valuable. 124. Work at find site will remain stopped until DCST allows work to continue.	All construction sites	At the start , and throughout construction phase	Monthly	No marginal cost	PMIS & PIU	contractor
Construction of Western WWTP								
Construction of WWTP	Destruction or damage to scattered mangroves in area	125. Extra care to locate WWTP site and alignment of raw WW pipeline away from scattered mangroves west of Mong Cai. Pipeline must be placed along access road to WWTP site	At western WWTP site & pipeline	Through construction phase	Monthly	No marginal cost	PIU/PMIS	contractor
Construction of Riverbank Protection								
Construction of riverbank protection and dredging	Heavy sedimentation of Ka Long river	126. Temporary earthen berms, or plastic fencing need to be installed along riverbanks to isolate shoreline earthworks from river. Silt curtains placed in river parallel to shoreline to isolate riverbank works from main river	Eastern and western riverbanks of Ka Long river	During all river earthworks activities	Monthly	No marginal cost	PIU/PMIS	contractor
	Damage aquatic	127. Dredging operations should be minimized as much as						

	habitat in Ka Long river	possible with peripheral silt curtains installed at sites to contain the spread of suspended sediment down river.						
Operation of New WWTPs								
Operation of WWTPs	Reduced effluent quality leading to pollution of Ka Long and western rivers	a) The quality of treated effluent of both WWTPs should be monitoring regularly to ensure that it always meets effluent quality design criteria	At WWTP	Quarterly	Biannual	O&M	WWTP operators / DONRE	
	Equipment failure at WWTPs causing chemical spills, and raw WW discharge	b) Sufficient annual O&M budget must be provided to ensure all equipment stays in good working condition. c) All staff must be properly trained on upgraded WWTP operations		Fulltime			WWTP operators	

V. MONITORING PLAN

23. The environmental monitoring plan for the EMP is provided in Table 5. The monitoring plan focuses on three phases (pre-construction, construction, post-construction operation) of the subproject and consists of environmental indicators, sampling locations & frequency, method of data collection, responsible parties, and estimated costs. The purpose of the monitoring plan is to determine the effectiveness of the impact mitigations, and to document unexpected positive or negative environmental impacts of the subprojects.

A. Environmental Quality Standards for Subproject Components

24. Environmental quality standards and criteria for Viet Nam are listed in Appendix B. The environmental standards provided by the Environmental, Health and Safety Guidelines of the IFC/World Bank (2007) should be consulted to supplement GOV standards if required.

25. An independent environmental monitoring consultant (EMC) will be required to implement the environmental monitoring program under the supervision and coordination of the PMIS/PIU. The EMC will be responsible for the sampling of environmental parameters that must be analyzed in a laboratory. The SO and EO will coordinate monitoring work with the EMC. The PMIS/PIU will also provide logistical support to the EMC where necessary for the implementation of environmental monitoring plan.

26. After construction is completed and the new WWTPs are in operation the treated effluent quality of the WWTPs should be monitored regularly either by the WWTP operators or by DONRE. Table 2 summarizes the responsibilities for monitoring during the construction-implementation of the subproject.

1. Performance Monitoring

27. Performance monitoring is required to assess the overall performance of the EMP. A performance monitoring system is normally developed by the EA for the entire subproject. Select indicators of the environment that will be affected primarily by the construction phase are drawn from the mitigation and monitoring plans and summarized in Table 6.

2. Reporting

28. Regular reporting on the implementation of mitigation measures, and monitoring activities during construction phase of the subproject is required. Reporting is the responsibility of PIU and should be conducted in conjunction with regular meetings with stakeholders as part of the continuation of stakeholder communications. The mitigation and monitoring plans (Tables 4 and 5) summarize proposed timing of reporting. Appendix C provides a monitoring report template for the PIU that the PIU with assistance from the PMU and PMIS must complete and attach as part of regular PIU reporting to the PMU/IA.

29. A report on environmental monitoring and implementation of EMP for the subproject component sites will be prepared quarterly for the EA/PSC by the PIU. The PIU report will compile monthly reports provided by the EO of contractor, the reports of the EMC on monitoring, and input from the ES of the PMIS. The PIU report will also be sent to the DONRE and ADB. The reports will table all indicators measured with the monitoring plan of EMP including performance monitoring indicators (Table 6), and will reference relevant GoV environmental quality standards.

Table 5. Environmental Monitoring Plan

ENVIRONMENTAL EFFECTS MONITORING							
Environmental Indicators	Location	Means of Monitoring	Frequency	Reporting	Responsibility Supervision / Implementation		Estimated Cost (USD)
					Supervision	Implementation	
Pre-construction Phase – Update Environmental Baseline Conditions							
Review baseline of existing sensitive receptors (e.g., cultural property & values, rare/ endangered species, critical habitat)	At all subproject sites including Ka Long and western rivers,	Consultation with community, and DONRE	Once	Once	PMU/PIU	Environmental Monitoring Consultant	$1,000.
A) Update baseline qualitative air quality: dust, noise, and vibration levels B): update baseline river water quality: TSS, heavy metals (As, Cd, Pb,) oil and grease, pH, DO, COD, BOD_5, temperature, TDS, NH_3, NH_4, other nutrient forms of N & P, coliform	A): Along riverbanks of Ka Long river and at WWTP sites B): Ka Long river at riverbank sites & eastern WWTP site, and at western river at western WWTP site.	Using field and analytical methods approved by DoNRE.	A & B: One day and one night measurement during rainy & dry seasons.	One baseline supplement report before construction phase starts	PIU	Environmental Monitoring Consultant	A) $1,000. B) $5,000..
Inventory of present and past land uses that could cause contaminated soil.	Possible contaminated lands at all excavation sites	Using field and analytical methods approved by DoNRE.	Once	Once	PIU	Environmental Monitoring Consultant	$500.
Construction Phase of all Subproject Components							
Analysis of soil quality (heavy metals (As, Cd, Pb, oil & grease,	Possible contaminated lands at all excavation sites	Using field and analytical methods approved by DoNRE.	Once if needed	Once	PIU	Environmental Monitoring	$2,500.

hydrocarbons).						Consultant	
A) Qualitative air quality: dust, , noise, and vibration levels B: Ka Long river & western river quality: TSS, heavy metals (As, Cd, Pb,) oil and grease, pH, DO, COD, BOD_5, temperature, TDS, NH_3, NH_4, other nutrient forms of N & P, coliform C) Analysis of soil quality (heavy metals (As, Cd, Pb, Hg, Mn), hydrocarbons. D) Domestic (worker) and construction solid waste inside & outside construction sites including worker camps. E) Public comments and complaints F) Incidence of worker or public accident or injury	A), B): Baseline sites of pre-construction phase. C) At sites where contaminated soil is suspected. D) All construction sites and worker camps E) Using hotline number placed at construction areas F) At all construction areas	A – C : Using field and analytical methods approved by DoNRE. Include visual observations of dust and noise from contractor & public reports . D) Visual observation E) Information transferred by telephone hotline number posted at all construction sites. F) regular reporting by contractors/PIU	(A – B): Quarterly during construction periods Daily visual records C) Once at start of excavations D) Monthly E) Continuous public input F) Continuous	Monthly	(A - D):		
					PIU	EMC	A & B: $24,000./yr C: $2,000./yr D: no marginal cost
					(E & F) & daily observations:		
					EA/PIU	contractor	E: $1,000./yr F: no marginal cost
Operation of New WWTPs							
TSS, heavy metals (As, Cd, Pb,) oil and grease, pH, DO, COD, BOD_5, temperature, TDS, NH_3, NH_4, other nutrient forms of N & P, coliform	Ka Long and western rivers below discharges of eastern and western WWTPs Effluents of both WWTPs before discharged to rivers	Using field and analytical methods approved by DoNRE	Quarterly	Biannually	WWTP/DONRE		$12,000. /yr

Table 6. Performance Monitoring Indicators for Subproject

Major Environmental Component	Key Indicator	Performance Objective	Data Source
Pre-construction Phase			
Public Consultation & Disclosure	Affected public & stakeholders	Meetings with stakeholders contacted during IEE & new stakeholders convened for follow-up consultation & to introduce grievance mechanism	Minutes of meeting, and participants list
EMP	Updated EMP	All stakeholders contacted during IEE re-contacted for follow-up consultation	EMP
Bid Documents	Requirements of EMP (CEMP[12])	EMP appended to bidding documents with clear instructions to bidders for CEMP	Bid documents
Training of PIU/PMU	Training course(s) & schedule	By end of P-C phase, required course(s) that will be delivered are designed and scheduled	Course(s) outline, participants, and schedule
Ka Long and western rivers quality	TSS, metals (Pb, Fe, As), parameters of TP, TN, fecal coliform, H_2S	Document baseline conditions as per Monitoring Plan	Survey
Planned WWTPs effluent quality	TSS, metals (Pb, Fe, As), parameters of TP, TN, fecal coliform, H_2S	Compare with original design criteria	desktop
Construction Phase			
All subproject areas	Critical habitat, rare or endangered species ***if present***	All *present* critical habitat and R & E species if unchanged, and unharmed	Monitoring by EMC[13]
Ka Long and western rivers quality	TSS, metals (Pb, Fe, As), parameters of TP, TN, fecal coliform, H_2S [14]	Levels never exceed pre-construction baseline levels	Monitoring by EMC
Qualitative air quality	Dust, noise, vibration[15]	Levels never exceed pre-construction baseline levels	EMC & contractor monitoring reports,
Soil & surface quality	Solid & liquid waste	Rigorous program of procedures & rules to collect and store all waste from construction camps and sites	Contractor and EMC monitoring reports

[12] Contractor Environmental Management Plan developed from EMP in contractor bidding document
[13] Environmental Monitoring Consultant hired by PIC to assist implementation of Environmental Monitoring Plan
[14] See Appendix B for list of available environmental quality standards
[15] Footnote 10

Major Environmental Component	Key Indicator	Performance Objective	Data Source
		practiced.	
Hazardous materials & waste	Oil, gasoline, grease, alum, chlorine, soda	Rigorous program of procedures to manage and store all waste from construction camps and sites practiced.	Contractor and EMC monitoring reports
Public & worker safety	Frequency of injuries	Adherence to GoV OHS regulations/policy to prevent accidents[16]	Contractor reports
Cultural property	Incidence of damage, or complaints	No valued cultural property, or unearthed valuable relic is harmed in any way	Public input, contractor reports, public input, EMC reports
Traffic	Frequency of disruptions & blocked roadways	Disruptions, stoppages, or detours are managed to absolute minimum.	Public input, contractor reports, EMC reports
Operation of Upgraded WWTPs			
Aesthetics, solid waste	Odour, uncontained garbage	Clean pond and WWTP areas, no aesthetic issues	Public/PPC
Air quality	dust, noise on property roads	Levels never exceed pre-construction baseline levels	Public/DoNRE,
Ka Long and western rivers river quality below WWTPs	TSS, metals (Pb, Fe, As), parameters of TP, TN, fecal coliform, H_2S) [17]	Levels never exceed pre-construction baseline levels	DONRE
Treated effluent of WTTPs	TSS, metals (Pb, Fe, As), parameters of TP, TN, fecal coliform, H_2S) [18]	Effluent quality meets design criteria, and QCVN standards	WWTPs/DONRE

VI. ESTIMATED COST OF EMP

30. The marginal costs for implementing the EMP are primarily for environmental monitoring because the costs for implementing impact mitigation measures are included with the construction costs in contractor bid documents. From Table 5 the preliminary costs for the implementation of the EMP for the subproject are summarized in Table 7. These costs include per diem technician fees.

31. An estimated budget of USD $10,000.00 is required for capacity building and training for environmental management in conjunction with other capacity development activities of the project such as occurring as part of overall the capacity development component of the PPTA.

[16] MoLISA GoV Regulations and Policy
[17] See Appendix B for list of available environmental quality standards
[18] See Appendix B for list of available environmental quality standards

The costs to implement the EMP will need to be updated by the PMIS in conjunction with the PIU during the pre-construction phase.

Table 7. Estimated Costs for Environmental Monitoring Plan of EMP

Activity Type	Estimated Cost (USD)
Pre-construction Phase	
Updating Environmental Baseline	
cultural receptors	$1,000.00
environmental quality	$6,500.00
Construction Phase	
environmental quality	$54,500.00
public consultation	$2,000.00
Post-construction Operation Phase	
environmental quality	$24,000.00
public input	none
Capacity Development and training	$10,000.00
Total	**$98,000.00**

VII. EMERGENCY RESPONSE PLAN

32. The Contractor must develop emergency or incident response procedures during construction. In the operational phase the operator/civil authorities will have responsibility for any emergencies or serious incidents. The construction phase should ensure:

i) Emergency Response Team (ERT) of the Contractor as initial responder;
ii) the District fire and police departments, emergency medical service, the Department of Health (DPH), collectively referred to as the External Emergency Response Team (EERT), as ultimate responders.

33. The Contractor will provide and sustain the required technical, human and financial resources for quick response during construction.

Table 8. Roles and Responsibilities in Emergency Incident Response

Entity	Responsibilities
Contractor Team (ERT)	- Communicates / alerts the EERT. - Prepares the emergency site to facilitate the

Entity	Responsibilities
	response action of the EERT, e.g., vacating, clearing, restricting site. - When necessary & requested by the EERT, lends support / provides assistance during EERT's response operations.
External Emergency Response Team (EERT)	- Solves the emergency/incident
Contractor Resources	- Provide and sustain the people, equipment, tools & funds necessary to ensure Subproject's quick response to emergency situations. - Maintain good communication lines with the EERT to ensure prompt help response & adequate protection, by keeping them informed of Subproject progress.

34. The ERT will be led by the senior Contractor engineer (designated ERTL) on site with a suitably trained foreman or junior engineer as deputy. Trained first-aiders and security crew will be the core members of the ERT.

35. The Contractor will ensure that ERT members are physically, technically and psychologically fit for their emergency response roles and responsibilities.

36. Prior to the mobilization of civil works, the Contractor, through its Construction Manager, ERTL, in coordination with the PCU/PIU, will meet with the ultimate response institutions to discuss the overall construction process, including, but not limited to:

i) Subproject sites;
ii) construction time frame and phasing;
iii) any special construction techniques and equipment that will be used; i
iv) any hazardous materials that will be brought to and stored in the construction premise and details on their applications and handling/management system;
v) the Contractor's Emergency Management Plan
vi) names and contact details of the ERT members

37. The objective of this meeting is to provide the ultimate response institutions the context for:

i) their comments on the adequacy of the respective Emergency Management Plans
ii) their own assessment of what types, likely magnitude and likely incidence rate of potential hazards are anticipated
iii) the arrangements for coordination and collaboration.

38. To ensure effective emergency response, prior to mobilization of civil works, the Contractor will:

i) set up the ERT;
ii) set up all support equipment and facilities in working condition
iii) made arrangements with the EERT;

iv) conducted proper training of ERT members, and encouraged and trained volunteers from the work force; v) conducted orientation to all construction workers on the emergency response procedures and facilities, particularly evacuation procedures, evacuation routes, evacuation assembly points, and self-first response, among others; and vi) conducted drills for different possible situations.

39. To sustain effective emergency response throughout Subproject implementation an adequate budget shall be provided to sustain the capabilities and efficiency of the emergency response mechanism, the emergency response equipment, tools, facilities and supplies. Drills and reminders will take place regularly, the former at least every two months and the latter at least every month.

A. Alert Procedures

40. Means of communicating, reporting and alerting an emergency situation may be any combination of the following: i) audible alarm (siren, bell or gong); ii) visual alarm (blinking/rotating red light or orange safety flag); iii) telephone (landline); iv) mobile phone; v) two-way radio; and vi) public address system/loud speakers. Some rules relative to communicating/alerting will be:

(i) Whoever detects an emergency situation first shall immediately :
- call the attention of other people in the emergency site,
- sound the nearest alarm, and/or
- report/communicate the emergency situation to the ERT.

(ii) Only the ERTL and, if ERTL is not available, the Deputy ERTL are authorized to communicate with the EERT. Exceptional cases to this rule may be necessary and should be defined in the Emergency Management Plans.

(iii) When communicating/alerting an emergency to the EERT, it is important to provide them with at least: i) the type of emergency situation; ii) correct location of the emergency; ii) estimated magnitude of the situation; iii) estimated persons harmed; iv) time it happened; v) in case of a spill, which hazardous substance spilled; and vi) in case of fire and explosion, what caused it. Such details would allow the EERT to prepare for the appropriate response actions.

For an effective reporting/alerting of an emergency situation:

(i) The names and contact details of the relevant persons and institutions should be readily available in, or near to, all forms of communication equipment, and strategically posted (at legible size) in all Subproject sites and vehicles:
- Most relevant construction/operations staffs namely, the ERTL, Deputy ERTL, first-aiders, supervising engineers, foremen
- EERT institutions/organizations
- Concerned village authority/ies
- PIU Office, SO

(ii) All Subproject sites should have good access to any combination of audible and visual alarms, landline phones, mobile phones and two-way radio communication at all times.

(iii) Contractor's construction vehicles should also be equipped with the appropriate communication facilities.

B. Emergency Response Situations

The following tables suggest general procedures that will be refined in the final EMP during detailed design, and described in more detail in the Emergency Management Plans of the Contractor.

Table 9. Evacuation Procedure

Procedure	Remarks
▪ Move out as quickly as possible as a group, but avoid panic.	▪ All workers/staff, sub-contractors, site visitors to move out, guided by the ERT.
▪ Evacuate through the directed evacuation route.	▪ The safe evacuation shall have been determined fast by the ERTL/Deputy ERTL & immediately communicated to ERT members.
▪ Keep moving until everyone is safely away from the emergency site and its influence area.	▪ A restricted area must be established outside the emergency site, all to stay beyond the restricted area.
▪ Once outside, conduct head counts.	▪ Foremen to do head counts of their sub-groups; ERTL/Deputy ERTL of the ERT.
▪ Report missing persons to EERT immediately.	▪ ERTL/Deputy ERTL to communicate with the EERT.
▪ Assist the injured in evacuation & hand them over to the ERT first-aiders or EERT medical group	▪ ERT to manage injured persons to ensure proper handling.
▪ If injury warrants special care, DO NOT MOVE them, unless necessary & instructed/directed by the EERT.	▪ ERTL/Deputy ERTL communicates with EERT to get instructions/directions in handling the injured.

Table 10. Response Procedure During Medical Emergency

Procedure	Remarks
▪ Administer First Aid regardless of severity immediately.	▪ Fundamentals when giving First Aid: ▪ Safety first of both the rescuer and the victim. ▪ Do not move an injured person unless: ▪ victim is exposed to more danger when left where they are, e.g., during fire, chemical spill ▪ it would be impossible for EERT to aid victims in their locations, e.g., under a collapsed structure

Procedure	Remarks
	▪ instructed or directed by the EERT. ▪ First AID to be conducted only by a person who has been properly trained in giving First Aid.
▪ Call the EERT emergency medical services &/or nearest hospital.	▪ ERTL/Deputy ERTL or authorized on-site emergency communicator
▪ Facilitate leading the EERT to the emergency site.	▪ ERTL/Deputy ERTL to instruct: ▪ an ERT member on- site to meet EERT in access road/strategic location. He/she shall hold orange safety flag to get their attention & lead them to site. ▪ Other ERT members to clear access road for smooth passage of the EERT.
▪ If applicable, vacate site & influence area at once, restrict site, suspend work until further notice.	▪ Follow evacuation procedure.

Table 11. Response Procedure in Case of Fire

Procedure	Remarks
▪ Alert a fire situation.	▪ Whoever detects the fire shall immediately: ▪ call the attention of other people in the site, ▪ sound the nearest alarm, and/or ▪ Foreman or any ERT member among the construction sub-group contacts the fire department (in this case it should be agreed on that it is alright for any ERT member in the sub-group to alert the fire department) ▪ report/communicate the emergency situation to the ERTL/Deputy ERTL.
▪ Stop all activities/operations and evacuate.	▪ All (non-ERT) workers/staff sub-contractors, site visitors and concerned public to move out to safe grounds following the evacuation procedure.
▪ Activate ERT to contain fire/control fire from spreading.	▪ Guided by the training they undertook, ERT members assigned to mitigate the fire shall assess their own safety situation first before attempting to control fire spread.
▪ Call the nearest fire & police stations &, if applicable, emergency medical services.	▪ When alerting the EERT, ERTL will give the location, cause of fire, estimated fire alarm rating, any injuries.
▪ Facilitate leading the EERT to the	▪ ERTL/Deputy ERTL to instruct:

Procedure	Remarks
emergency site.	▪ an ERT member to meet the EERT in the access road or strategic location and lead them to the site. He/she shall hold the orange safety flag to get their attention and lead them to the site. ▪ some ERT members to stop traffic in, & clear, the access road to facilitate passage of the EERT.
▪ ERT to vacate the site as soon as their safety is assessed as in danger.	▪ Follow appropriate evacuation procedure.

VIII. INSTITUTIONAL CAPACITY REVIEW AND NEEDS

41. Currently there is insufficient experience and capacity for environmental assessment and management amongst national counterparts responsible for the implementation of the EMP. i.e., PPC/PIU/PMU in Mong Cai province. No dedicated environmental staff exists in the PIU and thus the PMU. The PMIS with assistance from the designated SO/PIU will develop and deliver training courses to the PIU/PMU staff responsible for the implementation of the subproject. The purpose of the course(s) is to strengthen the ability of the PIU/PMU/SO to oversee implementation of the EMP by construction contractors, and EMC

42. The SO who is a full-time environmental member of the PIU as well as the EO of the contractor should attend training courses as required. Costs for training are included with costs for implementation of the EMP.

43. Training on the implementation of an EMP should address two thematic areas. The first area should be principles environmental management focused on the potential impacts of subproject activities on the natural and social environment. The second area should be environmental safeguard requirements of the ADB and GoV with specific reference to the EMP.

APPENDIX A: INDICATIVE TORS FOR ENVIRONMENTAL SPECIALISTS OF PMIS

International Environmental Specialist. With assistance from the national environmental specialist the international consultant will be responsible for updating the subproject EMPs at detailed design, and assisting the PIUs with overall environmental management of the implementation of the three subprojects (Bac Giang, Mong Cai, Sa Pa) in Viet Nam. The consultant will: (i) update the three environmental management plans (EMP) for the three three subproject towns to ensure that EMPs address the detailed designs and engineering of subprojects. Updates to EMPs include mitiation and monitoring plans, budget, and capacity development needs of executing agencies (PPC) and PIUs (CPCs and DPI); (ii) with national consultant design comprehenisve training plan for safeguards officer/PIU and on principles of EIA, and the purpose, content, and roles and responsibilities for implementation of updated EMPs highlighting environmental issues of subprojects; (iii) ensure that all relevant safeguards of the EMPs are adequately addressed in the bidding documents (instruction to bidders), and in the evaluation criteria for awarding contracts; (iv) coordinate and work with the SO/PIUs to ensure that contractors finalize their respective site-specific CEMPs based on the updated EMPs and the actual site conditions; (v) oversee the implementation of all safeguards of the three EMPs relating to construction phase activities including handling of construction spoil and waste, water and air quality protection, public nuisance impacts (noise, dust, traffic, blocked access, workers, and camps), and public safety; (vi) coordinate with the three provincial Departments of Environment and Natural Resources (DONRE) on all relevant environmental regulatory compliance issues (e.g. noise and dust from construction sites, sanitation in workers campsite etc); (viii) prepare ToR(s) for survey, detection, and removal of unexploded ordnance (UXO) at all civil works sites. Ensure that EA and/or PIUs consult GoV authorities to assist with ToR development and implementation; (ix) with SO/PIUs prepare ToRs for the follow-up interviews and consultations with the same affected stakeholder and local residents contacted during the PPTA on issues and concerns arising during project construction; (x) prepare ToR(s) for external national environment monitoring consultant (EMC) for conducting water and air quality sampling, and laboratory analyses for the monitoring plans for the three subproject EMPs; (xi) coordinate with PIU/DoTs when necessary to address vehicle traffic issues during road upgrades; (xii) advise SO/PIUs on environment-related concerns arising during sub-projects construction, and recommend corrective measures; (xiii) with SO/PIUs ensure dissemination to stakeholders the results of environment quality monitoring and implementation of safeguards, especially among households or small businesses near the civil construction works areas; (xiv) assist EA and SO/PIUs prepare a table of contents for regular reports PIU must submit to the EA on implementation of EMPs, environmental, issues, and corrective actions; (xv) assist SO/PIUs prepare simple report template for construction contractors to report monthly on mitigation activities, and environmental issues that occur during construction phase; and (xvi) prepare a quarterly status report on implementation of all EMPs, environmental issues, and public safety protection to be submitted through the PIU and EA to the PPCs and ADB. The consultant should have at least 7 years experience implementing and managing environmental assessment of infrastructure projects in southeast Asia countries (preferably Viet Nam) including: a) understanding of ADB and national environmental safeguard requirements; b) experience working with and supervising the activities of provincial and national environmental management agencies with environmental safeguards; and c) designing and delivering training and capacity development programs to provincial environment, project implementing units.

National Environmental Specialist. Provide assistance to the international environmental specialist including acquisition of information new information to update the three EMPs at detailed design, and work with the PIU with overall environmental management of the implementation of the three subprojects in the three corridor towns of Viet Nam. The national consultant will assist with: (i) updating all environmental management plans (EMP) for the three subprojects to ensure that EMPs address the detailed designs and engineering of subprojects.; (ii) deliver initial training to EA/PIU/PMU on the purpose, content, and roles and responsibilities for implementation of updated EMPs; (iii) ensure relevant safeguards of the EMPs are addressed in the bidding documents in accurate local language and in evaluation criteria for awarding contracts; (iv) help SO/PIUs to ensure that contractors prepare their respective site-specific plans based on the updated EMPs and the actual site conditions; (v) help Int'l ES consultant oversee the implementation of all safeguards of the three EMPs relating to construction phase activities including handling of construction spoil and waste, water and air quality protection, public nuisance impacts (noise, dust, traffic, blocked access, workers, and camps), and public safety; (vi) assist coordination with the three provincial DoNREs on all relevant environmental regulatory compliance issues (e.g. noise and dust from construction sites, sanitation in workers campsite etc); (vii) with SO/PIUs, prepare ToRs for the follow-up interviews and consultations with the same affected stakeholder and local residents contacted during the PPTA on issues and concerns arising during project construction. (viii) assist PIU/DoT when necessary to address vehicle traffic issues during road upgrades; (ix) with Iint'l ES consultant advise the SO/PIUs on environment-related concerns arising during sub-projects construction, and recommend corrective measures; (x) with SO/PIU ensure dissemination to stakeholders the results of environment quality monitoring and implementation of safeguards, especially among households or small businesses near the civil construction works areas; (xi) assist with all reporting for the EMP. The consultant should have at least 5 years with environmental assessment of infrastructure projects in Viet Nam including: a) understanding of ADB and national environmental safeguard requirements; b) experience working with international consultants; and c) delivering training and capacity development programs to provincial project implementing units.

APPENDIX B: ENVIRONMENTAL STANDARDS AND CRITERIA FOR VIET NAM

Environmental Standards and Regulations

Water quality:

- QCVN 01:2008/BYT – National technical regulations on quality of drinking water
- QCVN 08:2008/BTNMT – National technical regulations on quality of surface water
- QCVN 09:2008/BTNMT – National technical regulations on quality of groundwater
- QCVN 10:2008/BTNMT – National technical regulations on quality of about coastal water
- QCVN 14:2008/BTNMT – National technical regulations on quality of domestic wastewater
- QCVN 24:2008/BTNMT– Industrial wastewater discharge standards
- QCVN 02:2009/BYT - National standard of domestic water supply
- TCVN 5502:2003 – Supplied water – Requirements for quality
- TCVN 6773:2000 – Water quality – Water quality for irrigational purposes
- TCVN 6774:2000 – Water quality – Water quality for aquaculture protection
- TCVN 7222:2002 – Water quality for concentrated domestic WWTP
- TCVN / QCVN - Standard methods for analyzing environmental quality

Air Quality:

- QCVN 05:2008 – Standards for ambient air quality
- QCVN 06:2008 – Maximum allowable concentration of hazardous substances in the ambient air
- TCVN 6438:2001 – Maximum permitted emission limits of exhausted gases from vehicles

Solid Waste Management:

- TCVN 6696:2009 – Solid waste – Sanitary landfill. General requirements for environmental protection.
- QCVN 07:2009– National technical regulations for classification of hazardous wastes
- QCVN 25:2009 – National technical regulations for wastewater of solid waste sites
- QCVN 15:2008/BTNMT: - National regulation on allowable pesticide residues in soil
- QCVN 03:2008/BTNMT: - National regulation heavy metals concentrations in soil

Vibration and Noise:

- QCVN 26:2010/BTNMT: national technical standard for noise
- TCVN 6962: 2001 Allowable vibration level for public and residential areas
- TCVN 6962:2001: - Allowable vibration and shock from construction activities

International Guidelines

- World Bank Group, 2007. Environmental Health and Safety Guidelines, Wash. DC.
- AWWA Standard Methods for Measurement & Analysis Environmental Quality

APPENDIX C: MONITORING REPORT TEMPLATE FOR PROJECT IMPLENTATION UNIT

Safeguards Monitoring Report

This report is to be completed by the PIU with assistance from the PMIS and PMU. The report forms part of the regular reporting of PIU to PMU and ultimately to the EA and ADB.

1. Introduction and Project Overview

Project Number and Title:		
Safeguards Category	Environment	B
	Indigenous Peoples	C
	Involuntary Resettlement	B
Reporting period:		
Last report date:		
Key sub-project activities since last report:	*This section can include, among others, the following:* • *Activities of PIU/PMU* • *Progress of work (% physical completion)* • *Changes of surrounding environment* • *Status of permits / consents*	
Report prepared by:		

2. Environmental Performance Monitoring

a. Summary of Compliance with EMAP Requirements (Environmental Performance)

Monitoring Requirements	Compliance Status (Yes, No, Partial)	Comment or Reasons for Non-Compliance	Issues for Further Action
Use tabled performance monitoring indicators of EMP			

b. Issues for Further Action

Issue	Required Action	Responsibility and Timing	Resolution
Old Issues from Previous Reports			
List of monitoring or mitigation measures or activities not completed			

(last column of previous table)			
New Issues from This Report			

c. Other activities

- Other issues not covered by mitigation or monitoring plans of EMP
- Any additional environmental monitoring required (e.g., air quality, water sampling)

3. Occupational, Health and Safety (OHS) Performance Monitoring

a. OHS for worker

Issue	Required Action	Responsibility and Timing	Resolution
Old Issues from Previous Reports			
New Issues from This Report			

b. Public Safety

Issue	Required Action	Responsibility and Timing	Resolution
Old Issues from Previous Reports			

New Issues from This Report			

4. Information Disclosure and Socialization including Capability Building

Prepare brief summary of the information below where applicable

- Field visits conducted (sites visited, dates, persons met)
- Public consultations and meetings conducted (date; time; location; agenda; number of participants disaggregated by sex and ethnic group, not including project staff; Issues raised by participants and how these were addressed by the project team)
- Training conducted (nature of training, number of participants disaggregated by gender and ethnicity, date, location, etc.)
- Press/Media releases
- Material development/production (e.g., brochure, leaflet, posters)

5. Grievance Redress Mechanism

Summary:

- Number of new grievances, if any, since last monitoring period: ____
- Number of grievances resolved: _____
- Number of outstanding grievances: _____

Type of Grievance	Details (Date, person, address, contact details, etc.)	Required Action, Responsibility and Timing	Resolution
Old Issues from Previous Reports			
New Issues from This Report			

6. Conclusion

- Important results from the implementation of mitigation and monitoring of EMP

- Recommendations to improve EMP implementation

7. Attachments

- Consents / permits
- Monitoring data (water quality, air quality, etc.)
- Photographs
- Maps