Environmental Monitoring Report

Semestral Report
April 2017

VIE: Water Sector Investment Program (Tranche 2) - Thua Thien Hue Water Supply Subproject

Prepared by Joint Venture of HaskoningDHV Nederland B.V (the Netherlands) and HaskoningDHV Vietnam Co., Ltd for the Thua Thien Hue Water Supply Joint Stock Company (HueWACO) and the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 18th April 2017)

Currency unit	–	Vietnamese Dong (VND)
VND1.00	=	$0.000044
$1.00	=	VND22,700

ABBREVIATIONS

CEMP:	-	Contractor Environmental Management Plan
CSC:	-	Construction Supervision Consultant
DDC:	-	Detailed Design Consultant
DARD:	-	Department of Agriculture & Rural Development
DoNRE:	-	Department of Natural Resources and Environment
DoH:	-	Department of Health
DoLISA:	-	Department of Labour, Invalids, & Social Assistance
DoT:	-	Department of Transport
EARF:	-	Environmental Assessment & Review Framework
EERP:	-	External (local) Emergency Response Procedures
EERT:	-	External (local) Emergency Response Team
EIA:	-	Environmental Impact Assessment
EMC:	-	Environmental Management Committee
EMP:	-	Environmental Management Plan
EPC:	-	Environmental Protection Centre of DoNRE
EI:	-	Environmental Institute
ERC:	-	Emergency Response Coordinator
IEE:	-	Initial Environmental Evaluation
GoV:	-	Government of Viet Nam
HueWACO:	-	Thua Thien Hue Water Supply Company
LEP:	-	Law on Environmental Protection
MFF:	-	Multi-tranche Financing Facility
MoLISA:	-	Ministry of Labour, Invalids, and Social Assistance
PAM:	-	Project Administration Manual
PFR-2:	-	Second Periodic Funding Request
PMU:	-	Project Management Unit
PPC:	-	Provincial People Committee
PPMS:	-	Project Performance Management System
SERT:	-	Subproject Emergency Response Team
SERP:	-	Subproject Emergency Response Procedures
SPS:	-	Safeguard Policy Statement
WTP:	-	Water Treatment Plant
UXO:	-	Unexploded Ordinance
WS:	-	Water Supply System

WEIGHTS AND MEASURES

Km:	-	Kilometer
m^3:	-	Cubic metre

NOTE

In this report, "$" refers to US dollars unless otherwise stated.

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I. OVERVIEW

1. The environmental management plans (EMP) for the six water supply subprojects[1] that form the second Periodic Funding Request (PFR-2) of the Multi-tranche Financing Facility (MFF) for Support of the Water Sector in Viet Nam have been upgraded as part of the preparations of the subprojects. The original EMPs were developed with the initial environmental evaluations (IEE) or GoV[2] EIAs that were prepared for each subproject. The IEEs and EIAs for the subprojects including the IEE for the Thua Thien Hue Water Supply Project[3] are found under separate cover.

2. The upgrades to the EMPs stem from the findings of a recent review[4] of the IEEs and EIAs to ensure that potential environmental impacts of a water supply subproject are not overlooked, and moreover, that the EMP for each subproject addresses all potential impacts. The intention of the review was not for the IEE or GoV EIA to be modified, rather to identify required additions or changes to an IEE or EIA that could be addressed by updating the respective EMP. Thus, the upgraded EMPs are still supported by the parent IEE/EIAs in preparation for the detailed designs of the subprojects.

3. Provided herein is the upgraded EMP for the Thua Thien Hue Water Supply subproject. The upgraded EMP is based closely on the original EMP in order to preserve the original potential impacts assessment reported in the IEE. The objective is not to prepare a new EMP. It is for updating, supplementing the relevant contents of environmental impact during detailed design, in association with mitigation measures during construction. The text of the original EMP is left as is and only edited and supplemented as needed.

4. A secondary, important objective of upgrading the six EMPs is to develop specific but consistent EMPs for the six water supply subprojects which will assist the overall implementation of environmental safeguards for the PFR-2. The other five upgraded EMPs are found under separate cover.

5. The original EMP for the Thua Thien Hue subproject and original EMPs for most of the other 5 subprojects were prepared in view of the environmental safeguard requirements of the ADB (SPS 2009)[5], and the attendant Environmental Assessment & Review Framework[6] (EARF) that was developed to support the MFF.

[1] Subprojects in Hai Phong, Quang Tri, Thua Thien Hue, Da Nang, Dak Lak, and Binh Duong
[2] Government of Viet Nam (GoV) Environmental Impact Assessment (EIA)
[3] PPTA 7089, 2011. Initial Environmental Evaluation of Thua Thien Hue Water Supply Project, 89 pgs.
[4] 2012. SC100149 VIE: Supporting Viet Nam Water Sector Project PFR-2, Interim report prepared for ADB, 29 pgs.
[5] ADB, 2009. Safeguard Policy Statement.
[6] 2010. Environmental Assessment & Review Framework, prepared for RSC-C00751 VIE: Preparing Multi-tranche Financing Facility Supporting Viet Nam Water Sector

II. ENVIRONMENTAL MANAGEMENT PLAN

Thua Thien Hue Water Supply Sub-Project

A. Subproject Components

At the time the EMP was upgraded the subproject consisted of 8 component areas located across the province (Table 1):

Table 1. Summary of Thua Thien Hue Water Supply Subproject

Component Area	Name/ Location	Raw Water Source	New or Upgraded Facilities	Affected area
Phong Dien	Phong Dien District	O Lau river	• 150 km of pipeline (D50 – D500)	n/a
Tu Ha	Huong Tra Town	Bo river	• Construct Huong Van WTP with surface water source 30,000 m^3/day • Construct Huong Toan pressure regulate station • 90 km of pipeline (D50-D300)	n/a
Hue City	Hue City& suburbs	Huong river	• Upgrade Van Nien PS to 320,000 m^3/day • New Van Nien – Hue City WTP (120,000 m^3/day) and waterworks museum • New Phu An pressure regulate station • 140 km of pipeline (D50-D1200)	Tay Nam Hue Historical/ Cultural Site SW of Hue
Loc Bon	Loc Bon	Nong river	• New Loc Bon WTP (30,000 m^3/day) • 230 km of pipeline (D50-D600) • Construct new Phu Xuan pressure regulate station and Chau Son reservoir	n/a
Loc An	Loc An	Truoi river	• 100 km of pipeline (D50-D400) • Construct new Vinh Hung pressure regulate station	Located in buffer zone of Bach Ma National Park
Chan May	Chan May	Thuy Cam lake	• 80 km of pipeline (D50-D400)	Bac Hai Van Landscape Protection Site
Binh Dien	Binh Thanh Binh Dien	Huu Trach river	• Upgrade Binh Dien WTP with extension to 2,000 m^3/day • 30 km of pipeline (D50-D400)	n/a
Loc Tri	Loc Tri Loc Binh	Khe Su stream	• 30 km of pipeline (D50-D400) • Construct Phuoc Tuong reservoir	Located in buffer zone of Bach Ma National Park

Table 1 adapted from table 3.1 and table 4.1 of IEE, and Chapter 3 of FS report.

The sub-project is divided into 02 phases:

- Phase I (2011-2020) will be funded by ADB - PFR2:
  - 710 km transmission and distribution pipeline (D50-D1200) in 5 service areas: Phong Dien, Tu Ha, Loc An, Loc Bon, and Hue city.

- **Table 2. Summary of Phase I of Subproject under ADB Loan**

Component Area	Name/ Location	New or Upgraded Facilities	Affected area
Phong Dien (Phong Thu)	Phong Dien District	• 150 km of pipeline (D50 – D500)	n/a
Tu Ha	Huong Tra Town	• 90 km of pipeline (D50-D300)	n/a
Hue City (Hue City)	Hue City& suburbs	• 140 km of pipeline (D50-D1200)	Tay Nam Hue Historical/ Cultural Site SW of Hue
Loc Bon	Huong Thuy Town& Loc Bon Commune	• 230 km of pipeline (D50-D600)	n/a
Loc An	Loc An Commune & suburbs	• 100 km of pipeline (D50-D400)	Located in buffer zone of Bach Ma National Park

- Phase II (2020-2023):
  - Construct new Van Nien – Quang Te water treatment plant (120.000m^3/day – reservoir of 60.000m^3 in Quang Te), Huong Van water treatment plant (30.000 m^3/day), Loc Bon water treatment plant, upgrade and expand Van Nien raw water pumping station's area, and waterworks museum
  - Construct Huong Toan, Phu An, Phu Xuan, Vinh Hung pressure regulate station; Chau Son reservoir 10.000 m3, Phuoc Tuong reservoir 5.000 m3.
  - Upgrade Binh Dien water treatment plant (expand the area with capacity from 500 m3/day to 2,000 m3/day)
  - Install 160 km transmission and distribution pipeline in 3 service areas: Loc Tri, Binh Dien, Chan May.
  - Deliver services on capacity building, institutional strengthening, and smart water supply management system.

- **Table 3. Summary of Phase II of Subproject**

Component Area	Name/ Location	Raw Water Source	New or Upgraded Facilities	Affected area
Tu Ha	Huong Tra Town	Bo river	• Construct Huong Van WTP with surface water source 30,000 m^3/day • Construct Huong Toan pressure regulate station	n/a
Hue City	Hue City& suburbs	Huong river	• Upgrade Van Nien PS to 320,000 m^3/day • New Van Nien – Hue City WTP (120,000 m^3/day) and waterworks museum • New Phu An pressure regulate station	Tay Nam Hue Historical/ Cultural Site SW of Hue
Loc Bon	Loc Bon	Nong river	• New Loc Bon WTP (30,000 m^3/day) • Construct new Phu Xuan pressure regulate station and Chau Son reservoir	n/a
Loc An	Loc An	Truoi river	• Construct new Vinh Hung pressure regulate station	Located in buffer zone of Bach Ma

Component Area	Name/ Location	Raw Water Source	New or Upgraded Facilities	Affected area
				National Park
Chan May	Chan May	Thuy Cam lake	• 80 km of pipeline (D50-D400)	Bac Hai Van Landscape Protection Site
Binh Dien	Binh Thanh Binh Dien	Huu Trach river	• Upgrade Binh Dien WTP with extension to 2,000 m^3/day • 30 km of pipeline (D50-D400)	n/a
Loc Tri	Loc Tri Loc Binh	Khe Su stream	• 30 km of pipeline (D50-D400) • Construct Phuoc Tuong reservoir	Located in buffer zone of Bach Ma National Park

B. Institutional Arrangements and Responsibilities

6. The environmental management of the subproject will occur in accordance with GoV policy on decentralization pursuant to Decree 16/2016/ND-CP on management and utilization of Official Development Assistance (ODA) and concessional loans from donors. The primary framework for the EMP[7] will be defined by: 1) Thua Thien Hue Water Supply Joint Stock Company (HueWACO) who is the project owner (PO) and sub-executing agency (EA); 2) a designated project management unit (PMU) to support HueWACO who will implement Phase I of project and the EMP; and 3) a Detail Design Consultant who will assist with the detailed designs of subproject components and Construction Supervision Consultant[8] (CSC) who will assist with the updating the EMP to ensure EMP meets the final subproject designs. The ADB is responsible for monitoring to ensure subproject meets the environmental safeguards of the SPS (2009).

7. The EA (HueWACO) has the ultimate responsibility for implementation of the entire subproject, including finance and administration, technical and procurement matters, monitoring and evaluation, and environmental safeguards compliance. The HueWACO will operate the completed water supply system (WS).

8. The Department of Natural Resources and Environment (DoNRE) is the provincial agency which oversees environmental management of Thua Thien Hue. The DoNRE with District staff provides direction and support for environmental protection-related matters including application of the Law on Environmental protection (LEP 2005), and on use of the environmental policy and standards that are in place protect the environment (see Table 6).

9. The PMU is responsible for the detailed engineering with support from the DSC and preparation of construction plans, construction monitoring with support from the CSC, respectively. As of April 2017, detailed design has been completed. The PMU will be responsible for overseeing the overall procurement process (starting from bid documents preparation for specific works, to bid evaluations, award recommendations, to payment for completed works) as well as for the overall financial monitoring of the project.

10. The PMU is responsible to implement the EMP and fulfill the environmental safeguard requirements of the subproject with support from the CSC. The PMU has updated mitigation measures under the EMP following requirements of Detailed Technical Design of

[7] From footnote 5.
[8] Detailed Design Consultant and Construction Supervision Consultant are separate which are referred in original EMP as Detailed Design & Supervision Consultant (DDSC).

pipelines, raw water pipelines, WTP and distribution network, including mitigation requirements in the Bidding document and Contract documentations.

11. The PMU is responsible for overseeing implementation of the environmental monitoring plan of the EMP, undertaking environment-related investigations that may arise during subproject implementation in coordination with the DONRE, to expand and continue public consultations on the subproject starting during the pre-construction phase that were initiated during the IEE, and for responding to environment or nuisance-related complaints from residents or businesses affected by subproject implementation (see grievance redress mechanism in IEE).

12. PMU selected a CSC to supervise EMP implementation during construction. A sub-unit will be founded with the participation of CSC, PMU as well as local authorities. The sub-unit will report regularly to PMU/ADB and DoNRE throughout the construction. During operation, HueWACO will hire the Center of Natural Resources and Environment for supervision and reporting to PMU and DoNRE periodically.

Key duties of the PMU are summarized as follows:

- With DSC review and update the EMP during detailed design and engineering phase to ensure EMP meets detailed subproject designs (done);
- As a part of updating the EMP, the PMU has conducted public consultation in the People's Committees of the communes/wards/towns in the project areas, and with organizations including the Fatherland Front Committees of the communes/wards/towns, and residential areas in the project area, as well as authorities of the Hue Historic Sites, Bach Ma National Park, Bac Hai Van Landscape Protection Site. They also conducted surveys, collected opinions and recommendations of stakeholders to minimize the adverse impact of the project on the natural biodiversity and public health. The minutes of these public consultations are attached in Appendices of the EMP.
- In addition, the PMU has sent Consultation Letters and the EMP report to the Management Boards of Hue Historic Sites, Bach Ma National Park, Bac Hai Van Landscape Protection Site. Until now, those organizations are studying relevant contents and are preparing letters to respond to the Client. The PMU is in close contact with these organizations to accelerate the process. Conclusions and recommendations will be shared with potential bidders for inclusion in their technical proposals, and with work contractors for inclusion in their construction EMPs (CEMPs).
- Ensure safeguard requirements of the final EMP are adequately described in the bidding documents (instruction to bidders) so that contractors can prepare their respective site-specific CEMP[9] based on the final EMP, and ensure criteria for evaluating contractor bids and awarding construction packages include relevant safeguard requirements of the final EMP;
- Ensure construction contractors successfully implement impact mitigation measures of EMP as part of their CEMPs;
- Coordinate with the DoNRE on regulatory compliance issues for (e.g., water quality in rivers affected by construction activities, air quality, noise and vibration from construction sites, and sanitation in workers campsite);
- Prepare terms of reference for the military to conduct surveys to detect unexploded ordnance, and ordnance disposal if necessary;

[9] Contractors Environmental Management Plan

- Advise the PMU director on environme-11nt-related concerns arising during project construction, and recommend corrective measures;
- Disseminate to stakeholders the results of environmental monitoring and implementation of safeguards, especially among households or small businesses near the construction sites;
- Include monthly contractor reports in quarterly status reports to HueWACO on status of EMP & environment safeguards, and public stakeholder issues during construction phase of subproject; and
- Prepare ToRs for Environmental Institute (CREM- see below) for implementation of monitoring plan of EMP, and for assistance with follow-up interviews and consultations with public stakeholders on issues and concerns arising during project construction.

13. During implementation, the CSC team experts with expertise in Environment, Agriculture, Water Supply and Drainage, will support the PMU in supervising and coordinating EMP implementation. At the same time, the CSC will ask specialized opinions of DoNRE, Office of Natural Resources and Environment in cities/districts; People's Committees under project areas, in association with Environmental Experts.

14. An Environmental Institute[10] (EI), i.e., the Center of Natural Resources and Environmental Monitoring (CREM) under DoNRE, will be required to implement the environmental monitoring plan of the EMP during the construction phase of the subproject using the environmental baseline data of the IEE. HueWACO will sign a lump-sum contract with CREM Director, with financial resources calculated and estimated while environmental implementation plan has also been detailed. It is anticipated that CREM will also be commissioned by HueWACO to implement the monitoring plan[11] during the operation phase of the subproject with regular reporting to PMU.

15. CREM will be directly in charge and support PMU with the follow-on public consultations and interviews with local residents to identify concerns or grievances arising during construction.

16. The contractor(s) of the various construction packages are responsible for developing the CEMP based on the final EMP, implementing the mitigations that are detailed in the CEMP, and for developing and implementing emergency response procedures for the subproject (see section III-H below). Contractors will be responsible for providing brief monthly reports to PMU on the environmental status and mitigation activity at construction areas.

17. The DoNRE may conduct random environmental monitoring and inspection before, during, and after construction, as well as in the event of emergencies. It will also review the monitoring reports of CREM. If abnormalities are found, the DONRE may impose fines and issue a notice of rectification with a specific deadline to the responsible entities. If complaints are formally received from the public through the People's Committee, the DONRE will conduct verification inspections, as described by grievance redress mechanism in IEE.

18. The EA will develop a Project Performance Monitoring System (PPMS) to monitor the overall performance of the project[12]. The PPMS will include a broad range of indicators that address financial, technical-engineering, and operational components of the subproject

[10] Referred to as Consulting Firm in original EMP.
[11] This contrasts original EMP which indicates HueWACO will implement Monitoring Plan during operational phase.
[12] ADB 2011. Draft Project Administration Manual

during construction phase through to the operational phase. The PPMS will include key indicators of environmental safeguard compliance from the EMP (Table 8). The EA will refine the PPMS within 12 months of project implementation.

19. A unit with full eligibility will be selected to supervise environmental protection measures during project construction. The auditor will be separate from the main project Auditor. Within three months after construction is completed, or no later than one year, an environmental acceptance monitoring and audit report on the completion of the project components will be prepared by the selected institute. The report will be reviewed and approved by the DoNRE and submitted to ADB.

C. Summary of Potential Impacts

20. The IEE[13] of the subproject indicated that the potential impacts are primarily associated with the construction phase of the project which are summarized below:

- noise and vibration levels and emission of dust and exhaust gases by heavy machinery and vehicles used for earthworks and pipe laying
- loss of natural soil caused by site preparation (scouring), leveling and trench digging
- pollution of soils by oil spillage from engines and lubricant/fuel storage vessels
- pollution of fresh waters by disposal of spoil material
- destruction of terrestrial flora subsequent to the destruction of soil
- damage to private and public goods by the movement of heavy machinery
- disruption to public services (power, water, and telecommunications)
- disruption to road traffic in urban areas
- adverse effects on health and welfare due to noise and polluting emissions
- increased safety risks for nearby populations in residential areas due to excavated areas and circulation of vehicles and heavy machinery

21. The main environmental impacts which may occur during the operation phase are:

- soil erosion on the scoured strip above pipe routes
- decrease of river flows due to raw water abstraction, which might be harmful to biodiversity or prevent other use of water in downstream stretches
- pollution of fresh water by discharge of treatment sludge containing high amounts of aluminum
- aesthetic damage of pleasant landscapes due to the poor visual impact of new buildings/facilities.

1. Protected & Special Areas

22. The IEE indicated that six of the subproject components are located either near or inside ecological protected areas or specially designated green areas (Table 1). In particular are the locations of the Loc An components. The Loc An component is located inside of the buffer zone of the Bach Ma National Park. Located inside of the core and buffer zones of the

[13] Footnote 3.

same park are the intake-raw water pipeline, and WTP, respectively of the Loc Tri component. Other subproject components are located near other protected and special ecological areas such as Phong Dien Nature Reserve, and Tay Nam Hue Cultural/Historic Site (Table 1).

23. The IEE also indicates that the proposed Tam-Giang & Cau Hai marine protected area will receive the discharge of all major rivers from the province, and therefore will be susceptible in the west to upstream raw water extractions, and the planned upstream dumping of WTP sludge.

24. Based on the project information that was available, the IEE concluded that the subproject would likely only affect the Bach Ma National Park as a result of the Loc Tri component, and the Tam-Giang marine protected area as a result of upstream extractions from the Huong, Bo and O Lau rivers, and upstream sludge disposal.

25. During Detailed Design, under updated EMP, all environmental impacts were taken into account, including: soil, water, air, solid wastes, risks and relevant incidents, in association with the impacts on biodiversity and ecology in the buffer zone of Bach Ma National Park (through site surveys and inventories of affected flora and fauna in the project areas).

2. Public Consultation

26. Public consultations for the subproject were conducted at three locations corresponding to approximately three subproject components. Meetings were held in Hue City (Quang Te), A Luoi, and Nam Dong. Public meetings were not held at the other subproject component areas.

27. During each meeting the description of the nearby subject component was presented along with the affected environment, and expected potential impacts on the environment. Impact mitigation measures were described along with the indicators of impacts that will be monitored.

28. The participants at the meetings expressed no concern of the subproject components. Participants indicated that any shortcomings or disturbances associated with construction phase of subproject would be far out-weighed by the benefits of drinking water.

29. Detailed design has been carried out in parallel with public consultation within project area. The results of the public consultation are as follows:

- Mutual agreement is obtained from the project stakeholders.
- Project shall comply with statutory provisions in Law on Environmental Protection (2014).
- Publish fully environmental reports to relevant functional competencies.
- Publish all information related to environment management plan.
- Researches on wastewater treatment, garbage, sludge, dust storing, noise, wastewater generated during construction, etc shall comply with current Vietnam regulations and standards

30. The PMU has main responsibility for public participation during implementation of the Thua Thien Water Supply Subproject, but will be supported by the CSC. Affected communities will be involved and consulted through site visits, investigations of specific issues, interviews, and public meetings.

Table 4: Public Consultation Plan

Organizer	Format	Frequency	Subject	Attendees
Construction Stage				
Contractor	Public meetings	Prior to start of construction works; quarterly thereafter	Presentation of planned activities and schedule; anticipated impacts and mitigation measures; grievance redress mechanism (GRM)	Potentially affected households, ward PC representatives
PMU, CSC	Public meetings & site visits and informal interviews	Once before construction commences (public meetings) and semi-annually thereafter during construction (site visits and informal interviews)	Presentation of planned activities and schedule; anticipated impacts and mitigation measures; GRM	Potentially affected households, ward PC representatives
PMU, CSC	Expert workshop	As needed, based on public consultation	Comments and suggestions on mitigation measures, public opinion	Experts of various sectors, county/ district EPBs
CSC	Public opinion survey	Once at MTR stage	Public satisfaction with EMP implementation	Potentially affected households, ward PC representatives
Operational Stage				
PMU, CSC	Public consultation and site visits	Once in the first year	Effectiveness of mitigation measures, impacts of operation, comments and suggestions	Potentially affected households, ward PC representatives
CSC, PMU	Public satisfaction survey	Once at PCR stage	Public satisfaction with EMP implementation Comments and suggestions	Potentially affected households, ward PC representatives

a. Downstream Affected Persons

31. Public consultation meetings were organized at the People's Committees, the Fatherland Front Committees of the communes/wards/towns and residential areas in the project area, Hue Historic Sites, Bach Ma National Park, Bac Hai Van Landscape Protection Site. The minutes of such public consultation are attached in the Appendices of this EMP.

D. Mitigation Plan

32. The mitigation plan of the original EMP of the IEE has been expanded with additional scope and detail (Table 5). A leading section for mitigation measures of the pre-construction-detailed design phase has been added. The structure of the tabled mitigation plan has been modified slightly to be consistent with the other upgraded EMPs of the PFR-2 subprojects.

33. The mitigation plan combines the construction phase activities common to all components while highlighting activities and mitigations specific to a single component. The mitigation plan needs to be updated to meet the detailed designs of the subproject.

Table 5. Impact Mitigation Plan

Project Activity	Potential Impact	Proposed Mitigation Measure	Location	Timing	Reporting	Estimated Cost (USD)	Responsibility	
							Supervision	Implementation
I. Pre-construction Phase								
Confirmation of required resettlement and temporary relocations	No community impacts	1. Affected persons well informed well ahead of project implementation.	At all eleven subproject component areas	Completed	See resettlement plan	See resettlement plan	HueWACO / PMU[14]	Resettlement committees
Disclosure, & engagement of community	No community impacts	2. Implement information disclosure and activate grievance redress mechanism (see IEE)	At all construction sites.	Completed	Quarterly	No marginal cost[15]	HueWACO	PMU
GoV approvals	No negative impact	3. Notify DoNRE of subproject initiation to ensure GoV EIA requirements approved for all components, and obtain required project permits and certificates.	Entire subproject	Completed	As required	No marginal cost	PPC, DSC & CSC[16]	PMU
		4. Complete Detailed Design. There are 8 sub-projects including : Phong Dien, Hue City, Tu Ha, Loc Bon, Loc An, Binh Dien, Loc Tri, Chan May that incorporate the following: **a)** results of an assessment of seasonal flow of source rivers to ensure a sufficient and sustainable supply of treatable raw water will be available to all components during operation						

[14] Project Management Unit under HueWACO
[15] No marginal cost indicates that costs to implement mitigation are to be built into cost estimates of bids of contractors
[16] Detailed Design Consultant and Construction Supervision Consultant are separate which are referred in original EMP as Detailed Design & Supervision Consultant (DDSC).

Detailed designs	Minimize negative environmental impacts	phase. Of particular concern is discharge of Nong river (Loc Bon). Referred to as environmental flow assessments (EFA) in IEE. **b)** effects of flow abstractions above combined with results of a separate review of effects of planned river discharging of WTP sludge on flow and water quality of downstream proposed Tam Giang Marine Protected Area (see Update EMP section below); **c)** results of joint re- assessment with management boards of potential impacts of Loc An, Loc Tri, Hue City, and Chan May components on critical habitat, rare or endangered fauna & flora, and special forests of Bach Ma National Park, Phong Dien Nature Reserve, Tay Nam Hue Cultural/Historical Site, and Bac Hai Van Special Forest (see Update EMP section below); **d)** in conjunction with a) above results of review of potential influence of WTP sludge discharged into on water quality of O Lau, Huong, and Bo rivers **e)** no disturbance or damage to culture property and values at all 11 subproject component areas; **f)** no or minimal disruption to water supply, utilities, and electricity with contingency plans for unavoidable disruptions at all component sites; and **g)** final review of ability of existing wastewater infrastructure to manage the increased wastewater that will be produced.	At all 11 subproject areas:	Before construction initiated	Once with detailed designs documents	a) $30,000[17] (b-h): No marginal cost	HueWACO / CSC	CSC / PMU

[17] From IEE

Updating EMP	Minimize negative environmental impacts	5. Carried out consultation on environmental impacts (during construction and operation of water supply systems in Loc An, Loc Tri, Hue and Chan May cities) in the People's Committees of the communes/wards/towns and sent documents to the Management Boards of Bach Ma National Park, Phong Dien Natural Resources Conservation, Tay Nam Hue Historical/Cultural Site and Bac Hai Van Landscape Protection Site. These agreed with the project implementation and the analysis of environmental impacts and required some specific additional mitigation measures. 6. Impacts on the buffer zone of Bach Ma National Park are considered in details under EMP report and Consultation Letters and Site surveys as well as statistics of affected plants and animals. 7. The Client has applied for permission to exploit water resources at state-owned management agencies. The raw water exploitation when the water plant comes into operation will impact on local water resouces. Those impacts were analyzed and evaluated in the IEE. Client committed to exploit water in the direction of sustainable development. They also committed that during operation, sludge will be treated completely (signing contract to authorized agencies to collect, transport and treat periodically) and the same way to domestic wastewater before discharging into environment.	Loc An, Loc Tri, Hue City, and Chan May components Phong Dien Site	Completed (In parallel with completion of detailed designs)	Done (as part of detailed designs)	No marginal cost	HueWACO / DDC	CSC / PMU
Updating EMP	Minimize negative environmental impacts	8. Identify any new potential impacts of project and include in EMP. 9. Submit updated EMP with new potential impacts to ADB to review.						

			Entire subproject	Completed (In parallel with completion of detailed designs)	Once, as part of detailed design phase	No marginal cost	HueWACO / CSC	CSC / PMU
Develop bid documents	No negative environmental impact	10. Ensure updated EMP is included in contractor tender documents to enable contractors to develop their CEMP[18], and that tender documents specify that implementation of CEMP must be included in cost estimates. 11. The CEMPs shall include the following subplans, to be developed by contractors (this should be defined in the bidding documents): **a)** Securing GoV approvals; b**)** Forest clearing, tree/ vegetation removal, & site restoration; **c)** Civil works; **d)** Cultural chance finds; **e)** Contaminated spoil identification & disposal; **f)** Construction materials acquisition, transport, & storage including borrow pit management; **g)** Erosion & river sedimentation control; **h)** Construction site drainage; **i)** Noise, vibration; **k)**, dust & NOx, SOx, CO, CO_2 emissions; **l)** Worker camp operation; **m)** Solid and liquid waste disposal; **n)** Hazardous chemical & waste management; **o)** Construction & urban traffic (especially along raw water pipeline); **p)** Utility and Power Disruption; **q)** Worker and public Safety (especially along raw water pipeline); **r)** Raw water quantity sustainability; **s)** Training & capacity development plan; **t)** WTP chemicals & sludge management; and **u)** Treated water quality management. 12. The environmental management sub-plans identified in 12) above should be identified in the appropriate contractor tender documents, for the contractor to detail into CEMPs for their	All project areas	Prior to bidding	Once for all tenders	No marginal cost	HueWACO / CSC	PMU

[18] Contractors Environmental Management Plan

		bidding documents. 13. Specify in bid documents that contractor must have experience with implementing EMPs, and/or provide staff with EMP experience.						
UXO survey	Injured worker or public	14. Ensure military is consulted and clears areas where necessary.	All construction sites.	Before any clearing or excavation	Once	See Monitoring Plan below	PPC & military	military
Training & capacity development	No negative environmental impact	15. Develop and schedule training plan for HueWACO / PMU staff to be able to fully implement EMP, and manage implementation of mitigation measures by contractors. 16. Create awareness and training plan for later delivery to contractors whom will implement mitigation measures.	For all project areas	Before construction begins	After each training session	No marginal cost	CSC	CSC / HueWACO
Procurement of Contractor(s)	No negative environmental impact	17. Ensure winning contractor bid(s) include a CEMP that addresses items 9 – 12 in "Update EMP" section above.	All project areas	Before contracts signed	Once	No marginal cost	HueWACO	PMU / DDC
Recruitment of workers	Community mischief, & sexually transmitted disease	18. Use local workers as much as possible, reducing #s of migrant worker	For all work locations	Throughout construction phase	After worker hiring stages	No marginal cost	HueWACO / CSC	Contractor's bid documents
II. Construction Phase – ***General Mitigations for all Eleven Components of Subproject[19]***								
Initiate EMP & sub-plans,	Prevent or minimize impacts	19. Initiate updated EMP including individual management sub-plans for the different types of potential impacts identified in pre-construction phase. See sub-plan implementation guidance below.	For all construction sites	Beginning of construction	Once	No marginal cost	HueWACO / CSC	PMU & contractors

[19] Based on Mitigation Plan for construction phase in original EMP

Obtain & activate construction permits and licenses	Prevent or minimize impacts	20. Contractors to comply with all statutory requirements set out by DoNRE for use of construction equipment, hazardous waste & chemicals management, and operation of construction plants, e.g., concrete batching.	For all construction sites	Beginning of construction	Once	No marginal cost	HueWACO / CSC	PMU & contractors
Worker camp operation	Pollution and social problems	21. Locate worker camps away from human settlements. 22. Ensure adequate housing and waste disposal facilities including pit latrines and garbage cans. 23. A solid waste collection program must be established and implemented that maintains a clean worker camps 24. Locate separate pit latrines for male and female workers away from worker living and eating areas. 25. A clean-out or infill schedule for pit latrines must be established and implemented to ensure working latrines are available at all times. 26. Worker camps must have adequate drainage. 27. Local food should be provided to worker camps. Guns and weapons not allowed in camps. 28. Transient workers should not be allowed to interact with the local community. HIV Aids education should be given to workers. 29. Camp areas must be restored to original condition after construction completed.	All worker camps	Throughout construction phase	Monthly	No marginal cost	CSC & PMU	contractor
Training & capacity	Prevention of impacts through education	30. Implement training and awareness plan for HueWACO / PMU (environmental subunit) and contractors.	PMU offices, construction sites	Beginning of construction	After each event	No marginal cost	CSC	CSC & PMU
Tree and vegetation removal, and	Damage or loss of trees, vegetation, wildlife habitat, and	31. Contact local forestry department for advice on how to minimize damage to trees and vegetation especially in protected, & special	All construction sites.	Beginning and end of project	Monthly	No marginal cost	CSC / PMU	contractor

site restoration sub-plan	erosion of landscape	green and forestry areas 32. Restrict tree and vegetation removal to within designated RoWs. 33. Within RoWs minimize removals, and install protective physical barriers around trees that do not need to be removed. 34. All RoWs to be re-vegetated and landscaped after construction completed. Consult forestry department to determine the most successful restoration strategy and techniques.						
Civil works	Degradation of terrestrial resources	35. All construction sites should be located away forested, plantation, & agricultural areas as much as possible. 36. No unnecessary cutting of trees. 37. All construction fluids such as oils, and fuels should be stored and handled well away from forested and plantation areas. 38. No waste of any kind is to be discarded on land or in forests/plantations.	All construction sites	Throughout construction phase	Monthly	No marginal cost	CSC & PMU	contractor
Civil works	Degradation of water quality & aquatic resources	39. Protective coffer dams, berms, plastic sheet fencing, or silt curtains should be placed between all earthworks and all rivers and ponds. 40. Minimize earthworks & final area of foundation for all intakes at all source rivers. 41. Erosion channels must be built around aggregate stockpile areas to contain rain-induced erosion. 42. Earthworks should be conducted during dry periods. 43. All construction fluids such as oils, and fuels should be stored in metal or plastic containers and handled at least 100 m from surface waters. 44. No waste of any kind is to be thrown in surface	All construction sites	Throughout construction phase	Monthly	No marginal cost	CSC & PMU	contractor

		waters. 45. No washing or repair of machinery near surface waters. 46. Pit latrines to be located well away from all surface waters. 47. No unnecessary earthworks in or adjacent to all water courses. 48. No aggregate mining from all rivers, or from nearby lakes. 49. All existing irrigation canals and channels to be protected the same way as rivers and lakes.						
Cultural chance finds	Damage to cultural property or values & chance finds	50. As per detailed designs all civil works should be located away from all cultural property and values including cemeteries and pagodas. 51. Chance finds of valued relics and cultural values should be anticipated by contractors. Site supervisors should be on the watch for finds. 52. Upon a chance find all work stops immediately, find left untouched, and PMU and local CPC notified. If find deemed valuable, provincial cultural authorities must be notified. 53. Work at find site will remain stopped until authorities allow work to continue.	All construction sites	At the start , and throughout construction phase	Monthly	No marginal cost	CSC & PMU	contractor
Construction materials acquisition, transport, and	Pollution, injury, increased traffic, disrupted access	54. All borrow pits and quarries should be approved by DoNRE. 55. Select pits and quarries in areas with low gradient and as close as possible to construction sites. 56. Required aggregate volumes must be carefully calculated prior to extraction to prevent wastage. 57. Pits and quarries should not be located near surface waters, forested areas, critical habitat for wildlife, or cultural property or values.	For all construction areas.	Throughout construction phase	Monthly	No marginal cost	CSC / PMU	Contractor(s)

storage sub-plan		58. If aggregate mining from fluvial environments is required small streams and rivers should be used, and dry alluvial plains preferred. 59. All topsoil and overburden removed should be stockpiled for later restoration. 60. All borrow pits and quarries should have a fence perimeter with signage to keep public away. 61. 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. 62. Unstable slope conditions in/adjacent to the quarry or pit caused by the extractions should be rectified with tree planting. 63. Define & schedule how materials are extracted from borrow pits and rock quarries, transported, and handled & stored at sites. 64. Define and schedule how fabricated materials such as steel, wood structures, and scaffolding will transported and handled. 65. All aggregate loads on trucks should be covered. 66. Piles of aggregates at sites should be used/or removed promptly, or covered and placed in non traffic areas.						
Excavation spoil management sub-plan	Contamination of land and surface waters from excavated spoil	67. Uncontaminated spoil to be disposed of in DoNRE-designated sites, which must never be in or adjacent surface waters. Designated sites must be clearly marked and identified. 68. 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. 69. Where possible spoil should be used at other construction sites, or disposed in spent	All excavation areas	Throughout construction phase	Monthly	No marginal cost	CSC, PMU & DoNRE	Contractor

		quarries or borrow pits. 70. A record of type, estimated volume, and source of disposed spoil must be recorded. 71. Contaminated spoil disposal must follow GoV regulations including handling, transport, treatment (if necessary), and disposal. 72. Suspected contaminated soil must be tested, and disposed of in designated sites identified by DoNRE as per GoV regulations. 73. Before treatment or disposal contaminated spoil must be covered with plastic and isolated from all human activity.				Testing of contaminated soil (See Monitoring Plan below)		DoNRE
Construction Drainage sub-plan	Flooding from loss of drainage & flood storage	74. Provide adequate short-term drainage away from construction sites to prevent ponding and flooding. 75. Manage to not allow borrow pits and quarries to fill with water. Pump periodically to land infiltration or nearby water courses. 76. Install temporary storm drains or ditches for construction sites. 77. Ensure existing road & street drains do not become plugged with construction waste . 78. Protect surface waters from silt and eroded soil.	All areas with surface waters	Design & construction phases	Monthly	No marginal cost	CSC & PMU	contractor
Solid and liquid construction waste sub-plan	Contamination of land and surface waters from construction waste	79. 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. 80. Areas of disposal of solid and liquid waste to be determined by DoNRE. 81. Disposed of waste should be catalogued for type, estimated weigh, and source. 82. Construction sites should have large garbage bins.	All construction sites and worker camps	Throughout construction phase	Monthly	No marginal cost	CSC, PMU, & DoNRE	contractor

		83. A schedule of solid and liquid waste pickup and disposal must be established and followed that ensures construction sites are as clean as possible. 84. Solid waste should be separated and recyclables sold to buyers in community. <u>Hazardous Waste</u> 85. Collection, storage, transport, and disposal of hazardous waste such as used oils, gasoline, paint, and other toxics must follow GoV regulations. 86. Wastes should be separated (e.g., hydrocarbons, batteries, paints, organic solvents) 87. 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. 88. All spills must be cleaned up completely with all contaminated soil removed and handled with by contaminated spoil sub-plan.						
Noise, vibration subplan for all construction activities Dust, CO, NOx, SOx, CO_2 sub-plan for all construction activities	Noise Vibration Air pollution	89. Regularly apply wetting agents to exposed soil and construction roads especially in high density areas. 90. Cover or keep moist all stockpiles of construction aggregates, and all truck loads of aggregates. 91. Minimize time that excavations and exposed soil are left open/exposed. Backfill asap. 92. As much as possible restrict working time between 07:00 and 17:00. In particular are activities such as pile driving. 93. Maintain equipment in proper working order, and according to international standards 94. Maintain exhaust systems of vehicles and	All construction sites, & where vehicles & equipment are operated.	Fulltime	Monthly	No marginal cost	CSC & PMU	contractor

		equipment in proper working order. 95. Replace unnecessarily noisy vehicles and machinery. 96. Vehicles and machinery to be turned off when not in use. 97. Construct temporary noise barriers around excessively noisy activity areas where possible near schools and hospitals.						
Utility and power disruption sub-plan	Loss or disruption of utilities and services such as water supply and electricity	98. Develop carefully a plan of days and locations where outages in utilities and services will occur, or are expected. 99. Contact local utilities and services with schedule, and identify possible contingency back-up plans for outages. 100. Contact affected community to inform them of planned outages. 101. Try to schedule all outages during low use time such between 24:00 and 06:00.	All construction sites.	Fulltime	Monthly	No marginal cost	CSC, PMU & Utility company	contractor
Erosion sub-plan	Land erosion	102. Berms, and plastic sheet fencing should be placed around all excavations and earthwork areas. 103. Earthworks should be conducted during dry periods. 104. Excavated soil should be replaced in borrow pits or backfilled in trenches. 105. Maintain a stockpile of topsoil for immediate site restoration following backfilling. 106. Protect exposed or cut slopes with planted vegetation, and have a slope stabilization protocol ready. 107. Re-vegetate all soil exposure areas asap.	All construction sites	Throughout construction phase	Monthly	No marginal cost	CSC & PMU	contractor
		108. Proper fencing, protective barriers, and buffer zones should be provided around all						

Worker and public safety sub-plan	Public and worker injury, and health	construction sites. 109. Sufficient signage and information disclosure, and site supervisors and night guards should be placed at all sites. 110. Worker and public safety guidelines published by MoLISA should be followed. 111. Population near blast areas should be notified 24 hrs ahead, and evacuated well before operation. Accepted GoV blast procedures and safety measures implemented. 112. Speed limits should be imposed on all roads used by construction vehicles. 113. Standing water suitable for disease vector breeding should be filled in. 114. Worker education and awareness seminars for construction hazards should be given. A construction site safety program should be developed and distributed to workers. 115. Appropriate safety clothing and footwear should be mandatory for all construction workers. 116. Adequate medical services must be on site or nearby all construction sites. 117. Drinking water must be provided at all construction sites. 118. Sufficient lighting be used during necessary night work. 119. All construction sites should be examined daily to ensure unsafe conditions are removed.	All construction sites.	Fulltime	Monthly	No marginal cost	CSC & PMU	contractor
Construction	Traffic disruption,	120. Schedule construction vehicle activity during light traffic periods. Create adequate traffic detours, and sufficient signage & warning lights at all construction locations. 121. Post speed limits, and create dedicated construction vehicle roads or lanes.	All construction sites	Fulltime	Monthly	No marginal cost	CSC & PMU	contractor

and local vehicle traffic sub-plan	accidents, public injury	122. 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. 123. Increase the number of pedestrian crossings away from construction areas. 124. Increase road and walkway lighting.						
III. Specific Mitigations for Construction of Loc An, Loc Tri, Hue City, & Chan May Components								
Construction of five components	Minimal negative environmental impacts	125. Special attention to be given to mitigation sub-plans identified item #12 above as they apply to the five subproject components near or inside the following protected or special areas: Bach Ma National Park, Phong Dien Nature Reserve, Tay Nam Hue Cultural/Historical Site, and Bac Hai Van Special Forest. Specific attention to be given to the protection of the following valued ecosystem components: a) fauna, flora, and critical habitat; b) rare & endangered species; c) surface water quality; and d) forests.	Loc Tri, Loc An, Chan May, Hue City	During construction	Monthly	No marginal cost	CSC / PMU	contractor
Post-construction Operation of All Water Supply Systems								
Raw water extraction from source rivers	Unsustainable raw water supply	126. Convert the pre-construction assessment of water quantity sustainability of source rivers into a regular sampling program . (See Environmental Monitoring Plan below)	Above intakes at all source rivers	design program once	biannually	No marginal cost	HueWACO / DoNRE	HueWACO
Treated water	Unsustainable quantity or quality of treated water	127. Develop and implement O&M manual for all equipment and operations of each water supply system which includes regular maintenance of treatment system components, and materials supply to ensure treated water production (m^3/day) always meets WTP design specifications. Incorporate contingency and back-up plans for planned and unplanned system shutdowns. 128. Establish a regular treated water quality monitoring program at all WTPs to ensure the	WTPs at all subproject	Quarterly, and as needed	As needed	No marginal cost	HueWACO / CSC	HueWACO

supply		quality of treated water meets original WTP design specifications. Incorporate contingency and response plans to address episodes of decreased treated water quality, including public notification. (See Environmental Monitoring Plan below). 129. As part of #131 coordinate with Dept of Health to periodically monitor treated water quality to ensure it meets potable quality standards (Table 3).	At all WTP outlets and at select locations along distribution networks					EI / DoH
Operation of raw & treated water pipelines	Local flooding from ruptures	130. As part of implementation of O&M manual for water supply systems instate a regular inspection program of all pipeline networks starting at intakes and ending at distribution networks focusing on junctions and end-user connections.	At all pipeline locations	Quarterly, and as needed	As needed	No marginal cost	HueWACO / CSC	HueWACO
Operation of WTP	Chemical spills, and pollution from solid and domestic waste	131. As part of O&M manual provide clear methods and procedures for safe handling and storage of planned treatment chemicals defined by poly-aluminum chloride (PAC), soda, and chlorine in designated chemical & chlorine storage areas house on WTP property, including spills action plan. 132. With O&M manual define and implement a formal solid and domestic waste collection and disposal protocol for all WTP activities.	At WTPs	Continuously	As needed	No marginal cost	HueWACO	HueWACO
Management of WTP sludge	Contamination of rivers and land with particular interest in Tam Giang marine protected area	133. Review plans for sludge disposal for each WTP, and design sludge drying & disinfecting technology at each WTP if feasible. 134. Review and clarify with DN DoNRE the appropriate landfill location to dispose of the sludge produced at the WTP. 135. Never dump or temporarily store sludge on lands outside landfill site, WTP property, or near water courses. 136. Ensure sludge is covered when transported to	At WTPs	Continuously	As needed	No marginal cost	HueWACO / DoNRE	HueWACO

		designated landfill. 137. Develop and implement regular sludge quality monitoring to document sludge quality (See Environmental Monitoring Plan)						
Production of treated water	Wastewater production too much for wastewater management	138. Estimate wastewater loads generated from all water supply systems of subproject to determine whether wastewater pollution could occur .	Downstream of WTPs	Once, then periodically	As needed	No marginal cost	HueWACO	HueWACO
Operation of entire WS system,	Worker and public injury	139. Educate workers in workplace safety of WS system operation according to MoLISA regulations. Prevent public access to all intake areas, pipeline corridors, WTPs, & distribution networks with fencing and appropriate signage. 140. Enforce WTP truck drivers to follow speed limits on roads and highways. Provide adequate signage informing public of WTP truck traffic routes, and pipelines service routes. 141. Ensure all WS system vehicles in good working order.	WTP and all pipeline / network property WTP areas & road to landfill sites All facilities	Continuously	As needed	No marginal cost	HueWACO	HueWACO

E. Monitoring Plan

34. The environmental monitoring requirements identified in the IEE were carried forward and expanded with more detail into a comprehensive monitoring plan (Table 4) that addresses both environmental effects and performance monitoring (Table 8). The monitoring plan focuses on all three phases (pre-construction, construction, post-construction operation) of the project and provides environmental indicators, the sampling locations & frequency, method of data collection, responsible parties, and the estimated costs.

35. The purpose of the monitoring plan is to determine the effectiveness of the impact mitigations, and to document any unexpected positive or negative environmental impacts of the subproject. The PMU will be required to oversee the implementation of environmental monitoring plan by the EI. Similar to the mitigation plan, the monitoring plan will need to be updated at the detailed design stage to ensure it meets the monitoring needs of the detailed designs of the subproject

36. The key environmental protection laws, policy, and environmental standards that need to be followed with the implementation of the EMP are listed in Table 3 including allowable pollutant concentrations of discharged liquid residue of sludge settling ponds (e.g., QCVN 24:2009/BTNMT). Allowable ambient water and air quality levels are identified in QCVN 08:2008/BTNMT and QCVN 05:2009/BTNMT, respectively, drinking water quality (QCVN 02:2009/BYT), national standard of domestic water supply as well as standards for domestic wastewater discharge for worker camps, and allowable contaminants in excavated soil for disposal are also provided.

37. Monitoring the success of the required resettlement of households and businesses, and the temporary relocation of secondary structures will be undertaken as part of the Resettlement Plan prepared under separate cover.

Table 6. Applicable Laws, Policy and Environmental Quality Standards.

GoV Laws
• Law on Environmental Protection (LEP) No. 55/2014/QH13 • Law on Water Resources No. 17/2012/QH13 • Law on Construction (LoC) No. 50/2014/QH13 • Law on Cultural Heritage No. 28/2001/QH10 and Law amending and supplementing a number of articles of the law on cultural heritages(No 32/2009/QH12) • Biodiversity Law No. 20/2008/QH12 dated 13th November 2008 • Land law No. 45/2013/QH13 dated 29th November 2013
GoV Decrees & Circulars
• Decree No. 59/2015/ND-CP on managing construction and investment projects • Decree No. 46/2004/ND-CP on quality control and maintenance of construction works. • Decree 18/2015/ND-CP, dated 14/02/2015 on environmental protection planning, strategic environmental assessment, environmental impact assessment and environmental protection plans • Decree 38/2015/ND-CP, dated 24/04/2015 on management of waste and discarded

materials. • Decree 80/2014/ND-CP, dated 06/8/2014 on drainage and treatment of wastewater • Decree 201/2013/ND-CP, dated 27/11/2013 on detailing the implementation a number of articles of the law on water resources. • Decree 19/2015/ND-CP, dated 14/02/2015 on detailing the implementation of a number of articles of the law on environmental protection. • Decree 43/2014/ND-CP, dated 15/5/2014 on detailing a number of articles of the land law • Decree 47/2014/ND-CP, dated 15/5/2014 on regulations on compensation, support and resettlement upon land expropriation by the state
International Guidelines
• Safeguard Policy Statement (SPS). ADB, 2009 • World Bank Group, 2007. Environmental Health and Safety Guidelines, Wash. DC. • AWWA Standard Methods for Measurement & Analysis Environmental Quality
GoV Environmental Protection Standards & Methods
• QCVN 08:2008/BTNMT: national regulation on surface water quality • QCVN 10:2008/BTNMT: national technical regulation on coastal water quality • QCVN 05:2009/BTNMT: national technical regulation on ambient air quality • QCVN 02:2009/BYT: national standard of domestic water supply • QCVN 09:2008/BTNMT: national regulation on groundwater quality • QCVN 14:2008/BTNMT: national technical regulation on domestic wastewater • QCVN 24:2009/BTNMT: national regulation on industrial wastewater quality • QCVN 15:2008/BTNMT: national regulation on allowable pesticide residues in soil • QCVN 03:2008/BTNMT: national regulation heavy metals concentrations in soil • QCVN 26:2010/BTNMT: national technical standard for noise • TCVN 6962:2001: allowable vibration and shock from construction activities • TCVN / QCVN standard methods for analyzing environmental quality

1. Performance Monitoring

38. Indicators of the effectiveness of the EMP will be included in the Project Performance Monitoring System[20] that the EA will develop for the entire subproject. Select indicators of major components of the environment that will be affected primarily by the construction phase are drawn from the mitigation and monitoring plans and summarized in Table 8.

[20] Footnote 11

Table 7. Environmental Monitoring Plan

Environmental Indicators	Location	Means of Monitoring	Frequency	Reporting	Responsibility		Estimated[21] Cost (USD)
					Supervision	Responsibility	
Pre-construction Phase – ***Update Baseline Conditions***							
In consultation with management board, update baseline on presence of rare & endangered fauna & flora, and critical habitat in Bach Ma National Park that will be affected by Loc Tri and Loc An components. Include aquatic resources of source river in park. In Quarter II/2017, investigate and collect statistics on affected animals in Bach Ma national park The components of investigation team: PMU, supervision consultant, Department of Natural Resources and Environment, Department of agriculture and rural development, Management unit of Bach Ma National park, Office of Natural Resources and Environment, local people's committee.	Location of components in core and buffer zones of BM National Park	Review of existing data and information supplemented by original surveys as required.	Once	Once	DDC & HueWACO & MB of BMNP	EI[22]	$3,000. (for new survey)

[21] Estimated costs to be updated at detailed design stage
[22] The senior environmental consultant (SEC) & internal environment officer (IEC) of managing consulting firm identified in original EMP.

Environmental Indicators	Location	Means of Monitoring	Frequency	Reporting	Responsibility		Estimated[21] Cost (USD)
					Supervision	Responsibility	
The PMU shall request a consultant (Environment Institute) to carry out environmental monitoring. Air quality (dust, CO, NOx, SOx, noise, wind, and vibration levels) to supplement baseline air quality data collected reported in IEE 32 component area, including: construction sites represented for main civil works & excavation work, and truck routes to 8 sub-projects within project area (4 components area/sub-project) Frequency: every 3 months. Water quality data for rivers reported in IEE are sufficient. 24 component areas, including: water collection pits of water treatment plant (2 areas/water collection pit) Frequency: every 3 months.	Representative sites of heavy civil & earthworks including truck routes at all eleven component areas	Using field and analytical methods described in QCVN and TCVN standards for ambient air and surface water quality sampling & analysis.	One day and one night measurement	One baseline supplement report before construction phase starts	DSC & PMU	EI	$5,000. From project management fund
Inventory of present and past land uses that could cause contaminated soil.	At all excavation sites, including borrow pits at all eleven component areas	Survey methods described in QCVN and TCVN standards for land use.	Once	Once	DSC & PMU	EI	$750.
Analysis of soil quality if required from above (heavy metals (As, Cd, Pb, oil & grease, hydrocarbons).	Possible contaminated lands all sites	Use field and analytical methods described in QCVN and TCVN standards for soil quality sampling & analysis.	D): Once if needed	Once	DSC & PMU	EI	$5000.
Presence of UXO	Potentially located throughout subproject area	Military to survey and sweep affected areas of UXO	Once	Once	HueWACO	military	tbd.

<table>
<tr><th>Environmental Indicators</th><th>Location</th><th>Means of Monitoring</th><th>Frequency</th><th>Reporting</th><th colspan="2">Responsibility
Supervision Responsibility</th><th>Estimated[21] Cost (USD)</th></tr>
<tr><td>Updated expanded community stakeholder comments & concerns of subproject
Implementation duration: April or May, 2017</td><td>At easily accessible sites at all eleven component areas.</td><td>Public meetings with preceding questionnaire if feasible.</td><td>At least once & in conjunction with Grievance Redress Mechanism</td><td>At each location for each event</td><td>PPC / HueWACO</td><td>PMU</td><td>$8,000.</td></tr>
<tr><td colspan="8">Construction of all Eight Subproject Components</td></tr>
<tr><td rowspan="4">A) Air quality: dust, CO, CO_2, NOx, SOx, noise, wind, and vibration levels
B) Surface water quality: TSS, heavy metals (As, Cd, Pb,) oil and grease, total & faecal coliform, pH, DO, COD, BOD_5, temperature, NH_3, and other nutrient forms of N & P.
C) Analysis of soil quality (heavy metals (As, Cd, Pb, Hg, Mn), hydrocarbons.
D) Domestic 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</td><td rowspan="4">A): At sites of civil or excavation works from pre-construction baseline above.
B): At finalized intake sites at all source rivers.
C): At sites where contaminated soil is suspected at excavation areas at all project areas
D): All construction sites and worker camps
E): Using hotline number placed at construction areas
F): At all construction areas</td><td rowspan="4">A – C : Using field and analytical methods described in QCVN and TCVN standards for ambient air and surface water quality monitoring.
Include visual observations of dust and noise from contractor & public reports .
D) Visual observation
E) Information transferred by telephone hotline number
F) regular reporting by contractors/PMU</td><td rowspan="4">(A – B): Quarterly during construction periods
C) Once before start of excavation
D) Monthly
E) Continuous public input
F) Continuous</td><td rowspan="4">Quarterly</td><td colspan="2">(A - D):</td><td rowspan="4">A) $12,000. /yr
B) $13,000. /yr
C) $5,000. /yr
D) With A-C (no marginal cost)
E) $6,000. / yr
F) No marginal cost</td></tr>
<tr><td>CSC / PMU</td><td>EI</td></tr>
<tr><td colspan="2">E & F) & daily observations:</td></tr>
<tr><td>PPC / HueWACO</td><td>PMU / contractor</td></tr>
<tr><td colspan="8">Operation of all Eight Subproject Components</td></tr>
</table>

Environmental Indicators	Location	Means of Monitoring	Frequency	Reporting	Responsibility Supervision Responsibility	Estimated[21] Cost (USD)
Air quality: dust, noise and vibration levels	At all WTPs	Using field and analytical methods described in QCVN & TCVN standards for ambient air quality monitoring.	Quarterly for 5 years	Biannual	HueWACO	$3,600.00 / yr
Worker & public injury associated with WTP & pipeline networks	On property of WTPs, intake/pipelines, and pump stations	Regular record keeping	Continuously	For each event	HueWACO	No marginal cost
Treated water quality: total & faecal coliform, pH, DO, NH_3, NO_3, NO, chlorine, PAC, NaCl, and heavy metals (As, Cd, Pb,).	At WTPs & random user locations along distribution networks	Using field and analytical methods described in QCVN & TCVN standards for water quality monitoring, and parameters of QCVN 14:2008/BTNMT	Biannually, or when public complaint arises	For each event	HueWACO / DoNRE / MoH	$5,000.00 / yr
WTP sludge quality: ToC, heavy metals (As, Cd, Pb,), coliforms, pH, BOD, nutrients (N&P), PAC, chlorine,	After sludge is dried and before disposal at designated landfills.	Using field and analytical methods described in QCVN & TCVN standards for water quality monitoring	Quarterly for 5 years	Biannually	HueWACO	$6,000. / yr
Public complaints of operation of WTPs, drinking water availability & quality, and malfunctions with pipelines (e.g., leaks).	At all sites	Regular record keeping	Continuously	Biannually	HueWACO	$1,000. / yr

Table 8. Performance Monitoring Indicators

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 of all subproject components convened for follow-up consultation & to introduce grievance mechanism	Minutes of meeting, and participants list
EMP	Updated EMP	The stakeholders involved in the preparation of IEE shall participate in follow up consultation: PMU, supervision consultant, environment consultant, etc	EMP
Bid Documents	Requirements of EMP (CEMP)	EMP appended to bidding documents with clear instructions to bidders	Bid documents
Training of HueWACO / 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
Construction Phase			
Bach Ma National Park	Critical habitat, rare or endangered species	All critical habitat and R & E species unchanged, and unharmed	Monitoring by EI & management board of reserve
Air quality	SOx, NOx, dust, VOC, CO, noise, vibration	Levels never exceed QCVN standards (Table 6), or normal ambient levels. Necessary exceedances are isolated, and short in duration as possible.	EI & contractor monitoring reports,
Surface water quality	DO, TSS, pH, discharge, heavy metals (Cd, Pb, As), oil, grease, coliform, nutrients (N & P)	Levels never exceed QCVN standards (Table 6), or normal ambient levels. Necessary exceedances are isolated, and short in duration as possible.	EI & contractor monitoring reports,
Soil quality	Solid & liquid waste	Rigorous program of procedures & rules to collect and store all waste from construction camps and sites practiced.	Contractor and EI monitoring reports
Hazardous materials & waste	Oil, gasoline, grease, PAC, chlorine, soda	Rigorous program of procedures to manage and store all waste from construction camps and sites practiced as well as adherence to specific policy (Table 6)	Contractor and EI monitoring reports
Public & worker safety	Frequency of injuries	Adherence to specific policy (Table 6), and site-specific procedures to prevent accidents	Contractor reports

Major Environmental Component	Key Indicator	Performance Objective	Data Source
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, EI reports
Traffic	Frequency of disruptions & blocked roadways	Disruptions, stoppages, or detours are managed to absolute minimum.	Public input, contractor reports, EI reports
Operation Phase			
Raw water quality	Degraded water quality of source rivers	Raw water never degraded preventing WTP to produce potable water quality	HueWACO / DoNRE monitoring reports
Soil & surface water quality	Contamination from discharged sludge	Sludge is to be processed on WTP site then transported to DoNRE approved landfill.	Public input, DoNRE inspections, & HueWACO regular reporting
Worker health & safety	Exposure to treatment chemicals such as chlorine, and hazardous activities & equipment	No spills or unprotected exposure to chlorine, or other hazardous materials will occur following procedures of O&M manual for WTPs.	MoLISA reports, & HueWACO regular reporting
Potable water supply	Sufficient potable water for users of distribution network	Safe drinking water quality produced as per design specifications of WTPs	MoH inspections, & HueWACO regular reporting

F. Reporting

39. Regular reporting on the implementation of mitigation measures, and on monitoring activities during construction phase of the project is required as indicated in Tables 3 - 5. Construction contractors are required to submit brief monthly reports on environmental issues and mitigation activities to the PMU. The PMU must prepare quarterly reports on the EMP to the EA which include input from regular meetings with public stakeholders. The EA must prepare biannual reports on activity and effectiveness of EMP to ADB[23]. The template presented in Appendix 1 should be used for that purpose.

40. Environmental monitoring reports will be prepared in parallel quarterly for the PMU/EA by the EI. The reports will table all indicators measured from the monitoring plan of EMP, and will include relevant GoV environmental quality standards (i.e., QCVN & TCVN, Table 3).

[23] Footnote 5

G. Estimated Cost of Mitigation and Monitoring Plans

41. From the IEE estimated marginal costs for the pre-construction phase of the Mitigation Plan (Table 5) are $30,000 for assessments of seasonal flow of source rivers to determine sustainability of raw water supplies. Other costs associated with pre-construction phase should be included in contractor bids.

42. Estimated costs for field sampling and laboratory analyses for the Monitoring Plan during pre-construction phase to supplement the baseline are $21,750 which does not include UXO survey & removal by military. Monitoring costs per year during construction phase are estimated at $36,000, and $15,600 annually for the 2-3 year period from beginning of operation phase. All estimated costs are preliminary, and based on the national cost norms for environmental sampling and analyses (Circular 231/2009/TT-BTC). All cost estimates need to be updated with the EMP at detailed design stage.

H. Emergency Response Procedures

43. Emergency response procedures must be in place during the construction and subsequent operation phases of the water supply systems of the eleven subproject components to protect the public and workers. Potential emergencies could arise from accidents resulting from the operation of heavy equipment, excavation activities including work at borrow pits, chemical spills, electrical shock, work in/or near rivers, and from worker & public vehicle traffic. Environmental incidents could occur from pipeline failures, spills at WTP sites, improper disposal of WTP sludge, and failures along distribution networks.

44. The emergency procedures of the subproject (SERP) represent the first response which must align with the second and ultimate response by the existing external emergency response procedures (EERP) of the municipalities and districts for civil and environmental accidents. The SERP must complement workplace & public safety requirements prescribed by MoLISA (Table 6). The SERP essentially sounds the alarm and initiates emergency measures which are subsequently assumed and completed by the EERP.

Response Teams

45. The SERP requires an emergency response team (SERT) for each subproject component which consists primarily of the contractor during construction phase, and HueWACO during the operation of the completed system. The SERT will have an emergency response coordinator (ERC) to oversee sub-teams assigned to the different sites of a subproject component (e.g., intake, raw water pipeline, WTP, treated water distribution network). Representatives of the SERT will be present at construction sites at all times. The ERC will have a counterpart in the PMU which will assign 2-3 staffers as necessary as external officers of the SERT. The PMU will assist by providing a coordinating role amongst subproject components.

46. The EERP also has an emergency response team (EERT) which is comprised of local ambulance services, hospitals, clinics, police department, Department of Health, Department of Natural Resources & Environment, and the Department of Labour, Invalids, & Social Assistance. Before construction begins the SERT and PMU must meet with the different members of the EERT to ensure that the planned SERP and SERT are compatible and align with the procedures of the different components of the EERP.

47. Contractors will need to identify their draft SERP and SERT in the CEMP of their bid documents, and describe how they will coordinate with the EERT to finalize the SERP. Construction tender documents will need to specify the requirements for a SERP and roles of the SERT.

Example Emergencies

48. Example emergencies, and emergency scenarios that the SERP must be able to provide the first response are summarized below. The list of possible emergencies will be finalized with the PMU.

Human Injury
- all worker injuries requiring on-site first aid, or immediate hospital care
- all public injuries caused from construction-related activities requiring immediate first aid, or hospital care

Environmental emergencies
- pipeline, coffer dam, or reservoir intake failures causing local flooding
- spills of hazardous substances (e.g., gasoline, oil, chlorine, soda, PAC, paint) on land into surface waters (rivers, lakes, reservoirs), or into drinking water source

Emergency scenarios
- traffic accidents
- truck load or tanker spills, or ruptures
- excavation cave-ins
- landslides
- building collapse
- heavy equipment accident or malfunction
- near drownings
- gas or UXO explosions
- fire
- hazardous chemical or gas exposure

Emergency Response Procedures

49. Described briefly below are general emergency response procedures that the SERTs must be able to initiate ahead of the complete response of the EERT. The procedures will be finalized in coordination with the EERT and PMU, and will form part of the CEMP, and O&M manual for HueWACO.

Alert & Communication & Initial Response
- Immediate recognition of emergency situation by sub teams of SERT;
- Immediate notification of ERC & PMU of nature of emergency
- ERC alerts required authorities & expertise of EERT (e.g., fire department, ambulance & hospitals, DoNRE, DoT, DoH, DoLISA, PPC);
- SERT under direction of ERC & PMU begin to stabilize situation where possible (e.g., first aid to injured worker/public, environmental clean-up, fire containment) while waiting for expertise of EERT to arrive

Evacuation
- Move people out quickly as a group, and avoid panic
- Evacuate through pre-defined evacuation route

- Move people away until safely away from the emergency site and area of influence
- Report missing persons to EERT immediately
- Assist the injured & transfer to medical component of EERT
- Only move seriously injured persons under direction of EERT

Medical

- Administer appropriate first aid immediately regardless of severity of injury
- Alert ERC & PMU
- Call the EERT (emergency medical services and/or nearest hospital
- Direct EERT to the emergency site by escort if necessary
- If necessary vacate and close site immediately, or restrict access to site

Fire

- Alert immediate area and ERC & PMU of fire situation
- Contact EERT if fire considered too large to extinguish
- Contact EERT if medical assistance is required
- Stop all activities or operations
- Begin to contain fire and keep from spreading
- Evacuate site if deemed necessary
- Direct EERT to site by escort if necessary

Explosion

- Expect further explosions & take shelter or leave area
- Alert ERC & PMU
- Call EERT (fire dept, ambulance, hospitals) if necessary
- Evacuate area
- Direct EERT to site by escort if necessary

Hazardous Material Spill

- Alert all persons in area, and ERC & PMU
- Stop all work in area
- Notify EERT (DoNRE, DoH, ambulance, hospitals)
- Begin to stop spill and contain contaminated area if it can be done safely
- Direct EERT to site by escort if necessary
- All exposed persons to be taken to hospital to assess exposure damage

Drinking Water Contamination

- Assess potential eventual exposure (# of affected people) to contaminated water
- Contact EERT (DoNRE & MoH)
- Initiate notification of affected community
- Stop source of contamination
- Begin identifying alternate clean water supply to affected persons

50. The SERTs in conjunction with the EERT will conduct follow-up measures to ensure that the emergency is over or under remediation. The specific follow-up measures of the SERP for the different emergency types and scenarios will be finalized with the EERT and PMU.

I. Institutional Capacity Review and Needs

51. The capacity of the HueWACO and assigned PMU for environmental management is expectedly weak, and likely will need to be strengthened. Full-time staff in water supply

companies dedicated to environmental management normally does not exist other than engineers who monitor raw and treated water quality, and quality of WTP sludge.

52. The environmental subunit created for PMU will need to understand and be able to effectively oversee implementation of the EMP. Understanding of potential project environmental impacts and their management will be required by the PMU. The PMU will need to understand and be able to oversee compliance of subproject with ADB and GoV pursuant to environmental safeguards of the LEP (2014) and SPS (2009).

53. As part of the institutional capacity development plan for the entire sub-project, the environmental subunit of the PMU should receive training on the development and implementation of an EMP. Two approaches to training should be: 1) classroom coursework; and 2) "learning by doing" from work on the implementation of the subproject EMP with coaching assistance provided by the environmental specialist of the CSC. On the job training begins with updating of the EMP to meet the detailed subproject designs as assisted by the DDC and CSC.

54. Classroom training should be given by the environmental specialist of the CSC[24], and focus on two thematic areas defined by: 1) principles environmental assessment & management focused on the potential impacts of infrastructure development on the natural and social environments; and 2) environmental safeguard requirements of the ADB and GoV with specific focus on the Thua Thien Hue subproject.

[24] Responsibility given to the SEC & IEC of Consulting Firm in original EMP.

Appendix 1: Template Safeguard Monitoring Report

Safeguards Monitoring Report

Semiannual Report
xxx {month} 20xx

Viet Nam: xxx {Project name}, xxx {sub-project name, if report covers only one sub-project}

Prepared by the Project Management Unit of {complete name of Implementing Agency} for the {complete name of the borrower} and the Asian Development Bank.

NOTE

(i) In this report, "$" refers to US dollars.

This safeguards monitoring report 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.

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.

III. EXECUTIVE SUMMARY

{Read and delete: Provide short summary of the following items:

- **Summary of EMP/RP/REMDP Implementation**
- **Description of monitoring activities** carried out (e.g. field visits, environment effect monitoring, survey questionnaire, public consultation meetings, focus group discussions, etc)
- **Key issues**, any **corrective actions** already taken, and any **grievances**
- Key activities planned in the next reporting period
- Recommendations

Use the paragraph numbering format provided below throughout the report}

55. xxx

56. xxx

IV. PROJECT OVERVIEW, GENERAL SAFEGUARD MATTERS

1. Project Overview

{Read and delete: Briefly describe project objectives, scope and components – can be taken from PAM or other relevant document}

57. xxx

58. xxx

2. Project Progress

{Read and delete: Using most recent project progress report, describe status of project implementation, including full list of contracts, status of contract awarding and implementation, name of contractor, Engineer, Project Supervision Consultant.}

59. xxx

60. xxx

Table 1: Project Overview, Snapshot of Project Progress

Project Number and Title:		
Safeguards Category	Environment	
	Indigenous Peoples	
	Involuntary Resettlement	
Reporting period:		

Last report date:	
Key sub-project activities since last report:	*{Read and delete: This section should include, among others, the following:}* • Contract awarding • Progress of Work (% physical completion) • Status of Safeguard Approvals / Permits / Consents
Report prepared by:	

3. Safeguard Plans Implementation Arrangements

{Read and delete: Describe institutional arrangements and responsibilities for EMP and RP/REMDP implementation, internal and external monitoring, and reporting, defining roles of PMU, Construction Supervision Consultant, Loan Implementation Supervision Consultant, Contractors. (Table format as needed)}

61. xxx

62. xxx

4. Updated EMPs and RPs/REMDPs, Incorporation of Safeguards Requirements into Project Contractual Arrangements

{Read and delete: Define manner by which EMP and RP/REMDPs requirements are incorporated into bidding documents, contracts.
Indicate when updated EMPs and RPs/REMDPs were submitted for approval to ADB (Table format appropriate).}

63. xxx

64. xxx

V. ENVIRONMENTAL PERFORMANCE MONITORING

1. Status of EMP implementation (Mitigation Measures)

{Read and delete: Summarize main mitigation/protection measures implemented in the reporting period (narrative section). Structure in accordance to phases (detailed design, construction preparation, construction, and operation).}

65. xxx

66. xxx

{Read and delete: Include EMP table or updated EMP table if applicable. Assess compliance of environmental management activities with the original or updated EMP. For that purpose, include additional columns entitled "Compliance Status", "Comment or Reasons for Non-Compliance", and "Issues for Further Action". Example is provided below.}

Table 2: Compliance with EMP Requirements (Environmental Performance)

EMP Requirements	Compliance Status (Yes, No, Partial)	Comment or Reasons for Non-Compliance	Issues for Further Action

Use environmental impact as main heading and EMP as listing (see example below)	Use EMP list as basis for rating/evaluating compliance (see example below)		
Rise of employment opportunities: • Job openings of the project should give priority to local communities. • Recruitment of local laborers should be stipulated in the contract for construction	• Field inspections and interviews with communities - DONE • Note each complaint case in the field – 3 COMPLAINTS RECEIVED • Set up grievance centre and report as part of monitoring action plan – NOT DONE		

Table 3: Issues for Further Action

Issue	Required Action	Responsibility and Timing	Resolution
Old Issues from Previous Reports			
List of EMP measures or activities not completed (last column of previous table)			
New Issues from This Report			

2. Health and Safety

{Read and delete: Provide narrative of occupational and community health and safety issues that occurred during the reporting period. Any accident involving injury or death of workers or community members must be reported. Include investigation report of DOLISA as attachment to the report. Provide details in the Table below}.

67. xxx

68. xxx

Table 4: Health and Safety Issues

Issue	Required Action	Responsibility and Timing	Resolution

Old Issues from Previous Reports			
New Issues from This Report			

3. Environment Effect Monitoring

69. **Monitoring plan.** xxx *{Read and delete: Present the environment effect monitoring plan as defined in the EMP or the updated monitoring plan. Refer to Table 4. Describe monitoring responsibilities}*

70. **Monitoring activities in the reporting period.** Xxx *{Read and delete: Describe the environment effect monitoring activities in the reporting period, including number of monitoring campaigns, number of samples, etc. Confirm compliance with the monitoring plan, or justify any deviation from the plan}*

Table 4: Environment Effect Monitoring Results in the Reporting Period

{Read and delete: Present monitoring result in a Table (see example below, adjust as needed). Any non-compliance should be highlighted for attention and follow-up.}

Location	Parameter	Date	Monitoring value	Relevant government standard, standard value

71. **Assessment.** *Xxx {Read and delete: Compare monitoring results with baseline conditions (if baseline data is available) and relevant government standards in qualitative terms. Additional explanatory comments should be provided as necessary. Possible reasons for non-compliance should be identified.}*

VI. INVOLUNTARY RESETTLEMENT PERFORMANCE MONITORING

{Read and delete: Provide narrative of status of implementation of the RP(s), including but not limited to: status of RP or Resettlement Framework updating; number of households relocated during the reporting period; outstanding resettlement activities; etc}.

72. xxx

73. xxx

Table 6: Summary of Compliance with RP Requirements

RP Requirements	Compliance status Yes/No/Partial	Comment or Reasons for Compliance, Partial Compliance/Non-Compliance	Issues for Further Action[25]
Establishment of personnel in PMU/PIU		*{Read and delete: This section should include, among others, the following:}* Identify position and name of Safeguards/Resettlement staff of the PMU/PIU	
Public consultation and socialization process		*{Read and delete: This section should include, among others, the following:}* *Provide information on:* • *Public consultation, participation activities carried out* • *Inclusive dates of these activities* *To be elaborated on in Item 5*	
Land area to be acquired is identified and finalized		*{Read and delete: This section should include, among others, the following:}* *Provide information on:* • *Land area (of each parcel to be acquired)* • *Current land use (residential, agri, etc)* • *Current ownership status (private, state)* *Provide attachments on land titles/user rights certificates,*	
Resettlement plan(s) updated after detailed design			

[25] To be elaborated further in table 3.b (Issues for Further Action)

Land acquisition completed			
Establishment of Resettlement Site(s)		*Please state:* • *Number of AHs to be relocated as per agreed RP* • *Number of AHs already relocated* • *Number of houses built* • *Status of installation of community facilities to be provided as per agreed RP*	
Compensation payments for affected assets is completed		*Please state:* • *Total Number of Eligible AHs and APs (as per agreed RP)* • *Number of AHs and APs compensated as of this monitoring period* • *Total Budget allocation as per agreed RP* • *Total budget disbursed to AHs as of this monitoring period*	
Transport assistance for relocating affected households		*As above*	
Additional assistance to vulnerable affected household		*Please state:* • *Total Number of vulnerable AHs and APs (as per agreed RP)* • *Agreed forms of assistance as per RP* • *Number of AHs and APs assisted as of this monitoring period*	
Income Restoration Program		*Please state progress per income restoration feature/activity and actual period of implementation*	
Temporary impacts have been addressed (affected properties restored to at least pre-project conditions)		*Please state:* • *Total Number of AHs affected by temporary impacts as per agreed RP* • *Actual Number of AHs and total area affected by*	

		temporary impacts (if this differs from the projected number, such as in cases of unforeseen project impacts) • *Status of restoring affected property*	
Capacity building activities			

Table 7: Issues for Further Action

Issue	Required Action	Responsibility and Timing	Resolution
Old Issues from Previous Reports			
List of RP activities not completed (last column of previous table)			
New Issues from This Report			

VII. COMPLIANCE WITH SAFEGUARDS RELATED PROJECT COVENANTS

{Read and delete: List all environment and resettlement related loan covenants, and assess project's compliance with the covenants (Table format is appropriate, with concluding statement on compliance, partial compliance or non-compliance, and corrective actions as needed)

Schedule	Para No.	Covenant	Remarks/Issues (Status of Compliance)
Schedule 5	xxx		Complied with / Partially complied with / Not complied with. *{Identify reason for partial or non-compliance}*

VIII. PUBLIC CONSULTATION, INFORMATION DISCLOSURE, CAPABILITY BUILDING

{Read and delete: Describe public consultation activities during the reporting period. Confirm compliance with consultation plan defined in the IEE/EMP and the RP(s), or justify deviation from these plans. Present planned consultation activities in next reporting period. Use Tables as appropriate.}

- Field Visits (sites visited, dates, persons met)
- Public Consultations and meetings (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 (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)
- Information disclosure

IX. GRIEVANCE REDRESS MECHANISM

{Read and delete: Describe mechanisms established to address and redress public complaints and grievances related to social and environment safeguards. Summarize grievances received, if any, and measures implemented to redress them.}

- 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			

X. CONCLUSION

{Read and delete: Highlight important results from the implementation of EMP and RP monitoring; recommendations to improve EMP and RP management, implementation, and monitoring; key activities planned in next reporting period}.

74. xxx

75. xxx

XI. ATTACHMENTS

- Consents / permits
- Monitoring data (water quality, air quality, etc.)
- Inspection checklists
- Photographs
- Others