Updated Environmental Management Plan (uEMP)

Project 43237-013
March 2019

Socialist Republic of Viet Nam: Loan 3340-VIE:
Urban Environment and Climate Change Adaptation Project

For Package (Dong Hoi City, Quang Binh Province)
DH/W1: Improvement of Wastewater Management for Center City
- House connections (8,238) and associated tertiary sewers (55.6 km)
- Extensions to primary and secondary sewerage/drainage network

Prepared by Dong Hoi Environment and Climate Change Project Management Unit (PMU) for the Asian Development Bank.
CURRENCY EQUIVALENTS
(as of 1 March 2019)

Currency unit       –       Dong (VND)
VND1.00             =       $0.00004
$1.00               =       VND23.199

Abbreviations and Acronyms

ADB          Asian Development Bank
BOD5         Biochemical Oxygen Demand (5 days)
CC           Construction Contractor
CCAP         Climate Change Adaptation Plan
DONRE        Department of Natural Resources and Environment
EA           Executing Agency
EHSC         Environment, Health & Safety Coordinator (Contractor)
EIA          Environmental Impact Assessment
EMP          Environmental Management Plan
ESO          Environment & Social Officer (PMU)
ESS          Environment & Social Staff
IA           Implementing Agency
IEE          Initial Environmental Examination
MOF          Ministry of Finance
MONRE        Ministry of Natural Resources and Environment
PMU          Project Management Unit
PPC          Provincial Peoples Committee
RP           Resettlement Plan
UECCAP       Urban Environment and Climate Change Adaptation Project
UEMP         Updated Environmental Management Plan
URENCO       Urban Environment Company
UXO          Unexploded Ordnance

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1. **Introduction**

1. The Urban Environment and Climate Change Adaptation Project funded by ADB will construct and upgrade the infrastructure facilities to improve urban environmental conditions, water supply systems and sewerages, waste and water treatment facilities, and flood control in order to reduce environmental pollution, improve urban environment and climate change adaption for two coastal cities, namely Dong Hoi (Quang Binh Province) and Hoi An (Quang Nam Province).

2. The project was approved by ADB Board on 27 November 2015. Subsequently, the government requested ADB to change the implementation agencies and funds flow arrangements in accordance with the government’s new requirement for equalization of the state-owned companies. It took some time for the government and ADB to approve the revised loan agreement, project agreement, and grant agreement incorporating these changes. The loan agreement, project agreement, and grant agreement were signed on 25 March 2017 and became effective on 17 July 2017.

3. The Environmental Management Plan (EMP) has been prepared as environmental management tools in the IEE for the Dong Hoi Project in 2014. As required by ADB’s project review mission and Loan Agreement (Loan 3340/Grant 0462-VIE), the EMP is needed to be updated to reflect changes in the scopes of work and updated designs. Therefore, as requirements of the Project Administration Manual, the updated environmental management plan is to be submitted to ADB for approval before the construction contract is awarded. To expedite the project start-up, **this EMP is updated for Component 1 (See description in Table 1) specifically addressing Work Package DH/W1: Improvement of Wastewater Management for Center City**\(^1\) of the project which will integrate all technical and institutional changes (compared to the original design), and information on mitigation and monitoring measures for 03 phases of the project will be specified.

4. Since the approval of the original IEE for Dong Hoi Project by both Vietnamese Government and ADB in 2014, there are various developments in Viet Nam regulatory framework for environmental assessment. They include notably:

   - Decree No. 18/2015/ND-CP dated April 1, 2015 of the Government promulgating environmental protection planning, strategic environmental assessment, environmental impact assessment and environmental protection plan.
   - Decree No. 19/2015/ND-CP dated 14 May 02, 2015 of the Government detailing the implementation of some articles of the Law on Environmental Protection.
   - Circular No. 27/2015/TT-BTNMT dated May 29, 2015 of the Ministry of Natural Resources and Environment on strategic environmental assessment, environmental impact assessment and environmental protection plan.
   - Circular No. 36/2015/TT-BTNMT dated June 30, 2015 of the Ministry of Natural Resources and Environment on hazardous waste management.

5. The EIA required by Vietnamese regulation (Vietnamese EIA) was prepared covering all components proposed for ADB Project\(^2\), and was approved by Quang Binh Province’s Department of Natural Resources and Environment (DoNRE) in 2014.

6. In accordance with Circular No.27/2017, if no construction works starts within 24 months since the Vietnamese EIA is approved, the Project Owner must prepare an updated EIA. Dong Hoi PMU has already updated the Vietnamese EIA (covering the same scope as the original Vietnamese EIA) and obtained its approval from Quang Binh Provincial DoNRE on 28 June 2018. Data from the updated EIA is used as inputs for the updating of this EMP.

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\(^1\) Originally, the packages were designed as DH/W1: Household connection and tertiary sewers and DH/W2: Wastewater collection system extensions. These two packages are now agreed to merge and retile as DH/W1: Improvement of Wastewater Management for Center City.

\(^2\) The components are: (i) Bao Ninh Wastewater System; (ii) Bao Ninh Road Systems; (iii) Bao Ninh Sustainable Urban Drainage System; (iv) Bao Ninh Flood and Coastal Protection: including; and (v) Dong Hoi Wastewater management improvement.
7. Dong Hoi Urban Environment and Climate Change Adaptation Project is currently comprised of 05 components, that is:

- Component 1: Improvement of wastewater management for the city centre. A comparison of changes from the original design of components of the project is described in Table 1.
- Component 2: Development of climate change resilient urban infrastructure for Bao Ninh Peninsula
- Component 3: Management of flood and other infrastructure
- Component 4: Site Clearance and Resettlement
- Component 5: Project Management and Capacity Building

8. A comparison between the current and original design of components is shown below.

<table>
<thead>
<tr>
<th>Component 1: Improvement of wastewater management for the city centre</th>
<th>General Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DH/W1:</strong> Improvement of Wastewater Management for Center City</td>
<td>Improved wastewater management (Dong Hoi wastewater)</td>
</tr>
<tr>
<td><strong>Component 1: Improvement of wastewater management for the city centre</strong></td>
<td>Drainage system for households, pipes of level 3 (R3) with extensions in the wards Dong Phu, Phu Hai, Nam Ly and Bac Ly, with the total scale and it will serve 6100 to-be-connected households:</td>
</tr>
<tr>
<td>1) <strong>Phu Hai Ward:</strong> Construction of 04 main sewage lines (2.8km long, HDPE D=315-500); construction of pump station No. 4; 24 tier 4 sewage lines connecting to main lines (3km long, HDPE D=315 and UPVC D=160); Manholes of D=1mx1m, reinforced concrete, steel lid, installed underground to the depth 1.5-2m.</td>
<td></td>
</tr>
<tr>
<td>2) <strong>Phu Hai Ward:</strong> Construction of pressurized sewage lines to Duc Ninh Wastewater Treatment Plant via Pump station No.13: 3 sewage lines (3.1km, HDPE D=150)</td>
<td></td>
</tr>
<tr>
<td>3) <strong>Dong Phu Ward:</strong> Construction of 32 tier 3 sewage lines (4km, HDPE and PVC D=315)</td>
<td></td>
</tr>
<tr>
<td>4) <strong>Bac Ly Ward:</strong> Construction of 31 tier 3 sewage lines (4.2km, HDPE and PVC D=315)</td>
<td></td>
</tr>
<tr>
<td>5) <strong>Nam Ly Ward:</strong> Construction of 30 tier 3 sewage lines (3.2km, HDPE and PVC D=315)</td>
<td></td>
</tr>
<tr>
<td><strong>Component 2: Development of climate change resilient infrastructure for Bao Ninh Peninsula</strong></td>
<td></td>
</tr>
<tr>
<td><strong>DH/W3:</strong> Bao Ninh wastewater</td>
<td><strong>In Bao Ninh only:</strong></td>
</tr>
<tr>
<td>In Bao Ninh only:</td>
<td>Wastewater collection system along Vo Nguyen Giap road: 08 pipelines D300 of 5.5 km long.</td>
</tr>
<tr>
<td>In Bao Ninh</td>
<td>Gravity pipes: 8.4 km (diameter 300 mm) and 2.0 km (diameter 400 mm)</td>
</tr>
<tr>
<td></td>
<td>Pumping mains: 1.3 km (diameter 200 mm) and 0.4 km (diameter 150 mm)</td>
</tr>
</tbody>
</table>

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3 Quang Binh URENCO is assigned by Dong Hoi City People’s Committee for the task #4- cleaning and inspection as an annual work; Tasks No. #5,6, a SCADA system will be installed as a replacement, therefore, these tasks are not included in the current DH/W1 package/component.
| **Wastewater collection system from Vo Nguyen Giap road to Nhat Le River road:** | **2 pumping stations (598 and 1,960 m³/d)**
| • 03 pipelines D3-400 of 2km long | **In Phu Hai**
| • Wastewater collection system along Nhat Le River road: 02 pipelines D300 of 2.6km long; | • Gravity pipes: 1.9 km (diameter 300 mm) and 0.7 ; (diameter 400 mm)
| • 02 pumping mains D150 of 2.7km long; | • Pumping mains: 1.8 km (diameter 250 mm)
| • 02 pump stations: Station no.1 with 02 pumps, Q=65m³/h; Station no.3 with 02 pumps, Q=130m³/h | • 1 pumping station (2,833 m³/d)
| • and 01 transfer manhole with 02 pumps, Q=80m³/; | |
| (The works in Phu Hai in original proposal is now merged as part of Package DH/W1: Improvement of Wastewater Management for Centre City and will be addressed in a different uEMP) | |

| **Bao Ninh infrastructure improvement** | **Bao Ninh road improvement** |
| (04 roads, of which 01 horizontal road with length of 2.9 km and 03 vertical roads with a total length of 1.2 km) | **DH/W4**: Horizontal Road No. 3 (36M: KM1.387-2.919) (covering Bao Ninh Storm water for 2 retention lakes)
| **DH/W5**: Vertical roads | **DH/W8**: Horizontal Road No. 3 (36M: KM0-1.387) |
| **DH/G1**: Pumping station and warning system CSO, CCTV | **DH/W4**: Horizontal Road No. 3 (36M: KM1.387-2.919) |
| **Component 3: Management of flood and other infrastructure** | **Bao Ninh integrated flood and coastal protection** |

| Road width of 36m in which: width of road surface 2x10.5m; sidewalks 2x6,0m; median strip 3.0m. | **N-S road number 2.2 with width 36 meters, length 3.6 Km, including: road bed, road surface, plant trees, water drainage system, lighting, electricity line, communication line.**
| Embankment of 02 retention lakes with total area of 2.115ha. Connection pipes from the lakes to drainage system along horizontal and vertical roads | **E-W road number 2.4 (width 22.5 meters, length 330 meters), include: road bed, surface water drainage, lighting**
| | **E-W road number 2.5 (width 22.5 meters, length 450m), include: Road bed, road surface, water drainage and lighting.**
| | **E-W road number 2.6 (width 36 meters, length 1.4 km), include: road bed, road surface, water drainage, lighting.**

| Road width of 32m in which: width of road surface 2x9.0m; sidewalks 2x6,0m; median strip 2.0m. | |
| - Construction of new road with road length of 1.38 km and width of 36 m in which: width of road surface 2x10.5m; sidewalks 2x6,0m; median strip 3.0m. | |
| - Road surface water drainage system: 2100m with D800-D1500, precast concrete pipes. | |
| - Road sewage system: along two sides of the road with length of 920m HDPE D300 pipes. | |
| - Associated lighting and electrical system. | |

 dh/w6 embankment for 2 retention lakes was merged into dh/w4 due to its small construction scale and close proximity to dh/w4 site. the merged package is named **dh/w4: horizontal road no. 3 (36m: km1.387-2.919)**.

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4 The package DH/W6 embankment for 2 retention lakes was merged into DH/W4 due to its small construction scale and close proximity to DH/W4 site. The merged package is named DH/W4: Horizontal Road No. 3 (36M: KM1.387-2.919).
This component includes two sub-components: (i) a program for the physical restoration of the coastal dune conservation and for safeguarding the integrity of the dune system in the future, and (ii) the hydrodynamic study of the mouth of the Nhat Le river in order to improve understanding of the natural system of dunes, beaches, foreshore, under-water delta, and the forces acting upon it (wind, waves, tides, currents).

1) Hydrodynamic Study:
- Evaluate stability in the Nhat Le river mouth and the historical evolution of the mouth and its adjacent beaches.
- Identify the causes of beach erosion and the mechanisms of beach erosion, considering impacts from changes in the upstream reaches and watershed and human activities on the beach.
- Carry out additional bathymetrical survey and hydrodynamic survey at the study area.
- Implement mathematical modeling (at least 2D) for Nhat Le river mouth.
- Study the evolution of the river mouth and analyze impacts of various options to defend against erosion and stabilize the river mouth.

2) Bao Ninh Dune Restoration & Protection Study
- Prepare a topographical map with scale of 1:1000 for the whole sand dune system.
- Assess the current status of the sand dune system and its surface vegetation.
- Sample and analyze the sediment on the sand dune at representative locations.
- Propose technical solutions to restore the dune at the damaged locations and to replant the vegetation layer on the dune surface.
- Prohibit further resort preparation work including flattening of the dune area and removal of existing vegetation at the plots, which are not developed yet. This would be in line with regulations proposed by the Quang Binh provincial people’s committee.

Component 4: Site clearance and Resettlement

Component 5: Project Management and Capacity Building

DH/PISC1 Project implementation support and capacity development

DH/PISC2 Audit

DH/PISC3 External Monitoring (for Environment and Resettlement)

Note: Contents in grey cells are not covered by this uEMP.

9. This uEMP integrates the results of the original IEE and updated Vietnamese EIA (2018) into a formal plan for the implementing agency and Contractor to prevent or minimize potential environmental impacts for the wastewater package. Also, the EMP addresses the results of the public consultations on the Project that were convened as part of the IEE. The EMP includes two complementary Action Programs that are adapted to the phases of pre-construction, construction and operation of the Project components:
• The Preliminary Action Program (PAP), which includes all the measures recommended during the early stage of the Project, particularly before the construction works start. These measures essentially concern the organization and training of the teams which will be responsible for environmental and social management during construction and operation of the project before starting the construction works.

• The Program of Actions adapted to the Construction period (PAC), which defines the principles of organization and the environmental inspection procedures for the construction sites. This PAC also defines the contractors’ obligations in relation to environmental and social management of the construction sites and camps.

10. An updated list of sensitive receptors along or near the proposed wastewater system extension of DH/W1 is presented in the following table. There are no physical cultural resources detected as sensitive or can be encroached near this wastewater package.

Table 2. List of sensitive receptors along and near DH/W1: Improvement of Wastewater Management for Center City

<table>
<thead>
<tr>
<th>No</th>
<th>Section</th>
<th>Description</th>
<th>Distance to the sewage works</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Bac Ly Ward Sewage System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Line 1</td>
<td>Secondary School Bac Ly</td>
<td>Next to the line</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High School Bac Ly 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Along Hoang Xuan Han Street</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Line 3,4,5,6</td>
<td>New Bac Ly Market</td>
<td>20-50m</td>
</tr>
<tr>
<td></td>
<td></td>
<td>West Huu Nghí Residential Area</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Line 9,9A,10</td>
<td>Quang Binh Meteorological Station</td>
<td>20-50m</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quang Binh Province Ethnic Boarding School</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quang Binh University</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Line 14,15,16</td>
<td>Viet Nam – Cuba Friendship Hospital</td>
<td>100m</td>
</tr>
<tr>
<td>II</td>
<td>Nam Ly Ward Sewage System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Line 1</td>
<td>Viet Nam – Cuba Friendship Hospital</td>
<td>Next to the line</td>
</tr>
<tr>
<td>2</td>
<td>Line 14,15,16</td>
<td>Dong Hoi City Central Park</td>
<td>40-70m</td>
</tr>
<tr>
<td>III</td>
<td>Phu Hai Ward Sewage System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Line 3,4,5,6</td>
<td>Phu Hai Secondary School</td>
<td>50-200m</td>
</tr>
<tr>
<td>IV</td>
<td>Dong Phu Ward Sewage System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Line 14-24</td>
<td>Dong Phu Primary School</td>
<td>20-150m</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dong Phu Secondary School</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Line 36-38</td>
<td>Dong Phu Ward People Committee Office</td>
<td>40-100m</td>
</tr>
<tr>
<td>V</td>
<td>Pressurized Pipes to Duc Ninh Wastewater Treatment Plant</td>
<td>None detected</td>
<td></td>
</tr>
</tbody>
</table>

11. The present EMP accordingly establishes and describes the context in which all the proposed corrective measures shall be implemented, under the following headings:
- the organization to be established to ensure effective implementation of the corrective measures and the associated environmental monitoring;
- the role and responsibilities of the various parties to be involved in the Project;
- the principal tasks to be undertaken during the phases of preparation, construction and operation of the project;
- the complementary studies deemed to be necessary;
- financial resources to be mobilized and their origin.

12. The various management plans proposed will be drawn up according to the current state of engineering design of the Project.
Figure 1. Bac Ly Ward Sewage System Layout-1
Figure 2. Bac Ly Ward Sewage System Layout-1
Figure 3. Nam Ly Ward Sewage System Layout
Figure 4. Phu Hai Ward Sewage System Layout
Figure 5. Dong Phi Ward Sewage Layout-1
Figure 6. Dong Phu Ward Sewage Layout-2
Figure 7. Pressurized Lines to Duc Ninh Wastewater Treatment Station via Pump Station no.13
2. ENVIRONMENTAL MANAGEMENT PLAN (EMP)

2.1. Purpose and Objectives

13. The role of the updated EMP is to complement the IEE report (para.3) with analysis by defining the operational context in which these measures will be implemented. The EMP therefore sets out the principles, the approach, the procedures and methods which will be applied to monitor and reduce the environmental and social impacts resulting from the construction works and subsequent operation of the components projected in Dong Hoi.

14. To this effect, the original EMP (2014) includes 3 complementary Action Programs that are adapted to the phases of pre-construction, construction and operation of the Project components. In the updating of this EMP, the complementation action plans will focus on preconstruction and construction phases.

15. The Preliminary Action Program (PAP), which includes all the measures recommended during the early stage of the Project, particularly before the construction works start. These measures essentially concern the organization and training of the teams which will be responsible for environmental and social management during construction and operation of the project, as well as all the complementary studies and investigations identified during preparation of the IEE and deemed to be necessary before starting the construction works.

16. The Program of Actions adapted to the Construction period (PAC), which defines the principles of organization and the environmental inspection procedures for the construction sites. This PAC also defines the contractors’ obligations in relation to environmental and social management of the construction sites and camps.

17. The below table summaries a review and comparison of PAP and PAC in the original EMP that will be applied for this uEMP.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PAP-01: Additional Study of Water Quality</td>
<td>Not Done Yet</td>
<td>PMU is responsible for conduct the study prior to construction</td>
</tr>
<tr>
<td>2</td>
<td>PAP-02: Appointment of the PMU-CES</td>
<td>Done</td>
<td>PMU has already appointed such position</td>
</tr>
<tr>
<td>3</td>
<td>PAP-03: Training of the PMU-CES and PMU staff</td>
<td>Done</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>PAP-04: Preparation of communication instruments</td>
<td>Done</td>
<td>The dissemination and communication of project information, potential impacts and mitigation measures have been carried out to local affected people through public consultations</td>
</tr>
<tr>
<td>5</td>
<td>PAP-05: Preparation Of The Contractor E&amp;S specifications</td>
<td>Not due to</td>
<td></td>
</tr>
</tbody>
</table>

2.2. Overall Organization

18. At the present level of the Project preparation, it is anticipated that the project will be developed under the following conventional conditions:

- Public investment, with the Quang Binh Province People’s Committee (QBPPC) as the Executive Agency (EA) and Dong Hoi PMU as the Implementing Agency;
- The PMU will receive the support of a Project Implementation Consultant (PIC) who supervises design and construction of the Project components;
- Procurement of Construction Contractors.
19. The proposed organisation for the EMP is based on this general organisation and summarised in Figure 8 overleaf. Three levels of organization, fully complementary, will be set-up:

- Dong Hoi PMU will have to provide for all aspects related to environment and social safeguards including (i) general supervision of activities carried out prior, during and after construction of the project and (ii) coordination with other stakeholders including other Government Agencies and the Asian Development Bank, the International Financial Institutions-IFIs involved;

- The environmental specialist of the Project Implementation Consultant (PIC) will assist PMU for all aspects dealing with environmental management preparation, provision of environmental training to PMU staff and contractors, supervision and monitoring of EMP implementation and preparation of semi-annual environmental monitoring reports during the construction stage.

- The Construction Contractor Environment Health and Safety Unit (CC-EHSU), who is to provide resources for, and effective implementation of, all measures which are defined in the EMP and in the contract documentation in addition to health and safety aspects on site. There will be one CC-EHSU per Project component under the responsibility of the main CC for this component and covering the needs for sub-contractors.

20. Environmental staff in the PMU, PIC and CC is intended to be independent of construction staff. Environmental staff will work alongside construction staff; however, they will report through separate channels up to the Project Director for the PIC and to the executive management level for each CC concerned.
2.3. Stakeholder’s Organization

21. The IA-PMU will have an integrating role at the top of the organisation. It will be responsible for (i) informing the political and financial agencies of the correct implementation of the EMP and (ii) ensuring effective compliance in terms of E&S obligations and procedures in the implementation of the Project. An Environmental and Social Officer (ESO) in PMU will take a role (i) to supervise the Project’s environmental and social activities in the name of the IA and (ii) to ensure coordination with the international agencies (funding agencies, investors, panel of experts) and national agencies (other Government Ministries, NGOs). The PMU-ESO will follow up and ensure operations relating to compensation and resettlement of APs resulting from the implementation of the project components are progressing satisfactorily. The PMU-ESO will be assisted in this supervisory role by the Project Implementation Consultant (PIC) which will work on a temporary but regular basis right from the start of the project and through to the first year of operation of the project.

22. The PIC will appoint within its Engineering Team an Environment Staff (PIC-ES) who will monitor implementation of the environmental measures and their performance. This PIC-ES assisted by
engineers, technicians and Site Inspectors is responsible for environmental aspects directly related to the construction activities and social aspects related to health and safety on the sites, complaints expressed by the population, any disturbances or harmful impacts they are subjected to, claims for compensation for temporary disorders related to the construction activities and liaison with the local authorities or representatives of the State.

23. **Each CC** having responsibility for one of the main contracts will set up its own EHS Unit (EHSU) responsible for providing the interface with its construction team. Depending on how the contracts are distributed, certain contractors may group together to set up a common environmental team. Each EHSU will have an **EHS Coordinator (EHSC)** and Environment, Health & Safety (EHS) Inspectors.

### 2.4. Stakeholder Roles and Responsibilities

#### 2.4.1. Role of the PMU-ESO (Implementing Agency)

**Project Preparation Phase**
- Coordinate, with those concerned, the definition of the environmental measures at the level of detailed design and prepare the corresponding environmental obligations of the contractors as General and Particular Specifications in the Tender Documents;
- participate in the evaluation of the tenders and negotiation with the contractors for all the environmental and social aspects;
- ensure coordination with the financial institutions involved (ADB), in order to guarantee compliance with their specific environmental and social requirements;
- ensure, with those concerned, the monitoring and coordination of all consultations carried out with the local population prior to starting the construction works; this aspect is particularly important for the road and urban development components;
- coordinate with the Government Authorities concerned, the issues of land acquisition and compensation operations required to be completed before the start of construction works;

**Construction Phase**
- Ensure coordination of activities with the PIC;
- participate in environmental coordination meetings with the representatives concerned from the staff of the PIC and Contractors;
- directly refer results and problems encountered to the PMU-Project Director;
- contribute for E&S aspects to the monthly and/or quarterly Works Progress Reports prepared to the attention of the IA and the EA
- prepare and submit to ADB semi-annual environmental monitoring reports;
- provide liaison with MONRE and DONRE;
- provide liaison with other Provincial and Ward/Communal authorities.

**Operating Phase**

24. At the end of the Project construction (5 years from 2017 to 2022), the various components will come under the responsibility of various institutions: Dong Hoi City People’s Committee (CPC)/URENCO for the various wastewater and drainage sub-components, Quang Binh Department of Transportation for Bao Ninh roads, DONRE for the restored dunes. Each institution will need to be clearly informed about the environmental monitoring requirements and to have organized to follow up the environmental aspects.

25. Before the end of the Project, the PMU-ESO will be in a position to:
- Ensure coordination with agencies in charge of the components after their construction for environmental monitoring activities to be implemented;
- ensure monitoring of the environmental activities required on the site are efficiently implemented by the organizations in charge;
- ensure effective completion of the measures to rehabilitate the sites temporarily used during construction;

2.4.2. Role of the Project Implementation Consultant (PIC)

- At the start of the Project Contract, the PIC will provide training to PMU-ESO, other staff of PMU and contractors regarding content of EIA reports and EMP obligations, organization of PMU for environmental management;
- Preparation of baseline template documentation required for PMU-ESO activities: weekly, monthly report structure, template checklists for site inspection, etc.
- Assistance for ToR and contract preparation for effect monitoring (air, water) to be carried out by any registered laboratory appointed by PMU;
- During construction period, annual environmental auditing of all construction sites and preparation of annual environmental auditing report.

2.4.3. Role of the PIC-ES (Environmental Staff)

- ensure coordination with the PMU-ESO;
- ensure that all environmental plans and programs requested from the CCs (this generic term covering all the main Contractors) have been submitted and have been non-objected prior to the start of works;
- with his inspectors’ collaboration, check whether the Contractor’s environmental obligations have effectively been complied with on the sites, and refer to PIC Project Manager for any detected case of non-conformity for formal action;
- report any observed case of non-conformity and ensure that it is remedied by the concerned CC within the imposed time limit;
- participate in the site monitoring meetings and prepare a monthly environmental monitoring report covering all project components;
- prepare the monthly evaluation report, recording the Contractor’s environmental efforts, which may, if necessary, be used to justify a deduction on the monthly claim for payment presented to the IA-PMU;
- ensure the regular implementation of compliance monitoring programs (water and air quality) and present the interpretation of results in the context of the monthly report;
- provide liaison with the local communities concerned for any social aspect including health, respect of recruitment procedures, land use agreements, handling of complaints and compensation for unexpected damages to private property during construction activities;
- organize a database for storing all environmental documentation generated during construction of the project (letters, memos and technical notes, registers, site photos, non-compliance and resolution forms, etc.);
- prepare the documentation required prior to the project's environmental and social audits performed by the Project Management Engineer.
- Perform regular visits to the construction sites and the worker camps; frequency will be adjusted according to the environmental risks, the sensitivity of the environment and the contractors' performance);
- establish reports on all detected cases of non-compliance and follow up their resolution by the CC;
- regularly provide input to the environmental database, in particular the reports on non-compliance, the records of non-compliance correction and the supporting photographic documents.
2.4.2. Role of the Construction Contractor EHS Coordinator (EHSC)

26. The CE’s activity must be devoted solely to the CC’s environmental and social management. He must be sufficiently high-ranking in the organisation to be capable of imposing his decisions on the Works Supervisors and Foremen. In particular, the power to stop construction activity, for reasons of environmental protection or safety, is a fundamental prerogative to ensure efficient environmental management on construction sites.

27. The EHSC, with the support of his team, will have the following responsibilities:

28. adapting construction activities to ensure they comply with the environmental and social obligations defined in the Tender Documents and the Terms of the Contract;

- ensuring that all sub-contractors of his company comply with the same environmental and social obligations;
- preparing the environmental plans and programs specified by the Tender Documents, in particular the monitoring programs;
- supervising the environmental good practices for construction activities on all construction sites used by the Contractor or his sub-contractors, by calling on his inspectors to make regular inspection visits;
- treating cases of non-compliance notified by the PIC-ES and instructing the construction teams to apply the necessary remedial measures immediately;
- preparing the weekly and monthly activity reports for presentation to the ESS;
- organizing and performing E&S training of CC staff (management & workers).

2.4.3. Role of ADB

29. The ADB provides guidance to EA with any issues related to EMP, and reviews biannual reports on EMP activities compiled and submitted by EA which are disclosed on ADB website pursuant to ADB Safeguard Policy Statement (2009).

2.4.4. Role of MONRE and DONRE

30. MONRE and Quang Binh DONRE may undertake inspections and monitoring at their discretion.

3. Summary of Potential Impacts

31. As detailed in the Section 5 of the report and updated from the 2018 Vietnamese EIA report as well as site visits, the anticipated key impacts of the implementation, construction and operation of the Dong Hoi Project’s Component 1: DH/W1: Improvement of Wastewater Management for Center City from the IEE which are summarized in 4 arise primarily during the construction phase. The short-term construction disturbances concern noise, dust, reduced access, increased traffic and risk of traffic accidents, worker and public safety, and solid waste, and waste water. These short-term impacts can be managed and mitigated with Mitigation Plan provided below. As land acquisition and resettlement are addressed in the Resettlement Plan (RP) and recognizing the fact that the construction package DH/W1 does not require any land and forest acquisition, this EMP will principally focus on construction activities supervision and monitoring activities during construction period and first few years of operation.

32. The recommended mitigation measures for the adverse impacts summarized above and detailed in the previous chapters are summarized in Table 5 overleaf. These mitigation measures will be implemented by the relevant contractors (with costs included in the associated contracts) and supervised by the PMU and the environmental specialist in the supervision team.
Table 4. Summary of potential impacts for DH/W1: Improvement of Wastewater Management for Center City

<table>
<thead>
<tr>
<th>Phase</th>
<th>Activities</th>
<th>Potential impacts</th>
<th>Level of impacts</th>
<th>The affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-construction phase</td>
<td>- Land acquisition, compensation, support for affected households;</td>
<td>- No land acquisition</td>
<td>None</td>
<td>- None</td>
</tr>
<tr>
<td></td>
<td>- Site clearance;</td>
<td>- No risks related to UXO removal as PMU has the removal throughly done by a military unit December 2018</td>
<td>- None</td>
<td>- None</td>
</tr>
<tr>
<td></td>
<td>- Material collection, worker gathering</td>
<td>- Impacts caused by dust, noise from excavation of sewage pipelines and pump station.</td>
<td>Low, local and controllable through mitigation measures (small pipelines along the existing roads)</td>
<td>- Air environment households living and doing business along the road and schools including Secondary School Bac Ly, High School Bac Ly 2, Quang Binh Province Ethnic Boarding School in Bac Ly Ward, Phu Hai Secondary School in Phu Hai Ward, Dong Phu Primary School, Dong Phu Secondary School in Dong Phu Ward</td>
</tr>
<tr>
<td></td>
<td>- Preparing necessary permits, licenses and approvals from both ADB and GoV</td>
<td>- Impacts from domestic wastes and wastewater flowed from worker camps</td>
<td>Low, local and controllable through mitigation measures (few number of workers gathering at the site in this phase is expected)</td>
<td>- no worker camps will be installed. Workers will rent house near the site</td>
</tr>
<tr>
<td></td>
<td>- Training and capacity building</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction phase</td>
<td>- Gathering of construction workers and machines and tools</td>
<td>- Waste-related activities:</td>
<td>Low, short-term and mitigable (taken place on entire the route, but the successive construction method can cause local impacts at the leveling positions in each period and during the construction stage)</td>
<td>- Traffic in project area - Air environment - households living and doing business along the road and schools</td>
</tr>
<tr>
<td></td>
<td>- Transportation of construction materials and residual soils and stones</td>
<td>- Dust from the excavation, ground leveling</td>
<td>Medium, short-term and mitigable (only taken place in the construction phase)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Construction activities:</td>
<td>- caused by dust and emission gases from material transportation vehicles</td>
<td>Low, short-term and mitigable (locally taken place in construction positions and only in construction phase)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ Ground leveling</td>
<td>- Impacts from dust and gases emitted from construction machines and equipment</td>
<td>Low, short-term and mitigable (mainly the residual solid things from the construction and are transported to the dumping site)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ Construction of roadbase</td>
<td>- Construction wastewater</td>
<td>- Locally affect the quality of the soil.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ Construction of drainage system, sewer system</td>
<td>- Low, short-term and mitigable(mainly the water washing construction tools and devices, the water volume is local and few)</td>
<td>Soil pollution at the temporary storage yards at the site - Debeautify the landscape</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Construction solid wastes from the construction period</td>
<td>- Low, short-term and mitigable(mainly the residual solid things from the construction and are transported to the dumping site)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Waste oil from the maintenance of</td>
<td>- Low, short-term and mitigable(locally and)</td>
<td>- Locally soil pollution at the site</td>
</tr>
</tbody>
</table>

19
<table>
<thead>
<tr>
<th>Phase</th>
<th>Activities</th>
<th>Potential impacts</th>
<th>Level of impacts</th>
<th>The affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction of embankments</td>
<td>+ Construction of embankments and retaining walls</td>
<td>vehicles, construction machines.</td>
<td>infrequently</td>
<td>+ Groundwater pollution</td>
</tr>
<tr>
<td>and retaining walls</td>
<td>+ Construction of safety System</td>
<td>- Activities of workers:</td>
<td>Low, short-term and mitigable(locally taken place at the work sites and during the construction phase)</td>
<td>- Prone to soil pollution</td>
</tr>
<tr>
<td></td>
<td>+ Domestic wastewater</td>
<td>- Domestic wastest</td>
<td>- Affect air environment and generate epidemic diseases</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ Domestic wastes</td>
<td></td>
<td>- Disturb the local landscape</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Waste-unrelated impacts:</td>
<td>- Noise, vibrant from construction machines and tools.</td>
<td></td>
<td>- Households living and doing business along and near the road</td>
</tr>
<tr>
<td></td>
<td>- Disturbances to the local communities because of the concentration of</td>
<td>Low, short-term and mitigable (taken place on entire the route, but the</td>
<td></td>
<td>- Offices along and near the road</td>
</tr>
<tr>
<td></td>
<td>workers at the site</td>
<td>successive construction method can cause local impacts at the leveling positions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Impacts on business activities</td>
<td>Medium, short-term and mitigable</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Impacts on tourism activities of tourists</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Impacts on local infrastructures because of material transportation</td>
<td>Low, short-term and mitigable (use 7-10 ton trucks to transport construction</td>
<td>Connection roads to the horizontal road and other roads related to wastewater system</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- No impact on local underground utilities</td>
<td>materials with not very long distance of transportation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Impacts on people’s and workers’ health</td>
<td>Low, short-term and mitigable (taken place only in the construction period due</td>
<td>Households along the connecting and material transport roads</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Risks arisen during the construction period</td>
<td>to successive method).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Traffic and labor accidents</td>
<td>Low, short-term and mitigable (because of the failure in the implementation of</td>
<td>Along the city roads related to wastewater system where material transportation trucks go through</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Risks from local flooding</td>
<td>Safety plan and training manners for workers)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation</td>
<td>- Operation and maintenance of the pump stations and sewage system</td>
<td>Low, short-term and mitigable (work scheduled in non-rainy season)</td>
<td>Major impacts on businesses and houses along city roads</td>
<td></td>
</tr>
<tr>
<td>phase</td>
<td>+ Possible breakage or stoppage of the wastewater pipelines and pump</td>
<td></td>
<td>Improved capacity for storm water and wastewater management in Dong Hoi City</td>
<td></td>
</tr>
<tr>
<td></td>
<td>stations may create wastewater clogging, pollution, odor nuisance</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Table 5. Environmental Impact Mitigation Measures for DH/W1: Improvement of Wastewater Management for Center City

<table>
<thead>
<tr>
<th>Component</th>
<th>Potential Environmental Impacts</th>
<th>Proposed Mitigation Measures</th>
<th>Location</th>
<th>Timing</th>
<th>Activity Reporting</th>
<th>Estimated Cost (USD)</th>
<th>Responsibility Supervised by</th>
<th>Implemented by</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-Construction, Detailed Design Phase</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confirmation of required resettlement, relocations, &amp; compensation</td>
<td>No negative environmental impacts</td>
<td>1. Not applicable</td>
<td>NA</td>
<td>NA</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Disclosure, &amp; engagement of community</td>
<td>No community impacts</td>
<td>2. Initiate Information Disclosure and Grievance process of IEE</td>
<td>For all construction sites.</td>
<td>Beginning of project</td>
<td>As required</td>
<td>No marginal cost⁵</td>
<td>PMU</td>
<td>PMU</td>
</tr>
<tr>
<td>GoV approvals</td>
<td>No negative impact</td>
<td>3. EIA report was approved in 2017. 4. For Component 2, construction contractor prepares CEMP in line with both the uEMP and GoV’s regulations prior to construction.</td>
<td>Component 2</td>
<td>Before construction</td>
<td>As required</td>
<td>Within cost of contractor</td>
<td>PMU/DoNRE</td>
<td>PMU/Contractor</td>
</tr>
<tr>
<td>Confirm GoV approved construction waste disposal sites</td>
<td>No negative impact</td>
<td>5. Disposal sites for the construction works of the project was agreed by local authorities. Waste is collected and treated as prescribed by Dong Hoi URENCO which signed contract with the Contract Client.</td>
<td>All sites</td>
<td>Before construction</td>
<td>As required</td>
<td>No marginal cost</td>
<td>PMU/DONRE</td>
<td>PMU</td>
</tr>
<tr>
<td>Preparation of the Contractor E&amp;S Specifications</td>
<td>No negative environmental impact</td>
<td>14. Ensure updated EMP is included in contractor tender documents, and that tender documents specify requirements of EMP must be budgeted. 15. Specify in bid documents that contractor must have experience with implementing EMPs, or provide staff with the experience. 16. The Bid documents of the CEMP contractor will include separate plans for issues: a) Solid waste management plan,</td>
<td>All sites</td>
<td>Before construction begins</td>
<td>Once for all tenders</td>
<td>No marginal cost</td>
<td>PMU</td>
<td>Consultant</td>
</tr>
</tbody>
</table>

⁵Costs need to be updated during detailed design phase

⁶No marginal cost indicates that costs to implement mitigation are to be built into cost estimates of bids of contractors
<table>
<thead>
<tr>
<th>Component</th>
<th>Potential Environmental Impacts</th>
<th>Proposed Mitigation Measures</th>
<th>Location</th>
<th>Timing</th>
<th>Activity Reporting</th>
<th>Estimated Cost (USD)</th>
<th>Responsibility Supervised by</th>
<th>Implemented by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obtain &amp; activate permits and licenses</td>
<td>Prevent or minimize impacts</td>
<td>b) Dredging and Sediment management plan, c) Hazardous substances management plan, d) Accidental spill response plan, e) Erosion control and sedimentation management plan, f) Public health and safety management plan, g) Workers health and safety plan, h) Air pollution, dust and noise management plan, i) Road traffic and access management plan, j) Air quality monitoring plan, k) Water quality monitoring plan, l) Cultural resources protection plan, m) Environmental training plan</td>
<td>All sites</td>
<td>Beginning of construction</td>
<td>Once</td>
<td>No marginal cost</td>
<td>PMU</td>
<td>Contractor</td>
</tr>
<tr>
<td>Study of water quality</td>
<td>Updating Baseline survey</td>
<td>18. Prior to construction, The PMU will be responsible for contracting a registered laboratory to perform water sampling at Nhat Le 1 bridge</td>
<td>At Nhat Le 1 bridge on Nhat Le river</td>
<td>Prior to construction</td>
<td>Once</td>
<td>No marginal cost</td>
<td>PMU</td>
<td>PIC</td>
</tr>
<tr>
<td>Capacity development</td>
<td>No negative environmental impact</td>
<td>19. Develop and schedule training plan for PMU/PIC/CC to be able to fully implement EMP, and to manage implementation of mitigation measures by contractors. 20. Create awareness and training plan for contractors (CC) who will implement mitigation measures.</td>
<td>All sites</td>
<td>Before construction begins</td>
<td>Initially, refresher later if needed</td>
<td>No marginal cost</td>
<td>PMU</td>
<td>PIC</td>
</tr>
<tr>
<td>Recruitment of workers</td>
<td>Spread of sexually transmitted disease</td>
<td>21. Use local workers as much as possible thereby reducing number of migrant workers</td>
<td>All work forces</td>
<td>Throughout construction phase</td>
<td>Worker hiring stages</td>
<td>No marginal cost</td>
<td>EA/PMU</td>
<td>Contractor’s bid documents</td>
</tr>
<tr>
<td>Component</td>
<td>Proposed Mitigation Measures</td>
<td>Location</td>
<td>Timing</td>
<td>Activity Reporting</td>
<td>Estimated Cost (USD)</td>
<td>Responsibility Supervised by</td>
<td>Implemented by</td>
<td></td>
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</tr>
<tr>
<td>Initiate EMP &amp; sub-plans</td>
<td>Prevent or minimize impacts</td>
<td>All sites</td>
<td>Beginning of construction</td>
<td>Once</td>
<td>No marginal cost</td>
<td>PIC</td>
<td>PMU &amp; Contractor</td>
<td></td>
</tr>
<tr>
<td>Training &amp; capacity</td>
<td>Prevent of impacts through education</td>
<td>PMU office, construction sites</td>
<td>Beginning of civil work and through construction phase</td>
<td>After each event</td>
<td>No marginal cost</td>
<td>PIC</td>
<td>PIC/PMU</td>
<td></td>
</tr>
</tbody>
</table>
| Workers health and safety plan,  | - Generation of Domestic wastewater and solid wastes  
| Public health and safety management plan and Waste Management | - Disturbances to the local communities because of the concentration of workers at the site | All worker sites          | Throughout construction phase   | Monthly             | No marginal cost | PIC           | CC-EHSC          
| Waste management – PAC-01        | - Generation of construction solid wastes from the construction period  
| Dredging and Sediment Management – PAC-02 | - Generation of waste oil from the maintenance of vehicles, construction | All construction sites   | Throughout construction phase   | Monthly             | No marginal cost | PIC/PMU       | Contractor        |
| Accidental spill                 | 22. The pre-mobilization meeting with contractors and Dong Hoi PMU and PIC, underscore the need for contractors to understand and adhere to uEMP.  
|                                  | 23. Prepare and secure approval of CEMP including individual management sub-plans for different potential impact areas that are completed in pre-construction phase |
|                                  | 24. Contractor to commit and retain dedicated staff for project duration to oversee EMP and CEMP implementation  
|                                  | 25. Implement training and awareness plan for PMU/PIC/CC and contractors.  
|                                  | 26. A solid waste collection program must be established and implemented.  
|                                  | 27. Install movable toilets at work sites and separate pit latrines for male and female workers.  
|                                  | 28. Volume balance of excavated soil was calculated suitably. Volume of additional backfilled soil is limited at the lowest level.  
|                                  | 29. Trucks carrying construction material are covered. All trucks used should have well fitted bodies and not be overtopped in loading to avoid soil scattering.  
<p>|                                  | 30. Temporary storage areas on the site need to be...                                           |</p>
<table>
<thead>
<tr>
<th>Component</th>
<th>Potential Environmental Impacts</th>
<th>Proposed Mitigation Measures</th>
<th>Location</th>
<th>Timing</th>
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<th>Estimated Cost (USD)</th>
<th>Responsibility Supervised by</th>
<th>Implemented by</th>
</tr>
</thead>
<tbody>
<tr>
<td>response plan – PAC 04</td>
<td>Management of Road traffic and Access - PAC-08</td>
<td>be away from water bodies and households; 31. Cover the material storage, setting up appropriate of mobilize material to the site to ensure that material will not obstruct at the site. 32. Uncontaminated soil and stone is transported and disposed at landfill sites (was mentioned in this uEMP report) 33. 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. Excavated soil which should be reused at other construction locations need to be added (if any). 34. A record of type, estimated volume, and source of disposed spoil must be recorded. 35. Suspected contaminated soil must be tested, and disposed of in designated sites identified as per Decision No.38/2015/ND-CP and Circular No.36/2015/TT-BTNMT. Before treatment or disposal contaminated spoil must be covered with plastic and isolated from all human activity.</td>
<td>All excavation areas, especially for pump stations and manhole</td>
<td>Throughout construction phase</td>
<td>Monthly</td>
<td>See Monitoring Plan for contaminated soil analyses</td>
<td>PIC, PMU, DONRE</td>
<td>Contractor</td>
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<td>36. 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. 37. Areas of disposal of solid and liquid waste to be mentioned in contents of uEMP report. 38. Provide adequate garbage bins at the construction sites.</td>
<td>All construction sites</td>
<td>Throughout construction phase</td>
<td>Monthly</td>
<td>No marginal cost</td>
<td>PIC&amp; PMU &amp;DoNRE</td>
<td>Contractor</td>
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<tr>
<td>Component</td>
<td>Potential Environmental Impacts</td>
<td>Proposed Mitigation Measures</td>
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<td>39. The placement of washing instruments/vehicles next to the water body will not be allowed to avoid the leaching of waste, sludge, soil and oil contaminated water and maintenance activities will be banned on the sites.</td>
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<td>40. Disposal of solid wastes into canals, stream, other watercourses, agricultural fields and public areas shall be prohibited;</td>
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</tbody>
</table>
|           |                                | 41. Burning of construction and domestic wastes shall be prohibited.  
42. A schedule of solid and liquid waste pickup and disposal must be established and followed that ensures construction sites are as clean as possible.                                                                 |
|           |                                | 43. Solid waste should be separated and recyclables sold to buyers in community.                                                                                                                                            |
|           |                                | 44. Excavation activities must be scheduled to avoid rainy to reduce suspended matter in runoff water entering the surrounding water bodies.                                                                                       |
|           |                                | Hazardous Waste  
Collection, storage, transport, and disposal of hazardous waste such as used oils, gasoline, paint, and other toxics must follow Circular no 36/2015/TT-BTNMT on management of hazardous waste. |
<p>|           |                                | 48. Wastes should be separated (e.g., hydrocarbons, batteries, paints, organic solvents)                                                                                                                                       |
|           |                                | 49. Wastes must be stored above ground in closed, well labeled, ventilated plastic bins in good condition well away from construction.                                                                                                 |</p>
<table>
<thead>
<tr>
<th>Component</th>
<th>Potential Environmental Impacts</th>
<th>Proposed Mitigation Measures</th>
<th>Location</th>
<th>Timing</th>
<th>Activity Reporting</th>
<th>Estimated Cost (USD)</th>
<th>Responsibility Supervised by</th>
<th>Implemented by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management of Air quality, Dust and Noise - PAC-07</td>
<td>- Dust from the excavation, ground leveling - Impacts caused by dust and emission gases from material transportation vehicles - Impacts from dust and gases emitted from construction machines and equipment. Noise, vibrant from construction machines and tools.</td>
<td>52. On hot and dry days, regularly watering on the transportation routes and on the construction site 2 times per day to reduce dust especially the populated areas. 53. Cover or keep moist all stockpiles of construction aggregates, and all truckloads of aggregates. 54. Minimize time that excavations and exposed soil are left open/exposed. Backfill immediately after work completed. 55. As much as possible restrict working time between 17:00 and 7:00. In particular are activities such as pile driving. 56. Maintain equipment in proper working order 57. Replace unnecessarily noisy vehicles and machinery. 58. Vehicles and machinery to be turned off when not in use. 59. Construct temporary noise barriers around excessively noisy activity areas where possible.</td>
<td>All construction sites Attention to sites near sensitive places e.g. schools and hospitals</td>
<td>Fulltime</td>
<td>Monthly</td>
<td>No marginal cost</td>
<td>PIC &amp; PMU</td>
<td>Contractor</td>
</tr>
<tr>
<td>Public Health and safety Management Plan – PAC-06</td>
<td>- Impacts on people’s and workers’ health - Traffic and labor accidents</td>
<td>60. Proper fencing, protective barriers should be provided around all construction sites. 61. Sufficient signage and information disclosure, and site supervisors and night guards</td>
<td>All construction sites. Attention to</td>
<td>Fulltime</td>
<td>Monthly</td>
<td>No marginal cost</td>
<td>PIC &amp; CC-EHSC</td>
<td>Contractor</td>
</tr>
<tr>
<td>Component</td>
<td>Potential Environmental Impacts</td>
<td>Proposed Mitigation Measures</td>
<td>Location</td>
<td>Timing</td>
<td>Activity Reporting</td>
<td>Estimated Cost (USD)</td>
<td>Responsibility Supervised by</td>
<td>Responsibility Implemented by</td>
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<tr>
<td>Management of Road Traffic and Access – PAC-08</td>
<td>should be placed at all sites. Worker and public safety guidelines of GoV should be followed (DoLISA regulations &amp; guidelines). 62. Speed limits suitable for the size and type of construction vehicles, and current traffic patterns should be developed, posted, and enforced on all roads used by construction vehicles. 63. Standing water suitable for disease vector breeding should be filled in. Vertical and longitudinal drainage culverts will be designed to drainage for the road 64. Worker education and awareness seminars for construction hazards should be given at beginning of construction phase, and at ideal frequency of monthly. A construction site safety program should be developed and distributed to workers. 65. Appropriate safety clothing and footwear should be mandatory for all construction workers. 66. Adequate medical services must be on site or nearby all construction sites. 67. Drinking water must be provided at all construction sites. 68. Sufficient lighting is used during necessary night work. 69. All construction sites should be examined daily to ensure unsafe conditions are removed. 70. Report any construction accident or near miss to the PMU, PIC within 24h. Report serious accidents involving hospitalization or death of workers or residents to DOLISA and ADB within sites near sensitive places e.g. schools and hospitals</td>
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<tr>
<td>Component</td>
<td>Potential Environmental Impacts</td>
<td>Proposed Mitigation Measures</td>
<td>Location</td>
<td>Timing</td>
<td>Activity Reporting</td>
<td>Estimated Cost (USD)</td>
<td>Responsibility Supervised by</td>
<td>Implemented by</td>
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</tbody>
</table>
| Civil works | Generation of construction wastewater | **71.** Earthworks should be conducted during dry periods.  
**72.** All construction fluids such as oils, and fuels should be stored and handled well away from Nhat Le River and other nearby lakes.  
**73.** No waste of any kind is to be thrown into water bodies.  
**74.** No washing or repair of machinery near surface waters. | All construction sites  
Attention to sites near sensitive places e.g. schools and hospitals | Throughout construction phase | Monthly | No marginal cost | PIC&CC-EHSC ESS | Contractor |
| Management of Road Traffic and Access – PAC-08 | - Traffic and labor accidents  
- Impacts on business activities  
- Impacts on tourism activities of tourists | **75.** Schedule construction vehicle activity during light traffic periods. Create adequate traffic detours, and sufficient signage & warning lights.  
**76.** Post speed limits, and create dedicated construction vehicle roads or lanes.  
**77.** 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.  
**78.** Demarcate additional locations where pedestrians can develop road crossings away from construction areas.  
**79.** Provide construction road and walkway lighting. | All construction sites  
Attention to sites near sensitive places e.g. schools and hospitals | Fulltime | Monthly | No marginal cost | PIC&ESS | Contractor |
| Implement Erosion control and sediment Control – PAC-05 | Risks from local flooding | **80.** Provide adequate short-term drainage away from construction sites to prevent ponding and flooding.  
**81.** Install temporary storm drains or ditches for construction sites  
**82.** Frequently clear the flow at the construction site to limit blockage capacity. | All sites  
Design & construction phases | Monthly | No marginal cost | PIC & PMU | Contractor |
<table>
<thead>
<tr>
<th>Component</th>
<th>Potential Environmental Impacts</th>
<th>Proposed Mitigation Measures</th>
<th>Location</th>
<th>Timing</th>
<th>Activity Reporting</th>
<th>Estimated Cost (USD)</th>
<th>Responsibility Supervised by</th>
<th>Implemented by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement Cultural resources protection plan,</td>
<td>Damage to cultural property or values, and chance finds</td>
<td>83. Clean construction material at the site, cover materials that are easily dissipated by the wind in so that they are not swept away with the water flow, causing water flow block and flooding at the site.</td>
<td>All construction sites</td>
<td>At the start, and throughout construction</td>
<td>Monthly</td>
<td>No marginal cost</td>
<td>PIC &amp; PMU</td>
<td>Contractor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>84. Chance finds of valued relics and cultural values should be anticipated by contractors. Site supervisors should be on the watch for finds. 85. Upon a chance find all work to stop immediately, find left untouched, and PMU notified to determine if find is valuable. Culture section of Quang Binh Department of Culture and Sports (DCS) notified by telephone if valuable. 86. Work at find site will remain stopped until DCS allows work to continue.</td>
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<tr>
<td>Operation Phase</td>
<td>Operation of Dong Hoi City Wastewater System</td>
<td>- Operation and maintenance of the pump stations and sewage system - Possible breakage or stoppage of the wastewater pipelines and pump stations may create wastewater clogging, pollution, odor nuisance 87. Strictly follow the proper operational procedures for wastewater system and pump stations</td>
<td>At sites</td>
<td>Full time</td>
<td>Annually</td>
<td>O&amp;M</td>
<td>Quang Binh URENCO</td>
<td></td>
</tr>
</tbody>
</table>
4. Key Environmental Management Procedures

4.1. Communication Procedures

4.1.1. Internal Communication

33. The efficiency of environmental and social management is dependent upon the clear organisation of communication among the stakeholders. In particular, there must be a clearly defined channel for handling rapidly all possible environmental disorders and implementing efficiently the necessary remedial actions, especially in emergency situations.

34. Table 6 presents the key links regarding internal communication among the stakeholders during the construction period. This procedure must be laid down in greater detail before the start of the project in accordance with the Contractor EHS policy and the final Project organisation.

<table>
<thead>
<tr>
<th>ORIGIN</th>
<th>RECIPIENT</th>
<th>FREQUENCY</th>
<th>SUBJECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIC-Project Manager</td>
<td>PIC-ES</td>
<td>Weekly</td>
<td>Updating the construction programme; specific construction activities</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>in the coming period and their location</td>
</tr>
<tr>
<td>PIC-Project Manager</td>
<td>PMU-ESO, PIC-ES</td>
<td>Ad hoc</td>
<td>Additional needs for land, or notification of a change in construction</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>techniques</td>
</tr>
<tr>
<td>PIC-ES</td>
<td>PIC-Project Manager</td>
<td>Weekly</td>
<td>Weekly report on environmental events (EE) detected and their treatment; programme of activity of the PIC-ES for the coming week</td>
</tr>
<tr>
<td>PIC-ES</td>
<td>PIC-Project Manager</td>
<td>Ad hoc</td>
<td>Communication of EE of levels II or III</td>
</tr>
<tr>
<td>PIC-ES</td>
<td>PIC-Project Manager</td>
<td>Monthly</td>
<td>Monthly report on activity and results of monitoring for review and approval before forwarding to the PMU-ESO</td>
</tr>
<tr>
<td>PIC-ES</td>
<td>PIC-Inspectors</td>
<td>Weekly</td>
<td>Updating the construction programme; specific construction activities</td>
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<tr>
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<td></td>
<td>in the coming period and their location, particular directives</td>
</tr>
<tr>
<td>PIC-Inspectors</td>
<td>PIC-ES</td>
<td>Weekly</td>
<td>Weekly activity report, list of observed EE of level I</td>
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<tr>
<td>CC-EHSC</td>
<td>PIC-ES</td>
<td>Monthly</td>
<td>List of training modules followed in the past month and the personnel</td>
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<td>concerned (list of attendance)</td>
</tr>
<tr>
<td>CC-EHSC</td>
<td>PIC-ES</td>
<td>Fortnightly</td>
<td>Updating of new activity zones for the coming 2 weeks and operations</td>
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<td></td>
<td>presenting a particular risk for the environment; results of monitoring</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>of the previous 2 weeks</td>
</tr>
<tr>
<td>PIC-Project Manager</td>
<td>PMU-ESO</td>
<td>Immediate</td>
<td>Memo to inform on any observed non-compliance on level III; proposal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(same day)</td>
<td>to suspend the works on the incriminated site if justified</td>
</tr>
<tr>
<td>PIC-Project Manager</td>
<td>PMU-ESO</td>
<td>Monthly</td>
<td>Transmission of the monthly activity report including environment as</td>
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<td></td>
<td></td>
<td></td>
<td>prepared by the PIC-ES</td>
</tr>
<tr>
<td>PIC-ES</td>
<td>PIC-Project Manager</td>
<td>Quarterly</td>
<td>Summary report on significant environmental events (Levels II and III)</td>
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<tr>
<td></td>
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<td>observed, on the decisions taken, and on the measures implemented;</td>
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<td></td>
<td>proposal, if necessary, to modify certain mandatory thresholds or</td>
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<td></td>
<td>obligations of the Contractor</td>
</tr>
<tr>
<td>PIC-Project Manager</td>
<td>PMU-ESO</td>
<td>Quarterly</td>
<td>Summary report on significant environmental events (Levels II &amp; III)</td>
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<td>observed, on the decisions taken, and on the measures implemented;</td>
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<td></td>
<td>request for approval of the proposed modifications</td>
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<tr>
<td>PIC</td>
<td>PMU-ESO</td>
<td>Yearly</td>
<td>Annual audit of construction sites and submission of an annual</td>
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<td>environmental audit report</td>
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</tbody>
</table>

Note: PMU-ESO (Environment & Social Officer from Implementing Agency PMU) – PIC-ES (Environment Staff from Project Implementation Consultant) – CC-EHSC (Contractor's EHS Coordinator) - EE (Environmental Event = detected non-compliance)
4.1.2. External Communication

35. External communication for environmental and social subjects will be the prerogative of the IA through the intermediary of his PMU-ESO, assisted by the IA's Director of Communication. This communication will essentially concern exchanges of information with the media, with NGOs and with Government representatives at Central and Ward/Commune levels. The PIC-ES and the CC-EHSC will only intervene in these exchanges when expressly invited to do so by the IA.

36. The PMU-ESO will regularly contribute for all E&S aspects to the activity report provided to ADB, various government organisations and NGOs in Vietnam.

4.2. Information Disclosure and Public Consultation

37. Formal disclosure to affected persons and stakeholders of information on the Dong Hoi UECCAP in several areas of Dong Hoi City have been occurred during the IEE preparation in 2014. The process is meant to form the beginning of continued information disclosure and stakeholder involvement as the Project is implemented. As part of the stakeholder communication strategy regular information exchange, and meetings with stakeholders are strongly encouraged throughout implementation of the Project.

38. The IEE was made easily available to the stakeholders contacted during examination in written and verbal forms in local language of Vietnamese. At the minimum the Executive Summary of the IEE was translated to local language and distributed to all APs. The updated EMP will be available on the PMU website and should be posted at ward/communal offices of the project area before the construction starts. Similarly, all Project reporting with specific reference to stakeholder consultation minutes, environmental monitoring, and reports on EMP implementation released by the EA/IA will be available at the same offices and websites. The updated IEE will be available on the ADB website as well as EMP reporting that is prepared by the EA/IA after implementation begins.

39. During the updating of local EIA, a written consultation with local People’s Committees in 05 communes and ward of Bao Ninh, Bac Ly, Nam Ly, Dong Phu and Phu Hai was conducted by Dong Hoi PMU from November 2017. Follow up direct community consultation meetings were held by the EIA consultant to discuss project scope and possible impacts of the project for both environmental and social aspects. The meetings are convened in communes/ward from November 2017 to May 2018. The public meeting consisted of the following two component procedures:

- The PMU and environmental and social consultants introduced the Project including the project location and design; and
- The environmental and social consultants presented ADB’s environmental policy, safety regulations in the Viet Nam road and urban construction sector, anticipated social and environmental impacts and respective mitigation measures, the grievance redress mechanism for environmental and resettlement problems.

40. During the meeting, most people showed their consent with the proposed components of the project. They also raised their questions and comments on the environmental issues. The environmental national consultant answered and explained all questions to the participants. A larger number of the concerns are on environmental impacts during construction period and prompt implementation of mitigation impacts. Their comments regarding the area related to Package DH/W1 have been recognized and properly responded by consultants and Dong Hoi PMU representatives as presented in the following table.
### Table 7. Summary of Public Consultation results

<table>
<thead>
<tr>
<th>Meeting Venue/Date</th>
<th>Participants</th>
<th>Number of participants</th>
<th>Opinion of the community</th>
<th>Feedback from the project owner/consultant</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>People's Committee Office of Nam Ly Ward, Dong Hoi City 8:00 4, May 2018</td>
<td>Representatives of local authorities: Ward Chairman, Fatherland Front Cluster Heads, PMU staff Project consultants</td>
<td>18</td>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>People's Committee Office of Bac Ly Ward, Dong Hoi City 14:00 31, November 2017</td>
<td>Representatives of local authorities: Ward Chairman, Fatherland Front Cluster Heads, PMU staff Project consultants</td>
<td>20</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>People's Committee Office of Dong Phu Ward, Dong Hoi City 14:00 4, May 2018</td>
<td>Representatives of local authorities: Ward Chairman, Fatherland Front Cluster Heads, PMU staff Project consultants</td>
<td>17</td>
<td>10</td>
<td>7</td>
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</table>
Following the loan agreement (Schedule 5, para.17), the PMU needs to disclose relevant information from environmental monitoring reports to the respective affectee people under environmental safeguards, promptly upon submission to ADB. Every time the SEMR is cleared by ADB, the PMU will, with the support of PIC-ES, translate the summary of the SEMR and post its hard copy at the Office of all Ward People’s Committees.

4.3. Grievance Redress Mechanism (GRM)

Quang Binh PPC would ensure that all grievances and complaints on any aspect of land acquisition, compensation and resettlement and environmental issues would be addressed in a timely and satisfactory manner. All possible avenues would be made available to AP to air their grievances by establishing a well-defined grievance redress mechanism. AP with grievances can send their complaints or grievance to parties involved in Project implementation related to any aspect including incorrect estimates of number of individual graves, dissatisfaction associated with project attempts to accelerate grave relocation activities, requirements to pay informal transaction fees, or any other relevant issue associated the sensitive processes associated with grave relocation. AP seeking grievance redress are exempt from the payment of any fees – formal or informal - and Quang Binh PPC warrants it will not permit local authorities to collect such fees. The costs incurred by the AP during the grievance process will be borne by the project.

The grievance redress mechanism for land acquisition and resettlement of the Urban Environment and Climate Change Adaptation Project for Dong Hoi City shall follow the provisions of the Land Law No. 45/2013/QH13; Law on Grievances No. 02/2011/QH13; and the Decree No. 47/2014/NĐ-CP of the Government on Compensation, Assistance and Resettlement when the States Recovers Lands. The resolution of the complaint will go through the following four (04) steps:

**Step 1:** The AHs may meet with the Chairman of Commune People Committee/Ward People’s Committee (CPC/WPC) directly or will lodge the complaint with the CPC/WPC. The chairman of CPC/WPC will act on the grievance within a maximum period of 30 working days. The office of the CPC/WPC will acknowledge receipt of the grievance and will record the actions taken by CPC on the grievance.

**Step 2:** If after 30 working days the Chairman of CPC/WPC has not acted on the grievance, or if the AH is not satisfied with the action taken by CPC/WPC, the AH may meet directly with the chairman of City People’s Committee or lodge the complaint with the City People’s Committee. The City People’s Committee will act on the grievance within a maximum period.
of 45 working days. The office of the City People’s Committee will acknowledge receipt of
the grievance and will record the actions taken by City People’s Committee on the grievance.

**Step 3:** If after 45 working days the Chairman of City People’s Committee has not acted on the

**Step 4:** If after 45 working days the Chairman of PPC has not acted on the grievance, or if the AH is

44. A grievance resolving task-force will be established by Dong Hoi City People’s Committee that
consists of representatives of concerned city agencies (Natural resources and Environment;
Construction; Finance, Justice; Labours and Social Affairs; and Centre for Land Fund Development)
and two representatives of AHs (one male and one female). The grievance resolving task-force will
manage the Project grievance redress process and support the AHs for grievances to be addressed
satisfactorily.

45. Grievance redress mechanism was consulted and discussed with affected households and
affected households agreed with the mechanism – this was recorded in minutes of public consultative
meetings.

46. The above grievance redress mechanism will be disclosed and discussed again with the APs prior
to loan appraisal by ADB and during the updating of the RP to ensure their understanding of the
process. Dong Hoi PMU and the Centre for Land Fund Development are responsible for following-up
resolution of grievances of the AP. However, it also needs to be stressed that Quang Binh PPC hopes
that all grievances can be resolved at the local level.

### 4.3.1. Procedure for Handling Environmental Events

47. An important element of the process of communication among the parties is the ranking of events
which do not meet the obligations and environmental objectives assigned to the project. These
situations detected on site by the PIC-ES and PIC-Inspectors must then be notified to a higher level
but following procedures that are graduated according to the extent of the risk and the urgency of
remedial action. These environmental events could be ranked according to the system of quality
assurance applied to the construction works, in which case their subdivision would be variable
according to the subdivisions considered for non-conformity of a technical nature. In the present EMP,
considering the absence of information on the project’s future quality assurance plan, preference is
given to an evaluation system specific to environmental aspects, better adapted to the problems
encountered and which represents a proven and reliable system, which can work satisfactorily even
in the absence of an efficient quality assurance system.

48. Environmental events correspond to non-conformities (non-compliances) and are subdivided into
three levels. The communication and handling procedures depend on the level of non-conformity.
Level III represents the most serious incidents, while level I represents the incidents of least gravity.

**Level I (Minor Incident):** Situations on Level I are addressed on a day-to-day basis at the time of
site visits and routine meetings; the recommended measures are generally discussed on the spot
with the construction teams concerned. Formal communication takes place through the
Environmental Event (EE) report prepared by the EMU Inspectors and handed to the PIC-ES for
official notification to the concerned CC-EHSC.
**Level II (Moderate Incident):** The EE of Level II is notified by the PIC-ES to the PIC-Project Manager and the CC Site Supervisor the same day as the situation is observed, and within three days to the PMU-ESO. The PMU-ESO informs the PMU Project Director of the situation and details the proposed corrective measures, which must be implemented as rapidly as possible.

**Level III (Major Incident):** The PIC-Project Manager and the PMU Project Director must be informed on the day an event is observed. The corrective measures must be applied within three days. Should more time be required to implement a corrective measure, or if the risk is imminent, the PIC-Project Manager may order suspension of the works concerned until the observed situation returns to normal.

49. Following diagram (0) below illustrates the principles of this non-conformity procedure and shows how the approach favours direct resolution on site of the less serious EE (Level I) by direct communication with the construction workers, and how the senior levels of responsibility are progressively involved in the processes to solve the more serious EE (Levels II and III). The full arrows denote the decision processes, while the dotted arrows denote the reporting and information processes.

50. This procedure is often implemented on complex work sites, and generally gives satisfactory results. It also offers three advantages:

- ✓ a mechanism allowing the works to be stopped if the situation is deemed to be hazardous;
- ✓ provision for feedback so that the site inspectors monitoring implementation of the requested measures can ensure that the remedial action has been taken;
- ✓ the possibility of initiating an incident enquiry in order to determine the deep-seated causes of the incident and to assess whether they justify changes in the specifications, the requirements or the methods, to prevent reoccurrence of such a situation in the future.
Figure 9. Diagram of Procedures in Case of Non-conformity Observed
4.4.  Action Plan prior to Construction Works (PAP)

51. All the elements described above reflect the main details of the organisation to be set up for supervision and monitoring in the construction phase. However, it is essential to ensure that the necessary means and references are available and totally operational from the time the works start. To this effect, a certain number of activities are to be undertaken before the start of construction works. These actions cover the aspects of recruitment and organisation and training for the PMU. For these studies, the PMU will call on specialised consultants (either International or National). The main recommended actions, resulting from the IEE are detailed in the following paragraphs in the form of a Preliminary Action Programme (PAP).

52. Following PAPs are proposed to strengthen capacity for PMU regarding environmental compliance and Preparation of the Contractor E&S Specifications.

4.4.1. PAP-01: ADDITIONAL STUDY OF WATER QUALITY

53. The PMU will be responsible for contracting a registered laboratory to perform, during the construction period, air, noise and water quality measurements in compliance with Vietnamese regulations. The first survey of the appointed laboratory will take place as soon as the Project starts, prior to the start of construction works in order to have a reference value against which to evaluate the impact of the construction activities.

54. The point will be sampled at Nhat Le River at the level of Nhat Le 1 bridge.

55. The following parameters will be measured during this first survey, in accordance with standard QCVN 08: 2015/BTNMT: pH, Total suspended solid (TSS), COD, BOD5, Cl-, Pb, Fe, oil & grease.

56. If necessary, these results will provide an opposable baseline during construction activities.

4.4.2. PAP-02: Training of the PMU-ESO and PMU Staff

57. The PMS-EC will carry out training of the ESO and other PMU staff at the early stage of PMU-ESO recruitment. Purpose is to have the PMU-ESO and his staff fully operational at the start for the project construction. Training will be carried out in Dong Hoi and focus on:

- Review of impact analysis from the IEE
- Review of EMP Program of Action
- Organization for PMU for EMP implementation
- Basics for site inspection: organization of visits, frequency, control checklist;
- Basics for non-compliance process: reporting procedure and form, follow-up, procedure for resolution approval;
- Data management for PMU-ESO: data base organization, registers;
- Structure and content of weekly, monthly reports.

4.4.3. PAP-03: Preparation of the Contractor E&S Specifications

58. Effective consideration of the environment during construction activities presupposes the production of a clear, complete and detailed contractual document at the time the contract is awarded. This means including the specifications which will lay down the environmental and social obligations to be imposed on contractors by the Project Owner in the Tender Documents. These requirements dictated by the Owner will be presented in a document entitled ‘Environmental and Social Obligations of the Contractors under the project, which will be prepared together with the Technical Specifications (General and Particular) of the Project. For that purpose, the PMU will request a specialized environmental Consultant to assist the Technical Consultant in charge of the Detailed Design and of the Tender Documentation.
59. The document will set out the measures that the contractors involved in construction will have to take to comply with the recommendations and measures identified in the course of the EIA and set out in the form of Action Plans. Without being exhaustive, these documents will include the EHS management directives for contractors and the directives concerning the process of classification, investigations and analysis related to the EHS events as well as general clauses concerning the overall incident prevention program for the construction sites.

60. These obligations will be articulated around the principal themes of environmental and social management for all construction activities related to the project components in Dong Hoi, which will lie down:

- the general specifications for good environmental management which will be applicable to the contractor at any point within the work site and at all times, covering areas such as: training/awareness of employees on protection of the environment, management of hazardous substances and waste, protection of biodiversity, prevention of water and air pollution, preservation of soils, rehabilitation of sites;
- the minimum conditions to be established in the contractors' camps and installations, covering aspects related to housing, catering, waste management, drinking water, sewerage and conditions of public hygiene;
- the minimum conditions to be observed by the contractor in the field of employees' health and safety;
- the minimum conditions to be observed by the contractor with a view to protecting the environment of the sites as well as that of the areas contiguous, most densely urbanized;
- the minimum conditions to be observed by the contractor in managing the social aspects of construction activity; this heading includes in particular the procedure which the contractor will be required to follow in case of damage to any private property.

61. A specific monitoring program will be set up to ensure that the contractors fulfil their environmental and social obligations, detailed in the following section relating to the Construction Phase.

62. In practice, the selected contractors will be asked to draw up several specific environmental plans, within a specified period after the contract is notified, describing how these contractors (and their sub-contractors) will be organised and how they will work together to meet their environmental and social obligations. In principle, the list should cover the following key fields:

   a. Solid waste management plan,
   b. Dredging and Sediment management plan,
   c. Hazardous substances management plan,
   d. Accidental spill response plan,
   e. Erosion control and sedimentation management plan,
   f. Public and workers health and safety plan,
   g. Air pollution, dust and noise management plan,
   h. Road traffic and access management plan,
   i. Water quality monitoring plan
   j. Cultural resources protection plan,
   k. Environmental training plan

4.5. **Action Plan during Construction (PAC)**

63. This action plan provided below is sufficiently detailed to provide the baseline information for further preparation of Contractor Environmental and Social Specifications to be included later into the Tender documentation.

64. The following Program of Action will be implemented during the construction phase:
4.5.1. PAC-01: Waste Management

65. A waste management programme will be established and will be mandatory for contractors and their sub-contractors. The programme will include two waste management plans which will be prepared and implemented by the contractors following the common directives fixed by the Implementing Agency (Dong Hoi PMU). The first relates to wastes of the domestic type (essentially generated by the camps) and non-hazardous wastes generated on the construction sites, while the second is related to hazardous wastes. The objectives of the programme are:

- to minimize the generation of wastes by carefully considered use of raw materials;
- to sort and treat the wastes in order to limit their environmental impact;
- to raise awareness and train personnel in good waste management practices.

66. These plans will include procedures, in accordance with local regulations or with international best practice, concerning the handling, transport, storage, treatment and elimination of wastes according to their category:

- **Non-hazardous wastes (Group A):** putrescible wastes from the camps and canteens, paper, cardboard, plastics, wood and vegetation, inert wastes from construction or demolition (concrete, scrap iron, bricks, breezeblocks, etc.);
- **Hazardous wastes (Group B):** wastes that are corrosive, explosive, toxic, representing a degree of danger for humans or for the ecosystem. In the context of the present project components considered, this will essentially be engine oils and used hydraulic fluids, the residues of paints, solvents and resins, fluids from transformers, first aid medical wastes, sludge from septic tanks and chemical mobile toilets, various concrete additives (but with less danger for the latter).

4.5.1.1. Non-Hazardous Waste Management

67. A system of waste segregation at source, ensuring separation of metal products (including drink cans or food cans), plastic products (bottles, cartons, wrapping, etc.), glass bottles, paper and cardboard, will be set up on the construction sites. All these products will, as far as possible, be made available for collection by outside contractors responsible for recycling.

68. On the construction sites, metal wastes that have not been polluted by hazardous substances (oils, acids, paints, etc.) will be collected in containers for recycling. The same applies to wood and cardboard and plastic packaging. It will be absolutely forbidden to burn plastic or lubricants.

69. Concrete and plaster debris that is not reused will be collected and dumped separately from dredged materials from construction of pump station and installing underground wastewater pipelines. The excavated and waste material will be dumped at 02 following sites (see Annex 5).

- **Cua Phu Disposal Site** in Cua Phu Village, Bao Ninh Commune, about 3.2km from the construction site. This site has an area of 8.0ha and is under management of Quang Binh URENCO. The site has an area of 8ha and can handle to the disposal height of 2m and capable of storing the waste amount to be disposed from the package.

- **Co Cup Disposal Site** in Hamlet 6, Loc Ninh Commune, about 8km from the site. The excavated waste from construction of the road and its associated works and tree clearance will be dumped here. The dump site has an area of 13.5ha, operational from 2002 to 2008. Though it is closed, Quang Binh URENCO accepts disposal from this project to increase the topsoil coverage of the site and accelerate the site’s environmental rehabilitation.

70. The Contractor will prepare a detailed Action Plan indicating the anticipated volumes of non-hazardous waste to be produced, the procedures for management, collection and disposal, the technical means implemented, the location and dimensions of the controlled landfill, the contact details of the companies involved in waste recycling, as well as the training programs to raise awareness among workers on this subject.
4.5.1.2. Hazardous Waste Management

71. Used engine lubricants from the maintenance of construction plant and vehicles and the floating oily residue from oil separators will be collected in 200 litre drums with a view to recycling. The drums will be stored in a dry and covered area, surrounded by a bund the height of which will ensure retention of a volume equal to at least 110% of that of the largest container stored in the area, and equipped with an oil separation system at its outlet. The contractor will identify an acceptable recycling point (refinery) or a plant where the waste can be burned (fuel for industrial use such as a cement factory or metal foundry). A register will be maintained to record all handling of used lubricants, for the purpose of monitoring wastes. Machine and plant maintenance operations will be centralised in appropriate areas allowing collection of the used oils and hydraulic liquids.

72. Used chemical substances: the principal action to limit the management of used chemical is to use ones with low toxicity values and use the minimum quantity of chemical substances required for efficient operation. Used chemical substances will be stored in containers or drums in the same storage areas as used oils, as long as these substances are compatible. Otherwise, they will be stored in a safe area protected from inclement weather. The possibility of reuse in situ will be evaluated; failing this, the materials will be returned to the supplier or to appropriate waste treatment installations.

4.5.2. PAC-02: Dredging and Sediment Management

73. The estimation of excavated materials will be produced from construction of wastewater pipelines and pump station for DH/W1 Package, in accordance with the project calculation in the EIA report, amounted to 30,000 m³. About 18,000 m³ will be backfilled at site.

74. The Contractor(s) in charge of dredging operations will be required to produce a Dredging and Sediment Management Plan which will highlight the sediment management from road and wastewater system earthworks. The Plan will respect the objectives set out in the Tender Documents which will include:

- Describe methods of dredging/excavation in order to confine suspended sediment;
- Assess total production of sediment expected volume re-usable for fill with anticipated schedule of production;
- Define location and size of areas intended for temporary storage of re-usable sediment for fill;
- Store material in conditions that will ensure security in terms of stability and erosion; to this effect, a maximum height of 6 m should be imposed, with a berm half way up the slope;
- Provide drainage at the foot of the stockpiled material and anti-erosion measures on the slopes;
- Define hauling route to the designated disposal site (Co Cup Disposal Site).

4.5.3. PAC-03: Hazardous Substances Management

75. A plan for the management of chemical substances will be prepared by the Contractor, detailing the measures planned for minimising pollution risks. The programme will be applicable to all project activities involving the handling, storage and use of substances catalogued as hazardous. The information set out in this programme will cover the following aspects:

- procedure for registering and monitoring any substance of a hazardous nature including in particular the drafting of a safety data sheet per substance;
- procedure for identification of alternative and less hazardous substances;
- handling and storage conditions, including details on compatibility of the substances;
- emergency procedures in case of a spill;
- conditions for final treatment of residues or recycling.

76. Chemical substances will be stored in a locked container located on a watertight floor surrounded by a bund, capable of storing at least 110% of the volume of the largest receptacle placed
there. Each storage site will be provided with a substance collection pit, absorbent products and extinguishers. Standard signs will warn of the presence of toxic substances.

77. The substances’ safety data sheets will be available on the site and from the CC-EHSC of the contractor concerned. All chemical substances stores will be regularly inspected in order to detect any possible leakage or damage to the containers.

78. The largest volume of chemical substances anticipated under a project of this type concerns hydrocarbons (diesel, oil and grease). The programme will lay down the conditions to be respected for storage and refuelling of machinery.

79. The programme will specify the pollution control equipment to be installed by contractors at the storage sites: anti-pollution kits, extinguishers, substance description sheets, etc. At each site, the employees in charge of handling chemical substances will be given special training relative to best practice and emergency measures in case of an incident (see PAC-04 below).

4.5.4. PAC-04: Accidental Spill Preparedness and Response Plan

80. An anti-pollution program will be established to define the intervention procedures in case of leaks or accidental spills of liquid hazardous substances. This programme will include a description of the organisation planned for such situations and the work stations of key people. Specific training will be given for the activities to be performed in case of emergency intervention, for all staff and workers involved in any stage of the procedure.

81. Spills of less than 200 litres may be managed at the local level by the CC-EHSC present on the site, as representing an environmental event (non-conformity) of Level I. For greater volumes, they will be considered as an EE of Level II and will therefore require consultation of a higher level in the organisation. The authorities and local departments to be advised in case of an emergency at the local and regional level will be identified and informed of the response procedure put in place. Such a situation may occur in case of large accidental spill into Nhat Le River. In order to meet the objectives of this program, a Risk Response Plan will be prepared by the Contractor in conformity with (i) the emergency procedures and the response to major risks which will also be demanded by the PIC and (ii) the principles of ISO 14001.

4.5.5. PAC-05: Erosion and Sediment Control

82. Erosion control measures will be applied to all land that is stripped or excavated, all embankments and temporary or permanent deposits of materials in order to minimise and control the resulting sediment loads before they reach the storm water drainage and the river. This protection will involve, on one hand, the implementation of methods for stabilising slopes and, on the other, collection of surface water runoff.

83. Erosion control will include methods that are incorporated into construction practices, as the provision of temporary protection of a mechanical nature (geotextile covering sheets, sediment barriers).

84. Drainage of the entire area of any construction operations will be provided prior to the start of any other activity. Drained water will be channelled towards one or several sedimentation basins designed following accepted best practice and sized to contain the rainwater falling in 24 hours with a return period of two years.

85. The contractor will present a Drainage and Erosion and Sedimentation Control Plan setting out the applicable principles and practices adopted for the Project. For each site to be opened for construction activities, a detailed plan of the drainage system and the proposed anti-erosion measures will be prepared by the contractor and submitted to the PIC-ES for non-objection at least three weeks before starting works on the site. The drainage channel and sedimentation basins will be built as a priority before any other activity is carried out.
4.5.6. PAC-06: Public Health and Safety Management Plan

86. The program requirements will be described in detail in the Tender Documents and will cover the following main areas of action:

- First aid facilities established on the construction or camp site; hospital facilities available in Dong Hoi City;
- emergency intervention procedures in case of an accident;
- employee surveillance measures: medical check-up on recruitment, annual medical check-up;
- regular cleaning of the drainage system;
- regular cleaning of the sanitary facilities provided, in particular toilets and septic tanks;
- waste management and regular cleaning of refuse bins;
- systematic program to keep employees aware of good hygienic practices;
- monitoring hygiene in canteens;

87. A Health and Safety Management Plan shall be prepared by the concerned contractors and shall be non-objected by the SE. The plan shall be designed to ensure that Vietnamese labor regulations as well as international good practices related to health and safety are efficiently implemented on site and shall comply with the following obligations:

- The Plan shall address health and safety hazards associated with construction activities (e.g., working at heights, excavations, etc.) establishment and operation of construction/worker's camps, use of heavy equipment, transport of materials and other hazards associated with various construction activities.
- Appoint an Environment, Health and Safety manager to look after implementation of required environmental mitigation measures, and to ensure that health and safety precautions are strictly implemented for the protection of workers and the general public in the vicinity of construction areas.
- Conduct awareness training for construction workers regarding health and safety measures, emergency response in case of accidents, fire, etc., and prevention of HIV/AIDS and other related diseases.
- Provide first aid facilities that are readily accessible by workers.
- Provide adequate housing for workers.
- Provide reliable supply of potable water for workers.
- Provide separate hygienic sanitation facilities/toilets and bathing areas with sufficient water supply for male and female workers.
- Establish clean canteen/rest area.
- Provide fencing on all areas of excavation greater than 2 m deep.
- Provide appropriate personnel protection equipment (PPE) such as safety boots, helmets, gloves, protective clothes, goggles, ear protection and ensure the equipment is effectively used.
- Ensure reversing signals are installed on all construction vehicles.
- Implement precautions to ensure that objects (e.g., equipment, tool, debris, etc.) do not fall onto or hit construction workers.
- Implement fall prevention and protection measures whenever a worker is exposed to the hazard of falling more than two meters, falling into operating machinery or through an opening in a work surface. Based on a case-specific basis, fall prevention/protection measures may include installation of guardrails with mid-rails and toe boards at the edge of any fall hazard area, proper use of ladders and scaffolds by trained employees, use of fall prevention devices, including safety belt and lanyard travel limiting devices to prevent access to fall hazard, fall protection devices such as full body harnesses, etc.
4.5.7. PAC-07: Management of Air Quality, Dust and Noise

88. A program to limit atmospheric and noise emissions will be put in place in all areas likely to be affected by construction of the Project, in particular close to the construction sites and along the access roads.

89. Emissions of exhaust gases and fumes will be limited by the obligations regarding maintenance of construction plant and trucks, and by forbidding the combustion of any waste on the sites.

90. Dust caused by road traffic on unpaved surfaces will be subject to reduction measures in inhabited areas, by requiring the contractor to water spray the ground at regular intervals, i.e. at least two to four times per day during periods without daily rainfall. All loads of fine materials potentially causing dust to be spread during transport will be covered by a tarpaulin. In storage areas, watering will be recommended for all materials likely to generate dust, in particular during periods of wind (frequent in Dong Hoi).

91. Noise will be the subject of regular monitoring by the PIC-ES to ensure that the limits laid down for the site are respected or that the employees exposed to higher noise levels are appropriately equipped. Measures will be taken to reduce noise levels and the corresponding disturbance on the site and along the access roads: maintenance of plant and vehicles, use of soundproofed equipment, reduction of the hours of use of certain installations (crushing plant, blasting).

92. The Tender Documents will define the thresholds to be respected by the contractor in terms of gas, dust and noise. Compliance monitoring will concern at least the following indicators against limits set by Vietnamese QCVN 05:2013/BTNMT on ambient air quality, QCVN 06:2009/BTNMT on toxic substances in ambient air, QCVN 26:2010/BTNMT on noise.

4.5.8. PAC-08: Management of Road Traffic and Access

93. Road traffic is the prime cause of accidents during the construction phase of infrastructure projects. It is therefore essential to regulate traffic both on site and outside. This is particularly important for the present project as (i) components are located in urban area and (ii) the projects involve large volumes of excavation which may generate heavy truck traffic. Various measures will be considered and adopted by the contractors:

- awareness-raising and training of drivers of light vehicles and trucks in the rules of elementary caution and on the risks encountered: driving under the influence of alcohol or drugs, excess speed, monitoring tyre wear, placing the load (stability), etc.;
- checking the eyesight of all recruited drivers, and their ability to drive;
- provision of parking places for trucks separate from the roadway next to sites;
- enforcing respect for speed limits;
- Access to the construction sites will be indicated by appropriate signage.

94. The Tender Documents will set out all these obligations as well as the penalties that will be applied to contractors and their sub-contractors in case of infringement.

4.5.9. PAC-09: Protection of Cultural Resources

95. The IEE confirms that the project components are not affecting any cultural site or building. However, as some components involve excavation works, the chance to find any physical cultural resource does exist.

96. The Tender Documents will define an emergency intervention procedure (chance to find procedure) in case a discovery is made, or an interaction is observed during the works. This procedure will include aspects such as:
- immediate measures to stop work at the site concerned and mark out the area to be protected;
- information procedure involving the CC-EHSC, the PIC-ES and PMU-ESO;
- approval of the measures decided by the PMU-ESO;
- organization of removal of the resource (if physical);
- closure of the incident and resumption of work.

4.5.10. PAC-10: Environmental and Social Training Plan

97. The objective of this plan is to ensure effective implementation of the measures proposed under the EMP on the construction sites. This Plan will define the general training programs (awareness-raising) for the attention of all personnel and the specialized training programs intended for the employees involved in particularly sensitive activities from the environmental standpoint (management and distribution of hydrocarbons, hazardous waste management, etc.). Each new recruit must participate in the awareness-raising program within 10 days following his recruitment. Each employee in charge of sensitive activities will follow a catch-up session every 6 months.

98. This training will be delivered by the CC-EHSC of the main Contractors or by a specialized consultant appointed by the contractors. All personnel will be trained. The sessions will be recorded in a register where the names of all participants will be noted. The environmental management awareness program on the sites will cover the following priority subjects:

- the rules for waste management within the sites;
- the rules for management of hazardous substances and wastes, particularly their storage authorized exclusively in specially adapted areas;
- pollution control, in particular the response required in case of an accidental pollutant spill;
- protection of sites against fire;
- protection of sites against erosion and sedimentation;
- the procedure to follow in case of discovery of a physical cultural resource;
- the traffic safety rules on public roads and within the sites;
- the principles for saving energy and other resources;
- applicable penalties in case of infringement against the established rules.

99. Complementary provisions will be made relating to hygiene, health and safety under all aspects that are not covered by the Health and Safety Program and the corresponding training programs.

4.6. Environmental and Safety Supervision during Construction

100. The PMU, with the support of PIC, is responsible for ensuring the Contractor complies with its E&S obligations. The PIC-ES is the one that certifies payments to the contractor and as such, he can therefore negotiate the deployment of plant or labour initially allocated to the works in favour of specifically environmental measures.

4.6.1. PAC-11: Monitoring of Construction Activities (PIC)

101. Contractors' compliance with their environmental and social obligations will be the subject of a specific monitoring process, coordinated by the PIC-ES. In order to ensure compliance with E&S requirements and efficient implementation of corrective measures an environmental monitoring program will be set up, including:

- E&S supervision of the contractors: Through regular site inspections the objective is to ensure that all E&S measures set out in the Obligations for Contractors and in the Action Plans prepared by the Contractors are effectively and efficiently implemented;
- Environmental quality monitoring: monitoring of changes in the quality of the environment in order to evaluate the efficiency of the mitigation measures applied and, if necessary, to modify acceptability thresholds or methods;

- Environmental compliance control monitoring: ensuring that all discharges from all project sites are compliant with environmental legislation or with related specifications in the Tender Documents (under the responsibility of the Contractor, see PAC-10 above). This monitoring will also confirm or not the validity of information supplied by the CCs on a monthly basis. Analysis will be performed on a limited number of parameters indicators of pollution from construction activities.

4.6.1.1. Weekly Inspections

102. Weekly inspection of the different work sites will be organised by the PIC-ES and will be the subject of a report using a standard inspection sheet. This information sheet will check all the environmental specifications imposed on the contractor item by item, giving an immediate overview, during each inspection, of potential cases of non-conformity.

103. Each environmental event (EE) will be the subject of a standard record sheet to be filled in by the observer (Inspector) and submitted to the PIC-ES for action. The record sheet signed by the PIC-ES is handed over to the CC-EHSC who then completes the document by explaining the proposed corrective measure. If the solution is acceptable, the EE is closed after checking that the measure has been effectively and successfully implemented.

4.6.1.2. Coordination Meetings

104. Regular (weekly or semi-monthly) coordination meetings will be held between the CC-EHSCs (and their inspectors) and the PIC-ES (and his inspectors), during which they will discuss the EE in progress, the remedial measures taken and any other subject of current concern such as the Action Plans presented by the CC-EHSCs.

4.6.2. PAC-12: Air Quality and Noise Monitoring (PIC)

105. The most crucial problems will be caused by dust near the construction sites. No significant problem is seriously anticipated with exhaust emissions, except very locally along hauling routes.

106. There will be two types of sampling monitoring under the responsibility of the PIC:

- ad-hoc controls for dust in residential areas at the boundaries of construction sites near residential areas and along the hauling routes used between the sites. Action will be taken as soon as few complaints from residents have been collected for a particular location, or where visual inspection confirms that excessive dust is being generated. The PIC will make spot checks of noise levels on the various work sites and in certain residential areas during daytime and night, in order to check that standards applicable within the boundaries of the work sites or in the surrounding residential areas are respected.

- regular monitoring for air quality and noise carried out by an external registered laboratory on a quarterly basis. Locations may vary according to progressive transfer of activities, particularly for the road works. Proposed Monitoring Plan is detailed in
- Table 8 and Figure 10. Map of monitoring location.\textsuperscript{7}

\textsuperscript{7} This monitoring plan also covers other construction packages of Dong Hoi Project.
### Table 8. Environmental Effect Monitoring Plan for Construction Period

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Locations</th>
<th>Frequency</th>
</tr>
</thead>
</table>
| Ambient air quality compared to criteria in QCVN 05:2013/BTNMT | CO, SO2, NOx, TSP, O3, lead dust (Pb), (PM10), (PM2.5), benzene, petroleum hydrocarbon (HC) | 15 sites:  
- K1: At the intersection Tran Hung Dao and Quach Xuan Ky streets;  
- K2: At the intersection of Tran Hung Dao and Vo Nguyen Giap road;  
- K3: At junction between Nhat Le Bridge 2 and National Highway 1A;  
- K4: On Vo Nguyen Giap road, in front of Hai Dang guest house;  
- K5: At junction between Vo Nguyen Giap road and the end of Horizontal road 1, at Km 0 + 263.19;  
- K6: At junction between Vo Nguyen Giap road and the end of Horizontal road 2, at Km 0 + 381.01;  
- K7: At junction between Vo Nguyen Giap and the end of Horizontal road 3, at Km 0 + 544.13;  
- K8: At junction with the road passing Nhat Le Bridge 1 and Nguyen Thi Dinh Street;  
- K9: At the beginning of the road along the Nhat Le river (on the right of the bridge);  
- K10: In front gate of Secondary School No.2 Bac Ly, TK11, Bac Ly Ward;  
- K11: On Quang Trung Street, in front of Bao Minh Trading Limited Company;  
- K12: On Truong Chinh street, turn to the new market Bac Ly;  
- K13: At junction between Huu Nghi Street and the road to Vietnam-Cuba Hospital;  
- K14: At the intersection of Tran Hung Dao Street and Ton That Thuyet Street (one side of Dong Phu Market);  
- K15: On National Highway 1A, at the short bridge. | Quarterly |
| Noise level compared to criteria in QCVN 26:2010/BTNMT | Day time and night time noise levels dB(A) |  
For the quarterly monitoring of air quality, the PIC will appoint a registered professional laboratory to perform the task. |

Source: 2018 Environmental Impact Assessment Report for Dong Hoi Project

**Figure 10. Map of monitoring locations**
4.6.3. PAC-13: Water Quality Monitoring (PIC)

108. The PIC will appoint a registered professional laboratory to carry out an independent monitoring of surface water quality on a quarterly basis. Proposed monitoring criteria and locations are presented in Table 9.

<table>
<thead>
<tr>
<th>REFERENCE</th>
<th>PARAMETERS</th>
<th>LOCATIONS</th>
<th>FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Water Quality compared to criteria in QCVN 08:2015/BTNMT</td>
<td>pH, DO, TSS, COD, BOD5, NH4, Cl, NO2, NO3, F, Phosphate, Cyanide, As, Cd, Pb, Cr+3, Cr+6, Zn, Nickel, Fe, Hg, Cu, Coliforms</td>
<td>Nhat Le River at the southern site of Nhat Le Bridge 1</td>
<td>Quarterly</td>
</tr>
</tbody>
</table>

4.6.4. PAC-14: Site Cleaning and Rehabilitation Program

109. By the end of the construction activities, each contractor must decommission the sites where its activities for Project needs have been performed, which includes:

- The demolishing of all structures/buildings developed for the purpose of Project construction.
- The removal from the site of all equipment and the safe disposal or recycling of construction and demolition waste and of construction material;
- The restoration of the land in order to restore it as close as possible from the initial state,
- The official handover of the site to its owner, signed by parties.

110. In order to ensure that this Site Cleaning and Rehabilitation (SCR) operation is successfully implemented, the Contractor will be required to prepare a Site Cleaning and Rehabilitation Plan (SCRP) which provides operational methods for (i) site assessment and (ii) cleaning and rehabilitation in compliance with Contractual obligation and international good practices. The Plan will respect the following:

**Cleaning Stage**

- All construction materials, equipment, buildings, facilities and residual waste will be removed from all sites, except if a site-specific decision modifies this principle. This decision shall be, commonly agreed on by the CC, PMU and CPC.
- All waste collected on site will be treated in compliance with the requirements of the Tender Documents Environmental Obligations and the Waste Management Plan prepared by the CC at the start of the construction, depending on the classification of the waste product considered.
- Recycling of waste will be maximized.

111. The Plan will be submitted to the PIC not later than 1 month before the start of decommissioning and include the methods for carrying out the following activities: Identification of Materials and Waste existing on the site: Usable construction surplus, usable hazardous materials surplus, demolition and inert waste (wood, iron sheet, metal scrap, PVC and plastics, glass, tires, etc.), organic waste, hazardous waste, broken machineries etc.

- Evaluation of quantities regarding each group of materials/waste identified;
- Identification of registered companies for the recycling of materials and waste;
- Procedures for treatment and disposal of non-recycled material and waste;
- Schedule for cleaning operations;

**Rehabilitation Stage**

112. Rehabilitation will be carried out in immediate continuation or even in parallel with the cleaning stage, taking advantage of the presence of the manpower and the equipment. Consultation with concerned stakeholders will be carried out where necessary. The following principles will apply:
- Sites shall be rehabilitated in a way to restore, as much as feasible and reasonably possible, the original use of the land;
- All sites must be returned free of any buildings or infrastructures developed for the purpose of Project construction, except if specific request is made;
- All spoil disposal areas shall be rehabilitated according to the obligations of the Tender Documentation and the obligations of the Plan on Sediment and Spoil Management.
- Rehabilitation option will eventually be selected through consultation between CC, PIC, CPC and any private party if the land is privately owned.

113. After completion of SCR works, the CC will inform the PIC-ES regarding the final site status. After acceptance by PIC-ES of the site conditions Dong Hoi PMU-ESO will be notified. To finalize the SCR process a joint site visit with all concerned parties will be organized by the PIC-ES to sign SCR Completion Certificates as follows:
- For public land, the SCR Completion Certificate will be signed by PIC, PMU and by CPC as witness;
- For private land, the SCR Completion Certificate will be signed by the land owner, CC, PIC and PMU.

4.7. **ACTION PLAN FOR OPERATION STAGE (PAE)**

114. The implementation of environmental monitoring is necessary from the time the works are completed and commissioned, in order to ensure impacts and mitigation measures proposed have been efficiently implemented during the construction stage and show positive results as expected.

115. The following activities are proposed in this EMP.

4.7.1. **PAE-01: AIR QUALITY AND NOISE MONITORING**

116. Monitoring of air quality and noise level in Bao Ninh along the Project road will be conducted one time within 12 months after the completion of construction, in order to appreciate any changes regarding dust and air pollution. Same parameters than those monitored during construction will be kept, while one representative location will be selected from K1 - K15 of
4.7.2. PAE-02: MONITORING OF WATER QUALITY

118. Monitoring of surface and ground water quality will also be conducted one time within 12 months after the completion of construction. Same parameters and location than those monitored during construction will be kept as shown in Tables 8 and 9.

4.8. Environmental Monitoring & Reporting

4.8.1. Environmental Monitoring

119. Environmental monitoring will consist of environmental effects monitoring as described previously. Environmental effects monitoring will cover ambient air quality, noise and vibration levels and surface and ground water quality during construction phase as regulated by Vietnamese environmental law for this specific type of project.
4.8.2. Compliance Monitoring

121. Environmental monitoring activities and findings shall be documented for purposes of reporting, recording, verifying, referring on and evaluating the environmental performance of the Subproject. The documentation shall also be used as basis in correcting and enhancing further environmental mitigation and monitoring. An Environmental Monitoring Report (EMR) shall not only report on the progress and results of environmental monitoring and compliance of EMP implementation but shall also: (i) assess the effectiveness, of instituted measures; (ii) point out violation/s, if any; (iii) assess/recommend corrective actions; and (iv) cite any coordination made for corrective actions and, if applicable, certifications for having instituted them effectively. A draft EMR outline is presented in Appendix 3 of the disclosed IEE.

122. The contractor will submit monthly reports to Dong Hoi PMU ESO. During construction phase, semi-annual environmental monitoring reports (SEMR) will be prepared by PMU and submit to the ADB. During operation phase, annual reports will be submitted to ADB until the issuance of ADB’s Project completion report unless a longer period is agreed in the EMPs.

123. The EMR will be provided on every 6 months throughout the project life. A hard copy of EMR will be posted at the Office of Bao Ninh Commune/Ward People’s Committee after its submission to ADB.

4.9. Implementation Schedule

124. Construction work for Package DH/W1 is scheduled in 42 months from May 2019.
4.11. Cost of Environmental Impact Prevention, Mitigation & Monitoring

125. The budget in the table covers the cost for all subprojects (all packages) under the Project in Dong Hoi City, Quang Binh Province.

126. Table 10 sets out the estimated budgets required for implementation of the corrective measures and monitoring activities during the 3 phases of implementation of the Dong Hoi Urban Environment and Climate Change Adaptation Project. The budget in the table covers the cost for all subprojects (all packages) under the Project in Dong Hoi City, Quang Binh Province.

Table 10. EMP List of Actions and Budget

<table>
<thead>
<tr>
<th>No</th>
<th>Corrective Measure / Action</th>
<th>Responsibility</th>
<th>Duration of Implementation (Months)</th>
<th>Budget (US$)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAP-01</td>
<td>Additional Study of Water Quality</td>
<td>PMU Laboratory</td>
<td>12</td>
<td>1,000</td>
<td></td>
</tr>
<tr>
<td>PAP-02</td>
<td>Training of PMU-ESO &amp; PMU staff</td>
<td>PMU PIC</td>
<td>0.5</td>
<td>1,000</td>
<td></td>
</tr>
<tr>
<td>PAP-03</td>
<td>Preparation of Contractor E&amp;S specifications</td>
<td>PMU PIC</td>
<td>0.5</td>
<td>2,000</td>
<td></td>
</tr>
<tr>
<td>PAC-01</td>
<td>Waste Management</td>
<td>Contractor Contractor</td>
<td>42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAC-02</td>
<td>Management of Sediment and Spoil</td>
<td>Contractor Contractor</td>
<td>42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAC-03</td>
<td>Hazardous Substances Management</td>
<td>Contractor Contractor</td>
<td>42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAC-04</td>
<td>Accidental Spill Preparedness and Response</td>
<td>Contractor Contractor</td>
<td>42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAC-05</td>
<td>Erosion and Sediment Control</td>
<td>Contractor Contractor</td>
<td>42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAC-06</td>
<td>Public Health Management</td>
<td>Contractor Contractor</td>
<td>42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAC-07</td>
<td>Management of Air Quality, Dust and Noise</td>
<td>Contractor Contractor</td>
<td>42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAC-08</td>
<td>Management of Road Traffic and Access</td>
<td>Contractor Contractor</td>
<td>42</td>
<td></td>
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</tr>
<tr>
<td>PAC-09</td>
<td>Protection of Cultural Resources</td>
<td>Contractor Contractor</td>
<td>42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAC-10</td>
<td>Environmental &amp; Social Training Plan</td>
<td>Contractor Contractor</td>
<td>42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAC-11</td>
<td>Monitoring of Construction Activities</td>
<td>PMU PIC</td>
<td>42</td>
<td>28,000</td>
<td></td>
</tr>
<tr>
<td>PAC-12</td>
<td>Air Quality &amp; Noise Monitoring (PIC) (4 times a year x 3.5 years = 14 times)</td>
<td>PMU PIC</td>
<td>42</td>
<td>28,000</td>
<td></td>
</tr>
<tr>
<td>PAC-13</td>
<td>Water Quality Monitoring (PIC) (4 times a year x 3.5 years = 14 times)</td>
<td>PMU PIC</td>
<td>42</td>
<td>14,000</td>
<td></td>
</tr>
<tr>
<td>PAC-14</td>
<td>Site Cleaning &amp; Rehabilitation Program</td>
<td>Contractor Contractor</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAC-15</td>
<td>Monitoring Of Water Quality (once)</td>
<td>PMU PMU</td>
<td>12</td>
<td>2,000</td>
<td></td>
</tr>
<tr>
<td>PAC-16</td>
<td>Monitoring Of Water Quality (once)</td>
<td>PMU PMU</td>
<td>12</td>
<td>1,000</td>
<td></td>
</tr>
<tr>
<td>SUB-TOTAL (PAP+PAC+PAE)</td>
<td></td>
<td></td>
<td></td>
<td>49,000</td>
<td></td>
</tr>
<tr>
<td>Contingencies 20%</td>
<td></td>
<td></td>
<td></td>
<td>9,800</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td>58,800</td>
<td></td>
</tr>
</tbody>
</table>

Notes: (*) Related E&S expenses are included into construction costs of the CCs
Abbreviations: PMU: Project Management Unit; PIC: Project Implementation Consultant; CC: Construction Contractor

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REFERENCES CITED

- Dong Hoi PMU 2018, Updated EIA report for Urban Environment and Climate Change Adaptation Project, approved by Quang Binh PPC.
- Various technical and legal documents provided by Dong Hoi UECCA Project Management Unit.
2.7. Phối hợp với chính quyền địa phương để đảm bảo an ninh trật tự, an toàn xã hội trên địa bàn Thị công dân và xây dựng cụ thể với việc tổ chức triển khai các hoạt động công trình của dự án, thực hiện việc để đảm bảo an toàn các vị trí đã được xác định lập ấm của các yếu tố về an toàn, vệ sinh môi trường theo đúng quy định pháp luật. Chủ tịch thiếu niên dự tu, bảo đảm hiệu quả tiếp xúc, các tổ chức tương tự hữu hiệu được xác định là đủ để an ủi nguy

2.8. Thực hiện chương trình giám sát môi trường như trong Báo cáo đánh giá tác động môi trường để được phê duyệt, cập nhật, lưu giữ hồ sơ lập và định kỳ báo cáo cơ quan quản lý Nhà nước về báo cáo môi trường. Đàm bảo kinh phí để thực hiện các hoạt động bảo vệ môi trường và chuẩn bị trình quan, giám sát môi trường như đã nêu trong Báo cáo đánh giá tác động môi trường.

2.9. Chủ đầu tư phải lập lại Báo cáo đánh giá tác động môi trường trong các trường hợp sau đây:
   a) Không triển khai dự án trong thời gian 24 tháng kể từ thời điểm Quyết định phê duyệt Báo cáo đánh giá tác động môi trường;
   b) Thay đổi địa điểm thực hiện dự án so với phương án trong Báo cáo đánh giá tác động môi trường đã được phê duyệt;
   c) Tăng quy mô, thay đổi biên độ thị để làm tăng tác động xấu đến môi trường so với phương án trong Báo cáo đánh giá tác động môi trường đã được phê duyệt.

Diễn giải 2. Chúng ta cần có trách nhiệm:
1. Lập và giữ gìn khoa học quản lý môi trường của dự án để niêm yết công khai theo quy định pháp luật.
2. Thực hiện nghiêm túc các yêu cầu về bảo vệ môi trường, các điều kiện cụ thể ở Điều 1 Quyết định này và các nội dung báo về môi trường khác đề xuất trong Báo cáo đánh giá tác động môi trường.

3. Trong quá trình thực hiện dự án có những thay đổi so với Báo cáo đánh giá tác động môi trường đã được phê duyệt, Chủ đầu tư phải có văn bản báo cáo UBND tỉnh, Sở Tài nguyên và Môi trường và chỉ được thực hiện những thay đổi sau khi có văn bản chấp thuận của UBND tỉnh.

Diễn giải 3. Quyết định phê duyệt Báo cáo đánh giá tác động môi trường của dự án là cơ sở để cấp có thẩm quyền quyết định, quyết định các bước tiếp theo của dự án theo quy định tại Khoản 2 Điều 25 Luật Báo cáo môi trường.

Diễn giải 4. Sở Tài nguyên và Môi trường chủ trì, phối hợp với UBND thành phố Đồng Hới và các đơn vị, địa phương liên quan kiểm tra, giám sát việc thực hiện các nội dung báo về môi trường trong Báo cáo đánh giá tác động môi trường để được phê duyệt tại Quyết định này theo đúng quy định của pháp luật; đồng thời, chủ tịch thiếu niên tổ chức UBND tỉnh và pháp luật về kế hoạch kiểm tra, giám sát.
Annex 2. Confirmation letter for Co Cup disposal site, Ba Trang Area, Village 6, Bao Ninh Commune (under Quang Binh URENCO management)
Annex 3. Confirmation letter for Cua Phu disposal site, Bao Ninh Commune
Annex 4. Transportation Map of material supply sites and disposal site for the Project
Annex 5. Unexploded Ordnance Clearance Certification

CÔNG HÒA XÂ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc
Quảng Bình, ngày 30 tháng 12 năm 2018

CAM KẾT AN TOÀN

Gời thu DH/NCl: Rã phá bom, min, vật nổ
Dự án: Phát triển mới trường, hạ tầng đô thị để ứng phó với biến đổi khí hậu
Thành phố Đồng Hới, tỉnh Quảng Bình
Địa điểm: Thành phố Đồng Hới, tỉnh Quảng Bình

Kính gửi: Ban QLDA mới trường và biến đổi khí hậu TP Đồng Hới

Căn cứ Quyết định số 5336/QĐ-BQP ngày 01/12/2018 của Bộ Quốc phòng về việc tổ chức thực hiện công tác rã phá bom mìn, vật nổ Dự án phát triển mới trường, hạ tầng đô thị để ứng phó với biến đổi khí hậu T.p Đồng Hới, tỉnh Quảng Bình;
Căn cứ Hợp đồng số DH/NCl ngày 21/12/2018 giữa giữa Ban quản lý dự án mới trường và biến đổi khí hậu thành phố Đồng Hới và Tổng Công ty xây dựng Trường Sơn về việc thi công gói thầu DH/NCl: Rã phá bom mìn, vật nổ thuộc Dự án phát triển mới trường, hạ tầng đô thị để ứng phó với biến đổi khí hậu T.p Đồng Hới, tỉnh Quảng Bình;
Căn cứ kết quả thi công đã được nghiệm thu;
Căn cứ giấy Uỷ quyền số 06/UQ-TCT ngày 24/12/2018.

CHI NHÁNH MIỀN TRUNG – TÔNG CT XD TRƯỞNG SON CAM KẾT

Kể từ ngày 30/12/2018 các vị trí và đồ sưu do tìm xử lý bom mìn vật nổ sau đì đã thi công xong đảm bảo an toàn cho việc thi công các hạng mục tiếp theo của dự án bao gồm:

1. Diện tích đã thực hiện rã phá bom mìn, vật nổ:
   - Đồ tìm BMVN trên cánh là: 50,22 ha.
   - Đồ tìm BMVN trên cánh 10m do quả lõ khoan là: 0,598 ha.

2. Đồ sưu và phạm vi an toàn:
   a) Đồ sưu Rã phá bom mìn, vật nổ
      - Đồ sưu 5m: Tính toàn bộ phạm vi RPBM, VN.
      - Đồ sưu 10m: Các tuyến công có độ chơn sâu cộng >3,5m; các hệ thống trạm bom và họ ga trung chuyển.
   b) Phạm vi an toàn: Trên toàn bộ phạm vi mặt bằng của dự án (diễn thực hiện trên bản vẽ hoàn công).

Đơn vị chính tôi cam kết đã thi công sạch bom mìn, vật nổ và chịu trách nhiệm trước Chủ đầu tư, pháp luật về toàn bộ mặt bằng trong khu vực đã được đồ tìm, xử lý bom mìn, vật nổ. Công trình đủ điều kiện để thi công các hạng mục tiếp theo.

Nơi nhận:
- Như trên;
- Lưu HSHC, Đ (3b).

Trung tá Phan Văn Thành