VIETNAM ROAD ASSET MANAGEMENT PROJECT

Component B: Road Asset Preservation

ENVIRONMENTAL MANAGEMENT PLAN (EMP)

B2-1: NH5 Section Ha Noi – Hai Duong (Km11 – Km93)
VIETNAM ROAD ASSET MANAGEMENT PROJECT

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ENVIRONMENTAL MANAGEMENT PLAN (EMP)

B2-1: NH5 Section Ha Noi – Hai Duong (Km11 – Km93)

PROJECT’S OWNER

Hanoi, June 2013
# Table of Contents

Acronyms .......................................................................................................................... 6

1. Introduction .................................................................................................................. 7

2. EMP Organization and Structure .............................................................................. 8

3. Project Description ...................................................................................................... 8

3.1. Subproject Objectives .............................................................................................. 8

3.2. Location .................................................................................................................... 8

3.3. Main components of the Subproject ....................................................................... 12

3.4. Work volume .......................................................................................................... 13

4. Environmental and Social Impacts ........................................................................... 14

4.1. Environmental Impacts ........................................................................................... 14

4.2. Social Impacts .......................................................................................................... 18

5. Mitigation Measures ................................................................................................... 18

*Chance Find Procedures* ............................................................................................... 24

6. Roles and Responsibilities of Environmental Management Stakeholders ............... 24

7. Environmental Compliance Framework ....................................................................... 27

7.1. Environmental Duties of the Contractor ................................................................. 27

7.2. Contractor’s Safety and Environment Officer (SEO) ............................................... 28

7.3. Environmental Supervision during Construction ..................................................... 28

7.4. Compliance with Legal and Contractual Requirements ......................................... 29

8. EMP Implementation Plan .......................................................................................... 29

8.1. Contractor’s EMP Implementation Plan .................................................................. 29

8.2. Project Initiation and Staffing .................................................................................. 30

8.3. Capacity Building and Training ............................................................................. 30

9. Monitoring Program .................................................................................................... 30

9.1. Objectives ................................................................................................................ 30

9.2. Site Inspections ........................................................................................................ 31

9.3. Monitoring Indicators .............................................................................................. 32

9.4. Monitoring Report System ....................................................................................... 33

9.5. Environmental Claims and Penalty System ............................................................. 34

10. Estimated Budget for EMP Implementation ............................................................. 34

10.1. Implementation of Mitigation Measures by Contractor ......................................... 34
10.2. EMP Estimated Budget for Capacity Building .......................................................... 34
11. Public Consultation and Information Disclosure .......................................................... 35
11.1. Objectives .................................................................................................................. 35
11.2. Results of Public Consultation Meetings .................................................................. 35
11.3. Disclosure of the EMP ............................................................................................ 38
12. Appendices ................................................................................................................... 39

Appendix 1. Environmental standard and regulations ......................................................... 39
Appendix 2. Specific Impacts, Location and Proposed Mitigation Measures for each Route Segment .............................................................................................................. 40
Appendix 3: Environmental and Social Specification for Contractors .......................... 67
Appendix 4: Environmental Supervision for the Maintenance of NH5 ....................... 80
Appendix 5: Training demands and proposals for a training program ....................... 85
Appendix 6: Budget Estimate ............................................................................................ 88
List of Figure

Figure 1. Project Location............................................................................................................... 10
Figure 2. Environmental Management System............................................................................... 25

List of Table

Table 1. Work Volume to be Implemented ..................................................................................... 13
Table 2. List of Sand Mines and Quarries ......................................................................................... 14
Table 3. Potential Environmental and Social Impacts of NH5 ....................................................... 15
Table 4. Site-specific Mitigation Measures along the NH5............................................................... 18
Table 5. Roles of Responsible Stakeholders..................................................................................... 25
Table 6. System of Environmental Monitoring Report ................................................................. 33
Table 7. Estimated Budget for Capacity Building ............................................................................ 34
Table 8. Time of Public Consultation Meetings .............................................................................. 35
Table 9. Results summary of Consultation Meetings ......................................................................... 36
Table 10. Analysis and Determination of Training Demands ......................................................... 85
Table 11. Proposed Programs of Capacity Building on Environmental Management ............... 86
Table 12. Estimated Budget for implementation of Capacity Building and Training ................. 88
### Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSC</td>
<td>Construction Supervision Consultant</td>
</tr>
<tr>
<td>CEMP</td>
<td>Community Environmental Monitoring Program</td>
</tr>
<tr>
<td>DRVN</td>
<td>Directorate for Roads of Vietnam</td>
</tr>
<tr>
<td>DUNRE</td>
<td>District Unit Natural Resource and Environment</td>
</tr>
<tr>
<td>DONRE</td>
<td>Department of Natural Resources and Environment</td>
</tr>
<tr>
<td>EPC</td>
<td>Environmental Protection Commitment</td>
</tr>
<tr>
<td>EO</td>
<td>Environmental officer of the Environmental Unit (under PMU3)</td>
</tr>
<tr>
<td>EMP</td>
<td>Environmental Management Plan</td>
</tr>
<tr>
<td>EMS</td>
<td>Environmental Management System</td>
</tr>
<tr>
<td>GoV</td>
<td>Vietnam Government</td>
</tr>
<tr>
<td>IEMC</td>
<td>Independent Environmental Monitoring Consultant</td>
</tr>
<tr>
<td>MOT</td>
<td>Ministry of Transport</td>
</tr>
<tr>
<td>PR</td>
<td>Provincial Road</td>
</tr>
<tr>
<td>NH</td>
<td>National Highway</td>
</tr>
<tr>
<td>OP</td>
<td>Operation policies</td>
</tr>
<tr>
<td>PMU3</td>
<td>Project Unit Management No.3</td>
</tr>
<tr>
<td>RAP</td>
<td>Resettlement Action Plan</td>
</tr>
<tr>
<td>SEMP</td>
<td>Site Environmental Monitoring Program</td>
</tr>
<tr>
<td>SEO</td>
<td>Safety and Environment Officer</td>
</tr>
<tr>
<td>SES</td>
<td>Workplace Safety and Environment Supervisor</td>
</tr>
<tr>
<td>WB</td>
<td>World Bank</td>
</tr>
</tbody>
</table>
1. **Introduction**

The Subproject “Performance-Based Contract (PBC) of NH5 - Section from Ha Noi - Hai Duong (Km11+000 – Km93+000)” is one of the subprojects under Component B of the Vietnam Road Asset Management Project (VRAMP) funded by the World Bank. The subproject will be implemented in thirty-eight communes of the ten districts of Ha Noi City, Hung Yen Province, Hai Duong Province and Hai Phong City.

The routine maintenance and emergency repair activities of subproject include managing and maintaining the pavement, bridges, electrical system, taking care the tree and shrub in the separator, protecting the road corridor, emergency repairing the drainage system, slope protection, auxiliary works. These activities may cause negative impacts on the local environment and communities during pre-construction, construction, and operation phases.

An environmental screening was undertaken in line with the World Bank safeguards policy requirements and it showed that the World Bank’s policy on Environmental Assessment (OP 4.01) will be triggered for the subproject. The implementation of the subproject would mainly cause increased dust generation, air pollution, and domestic wastes, and traffic safety. However, these impacts are not significant, temporary, localized, and can be mitigated with available mitigation measures. Therefore, the subproject is assessed as B environmental category and eligible for funding by the World Bank.

The Government’s regulation on environmental assessment requires submission of an Environmental Protection Commitment (EPC) for the subproject. An EPC report has been prepared and submitted to Cam Giang District People’s Committee of Hai Duong Province. In addition to fulfilling the government requirements, an Environmental Management Plan (EMP) that complies with the World Bank OP 4.01 has also been prepared for the subproject.

The main objective of this EMP is to establish a set of mitigation and monitoring measures to minimize the adverse social and environmental impacts that can take place during the implementation stage of the subproject. The measures especially focus on sensitive receptors or sensitive locations. The EMP also provides specific information about the monitoring program during construction stage including locations, frequency and reporting process. The EMP contains guiding environmental principles and procedures for communication, reporting, training, monitoring and plan review to which all staff, consultants, supervisors, Contractors and sub-Contractors are required to comply with throughout the pre-construction, and constructions stages of the Subproject.

The EMP addresses all issues identified in the EPC: i) organizes all measures to mitigate environmental impacts during the construction and operation; and (ii) establishes an organizational structure, procedures, institutional responsibilities for implementation, and a budget and source of financing for each activity.

The EMP will also assist different stakeholders in managing the environmental issues of the National Highway No. 5 (NH5): (a) The PMU3 - to help with the management and implementation of the EMP; (b) supervisors – to ensure that the EMP is properly implemented; (c) environmental engineers – to assist them to work with the Contractors to implement the EMP; and (d) Contractors – to help them develop project-specific EMP implementation plans.

In addition to the project-specific mitigation measures included in the EPC and EMP, the NH5 VRAMP Sub-project will be also in compliance with Vietnamese Standard (TCVN) and National Technical Regulation (QCVN) and the World Bank Safeguard Policies. Appendix 1 presents the most relevant environmental standards of the Socialist Republic of Vietnam.
2. EMP Organization and Structure

The EMP is structured as follows:

Introduction: describes EMP objectives and structure of EMP.

Overview of Environmental and Social Issues: summarizes the project description and main environmental and social impacts, the approach for identification of environmental issues along the road alignment and summarizes the main mitigation measures.

Roles and Responsibilities for Environmental Management during Construction: This part will define the roles and responsibilities for environmental management for all actors involved in the project, and the process of control and reporting.

Compliance Framework: This part will define the environmental duties of the contractor (s), and the environmental compliance framework that will be put in place, the environmental standards for all mitigation measures, the environmental supervision of civil works, and the independent monitoring consultant.

EMP Implementation Plan: describes the requirements and staffing needs for initiation of the works, for the Contractor and supervision consultant. It also includes the capacity building and training programs that will need to be implemented for all actors involved in the environmental management of the project.

Monitoring Program: an environmental monitoring program for the project identifies the parameters, frequency, and responsibilities for monitoring environmental impacts during construction and operation of the road.

Budget: budget estimates for the implementation of the EMP will be presented.

Appendices: related to the project and the contents of the EMP

3. Project Description

3.1. Subproject Objectives

The objectives of the subproject are to repair and rehabilitate the NH5 pavement under the local-funded investment and construction Project of NH5 pavement repair and restoration, which was approved by the Directorate for Roads of Vietnam under the Decision No. 1746/QD-TCDBVN dated 26/10/2012. Following the repair and rehabilitation the route will be contracted using performance based contract for regular maintenance in 05 years.

Due to the traffic volume and load, the initial rehabilitation would only improve the operational conditions and maintain the technical status of the road. During the future operation period (05 years), a management plan of traffic volume and load as well as a plan of pavement structure strengthening/ reinforcement is required.

3.2. Location

NH5 Subproject is an arterial transportation road connecting Hai Phong multi-ports and Hanoi Capital in the north of Vietnam. It is also a part of Asian Highway AH14. Sub-project NH5, Section from Ha Noi - Hai Duong (Km11+000 – Km93+000) has a total length of about 81.87km (figure 1.1):

- Starting point: Km11+135 belonging to Duong Xa, Gia Lam District, Ha Noi City;
- Ending point: Km93+000 belonging to Hung Vuong Ward, Hong Bang Urban District, Hai Phong City.
Subproject passes through territories of 10 districts / 4 Provinces and Cities, including Gia Lam District (Ha Noi City); Van Lam, Yen My, My Hao districts (Hung Yen Province); Binh Giang, Cam Giang, Kim Thanh districts and Hai Duong City (Hai Duong Province); An Duong, Hong Bang Urban Districts (Hai Phong City).

NH5 Subproject is a key road within the triangle economic axis of Ha Noi - Hai Phong - Quang Ninh, and the major transportation route of import-export goods to and from Hai Phong port. Numerous factories/industrial zones, urban residential areas are located along the road with a huge volume of traffic. After many years of operation with the traffic volume being greater than the original design, NH5 has been seriously degraded which causes frequent congestion and traffic accidents on NH5. For this reason, repairing and rehabilitating the NH5 pavement is a high priority.

Initial rehabilitation (repairing and rehabilitating the NH5 pavement) has been approved by the Directorate for Roads of Vietnam under Decision No. 1746/QD-TCDBVN dated 26/10/2012.
Figure 1. Project Location
3.3. Main components of the Subproject

Existing NH5 was improved to secure the standard of level-II plain road.

After repairing and rehabilitating activities of NH5 pavement has been completed, maintenance plan of NH5, section from Ha Noi - Hai Duong (Km11+000 - Km93+000) will be implemented according to the Performance-Based Contract (PBC) based on results and execution quality and the following items:

(1). Routine maintenance within 5 years of the whole NH5, section from Ha Noi - Hai Duong (Km11+000 – Km93+000). The maintenance will be done every year as follows:

- Pavement management (include track patrol service; traffic assurance on site; traffic management; data collection and analysis; carriageway hygiene, etc)
- Pavement maintenance (include partial damage repair of pavement layers and pavement; repair and mending of pot-hole and jagged locations; resurfacing to treat cracking; repair of bleeding asphalt);
- Take care of trees and shrubs in the separator (include watering trees, additional planting dead trees, pruning and shaping trees and pruning grass to ensure nice landscape);
- Maintenance of bridge L < 25m and culverts (include clearing water flow culverts, river flow, cleaning manhole and handrail, small repairs of culverts, etc);
- Management and maintenance of bridge L < 300m (including patrol, inspection; clearing for river flow; cleaning bridge deck, abutment, bearing; repairing guardrail and quarter-cones of abutment, approach roads, painting handrail, traffic sign, etc);
- Protection of road corridor (include patrol, inspection, protection of road corridor; coordination with local authorities in the propagation of prevention, encroachment, violating road safety corridor, etc);
- Maintenance of electrical system (maintenance of light with covers; replacing bulb, management of substation, etc);
- Measuring the moving E by FVD equipment.

The road maintenance will be implemented based on lump-sum payment by km, with the aim to maintain the service level of the Project route as specified in the technical specification.

The Bill of Quantities for maintenance service will be considered together with ITB, conditions of contract, technical requirements and drawings.

(2) Emergency repair within 5 years. The emergency repair is done every year with the following items:

- Control the traffic flow;
- Repair drainage, slope protection, auxiliary works;
- Rebuild pipe and box culverts;
- Repair and replace guardrail;
- Repair pavement.

Volume for emergency repair work will be determined when it is necessary to repair
3.4. Work volume

The following table describes the work volume to be implemented.

**Table 1. Work Volume to be Implemented**

<table>
<thead>
<tr>
<th>No</th>
<th>Main Items</th>
<th>Unit</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Routine maintenance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Pavement management of asphalt pavement with 4 lanes</td>
<td>km</td>
<td>81.87</td>
</tr>
<tr>
<td>2</td>
<td>Frontage management</td>
<td>km</td>
<td>58.54</td>
</tr>
<tr>
<td>3</td>
<td>Pavement maintenance of asphalt pavement with 4 lanes</td>
<td>km</td>
<td>81.87</td>
</tr>
<tr>
<td>4</td>
<td>Routine maintenance of side ditch B=0.6m with concrete cover</td>
<td>m</td>
<td>2,108.00</td>
</tr>
<tr>
<td>5</td>
<td>Take care the tree and shrub in the separator</td>
<td>m2</td>
<td>122,797.50</td>
</tr>
<tr>
<td>6</td>
<td>Management, maintenance and repair of bridge L &lt; 15m</td>
<td>m</td>
<td>69.00</td>
</tr>
<tr>
<td>7</td>
<td>Management, maintenance and repair of bridge ( \leq L \leq 300m )</td>
<td>m</td>
<td>431.00</td>
</tr>
<tr>
<td>8</td>
<td>Management, maintenance and repair of bridge ( L &gt; 300m )</td>
<td>m</td>
<td>450.00</td>
</tr>
<tr>
<td>9</td>
<td>Protection of road corridor</td>
<td>cm</td>
<td>996.00</td>
</tr>
<tr>
<td>10</td>
<td>Maintenance of electrical system</td>
<td>Km</td>
<td>81.87</td>
</tr>
<tr>
<td>II</td>
<td>Emergency repair</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Repair drainage, slope protection, auxiliary works</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Excavation</td>
<td>m3</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Backfill</td>
<td>m3</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Demolition and clearance of the existing damaged concrete, rock and cement works</td>
<td>m3</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Repair of the existing concrete, rock and cement works</td>
<td>m3</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Rebuild pipes and box culverts</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Re-installation of reinforced concrete pipe culverts</td>
<td>m</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Re-installation of reinforced concrete box culverts</td>
<td>m</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Re-construction of cement concrete works</td>
<td>m3</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Repair and replace guardrail</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Repair of guardrails</td>
<td>m</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Removal and replacement of guardrails</td>
<td>m</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Repair pavement</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>New structure</td>
<td>m2</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Strengthening structure 1</td>
<td>m2</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Strengthening structure 2</td>
<td>m2</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Strengthening structure 3</td>
<td>m2</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Strengthening structure 4</td>
<td>m2</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Structure of non-motorized lane</td>
<td>m2</td>
</tr>
</tbody>
</table>
4. Environmental and Social Impacts

4.1. Environmental Impacts

The Sub-Project of NH5 is implemented based on the existing roadbed, so there is no requirement on land acquisition. Environmental impacts in pre-construction phase are considered minor. Most of the potential adverse environmental impacts would occur during construction phase. Therefore, environmental management in the construction phase is the main contents of this EMP.

➢ Worker’s camp

Since this is a road maintenance project, there would not be many workers on the construction site, with each maintenance package usually requiring about twenty workers. Because of small number of workers, it is not necessary to build the worker’s camp. The contractor may hire temporary houses of the local resident for worker’s camp.

➢ Access road:

There is no access road that will be constructed for NH5 Subproject. The local roads will be used for construction of the subproject items including transportation of materials and construction spoils, etc.

➢ Sand mines, quarries:

Existing sand mines or quarries will be used for NH5 rehabilitation activities. When civil work starts, the contractor shall require sand mine and quarry owners to submit the certificate environmental protection commitment for these sand mines and quarries.

The sand mines and quarries that will be used for the subproject are presented in the following table:

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of Pit or Quarries</th>
<th>Location</th>
<th>Distance from the pit to Project area (Km)</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sand mine</td>
<td></td>
<td>About 0.7Km from the pit to the station of Km50+000</td>
<td>250,000 m³</td>
</tr>
<tr>
<td>2</td>
<td>Ben Han Stockpile</td>
<td>Hai Duong City</td>
<td>About 0.6Km from the pit to the station of Km60+000</td>
<td>100,000 m³</td>
</tr>
<tr>
<td>3</td>
<td>Binh Lang Stockpile</td>
<td>Binh Lang Commune - Tu Ky District - Hai Duong Province.</td>
<td>About 19Km from the pit to the station of Km55+000</td>
<td>50,000 m³</td>
</tr>
<tr>
<td>4</td>
<td>Stockpile of Vu Lai Bridge</td>
<td>Hong Lac Commune - Thanh Ha District - Hai Duong Province.</td>
<td>About 0.5Km from the pit to the station of Km10+450</td>
<td>70,000 m³</td>
</tr>
<tr>
<td>5</td>
<td>Duong Xa Stockpile</td>
<td>Duong Xa Commune - Gia Lam District - Ha Noi City</td>
<td>About 2.8Km from the pit to the station of Km85+750</td>
<td>Coarse sand: 1000 m³/day Fine sand: 2000 m³/day</td>
</tr>
<tr>
<td>No.</td>
<td>Name of Pit or Quarries</td>
<td>Location</td>
<td>Distance from the pit to Project area (Km)</td>
<td>Capacity</td>
</tr>
<tr>
<td>-----</td>
<td>----------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>-------------------------------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>6</td>
<td>Van Duc</td>
<td>On the left of the existing NH5, at the station of Km7 - Hung Vuong Street - Hong Bang Ward - Hai Phong City.</td>
<td>About 4Km from the pit to the station of Km85+750</td>
<td>Coarse sand: 500 m³/day Fine sand: 500 m³/day</td>
</tr>
<tr>
<td>7</td>
<td>Hai Phong Urban Construction Join stock Company</td>
<td>On the left of the existing NH5, No.508 of Hung Vuong Street - Hong Bang Ward - Hai Phong City.</td>
<td>About 4.5Km from the pit to the station of Km85+750</td>
<td>Coarse sand: 1000 m³/day Fine sand: 1000 m³/day</td>
</tr>
<tr>
<td>8</td>
<td>Hai Phong Road Construction Join stock Company</td>
<td>On the right of Rao Bridge, belonging to Anh Dung Urban District, Kinh Duong Ward - Hai Phong City.</td>
<td>About 8.7Km from the pit to the station of Km92+600</td>
<td>Coarse sand: 1000 m³/day Fine sand: 1500 m³/day</td>
</tr>
</tbody>
</table>

### II Quarries

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of Stockpile</th>
<th>Location</th>
<th>Distance from the pit to the station of Km</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ben Han Stockpile</td>
<td>Hai Duong City</td>
<td>About 0.7Km from the pit to the station of Km50+000</td>
<td>70,000 m³</td>
</tr>
<tr>
<td>2</td>
<td>Duong Xa Stockpile</td>
<td>Duong Xa Commune - Gia Lam District - Ha Noi City</td>
<td>About 0.7Km from the pit to the station of Km10+450</td>
<td>100,000 m³</td>
</tr>
<tr>
<td>3</td>
<td>Hoang Loc</td>
<td>Minh Duc Town - Thuy Nguyen District - Hai Phong City</td>
<td>About 25.2Km from the pit to the station of Km85+750</td>
<td>2,000,000 m³</td>
</tr>
<tr>
<td>4</td>
<td>Thong Nhat</td>
<td>Phu Thu Town - Kinh Mon District - Hai Duong City</td>
<td>About 12.3Km from the pit to the station of Km76+000</td>
<td>1,000 m³/day</td>
</tr>
</tbody>
</table>

Table 3 below describes potential environmental and social impacts during the phase of maintenance according to the PBC contract (including routine maintenance and emergency repair).

**Table 3. Potential Environmental and Social Impacts of NH5**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Potential Impact</th>
<th>Location</th>
<th>Impact Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Routine maintenance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation of material and waste, operation of construction machines</td>
<td>Air pollution caused by dust and impact on community heath</td>
<td>- Residential areas, school, state agencies near construction locations.</td>
<td>Small</td>
</tr>
<tr>
<td>Activity</td>
<td>Potential Impact</td>
<td>Location</td>
<td>Impact Level</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Construction activities</td>
<td>Noise pollution</td>
<td>- Along the transportation roads.</td>
<td>Small to medium</td>
</tr>
<tr>
<td>Transportation of material and waste</td>
<td>Interruption of businesses and utility services</td>
<td>- Residential areas, school, state agencies near construction locations.</td>
<td>Small</td>
</tr>
<tr>
<td>- Carriageway hygiene</td>
<td>Environmental pollution and worsening landscape due to solid waste</td>
<td>- At the construction locations.</td>
<td>Small to medium</td>
</tr>
<tr>
<td>- Pavement maintenance</td>
<td>Surface water pollution caused by waste oil and oil-containing wastes</td>
<td>- At the locations near the source of surface water.</td>
<td>Small</td>
</tr>
<tr>
<td>- Clearing drainage culverts, ditches.</td>
<td>Cause traffic unsafely and traffic obstruction on the route.</td>
<td>- At the construction locations.</td>
<td>Small to medium</td>
</tr>
<tr>
<td>- Clearing river flow</td>
<td>Cause damages to the public utilities.</td>
<td>Local roads used for Transportation of material and waste.</td>
<td>Small</td>
</tr>
<tr>
<td>- Construction activities of machines.</td>
<td>Tensions between workers and local communities; Increase of theft, drug and alcohol abuse; Transfer of epidemic disease</td>
<td>At the construction locations.</td>
<td>Small</td>
</tr>
<tr>
<td>- Maintenance of construction machines</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation of material and waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work force</td>
<td>Tensions between workers and local communities; Increase of theft, drug and alcohol abuse; Transfer of epidemic disease</td>
<td>At the construction locations.</td>
<td></td>
</tr>
<tr>
<td>Material exploitation</td>
<td>- Generate dust, noise, vibration.</td>
<td>- At the borrow pits.</td>
<td>Small</td>
</tr>
<tr>
<td></td>
<td>- Cause damages to the public utilities.</td>
<td>- Along the transportation roads.</td>
<td></td>
</tr>
<tr>
<td>II. Emergency repair</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction activities (excavation, filling and old structure demolition, etc)</td>
<td>Air pollution caused by dust, exhaust and impact on community health</td>
<td>- At the locations of repairing and rebuilding drainage system.</td>
<td>Small to medium</td>
</tr>
<tr>
<td>Activity</td>
<td>Potential Impact</td>
<td>Location</td>
<td>Impact Level</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Interruption of businesses and utility services</td>
<td>construction locations.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation of material and waste, operation of construction machines</td>
<td>- Along the transportation roads.</td>
<td>- Residential areas, school, state agencies near construction locations.</td>
<td>Small to medium</td>
</tr>
<tr>
<td>Construction activities</td>
<td>Noise pollution</td>
<td>- Residential areas, school, state agencies near construction locations.</td>
<td>Small</td>
</tr>
<tr>
<td>Transportation of material and waste</td>
<td>- Activities of excavation, filling</td>
<td>- Environmental pollution and worsening landscape due to solid waste</td>
<td>Small to medium</td>
</tr>
<tr>
<td></td>
<td>- Repairing pavement structure</td>
<td>- Surface water pollution caused by waste oil and oil-containing wastes</td>
<td>Small</td>
</tr>
<tr>
<td></td>
<td>- Construction activities of machines.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Maintenance of construction machines.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Arranging construction machines</td>
<td>- Cause traffic unsafely and traffic obstruction on the route.</td>
<td>Small to medium</td>
</tr>
<tr>
<td></td>
<td>- Transportation of material and waste</td>
<td>- At the construction locations.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Maintenance of electrical system</td>
<td>- Along the transportation roads.</td>
<td></td>
</tr>
<tr>
<td>Transportation of material and waste</td>
<td>Cause damages to the public utilities.</td>
<td>Local roads used for Transportation of material and waste.</td>
<td>Small</td>
</tr>
<tr>
<td>Work force</td>
<td>Tensions between workers and local communities; Increase of theft, drug and alcohol abuse; Transfer of epidemic disease</td>
<td>At the construction locations.</td>
<td>Small</td>
</tr>
<tr>
<td>Material exploitation</td>
<td>- Generate dust, noise, vibration.</td>
<td>- At the borrow pits.</td>
<td>Small</td>
</tr>
<tr>
<td></td>
<td>- Cause damages to the public utilities.</td>
<td>- Along the transportation roads.</td>
<td></td>
</tr>
</tbody>
</table>

*Note: The activities during emergency repair are only assumed, so these impacts are assumed too. The impacts will be specified when the specific activities are determined.*
4.2. Social Impacts

The subproject does not acquire land, therefore there are not any social impacts due to land acquisition and resettlement.

The main social impacts would potentially be caused by workers who may bring in infectious diseases to the subproject site and the community and practice unhealthy sexual behavior. Community relations and safety may also be affected due to conflicts between local people and workers.

5. Mitigation Measures

The main mitigation measures are described in Table 4. Since this is a road maintenance sub-project good practice and standard mitigation measures are required along the road. Mostly waste, noise, dust, and traffic safety mitigation measures are required.

Site-specific mitigation measures along the NH5 are presented in Table 4. The specific impacts, location and proposed mitigation measures for each route segment are also described in Appendix 2.

<table>
<thead>
<tr>
<th>Location</th>
<th>Sensitive Area or Activity</th>
<th>Mitigation Measures</th>
</tr>
</thead>
</table>
| Km11+000 – Km14+000 | - The section Km11+000 ÷ Km12+300, is the area of companies and manufacturing facilities. At the remaining section, the resident is living along the route.  
- Nhu Quynh Bridge is located at Km12+752 | - When construction passes through residential areas, it should note to ensure dust and noise restrictions.  
- Ensure safety traffic on the route, especially on the rush hour on companies’ entrance.  
- Collecting and managing the waste. Not dumping solid waste, oil, paint, which are generated by bridge maintenance, into the river. |
| Km14+000 – Km17+000 | - The section Km14+000 ÷ Km16+000, is the area of companies and manufacturing facilities. At the remaining section, the Cho Duong Cai residential area is along the route. | - When construction passes through residential areas, it should note to ensure dust and noise restrictions.  
- Ensure safety traffic on the route, especially on the rush hour on companies’ entrance.  
- Collecting and managing the waste. |
| Km17+000 – Km20+000 | - Residential area of Lac Hong Commune is living along the route at section Km17+000 ÷ Km17+500  
- At section Km17+500 ÷ Km18+400, the route pass through agricultural land.  
- Pho Noi A Industrial Zone and manufacturing facilities are located at the remaining section. | - When construction passes through residential areas, it should note to ensure dust and noise restrictions.  
- Ensure safety traffic on the route, especially on the rush hour on industrial park’s entrance.  
- Collecting and managing the waste. Not dumping solid waste, oil, paint, which are generated by bridge maintenance, into the river. |
<table>
<thead>
<tr>
<th>Location</th>
<th>Sensitive Area or Activity</th>
<th>Mitigation Measures</th>
</tr>
</thead>
</table>
| Km20+000 – Km23+000 | - The route passes through concentration residential area.  
- Ban Bridge at Km21+014.  
- Company No.165 Kindergarten and Hung Yen College of Technology are located along the route.                                                                 | - When construction passes through residential areas, it should note to ensure dust and noise restrictions, especially at school area.  
- Ensure safety traffic on the route.  
- Collecting and managing the waste. Not dumping solid waste, oil, paint, which are generated by bridge maintenance, into the river. |
| Km23+000 – Km26+000 | - Populated areas are located along the route.  
- There are two interchanges on the route, one at Km23+000 and one at Km24+000.  
- Hong Duc Secondary School is located at Km24+400.                                                                 | - When construction passes through residential areas, it should note to ensure dust and noise restrictions, especially at school area.  
- Ensure safety traffic on the route, especially at interchanges.  
- Collecting and managing the waste.                                                                 |
| Km26+000 – Km29+000 | - Resident areas of Phung Chi Kien and Bach Sam communes are located along the route.                                                                                                                                       | - When construction passes through residential areas, it should note to ensure dust and noise restrictions, especially at school area and People Committee Office.  
- Ensure safety traffic on the route.  
- Collecting and managing the waste. Not dumping solid waste, oil, paint, which are generated by bridge maintenance, into the river. |
| Km29+000 – Km32+000 | - Resident is living on the left of route, industrial zone and manufacturing facilities are on the right.  
- Luong Bridge and Phong Coc Bridge are located at the station of Km29+403 and Km31+862 respectively.                                                                 | - When construction passes through residential areas, it should note to ensure dust and noise restrictions.  
- Ensure safety traffic on the route, especially on the rush hour on industrial park’s entrance.  
- Collecting and managing the waste. Not dumping solid waste, oil, paint, which are generated by bridge maintenance, into the river. |
| Km32+000 – Km35+000 | - Resident of Minh Duc Commune is living along the route.  
- Interchange with NH38 (at Km33+800) has a big traffic flow.                                                                                                       | - When construction passes through residential areas, it should note to ensure dust and noise restrictions.  
- Ensure safety traffic on the route, especially at interchange with NH38.  
- Collecting and managing the waste.                                                                 |
| Km35+000 – Km38+000 | - Cam Dien residential area is living at Km36+650 and Km37+800. On the remaining section, the route passes through agricultural land.                                                                                                | - When construction passes through residential areas, it should note to ensure dust and noise restrictions.  
- Ensure safety traffic on the route.                                                                 |
<table>
<thead>
<tr>
<th>Location</th>
<th>Sensitive Area or Activity</th>
<th>Mitigation Measures</th>
</tr>
</thead>
</table>
| Some companies are located on the route.  
- Giat Bridge, Mao Dien Bridge and Dua Bridge are located at the stations of Km35+120, Km36+060 and Km36+990 respectively. |
| Km38+000 – Km41+000 | - Sparsely populated area is interspersed with agricultural land along the route. Companies and manufacturing facilities are located at the end of section.  
- Cam Giang Secondary School is located at Km40+150, People Committee of Tan Truong Commune is located at Km40+300.  
- Ghe Bridge is located at Km39+831 | - When construction passes through residential areas, it should note to ensure dust and noise restrictions, especially at area nearby school and People Committee office.  
- Ensure safety traffic on the route, especially on the rush hour on school’s gate.  
- Collecting and managing the waste. Not dumping solid waste, oil, paint, which are generated by bridge maintenance, into the river. |
| Km41+000 – Km44+000 | - The densely populated areas are interspersed with companies and manufacturing facilities along the route.  
- Trade and Tourism College is located at Km43+180.  
- Interchange with PR194 in Lai Cach Town has big traffic flow.  
- Mo Bridge is located at Km42+172. | - When construction passes through residential areas, it should note to ensure dust and noise restrictions, especially at area nearby school.  
- Ensure safety traffic on the route, especially on the rush hour on school’s gate and at the interchange in Lai Cach Town.  
- Collecting and managing the waste. Not dumping solid waste, oil, paint, which are generated by bridge maintenance, into the river. |
| Km44+000 – Km47+000 | - Resident areas of Lai Cach Town are located at Km44+900. The remaining section is agricultural land and some factories.  
- Lai Cach Bridge is located at Km44+150 | - When construction passes through residential areas, it should note to ensure dust and noise restrictions.  
- Ensure safety traffic on the route.  
- Collecting and managing the waste. Not dumping solid waste, oil, paint, which are generated by bridge maintenance, into the river. |
| Km47+000 – Km50+000 | - Residents of Hai Duong City are located on the right of the route and separated with non-motorcycle lane by 7m wide separator and 5m wide parallel road. Companies and manufacturing facilities are located on the left. | - When construction passes through residential areas, it should note to ensure dust and noise restrictions at night.  
- Ensure safety traffic on the route. |
<table>
<thead>
<tr>
<th>Location</th>
<th>Sensitive Area or Activity</th>
<th>Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Km50+000 – Km53+000</td>
<td>- The first section Km50+000 ÷ Km51+000, companies and manufacturing facilities are located along the route. The remaining section, residents of Hai Duong City are living on the right of route and separated with rudimentary lane by 7m wide separator and 5m wide parallel road. - The interchange with the way to center of Hai Duong City is located at Km52+100.</td>
<td>- When construction passes through residential areas, it should note to ensure dust and noise restrictions at night. - Ensure safety traffic on the route, especially at the interchange with the way to center of Hai Duong City.</td>
</tr>
<tr>
<td>Km53+000 – Km56+000</td>
<td>- The first section Km53+000 ÷ Km54+000, resident areas of Hai Duong City are located on the right of route and separated with non-motorcycle lane by 7m wide separator and 5m wide parallel road. - Phu Luong Bridge is located at Km55+120. Some ponds are located at 5m far from the route.</td>
<td>- When construction passes through residential areas, it should note to ensure dust and noise restrictions at night. - Ensure safety traffic on the route. - Collecting and managing the waste. Not dumping solid waste, oil, paint, which are generated by bridge maintenance, into the river and ponds near the route.</td>
</tr>
<tr>
<td>Km56+000 – Km59+000</td>
<td>- Resident is interspersed with company and manufacturing facilities on the left. On the right of route, the mainly is agricultural land. - Hai Duong College of Technology is located at Km58+650.</td>
<td>- When construction passes through residential areas, it should note to ensure dust and noise restriction, especially at school area. - Ensure safety traffic on the route. - Collecting and managing the waste.</td>
</tr>
<tr>
<td>Km59+000 – Km62+000</td>
<td>- Concentration areas of resident are located at Km59+000 ÷ Km60+000 and Km61+600 ÷ Km62+000. At the remaining section, mainly is agricultural land and companies. - Lai Vu Bridge is located at Km60+200.</td>
<td>- When construction passes through residential areas, it should note to ensure dust and noise restrictions. - Ensure safety traffic on the route. - Collecting and managing the waste. Not dumping waste into agricultural land along the route.</td>
</tr>
<tr>
<td>Km62+000 – Km65+000</td>
<td>- Residents are interspersed with agricultural land. - People Committee of Cong Hoa Commune is located at Km63+450.</td>
<td>- When construction passes through residential areas, it should note to ensure dust and noise restrictions. - Ensure safety traffic on the route. - Collecting and managing the waste. Not dumping waste into agricultural land along the route.</td>
</tr>
<tr>
<td>Location</td>
<td>Sensitive Area or Activity</td>
<td>Mitigation Measures</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Km65+000 – Km68+000</td>
<td>- At section Km65+500 ÷ Km66+400, the route passes through agricultural land area. At the remaining section, the residents are located along the route.</td>
<td>- When construction passes through residential areas, it should note to ensure dust and noise restrictions.</td>
</tr>
<tr>
<td></td>
<td>- When construction passes through residential areas, it should note to ensure dust and noise restrictions, especially at the area nearby Kim Lien Pagoda.</td>
<td>- Collecting and managing the waste. Not dumping waste into agricultural land along the route.</td>
</tr>
<tr>
<td></td>
<td>- Collecting and managing the waste. Not dumping waste into agricultural land along the route.</td>
<td></td>
</tr>
<tr>
<td>Km68+000 – Km71+000</td>
<td>- Residents are located on the left of route, Agricultural land area on the right.</td>
<td>- When construction passes through residential areas, it should note to ensure dust and noise restrictions, especially at the area nearby Kim Lien Pagoda.</td>
</tr>
<tr>
<td></td>
<td>- Kim Lien Pagoda is located at Km68+900 and People Committee of Kim Xuyen Commune is located at Km69+400.</td>
<td>- Collecting and managing the waste. Not dumping waste into agricultural land along the route.</td>
</tr>
<tr>
<td></td>
<td>- Ensure safety traffic on the route.</td>
<td></td>
</tr>
<tr>
<td>Km71+000 – Km74+000</td>
<td>- At section Km71+000 ÷ Km72+000, sparse resident is interspersed with companies and manufacturing facilities. At the remaining section, the resident is located along the route.</td>
<td>- When construction passes through residential areas, it should note to ensure dust and noise restrictions, especially at the area nearby Kim Lien Pagoda.</td>
</tr>
<tr>
<td></td>
<td>- Ensure safety traffic on the route, especially at interchanged and Phu Thai Town.</td>
<td>- Collecting and managing the waste. Not dumping waste into agricultural land along the route.</td>
</tr>
<tr>
<td></td>
<td>- Collecting and managing the waste.</td>
<td></td>
</tr>
<tr>
<td>Km74+000 – Km77+000</td>
<td>- Concentration areas of resident are located at Km74+000, Km76+000 and Km77+000. The remaining section is agricultural land.</td>
<td>- When construction passes through residential areas, it should note to ensure dust and noise restrictions, especially at the area nearby health center.</td>
</tr>
<tr>
<td></td>
<td>- Shrines are located at Km75+500 and Health center of Kim Luong is located at Km76+600.</td>
<td>- Collecting and managing the waste. Not dumping waste into agricultural land along the route.</td>
</tr>
<tr>
<td></td>
<td>- Tay Linh Pagoda is located at Km79+350.</td>
<td></td>
</tr>
<tr>
<td>Km77+000 – Km80+000</td>
<td>- The residents are located at Km77+000 and on the right of section Km79+000 ÷ Km77+000. The remaining section is agricultural land.</td>
<td>- When construction passes through residential areas, it should note to ensure dust and noise restrictions, especially at the area nearby pagoda.</td>
</tr>
<tr>
<td></td>
<td>- Tay Linh Pagoda is located at Km79+350.</td>
<td>- Collecting and managing the waste. Not dumping waste into agricultural land along the route.</td>
</tr>
<tr>
<td>Location</td>
<td>Sensitive Area or Activity</td>
<td>Mitigation Measures</td>
</tr>
<tr>
<td>-------------------</td>
<td>----------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Km80+000 – Km83+000</td>
<td>- The residents are located on the left of the route. Agricultural land is on the right.</td>
<td>- When construction passes through residential areas, it should note to ensure dust and noise restrictions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Ensure safety traffic on the route.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Collecting and managing the waste. Not dumping waste into agricultural land along the route.</td>
</tr>
<tr>
<td>Km83+000 – Km86+000</td>
<td>- Residents are located along the route and interspersed with companies, industrial parks.</td>
<td>- When construction passes through residential areas, it should note to ensure dust and noise restrictions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Interchange between new NH5 and old NH5 is located at Km85+800.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Ensure safety traffic on the route, especially at interchange.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Collecting and managing the waste.</td>
</tr>
<tr>
<td>Km86+000 – Km89+000</td>
<td>- At section Km86+000 ÷ Km87+000, the route passes through agricultural land area. At the remaining section, residents are living along the route.</td>
<td>- When construction passes through residential areas, it should note to ensure dust and noise restrictions, especially at the area nearby school and pagoda.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Hai Phong Tourism and Service College is located at Km87+950, Linh Quang Pagoda is located at Km88+200.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Interchange between NH5 and NH10 is located at Km86+800.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Ensure safety traffic on the route, especially at interchange.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Collecting and managing the waste. Not dumping waste into agricultural land along the route.</td>
</tr>
<tr>
<td>Km89+000 – Km93+000</td>
<td>- Residents of Hai Phong City are located along the route and interspersed with companies, offices.</td>
<td>- When construction passes through residential areas, it should note to ensure dust and noise restrictions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Ensure safety traffic on the route, especially at interchange.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Collecting and managing the waste.</td>
</tr>
<tr>
<td>Along the road</td>
<td>- Private businesses and utility companies that will be affected.</td>
<td>- Planned and unplanned interruptions to water, gas, power, internet services: the Contractor must undertake prior consultation and contingency planning with local authorities about the consequences of a particular service failure or disconnection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Coordinate with relevant utility providers to establish appropriate construction schedules.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Provide information to affected households on working schedules as well as planned disruptions (at least 5 days in advance).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- The contractor should ensure alternative water supply to affected residents in the event of</td>
</tr>
<tr>
<td>Location</td>
<td>Sensitive Area or Activity</td>
<td>Mitigation Measures</td>
</tr>
<tr>
<td>----------</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>disruptions lasting more than one day. - Any damages to existing utility systems of cable shall be reported to authorities and repaired.</td>
</tr>
</tbody>
</table>

**Chance Find Procedures**

If the Contractor discovers archeological sites, historical sites, remains and objects, including graveyards and/or individual graves during excavation or construction, the Contractor shall:

- Stop the construction activities in the area of the chance find.
- Delineate the discovered site or area.
- Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities or the Department of Culture and Information takes over.
- Notify the Construction Supervision Consultant who in turn will notify responsible local or national authorities in charge of the Cultural Property of Viet Nam (within 24 hours or less).
- Relevant local or national authorities would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage; those include the aesthetic, historic, scientific or research, social and economic values.
- Decisions on how to handle the finding shall be taken by the responsible authorities. This could include changes in the layout (such as when finding an irremovable remain of cultural or archeological importance) conservation, preservation, restoration and salvage.
- If the cultural sites and/or relics are of high value and site preservation is recommended by the professionals and required by the cultural relics authority, the Project’s Owner will need to make necessary design changes to accommodate the request and preserve the site.
- Decisions concerning the management of the finding shall be communicated in writing by relevant authorities.

6. **Roles and Responsibilities of Environmental Management Stakeholders**

Proper environmental management during construction requires the involvement of several stakeholders and agencies, each with different roles and responsibilities including:

- Project owner: DRVN, PMU3;
- DUNREs (District Unit of Natural Resources and Environment) of the ten districts / 4 Provinces and Cities, including Gia Lam District (Ha Noi City); Van Lam, Yen My, My Hao districts (Hung Yen Province); Binh Giang, Cam Giang, Kim Thanh districts and Hai Duong City (Hai Duong Province ); An Duong, Hong Bang Urban Districts (Hai Phong City) and relative agencies;
- Contractor; and Local communities;
The relationship and interaction among different stakeholders in environmental management of the subproject are presented in the figure below.

**Figure 2. Environmental Management System**

Specific responsibilities of the stakeholders are provided in Table 5 below:

**Table 5. Roles of Responsible Stakeholders**

<table>
<thead>
<tr>
<th>No.</th>
<th>Company/Unit</th>
<th>Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DRVN/ PMU3</td>
<td>DRVN, the Project implementing agency, will be responsible for overseeing the project implementation. PMU3, representative of the DRVN, will be responsible for monitoring the overall project implementation, including environmental compliance of the project. PMU3 will have the final responsibility for environmental performance of the project during both the construction and operational phases. Specifically PMU3 will: i) closely coordinate with local authorities in the participation of the community during project preparation and implementation; ii) monitor and supervise EMP implementation</td>
</tr>
</tbody>
</table>
In order to get effectiveness in the implementation process, PMU3 will establish an environmental unit with at least two environmental staff to help with the environmental aspects of the project.

<table>
<thead>
<tr>
<th>No.</th>
<th>Company/ Unit</th>
<th>Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Environmental Unit (under PMU3)</td>
<td>The Environmental Unit is responsible for monitoring the implementation of WB’s environmental safeguard policies in all stages and process of the project. Specifically, this unit will be responsible for: i) reviewing the subproject EPCs and EMPs prepared by consultants to ensure quality of the documents; ii) helping PMU3 incorporate EMPs into the detailed technical designs and civil works bidding and contractual documents; iii) helping PMU3 incorporate responsibilities for EMP monitoring and supervision into the TORs, bidding and contractual documents for CSC and IEMC; iv) providing relevant inputs to the consultant selection process; v) reviewing reports submitted by the CSC and IEMC; vi) conducting periodic site checks; vii) advising PMU3’s leaders on solutions to environmental issues of the project; and viii) preparing environmental performance section on the progress and review reports to be submitted to the DRVN and the Bank.</td>
</tr>
<tr>
<td>3</td>
<td>CSC</td>
<td>The Construction Supervision consultant (CSC) will be responsible for supervising and monitoring all construction activities and for ensuring that Contractors comply with the requirements of the contracts and the EMP. The CSC shall engage sufficient number of qualified staff (e.g. Environmental Engineers) with adequate knowledge on environmental protection and construction project management to perform the required duties and to supervise the Contractor’s performance. The Environmental Engineers shall be lead by a Workplace Safety and Environment Supervisor (SES) who shall have extensive experience (at least 5 years experience is required) in environmental management, supervision and monitoring on construction projects and be familiar with Viet Nam environmental legislatives requirements. The terms of reference for the CSC shall be clearly stipulated in the contract signed between CSC and PMU3.</td>
</tr>
<tr>
<td>4</td>
<td>Contractor</td>
<td>Based on the approved EMP, the Contractor will be responsible for establishing a site-specific EMP for each construction site area, submit the plan to PMU3 and CSC for review and approval before commencement of construction. In addition, it is required that the</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>No.</th>
<th>Company/Unit</th>
<th>Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Contractor get all permissions for construction (traffic control and diversion, excavation, labor safety, etc) following current regulations. The contractor shall be required to appoint a competent individual as the contractor’s on-site Safety and Environment Officer (SEO) who will be responsible for monitoring the contractor’s compliance with the EMP requirements and the environmental specifications.</td>
</tr>
<tr>
<td>5</td>
<td>DUNREs (District Unit of Natural Resources and Environment)</td>
<td>With the role of state management in the environmental field, DUNREs will be responsible for monitoring and management environmental issues from project implementation process in district area.</td>
</tr>
</tbody>
</table>

7. Environmental Compliance Framework

7.1. Environmental Duties of the Contractor

The Contractor, and his sub-contractor and employees firstly shall adhere to minimize the impact that be may result of the project construction activities and secondly, the mitigation measures set down in these EMP to prevent harm and nuisances on local communities, impacts in construction and operation on the environment.

Remedial actions that cannot be effectively carried out during construction should be carried out on completion of the works (and before issuance of the acceptance of completion of works)

The duties of the Contractor and his Sub-Contractors include but not limiting to:

- Compliance with relevant legislative requirements governing the environment, public health and safety;
- Work within the scope of contractual requirements and other tender conditions;
- Organize representatives of the construction team to participate in the joint site inspections undertaken by the SES;
- Carry out any corrective actions instructed by the environmental officer of the Environmental Unit (under PMU3) or the SES;
- Provide and update information to the Environment Unit regarding works activities which may contribute, or be continuing to the generation of adverse environmental conditions;
- In case of non-compliances/discrepancies, carry out investigation and submit proposals on mitigation measures, and implement remedial measures to reduce environmental impact;
- Stop construction activities, which generate adverse impacts upon receiving instructions from the environmental officer of the Environmental Unit (under PMU3) or the SES. Propose and carry out corrective actions and implement alternative construction method, if required, in order to minimize the environmental impacts; Major non-compliance by the Contractor will be cause for suspension of works and other penalties until the non-compliance has been resolved to the satisfaction of the environmental officer of the Environmental Unit (under PMU3).

Detailed Environmental specifications for Contractors are included in Appendix 3.
7.2. Contractor’s Safety and Environment Officer (SEO)

The Contractor shall be required to appoint a competent individual as the Contractor’s on-site Safety and Environment Officer (SEO). The SEO must be appropriately trained in environmental management and must possess the skills necessary to transfer environmental management knowledge to all personnel involved in the contract. The SEO will be responsible for monitoring the Contractor's compliance with the EMP requirements and the environmental specifications. The duties of the SEO shall include but not be limited to the following:

- Carry out environmental site inspections to assess and audit the Contractors' site practice, equipment and work methodologies with respect to pollution control and adequacy of environmental mitigation measures implemented;
- Monitor compliance with environmental protection measures, pollution prevention and control measures and contractual requirements;
- Monitor the implementation of environmental mitigation measures;
- Prepare audit reports for the environmental monitoring data and site environmental conditions;
- Investigate complaints and recommend any required corrective measures;
- Advise the Contractor on environment improvement, awareness and proactive pollution prevention measures;
- Follow the procedures in the EMP and recommend suitable mitigation measures to the Contractor in the case of non-compliance. Carry out additional monitoring of non-compliance within the specified timeframe instructed by the environmental officer of the Environmental Unit (under PMU3);
- Liaison with the Contractor and environmental officer of the Environmental Unit (under PMU3) on all environmental performance matters; and Contractor's submission of EMP Implementation Plan reports to the environmental officer of the Environmental Unit (under PMU3), SES, and relevant administrative authorities, if required;
- Keep detailed records of all site activities that may pertain to the environment.

7.3. Environmental Supervision during Construction

During construction, the environmental supervision shall be carried out by a qualified Construction Supervision Consultant (CSC) reporting to the PMU3. The CSC is responsible for inspecting, and supervising all construction activities to ensure that mitigation measures adopted in the EMP are properly implemented, and that the negative environmental impacts of the project are minimized. The CSC shall engage sufficient number of qualified staff (e.g. Environmental Supervision Engineers) with adequate knowledge on environmental protection and construction project management to perform the required duties and to supervise the Contractor's performance.

The Environmental Engineers shall be led by a Workplace Safety and Environment Supervisor (SES) who shall have extensive knowledge and experience (at least 5 years experience is required) in environmental management, supervision and monitoring on construction projects to provide, objective and professional advice to the client on the environmental performance of the project. The SES shall be familiar with the environmental legislatives requirements of the Socialist Republic of Viet Nam. Depending on the project requirements, the SES may be required to work full-time on-site.

The SES shall:
Review and assess on behalf of the PMU3 whether the construction design meets the requirements of the mitigation and management measures of the EPC and EMP;

Supervise site environmental management system of Contractors including their performance, experience and handling of site environmental issues, and provide corrective instructions;

Review the EMP implementation by the Contractors and Sub-Contractors, verify and confirm environmental supervision procedures, parameters, monitoring locations, equipment and results;

Report EMP implementation status to PMU3 and prepare the environmental supervision statement during the construction period; and

Approve invoices or payments.

Terms of reference for the Environmental Supervision Engineers are included in Appendix 4.

7.4. Compliance with Legal and Contractual Requirements

The constructions activities shall comply not only with contractual environmental protection and pollution control requirements but also with environmental protection and pollution control laws of the Socialist Republic of Viet Nam.

All the works method statements submitted by the Contractor to the environmental officer (under PMU3) for approval shall also be sent to the SES to see whether sufficient environmental protection and pollution control measures have been included.

The SES shall also review the progress and program of the works to check that relevant environmental laws have not been violated, and that any foreseeable potential for violating the laws can be prevented.

The Contractor(s) shall regularly copy relevant documents to the SEO and the SES. The document shall at least include the updated Work Progress Reports, the updated Works Program, and the application letters for different license/permits under the environmental protection laws, and all the valid license/permit. The SES and the SEO shall also have access, upon request, to the Site Log-Book.

After reviewing the documents, the SEO or the SES shall advise the environmental officer (under PMU3) and the Contractor of any non-compliance with the contractual and legislative requirements on environmental protection and pollution control for them to take follow-up actions. If the SEO or the SES concludes that the current status on license/permit application and any environmental protection and pollution control preparation works may not comply with the works program or may result in potential violation of environmental protection and pollution control requirements by the works in due course, they shall advise the Contractor and the environmental officer (under PMU3) accordingly.

8. EMP Implementation Plan

8.1. Contractor’s EMP Implementation Plan

Prior to commencement of construction, the Contractor will be required to submit an EMP Implementation Plan to the PMU3 based on the Contractor’s actual construction methodologies, work program, and management of construction activities and management of the workforce during construction. The EMP Implementation Plan shall demonstrate compliance with Vietnamese environmental requirements, the mitigation measures set down in these specifications and The World Bank environmental policies. The content of the Contractor’s EMP shall be in line with the project specific EMP. The Plan shall be certified by
the SEO and verified in accordance with the project and the EPC requirements and, approved by the SES and PMU3.

The Contractor’s EMP Implementation Plan shall provide details such as commitment to environmental protection by the Contractor’s Project Management Team; methodology of implementing the project EMP; detailed designs and installation of pollution control facilities (e.g. drainage channel, settling tank, temporary noise barrier, etc); environmental control mechanism; detailed earthworks management plans and site operation plans outlining the measures that are proposed to minimize, mitigate and manage the effects, for the duration of the construction works; and environmental monitoring program during different stages of construction period.

8.2. Project Initiation and Staffing

It is anticipated that the CSC and the SES, will be mobilized one month before the start of the construction activities. The one month start up time will be utilized by the SES to review and familiarize itself with the project, the project design, the technical specifications, contract documents, the EPC, EMP and RAP reports and other project relevant documents and reports. Following the review, the SES will prepare a brief report on the potential issues and challenges arising from the implementation of the EMP and the condition of contracts and make recommendations to the PMU3 about how best to improve the implementation of the EMP. The SES is expected to be mobilized at the beginning of the contract, to prepare the necessary guidelines, documentation, training, etc.

8.3. Capacity Building and Training

Actual implementation of projects shows that coordination in environmental management is not always effective because of the following reasons:

- Local staff do not master loans borrowing process of project but carry out practices involving and following those of domestic projects with limited participation;
- The community does not have obvious awareness on their rights and obligations on environmental protection or in spite of understanding, there is a lack of regime to provide feedback;
- Relevant agencies were not always ready in coordinating works during project implementation. Some agencies assigned their functional staff to coordinate with the project but this assignment is only temporary and appointed staffs do not master the coordination method as well as necessary procedures for discussion and contact with PMU3.

In order to overcome these matters, it is necessary to analyze and assess the capability and demands of relevant departments/divisions in environmental management and analyze actual demands for project implementation. Accordingly, a capacity building and training program will be established to increase the effective operation of environmental management systems in the future. Some assessments on training demands in environmental management as well as proposals for a training program are presented in Appendix 5.

9. Monitoring Program

9.1. Objectives

It is essential to design the monitoring program and monitoring frequency appropriately to be able to demonstrate both the overall performance of the project works as well as the short-term impact due to peak construction activities. More specifically, as the integral and critical part of the EMP, the environment monitoring program should have the following objectives:
NH5 Environmental Management Plan

- Determine the actual extent of the impacts;
- Control impacts which are generated from construction process and mentioned in EPC report;
- Check environmental pollution standards applied to the project during construction;
- Check and supervise implementation of environmental protection solutions during construction based on EPC report.
- Suggest mitigation measures in case of unexpected impacts;
- Suggest to the Client to coordinate with central and local environmental organizations to solve pending issues relating to environmental protection under the scope of the Subproject;
- Assess the effect of mitigation measures in pre-construction, construction and operation stages;
- Confirm the impacts forecasted in the EPC.

9.2. Site Inspections

The SEO and the SES shall carry out a monitoring program on a daily or as needed basis at the designated monitoring locations and the regular site inspections. The monitoring program shall include:

- Monitoring of the noise level at the sensitive receptor by portable monitoring kit; the monitoring shall take place during the heavy construction activities, such as excavation, piling, power generation, material transportation and night time construction, if any and shall be conducted near villages, schools, and other sensitive receptors along the project alignment;
- Visual inspection to check the air-borne dust, during demolition, bulk material handling and storage, transportation routes near the resident areas;
- Visual inspection to check the water quality in the receiving rivers, fish ponds and lakes affected by the construction activity such as turbid, smell, color, etc.
- During the peak construction period or at the request from PMU3, once non-compliance with environmental quality performance criteria is identified, additional monitoring shall be carried out.

The SEO and the SES shall refer to the following information/documentation in conducting the inspection:

- The contractor’s environmental performance, and EMP Implementation program;
- Good practices and general environmental mitigation measures;
- Compliance with the EMP requirements, contractual specification and Vietnamese legislation;
- Protection to sensitive locations and control mechanism of the restricted areas;
- The contractor’s construction methodologies and condition of construction plant;
- Individual works methodology proposals (which shall include proposal on associated pollution control measures);
- Works progress and program;
- The adequacy and efficiency of the contractor’s pollution control measures/ treatment facilities for minimizing environmental impacts;
- Landscaping and soil erosion controls;
- Location, management and pollution control at the waste/material storage areas, borrow pits and access roads;
- Previous site inspection results.

The Contractor shall update the SEO and the SES with all relevant information of the construction contract to carry out the site inspections. The inspection results and its associated recommendations on improvements to the environmental protection and pollution control works shall be timely submitted to PMU3 and the Contractor for reference and for taking immediate action.

9.3. Monitoring Indicators

The environmental monitoring program will be implemented during construction and operation process at 3 levels:

(i) Monitoring project completion Indicator
(ii) Monitoring the level of compliance with mitigation measures
(iii) Community-based Monitoring

Details of the monitoring program proposed are presented below.

- Monitoring project completion indicator

A system of monitoring indicators are proposed to assess implementation of some project stages. These monitoring indicators which represent characteristics of sub-project activities can be collected easily based on experiences obtained from similar WB funded infrastructure investment projects in Viet Nam. Based on initial objectives, the following activities will be established, including socio-economic effect, environment, and sustainable development.

These indicators will be stated in the manuals that provides guidance on project implementation. The main environmental indicators related to project investment effect includes but not be limited by the following matters:

+ Decrease in the level of pollution load on NH5 and related axis roads.
+ Decrease in the level of accidents on NH5 and related axis roads.

This monitoring will be implemented after road completion. PMU3 will be responsible for collecting the information necessary to prepare periodical reports on project completion indicators with the help of a technical consultant.

- Monitoring compliance with mitigation measures

The monitoring assignments for the Contractor, CSC shall be clearly indicated in their terms of reference and contract documents shall be approved by the World Bank. CSC will be responsible for submitting monthly reports which state environmental problems, actions and updated monitoring results. CSC will be responsible for preparing and submitting every three months reports to PMU3, which shall include conclusions on environmental problems and the key implemented mitigation measures. Quarterly reports, prepared by PMU3, shall comprise the following aspects:

+ A priority list of issues as determined in monitoring reports of the previous months.
+ Methods taken by the Contractor to solve relevant.
Pending matters, proposed solutions and explanation of special circumstances for non-compliance.

- **Community-based Monitoring**

The communities will monitor the project along its construction process in order to ensure that the contractors will comply with all environmental and social regulations as well as to reduce the risks on their properties and economic activities, human health and the environment. According to the information phase, the community helps to assess the mitigation measures as well as interested in the aspirations of the people, to contribute to a better environment management mechanism.

Community-based monitoring will be reported in voluntary monitoring reports that address the urgent issues. When there is damage to the environment, the community and local authorities will report to stakeholders.

**9.4. Monitoring Report System**

In order to exchange information effectively, establish a database for monitoring the implementation of mitigation measures, and create an effective implementation of EMP, it is essential to adopt a system of standard report at all levels of management as shown in the table below.

### Table 6. System of Environmental Monitoring Report

<table>
<thead>
<tr>
<th>No.</th>
<th>Issues to be reported</th>
<th>Monitoring at 1st level</th>
<th>Monitoring at 2nd level</th>
<th>Monitoring at 3rd level (One duplicate must be sent to DUNREs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Implement mitigation measures on site in accordance with the EMP and contract clauses</td>
<td>Implemented by: Functional company ofDRVN</td>
<td>Frequency of report submission: once every six months Report sent to: DRVN</td>
<td>Implemented by: DRVN Frequency of report submission: once every six months Report sent to: MOT</td>
</tr>
<tr>
<td>2</td>
<td>Monitoring and supervision of the EMP compliance in accordance with the contract clauses</td>
<td>Implemented by: Functional company of DRVN</td>
<td>Frequency of report submission: once every six months Report sent to: DRVN</td>
<td>Implemented by: DRVN Frequency of report submission: once every six months Report sent to: MOT</td>
</tr>
<tr>
<td>3</td>
<td>Community monitoring of EMP implementation</td>
<td>Implemented by: Monitoring by community group Frequency of</td>
<td>Implemented by: Local authority Frequency of</td>
<td></td>
</tr>
</tbody>
</table>

Phase of Maintenance according to PBC contract
9.5. Environmental Claims and Penalty System

As part of the compliance framework, if non-compliance with environmental regulations are discovered by CSC during the site supervision, 2% values of interim payment of the contractor of this month will be held back. The Contractor will be given a grace period (determined by CSC) to repair the violation. If the Contractor performs the repairs within the grace period (confirmed by CSC), no penalty is incurred and keeping money will be pay for next month. However, if the Contractor fails to successfully make the necessary repairs within the grace period, the Contractor will pay the cost for a third party to repair the damages (deduction from keeping money).

In case of CSC not detected of non-compliance with environmental regulations of the contractor, they will be responsibility payment to repair the violation.

10. Estimated Budget for EMP Implementation

10.1. Implementation of Mitigation Measures by Contractor

The cost for organization, training, dissemination, procurement, operation of equipment, and labor for implementation of mitigation measures in and out of the site in accordance with the EMP and the subproject bidding and contractual document requirements are integrated in the construction package. Contractors will be responsible to study, prepare alternatives and offer cost estimation for these activities. It is considered as one of the criteria for assessing the capability of the Contractor in the future and compliance level of the Contractor.

10.2. EMP Estimated Budget for Capacity Building

Apart from costs, which have been calculated in relevant packages/contracts, one more cost element will be required for EMP as follows:

<table>
<thead>
<tr>
<th>No</th>
<th>Contents</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cost for capability building and training</td>
<td>82,000,000</td>
</tr>
<tr>
<td>2</td>
<td>Contingency (10%)</td>
<td>8,200,000</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>90,200,000</strong></td>
</tr>
</tbody>
</table>

Exchange Rate dated on June 21, 2013 of VCB: 1 USD = 21,036 VND
EMP estimated budget for capacity building is 90,200,000VND (4,288 USD).
The above cost rate is estimated based on current unit price and Consultant’s experiences. Because the project will be implemented several years, price fluctuation will be unavoidable. A contingency amount should be prepared for any unavoidable price or cost increase during project implementation. Detailed costs are presented in Appendix 6.

11. Public Consultation and Information Disclosure

11.1. Objectives

According to the safeguard policy of World Bank (OP 4.01), the Subproject shall organize public consultation and disclose the Subproject information to local communities.

Main objectives of the public consultation meeting and disclosure including:
- Provide information on the subproject to the affected people and local communities.
- Collect opinions and comments of the subproject-affected-people and local communities on the subproject design, location, alternatives, positive and negative potential impacts, and proposed mitigation measures.
- Address concerns of the local communities and people on the subproject and promote active participation of the subproject-affected-people and local communities into the subproject implementation from the early stage of the subproject planning.

11.2. Results of Public Consultation Meetings

The project owner (PMU3) has organized nine (9) public consultation meetings at the nine (9) communes in the project area (time of the meeting are present in following Table).

Table 8. Time of Public Consultation Meetings

<table>
<thead>
<tr>
<th>No.</th>
<th>Time</th>
<th>Locality</th>
<th>Number of participant</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>14h00 - March 07, 2013</td>
<td>Nhu Quynh Town, Van Lam District, Hung Yen Province</td>
<td>19</td>
</tr>
<tr>
<td>2</td>
<td>08h00 - March 08, 2013</td>
<td>Giai Pham Commune, Yen My District, Hung Yen Province</td>
<td>23</td>
</tr>
<tr>
<td>3</td>
<td>14h00 - March 08, 2013</td>
<td>Di Su Commune, My Hao District, Hung Yen Province</td>
<td>24</td>
</tr>
<tr>
<td>4</td>
<td>09h00 - March 11, 2013</td>
<td>Lai Cach Commune, Cam Giang District, Hai Duong Province</td>
<td>21</td>
</tr>
<tr>
<td>5</td>
<td>14h00 - March 11, 2013</td>
<td>Cam Thuong Ward, Cam Giang District, Hai Duong Province</td>
<td>19</td>
</tr>
<tr>
<td>6</td>
<td>08h00 - March 12, 2013</td>
<td>Tuan Hung Commune, Kim Thanh District, Hai Duong Province</td>
<td>24</td>
</tr>
<tr>
<td>7</td>
<td>14h00 - March 12, 2013</td>
<td>Phuc Thanh Commune, Kim Thanh District, Hai Duong Province</td>
<td>24</td>
</tr>
<tr>
<td>8</td>
<td>09h00 - March 13, 2013</td>
<td>Le Thien Commune, An Duong District, Hai Phong City</td>
<td>23</td>
</tr>
<tr>
<td>9</td>
<td>14h30 - March 13, 2013</td>
<td>Tan Tien Commune, An Duong District, Hai Phong City</td>
<td>25</td>
</tr>
</tbody>
</table>

After listening to the representative of the Project owner introducing main items of the Project
the participants put forward many comments as well as contributions to the Project owner. In the public consultation meetings and EPC report, the project owner has committed and responded on environmental protection during implementation of the subproject. The following table presents the opinions/comments from the communes/wards and responses from the Project owner. These opinions/comments and responses have been integrated in the impacts and mitigation measures of the subproject EMP and EPC.

Table 9. Results summary of Consultation Meetings

<table>
<thead>
<tr>
<th>No</th>
<th>Opinions/Comments from the Communes/Wards</th>
<th>Response from Project Owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Drainage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>Most localities require dredging and adding the drainage system along the route of NH5.</td>
<td>Project owner collected the opinions and directed the design consultant to design adequately the drainage system, ditches along both sides of NH5 so that the inundation will not occur during the construction.</td>
</tr>
<tr>
<td>2. Environmental sanitation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>Focusing on the mitigation of dust and noise during construction.</td>
<td>Mitigation measures for the environmental impacts are detailed in the Project’s EPC and EMP and project owner commit to comply with the proposed measures.</td>
</tr>
<tr>
<td>-</td>
<td>Most localities require the Project to collect immediately all kinds of waste soil and rock.</td>
<td>All types of waste generated during construction will be collected and processed according to the regulations.</td>
</tr>
<tr>
<td>-</td>
<td>The type of waste soil and rock and grease spills down the field along the NH5. PMU3, supervision consultant need to coordinate closely with local authorities to manage the construction company during the implementation of the measures to minimize the environmental impacts.</td>
<td>During construction the contractor will arrange the residual mud barriers with geotextile at the construction sections cross the ponds, canals to prevent the mud spill out. Waste oil and rock, waste oil and containing-oil waste will be collected, classified and processed in accordance with the regulations.</td>
</tr>
<tr>
<td>-</td>
<td>No burn the waste oil and oil rags at the site. It is necessary to collect and transport them to the place of treatment as prescribed.</td>
<td>All waste oil and containing-oil waste will be collected in the specialized containers. When they are full, they will be transported to the temporary storage areas, concurrently with the new containers arranged at the repair station. Waste oil and containing-oil waste will be handled according circular No.12/2011/TT-BTNMT Circular dated 14/04/2011 of the Ministry of Natural Resources and Environment on hazardous waste management.</td>
</tr>
<tr>
<td>3. Safety at work and Social security, order</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
No | Opinions/Comments from the Communes/Wards | Response from Project Owner
---|---------------------------------------------|-----------------------------------------------
- | The workers must be strictly managed during construction. It should be registered the temporary residence for the workers with local authorities | Project owner and contractor have rules of their workers management, and will coordinate with the local authorities to propagandize the understanding of the social evils, prostitution, disease, HIV, etc in order to reduce the social evils. They also register the temporary residence for the workers with local authorities
- | Limit construction in rush hours of the industrial zones along the road (from 16h30 to 18h00 daily). | Project owner will receive the comments and put into the contract with the contractor

4. Ensuring traffic safety

- | It necessary to distribute the traffic direction reasonably to avoid traffic congestion. There are opinions of some localities which are dismantling the separators between the motorized and non–motorized lanes to divide the traffic direction effectively. | To ensure traffic operation normally take place, during construction process the project owner will coordinate with the contractor to take measures to separate the construction site, and distribute and regulate the flow of traffic, which should meet traffic while carrying out the construction activities
- | Project owner need to pay attention to connect with the local roads so that ensure the safety of people and vehicles in traffic. | Thirty four (34) intersections are arranged to ensure the safety of people and vehicles in traffic. These intersections are mostly installed system of traffic control signals or warning lights.

5. Information Disclosure

- | PMU3 should have a mechanism for local authorities to monitor, respond to environmental impacts during construction. | The project will publicize EMP at the localities according to the Vietnam environmental protection law so that people known, check and monitor.

In addition, the project owner and socio-environmental experts have conducted the interview with local people by questionnaire forms. The overall result of interview is as follows:

- Information about the project: Most affected households known information of the project through various sources: from the local authority, from radios and from others.
- Environmental status: Almost local people living along the roadside of NH5 are affected by noise, vibration caused by the vehicles, not affected by water pollution. Due to large traffic density, the accident usually occurs on this road.
- Positive impact of Project: The project contributes to regional economic development, increasing business opportunities during construction and operation phase.
- Negative impact of Project: Almost interviewed households said that the construction process would affect the socio-economic and natural environment due to dust, noise and vibration generated from machinery, people's health. They would like the project should
soon be implemented and having the measures to limit negative impacts on their lives.

- Mitigation measures of Project: Almost households agree with the mitigation measures which proposed by Project as: spraying water to prevent dust, using canvas cover to prevent dust generated by material transportation or limiting construction on the nighttime. They proposed the project and the construction units should coordinate with the police to regulate the traffic, arrange the traffic sign of construction site to ensure safety for them.

- In addition, there are many workers who work for the industrial zones in Project area, the implementation of the project will mobilize a labor force from other places. Therefore, many households are afraid causing impact on the public order, affecting their lives due to conflict arising with workers or appears many other evils such as stealing, fighting, gambling.

11.3. Disclosure of the EMP

The EMP in Vietnamese will be disclosed in the country at PMU3, as well as in the thirty-eight communes of the ten districts of Ha Noi City, Hung Yen Province, Hai Duong Province and Hai Phong City.

The EMP copies in Vietnamese and English will be sent to the Vietnam Development Information Center at 63 Ly Thai To street, Hanoi City for disclosure of information. The EMP copies in English will also be disclosed in the Infoshop of the World Bank.
12. Appendices

Appendix 1. Environmental standard and regulations

Standards and regulations on water environment
+ QCVN 09: 2008/BTNMT - National technical regulation on underground water quality;
+ QCVN 08: 2008/BTNMT - National technical regulation on surface water quality;

Standards and regulations on air environment
+ QCVN05:2009/BTNMT. National technical regulation on ambient air quality;
+ QCVN06:2009/BTNMT. National technical regulation on hazardous substance in ambient air.

Standards on solid waste
+ QCVN 07:2009/BTNMT The national technical regulation on hazardous waste thresholds;
+ TCVN 6707:2009 - Prevention and warning signs for hazardous waste;
+ TCVN 6705:2009 - Non-hazardous waste;
+ TCVN 6706:2009 - Separation of hazardous wastes.

Standards and regulations on soil environment and sediment
+ QCVN03:2008/BTNMT, National technical regulation on the allowable limits of heavy metals in the soils;
+ QCVN 43:2012/BTNMT, National Technical Regulation on Sediment Quality

Standards and regulations on noise and vibration
+ QCVN26:2010/BTNMT, National technical regulation on noise;
+ QCVN 27:2010/BTNMT, National technical regulation on vibration.
+ TCVN7210:2002, Vibration and shock – Vibration caused by construction works and factories – Maximum permitted levels in the environment of public and residential areas.

Standards on labor sanitation
+ Decision No. 3733/2002/QD-BYT dated 10th October 2002 issued by Heath Care Department on application of 21 standards on labor sanitation

Safety standards and regulations for construction:
Appendix 2. Specific Impacts, Location and Proposed Mitigation Measures for each Route Segment

**CURRENT STATUS**
- The section Km11+000 ÷ Km12+300, is the area of companies and manufacturing facilities. At the remaining section, the resident is living along the route.
- Nhu Quynh Bridge is located at Km12+752

**ATTENTION IN CONSTRUCTION PROCESS**
- When construction passes through residential areas, it should note to ensure dust and noise restrictions.
- Ensure safety traffic on the route, especially on the rush hour on companies’ entrance.
- Collecting and managing the waste. Not dumping solid waste, oil, paint, which are generated by bridge maintenance, into the river.
CURRENT STATUS
- The section Km14+000 ÷ Km16+000, is the area of companies and manufacturing facilities. At the remaining section, the Cho Duong Cai residential area is along the route.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions.
- Ensure safety traffic on the route, especially on the rush hour on companies’ entrance.
- Collecting and managing the waste.
CURRENT STATUS
- Residential area of Lac Hong Commune is living along the route at section Km17+000 ÷ Km17+500
- At section Km17+500 ÷ Km18+400, the route pass through agricultural land.
- Pho Noi A Industrial Zone and manufacturing facilities are located at the remaining section.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions.
- Ensure safety traffic on the route, especially on the rush hour on industrial park’s entrance.
- Collecting and managing the waste. Not dumping solid waste, oil, paint, which are generated by bridge maintenance, into the river.
CURRENT STATUS
- The route passes through concentration residential area.
- Ban Bridge is located at Km21+014.
- Company No.165 Kindergarten and Hung Yen College of Technology are located along the route.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions, especially at school area.
- Ensure safety traffic on the route.
- Collecting and managing the waste. Not dumping solid waste, oil, paint, which are generated by bridge maintenance, into the river.
CURRENT STATUS
- Populated areas are located along the route.
- There are two interchanges on the route, one at Km23+000 and one at Km24+000
- Hong Duc Secondary School is located at Km24+400.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions, especially at school area.
- Ensure safety traffic on the route, especially at interchanges.
- Collecting and managing the waste.
CURRENT STATUS
- Resident areas of Phung Chi Kien and Bach Sam communes are located along the route.
- My Hao Bridge is located at Km27+160.
- Phung Chi Kien Secondary School and People Committee of Bach Sam Commune are located at Km28+750.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions, especially at school area and People Committee Office.
- Ensure safety traffic on the route.
- Collecting and managing the waste. Not dumping solid waste, oil, paint, which are generated by bridge maintenance, into the river.
CURRENT STATUS
- Resident is living on the left of route, industrial zone and manufacturing facilities are on the right.
- Luong Bridge and Phong Coc Bridge are located at the station of Km29+403 and Km31+862 respectively.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions.
- Ensure safety traffic on the route, especially on the rush hour on industrial park’s entrance.
- Collecting and managing the waste. Not dumping solid waste, oil, paint, which are generated by bridge maintenance, into the river.
CURRENT STATUS
- Resident of Minh Duc Commune is living along the route.
- Interchange with NH38 (at Km33+800) has a big traffic flow.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions.
- Ensure safety traffic on the route, especially at interchange with NH38.
- Collecting and managing the waste.
CURRENT STATUS
- Cam Dien residential areas area located at Km36+650 and Km37+800. On the remaining section, the route passes through agricultural land. Some companies are located on the route.
- Giat Bridge, Mao Dien Bridge and Dua Bridge are located at the stations of Km35+120, Km36+060 and Km36+990 respectively.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions.
- Ensure safety traffic on the route.
- Collecting and managing the waste. Not dumping solid waste, oil, paint, which are generated by bridge maintenance, into the river.
CURRENT STATUS
- Sparsely populated area is interspersed with agricultural land along the route. Companies and manufacturing facilities are located at the end of section.
  - Cam Giang Secondary School is located at Km40+150, People Committee of Tan Truong Commune is located at Km40+300.
  - Ghe Bridge is located at Km39+831

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions, especially at area nearby school and People Committee office.
  - Ensure safety traffic on the route, especially on the rush hour on school’s gate.
  - Collecting and managing the waste. Not dumping solid waste, oil, paint, which are generated by bridge maintenance, into the river.
CURRENT STATUS
- The densely populated areas are interspersed with companies and manufacturing facilities along the route.
- Trade and Tourism College is located at Km43+180.
- Interchange with PR194 in Lai Cach Town has big traffic flow.
- Mo Bridge is located at Km42+172.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions, especially at area nearby school.
- Ensure safety traffic on the route, especially on the rush hour on school’s gate and at the interchange in Lai Cach Town.
- Collecting and managing the waste. Not dumping solid waste, oil, paint, which are generated by bridge maintenance, into the river.
CURRENT STATUS
- Resident areas of Lai Cach Town are located at Km44+900. The remaining section is agricultural land and some factories.
- Lai Cach Bridge is located at Km44+150

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions.
- Ensure safety traffic on the route.
- Collecting and managing the waste. Not dumping solid waste, oil, paint, which are generated by bridge maintenance, into the river.
CURRENT STATUS
- Residents of Hai Duong City are located on the right of the route and separated with non-motorcycle lane by 7m wide separator and 5m wide parallel road. Companies and manufacturing facilities are located on the left.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions at night.
- Ensure safety traffic on the route.
CURRENT STATUS
- The first section Km50+000 ÷ Km51+000, companies and manufacturing facilities are located along the route. The remaining section, residents of Hai Duong City are living on the right of route and separated with rudimentary lane by 7m wide separator and 5m wide parallel road.
- The interchange with the way to center of Hai Duong City is located at Km52+100.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions at night.
- Ensure safety traffic on the route, especially at the interchange with the way to center of Hai Duong City.
CURRENT STATUS
- The first section Km53+000 ÷ Km54+000, resident areas of Hai Duong City are located on the right of route and separated with non-motorcycle lane by 7m wide separator and 5m wide parallel road.
- Phu Luong Bridge is located at Km55+120. Some ponds are located at 5m far from the route.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions at night.
- Ensure safety traffic on the route.
- Collecting and managing the waste. Not dumping solid waste, oil, paint, which are generated by bridge maintenance, into the river and ponds near the route.
CURRENT STATUS
- Resident is interspersed with company and manufacturing facilities on the left. On the right of route, the mainly is agricultural land.
- Hai Duong College of Technology is located at Km58+650.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restriction, especially at school area.
- Ensure safety traffic on the route.
- Collecting and managing the waste.
CURRENT STATUS
- Concentration areas of residents are located at Km59+000 ÷ Km60+000 and Km61+600 ÷ Km62+000. At the remaining section, mainly is agricultural land and companies.
- Lai Vu Bridge is located at Km60+200.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions.
- Ensure safety traffic on the route.
- Collecting and managing the waste. Not dumping waste into agricultural land along the route.
CURRENT STATUS
- Residents are interspersed with agricultural land.
- People Committee of Cong Hoa Commune is located at Km63+450

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions.
- Ensure safety traffic on the route.
- Collecting and managing the waste. Not dumping waste into agricultural land along the route.
CURRENT STATUS
- At section Km65+500 ÷ Km66+400, the route passes through agricultural land area. At the remaining section, the residents are located along the route.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions.
- Ensure safety traffic on the route.
- Collecting and managing the waste. Not dumping waste into agricultural land along the route.
CURRENT STATUS
- Residents are located on the left of route, Agricultural land area on the right.
- Kim Lien Pagoda is located at Km68+900 and People Committee of Kim Xuyen Commune is located at Km69+400.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions, especially at the area nearby Kim Lien Pagoda.
- Ensure safety traffic on the route.
- Collecting and managing the waste. Not dumping waste into agricultural land along the route.
CURRENT STATUS
- At section Km71+000 ÷ Km72+000, sparse resident is interspersed with companies and manufacturing facilities. At the remaining section, the resident is located along the route.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions.
- Ensure safety traffic on the route, especially at interchanged and Phu Thai Town.
- Collecting and managing the waste. Not dumping waste into agricultural land along the route.
CURRENT STATUS
- Concentration areas of resident are located at Km74+000, Km76+000 and Km77+000. The remaining section is agricultural land.
- Shrines are located at Km75+500 and Health center of Kim Luong is located at Km76+600.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions, especially at the area nearby health center.
- Ensure safety traffic on the route.
- Collecting and managing the waste. Not dumping waste into agricultural land along the route.
CURRENT STATUS
- The residents are located at Km77+000 and on the right of section Km79+000 ÷ Km77+000. The remaining section is agricultural land.
- Tay Linh Pagoda is located at Km79+350.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions, especially at the area nearby pagoda.
- Ensure safety traffic on the route.
- Collecting and managing the waste. Not dumping waste into agricultural land along the route.
CURRENT STATUS
- The residents are located on the left of the route. Agricultural land is on the right.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions.
- Ensure safety traffic on the route.
- Collecting and managing the waste. Not dumping waste into agricultural land along the route.
CURRENT STATUS
- Residents are located along the route and interspersed with companies, industrial parks.
- Interchange between new NH5 and old NH5 is located at Km85+800.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions.
- Ensure safety traffic on the route, especially at interchange.
- Collecting and managing the waste.
CURRENT STATUS
- At section Km86+000 ÷ Km87+000, the route passes through agricultural land area. At the remaining section, residents are living along the route.
- Hai Phong Tourism and Service College is located at Km87+950, Linh Quang Pagoda is located at Km88+200.
- Interchange between NH5 and NH10 is located at Km86+800.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions, especially at the area nearby school and pagoda.
- Ensure safety traffic on the route, especially at interchange.
- Collecting and managing the waste. Not dumping waste into agricultural land along the route.
CURRENT STATUS
- Residents of Hai Phong City are located along the route and interspersed with companies, offices.

ATTENTION IN CONSTRUCTION PROCESS
- When construction passes through residential areas, it should note to ensure dust and noise restrictions.
- Ensure safety traffic on the route, especially at interchange.
- Collecting and managing the waste.
Appendix 3: Environmental and Social Specification for Contractors

The following are the environmental and social specifications that must be included in both the bidding documents and construction contracts to ensure an adequate management of environmental and social issues during all the phases of the road project. However, this information is intended solely as broad guidance to be used in conjunction with local and national regulations.

The Contractor and his employees shall adhere to the mitigation measures set down in:

+ The Environmental Management Plan of the this project including site specific measures identified in Table 4 and Appendix 2 of the EMP;
+ The mitigation measures included in Subproject design and bill of quantities;
+ The specifications, procedures, and best practices included in these specifications. These specifications complement any technical specifications included in the work quantities and the requirements of any Vietnamese regulations and standards.

WORKFORCE AND SITE MANAGEMENT PLAN
- Workforce
- Site installation
- Prohibitions
- Environmental Training for Construction Workers

CONSTRUCTION IMPACT MANAGEMENT PLAN
- Emissions air and Dust
- Noise and Vibration
- Earthworks, Cut and Fill Slopes
- Disposal of Debris

WASTE MANAGEMENT PLAN
- Drainage System
- Solid Waste
- Hazardous waste

MATERIALS HANDLING, USE AND STORAGE MANAGEMENT PLAN
- Transportation
- Hazardous Substances
- Surfacing Materials
- Cement and Concrete Batching
- Maintenance of Construction Equipment

ECOLOGICAL MANAGEMENT PLAN
- Protection of Natural Vegetation
- Protection of Fauna
SAFETY MANAGEMENT PLAN
  Construction Site Safety
  Fire Control
  Traffic Management
  Environmental Emergency Procedures

COMMUNITY RELATIONS AND HEALTH MANAGEMENT PLAN
  Community Relations
  Health Management Plan

The details of these plans are as follows:

WORKFORCE AND SITE INSTALLATION MANAGEMENT PLAN

Workforce
Workforce includes all personnel hire by the Contractors to work in the constructions, rehabilitation or improvement of roads. The workers shall, whenever possible, rent houses nearby.

The Contractors shall:

  + Give priority to hire local labor for the works;
  + Engineers and workers shall register their temporary residence with the local authority;
  + Provide work safety training to those local labors upon their hiring;
  + The construction workers and staff shall need to have appropriate certificates as required (for example, health checks, labor contracts, insurance, etc);
  + Provide education classes on HIV and sexually transmitted diseases.
  + Establish a Code of Conduct to outline the importance of appropriate behavior, drug and alcohol abuse, respect for local communities, and compliance with relevant laws and regulations. Each employee shall be informed of The Code of Conduct and bound by it while in the employment of the PMU3 or its Contractors;
  + The Code of Conduct shall address issues such as the prohibition to possess illegal substances, fire arms, pornographic materials, gambling, disturbances in or near communities, etc. Failure to follow the Code of Conduct should result in disciplinary actions;
  + Ensure adequate use of resources and proper waste management.

Site Installation
In order to minimize adverse environmental impacts due to construction and location of areas/facilities for the complexion of the project, the following measures should be put into place:

  + To the extent possible, the project shall utilize the existing mixing stations and asphalt plants of local area;
+ The workforce shall be provided with safe, suitable and comfortable accommodations. They have to be maintained in clean and sanitary conditions;
+ A medical and first aid facilities and first aid boxes shall be provided for all workers.

**Prohibitions**

The following activities are prohibited on or near the project site:

+ Cutting of trees for any reason outside the approved construction area;
+ Hunting, fishing, wildlife capture, or plant collection;
+ Buying of wild animals for food;
+ Use of unapproved toxic materials, including lead-based paints, asbestos, etc.;
+ Disturbance to anything with architectural or historical value;
+ Building of fires;
+ Use of firearms (except authorized security guards);
+ Use of alcohol by workers in office hours;
+ Washing cars or machinery in streams or creeks;
+ Doing maintenance (change of oils and filters) of cars and equipment outside authorized areas:
+ Disposing trash in unauthorized places;
+ Driving in an unsafe manner in local roads;
+ Having caged wild animals (especially birds) in camps;
+ Working without safety equipment (including boots and helmets);
+ Creating nuisances and disturbances in or near communities;
+ The use of rivers and streams for washing clothes;
+ Indiscriminate disposal of rubbish or construction wastes or rubble;
+ Littering the site;
+ Spillage of potential pollutants, such as petroleum products;
+ Collection of firewood;
+ Poaching of any description;
+ Explosive and chemical fishing;
+ Burning of wastes and/or cleared vegetation.

Any construction worker, office staff, Contractor’s employees, the PMU3’s employees or any other person related to the project found violating theses prohibitions will be subject to disciplinary actions that can range from a simple reprimand to termination of his/her employment depending on the seriousness of the violation.
Environmental Training for Construction Workers

The Contractor shall prepare an Environmental Training Plan for all construction workers and staff to ensure that all concerned staff is aware of the relevant environmental requirements as stipulated in the Vietnamese environmental legislation and the Contract specifications.

+ The Contractor shall distribute to the key staff, including newly joined key staff members, (1) the Contractor’s Environmental Policy; and (2) Copies of relevant extracts from environmental laws, standards and regulations.

+ The Contractor is responsible for providing appropriate training to all staff according to their level of responsibility for environmental matters. Managerial staff shall receive additional training.

+ All Contractor’s employees shall be required to comply with environmental protection procedures and they shall be able to provide evidence that they attended the training sessions detailed in the Plan;

+ Training materials and methods - which shall include formal training sessions, posters, data in newsletters, signs in construction area and ‘tool box’ meetings - shall be reviewed by the SES and submitted to the PMU3 for approval.

+ The Plan shall educate all construction workers on the following issues but not limited to them: fire arm possession, traffic regulations, illegal logging and collection of non-timber forestry products, non-disturbance of resettlement communities, hunting and fishing restrictions, waste management, erosion control, health and safety issues, all prohibited activities, the Code of Conduct requirements and disciplinary procedures, general information on the environment in which they will be working and living; and establishment of penalties for those who violate the rules;

+ Periodic training shall be provided when necessary.

+ Records shall be maintained (e.g. attendance records for environmental awareness training, topics covered) and submitted to the PMU3 upon request.

CONSTRUCTION IMPACT MANAGEMENT PLAN

Emissions and Dust

In order to ensure that the generation of dust due to the constructions activities is minimized, the following activities should be put into place:

+ The Contractor shall be responsible for compliance with relevant Vietnamese legislation with respect to ambient air quality;

+ The Contractor shall ensure that the generation of dust is minimized and shall implement a dust control program to maintain a safe working environment, minimize nuisance for surrounding residential areas / dwellings and protect damage to natural vegetation, crops, etc;

+ The Contractor shall implement dust suppression measures (e.g. water spray vehicles, covering of material stockpiles, etc.) if and when required;

+ Construction vehicles shall comply with speed limits and haul distances shall be minimized;

+ It is encouraged to use vehicles and machinery which would cause less pollution like gasoline without lead. Limit the use of materials which may have high risk of pollution
such as coal and black oil;
+ Transport and construction vehicles shall abide by the Standard TCVN 6438-2005 with respect to maximum exhaust fumes allowed;
+ Material loads shall be suitably covered and secured during transportation to prevent the scattering of soil, sand, materials or dust.

**Noise and Vibration**

To minimize noise and vibration during construction, the Contractor shall:
+ Be responsible for compliance with the relevant Vietnamese legislation with respect to noise;
+ Ensure that all instruments, machinery and construction equipment meet quality standards before they are put into use;
+ Try to keep noise generating activities to a minimum;
+ Restrict all operations that result in undue noise disturbance to local communities and/or dwellings to daylight hours on weekdays or as agreed with the EO;
+ Use temporary noise barriers to minimize the noise caused by the construction equipment;
+ Provide ear pieces to workers who must work with highly noisy machines such as piling, explosion, mixing, etc., for noise control and workers protection
+ Maintain the construction equipment in its best operating conditions and lowest noise levels possible;
+ In sensitive areas (including residential neighborhoods, hospitals, rest homes, schools, etc.) more strict measures may need to be implemented to prevent undesirable noise levels;
+ To the extent possible, nighttime operations shall be kept to a minimum and banned near sensitive receptors;

**Earthworks, Cuts and Fill Slopes**

Earthworks, cuts and fill slopes shall be carefully managed to minimize negative impacts on the environment
+ All earthworks shall be properly controlled, especially during the rainy season.
+ The Contractor shall maintain stable cut and fill slopes at all times and cause the least possible disturbance to areas outside the prescribed limits of the works.
+ Any excavated cut or unsuitable material shall be disposed of in designated disposal areas as agreed to by the EO.
+ Disposal sites should not be located where they can cause future slides, interfere with agricultural land or any other properties, or cause soil from the dump to be washed into any watercourse. Drains may need to be dug within and around the tips, as directed by the SEO or SES and to the satisfaction of the EO.

**Disposal of Debris**

The Contractor shall carry out the following activities:
Establish and enforce daily site clean-up procedures, including maintenance of adequate disposal facilities for debris;  

Debris generated due to the dismantling of existing structures shall be suitably reused, to the extent feasible, in the proposed rehabilitation program. The disposal of remaining debris shall be carried out only at sites identified and approved by the EO. The contractor should ensure that these sites (a) are not located within designated forest or cultivated areas; (b) do not impact natural drainage courses; and (c) do not impact endangered/rare flora. Under no circumstances shall the contractor dispose of any material in environmentally sensitive areas.  

In the event any debris or silt from the sites is deposited on adjacent land, the Contractor shall immediately remove such, debris or silt and restore the affected area to its original state to the satisfaction of the EO.  

Water courses shall be cleared of debris and drains and culverts checked for clear flow paths;  

Include provisions for incorporating the most appropriate stabilization techniques for each disposal site and determine that the selected spoil disposal sites do not cause unwanted surface drainage;  

Assess risk of any potential impact regarding leaching of spoil material on surface water;  

Once the job is completed, all rehabilitation-generated debris should be removed from the site.  

WASTE MANAGEMENT PLAN  
During the construction stage, the Contractor shall prepare a Waste Management Plan before commencement of project works. The Plan shall include the following Sub-Plans:  

Wastewater  
+ The Contractor shall be responsible for compliance with the relevant Vietnamese legislation relevant to wastewater discharges into watercourses  
+ The Contractor shall submit a method statement to the EO detailing how wastewater would be collected from all wastewater generating areas, as well as storage and disposal methods. If the Contractor intends to carry out any on-site wastewater treatment, this should also be included;  
+ Runoff from fuel depots/workshops/machinery washing areas and concrete batching areas shall be collected into a conservancy tank and disposed off at a site approved by the EO or SES;  
+ Wastewater shall not be disposed in watercourses without treatment.  

Solid waste  
+ The Contractor shall submit a method statement detailing a solid waste control system to the EO for approval.  
+ The Contractor shall ensure that all facilities are maintained in a neat and tidy condition and the site shall be kept free of litter;  
+ Measures shall be taken to reduce the potential for litter and negligent behavior with regard to the disposal of all refuse. At all places of work, the Contractor shall provide
litter bins, containers and refuse collection facilities for later disposal;
+ Solid waste may be temporarily stored on site in a designated area approved by the EO prior to collection and disposal as regulation.
+ No burning, on-site burying or dumping of waste shall occur;
+ Random disposal of solid waste in scenery areas shall be strictly prohibited.

**Hazardous waste**
+ All hazardous waste shall be disposed of at an approved hazardous landfill site and in accordance with local legislative requirements. The Contractor shall provide disposal certificates to the EO;
+ The removal of asbestos-containing materials or other toxic substances shall be performed and disposed of by specially trained workers;
+ Used oil and grease shall be removed from site and sold to an approved used oil recycling company;
+ Under no circumstances shall the spoiling of tar or bituminous products be allowed on the site, over embankments or any burying;
+ Unused or rejected tar or bituminous products shall be returned to the supplier’s production plant;
+ Used oil, lubricants, cleaning materials, etc. from the maintenance of vehicles and machinery shall be collected in holding tanks and sent back to the supplier or removed from site by a specialist oil recycling company for disposal at an approved hazardous waste site.
+ Inform the EO of any accidental spill or incident;
+ Initiate a remedial action following any spill or incident;
+ Provide a report explaining the reasons for the spill or incident, remedial action taken, consequences/damage from the spill, and proposed corrective actions.

**MATERIALS HANDLING, USE AND STORAGE MANAGEMENT PLAN**

Environmental considerations shall be taken into account in the location of any material storage areas.

**Transportation**
+ The Contractor shall ensure that all suppliers and their delivery drivers are aware of procedures and restrictions (e.g. restricted areas);
+ Material shall be appropriately secured to ensure safe passage between destinations during transportation;
+ Loads shall have appropriate cover to prevent them spilling from the vehicle during transit;
+ The Contractor shall be responsible for any clean-up resulting from the failure by his employees or suppliers to property secure transported materials.
Hazardous Substances

The Contractor shall provide a method statement detailing the hazardous substances / material that are to be used during construction, as well as the storage, handling, and disposal procedures for each substance / material and emergency procedures in the event of misuse or spillage that might negatively affect the environment. In general terms, the following activities shall be carried out:

- Make the Hazardous Waste Management Plan available to all persons involved in operations and transport activities
- All hazardous material / substances shall be stored on site only under controlled conditions;
- All hazardous material / substances shall be stored in a secured, appointed area that is fenced and has restricted entry. All storage shall take place using suitable containers to the approval of the EO;
- Hazard signs indicating the nature of the stored materials shall be displayed on the storage facility or containment structure;
- Fuel shall be stored in a steel tank supplied and maintained by the fuel suppliers. The tank shall be located in a secure, demarcated area.

Surfacing Materials

- Over spray of bitumen products outside of the road surface and onto roadside vegetation shall be prevented using a method approved by the SES;
- When heating of bitumen products, the Contractor shall take appropriate fire control measures; Stone chip / gravel excess shall not be left on road / paved area verges. This shall be swept /raked into piles and removed to an area approved by the SES;
- Water quality from runoff from any fresh bitumen surfaces shall be monitored by the SES and remedial actions taken where necessary.

Cement and Concrete Batching

- Concrete mixing directly on the ground shall not be allowed and shall take place on impermeable surfaces to the satisfaction of the SES;
- All runoff from batching areas shall be strictly controlled, and cement-contaminated water shall be collected, stored and disposed of at a site approved by the SES;
- Unused cement bags shall be stored out of the rain where runoff won’t affect it;
- Used (empty) cement bags shall be collected and stored in weatherproof containers to prevent windblown cement dust and water contamination. Used cement bags shall not be used for any other purpose and shall be disposed of on a regular basis via the solid waste management system;
- All excess concrete shall be removed from site on completion of concrete works and disposed of washing of the excess into the ground is not allowed. All excess aggregate shall also be removed.

Maintenance of Construction Equipment

The Contractor shall:

- Identify and demarcate equipment maintenance areas (>15m from rivers, streams, lakes
or wetlands). Fuel storage shall be located in proper areas and approved by the EO;

+ Ensure that all instruments, machines, and construction equipment meet quality standards before they are put into use;

+ Ensure that all equipment maintenance activities, including oil changes, are conducted within demarcated maintenance areas; never dispose spent oils on the ground, in water courses, drainage canals or in sewer systems.

+ All spills and collected petroleum products shall be disposed of in accordance with standard environmental procedures/guidelines. Fuel storage and refilling areas shall be located at least 300m from all cross drainage structures and important water bodies or as directed by the EO.

ECOLOGICAL MANAGEMENT PLAN

Protection of Natural Vegetation

+ The Contractor shall be responsible for informing all employees about the need to prevent any harmful effects on natural vegetation on or around the rehabilitation site as a result of their activities;

+ Clearing of natural vegetation shall be kept to a minimum.

+ The removal, damage and disturbance of natural vegetation without the written approval of the EO are prohibited;

+ The use of herbicides shall be approved by the EO;

+ Regularly check the work site boundaries to ensure that they are not exceeded and that no damage occurs to surrounding areas;

+ Prohibit and prevent open fires during upgrading/rehabilitation and provide temporary firefighting equipment in the work areas, particularly close to forest areas;

Protection of Fauna

+ The Contractor shall ensure that no hunting, trapping, shooting, poisoning or otherwise disturbance of any fauna takes place.

+ The feeding of any wild animals shall be prohibited;

+ The use of pesticides shall be approved by the EO;

+ No domestic pets or livestock shall be permitted on site.

SAFETY MANAGEMENT PLAN

Construction Site Safety

The Contractor’s responsibilities include the protection of every person and nearby property from construction accidents. The Contractor shall be responsible for complying with all national and local safety requirements and any other measures necessary to avoid accidents, including the following:

+ Provide personal protective equipment and clothing (goggles, gloves, respirators, dust masks, hard hats, steel-toed boots, etc.) for construction workers and enforce their use;

+ During heavy rains, accidents, or emergencies of any kind, suspend all work;

+ Brace electrical and mechanical equipment to withstand seismic events during the
construction;
+ Limit the speed of vehicles moving within the construction site;
+ Place signs around the construction areas to facilitate traffic movement, provide directions to various components of the works, and provide safety advice and warning. All signs shall be constructed according to Vietnamese specifications;
+ Provide post Material Safety Data Sheets for each chemical present on the worksite;
+ Require that all workers read, or are read, all Material Safety Data Sheets. Clearly explain the risks to them and their partners, especially when pregnant or planning to start a family. Encourage workers to share the information with their physicians, when relevant;
+ Ensure that the removal of asbestos-containing materials or other toxic substances be performed and disposed of by specially trained workers;

**Fire Control**

+ The Contractor shall submit a fire control and fire emergency method statement to the EO for approval. The method statement shall detail the procedures to be followed in the event of fire;
+ The contractor shall take all reasonable steps to avoid increasing the risk of fire through activities on site;
+ The contractor shall appoint a fire officer who shall be responsible for ensuring immediate and appropriate action in the event of a fire;
+ The contractor shall ensure that all site personnel are aware of the procedure to be followed in the event of a fire;
+ Any work that requires the use of fire may only take place at a designated area approved by the EO and must be supervised at all times. Fire-fighting equipment shall be available.

**Traffic Management**

The Contractor shall:
+ Estimate maximum concentration of traffic (number of vehicles/hour);
+ Construction vehicles shall comply with speed limits;
+ Use selected routes to the project site, as agreed with the EO, and appropriately sized vehicles suitable to the class of roads in the area, and restrict loads to prevent damage to local roads and bridges used for transportation purposes;
+ Maintain adequate traffic control measures throughout the duration of the construction activities and such measures shall be subject to prior approval of the EO;
+ Promote and disseminate traffic safety information to local residents;
+ If school children are in the vicinity, include traffic safety personnel to direct traffic during school hours;
+ Ensure traffic safety at intersections, especially near sensitive areas (schools, markets, hospitals, and historical, cultural and religious places).
+ Maintain a supply for traffic signs (including paint, easel, sign material, etc.), road
marking, and guard rails to maintain pedestrian safety during construction;

+ Use signs and flagmen for traffic control;

+ Materials leaving or entering the construction site shall be transported during non-peak hours in order to minimize traffic noise due to the increase in traffic volume;

**Environmental Emergency Procedures**

Environmental Emergency procedures are unforeseen events that can occur during the construction or rehabilitation of a road. The Contractor shall be prepared to take any necessary measures to solve such emergencies on a case-by-case basis. Events related to adverse weather conditions shall be addressed as part of the Contractor’s Safety Plan, which shall be submitted to the EO before commencement of project construction works.

The following environmental emergency procedures shall be implemented during the construction of the Road:

+ Training shall be provided to all construction workers and site staff to ensure that they are fully aware of the various possible emergency situations in construction activities, the danger and potential damages caused by the emergency to the environment and the people, as well as the emergency response procedures to be followed;

+ If explosive materials are detected during the clearing of construction areas, earthwork movements, or any other construction activity, the Contractor shall secure the area and inform the local authorities immediately, which in turn shall contact the local army unit for support;

+ If a person identifies a leakage/spillage, she/he shall immediately check if anyone is injured and shall then inform the Contractor, the SEO and SES;

+ The Contractor shall ensure any injured persons are treated and assess what has been spilled/leaked;

+ If the accidents/incidents generate serious environmental pollution or the SEO or the SES consider that the incident has the potential of resulting in serious environmental pollution problems (eg. spillage/leakage of toxic or chemicals, large scale spillage/leakage, or spillage/leakage into the nearby water bodies which are used for irrigation/portable water), the SES or SEO shall inform the EO immediately.

+ In such cases, the Contractor shall take immediate action to stop the spillage / leakage and divert the spilled / leaked liquid to a nearby non-sensitive areas;

+ The Contractor shall arrange maintenance staff with appropriate protective clothing to clean up the chemicals/chemical waste. This may be achieved through soaking with sawdust (if the quantity of spillage/leakage is small), or sand bags (if the quantity is large); and/or using a shovel to remove the topsoil (if the spillage/leakage occurs on bare ground); and

+ Depending on the nature and extent of the chemical spill, evacuation of the activity site may be necessary.

+ Spilled chemicals must not be flushed to local surface drainage systems. Instead, sawdust or sandbags used for clean-up and removed contaminated soil shall be disposed of by following the procedures for chemical waste handling and disposal already described.
+ The Contractor(s) shall prepare and present a report to the EO on the incident detailing the accident, clean-up actions taken, any pollution problems and suggested measures to prevent similar accidents from happening again in future.

COMMUNITY RELATIONS AND HEALTH MANAGEMENT PLAN

Community Relations

The Contractor shall:

+ Maintain open communications between the local government and concerned communities;
+ Have a mailing list to include agencies, organization, and residents that are interested in the project;
+ Disseminate project information to affected parties through community meetings before construction commencement;
+ Provide a community relations contact from whom interested parties can receive information on site activities, project status and project implementation results;
+ Provide all information, especially technical findings, in a language that is understandable to the general public and in a form of useful to interested citizens and elected officials through the preparation of fact sheets and news release, when major findings become available during project phase;
+ Monitor community concerns and information requirements as the project progresses;
+ Respond to telephone inquiries and written correspondence in a timely and accurate manner;
+ Inform local residents about construction and work schedules, interruption of services, traffic detour routes and provisional as appropriate;
+ Provide technical documents and drawings to PC’s community, especially a sketch of the construction area and the EMP of the construction site;
+ Notification boards shall be erected at all construction sites providing information about the project, as well as contact information about the site managers, environmental staff, health and safety staff, telephone numbers and other contact information so that any affected people can have the channel to voice their concerns and suggestions;
+ Limit construction activities at night. When necessary ensure that night work is carefully scheduled and the community is properly informed so they can take necessary measures;

Health Management Plan

The Contractor shall prepare and enforce a Health Management Plan to address matters regarding the health and wellbeing of construction workers, project staff and nearby communities. The Contractor shall include in his proposal the outline of the Health Plan. The EO will issue a certificate of compliance to the Contractor prior to the initiation of Construction. The Contractor shall:

+ Implement a vaccination program including but not limited to vaccination against yellow fever, hepatitis A and B, tetanus, polio, etc.
+ Provide periodical health check to construction workers to ensure their health and well
being.

+ Provide appropriate information and education to the workforce on basic personal hygiene, prevention of diseases, including respiratory diseases, vector-borne diseases such as malaria and dengue, water and food borne diseases such as diarrhea, tuberculosis, etc;

+ Implement preventive measures against malaria, if applicable.

+ Ensure correct maintenance of water to prevent the breeding of mosquitoes.
Appendix 4: Environmental Supervision for the Maintenance of NH5
(to be included in the scope of works for the Construction Supervision Consultant)

General
In order to prevent harm and nuisances on local communities, and to minimize the impacts on the environment during the construction and operation of NH5 Subproject, the following documents have been prepared which should be adhered to by all Contractors and his employees:

+ The Environmental Impact Assessment (EIA) for this Subproject;
+ The Environmental Management Plan (EMP) of this Subproject including site specific measures identified in Table 4 and Appendix 2 of the EMP;
+ The mitigation measures included in project design and bill of quantities;
+ The specifications, procedures, and best practices included in the EMP. These specifications complement any technical specifications included in the work quantities and the requirements of any Vietnamese regulations and standards;

Objective of the Assignment
The Consultant is to provide professional technical services (“the Services”) to help ensure effective implementation of the Environmental Management Plan (EMP), mitigation measures included in the Information Page, and the Environmental Specifications during the construction of this Subproject.

In order to achieve the goal of minimizing the negative environmental impacts of the project, the EMP has been integrated in the design of the Road, and in the technical specifications and contract documents. It will need to be closely followed and implemented by the contractors. The implementation of the EMP will therefore involve three parties:

+ The Contractor’s Workplace Safety and Environment Officer (SEO) responsible for implementing the EMP and other construction related environmental and safety issues;
+ The Construction Supervision Consultant (CSC) who are responsible for supervising and monitoring all construction activities and for ensuring that contractors comply with the requirements of the contracts and the EMP. The CSC will include Environmental Engineers led by a Workplace Safety and Environment Supervisor (SES).

Scope of Services:
The general services to be provided by the SES are to inspect, monitor and audit the construction activities to ensure that mitigation measures adopted in the EMP are properly implemented, and that the negative environmental impacts of the project are minimized.

The Contractor has the responsibility for ensuring compliance with the project EMP and contract conditions while undertaking the works. This is overseen by the SES. The SES is therefore to be an independent monitor to ensure compliance with the EMP and to ensure adequate performance of the Contractors on environmental issues.

The SES will inspect, monitor and carry out environmental review of all road and bridge contracts packages and lots. The SES shall have extensive knowledge and experience in environmental supervision, monitoring and auditing to provide independent, objective and professional advice to the client on the environmental performance of the project. The SES
team leader shall be familiar with the project works through review of the relevant reports, including the EPC, EMP as well as project technical specifications and contract documents.

As part of the CSC, the SES is expected to perform the following duties:

**Phase I: Preparation**

The objective of Phase I is to lay the groundwork for the successful execution of the project. In this phase, the SES shall: (i) review the EPC, EMP, project designs and technical specifications and confirm that there have been no major omissions of mitigation measures; (ii) prepare guides for contractors on implementing the EMP; and, (iv) develop and execute a training program for all involved in construction activities.

The main tasks in this phase are:

**Review of Project Documents:** The SES shall review the EPC, EMP, project designs and technical specifications and confirm in writing that there have been no major omissions of mitigation measures. If any issues are identified, the SES shall propose to the PMU updates to the EMP and the design and technical specifications to address these issues. Once approved by PMU, the SES shall update the EMP.

**Environmental Supervision Checklist:** The SES shall establish a comprehensive checklist which will be used during the construction of the project to monitor the contractor’s performance. This shall cover major aspects of the project, required mitigation/control measures and their implementation schedule.

**Log-Book:** The SES shall keep a log-book of each and every circumstance or change of circumstances which may affect the environmental impact assessment and non-compliance with the recommendations made by the SES to remediate the non-compliance. The log-book shall be kept readily available for inspection by all persons assisting in the supervision of the implementation of the recommendations of the EPC and Contract. The CSC shall verify the log-book as part of his environmental audit.

**Environmental Training:** The SES shall design and execute a comprehensive training program for all actors: Supervision Engineers, EO of PMU3, PMU3, Contractor’s SEOs (and workers as part of the trainings given to the SEO), on the environmental requirements of the project, and how they will be supervised, monitored and audited, giving particular attention to:

- EMP: The requirements of the EMP, the agreed environmental monitoring checklist, the environmental monitoring form, how non-compliance with the EMP will be handled, and all other key issues shall be covered. Particular attention will be paid to the specific provisions in each contract’s technical specifications indicating how the EMP is to be complied with;

- Health and Safety: The health and safety requirements of the project shall be clearly identified and communicated with the Contractors and PMU3 (included in environmental specifications for contractors).

At the conclusion of the training Contractors will also sign a statement acknowledging their awareness of the environmental regulations, the EMP, the compliance framework, and health and safety obligations. The CSC shall sign a similar statement confirming their understanding of the supervision responsibilities.

**Phase II: Supervision of Construction Activities**

On behalf of the PMU3 and the Chief Supervision Engineer, the SES will:
+ Review, and inspect in an independent, objective and professional manner in all aspects of the implementation of the EMP;
+ Carry out random monitoring checks, and review on records prepared by the Contractor’s SEO;
+ Conduct regular site inspections;
+ Review the status of implementation of environmental protection measures against the EMP and contract documents;
+ Review the effectiveness of environmental mitigation measures and project environmental performance;
+ As needed, review the environmental acceptability of the construction methodology (both temporary and permanent works), relevant design plans and submissions. Where necessary, the SES shall seek and recommend the least environmental impact alternative in consultation with the designer, the Contractor(s), and PMU3:
+ Verify the investigation results of any non-compliance of the environmental quality performance and the effectiveness of corrective measures; and
+ Provide regular feedback audit results to PMU3 and CSC according to the procedures of non-compliance in the EMP;
+ Provide training programs, including CSC and PMU3 staff, to appraise them of issues identified and how to improve environmental compliance;
+ Instruct the Contractor(s) to take remedial actions within a specified timeframe, and carry out additional monitoring, if required, according to the contractual requirements and procedures in the event of non-compliances or complaints;
+ Instruct the Contractor(s) to take actions to reduce impacts and follow the required EMP procedures in case of non-compliance / discrepancies identified;
+ Instruct the Contractor(s) to stop activities which generate adverse impacts, and/or when the Contractor(s) fails to implement the EMP requirements / remedial actions instructed by the SES.

Review of Site Plans: To ensure consistency across the project, the SES shall provide the final review of all site plans which may affect the environment. These include, but are not limited to: borrow pit and disposal sites plans. The SES will review and approve the EMP Implementation Plan and Landscape Implementation Plan presented by the Contractors. Where these plans are found not to comply with the EMP, EPC, the SES shall work with the CSC and Contractor to establish a suitable solution.

Health and Safety: To ensure consistency across the project, the SES shall provide the final review and recommend clearance of all Contractors’ Safety Plans, and, based on these, with inputs from the CSC, prepare an overall Subproject Safety Plan (PSP). The PSP shall include procedures such as management of explosions, safety during construction, the prevention of slope slide / soil erosion during the rainfall season, etc. These plans shall be reviewed on an annual basis and updated if necessary.

The SES shall ensure compliance with the requirements of the health and safety clauses in the contract documents. This shall include, but not be limited to: (i) construction activities; (ii) HIV/AIDS education campaign; (iii) compliance with Viet Nam’s labor laws; and (iv) road
traffic safety. For HIV/AIDS the focus shall not only be on the construction sites themselves, but also on assisting the nearby communities.

**Site Inspections:** The SES shall closely audit the construction activities through regular site inspections accomplished through daily site visits, walks and visual inspections to identify areas of potential environmental problems and concerns.

Inspections should be done independently from the Contractor’s staff. It is expected that the SES shall have their own hand held and portable monitoring equipment such as cameras, transport and other resources. Where definitive monitoring is necessary to resolve contentious issues or to impose penalties, the SES may contract third parties to carry out specific monitoring at the locations under review.

Where there is infringement of technical specifications, or condition of contracts, or non compliance with the EMP, the SES shall be immediately inform Contractor’s Chief Engineer, Supervision Chief Engineer and PMU3. The SES shall also report all infringements to the PMU3 as part of the monthly reporting.

Regular joint environmental site inspections (e.g. weekly) should be organized by the SES and CSC, with participation from the Contractor’s Environmental Officer (SEO). These should be used as an opportunity for the SES to further train the CSC and Contractor’s staff.

SES field engineer’s log-book shall be kept readily available for inspection by all persons assisting in project management.

The SES shall also regularly review the records of the contractors to ensure that they are up to date, factual and meet the EMP reporting requirements (e.g. environmental complaint monitoring records).

**Complaints:** Complaints will be received by the Contractor’s Site Office from local residents with regard to environmental infractions such as noise, dust, traffic safety, etc. The Contractor’s Chief Engineer or his deputy, and the SEO shall be responsible for processing, addressing or reaching solutions for complaints brought to them. The SES shall be provided with a copy of these complaints and shall confirm that they are properly addressed by the Contractors in the same manner as incidents identified during site inspections.

**Unforeseen Impacts:** In the event that an incident arises which was not foreseen in the EMP or EIA, the SES shall work closely with the CSC, the Contractors, and the PMU3 to confirm satisfactory resolution to the incident. The SES shall then update the EMP and the implementation guidelines, training the Contractors’ staff accordingly.

**Monthly Payments:** The SES shall confirm the monthly payments for environmentally related activities as recommended by the SES to the client.

**Site Restoration and Landscaping:** The SES shall closely monitor all activities with regard to site restoration and landscaping in areas such as borrow pits, quarries, washing vehicles etc. to ensure that the activities are done to an appropriate and acceptable standard. The SES will agree with the Contractor on a Site Decommissioning and Restoration plan to be implemented before the completion of the construction.

**Project Initiation and Staffing:** It is anticipated that the CSC and the SES, will be mobilized one month before the start of the construction activities. The one month start up time will be utilized by the SES to review and familiarize itself with the project, the project design, the technical specifications, contract documents, the EPC, EMP reports and other project relevant documents and reports. Following the review, the SES will prepare a brief report on the potential issues and challenges arising from the implementation of the EMP and the condition
of contracts and make recommendations to the PMU3 about how best to improve the implementation of the EMP.

The SES is expected to be mobilized at the beginning of the contract, to prepare the necessary guidelines, documentation, training, etc.

Reporting: as a minimum the SES shall prepare the following written reports:

+ Weekly report of non-compliance issues
+ Summary monthly report covering key issues and findings from reviewing and supervision activities
+ Consolidated summary report from contractor’s monthly report

They shall also collect and report on data as requested by the PMU3.

At the end of the project the SES shall prepare a final report summarizing the key findings from their work, the number of infringements, resolutions, etc. as well as advice and guidance for how such assignments should be conducted in the future.
Appendix 5: Training demands and proposals for a training program

The table below presents an analysis of training demands

Table 10. Analysis and Determination of Training Demands

<table>
<thead>
<tr>
<th>No.</th>
<th>Subject</th>
<th>Preliminary assessment on capability/awareness</th>
<th>Capacity building/training on environmental management</th>
</tr>
</thead>
</table>
| 1   | Environment Unit - PMU3              | - Have most staff with University/post university education, thus it is easy to them to comprehend new contents  
- Have working experiences in previous projects but have not gone into details of the environmental field.  
- Have basic knowledge in information technology, thus, it will be convenient for data management and information process as well as cooperation with other agencies. | - Should be further trained on environmental management process in project and implementation methods (from preparation stage of bidding documents, bid evaluation, contract signing, monitoring implementation and acceptance works, etc.).  
- Should increase awareness on critical roles of EMS  
- Should provide with more knowledge/legal regulations related to penalty for violations on the environment.  
- Should be provided with treatment solutions for arising problems on site. |
| 2   | Local leaders                        | - The communes have not been made sufficiently clear and understood about the project process.  
- Computer skills are still limited.  
- Awareness on community organization and monitoring is not clear. Community organization and monitoring have only been implemented for small projects which are invested by residents.  
- Have no experiences in community monitoring on a large scale. | - Should be provided with preliminary knowledge on environmental laws and contents related to coordination in monitoring among ward/commune authorities in projects which are executed in the areas.  
- Should be trained on community monitoring.  
- Should have updated information on project progress and monitoring and information exchange regime.  
- Especially, environmental management process should be made clear and comprehended before, during and after construction. |
| 3   | Community representatives            | - Not been established in the local area. Thus participants have not been determined | - Should be provided with rights and responsibilities in environmental management (as well as legal |
Based on an analysis of current capabilities, experiences and actual demands in project implementation, a capacity building and training program for relevant agencies is established as shown in the table below:

**Table 11. Proposed Programs of Capacity Building on Environmental Management**

<table>
<thead>
<tr>
<th>No.</th>
<th>Subject</th>
<th>Preliminary assessment on capability/awareness</th>
<th>Capacity building/training on environmental management</th>
</tr>
</thead>
</table>
|     | Contractor | - Contractor’s leaders are qualified and experienced staffs who are competent in legal regulations.  
- Periodically organize training courses on environmental sanitation and labor safety.  
- Most Contractors consider environmental issues as arising ones with a separate cost and do not want to implement them or rectify the issues.  
- Awareness of Contractors on environmental issues during construction is limited. | - Should learn about environmental law and focus on contents related to roles of local authority and community supervisors.  
- Should comprehend environmental management process following requirements of WB’s safeguard policies.  
- However, for contractors these requirements will be followed through project documents and concrete criteria in bidding documents as well as construction contract. |
| 4   | Contractor |                                 |                                                      |

<table>
<thead>
<tr>
<th>No.</th>
<th>Subject</th>
<th>Preliminary assessment on capability/awareness</th>
<th>Capacity building/training on environmental management</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Contractor</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on an analysis of current capabilities, experiences and actual demands in project implementation, a capacity building and training program for relevant agencies is established as shown in the table below:

**Table 11. Proposed Programs of Capacity Building on Environmental Management**

<table>
<thead>
<tr>
<th>Training content</th>
<th>Subject to be trained</th>
<th>Number of trainees</th>
<th>Training time</th>
<th>Organization unit</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning on Labor safety and environmental sanitation</td>
<td>Contractor’s workers and technical staff</td>
<td>All workers and staff on site</td>
<td>Prior to construction and following legal regulations</td>
<td>Contractor in coordination with Institute of Labor, War invalids and Social Affairs</td>
<td>Paid by Contractor</td>
</tr>
<tr>
<td>Learning on</td>
<td>Staff of PMU3</td>
<td>3 persons</td>
<td>Prior to</td>
<td>PMU3</td>
<td>Paid by</td>
</tr>
<tr>
<td>Training content</td>
<td>Subject to be trained</td>
<td>Number of trainees</td>
<td>Training time</td>
<td>Organization unit</td>
<td>Budget</td>
</tr>
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<td>------------------</td>
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<td>--------</td>
</tr>
<tr>
<td>general environmental management process</td>
<td>and public utility companies</td>
<td></td>
<td>construction</td>
<td></td>
<td>PMU3 or to be included in a package on training</td>
</tr>
<tr>
<td>Learning on Process of CEMP</td>
<td>Environmental staff under ward PC in the project area</td>
<td>48 persons (10 district staff + 38 commune staff)</td>
<td>Prior to construction</td>
<td>Training consultant under Contract on capacity building and training for relevant agencies.</td>
<td>Included in Contract on training consulting</td>
</tr>
<tr>
<td>Learning on Process of SEMP</td>
<td>CSC’s staff in charge of environmental sanitation under CSC</td>
<td>5 trainees</td>
<td>Prior to construction</td>
<td>PMU3 in coordination with CSC</td>
<td>In the Contract of CSC</td>
</tr>
</tbody>
</table>
Appendix 6: Budget Estimate

Cost of Environmental Supervision carried out by CSC

The CSC will be responsible for proposing organization and monitoring plans on the Contractor’s compliance with mitigation measures. In addition, CSC will be required to assign staff and prepare detailed working plans to monitor environmental sanitation and labor safety management on and around the site. The cost for this assignment will be proposed in the contract with CSC.

Cost for implementation of capacity building and training

The cost estimation for implementation of capacity building and training is presented in the following table:

Table 12. Estimated Budget for implementation of Capacity Building and Training

Unit: VND

<table>
<thead>
<tr>
<th>Training contents</th>
<th>Subject to be trained</th>
<th>Number of trainees</th>
<th>Cost rate (VND)</th>
<th>Source of cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning on labor safety and environment sanitation</td>
<td>Workers and technicians of Contractors</td>
<td>All workers and construction staff on site (100 turns of persons as expected)</td>
<td>100 x 200,000 = 20,000,000</td>
<td>Paid by contractor, this cost is included in the contract of construction</td>
</tr>
<tr>
<td>Learning of general environmental management process</td>
<td>PMU3’s staff in charge of construction packages</td>
<td>3 persons</td>
<td>3 x 3,000,000 = 9,000,000</td>
<td>This cost should be included in the signed contract with training consultant</td>
</tr>
<tr>
<td>Learning on CEMP</td>
<td>Environmental staff under ward/commune PC in the project area</td>
<td>48 persons (10 district staff + 38 town/commune staff)</td>
<td>48 per, x 1,000,000/per, = 148,000,000</td>
<td>Included in the contract signed with training consultant</td>
</tr>
<tr>
<td>Learning on SEMP</td>
<td>Staff in charge of labor safety and environmental sanitation under CSC</td>
<td>5 trainees</td>
<td>5 per, x 1,000,000/per, = 5,000,000</td>
<td>In the Contract of CSC</td>
</tr>
<tr>
<td>Total cost</td>
<td></td>
<td></td>
<td>82,000,000</td>
<td></td>
</tr>
</tbody>
</table>