THE SOCIALIST REPUBLIC OF VIET NAM
MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT

Mekong Delta Water Management for Rural Development Project
(MDWM-RDP)

Revised Final, 25 April 2011
### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD</td>
<td>Biochemical Oxygen Demand</td>
</tr>
<tr>
<td>CPMU</td>
<td>Central Project Management Unit</td>
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<tr>
<td>CPO</td>
<td>Central Project Office of MARD</td>
</tr>
<tr>
<td>DARD</td>
<td>Department of Agriculture and Rural Development</td>
</tr>
<tr>
<td>DONRE</td>
<td>Department of Natural Resources and Environment</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
</tr>
<tr>
<td>ECOP</td>
<td>Environmental Code of Practices</td>
</tr>
<tr>
<td>EMDP</td>
<td>Ethnic Minority Development Plan</td>
</tr>
<tr>
<td>EMP</td>
<td>Environment Management Plan</td>
</tr>
<tr>
<td>ESMF</td>
<td>Environment and Social Management Framework</td>
</tr>
<tr>
<td>GOV</td>
<td>Government of Vietnam</td>
</tr>
<tr>
<td>LEP</td>
<td>Law on Environmental Protection</td>
</tr>
<tr>
<td>MARD</td>
<td>Ministry of Agriculture and Rural Development</td>
</tr>
<tr>
<td>OP</td>
<td>Operation Policy of World Bank</td>
</tr>
<tr>
<td>PPC</td>
<td>Provincial People’s Committee</td>
</tr>
<tr>
<td>PPMU</td>
<td>Provincial Project Management Unit</td>
</tr>
<tr>
<td>QCVN</td>
<td>National Technical Regulations</td>
</tr>
<tr>
<td>RAP</td>
<td>Resettlement Action Plan</td>
</tr>
<tr>
<td>REA</td>
<td>Regional Environment Assessment</td>
</tr>
<tr>
<td>RPF</td>
<td>Resettlement Policy Framework</td>
</tr>
<tr>
<td>TCVN</td>
<td>National Environmental Standards</td>
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<tr>
<td>WB</td>
<td>World Bank</td>
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EXECUTIVE SUMMARY

Background: Soc Trang is a coastal province in the Mekong delta, locating along the right side of the Hau River. The province is 240 km from HCM city. Major land use in the subproject area is agriculture production mainly rice and some small area for aquaculture. There are 48 bridges proposed for inclusion under the project. These are rural bridges over secondary canals located in Chau Thanh, My Tu, Long Phu, My Xuyen and Nga Nam districts.

Description: The subproject aims to improve local transport access through the construction of 48 secondary bridges over secondary canals in Soc Trang province. These bridges have been designed for 3-8 tons load and with 3 meters (m) wide and they will be made by concrete and reinforced steel.

Impacts and Mitigations: Main potential impacts would be due to (a) temporary and permanent land acquisition, (b) site clearance and construction activities which can cause localized and short-term disturbance in water and soil, noise, vibration, traffic etc. The subproject area part of existing irrigation area (Quan Lo-Phuong Hiep) and is used exclusively for agriculture and aquaculture, and does not have any natural habitats.

About 39,113 square meters (m²) of land will be appropriated (37% permanent and 63% temporarily) which will affected 133 households of which 64 households will be Khmer minority. The affected population will be compensated in line with the Resettlement Policy Framework (RPF) and the Ethnic Minority Policy Framework (EMPF) and a Resettlement Action Plan (RAP) and an Ethnic Minority Development Plan (EMDP) have been prepared for the subproject and they are presented separately.

Given that the construction activities will be carried out in different locations and at different time, the potential impacts during site clearance and construction will be minor, localized, and short term, and they will be mitigated locally. The Environmental Code of Practice (ECOP) Part A and B (Annex 1) prepared for the subproject will be applied with close supervision of field engineer and in close consultation with local authority and communities. The ECOP will be included (as an annex) to the bidding and contract documents.

The EMP: During the implementation of the subproject the following mitigation measures will be carried out in close consultation with local authority and communities, especially the affected households:

1. Effective and timely implementation of RAP and EMDP;
2. Effective implementation of the measures to mitigate the impacts during site clearance and construction, including close supervision of contractor performance; and
3. Effective planning and implementation of water quality monitoring program.

Responsibility: The Soc Trang Provincial Project Management Unit (PPMU) will be responsible for ensuring effective implementation of these measures and timely reporting the implementation progress, including the safeguard compliance of contractors. PPMU will set up an Environment and Social Unit (ESU), headed by a senior staff, responsible for forging effective implementation of safeguard measures for the subproject, including incorporation of the subproject ECOP in the bidding and contract documents and ensure that the bidders are aware of this commitment. The PPMU will work closely with the local authorities, local agencies, and local communities to forge effective implementation of the measures.
national consultants\(^1\) which will be hired by the PPMU will assist in forging effective implementation and coordination of the EMP, including periodic monitoring of contractor and undertaking water quality monitoring.

The Central Project Management Unit (CPMU) will be responsible for overall supervision and monitoring the implementation progress of the subproject including safeguards and provide safeguard training to the subproject staff.

**Budget:**

- Cost for implementation of RAP and EMDP will be financed by the Government.
- Cost for implementation of mitigation measures during construction and compensation to damage (if any) will be part of the subproject construction cost;
- Cost for supervision of contractor performance will be part of the subproject supervision cost;
- Cost for water quality monitoring program will be part of the environmental monitoring cost; and
- Cost for safeguard training of staff will be part of the subproject and/or project management as appropriate.

\(^1\) These consultants will assist the PPMU in managing and monitoring of safeguard activities of all the subprojects under the responsibility of Soc Trang PPMU.
I. INTRODUCTION

The subproject is located in Soc Trang province and is considered as part of the existing irrigation area namely Quan Lo-Phoung Hiep (QLPH). The subproject will involve civil works that may lead to negative impacts on local environment and communities during construction thus triggered the WB safeguard policies on Environmental Assessment (OP 4.01); Indigenous Peoples (OP 4.10); and Involuntary Resettlement (OP 4.12).

To ensure that, the potential negative impacts are properly identified and mitigated during the implementation of the subproject and to comply with OP 4.01, this Environmental Management Plan (EMP) has been prepared in line with the Environment and Social Management Framework (ESMF) that has been developed for the project in consultation with the agencies and the World Bank (WB). The EMP briefly summarizes the subproject description and the environmental background; assesses the potential negative impacts; proposes the mitigation measures to be carried out during preconstruction, construction, and operation phases; and describes the implementation arrangement. It also includes the Environmental Code of Practice (ECOP) to be applied to the subproject which will be included in the construction contracts as well as outlines the scope water quality monitoring for the subproject. The Resettlement Action Plan (RAP) and the Ethnic Minority Development Plan (EMDP) for the subproject has been prepared and they are presented separately.

Related to the Government of Vietnam (GOV)'s regulations on environment, preparation and approval of an Environmental Commitment (EC) will be required before construction. Preparation and approval of an EC will be made on a site by site basis and the process is ongoing.

II: SUBPROJECT DESCRIPTION

2.1. Scope of the Subproject

The objective of the subproject is to construct 48 rural bridges over the secondary canal of the QLPH irrigation area with an aim to improve local accessibility, facilitate local agribusiness activities, and improve people's living standard. The 48 bridges are located in Chau Thanh, My Tu, Long Phu, My Xuyen and Nga Nam districts of Soc Trang province (see Figure 2.1 for location).

Table 2.1 list design criteria of the 48 bridges and the technical specification is as follows:

- Design standards: Rural bridge
- Total number of constructions: 48 (bridges)
- Loading capacity H 3: 3 tons; H8: 8 tons
- Width: 3 m
- Length: From 21 to 51 m

2.2. Description of Works

- Complement 2 abutments; platform; jamb; connecting structure; horizontal beams, the bridge deck (for steel); Constructing the road to the bridge

OP 4.04 and 4.09 are not triggered for this subproject, as there is no natural habitat or envisaged graveyard relocation.
Figure 2.1: Location of the Subproject

Subproject area covering five districts

Figure 2.2 Schematic drawing of the Soc Trang bridges
<table>
<thead>
<tr>
<th>No</th>
<th>Name of Bridge</th>
<th>Location</th>
<th>Width (m)</th>
<th>Length (m)</th>
<th>Spans construction</th>
<th>Load (T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Tân Phước 1</td>
<td>K18+150 k.Tân phước</td>
<td>3</td>
<td>36</td>
<td>Steel bridge (DT)</td>
<td>H3</td>
</tr>
<tr>
<td>2</td>
<td>Phú Mỹ A1</td>
<td>K1+750 k.Phú Mỹ</td>
<td>3</td>
<td>31</td>
<td>2BTTA1280+DT</td>
<td>H3</td>
</tr>
<tr>
<td>3</td>
<td>An Tấp</td>
<td>K6+300 k.An tập</td>
<td>3</td>
<td>28</td>
<td>2BTTA1280+DT</td>
<td>H3</td>
</tr>
<tr>
<td>4</td>
<td>Ba Râu</td>
<td>K9+440 k.Ba râu</td>
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<td>28</td>
<td>2BTTA1280+DT</td>
<td>H3</td>
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<tr>
<td>5</td>
<td>Dương Xướng*</td>
<td>K0 k.Dương Xướng</td>
<td>3</td>
<td>25</td>
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<tr>
<td>6</td>
<td>85</td>
<td>K4+519 k.85</td>
<td>3</td>
<td>28</td>
<td>2BTTA1280+DT</td>
<td>H3</td>
</tr>
<tr>
<td>7</td>
<td>Trà Cạnh*</td>
<td>KF k.85</td>
<td>3</td>
<td>28</td>
<td>2BTTA1280+DT</td>
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<tr>
<td>8</td>
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<td>K1+380 k.Mĩ Thuận</td>
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<td>2BTTA1280+DT</td>
<td>H3</td>
</tr>
<tr>
<td>9</td>
<td>Ập Mới</td>
<td>K0+000 k.Â</td>
<td>3</td>
<td>36</td>
<td>2BTTA1280+DT</td>
<td>H3</td>
</tr>
<tr>
<td>10</td>
<td>Bố Xuyên 1</td>
<td>K0+000 k.Bố xuyên</td>
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<td>28</td>
<td>2BTTA1280+DT</td>
<td>H3</td>
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<td>11</td>
<td>Bố Xuyên 2</td>
<td>K3+600 k.Bố xuyên</td>
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<td>12</td>
<td>Chết Xiu</td>
<td>K3+618 k.Bế xuyên</td>
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<td>H3</td>
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<td>Muông Tra 1</td>
<td>K0+000 k.Muông Tra</td>
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<td>28</td>
<td>2DBTCT+DT</td>
<td>H3</td>
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<tr>
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<td>Muông Tra 2</td>
<td>K2+500 k.Muông Tra</td>
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<td>24</td>
<td>2DBTCT+DT</td>
<td>H3</td>
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<td>20</td>
<td>Hải Mới 1</td>
<td>K0+412 k.Hải Mới</td>
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<td>21</td>
<td>2DBTCT+DT</td>
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<td>Hải Mới 2</td>
<td>K4+872 k.Hải Mới</td>
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<td>HTX B. Long</td>
<td>K1+074 k.HTX Bung Long</td>
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<td>Kênh Thế 11(1)</td>
<td>K2+250 k.Thế</td>
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<td>Kênh Thế 11(2)</td>
<td>KF k.Thế</td>
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<td>Kênh Thế 12</td>
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<td>2DBTCT+DT</td>
<td>H3</td>
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<tr>
<td>26</td>
<td>Sâu Côi</td>
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<td>2DBTCT+DT</td>
<td>H3</td>
</tr>
<tr>
<td>27</td>
<td>OUNCE 1</td>
<td>K0+550 k.OUNCE 1</td>
<td>3</td>
<td>25</td>
<td>2DBTCT+DT</td>
<td>H3</td>
</tr>
<tr>
<td>28</td>
<td>OUNCE 2</td>
<td>K2+000 k.OUNCE 2</td>
<td>3</td>
<td>28</td>
<td>2DBTCT+DT</td>
<td>H3</td>
</tr>
<tr>
<td>Item</td>
<td>Quantities</td>
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<td>------</td>
<td>------------</td>
<td></td>
<td></td>
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<tr>
<td>Excavated soil (m³)</td>
<td>61,323</td>
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<td>Earth fill</td>
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<td>Masonry</td>
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<td>Sand</td>
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<td>Concrete</td>
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<td>Steel (T)</td>
<td>1,477</td>
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<td>Land for construction (ha)</td>
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<tr>
<td>Temporary land loss (ha)</td>
<td>1.54</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Note: k : Canal
DBTCT: Bridge constructed with concrete and steel
DT : Steel

Table 2.2 Summary of construction quantities *(HEC 2 FS, 2011)*
III: ENVIRONMENTAL BACKGROUND

The subproject area is located in existing irrigation area called Quan Lo-Phoung Hiep (QLPH) and is part of Soc Trang province, and the major land use is for agriculture production mainly rice and small area for aquaculture. Information below briefly describes key characteristics and environmental and social conditions in QLPH and Soc Trang province and more detailed information can be found in the Regional Environmental Assessment (REA) which is publicly available at the Central Project Office (CPO) of the Ministry of Rural and Agriculture Development (MARD).

3.1 General Characteristics

- **Climate:** There is a noticeable climate gradient extending from the south-western towards the northeast. Higher rainfall and fewer hours of sunshine characterize the south-western zone compared with the northeast.

- **Topography:** QLPH is a low-lying, flat portion of the Mekong Delta with very small variations in elevation. The central part is slightly lower than the edges, where levees up to a meter high can be found along riverbanks. Nearly all of the subproject sitesis higher than 0.4 m above sea level.

- **Rainfall:** Because of the wind with South-west and North-east direction. The Rainy season is from May to November and the annual average account for with 2,367 mm of rainfall (80 - 85% of total annual rainfall).

- **Main flows affected to the subproject area:** the subarea has been divided into many parts by a complex rivers and canals networks. The freshwater sources supplying for the subproject is Hau River with average volume in dry season 1,200 m$^3$/s and 7,000 m$^3$/s in wet season. Main rivers in the system include Ganh Hao river, My Thanh river, Hau Giang river and their branches while main canals include Quan Lo – Phung Hiep, Bac Lieu – Ca Bau, Bac Lieu – Co Co, Ho Phong – Chu Chi, Cho Hoi, Gia Rai – Pho Sinh – Canh Den, Lo Be – Ganh Hao, Xom Lung – Cong Cai Cung, Bridge II – Phuoc Long, and Cau Sap – Vinh Phu cross-section – Ngan Dua channel. The subproject area is affected by the tidal regimes of the South China Sea (with the form of irregular semi-diurnal) and a large tidal range (3 to 3.5 m).

- **The acid sulphate soil in depth is located in some area in Soc Trang province. The active depth of acid sulphate soil is more than 1 meter below the surface ground. Therefore, excavating activities may disseminate the acid sulphate soil the nearby area. That may be more complex and have serious effect on fishes and other aquatic life and agriculture (see Figure 3.1).**

3.2 Environment and Social Conditions

- **Land Use and Vegetation Cover:** In subproject area, the use of agriculture land is to rice farming, fruit cultivation and vegetable, industrial plant, and aquaculture. Current status of land use (2009): Total natural land area is 331.2 thousands of hectares, of
which there is about 206,000 hectares (ha) of agricultural land, 11,000 ha of forestry land, 23,000 ha of hectares of specialized land, and 6,000 ha of residential land (see Figure 3.2). The subproject areas are exclusively agriculture area. There are no protected areas in and/or nearby the subproject area.

Population: According to results of the overall population survey conducted on 1 April 2009, Soc Trang province has 1,127,404 people. The total number of labour is 793,979 people, of which the number of untrained labour and technical workers with certificates is 605,727 people, counting for 76.29%; the number of trained labour is 188,252 people, counting for 23.71%.

Ethnic minorities: In the province, there are three main peoples with the Kinh people as the most crowded people, constituting 64.83% of the population; the Khmer constitutes 29.21%; the Hoa constitutes 5.93%; and other ethnic minorities constitute 0.02%. The Khmer people live mainly in Subproject area: My Xuyen: 86,692 people, counting for 21.0%. The poverty percentage of the Khmer households that do not have their basic demands met. Rich and quite rich households: 7,379 households, making up 10.82%; medium-income households: 31,534 household, making up 46.26%; poor household: 29,625 household, making up 42.92%.

Transportation: Main transportation infrastructure includes roads and waterways. Soc Trang has a fairly developed road system with some important roads passing through, such as the national highway 1A, and the national road 60. Waterways: Soc Trang has 72 km of seashores that borders the East sea and the downstream of the Hau river (the section from Can Tho province to Dinh An and Tran De seaports), and channels and canals that connect to the Hau river and create a favourable waterway network. Soc Trang has three large estuaries, namely Dinh An, Tran De, and My Thanh, that form a large catchment that is very convenient for water-related transportation. The province also has Tran De port with a loading capacity of 240,000 tons of goods per year.

Industrial zones: Soc Trang has An Nghiep industrial zone with a total area of 251 ha. This industrial zone borders the National highway 1A at west, the by-pass of the National highway 60, the 25 channel at the north, the 30/4 channel at the east, and is 4km far from the provincial centre.

Water supply: The water supply system in the provincial town has a capacity of approximately 20,000 m3/d. District towns have improved the water supply networks that meet productive and daily demands. Surface water¹ quality in the Sub-project area is extremely poor, particularly with respect to salinity, organic matter and bacterial contamination; it is therefore almost never used as a drinking water source. Canal water appears to still be extensively used as a source of domestic water. While traditional latrines have been replaced by other systems, there is little or no septic treatment of human waste in the Sub-project area. Bacterial contamination comes from drainage of these raw wastes.

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¹ Surface water, in this context means canal water, as well as any pond or dug well created by individuals for human water supply.
Figure 3.1: Map of acid sulphate soil in Soc Trang province

- Acid Sulphate soil in 50 cm of depth below surface
- Acid Sulphate soil in depth more than 1 meter below surface

Figure 3.2: Land use of Soc Trang province

Agricultural crop
Aquaculture crop
Industrial crop
Residential
IV: IMPACTS ASSESSMENT AND MITIGATION MEASURES

4.1. Summary of the Impacts

Since the subproject involves construction of 49 small rural bridges (3 meter wide) spreading over 5 districts therefore environmental impacts will not be significant, however, need to be mitigated. The potential negative impacts would be mainly due to (a) land acquisition and (b) disturbance during the construction from dust, air pollution, noise and others; and (c) traffic safety during the operation phase. Assessment and mitigations of the impacts were prepared in line with the policy guidelines provided in the ESMF and the findings are provided below.

4.2. Safeguard Screening and Identification of Issues

(a) Initial Screening

To avoid adverse social and environmental impacts which cannot be adequately mitigated by the Project, the initial screening was carried out to identify subprojects activities that may cause serious environmental and social impacts which would not be easily mitigated with the Project’s current set of safeguard instruments and/or equivalent to the Category A subproject as described in World Bank safeguard guidelines. In the process of initial screening, the following aspects were considered:

- Possible substantial adverse impacts on ethnic minorities, and the proposed mitigation measures are not acceptable to affected population;
- Possible loss or damage to cultural property, including sites having archeological (prehistoric), paleontological, historical, religious, cultural and unique natural values, including individual grave and/or shrines;
- Possible impacts on the natural habitats and/or protected areas;
- Possible increase in the use of pesticides and other agrochemicals.
- Possible impacts on the current water regimes, particularly water flow, water quality, and salinity;
- Possible existence of the UXOs (unexploded objects); and
- Possible impacts on the traffic volume increase.

The potential negative impacts on local environment of the Soc Trang Bridge subproject could be mitigated through the safeguard instrument developed for the project.

(b) Identification of Issues

A technical screening was conducted in line with the safeguard issues identified in the ESMF (Table 5.1 of the ESMF) and the results are shown in Table 4.1 below.

Table 4.1 Results of safeguard screening for Soc Trang Bridge subproject

<table>
<thead>
<tr>
<th>Safeguard issues likely to be involved</th>
<th>Safeguard document prepared</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1); (2); (9)</td>
<td>EMP, RAP, EMDP</td>
<td>The subproject does not involve any natural habitats, cultural property, pesticide use, dredging, dyking, and/or construction of sluices.</td>
</tr>
</tbody>
</table>

Notes: (1) Permanent or temporary loss of land; (2) Involve ethnic minorities; (9) Construction of rural bridges
4.3 Potential Negative Impacts and Mitigation Measures

Data collection and field surveys were carried out including consultation with local communities and affected population. Table 4.2 summarizes nature and extent of the potential negative impacts of the subproject. Key social and environmental impacts and mitigation measures are discussed in Section 4.3.1 and 4.3.2 and are summarized in Tables 4.3 and 4.4.

Table 4.2: Potential impact of Soc Trang Bridge subproject

<table>
<thead>
<tr>
<th>Key Activities</th>
<th>Potential negative impact</th>
<th>Impact Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pre-construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1 Land acquisition and resettlement of local residents</td>
<td>Loss of productive land and/or residential land/assets that may cause adverse impacts on livelihoods and well being of project affected population (PAPs); About 4.9 ha of land will be acquired permanently (2.4 ha) and temporarily (2.45 ha), and this will affect about 133 households of which 64 household are Kmer ethnic and 69 households are vulnerable group.</td>
<td>Small, unavoidable</td>
</tr>
<tr>
<td>2. Site clearance and construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1 Construction of 49 small rural bridges</td>
<td>Air and noise pollution, vibration, and traffic (road and waterways) congestion due to transportation, loading and unloading of construction materials, and other construction activities. Water pollution due to high level of suspended solid, low dissolve oxygen (DO), high Biological Oxygen Demand (BOD), decrease in pH due to leachate of acid sulfate soil, and/or possible contamination with other pollutants. Generate solid and toxic waste (used oil and grease from equipment maintenance), especially those related to construction waste. Increase safety risk, dust, noise, vibration, and other nuisance to local residents.</td>
<td>Small, unavoidable, could be mitigated</td>
</tr>
<tr>
<td>2.2 Transportation of construction materials (sand, soil, rocks, gravel, cements, etc.) construction waste, etc.</td>
<td>Dust and other air pollution caused by trucks, boats, vehicles, and loading and unloading activities. Noise and vibration due to transportation and loading and unloading activities. Water pollution caused by accidental spills and runoff water contained oil and grease. Increase safety risk (roads and waterways), dust, noise, vibration, and other nuisance to local residents.</td>
<td>Very small, short term, unavoidable, controllable</td>
</tr>
</tbody>
</table>

Activities of construction workers, including: Generation of solid and liquid wastes. Competing use of local resources (fishing, hunting, etc.). Conflicts between workers and workers and workers and...
<table>
<thead>
<tr>
<th>Key Activities</th>
<th>Potential negative impact</th>
<th>Impact Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>work camp</td>
<td>local people</td>
<td>controllable</td>
</tr>
<tr>
<td>Health and safety issues</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Operation phase

| Increase local traffic | Induce development in the area and increase traffic congestion and road safety risk; air, noise, vibration; waste generation (social and liquid); and water pollution | Small, long term |

4.3.1 Social impacts and mitigation measures

There will be some land acquisition and ethnic minority will be involved. These affected populations will be compensated in line with RPF and EMPF; and RAP and EMDP for the subproject have been prepared and they are presented separately. The table below illustrates the preliminary estimate of land lost under the subproject.

Table 4.3: Land acquisitions and affected households for Soc Trang Bridge subproject

*Source: RAP for Soc Trang subproject, 2010*

<table>
<thead>
<tr>
<th>Type of compensation</th>
<th>Unit</th>
<th>Soc Trang Province</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of affected household</td>
<td>household</td>
<td>133 (with 606 people)</td>
</tr>
<tr>
<td>Ethnic Group: Khmer</td>
<td>household</td>
<td>64</td>
</tr>
<tr>
<td>Vulnerable Group</td>
<td>household</td>
<td>69</td>
</tr>
<tr>
<td>Total Compensation area</td>
<td>ha</td>
<td>4.9</td>
</tr>
<tr>
<td>Total area of permanent land</td>
<td>ha</td>
<td>2.4</td>
</tr>
<tr>
<td>Total area of temporarily land</td>
<td>ha</td>
<td>2.45</td>
</tr>
<tr>
<td>Total cost for land compensation (1,000x)</td>
<td>VND</td>
<td>7,541,200</td>
</tr>
<tr>
<td></td>
<td>SUS</td>
<td>386,729</td>
</tr>
</tbody>
</table>

4.3.2 Environmental impacts and mitigation measures

There would be no major impacts during the construction of the proposed bridges. The impacts on local traffic, air quality, noise, vibration, and water quality are considered marginal, short term, and localized. These impacts will be mitigated through the application of the ECOP Parts A and B and with close supervision of field engineers and close consultation with local authorities and communities. *Table 4.4* summarizes the mitigation measures to be carried out during the implementation of the subproject and they are elaborated as follows:
To mitigate the potential impacts during construction, the ECOP Part A and Part B (see Annex 1) will be applied. The ECOP Part A (General Provisions) requires the contractor to (a) be aware of the basic objective of ECOP, prohibitions, and basic procedures on “chance find” and on-compliance reporting; (b) prepare the contract specific environmental plan (CSEP) describing how the safeguard performance during construction as defined in Part B could be achieved; and (c) initiate and maintain connection with local authorities and communities throughout the construction period. Part B (Construction Management) describes basic requirements for management of construction sites, management of environmental quality (water, air/noise/vibration, traffic/transportation, wastes, excavated/demolition materials), including management of work camps and workers and monitoring of potential impacts.

Negative impacts due to operation of bridges are not anticipated. These bridges are design mainly to accommodate rural connection of the existing roads along the two sides of existing secondary canals. These bridges would not attract major traffic since it will be built within existing irrigation area. The Government has been addressing road safety through the national road safety program.

Table 4.4: Proposed mitigation measures for Soc Trang Bridge subproject

<table>
<thead>
<tr>
<th>Key Activities</th>
<th>Mitigation Measures</th>
<th>Responsible Entity and Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) During site clearance and construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) Construction of 14 small rural bridges</td>
<td>During detailed design: Include the ECOP Parts A+B in the bidding and contract documents and inform the safeguard requirements to all potential bidders.</td>
<td>CPMU or Soc Trang PPMU; Cost of the mitigation measures will be part of the construction cost</td>
</tr>
<tr>
<td></td>
<td>During construction: Closely supervise and monitor the contractor performance in close consultation with local authorities and communities</td>
<td>Soc Trang PPMU; Cost for monitoring and supervision is part of the supervision cost</td>
</tr>
<tr>
<td></td>
<td>Monitor water quality upstream and downstream of the construction sites as needed.</td>
<td>Soc Trang PPMU; Cost will be part of environmental monitoring cost</td>
</tr>
<tr>
<td></td>
<td>Periodic supervision and monitoring</td>
<td>CPMU; Cost will be part of the project management cost; WB will also monitor performance as part of the supervision missions.</td>
</tr>
</tbody>
</table>
V. EMP -- ACTIONS TO BE CARRIED OUT UNDER THE SUBPROJECT

5.1 Mitigation Measures during Construction

During preconstruction, PPMU will carry out the following actions:

- Establish an Environmental and Social Unit (ESU) and assign at least one full time staff to be responsible for coordination and forging effective implementation of safeguard, including hiring of consultants to assist in the management and monitoring;

- In preparing detailed design, identify the required mitigation measures to be implemented to address the concerns from the affected population and key stakeholders and further reduce the negative impacts both from social and environmental aspects.

- In preparing the bid document, include the ECOP Parts A and B (Annex I) in the bidding and contract documents and ensure that the contractors are aware of the safeguard obligation and commit to comply. Cost for mitigating the impacts during construction must be included as part of the subproject cost. The supervision and/or field engineers will be responsible for supervision and monitoring of safeguard performance of contractor and this responsibility will be included in the TOR for field engineers;

- Implement RAPs (including complete Detailed Measurement Survey) and EMDPs as soon as possible.

5.2 Environmental Monitoring Program

The environmental monitoring program would comprise of two types of monitoring: ambient water quality monitoring of the subproject area and monitoring of contractor performance. Objectives and scope of the monitoring are described below.

5.2.1 Contractor performance monitoring

The environmental monitoring program would focus on the monitoring of contractor performance during construction. PPMU will hire a group of national consultant to conduct periodical monitoring in line with the detailed design and the construction plan and schedule, including locations of dredge materials disposal areas. Below provides a guideline for monitoring of contractor performance:

- Conduct periodic monitoring of the compliance with regulations on environmental protection with the following contents:

  + Ensure environmental sanitation in camp areas: toilets, collection and treatment of solid waste and wastewater.

  + Make sure the life and health of workers, prevent diseases and social diseases

  + Make sure the regulations on occupational safety
Ensure environmental sanitation in and surrounding areas such as covering material transport truck, watering for dust-resistant and construction time, reasonable transportation to reduce the impacts of noise to the surrounding residential areas.

- Monitoring frequency: Quarterly (3months per year)
- Monitoring supervisor: Project owner and independent environmental supervisor

It is a normal practice in Vietnam that local community will also set up team to monitor potential negative impacts during construction. This is to ensure that the potential negative impacts are adequately mitigated from the local resident point of view. When the environmental deterioration happens, people and local administration will report to the project owner. For this subproject, it is anticipated that the local community will also monitor the contractor performance. Details discussion will be made before commencement of the construction of each contract. PPMU will coordinate connection between the contractor and local community.

5.2.2. Ambient water quality monitoring

Although serious impact on water quality is not expected it is a good practice to monitor water quality during construction upstream and downstream of the construction sites to avoid potential impacts on water users. Table 5.1 provides a guideline for water quality monitoring during construction for the subproject. PPMU will hire qualified consultant to assist in the monitoring. The estimated cost is only for water quality collection and analysis.

In parallel to this monitoring, PPMU will also ensure compliance with the GOV requirement regarding environmental quality monitoring which was approved as part of the EIA process.

**Table 5.1: Water quality monitoring during construction**

<table>
<thead>
<tr>
<th>Items</th>
<th>Detail observation</th>
<th>Compare to Gov Regulations</th>
<th>Frequency sampling</th>
<th>Implementing Cost (VND)</th>
<th>Total cost 1,000x(VND)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Samples analysis</td>
<td>Monitoring of water quality should be implemented. The monitoring parameters proposed including pH, DO, BOD, COD, SS, Coli form bacteria, Fe, Pb, Hg, Cd, Al, Zn, Fe, chemicals</td>
<td>QCVN 08:2008/BTN MT</td>
<td>48 bridges x 2 sampling locations x 2 times (before and after construction)</td>
<td>192 samples x 1,825,000 VND/sample (According to Circular No.232/2009/TT/BTC dated on 9/12/2009 of MOF)</td>
<td>350,400</td>
</tr>
<tr>
<td>Field survey</td>
<td>Per diem, accomodation, Boat hiring (2 person x 3days x 2 times per year x 3 years)</td>
<td></td>
<td></td>
<td></td>
<td>30,000</td>
</tr>
<tr>
<td>Report</td>
<td>2 reports x 3 years</td>
<td></td>
<td></td>
<td></td>
<td>30,000</td>
</tr>
<tr>
<td>Total</td>
<td>Total cost is 410,400,000 VND equivalents to US$ 20,520</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5.3 Consultation and Information Disclosure

The EMP will be disclosed in the country at CPO as well as in Soc Trang province. It will be translated into Vietnamese language and disclose in the country.

Pre-meeting: During detailed design and before bidding, Soc Trang PPMU will carry out a consultation with the local authority and community and inform them about the status of the subproject and how to access to safeguard information which has been disclosed both in English and Vietnamese.

In the meeting, the detailed design, the potential negative impacts and mitigation measures proposed for the subproject will be discussed to facilitate effective implementation of the subproject and cooperation of local authorities and communities. If needed, the mitigation measures should be adjusted in line with the final agreement and the revised mitigation plan should be disclosed to the public locally. The results will be included in the subproject progress report.

VI: IMPLEMENTATION ARRANGEMENT

6.1. Organization and Responsibilities

The subproject owner: The Soc Trang PPMU is the subproject owner and will be responsible for ensuring effective implementation of safeguard measures and timely reporting the implementation progress. The subproject PPMU will set up an Environment and Social Unit (ESU) comprising at least one full time staff to be responsible for forging effective implementation of safeguard measures.

The safeguard consultant: To ensure effective implementation of safeguard measures, a team of qualified national consultant (Environmental Management Consultant or EMC) will be hired to assist the PPMU during the implementation of safeguard activities for all the subprojects to be implemented by the subproject PPMU under the project, including providing guidance on supervision and monitoring of contractors as well as safeguard training to ESU staff and field engineers.

The Central Project Management Unit (CPMU): CPMU and its safeguard consultant will be responsible for periodic monitoring of safeguard measures for the subproject, including providing clarification on issues related to safeguard policies and requirements and safeguard training to the subproject staff/consultant.

Other entities: The Provincial and District’s People Committees and the Department of Natural Resources and Environment and (DONRE) are responsible for ensuring full compliance of GOV’s regulations. It is also a normal practice in Vietnam that local community and/or social entities will also monitor the contractor performance as well as actual environmental and social impacts.

Key responsibilities of these stakeholders are listed in Table 6.1.
WB's safeguard training. Given that World Bank safeguard policy and procedures are relatively new to the agencies and key stakeholders, the subproject PPMU will carry out special training on issue related to World Bank safeguard policies and the subproject at least one time during the first two years. The training costs will be part of the subproject management cost.

6.2 Monitoring and Reporting

Field engineer will report the safeguard performance of the contractor as part of the contract's progress report to the PPMU. The PPMU will submit a progress report to CPMU periodically, including the progress on the implementation of the EMP and safeguard performance of the contractor. CPMU will submit the following reports to WB: (a) Semi-annual progress report, including; (b) Mid-term Review Report; and Annual Environmental and Social Safeguard Monitoring Report, and the reports will also include the progress on safeguard implementation and performance of contractors.

6.3 Work Plan, Schedule, and Budget

Table 6.2 summarizes work plan and schedule of the EMP.

Budget arrangement will be as follows:

- Cost for implementation of RAP and EMDP will be financed by the Government.
- Cost for implementation of mitigation measures during construction and compensation to damage (if any) will be part of the subproject construction cost;
- Cost for supervision of contractor performance will be part of the subproject supervision cost;
- Cost for water quality monitoring program will be part of the environmental monitoring cost; and
- Cost for safeguard training of staff will be part of the subproject and/or project management as appropriate.
Table 6.1: Institutional responsibilities for Soc Trang Bridge subproject

<table>
<thead>
<tr>
<th>Community/agencies</th>
<th>Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPMU</td>
<td>- Periodically monitor performance of the subproject and include the safeguard performance in the project progress report and be the overall contact point with the World Bank.</td>
</tr>
<tr>
<td>Soc Trang PPMU</td>
<td>- As the subproject owner, it is responsible for implementation of all the EMP activities including the mitigation measures during construction and operation, including fostering effective coordination and cooperation between contractor, local authorities, and local communities during construction phase. PPMU will be assisted by a team of qualified consultant, the environmental staff, and/or field engineer.</td>
</tr>
</tbody>
</table>
| Contractor         | - Take actions to mitigate all potential negative impacts in line with the objective described in the ECOP.  
- Actively communicate with local residents and take actions to prevent disturbance during construction.  
- Ensure all the construction activities have sufficient documents from the related organization.  
- Ensure that all staff and workers understand the procedure and their tasks in the environmental management program.  
- Report to the PPMU on any difficulties and their solutions.  
- Report to local authority and PPMU if environmental accidents occur and coordinate with agencies and keys stakeholders to resolve these issues. |
| Social organizations, women union and Associations and Related organisations | - These organizations could play a role as a bridge between the Provincial and/or District People’s Committee, communities, contractors, and PPMU by assisting in community monitoring.  
- Mobilizing communities participation in the subproject, providing training to communities, and  
- Participating in solving environmental problems if any. |
| Province and District People’s Committees | - Oversee the implementation of the subproject under the recommendations of the DONRE and the PPMU to ensure compliance of GOV policy and regulations. |
| Soc Trang DONRE    | - DONRE represents the MONRE for environmental management. It is responsible for monitoring the compliance with the GOV’s environmental requirements. |
Table 6.2 Tentative work plan for Soc Trang Bridge subproject

<table>
<thead>
<tr>
<th>Activities</th>
<th>Responsible entity</th>
<th>Work schedule (tentative)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Set up safeguard capacity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1 Set up ESU and assign staff</td>
<td>Soc Trang PPMU</td>
<td>By end July 2011</td>
<td>Assume board approval in May 2011</td>
</tr>
<tr>
<td>1.2 Provide safeguard training to subproject staff</td>
<td>CPMU/ Soc Trang PPMU</td>
<td>By end September 2011</td>
<td></td>
</tr>
<tr>
<td><strong>2. Consultation and detailed design</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1 Inform local authorities and communities on the EMP and adjust the plan as appropriate (pre-meeting)</td>
<td>Soc Trang PPMU</td>
<td>By end September 2011</td>
<td>Assume project effectiveness in July 2011</td>
</tr>
<tr>
<td>2.2 Include the ECOP for the subproject in bidding document and contract document and inform all the bidders of the safeguard requirement</td>
<td>CPMU/consultant</td>
<td>By end September 2011</td>
<td></td>
</tr>
<tr>
<td>2.3 Assign safeguards staff and supervision engineers to supervise contractor on a daily basis</td>
<td>Soc Trang PPMU/ consultant</td>
<td>By end September 2011</td>
<td></td>
</tr>
<tr>
<td><strong>3. Site clearance and construction management</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1 Prepare CSEP and implement the activities as indicated in the ECOP</td>
<td>Contractor</td>
<td>During construction</td>
<td>Expect in January 2012</td>
</tr>
<tr>
<td>3.2 Monitor and report on contractor performance and actual impact including consultation activities with local resident</td>
<td>Soc Trang PPMU/ field engineer, consultant</td>
<td>During construction</td>
<td>Expect in January 2012</td>
</tr>
<tr>
<td><strong>4. WQM program</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1 Monitor WQ as agreed</td>
<td>Soc Trang PPMU/ consultant</td>
<td>Periodically during construction</td>
<td></td>
</tr>
</tbody>
</table>
Annex 1
Environmental Code of Practices (ECOP) for Soc Trang Bridge Subproject

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  A7. Prohibitions

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  B2 Management of Environmental Quality
  B3 Management of Work Camp
  B4 Monitoring of Potential Impacts
Chapter 1
Introduction

1. **Objective:** This Environmental Code of Practices (ECOP) was prepared to guide the planning and implementation of the mitigation measures to be carried out by Contractor during bridge construction for Soc Trang Bridge subproject. It sets out standard practices and procedures for managing the potential negative impacts on local environment and local communities of all civil works to be carried out under the Project. The ECOP will be included as a separate annex in all bidding and contract documents and the field engineers and supervisor will be assigned the responsibility to ensure compliance and reporting. The Contractor will be made aware of and commit to this obligation and know that cost for implementation of the measures is part of the construction cost.

2. **Scope and application:** Given that the nature and extent of the impacts varies with nature of the civil works as well as with the scale and locations of the activities, the ECOP has been designed to comprise two parts as follows:

   - **Part A: General Provisions.** This part describes basic requirements for implementation and supervision of works. Part A is to be included in all contracts of the subproject.
   
   - **Part B: Construction Management.** This part describes basic requirements for all Contractors carrying out construction of bridges, dredging, dyking/rural road, secondary/tertiary sluices, and water supply. It will be included in all construction contracts of the subproject.

3. For the sake of clarity, “construction” in this document includes all site preparation, demolition, spoil disposal, materials and waste removal and all related engineering and construction activities.

Chapter 2
Relevant World Bank's Safeguard Policies and Government's Regulations

1. **World Bank’s safeguard policies.** This ECOP is prepared to satisfy the WB safeguard requirements under OP4.01 (EA) which requires planning, implementation, and monitoring of the mitigation measures during construction.

2. **GOV’s regulations.** There are a number of GOV regulations, standards, code of practices, etc. related to environmental and safety that are relevant to construction activities and environmental quality. In addition to the main laws and regulation outlined in the Environmental and Social Management Framework (section III of the ESMF), the ones related to environmental quality and safety are listed below (not exhaustive) and have to be closed observed:

   *Water environment*
   
   - QCVN 08:2008/ BTNMT: National technical regulations on quality of surface water
   - QCVN 14:2008/ BTNMT: National technical regulations on quality of domestic wastewater
Soil environment

- QCVN 03:2008 BTNMT - National technical regulation on the allowable limits of heavy metals in the soils;
- Decision No.27/2004/QĐ - BXD dated on 09-11-2004 by the Minister of Ministry of Construction on the promulgation of TCXDVN 320:2004 "Landfill for hazardous waste - Design standards"

Air environment

- QCVN 05:2008: Air quality - Standards for ambient air quality
- QCVN 06:2008: Air quality - Maximum allowable concentration of hazardous substances in the ambient air.
- QCVN 07:2008: Air quality - Threat hold of hazardous substances in the air.
- TCVN 6438:2001: Road vehicles - Maximum permitted emission limits of exhausted gases

Solid waste management

- QCVN 07:2009: National technical regulations for classification of hazardous wastes
- QCVN 25:2009: National technical regulations for wastewater of solid waste sites

Vibration and Noise

- QCVN 27:2010 BTNMT - National technical regulation on Vibration (replace TCVN 6962:2001 - Vibration emitted by construction works and factories - Maximum permitted levels in the environment of public and residential areas;
- QCVN 26:2010 BTNMT - National technical regulation on Noise (replace TCVN 5948:1999 Acoustics - Noise caused by transportation means when speeding - Allowable level)
- TCVN 5949:1998 Acoustics - Noise in public and residential areas - Allowable level

Labor Health and Safety

- Decision No.3733/2002/QĐ-BYT issued by Ministry of Healthcare dated on 10/10/2002 about the application of 21 Labor health and safety standards that concerned about microclimate, noise, vibration, Chemicals - Permitted level in the working environment.

Moreover, regarding planning and design of infrastructure the following standards are used:
- Decision No.628/BXD-CSXD of the Ministry of Construction (MOC) dated 14th December 1996: Vietnamese Construction Regulations and Standards;
- Instructions for preparation and approval of town construction planning of MOC in 1998.

Chapter 3

Responsibilities

1. The subproject owner (Soc Trang PPMU) and the Contractor are the key entities responsible for implementation of this ECOP. Key responsibilities of the subproject owners and the contractors are as follows:
(a) Subproject owner

- General: The subproject owner on behalf of the Central Project Management Unit (CPMU) is responsible for ensuring that the ECOP is effectively implemented. The subproject owner will create a safeguard unit and assign a group of qualified staff to be responsible for preparation and management of environmental and social safeguard of the subproject throughout its life, including supervision of contractors. The subproject owner is responsible for preparing the safeguard reports and submitting to the CPMU.

- During construction, the subproject owners will recruit environmental management consultants (EMCs) to monitor the compliance of the contractors to fulfil the agreed CSEP (see below). Responsibilities of the EMCs would include the following: (a) monitoring the contractors’ compliance with the environmental plan, (b) taking remedial actions in the event of non-compliance and/or adverse impacts occur, (c) investigating complaints, evaluating and identifying corrective measures; (d) advising to the Contractor on environment improvement, awareness, proactive pollution prevention measures; (f) supervising the Contractor’s activities in responding to the complaints; (g) providing guidance and on-the-job training to field engineers on various aspects to avoid/mitigate potential negative impacts to local environment and communities during construction.

(b) Contractor

- Contractor has the responsibility of carrying out contracted works through fulfilling the agreed CSEP. In doing so, the contractors will establish and maintain contact with the subproject owner and local residents, and keep them informed of construction matters likely to affect them. This may include regular and frequent distribution of newsletters and attendance at meetings at the request of the subproject owner with representatives of local residents groups.

- Contractor will provide information and reporting telephone "Hot Line", staffed at all times during working hours. Contact details should be prominently displayed at the sites. Information on the construction progress, including the projected activities that might require closure of traffic or may cause safety risk should be timely provided.

- Contractor has the duty to secure appropriate permits and licenses before undertaking the works or moving heavy equipment. It is the responsibility of the Contractors to monitor the development and implementation of new environmental legislation and regulation and to use the appropriate standards prevailing at the time of awarding contracts. Contractors must comply with all prevailing legislation at the time of construction, including any requirements under health and safety.
Chapter 4
ECOP Part A: General Provisions

A1. Contract Specific Environmental Plan (CSEP)

1. Contractor will be required to prepare a CSEP describing how the Contractor intends to operate construction at works sites as well as other specific measures necessary to avoid and/or reduce the potential negative impacts as required in the ECOP, especially those related to management of the construction site; transportation of construction materials, especially dredge materials; control of dust, noise, and vibration; solid and liquid waste management; and public health. Given different scope and nature of civil works, scope and nature of the CSEP could be differ and all the CSEP will be reviewed and approved by the EMC to be assigned by the subproject owner.

A2. Non-compliance Reporting Procedures

2. Contractor must comply with the CSEP, and must ensure that their Sub-Contractors (if any) also comply with it. To ensure that necessary action has been undertaken and that steps to avoid recurrence have been implemented, the EMCs and/or Contractor must advise the subproject owner within 24 hours of any serious incidents of non-compliance with the CSEP that may have serious consequence. In the event of working practices being deemed dangerous either by the subproject owners, the local authorities, or the other concerned agencies, immediate remedial action must be taken by the Contractor. The Contractor must keep records of any incidents and any ameliorative action taken. The records on non-compliance that could be practically addressed (not cause serious impacts) should be reported to the subproject owner on a monthly basis.

3. The Contractor will be responsible for dealing with any reports forwarded by the subproject owner, Police or other agencies by (following instruction from the subproject owner representative as appropriate) as soon as practicable, preferably within one hour but always within 24 hours of receipt by either the Contractor. The EMCs will monitor and ensure that the Contractor has taken appropriate action. Where appropriate, approval remedial actions may require an agreement from the local authorities and/or other GOV agencies. Procedures should be put in place to ensure, as far as is reasonably practical, that necessary actions can be undertaken to avoid recurrence and/or serious damage.

A3. Liaising with Authorities and the Public

4. Prior to the commencement of subproject activities and throughout the construction duration, the Contractors will work closely with the local authorities and other agencies to ensure full compliance with GOV regulations and will also provide adequate information on the Project to the General Public, especially those that may cause public safety, nuisance, and sensitive areas and the locations of storage and special handling areas.

5. The Contractor will provide information and reporting telephone “Hot Line” staffed at all times during working hours. Information on this facility shall be prominently displayed on site hoardings.

A4. Community Relations

6. Contractor will assign a community-relations personnel, who will be focused on engaging with the community to provide appropriate information and to be the first line of
response to resolve issues of concern. Contractors will take reasonable steps to engage with residents of ethnic minority backgrounds and residents with disabilities (or other priority groups as appropriate), who may be differentially affected by construction impacts.

7. Contractor will ensure that local residents nearby the construction sites will be informed in advance of works taking place, including the estimated duration. In the case of work required in response to an emergency, local residents shall be advised as soon as reasonably practicable that emergency work is taking place. Potentially affected residents will also be notified of the 'Hotline' number, which will operate during working hours. The “Hotline” will be maintained to handle enquiries regarding construction activities from the general public as well as to act as a first point of contact and information in the case of any emergency. All calls will be logged, together with the responses given and the callers' concerns action and a response provided promptly. The helpline will be widely advertised and displayed on site signboards.

8. The Contractor respond quickly to emergencies, complaints or other contacts made via the ‘Hotline’ or any other recognized means and liaise closely with the emergency services, local authority officers and other agencies (based on established contacts) who may be involved in incidents or emergency situations.

9. The Contractor will manage the work sites, work camps, and workers in a way that is acceptable to local residents and will not create any social impacts due to workers. Any construction workers, office staff, Contractor’s employees, or any other person related to the Project found violating the "prohibitions" activities listed in Section A2 below may 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.

A5. Mitigation Objectives

10. Main objective of this ECOP is to minimize the potential negative impacts during construction on local environment, local community, and human and environmental safety and disturbance. The Contractor is expected to implement the activities in line with the following approach as much as possible in close consultation with the supervision and/or field engineers who will be assigned by PPMU to supervise the contract. Key approaches include, but not limited to:

- Minimize impacts and restore damages;
- Replanting trees in project areas;
- Control erosion and sedimentation during construction;
- Proper control of runoff and erosion from acid sulphate soil (ASS) and contaminated sediments through special protection and management;
- Use main roads when possible;
- Heavy traffic restrictions;
- Control (collection, disposal) of wastes (solid and liquid);
- Minimize disturbance to local population; Frequent meetings with local people and provision of timely and adequate information to the project affected peoples (PAPs) so that their living and production conditions could be managed;
- Engage and provide labour opportunity for local population;
- Application of proper safety and warning measures in the construction sites, especially in dredging canals;
- Provision of temporary crossings and bridges during construction of bridges; Application of proper safety and warning measures;
- Conduct public information campaign and outreach program, including training and capacity building.

A6. Implementation of “Chance Find” Procedures

11. If Contractors discovers archeological sites, historical sites, remains and objects, including graveyards and/or individual graves during excavation or construction, the Contractors will carry out the following steps:

- 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 National Culture Administration take over;
- Notify the supervisory Project Environmental Officer and Project Engineer who in turn will notify the responsible local authorities and the Culture Department of Province immediately (within 24 hours or less);
- Responsible local authorities and the Culture Department of Province 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 by the archeologists of National Culture Administration. 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 and Culture Department of Province. This could include changes in the layout (such as when finding an irremovable remain of cultural or archeological importance) conservation, preservation, restoration and salvage;
- Implementation for the authority decision concerning the management of the finding shall be communicated in writing by relevant local authorities; and
Construction work could resume only after permission is given from the responsible local authorities or Culture Department of Province concerning safeguard of the heritage.

A7. Prohibitions

12. The following activities are prohibited on or near the Project sites:

- Cutting of trees for any reason outside the approved construction area; Building of fires; Use of unapproved toxic materials, including lead-based paints, asbestos, etc.; Use of firearms (except authorized security guards); Use of alcohol by workers in office hours; Driving in an unsafe manner in local roads;

- Washing cars or machinery in streams or creeks; Maintenance (change of oils and filters) of cars and equipment outside authorized areas; Creating nuisances and disturbances in or near communities; Disposing garbage in unauthorized places; Indiscriminate disposal of rubbish or construction wastes; Littering the site; Spillage of potential pollutants, such as petroleum products; Collection of firewood; Urinating or defecating outside the designated facilities; and Burning of wastes and/or cleared vegetation.

Chapter 5
ECOP Part B: Construction Management

B1 Management of Construction Sites

1. This section outlines the requirements relating to site management practices that should be implemented during site operation. These relate to working hours, site layout and appearance and good housekeeping as well as operations of equipment and vehicles. Monthly inspection/meeting should be conducted to ensure that these procedures are adhered to. The Contractor must follow a ‘good housekeeping’ policy at all times. The site should be cleared by the Contractor on completion of the construction.

2. The Contractor is required to minimize, as far as reasonably practicable, any adverse environmental impact of their construction activities. All appropriate licenses and consents in respect of site operations will be timely secured. Key measures are as follows:

- Working hours: Core working hours will be from 0800 to 1800 on weekdays and 0800 to 1300 on Saturday. Individual site requirements which differ from the above will be considered on a site by site basis. Noisy operations shall not take place outside these hours without prior approval from the subproject owner. All construction related traffic will abide by the agreed hours of working for each site. Any exemption will require an agreement with the Subproject owner, subproject, and/or local authorities.

- Good housekeeping: The Contractor will follow a ‘good housekeeping’ policy at all times. This will include, but not necessarily be limited to the following: Ensure considerate site behaviour of the Contractor’s staff; Prohibit open fires; Ensure that appropriate provisions for dust control and road cleanliness are implemented; Remove
rubbish at frequent intervals, leaving the site clean and tidy; Remove food waste; Prevent vermin and other infestations; Frequently inspect, repair and re-paint as necessary all site hoardings to comply with the local conditions and local regulations, all flying post/board is to be removed as soon as reasonably practicable and within 24 hours of notice from the Subproject owner; Maintain toilet facilities and other welfare facilities for its staff; Frequently cleanse wheel washing facilities; and Undertake all loading and unloading of vehicles off the highway wherever this is practicable.

- **Public information and site access**: As a minimum, the Contractor will provide public information on the site program (start and finish dates), plus the telephone for public contacts and/or requests. Although restriction of site access for dredging, dyking, and construction of sluices will be difficult, effort will be made as much as possible to ensure safety for workers as well as for the Public (especially children). Any unauthorised entry to or exit from the sites should be control as much as possible.

- **Site layout and facilities**: Location of site huts, office accommodation, toilets and welfare facilities should be accommodated within the boundaries of the site.

- **Emergency Procedures**: The Contractor will ensure that emergency procedures are developed to facilitate effective actions in case of medical/fire emergency as well as environmental pollution (major spillage of gasoline, used oil, and/or toxic chemicals, etc.). Further guidance will be provided by responsible agencies. The emergency procedure will contain emergency phone numbers and the method of notifying the statutory authorities. Contact numbers for the key staff of the contractor will also be included.

- **Fire Prevention and Control**: All construction sites and associated accommodation or welfare facilities will have in place appropriate plans and management controls to prevent fires. The site fire plans will be prepared and will have due regard to the GoV regulations. During operation and maintenance of equipment and vehicles, the Contractor will ensure that its workers are well aware of the procedures and have enough knowledge to comply with them. The specification of non-combustible materials, products and packaging will be pursued wherever reasonably practicable. The project will also have to comply with GOV’s requirements as may be appropriate at specific sites.

- **Pest control**: The Contractor shall ensure that the risk of infestation by pests or vermin is minimized. Adequate arrangements for disposing of food waste or other material attractive to pests must be implemented. If infestation occurs the Contractor must take such action to deal with it as required.

- **Operation of equipment**: The Contractor must take all reasonable precautions to ensure that equipment is operated in a manner so as not to cause safety risk and/or nuisance to surrounding residents and occupiers. Operations of crane and other large equipment will have to be closely supervised. Permission may be required per GOV regulations.
Clearance and rehabilitation of construction site after completion: On completion of
the works the Contractor will clear away and remove all materials and rubbish and
temporary works of every kind. The site will be left clean and in a condition to the
satisfaction of the PPMU. Any potentially hazardous defects to the highway will be
made good, prior to permanent reinstatement.

B2 Management of Environmental Quality

(a) Discharge of Wastes into the Canals

3. The Contractor must take all the efforts to prevent wastes (solid and liquid) discharge
into all rivers and canals and to protect surface and groundwater from pollution and other
adverse impacts including changes to water levels, flows and general water quality.
Discharge of engine oil and oily waste from dredgers and construction machines to the canals
will be strictly prohibited. Engine oil, used oil, and other toxic substances and hazardous
wastes must be properly collected, stored, treated, and/or disposed off. Key measures are as
follows:

- **Used oil/engine oil:** The oil container at the construction site (especially when the site
  is located less than 10 meters from the waterways) must be of sufficient strength to
  ensure to prevent leakage. The container must be situated within a secondary
  containment system (bunded), which will prevent the release of any leaked oil. The
  Contractor must make provisions to ensure that all hazardous substances including oil
  drums or containers on site are properly labeled and properly stored and that no oil or
  other contaminants are allowed to reach water courses or groundwater.

- **Wastewater from sites:** Whenever possible, the Contractor must minimize the amounts
  of wastewater that need to be discharged and find alternative means of disposal. The
  Contractor will ensure that any seepage and wastewater arising from the works and
  camp sites must be collected and discharged via a settlement tank. The standards for
  wastewater treatment prior to discharge must be agreed in advance with the ESA.
  Contaminated water or water of an uncertain quality must be discharged into sewers
  by tankers or other approved means of disposal.

- **Drainage.** Water drainage must be designed to avoid stagnant conditions that could
  create bad smell and unsanitary condition. The Contractor must agree with the ESA in
  advance, details of the methodology to be employed, prior to commencement of the
  construction. Particular attention must be given to regular pest control treatment
  (particularly rats and flies); removal of sludge and other debris after drainage;
  reducing smell nuisance from sludge and algae by measures including deodorizing,
  hosing down etc. Safety measures must also be taken to protect both the general public
  and employees and to prevent fly-tipping and illegal access during the development
  works.

- **Water quality monitoring:** The Contractor must ensure continuous compliance with all
  the above conditions under the monitoring of the Subproject Owner and/or field
  engineer, including undertaking water quality monitoring at specific sites and are in
compliance with government regulation related to wastewater management and water quality monitoring.

(b) Dust, noise, vibration

4. The Contractor must take all the efforts to control dust, noise, and vibration levels from the site, as far as is reasonably practicable. Excessive noise/vibration generation activities must be in accordance with GOV standards. For critical areas, the Contractor may be required to conduct noise measurement in close consultation with the local residents and establish appropriate measures to control and manage noise level. Measures for reducing dust and other air pollution, noise, and vibration are provided as follows:

- **Inform the residents:** Prior to commencement of work at any site, the Contractor will be required to inform the local authority and residents regarding the construction plan and potential noise and vibration that may occur from the construction activities, including measures to reduce noise and vibration.

- **Dust control:** The Contractor will ensure that no burning of waste materials on site; adequate water supply is available on site; dry sweeping of large areas is not allowed; Cover all trucks carrying loose or potentially dusty materials (soil, mud, etc.) to and from construction site; Water or sprinkle the construction areas periodically, especially at site located near residential area; avoid overloaded of trucks; routinely clean public roads and access routes; Ensure vehicles working on site have exhausts positioned such that the risk of re-suspension of ground dust is minimised (exhausts should preferably point upwards), where reasonably practicable; Control driving speed on un-surfaced haul routes and work areas; Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery; Mix large quantities of cement, bentonite, grouts and other similar materials in designated areas; Store materials with the potential to produce dust away from site boundaries where reasonably practicable; Minimise the amount of excavated material held on site; Sheet, seal or damp down unavoidable stockpiles of excavated material held on site, where required; Seal or re-vegetate completed earthworks as soon as reasonably practicable after completion.

- Care must be undertaken during the transportation of dredge spoil to and from the construction site; the spoil must be covered at all time. Fly-tipping will not be permitted. Loads must only be deposited at designated sites. The Contractor will be responsible for all the trucks delivering to, or exiting from, a worksite and will clean up all damage that may occur to public road and other public facilities. Care should be taken when loading or unloading vehicles or dismantling scaffolding or moving materials to reduce impact noise. Loading or unloading bays may have to be housed in suitable acoustic enclosures.

- The installation of sheet piling with a diesel or air driven impact or drop hammer may not be acceptable on some of the sites. Use of hydraulically operated or vibratory hammers may be necessary in these circumstances to drive and extract sheet piling, provided the soil strata are suitable for such equipment. Where practicable, rotary
drills and bursters actuated by hydraulic or electrical power should be used for excavating hard material. Noisy plant or equipment will be sited as far away as is practicable from noise sensitive buildings. The use of barriers, (e.g. soil mounds), site huts, acoustic sheds or partitions to deflect noise away from noise sensitive areas must be employed wherever practicable.

- The Contractor will be obliged to comply with the vibration levels established by agreement with the ESA on a site by site basis given due attention to minimize human exposure (1 Hz to 80 Hz) and protection of damage to nearby structures.

(c) Traffic and Transportation

5. The Contractor will be required to use designated construction traffic routes as directed by the local authorities and the Police. The number of truck movements, hours of operation and any truck holding areas will be agreed in advance with the local authority and the Police. Plans will be required for each site showing the site entrances/exits and the agreed access roads for use to the nearest main road, and the routes to be used by truck to and from the strategic road network.

- The Contractor will maintain an up to date log of all drivers that will include a written undertaking from them to adhere to the local authority’s approved routes for construction traffic. In the case of non-compliance, the Contractor and/or their subcontractor(s) would be in breach of contract, necessitating disciplinary action against individual drivers.

- The Contractor may be required to provide truck stickers uniquely identifying the group of construction sites included in each contract, details of which shall be submitted to the local authority for approval. For identification purposes the Contractor will fix these in a prominent position on all trucks frequently serving the construction site. The identification will need to be sufficiently large to be easily read from a distance of 20 meters. Trucks waiting to enter or leave the site must switch off their engines to avoid unnecessary engine noise and emissions. Restrictions on the size and weight of vehicles accessing each site may be imposed depending on agreed access routes.

- For construction that interference with a carriageway or footway, the Contractor will inform the local authorities, responsible agencies, and local residents before commencing the works and proposed measures to minimize the safety risk and inconvenience to the public. All necessary consents and licenses must be obtained in advance. The safety of the public must be ensured. In the case of temporary footways, reasonable access shall be provided for people in accordance with the following requirements: (a) Any temporary footways and carriageways will be constructed to the reasonable requirements of the local authorities and should have uniform surfaces as much as possible; (b) Clear signing must be provided at all times for pedestrian routes with the minimum number of changes to all temporary layouts in order to reduce confusion. Advance warning should, if possible, indicate alternative existing wheelchair-accessible routes; (c) After completion of the works all materials arising from the works will be cleared from the highway leaving the same in a clean and tidy
condition to the reasonable requirements of the local authorities; and (d) The Contractor will be responsible for any damage caused by their activities to the roads and public facilities in the vicinity of the worksite. Any defects caused by the Contractors must be rectified immediately if dangerous or otherwise within 24 hours.

- Any street furniture (electrical or non-electrical) cannot be removed or relocated by the Contractor or any of its sub-contractors without written agreement from the responsible agencies.

(d) Waste disposal, re-use, and recycling

6. The Contractor must make an effort to minimize wastes and properly stored and disposed of toxic wastes (such as used oil, battery, etc.) and this should be clearly defined in CSEP. Opportunities for re-using or recycling construction and demolition waste should be explored and implemented. Where contaminated wastes are found to be present, handling and disposal procedures must be proposed by the Contractor and agreed by the Subproject Owner. The Contractor will be required to comply with these procedures during site development. The contractor will not be permitted to transport contaminated materials on canals, unless appropriate handling facilities and infrastructure are agreed with the responsible agency.

(e) Excavation Materials

7. Earth excavation must be carefully handled to reduce dust and possible obstruction and causing nuisance and health impacts to local residents. Excavation that affect public roads (such as pipeline and bridges) must be properly planned in consultation with local authority and inform the residents in advance. All dredged spoil as well as excavation materials will be reused for dike/road construction and/or land filling at or nearby the work site. Care must be undertaken to excavate, transport, and/or disposal of acid sulfate soil and/or contaminated soil.

(f) Demolition Materials

8. Demolition materials must be properly disposed off. The Contractor must consult ESA on the final selection of disposal sites and methods. If the works involve the removal of asbestos or the demolition of premises containing asbestos, the Contractor shall comply with related government regulations.

(g) Protection of natural habitats

9. The Contractor must observe the national and local regulations and policies related to protected areas/species, wildlife sanctuaries, and conservation of natural sceneries for tourism development and strictly control disturbance to these areas. Where species are protected by specific legislation the Contractor must follow the guidance to comply with those requirements and allow sufficient time for obtaining licenses or consents. No trees in these areas shall be cut without obtaining prior agreement with the authorities.

B3 Management of Work Camp

10. The Contractor will consult with local authority regarding the location of the worker camps and will provide appropriate water supply, garbage collection, toilets, mosquito net, and other health protection measures to all workers. Fishing, wildlife hunting, and other
social disturbance to local societies are prohibited. Training of workers on safety, good hygiene, and prohibitions activities (section A7) is required.

B4. Monitoring of Potential Impacts

11. The Contractor will be required to carry out monitoring program as follows:

<table>
<thead>
<tr>
<th>IMPACT</th>
<th>PARAMETERS</th>
<th>EXAMPLE LOCATIONS</th>
<th>FREQUENCY</th>
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<td>Air emissions</td>
<td>Dust level</td>
<td>Vicinity of clearing works</td>
<td>In windy conditions</td>
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<tr>
<td>Noise and vibration generation</td>
<td>Noise levels to meet TCVN/QCVN requirements</td>
<td>In the vicinity of sensitive receivers</td>
<td>In response to complaints</td>
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<tr>
<td>Surface water quality deterioration</td>
<td>TSS, pH, BOD, salinity, coliform to meet TCVN 5942 requirements</td>
<td>Downstream of dredging works, especially when ASS and/or contaminated spoil is disturbed and/or discharged back into the water.</td>
<td>Regularly during construction works</td>
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