

# Initial Environmental Examination

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October 2015

## Viet Nam: Greater Mekong Subregion Livelihood Support for Corridor Towns

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**GRANT-9173 REG: GREATER MEKONG SUBREGION: LIVELIHOOD SUPPORT  
FOR CORRIDOR TOWNS**

# **INITIAL ENVIRONMENTAL EXAMINATION REPORT**

Submitted to:

**ASIAN DEVELOPMENT BANK**

Prepared by:



**QUANG TRI CONSTRUCTION CONSULTANT JSC. (QCC), VIETNAM**

In partnership with:



**ASEAN DEVELOPMENT AND MANAGEMENT CONSULTING LTD (ASEC),  
VIETNAM**

**October – 2015**

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**ABBREVIATION**

|      |   |                                   |
|------|---|-----------------------------------|
| ADB  | : | Asian Development Bank            |
| EMP  | : | Environment Management Plan       |
| FS   | : | Feasibility Study                 |
| GMS  | : | Greater Mekong Subregion          |
| GoV  | : | Government of Viet Nam            |
| IA   | : | Implementation Agency             |
| IEE  | : | Initial Environmental Examination |
| JFPR | : | Japan Fund for Poverty Reduction  |
| MMC  | : | Market Management Committee       |
| O&M  | : | Operation & Maintenance           |
| ODA  | : | Official Development Assistance   |
| PC   | : | People's Committee                |
| PMU  | : | Project Management Unit           |
| PSU  | : | Project Support Unit              |
| TOR  | : | Terms of Reference                |

## EXECUTIVE SUMMARY

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The Great Mekong Sub-region: Livelihood Support for Corridor Towns Project aims to pilot market development approach to poverty reduction in the Greater Mekong Sub-region (GMS). A slice of this project will help provide market facilities for poor informal vendors in Dong Ha city, Vietnam, that will: (i) address the lack of security and hygiene; (ii) enhance the health conditions of traders and other users; (iii) address access to customer flow, which will result in increased income; and (iv) promote quality products as a result of created and/or enhanced product value chains. Key project's beneficiaries will be market vendors and poor self-employed people in the area of Dong ha city, thereby increasing the sale of locally produced products etc.

The project includes four components: (i) Component A –This component's objective is to construct new market facilities in ward 3 of Dong Ha city; (ii) Component B – Microfinance Support for Market Vendors; (iii) Component C – Training and Awareness Campaigns; Component D – Project Management and Consulting Services. The Consultant was awarded the contract for providing service of Detailed Engineering and Construction Supervision Feasibility Study and Initial Environmental Examination Consulting Services for the Component A: Construction of Three Small Markets in Quang Tri Province, Dong Ha City: Ward 3 Market.

The Quang Tri PPC issued Official Letter No.780/UBND-DN dated March 13, 2015 to guarantee the future construction site of 3,200 m<sup>2</sup> in agreement with ADB's Official Letter to the province. The new area locates near the current Ward 3 Market as well as requires no land clearance or resettlement. The construction site's location also locates in the road leading to new resident areas and administrative buildings in the future, which ensure stable demand for trading activities, increase income for poor vendors, but also serve as a new tourism attraction for the city, where tourists will come to enjoy traditional food and buy souvenirs and specialties. To ensure the environmental sustainability of the facilities during operation, an (IEE) environmental examination has been prepared in parallel with the market facility detailed engineering design.

The new market will provide larger space for trading, as well as complete infrastructure for market vendors and customers. The market will provide water supply, wastewater and drainage, solid waste collection, fire safety, parking and security services. According to the basic engineering design, the market will have the area of 3200 m<sup>2</sup>, accommodating 200 stalls. 800 m<sup>2</sup> is for the main market house, nearly 450 m<sup>2</sup> for the roofed and outdoor catering and local speciality selling areas, 180 m<sup>2</sup> for domestic appliance selling area, 120 m<sup>2</sup> for souvenir selling house, nearly 1600 m<sup>2</sup> for parking and utility sites (water supply and drainage, toilets, waste collecting area, fire prevention and fighting system, etc).

The IEE report comprises baseline data on the existing condition of the physical and biological environment, the anticipated environmental impacts, and proposed mitigation measures. Field surveys were undertaken to assess the physical and biological environment. Data has been collected from secondary sources to supplement the findings of the field survey. All the issues such as the ecology, management of construction, shelter and sanitation, use of equipment and machineries, environmental health and safety, occupational hazard, social and environment management and monitoring plan have been dealt with in detail in the respective sections of the report. However, these are briefly enumerated below to have a quick assessment of the situation.

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**Table 1. Summary of Environmental Impacts and Mitigation Measures**

| <b>Environmental Parameter</b>                          | <b>Level of Impact</b> | <b>Reason</b>  | <b>Proposed Mitigation Measures</b>   |
|---|------------------------|--|---|
| <b>Environmental Impacts during construction period</b> |                        |  |   |
| Air Impact  | Low                    | i. Dust generated from excavation, backfill and transport of soil for leveling on project site;<br>ii. Emissions generated from operations of construction equipment and machinery on site such as trucks, excavators etc  | i. For excavation and backfill: transport trucks should be covered with canvas, and construction site should be surrounded by fence to limit the dust amount generated affecting surrounding air environment.<br>ii. Construction equipment and machinery must have full registration and meet safety standards for working on site. Perform regular investigation and maintenance for on-site equipment and machinery.   |
| Surface and underground water impacts                   | Low                    | i. Storm water runoff entraining contaminants on construction site;<br>ii. Domestic wastewater from worker's camps;<br>iii. Wastewater from construction process and equipment and machinery cleaning on site<br>iv. Drilling activities which can contaminate ground water.                     | i. Storm water on construction site should be collected and contaminants or grease/oil separated before being discharged into environment.<br>ii. Provide sanitary toilets for workers on site.<br>iii. Wastewater from construction process and equipment /machinery cleaning must be pass through grease traps before being discharged into environment<br>iv. There should be officer in charge of HSE on site, prepare site regulations, disseminate and instruct for workers to follow |
| Solid wastes and hazardous wastes                       | Low                    | i. Domestic wastes: generated from worker's camps such as plastic bags, leftover food etc.;<br>ii. Construction waste: generated from construction process;<br>iii. Hazardous wastes: oil and grease generated from operations of construction equipment and machinery , fluorescent bulbs, etc. | i. Employ competent agencies for domestic waste collection and conduct communication activities to raise workers' awareness on environmental sanitation.<br>ii. Construction waste should be utilized or recycled, unused residual materials can be gathered at the temporary stock pile on site and transported away once  |



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| Environmental Parameter                       | Level of Impact | Reason  | Proposed Mitigation Measures   |
|---|-----------------|---|--|
|   |                 |   | construction process finishes.   |
|   |                 |   | iii. Hazardous waste must be collected for treatment and disposed by a hired competent agency  |
| Noise and Vibration                           | Low             | i. Noise generated from operations of transport trucks and equipment serving the construction process;<br>ii. Vibration generated by construction machinery and equipment on site | i. Regular check the construction equipment to limit noise generating level, constrain the use of horn in residential areas.<br>ii. Only use equipment generating noise and vibration within permitted standards, consider using noise/vibration reduction device. |
| Ecosystem                                     | Low             | As no ecologically sensitive place (protected area/reserved forest/Important flora and fauna species) lies within 2 km radius from the project site                               | Tree planting activities will be carried out to compensate for any trees that may have to be cut.  |
| Health and Safety                             | Low             | Accidents and incidents happening during construction period  | There should be officer in charge of HSE on site, prepare site regulations, disseminate and instruct for workers to follow   |
| Environmental Impacts during operation period |                 |   |  |
| Air Impact                                    | Low             | i. Air pollution due to gas emissions from operation of vehicles like cars and motorbikes of customers coming to the market;<br>ii. Unpleasant odors from waste treatment system. | i. Implement communication activities to raise people's awareness on environmental protection: turn off engines when parked.<br>ii. Waste is gathered and transported on daily basis to limit odor emissions.  |
| Wastewater                                    | Medium          | i. Storm water runoff entraining contaminants from market site;<br>ii. Wastewater from public toilets in market site;<br>iii. Wastewater from operations of market stalls.        | i. Storm water should be collected and there should be measures to remove contaminants before being discharged to environment.<br>ii. Build treatment system to treat wastewater from market operations and toilets.   |
| Solid wastes and hazardous waste              | Medium          | i. Waste from market stalls such as plastic bags, leftover food, reject from selling process etc.;<br>ii. Hazardous waste: oil and  | i. Sign contract with service provider to collect domestic waste in market area on daily basis. Conduct communication activities and   |

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| Environmental Parameter               | Level of Impact | Reason   | Proposed Mitigation Measures   |
|---------------------------------------|-----------------|--|--|
|                                       |                 | grease from operations of equipment and machinery.   | remind traders to classify garbage from source to facilitate transport and treatment process.  |
|                                       |                 |  | ii. Hazardous waste: register hazardous waste owner with competent agency; arrange roofed waste storage area according regulation, having system for leachate collection and sign contract with competent agencies for collection and treatment. |
| Noise and Vibration and other impacts | Low             | i. Noise generated from vehicles of customers;       | i. Control and coordinate traffic to restrict traffic accidents.   |
|                                       |                 | ii. More accidents due to increased traffic density. | ii. There should be security group for market and market operation regulation in place to follow.  |

The IEE study of the proposed project indicates that the benefits from the implementation of the proposed project are significant and long term in nature. The study also establishes that the adverse impacts, if any, can be easily mitigated or avoided. The proposed physical infrastructure development of the market project falls under 'Category B' as per ADB's environmental categorization due to limited adverse environmental impacts. Moreover, these are site-specific, easily reversible, and can be readily addressed through mitigation measures. Based on the influent factors, the Consultants proposed an environmental management program with action plan prior to construction works, during construction works, operation stage. The IEE report also sets out the Grievance Redress Mechanism, including the proposed organizational structure, procedures and processes for complaint and grievance redressing mechanism.

## **I. INTRODUCTION**

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### **I.1. Project Background**

The Greater Mekong Subregion (GMS) Livelihood Support for Corridor Towns Project aims to reduce poverty by piloting market development approach in the GMS. Part of this Project is to provide informal poor vendors in Dong Ha city, Viet Nam with market facilities that will: (i) create security and hygiene; (ii) improve traders and other users' health conditions; (iii) attract customers to increase customer flow that will translate to higher income; and (iv) create or improve product value chains to support quality products. The primary beneficiary will be informal traders in markets, the self-employed urban poor population in Dong Ha city, and the sale of local products etc.

The Project has four components:

- i. **Component A** – The focus is the construction of Dong Ha Ward 3 Market. The primary beneficiary of the new night market will be informal traders, the self-employed urban poor population in Dong Ha, and the sale of local products etc.
- ii. **Component B** – Microfinance Support for Market Vendors. Microfinance loans will be offered to market vendors through a local microfinance provider accessible to the target beneficiaries in Dong Ha.
- iii. **Component C** – Training and Awareness Campaigns. This component will help build the capacities of the stakeholders, primarily the local governments, in the management and operations of night market. An information dissemination strategy appropriate for the local settings will be used to introduce the project objectives and its facilities (night market and microfinance services) to the beneficiary group. This is an awareness campaign that is part of additional activities of this component.
- iv. **Component D** – Project Management. This component involves the delivery of efficient project management, monitoring and audit services to the stakeholders.

The Consultant will provide technical assistance for the Component A: Construction of Three Small Markets in Quang Tri Province, Dong Ha City: Ward 3 Market.

The construction of market centre is also expected to provide gender-specific benefits, including: access to formal market facilities, allowing women to vend safely (even with their children); separate toilet facilities for men and women; allocation of reserved spaces and stalls (space quotas) for market stalls; increased incomes (also in relation to microfinance), resulting in increased capacity to help meet family expenditures; and empowerment of women in terms of decision-making on market management matters, as a result of membership in the MMC and the market vendors association. To ensure the environmental sustainability of the facilities during operation, an (IEE) environmental examination will be prepared in parallel with the market facility detailed engineering design. Feasibility studies will also be prepared to determine the most marketable products with respect to available supply, production, and distribution chains.

### **I.2. Purpose/Objectives of IEE**

This report gives an account of the initial environmental examination of the proposed Livelihood Support for Corridor Towns in the Greater Mekong Sub-region for the city of Dong Hoi. The IEE was conducted as part of the subproject preparation to (i) identify and assess potential impacts and risks arising from the

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implementation of the proposed subprojects on and to physical, biological, socio-economic and physical cultural environment; and (ii) recommend measures to avoid, mitigate and compensate for adverse impacts, and enhance positive impacts.

The present IEE was carried out following the below legal basis:

- The Safeguard Policy Statement (June 2009) of the Asian Development Bank and
- The Vietnam Law and regulations on Environmental Protection.

The assessment of the project has been carried out for both positive and negative impacts. It is expected that the project activities will not have any significant adverse impact on the environment.

### **I.3. Methodology and Approach of IEE**

- Desk review of information such as maps, reports, etc. for the project;
- Checklist method: Based on analysis of the interchange and interaction between project's activities and environmental parameters that are potentially affected, project's environmental impacts were identified;
- Comparison method: is used to assess project's environmental impacts via comparing them with national environmental norms and standards;
- Expertise method: uses a group of consultants of relevant expertise to prepare IEE report;
- Public consultation method: is used to collect opinions of leadership board, affected people by project's activities to collect vital information for IEE preparation.

### **I.4. Timelines and Deliverables**

The timelines and deliverables of the Consultant in relation to this IEE are presented in the table below:

| No. | Task  | Timeline                                    | Deliverable             |
|-----|---|---|-------------------------|
| 1   | Desk review   | Week 1 – Week 3<br>(18 Mar to 7 April 2015) | Inception Report        |
| 2   | Kick off meeting and preliminary field survey in Dong Ha, Quang Tri City                | Week 4<br>(10 April 2015)                   |                         |
| 3   | Survey on socio-economic and natural conditions of the project area                     | Week 10<br>(25 – 27 May 2015)               | First draft of the IEE  |
| 5   | Compilation of the first draft of IEE (before having the need assessment results)       | Week 11<br>(4 June 2015)                    |                         |
| 6   | Compilation of the second draft of IEE, taking into account the need assessment results | Week 18<br>(27 July 2015)                   | Second draft of the IEE |
| 7   | Finalization of the IEE based on feedbacks of ADB                                       | Week 27                                     | Final IEE               |

## **II. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK**

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OFA-funded projects must comply harmoniously with both Donor's and funding recipient's government regulations. Specifically, this Greater Mekong Sub-region: Livelihood Support for Corridor Towns project needs to comply with the Safeguard Policy Statement of ADB (SPS) 2009 and relevant policies of the Government of Vietnam.

### **II.1. Vietnamese legislation**

The Vietnamese legal framework for environmental management continues to rapidly evolve. Projects implemented within Vietnam territory must comply with laws regulations of the Government of Viet Nam. According to the Decree No. 02/2003/ND-CP of the Government of Vietnam dated January 14th, 2003 on development and management of market, with the scope of 200 stalls downwards, semi-permanent/temporary structure and serving for local consumption purpose, the market is classified as market level 3, the project shall develop environmental management plan and submit to competent authorities at the locality in line with the Decree 18/2015/ND-CP. The format of the EMP is provided in the Circular. Following are regulations to be aligned to during construction and operation of the market:

- Law No. 55/2014/QH13 on environmental protection; approved by the 13<sup>th</sup> National Assembly, session 7 of the Socialist Republic of Vietnam on June 26, 2014 and took effect from January 1, 2015
- Decree No. 18/2015/ND-CP dated January 15, 2015 on environmental protection planning, strategic environmental assessment, environmental impact assessment and environmental protection plans; effective from April 1, 2015.
- Decree No. 19/2015/ND-CP dated February 14, 2015 detailing the implementation of a number of articles of the law on environmental protection, effective from April 1, 2015.
- Decree No. 03/2015/ND-CP dated March 6, 2015 on defining environmental damages ;
- Decree No. 80/2014/ND-CP dated August 06, 2014 on drainage and waste water treatment
- Circular No. 12/2011/TT-BTNMT dated 14 April, 2011 by Ministry of Natural Resources and Environment on hazardous waste management;
- Circular No. 25/2009/TT-BTNMT dated November 16, 2009 by Ministry of Natural Resources and Environment promulgation of the national regulations on environment
- Decree No 67/2003/ND-CP dated June 13, 2003 on Environmental Protection Charge for Waster Water.
- QCVN 02:2009/BYT: National Technical Regulation on domestic water quality
- QCVN 03:2008/BTNMT: National Technical Regulation on the allowable limits of heavy metals in the soil
- QCVN 07:2009/BTNMT: National Technical Regulation on Hazardous Waste
- QCVN 05:2013/BTNMT: National technical regulation on ambient air quality
- QCVN 06:2009/BTNMT: National technical regulation on Hazardous substances in ambient air
- QCVN 08:2008/BTNMT: National technical regulation on surface water quality.
- QCVN 09:2008/BTNMT: National technical regulation on ground water quality. .
- QCVN 14:2008/BTNMT: National technical regulation on domestic wastewater
- QCVN 26:2010/BTNMT : National Technical Regulation on Noise
- QCVN 27:2010/BTNMT: National Technical Regulation on Vibration

## II.2. ADB's policies

The project must follow the Safeguard Policy Statement (SPS) approved by ADB in July 2009 and took effect on January 2010. The Policy deploys a classification system to reflect the significance of a project's potential environmental impacts. Projects are assigned to one of the following four categories:

- **Category A:** having significant adverse environmental impacts that are irreversible, diverse or unprecedented. An environmental impact assessment is required. A draft EIA including environmental management plan must be posted on ADB's website at least 120 days before Board consideration.
- **Category B:** Potential adverse environmental impacts are less adverse than those of category A projects. An initial environmental examination is required.
- **Category C:** Having minimal or no adverse environmental impacts. Category C projects require further environmental assessment documents/activities.
- **Category FI:** involving investment of ADB funds to or through a FI. Category FI projects requires a Social and Environmental Management System.

With the scope of this market, the Project falls in the Category B due to limited adverse environmental impacts. Moreover, these are site-specific, easily reversible, and can be readily addressed through mitigation measures. An IEE is required to be conducted in compliance with the guidelines in the SPS. The outline of this IEE will follow the structure provided in the Annex to the Appendix 1 of the SPS on outline of an Environmental Impact Assessment report.

## II.3. GoV regulations vs ADB policies on environmental safeguards related to this project

| No. | Content                          | GoV Requirements   | ADB Policies  |
|-----|----------------------------------|--|---|
| 1   | Type of environmental assessment | Environmental Management Plan  | Initial Environmental Examination   |
| 2   | Contents of the report           | i. Place of construction<br>ii. Type, technology and scale of production, business and services.<br>iii. Raw materials and fuel used.<br>iv. Forecasting types of waste generated, other environmental impacts.<br>v. Waste management measures and minimize adverse environmental impacts.<br>vi. Implementing measures to protect the environment. | i. Policy, Legal, and Administrative Framework<br>ii. Description of the Project<br>iii. Description of the Environment (Baseline Data)<br>iv. Anticipated Environmental Impacts and Mitigation Measures<br>v. Analysis of Alternatives<br>vi. Information Disclosure, Consultation, and Participation<br>vii. Grievance Redress Mechanism<br>viii. Environmental Management Plan |
| 3   | Timeline for registration of EMP | Before project implementation  | Before project appraisal  |

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| No. | Content                             | GoV Requirements   | ADB Policies  |
|-----|-------------------------------------|--|---|
|     | or submission of IEE                |  |   |
| 4   | Authority for Report Appraisal      | Department of Natural Resources and Environment of the City's People Committee   | ADB   |
| 3   | Timeline for approval of the report | 10 days after receiving the EMP registration; in case that the EMP is not accepted, the authority must response by written to the PSU with clear and adequate reasons. | N/A   |
| 4   | Information disclosure              | Not required   | Disclosure of the final IEE, new or updated IEE and corrective action plan prepared during project implementation, if any.<br>Relevant environmental information shall be provided in a timely manner, in an accessible place and in a form and language understandable to affected people and other stakeholders. For illiterate people, other suitable communication methods will be used |

### III. SUB-PROJECT DESCRIPTION

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The Quang Tri PPC issued Official Letter No.780/UBND-DN dated March 13, 2015 to guarantee the future construction site of 3,200 m<sup>2</sup> in agreement with ADB's Official Letter to the province. The new area locates near the current Ward 3 Market as well as requires no land clearance or resettlement. The construction site's location also locates in the road leading to new resident areas and administrative buildings in the future, which ensure stable demand for trading activities. However, the location for this market is 2 km away from the city center and in a closed area. This should be a problem for tourist attracting for this market and required significant efforts from the Dong Ha City government to promote this market for tourists

It is expected that the primary purpose of this market is to be a night market for both tourists and local residents. The night market will provide (i) traditional food and drinking services made from local agricultural products for both tourists and local residents; (ii) locally produced souvenirs (narrow-brimmed soft cap, textiles, palm-leaf conical hat, etc.); and (iii) local specialties such as coffee beans, wines, pepper, seaweed, fish sauce, etc. The new market will not only promote trading activities and increase income for poor vendors, but also serve as a new tourism attraction for the city, where tourists will come to enjoy traditional food and buy souvenirs and specialties. Moreover, a possible secondary use of this market is a domestic market for the current overcrowded Ward 3 Market in the morning and afternoon.

The new market will provide larger space for trading, as well as complete infrastructure for market vendors and customers. The market will provide water supply, wastewater and drainage, solid waste collection, fire safety, parking and security services.

#### III.1. Sub-project Location

The selected site for the construction of the market in ward 3, Dong Ha city is located in the new land area of which the urban plan was modified. The proposed market will be situated in block 2 of Thanh Co road (behind Provincial Social Insurance Compound). The site is bordered by (i) the planned 15m-wide road (including 2 m-wide drainage ditches) to the South; (ii) Farm land to the North; (iii) The planned 10m-wide road to the West; (iv) The planned 10m-wide road to the East.

The new market location can be seen in the *Figure 1* and *Figure 2* below:



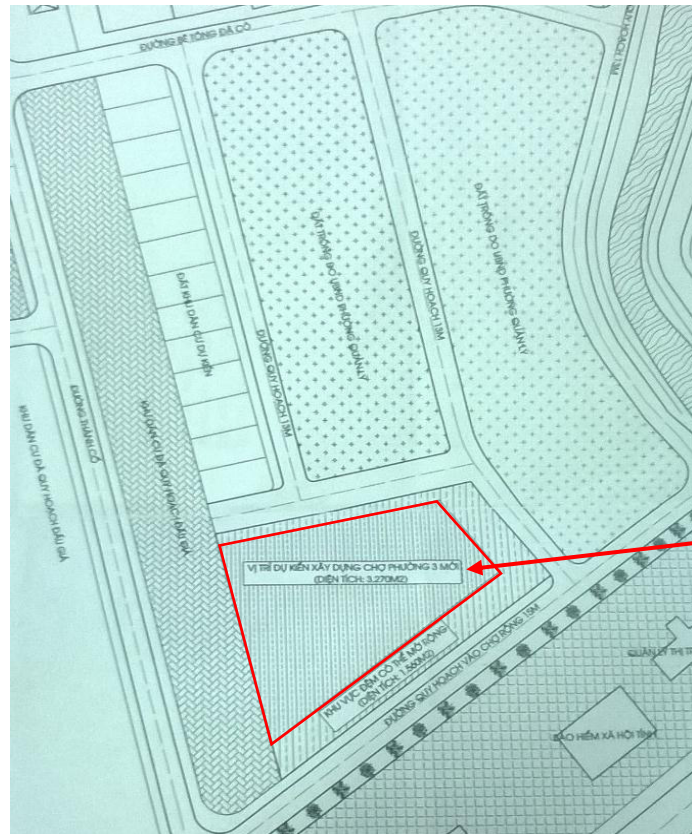
**Figure 1. Location of the new market**



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Location for construction of the new Ward 3 market

Figure 2. Planning area for construction site

## III.2. Sub-project Components

The market comprises a number of items commensurate with the scale of a ward-level market. The kiosk area is situated at the center of the site, facing the main gate and the planned 15m-wide road (the south), food and vegetable stalls; outdoor self-sufficient area and other auxiliary items are situated behind kiosk area.

According to the Need Assessment Report, currently there are 122 of vendors expected to move in the market. In which, 18.9% of the vendors select the area of 3m<sup>2</sup> downwards per stall, 65.6% select the area of 3-5 m<sup>2</sup> per stall, 15,6% chooses the area larger than 5m<sup>2</sup> per stall. After 2017, with the scale of population and development of the locality, the amount of tourists in the future, the expected scale of the market would be 200 stalls.

According to the basic engineering design, the market will have the area of 3200 m<sup>2</sup>, in which 800 m<sup>2</sup> is for the main market house, nearly 450 m<sup>2</sup> for the roofed and outdoor catering and local speciality selling areas, 180 m<sup>2</sup> for domestic appliance selling area, 120 m<sup>2</sup> for souvenir selling house, nearly 1600 m<sup>2</sup> for parking and utility sites (water supply and drainage, toilets, waste collecting area, fire prevention and fighting system, etc). The market includes 4 main items and supporting utility areas as prescribed in the *Table 2. Market's components* below:

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**Table 2. Market's components**

| No.          | Construction Item                                    | Area (m <sup>2</sup> ) | Ratio (%)  |
|--------------|--|------------------------|------------|
| 1            | Main market home                                     | 800                    | 23,49      |
| 2            | Roofed catering service and local specialities space | 272                    | 7,99       |
| 2*           | Outdoors catering service space                      | 175                    | 5,14       |
| 3            | Roofed Domestic good selling house 1                 | 60                     | 1,76       |
| 3*           | Unroofed daily domestic good selling house 1         | 60                     | 1,76       |
| 4            | Roofed daily domestic good selling house 1           | 60                     | 1,76       |
| 4*           | Unroofed daily domestic good selling house 2         | 125                    | 3,67       |
| 5            | Roofed motorbike, bike garage                        | 100                    | 2,94       |
| 6            | Waste water collection and treatment tank            | 31                     | 0,91       |
| 7            | Public toilets: 35 m2                                | 35                     | 1,03       |
| 8            | Solid waste collecting house: 6m x 3m = 18 m2        | 18                     | 0,53       |
| 9            | Religious house: 02 m2                               | 2                      | 0,06       |
| 10           | Domestic and fire fighting water tank:               | 18                     | 0,53       |
| 11           | Market management house + security room              | 18                     | 0,53       |
| 12           | Internal concrete road                               | 936                    | 27,49      |
| 12*          | Outdoor concrete road                                | 300                    | 8,81       |
| 13           | Gate + Fence   | 45                     | 1,32       |
| 14           | Garden & trees                                       | 350                    | 10,28      |
| <b>Total</b> |  | <b>3405</b>            | <b>100</b> |

The general layout of the market can be seen at the following figure, whereas the detailed narrative of the design can be referred at the FS – Technical part.

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## **IV. DESCRIPTION OF ENVIRONMENT**

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### **IV.1. Physical Environment**

#### **IV.1.1. Physiography and Geology**

Quang Tri is a coastal province, located in the North Central Region and Central Coastal Region with total land area of 4,739.82 km<sup>2</sup> –accounting for 1.3% of the country's total land area. Quang Tri shares borders with Quang Binh to the North, with Thua Thien Hue to the south, Lao PRC to the west and the sea to the east. The province consists of 10 administrative units including Dong Ha city, Quang Tri town and the other 8 districts, including Vinh Line, Gio Line, Cam Lo, Trieu Phong, Hai Lang, Hong Hoa, Da Nang and Con Co.

Quang Tri is located on the transportation axes of national importance including roads, railway and waterways. The province is assessable through North-South railway, National Highway No. 1A, Ho Chi Minh highway and particularly National Highway No. 9 on East-West Economic Corridor, connecting Lao – Thailand – Myanmar through Lao Bao border gate to seaports in the central region such as Cua Viet, Chan May, Da Nang and Vung Ang, etc. Additionally, air traffic is quite convenient thanks to airports in neighboring cities such as Phu Bai airport in Hue (80km from Dong Ha city) and Da Nang international airport (150km).

Dong Ha city is a political-economic-cultural-social hub of Quang Tri province, located by the intersection between National Highway No. 1A connecting Hanoi Capital – Ho Chi Minh city and east-west Asian highway connecting Thailand-Lao-Myanmar with other countries in the region. This positional advantage allows Dong Ha to develop socio-economic relations and exchanges conveniently with whole country and other countries in the region, especially service and commercial development.

Existing gradient of the site is on average 2.5m lower than the centerline of Thanh Co road. After levelling, the new gradient of the site will be as high as that of Thanh Co road or close to the height of Thanh Co road.

Based on the geological survey results on 10<sup>th</sup> July 2015, this area has complex geological structure. It consists of soil layers, plain alluvia, riverside lake and swamp sediment, etc. Therefore, layers of clay mud, sandy mud, weak soil, submerged, mildly to extremely weathered, and possibly segmented rock due to low topography, may appear in the stratum.

Within the project area and drill holes depth of 11 meters, from top to bottom the stratum is divided into the following soil layers:

- Layer 1: Yellow-grey clay farmland. Plastic state, porous structure. Average cumulative thickness is 0.40 meters.
- Layer 2: Yellow-grey, brown-grey clay, hard-plastic state. Cumulative thickness is uneven, average thickness of 1.00 meter.
- Layer 3: Brown-grey, yellow-grey clay with some red-brown veins. Hard-plastic to semi-plastic state. Cumulative thickness is uneven, average thickness of 1.90 meters.
- Layer 4: Black-grey muddy soil. Fluid state. Cumulative thickness is uneven, average thickness of 6.45 meters.
- Layer 5: Yellow-grey, brown-grey clay with gravel, semi-solid state. This layer's thickness is unidentified.

## ***IV.1.2. Meteorology and Climate***

### ***Meteorology***

Dong Ha city is characterized by monsoon climate and typical features, compared to climate area on the east of Truong Son Mountain, due to the influence of hot and dry Foehn wind. Dong Ha city has two distinct seasons: wet, hot and dry. In the winter, given the influence of arctic cold air blowing to Hai Van pass, Dong Ha has relatively cold winter compared to southern areas.

Dong Ha is deeply influenced by two monsoons: northeastern monsoon active from November to March and southwestern monsoon active from April to September. The climate shifts drastically over the seasons: winter and summer, rainy season and dry season, flooding at the beginning of winter-spring crop; flooding at the end of summer crop. Dong Ha area is also affected by storms which occurs mainly from September to November. The storms are often accompanied by heavy rains and high sea levels, causing large-scale flooding, crop losses and infrastructure damages.

The proposed site is an undeveloped area, without the presence of high-story buildings, thus it is often struck by lightnings in rainy season.

### ***Temperature***

The average temperature gap between the coldest and hottest months ranges from 9-10°C. Annual average temperature 25°C. Max temperature 40.8°C (July - August). Minimum temperature is 11.2°C (January).

### ***Rainfall***

Rainfall in this area is quite high, mainly focus on 4 rainy months (roughly 80%). However, the distribution of rainy days over months is uneven. During the peaks months, the average number of rainy days range from 17 – 20 days, which affects cultivation timing and agricultural production. The Average rainfall is 2325 mm; Annual average number of rainy days: 125 days; Average rainfall in the wettest month is 384 millimeters; Average rainfall on the driest month is 17 millimeters. The project area has a fairly flat topography, with approximately 0.50 meter of elevation difference. During the rainy season, the temporary flows don't cause erosion and the area doesn't get cut off or flooded.

### ***Humidity***

- Average humidity per annum: 84.8%
- Minimum humidity: 92.8%

Climate change projections in the project area:

- Situated entirely within the northern hemisphere tropic, with the sun passes the zenith twice a year (in May and August), it has a high radiation background (maximum in May, minimum in December). The total annual amount of radiation in Quang Tri ranges about 70-80 kcal/cm<sup>2</sup>/year, with the amount in summer months 2-3 times as much as in winter months. The average total number of sunny hours in Quang Tri ranges from 1,700 to 1,800 hours. There are the most number of sunny hours in July (240-250 hours).
- The average annual temperature ranges 20-25 ° C, with the highest temperature in July and the lowest in January. The highest temperature is in hot months of the year, 40 ° C in plains and 34-35 ° C in low mountains. The lowest temperature of the year can drop to 8-10 ° C in plains and 3-5 ° C in high mountains. According to the General Statistics Office, during 4 years from 2011 to 2014, the

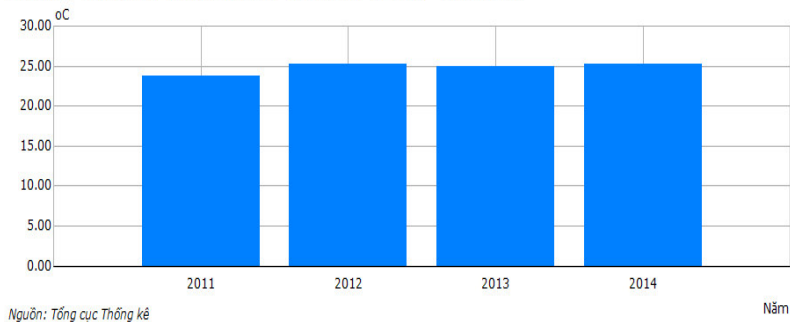
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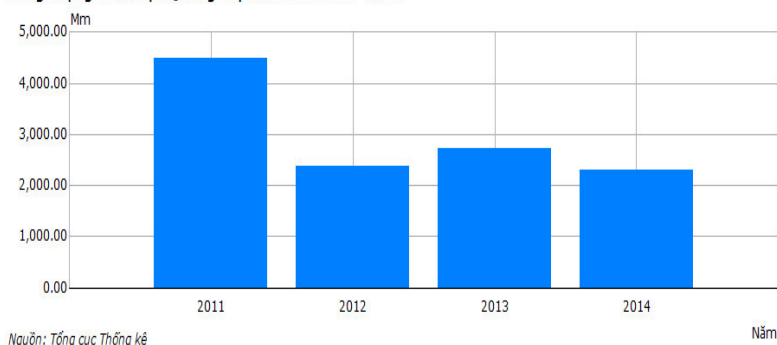
average temperature of Quang Tri has no big change, ranging 23.8 -25,3°C, hence the regional temperature will remain the same in the coming years.

Nhiệt độ không khí trung bình của Quảng Trị từ năm 2011-2014



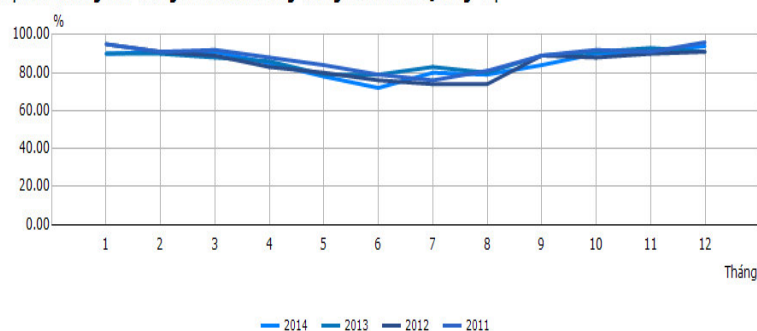
- The rainy season occurs from September to January next year, with the rainfall during this period accounting for about 75-85% of the total annual rainfall. The months when it heavily and stretchingly rains are September - November (600 mm). The months it rains the least is February – July (at least 40 mm/month). The total annual rainfall ranges between 2,000-4,000 mm. The stormy season in Quang Tri occurs from July to November, especially September - October. The rainfall caused by storms and tropical depressions accounts for up to 40-50% of the total rainfall in months July - October. The rainfall caused by a storm is about 300-400 mm, sometime up to 1,000 mm. According to statistics, the rainfall of the last 3 years (2012-2015) is relatively stable, according to forecast in the next years, the rainfall has no significant change.

Tổng lượng mưa tại Quảng Trị các năm 2011-2014



- The relative humidity is average, with 85-90% in moist months and often less than 70% in dry months. The chart shows that monthly and yearly air humidity is relatively stable and will not have big change in the coming years.

Độ ẩm không khí trung bình các tháng trong năm tỉnh Quảng Trị



### **IV.1.3. Water Environment**

#### *Surface water*

According to the analysis results dated 16<sup>th</sup> July 2014 of Quang Tri Center for Monitoring and Environmental Engineering on surface water quality at several water basins (river and lakes in ward 3, Dong Ha City), it is recognized that most of the surface water quality parameters are within the limits of the QCVN 08:2008/BTNMT on National Technical Regulation on surface water quality (column A2). Therefore, the water quality is suitable for irrigation works, water transportation, aquaculture, or other purposes with lower water quality requirements. Locations of water sampling can be seen in the table 3 whereas the results of water surface analysis in the project area can be seen in the table 4.

**Table 3: Surface water sampling locations**

| No. | Sampling code | Location description   | Position VN2000<br>(KTT 106°15', projection 3°) |         |
|-----|---------------|--|---|---------|
|     |               |  | X (m)   | Y (m)   |
| 1   | <b>M1</b>     | Khe May lake - at dam - Ward 3   | 1,859,687                                       | 588,449 |
| 2   | <b>M2</b>     | Khe Luoc - at Khe Luoc bridge (Thanh Co bridge (Thanh Co road, Ward 3) | 1,860,995                                       | 588,797 |
| 3   | <b>M3</b>     | Khe Luoc - at Thanh Nien bridge (Tran Nhat Duat road, Ward 3)          | 1,861,198                                       | 589,551 |
| 4   | <b>M4</b>     | Hieu river - 1.0km from the gangway, to the upstream                   | 1,860,824                                       | 588,000 |
| 5   | <b>M5</b>     | Hieu river - at the gangway (Ward 3)                                   | 1,861,404                                       | 588,711 |
| 6   | <b>M6</b>     | Hieu river - at Dong Ha bridge   | 1,861,128                                       | 590,338 |

**Table 4: Results of water surface analysis in the project area**

| No. | Parameter          | Unit      | Analysis results |       |       |       |             |             | QCVN 08:2008/<br>BTNTM |       |
|-----|--------------------|-----------|------------------|-------|-------|-------|-------------|-------------|------------------------|-------|
|     |                    |           | M1               | M2    | M3    | M4    | M5          | M6          | A1                     | A2    |
| 1   | pH                 | -         | 6.81             | 6.97  | 6.24  | 6.29  | 6.35        | 6.38        | 6-8.5                  | 6-8.5 |
| 2   | DO                 | mg/l      | 6.24             | 6.19  | 6.12  | 6.61  | 6.12        | 6.74        | ≥6                     | ≥5    |
| 3   | TSS                | mg/l      | <b>28.8</b>      | 18.0  | 17.3  | 13.0  | 17.3        | 25.8        | 20                     | 30    |
| 4   | BOD <sub>5</sub>   | mg/l      | 3.31             | 3.11  | 3.05  | 2.94  | 3.05        | 3.14        | 4                      | 6     |
| 5   | COD                | mg/l      | 6.8              | 6.1   | 5.9   | 5.3   | 5.9         | 6.8         | 10                     | 15    |
| 6   | NH <sub>4</sub> -N | mg/l      | 0.08             | 0.12  | 0.15  | 0.10  | 0.15        | 0.07        | 0.1                    | 0.2   |
| 7   | NO <sub>2</sub> -N | mg/l      | 0.015            | 0.015 | 0.015 | 0.015 | <b>0.08</b> | <b>0.06</b> | 0.01                   | 0.02  |
| 8   | NO <sub>3</sub> -N | mg/l      | 0.23             | 0.34  | 0.12  | 0.09  | 0.12        | 0.14        | 2                      | 5     |
| 9   | PO <sub>4</sub> -P | mg/l      | 0.04             | 0.04  | 0.04  | 0.04  | 0.04        | 0.04        | 0.1                    | 0.2   |
| 10  | Fe                 | mg/l      | 0.07             | 0.19  | 0.21  | 0.08  | 0.21        | 0.11        | 0.5                    | 1     |
| 11  | Cu                 | mg/l      | 0.12             | 0.12  | 0.12  | 0.12  | 0.12        | 0.12        | 0.1                    | 0.2   |
| 12  | Zn                 | mg/l      | 0.03             | 0.03  | 0.03  | 0.03  | 0.03        | 0.03        | 0.5                    | 1     |
| 13  | Pb                 | mg/l      | 0.002            | 0.002 | 0.002 | 0.002 | 0.002       | 0.002       | 0.02                   | 0.02  |
| 14  | Cd                 | mg/l      | 0.005            | 0.005 | 0.005 | 0.005 | 0.005       | 0.005       | 0.005                  | 0.005 |
| 15  | Mineral oil        | mg/l      | 0.02             | 0.02  | 0.02  | 0.02  | 0.02        | 0.02        | 0.01                   | 0.02  |
| 16  | Coliform           | MPN/100ml | 43               | 150   | 93    | 43    | 93          | 23          | 2.500                  | 5.000 |

Source: Quang Tri Center for Monitoring and Environmental Engineering, July 2014

### Underground water

Groundwater appears at the shallow layer of average depth from 1.5 to 1.6 meters, it was observed that water doesn't have unpleasant odor, and has a sweet taste. According to the sampling and analysis of Quang Tri Center for Monitoring and Environmental Engineering on July 2014 at 5 locations as stated in the table 5 below, the underground water quality are mostly within the limits of the QCVN 09:2008/BTNM on underground water quality. The NH<sub>4</sub>-N parameter of 3/5 samples at N1, N2 and N5 was higher than the limits of the Regulation (1.3 to 2.2 times higher). However, the NH<sub>4</sub>-N



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parameter in drinking water according to QCVN 01:2009/BYT and QCVN 02:2009/BYT of the Ministry of Health has the permitted value of 3 mg/l so the effects of  $\text{NH}_4\text{-N}$  on the human health is negligible.

**Table 5: Underground water sampling locations**

| No. | Sample code | Location description  | VN2000 Coordinates<br>(KTT 106°15', projection 3°) |         |
|-----|-------------|---|--|---------|
|     |             |   | X (m)  | Y (m)   |
| 1   | N1          | Mr. Nguyen Van Phung's well - KP1, Ward 3                   | 1,861,245  | 588,671 |
| 2   | N2          | Mr. Nguyen Huu Hien's well - KP1, Ward 3                    | 1,861,081  | 588,637 |
| 3   | N3          | Mr. Nguyen Dang Thanh's well - KP1, Ward 3                  | 1,861,146  | 588,622 |
| 4   | N4          | Mr. Tran Van Thoai's well - KP1, Ward 3                     | 1,860,990  | 588,565 |
| 5   | N5          | Ms. Duong Thi Tinh's well water - KP6, Ward 3, Dong Ha city | 1,859,602  | 588,909 |

- Groundwater quality is listed in the following table:

**Table 6: Groundwater analysis results in the Project area**

| No. | Parameter              | Unit      | Analysis results |             |       |       |             | QCVN<br>09:2008/BTN<br>MT |
|-----|------------------------|-----------|------------------|-------------|-------|-------|-------------|---------------------------|
|     |                        |           | N1               | N2          | N3    | N4    | N5          |                           |
| 1   | pH                     | -         | 6.17             | 6.70        | 6.55  | 6.44  | 6.78        | 5.5 - 8.5                 |
| 2   | TS                     | mg/l      | 98.5             | 125         | 104   | 109   | 91.5        | 1,500                     |
| 3   | Hardness               | mg/l      | 42.4             | 55.6        | 37.9  | 35.4  | 42.4        | 500                       |
| 4   | COD                    | mg/l      | 1.58             | 2.93        | 1.19  | 1.82  | 1.50        | 4                         |
| 5   | $\text{NH}_4\text{-N}$ | mg/l      | <b>0.14</b>      | <b>0.22</b> | 0.08  | 0.05  | <b>0.13</b> | 0.1                       |
| 6   | $\text{NO}_3\text{-N}$ | mg/l      | 1.12             | 0.86        | 1.51  | 2.22  | 1.30        | 15                        |
| 7   | Sulfate                | mg/l      | 16.7             | 21.2        | 9.89  | 16.7  | 14.0        | 400                       |
| 8   | Chloride               | mg/l      | 12.9             | 11.3        | 15.5  | 10.3  | 11.6        | 250                       |
| 9   | Fe                     | mg/l      | 0.08             | 1.40        | 0.08  | 0.07  | 0.13        | 5                         |
| 10  | Cu                     | mg/l      | 0,12             | 0,12        | 0,12  | 0,12  | 0,12        | 1                         |
| 11  | Zn                     | mg/l      | 0,03             | 0,03        | 0,03  | 0,03  | 0,03        | 3                         |
| 12  | Pb                     | mg/l      | 0,002            | 0,002       | 0,002 | 0,002 | 0,002       | 0.01                      |
| 13  | Cd                     | mg/l      | 0,005            | 0,005       | 0,005 | 0,005 | 0,005       | 0.005                     |
| 14  | E.Coli                 | MPN/100ml | NF               | NF          | NF    | NF    | NF          | NF                        |
| 15  | Coliform               | MPN/100ml | NF               | NF          | NF    | NF    | NF          | 3                         |

Sources: Quang Tri Center for Monitoring and Environmental Engineering.

**Remarks:**

- Date of sampling: 2014/07/16.
- QCVN 09:2008/BTNMT - National Technical Regulation on groundwater quality.
- NF: Undetected.
- The analysis and measuring methods are listed in the result sheet (Annex).

#### IV.1.4. Ambient Air and Noise

According to the survey of Quang Tri Center for Monitoring and Environmental Engineering on ambient air and noise quality on 16th July 2014 at 8 locations in Ward 3 as stated in the Table 7 below, the result shows that most of the air quality and noise level parameters are within the limits of the QCVN 05:2013/BTNMT on the surrounding air quality and the QCVN 26:2010/BTNMT on the noise level. Dust (TSP) level ranged from 110 to 210  $\mu\text{g}/\text{m}^3$ , which is lower than the threshold of 300  $\mu\text{g}/\text{m}^3$ ,  $\text{SO}_2$ ,  $\text{NO}_2$  and CO concentrations were also lower than the acceptable levels. Noise level fluctuates from 61.2 to 67.4 dBA in comparison to the level of 70 dBA of the QCVN 26:2010/BTNMT - National Technical Regulation on noise level (in normal area from 6am-9pm).

**Table 7: Air quality and noise sampling locations:**

| Sample code | Location description  | VN2000 Coordinates<br>(KTT 106°15', projection 3°) |         |
|-------------|---|--|---------|
|             |   | X (m)  | Y (m)   |
| K1          | Khoa Bao road - 50m north of Khe Luoc bridge (Ward 3)         | 1,860,957  | 588,541 |
| K2          | Khoa Bao road - 100m north of National Highway 9              | 1,860,333  | 588,886 |
| K3          | Khe Luoc bridge, Thanh Co road (Ward 3)                       | 1,861,004  | 588,791 |
| K4          | Thanh Co and Ba Trieu roads intersection                      | 1,861,303  | 588,718 |
| K5          | National Highway 9 - Ba Trieu road intersection               | 1,860,105  | 587,947 |
| K6          | On Luong Ngoc Quyen road, in front of ward 3 market           | 1,860,196  | 588,912 |
| K7          | National Highway 9 - Tran Hung Dao road intersection (Ward 3) | 1,860,252  | 588,934 |
| K8          | Tran Hung Dao - Tran Nhat Duat roads intersection             | 1,860,836  | 589,610 |

**Table 8: Air quality analysis results in the Project area**

| No. | Parameter     | Unit                     | Analysis results |       |       |       |       |       |       |       | QCVN<br>05:2013/BTNMT<br>(1 hour average) |
|-----|---------------|--------------------------|------------------|-------|-------|-------|-------|-------|-------|-------|---|
|     |               |                          | K1               | K2    | K3    | K4    | K5    | K6    | K7    | K8    |   |
| 1   | Temperature   | $^{\circ}\text{C}$       | 31.2             | 31.5  | 31.9  | 32.4  | 32.5  | 32.7  | 31.8  | 31.9  | (-)                                       |
| 2   | Humidity      | %                        | 81               | 78    | 77    | 78    | 76    | 79    | 76    | 77    | (-)                                       |
| 3   | Wind speed    | m/s                      | 1.2              | 1.4   | 0.9   | 1.3   | 1.1   | 0.9   | 0.8   | 1.4   | (-)                                       |
| 4   | Dust (TSP)    | $\mu\text{g}/\text{m}^3$ | 152              | 175   | 110   | 207   | 139   | 116   | 210   | 161   | 300                                       |
| 5   | Noise level   | dBA                      | 61.2             | 62.3  | 63.8  | 64.5  | 64.0  | 62.4  | 65.3  | 67.4  | 70  |
| 6   | $\text{SO}_2$ | $\mu\text{g}/\text{m}^3$ | 28               | 32    | 34    | 27    | 20    | 23    | 24    | 22    | 350                                       |
| 7   | $\text{NO}_2$ | $\mu\text{g}/\text{m}^3$ | 27               | 27    | 30    | 35    | 32    | 29    | 32    | 35    | 200                                       |
| 8   | CO            | $\mu\text{g}/\text{m}^3$ | 2,344            | 2,530 | 2,583 | 1,938 | 2,174 | 2,402 | 2,333 | 2,154 | 30,000                                    |

Sources: Quang Tri Center for Monitoring and Environmental Engineering.

**Notes:**

- Date of sampling: 2014/07/16.
- Weather condition: Cool weather, light wind.
- QCVN 05:2013/BTNMT - National Technical Regulation on surrounding air quality.

- QCVN 26:2010/BTNMT - National Technical Regulation on noise level (in normal area from 6am-9pm).

(-) Regulation doesn't specify.

- The analysis and measuring methods are listed in the result sheet in the Annex.

#### **IV.1.4. Ecosystem**

##### *Ecosystem on land*

The ecosystem in the project area consists mostly of grass, some lizards and rats, etc. Therefore, the project's impact on the ecosystem is negligible.

##### *Ecosystem under water*

The project area has a draining canal, the aquatic ecosystem is not diverse, mainly consists of small fishes, moss, etc. The project will affect this ecosystem but the impact will be small.

### **IV.2. Socio-economic development**

#### **IV.2.1. Population and population distribution**

Total projected population of Dong Ha city to 2020 is 150,000 persons (In which, number of permanent residents is 135,000 persons and number of temporary residents is 15,000 persons). Population growth rate as of 2015 is 1.1% and expected to remain under 1% until 2020). To the year 2020, population density for inner city is 9,291 persons/ km<sup>2</sup>

#### **IV.2.2. Labors and employment**

The number of labors within working age is 83,700 persons; the proportion of those working in non-agricultural jobs in the inner city is 90%. The rate of poor households in 2015 has reduced to 3% according the new criteria and it is expected that until 2020 there would be no poor household in the city area.

#### **IV.2.3. Economic status**

The average economic growth rate (calculated according to GDP) in the city area for the period of 2010 – 2015 is 11.5% and projected to be 11.0% for the period from 2016 – 2020.

Economic structure in the area is going through a restructuring process, striving to 2015, economic structure will be 11.5% of service, 41.1% of industry – construction, 1.2% of agriculture; and to 2020 the respective proportions are 54.1%, 44.7% and 1.2%. Annual state budget revenues in the area increase at the average of 15% per year.

Living standards of city residents is being raised considerably. Income per capita (GDP) in 2015 reaches more than 3,700 USD and expected to top 5000 USD by 2020.

#### **IV.2.4. Current urban infrastructure surrounding the project area**

Low voltage line runs along Thanh Co road and behind residential area, close to planned road, to the west of proposed market in ward 3; there is a possibility for obtaining permission for wiring electric line for the proposed market.

D200 water pipe of Dong Ha Water Supply Company runs on the pavement of Thanh Co road. It is projected to be wired along the planned road in front of the site; there is a possibility to supply the water directly to the site.

The system of surface water drainage discharges to the south culverts which runs along the planned road.

#### ***IV.2.5. Cultural and historical heritages***

Project site is planned area of Dong Ha city, and via survey and assessment results, it was confirmed that project's construction and operation processes would pose no impacts to local cultural and historical heritage of the city or the country.

#### ***IV.2.6. UXO concern***

During the Vietnam-American War from 1954 to April, 1975, Quang Tri Province suffered the fiercest fighting of any battlefield in the nation. Although the War ended more than four decades ago, the legacy of ERW (Explosive Remnants of War) still remains a serious threat in the land.

According to the Project RENEW ("Restoring the Environment and Neutralizing the Effects of the War")'s survey database, there was a total of 7,024 ERW victims from 1975 to the end of 2008 in Quang Tri Province only (comprising 1.2% of provincial population in 2006). Of these, 2,618 were fatalities, and 31% of the total victims were children. Rate of ERW victim was reduced significantly from 456 cases in the period of 2001-2007 to 127 cases in the period of 2008 to 2014. To 2014, INGOs have assisted Quang Tri province in demining nearly 10,000 ha land, relocate and demolish safely 556,448 explosive materials.

According to the demining report for ward 3 executed by Mine Advisory Group in 2014, the ward 3 have no risk of unexploded ordnance.

## **V. SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES IMPACTS AND MITIGATION**

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### **V.1. Potential Environmental Impacts & Mitigation Measures in Construction Stage**

#### ***V.1.1. Disruption to Community Utilities***

During the construction of the project, the contractor might disrupt the traffic, electricity, water, etc. of the surrounding households. To minimize impacts, the contractor shall implement the following measures:

- Water supply pipelines, power supply, communication lines and other utilities shall be re-provisioned before construction works commence
- Prepare appropriate traffic management plan to minimize impacts on the households.
- Re-provisioning shall be undertaken in coordination with the concerned utility company.
- Affected households and establishments shall be notified at least 3 days in advance of such disruption.

#### ***V.1.2. Impacts on Air Quality***

##### ***Sources of Impact***

The main sources of air pollution are machines burning fuel for digging, transportation and loading. Dust and waste gas from these machines affect air quality surrounding work place. Areas most affected are located in a range of around 100 m all around project sites, but also along the main access roads to sites which will be supporting the heavy truck traffic.

A large amount of CO, CO<sub>2</sub>, SO<sub>2</sub>, NO<sub>x</sub> gases will be produced from the operations of the machines on the construction site.

Another source of dust release is the mud collected by the truck wheels within the construction site premises and released on the public road where it dries and generates dust. Besides, carbon and other harmful pollutants may also be released through the burning of waste on construction sites, including plastics.

##### ***Mitigation Measures***

- Before site works commence, an Air and Dust Control Plan shall be prepared by the contractor and shall be approved by the Construction Management Consultant (CMC). The plan shall provide details of mitigation measures, specific locations and schedules where such measures shall be implemented to minimize impacts to sensitive receptors (residential areas, schools, hospitals, etc.) due to construction works, sourcing and transport of construction materials, and other project-related activities.

- Reduce pollutant emission at source: Wherever possible, use electrically-powered equipment rather than gas or diesel-powered equipment; Use only vehicles and equipment that are registered and have necessary permits; Construction equipment and vehicles shall be well-maintained and shall meet national TCVN emission standards; Undertake immediate repairs of any malfunctioning construction vehicles and equipment;
- Burning of wastes generated at the construction sites, work camps and other project-related sites shall be strictly prohibited.
- Position any stationary emission sources (e.g., portable diesel generators, compressors, etc.) as far as practical from sensitive receptors;
- Control the risk of dust release: Keep stockpiles moist and cover vehicles with tarpaulin sheets or other suitable materials to minimize dust emission and prevent spillage of materials (e.g. cement, stone, sand, aggregates, etc.); Provide temporary covers (e.g., tarpaulins) on long term materials stockpiles; Clean every vehicle entering/leaving construction site; Clean road surfaces daily;
- Ensure the availability of water trucks on site and if the works surface and access roads near sensitive receptors (i.e. residential areas, roadside tea and food stalls, schools, hospitals, etc.) are dry and dusty, spray water on the surfaces to reduce dust emission.
- Impose speed limits on construction vehicles to minimize road dust in areas where sensitive receptors are located.

### ***V.1.3. Impacts from Noise and Vibration***

#### ***Sources of Impact***

During the construction phase, there are machines that may be used such as: excavators, bulldozers, trucks, drills, etc. These machines will produce noises when in operation. The level of impacts depends on the type of machine and the distance to the sources. The following table provides some typical noise levels of various construction machineries measured at various distances from the point-source.

**Table 9: Noise Levels of Various Construction Equipment in dB(A)**

| EQUIPMENT TYPE   | 15 M | 30 M | 50 M | 100 M | 200 M |
|------------------|------|------|------|-------|-------|
| Excavator        | 78   | 72   | 67   | 61    | 53    |
| Bulldozer        | 78   | 72   | 67   | 61    | 53    |
| Drilling machine | 89   | 83   | 78   | 72    | 66    |
| Air compressor   | 75   | 69   | 64   | 58    | 52    |
| Vibrator         | 76   | 70   | 65   | 59    | 53    |
| Mixer            | 75   | 69   | 64   | 58    | 52    |
| Truck            | 76   | 70   | 65   | 59    | 53    |

The noisiest activities are prohibited at night. Vibration generated during construction and operation has the potential to cause amenity and physical (structural) impacts at receivers. Construction activities anticipated in the Project should not generate significant vibration. The most critical activities will concern (i) geological survey drilling for design works (ii) foundation compaction, the vibration will disperse quickly but may affect residents close to the site.

## **Mitigation Measures**

To mitigate the impacts of the noises and vibration, these are the control and mitigation measures:

- Before site works commence, a Noise Control Plan shall be prepared by the contractor and shall be approved by the Construction Management Consultant (CMC). The plan shall provide details of mitigation measures, specific location and schedule where such measures shall be implemented to minimize impacts to sensitive receptors (residential areas, schools, hospitals, etc.) due to construction works, transport of construction materials, and other project-related activities.
- Restrict noisy construction activities as well as the transport of materials from 6:00 AM to 9:00 PM, and enforce the compliance during night time with Standards QCVN 26:2010/BTNMT (National Technical Regulation on Noise) and QCVN 27:2010/BTNMT (National Technical Regulation on Vibration).
- Reduce level of noise for surrounding population through a set of measures: Position any stationary equipment that produce high noise levels (e.g., portable diesel generators, compressors, etc.) as far as practical from sensitive receptors; whenever possible, completely enclose noisy equipment which can reduce noise level by 15-25 dB(A) and restrict use of noisy equipment (e.g. 15 min for every consecutive 30 min period); erect temporary walls around the construction sites, as necessary, especially near sensitive areas such as schools, hospitals, houses, etc. Temporary noise barriers (3-5 meter high) can reduce noise level by 5-10 dB(A); all construction equipment and vehicles shall be well maintained, regularly inspected for noise emissions.
- Train truck drivers: minimize the use of horn, compliance with speed limit particularly in residential zones.
- Provide prior notification to the community on schedule of noisy construction activities and implement 24 hour community complaint hotline.

### **V.1.4. Impacts from wastewater**

#### **Source of Impacts**

During the construction the following wastewater may be produced:

- Rain washes through the construction site bringing surface waste and dust, this will cause pollution without collection methods.
- Wastewater from domestic activities of the workers that have high level of suspended solid (SS), BOD<sub>5</sub>, and the microorganism (E.coli, Coliform) which in turn may pollute the water source and cause diseases.
- Wastewater from the construction process: cleaning of vehicles' wheels, construction tools are projected to have low impact, but they all need to be managed properly.

## **Mitigation Measures**

The Contractor is required to prepare water management plan with detailed solutions to protect the water quality during construction. The Contractor's solutions:

- The domestic wastewater of the workers has to be collected and treated by the standard WC or outsourced contractor.
- Provide a fully-equipped specialized area for maintaining and cleaning the equipment, machines. Provide leak controlling measures during fueling process for the machines.
- Rainwater has to be collected and treated before released to the environment.

### **V.1.5. Impacts from Solid Wastes**

#### *Source of Impacts*

Quantities of solid waste will be generated by construction activities or by worker camps and canteens. Pollution risks are high if this waste is not managed appropriately, with secondary impacts on water and air quality, and the risk of developing disease vectors (mosquitoes, flies, rats) harmful to public health. A plan for managing all these types of waste must be put in place to avoid cross-contamination.

There are three categories of waste to consider: household waste, inert construction waste and hazardous waste.

- The quantity of domestic waste, mainly produced by temporary or permanent camps set up for the needs of the project, can be estimated at 0.5 to 0.7 kg/person/day. This waste mainly includes waste from canteens, packaging, plastic bottles, glass bottles, paper, and cardboard. Production of waste will be rather limited nevertheless it is worth being properly managed.
- Inert construction waste is generated on the construction sites in variable quantities. It consists mainly of wood, packing boxes, scrap, plastics and concrete debris. This waste is generally disposed of, and landfilled in appropriated sites or in permanent inert materials sites. They represent no direct danger to health. Scrap metal is generally collected for recycling. Wood and cardboard waste if burnt will produce fumes and nuisance for the neighborhood.
- Hazardous waste such as vehicle batteries, oil filters, various containers that had held hazardous products (mainly paints and solvents) and other alkaline/lithium ion batteries is generated by construction activities, but in specific places and in limited quantities. This waste is very harmful to the environment and public health and must receive appropriate treatment so as to ensure it is managed safely. The main risk comes from used engine and hydraulic oil resulting from the maintenance on site of heavy equipment (backhoe, bulldozer, levelers, etc.) and which may be produced in large quantities. If released on the ground, these hydrocarbons will cause surface and underground water pollution. Maintenance of trucks on site is not anticipated, as the project is developed in an urban area where garage facilities are available for trucks. Hazardous waste also includes sludge from temporary toilets and from chemical toilets to be installed on construction sites within urbanized areas.



### *Mitigation Measures*

To avoid such impacts, the contractor shall be requested the following:

Prior to the start of the works, to prepare a Waste Management Plan addressing the management issues related to all types of waste: anticipated production and schedule, collection system proposed, disposal methods and location. The Plan will reflect the following obligations:

#### *For Non-hazardous Waste*

1. Provide garbage bins and facilities within the project sites for temporary storage of construction waste and domestic solid waste and ensure that wastes are not haphazardly dumped within the project site and adjacent areas.
2. Implement an employee awareness program in waste management and site cleanliness.
3. Organize with Municipal Service Company the regular collection of domestic waste in the project sites.
4. Identify recognized regional recycling companies to collect recyclable waste on a regular basis.

#### *For Hazardous Waste*

1. Waste engine oil and hydraulic lubricants from the maintenance of heavy machinery and the floating oily residue from oil separators will be collected and stored in tightly sealed containers to avoid contamination of soil and water resources. Transport and off-site disposal of such wastes shall be consistent with national and local regulations
2. Tanks of oil and hazardous substances have to be stored in a separate house with warning signs and separate from the construction area and workers' camps.
3. The Contractor has to register codes for hazardous waste with the competent authority in accordance with the Circular 12/2011/BTNMT with regard to hazardous waste management.

### **V.1.5. Health and Safety of Workers**

#### *Source of Impact*

The project will concentrate a number of workers which are mainly expected from Dong Ha and surrounding areas. It is probable that only a limited number of workers is recruited outside the region and will live in camps. To ensure appropriate health and safety conditions for the workers, a Health and Safety Management Plan shall be prepared by the concerned contractors and shall be non-objected by the CMC.

#### *Mitigation Measures*

The plan shall be designed to ensure that Vietnamese labor regulations as well as international good practices related to health and safety (e.g., World Bank / EHS Guidelines) are efficiently implemented on site and shall comply with the following obligations:

- The Plan shall address health and safety hazards associated with construction activities (e.g., working at heights, excavations, etc.) establishment and operation of construction/worker's

camps, use of heavy equipment, transport of materials and other hazards associated with various construction activities.

- Appoint an Environment, Health and Safety manager to look after implementation of required environmental mitigation measures, and to ensure that health and safety precautions are strictly implemented for the protection of workers and the general public in the vicinity of construction areas
- Conduct awareness training for construction workers regarding health and safety measures, emergency response in case of accidents, fire, etc., and prevention of HIV/AIDS and other related diseases.
- Provide first aid facilities that are readily accessible by workers.
- Provide fire-fighting equipment at the work areas and at construction camps, as appropriate.
- Provide adequate drainage in workers camps to prevent water logging/accumulation of stagnant water and formation of breeding sites for mosquitoes.
- Provide adequate housing and reliable supply of water for workers.
- Ensure proper collection and disposal of solid wastes within the construction camps consistent with local regulations.
- Provide fencing on all areas of excavation greater than 2 m deep.
- Provide appropriate personnel protection equipment (PPE) such as safety boots, helmets, gloves, protective clothes, goggles, ear protection and ensure the equipment is effectively used.

## **V.2. Impacts and mitigation measures during operation stage**

### ***V.2.1. Impacts on floods***

#### *Source of Impacts*

The market after being put into use would generate a certain amount of wastewater, which is designed to be discharged into regional sewage system. Therefore, the DED consultants and investor should prepare measures and construction option to make sure that during operation, the market would cause no regional flooding.

#### *Mitigation measures*

Calculating the amount of wastewater that would be generated from market operation and coming up with collection and drainage measures is required to make sure not to cause regional flooding.

For DED Consultants, it is vital to:

- Calculate expected wastewater amount generated from market operation.
- Design appropriate water supply and drainage systems for the market.
- Prepare measures to connect market's sewerage system to the regional drainage system.
- Equip pumps for the market in case of local flooding
- For investor, it is vital to:

- Review the regional planning and infrastructure to assess the feasibility of connecting market's sewerage system to regional drainage system.

### ***V.2.2. Impacts related to water quality***

#### ***Source of Impacts***

After being put into use, the market would cause some key impacts to water quality as follows:

- Overflow storm water flowing with waste on the ground if not being properly collected and treated before discharged to the environment will pollute the environment.
- Wastewater from market operation having some contents such as SS, BOD, COD, ammonia and other micro-organisms which might cause eutrophication to water resources and some infectious diseases. Therefore, wastewater should be collected and treated satisfying set standards before being discharged into the environment.

#### ***Mitigation measures***

- It is required to construct a wastewater treatment system for the market to treat wastewater before discharging into the environment: especially wastewater from seafood stalls and food shops etc.
- There should be a storm water collection system properly designed to prevent cross-contamination to the extent possible/feasible.
- There should be pumping system and prevention option in place in case of system-related incident

### ***V.2.3. Solid wastes***

#### ***Source of Impacts***

Solid waste generated from market area if not collected will create odor (especially on hot days) and cause pollution to air environment. Some sorts of waste include:

- Waste generated from market operation: packages of foodstuff or nylon bags etc.
- Waste from restaurants and food shops in the market area etc.

#### ***Mitigation measures***

Measures to reduce solid waste generated from market operation:

- Enhance communication activities to local people and tourists on contributing to keep the market clean though not littering waste.
- Encourage use of environment-friendly bags and limit use of plastic bags when buying goods from market.
- Form a janitor group who will on regular basis collect and transport waste to regulated disposal site.
- Restaurants, stores and food shops should apply waste management and waste segregation method right in first place to facilitate waste treatment process afterwards.
- Sign contract with competent agencies to regularly transport and treat generated wastes to avoid stagnancy and generation of unpleasant odor, affecting market operation.

## ***V.2.4. Impacts on air quality***

### ***Source of Impacts***

There would some impacts on air quality after the market is put into use, including:

- Breathlessness might occur when too many people gather within small market area or at the parking lot if there is no air ventilation system in place.
- Unpleasant odor from wastewater, waste treatment system.
- Incidents like fire, explosion or electric fire.

### ***Mitigation measures***

To reduce impacts on air quality when the market is put into use, it should be noted that:

- Include an air ventilation system for the parking lot or covered areas that might gather many people at the same time.
- Erect signs guiding evacuation way in the event of incidents and fully equip the market with protective appliances for use during emergency.
- Waste and wastewater has to be collected and treated according to regulations, avoid emission of odor, which negatively affects the market operation.

## ***V.2.5. Impacts on regional safety and security***

### ***Source of Impacts***

After being put into use, the market would attract and gather a large number of tourists and local people paying visit to the market and shopping for goods, which would result in some issues in relation to safety and security as follows:

- Differences in term of culture among many people gathering at the market would result in conflicts and contradictions.
- Traffic safety would not be ensured when there are too many vehicles gathering at the same time at the market area without any proper management measures.

### ***Mitigation measures***

- Forming MMC with a sub-committee in charge of security and cooperating with local authorities and local security agency to ensure security order and traffic safety for the market area.
- Regularly conduct communication activities to local people and tourist on ensuring market security and traffic safety.

## **V.3. Environmental Management Plan (EMP)**

### ***V.3.1. EMP's purpose and objectives***

The role of the IEE process is to identify the impacts which may be caused by the project and to develop a series of attenuating or mitigating measures which will be technically appropriate, financially acceptable and easily applicable in the context of the project.

The role of the EMP is to complement this analysis by defining the operational context in which these measures will be implemented. The present chapter therefore sets out the principles, the approach, the procedures and methods which will be applied to monitor and reduce the environmental and social impacts resulting from the construction works and subsequent operation of the components.

To this effect, the EMP includes 3 complementary Action Programs that are adapted to the phases of pre-construction, construction and operation of the Project:

- The Preliminary Action Program, which includes all the measures recommended during the early stage of the Project, particularly before the construction works start. These measures essentially concern the organization and training of the teams which will be responsible for environmental and social management during construction and operation of the project, as well as all the complementary studies and investigations identified during preparation of the IEE and deemed to be necessary before starting the construction works.
- The Program of Actions adapted to the Construction period, which defines the principles of organization and the environmental inspection procedures for the construction sites. This PAC also defines the contractors' obligations in relation to environmental and social management of the construction sites and camps.
- The Operational Phase Action Program, which defines the environmental quality controls (water, air and noise) applicable during the period of operation of the structures and necessary to evaluate the environmental efficiency and performance of the corrective measures put in place.

The present EMP accordingly establishes and describes the context in which all the proposed corrective measures shall be implemented, under the following headings:

- the organization to be established to ensure effective implementation of the corrective measures and the associated environmental monitoring;
- the role and responsibilities of the various parties to be involved in the project;
- the principal tasks to be undertaken during the phases of preparation, construction and operation of the project;
- the complementary studies deemed to be necessary;

The various management plans proposed will be drawn up according to the current state of engineering design of the Project.

All the measures proposed in this EMP are based on the results of the analysis of impacts and corrective measures outlined previously the present IEE. These aspects will not therefore be repeated here.

### **V.3.2. Summary of key impacts**

The anticipated key impacts from the project components are summarized in the following table.

**Table 10: Summary of key impacts**

| <b>Component</b>          | <b>Key expected impacts</b>                                  |
|---------------------------|--|
| <b>Clearance</b>          | No land acquisition and resettlement is required             |
|                           | Some crops will be lost                                      |
| <b>Construction Stage</b> | Air pollution caused by dust, and emissions arising from the |

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|                        |  |
|------------------------|--|
|                        | transportation and construction of machinery, noise pollution and vibration from construction equipment can affect life and works of households. |
|                        | Construction waste , domestic, hazardous waste from the construction process on site   |
|                        | Domestic wastewater, sewage construction and storm water runoff pollution and sedimentation area.  |
|                        | Order and security problems caused by the focus areas of the contractor workers  |
| <b>Operation stage</b> | Solid waste , waste water arising from the operation of markets  |
|                        | Regional security by attracting residents and tourists to shop at the market   |
|                        | Air pollution from the processing system ( wastewater, garbage focus ) , and from the car park area  |

As observed from this table, major impacts from the project mainly concern impacts related to construction activities. Therefore, this EMP will principally focus on construction activities supervision and monitoring activities during construction period and first few years of operation.

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**EMP summary-matrix**

| NO       | Implementation Phase/Content  | Implementation Agency | Implementation Subject/Location              | Period/Frequency                            | Related agency                         |
|----------|---|-----------------------|--|---|--|
| <b>A</b> | <b>Preparatory stage</b>  |                       |  |   |  |
| 1        | PAP-01: Additional study of water quality.<br><br>Monitoring parameters: BOD, COD, TSS, pH, DO, Oil, Coliform | PMU                   | Project area                                 | Take sample before construction preparation |  |
| 2        | PAP-02: Appointment of the PMU's Environmental Staff (PES)  | PMU                   | PMU  | In the project preparatory phase            |  |
| 3        | PAP-03: Training of the PES and PMU staff   | IMO                   | PMU  | In the project preparatory phase            |  |
| 4        | PAP-04: Preparation of communication instruments  | PMU                   | PMU  | In the project preparatory phase            |  |
| 5        | PAP-05: Preparation of the contractor Environmental specifications  | PMU                   | PMU  | In the project preparatory phase            |  |
| <b>B</b> | <b>Construction stage</b>   |                       |  |   |  |
| 1        | PAC-01: Waste management<br><br>Includes: quantity and composition of waste generated.                        | Contractor            | Project construction site and worker camp    | Perform regularly                           | PMU, Environment monitoring consultant |
| 2        | PAC-02: Accidental spill preparedness and response plan<br><br>Includes: training and responding plans        | Contractor            | Contractor's construction site, storage area | Train every 6 months                        | PMU, Environment monitoring consultant |
| 3        | PAC-03: Workers' camp   | Contractor            | Workers' camp                                | Perform regularly                           | PMU, Environment                       |

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|    |   |            |   |                                     |   |
|----|---|------------|---|-------------------------------------|---|
|    | management  |            |   |                                     | monitoring consultant                                     |
| 4  | PAC-04: Public health management plan   | Contractor | All of contractor's workers   | Perform regularly                   | PMU, Environment monitoring consultant                    |
| 5  | PAC-05: Management of air quality, dust and noise<br><br>Parameter: Noise, dust, CO, SO2, NOx.                                | Contractor | Construction site and transport route   | Perform regularly.                  | PMU, Environment monitoring consultant                    |
| 6  | PAC-06: Road traffic management<br><br>Parameter: Contractor's traffic management plan.                                       | Contractor | Contractor's transport route  | Conduct when transporting materials | PMU, Environment monitoring consultant, local government  |
| 7  | PAC-07: Water quality monitoring (for the Contractor)<br><br>Monitoring parameters: BOD, COD, TSS, pH, DO, Oil, Coliform      | Contractor | Construction site drainage area   | Take sample every 3 months          | PMU, Environment monitoring consultant                    |
| 8  | PAC-08: Protection of cultural resources  | Contractor | Project area  | Regularly                           | PMU, Construction monitoring consultant, local government |
| 9  | PAC-09: Environmental and social training plan<br><br>Parameter: Environment management capacity building training materials. | EMC        | Contractor's construction site  | Every 6 months                      | Contractor, PMU   |
| 10 | PAC-10: Monitoring of construction activities (supervision engineer)  | EMC        | Monitoring contractor's implementation of workers' safety and environment impact reduction measures | Every month                         | Contractor  |
| 11 | PAC-11: Air quality and noise monitoring (CMC)  | EMC        | Location determined in the management plan  | Every month                         | Contractor, PMU   |



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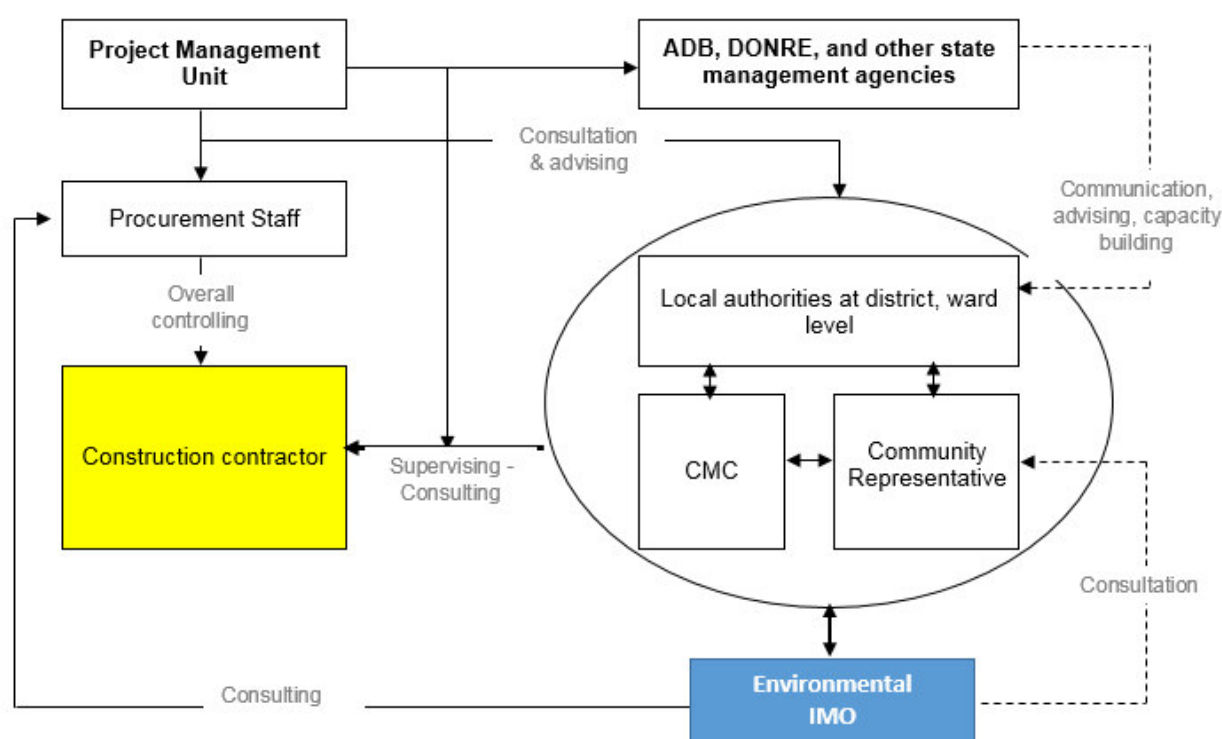
|          |  |            |   |   |                                 |
|----------|--|------------|---|---|---------------------------------|
|          | Monitoring parameters: noise level, dust, CO, SO <sub>2</sub> , NO <sub>x</sub> .  |            |   |   |                                 |
| 12       | PAC-12: Water quality monitoring<br>Monitoring parameters: BOD, COD, TSS, pH, DO, Oil, Coliform                                  | EMC        | Project construction site drainage location | Every 3 months                          | Contractor, PMU                 |
| 13       | PAC-13: Site clearing and rehabilitation program   | Contractor | Project area                                | After construction is completed         | PMU, EMC, CMC, local government |
| <b>C</b> | <b>Operation stage</b>   |            |   |   |                                 |
| 1        | PAE-01: Monitoring air quality and noise<br>Monitoring parameters: Noise level, dust, CO, SO <sub>2</sub> , NO <sub>x</sub> , HC | PMU        | Parking area, market area after opening     | 1 time in the first month after opening | PMU, EMC                        |
| 2        | PAE-02: Monitoring water quality<br>Monitoring parameters: BOD, COD, TSS, pH, DO, Oil, Coliform                                  | PMU        | Project's drainage area                     | 1 time in the first month after opening | PMU, EMC                        |
| 3        | PAE-03: Guaranteeing road safety and security  | PMU        | Project's access roads                      | 1 time in the first month after opening | PMU, Local government           |

### V.3.3. EMP Organization and Responsibilities

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

- Creation of a Project Management Unit (PMU) based in Dong Ha. This PMU will receive the support of an Independent Monitoring Organization (IMO) on environmental issues if necessary;
- Appointment of Construction Management Consultant (CMC) to supervise design and construction of the project;
- Appointment of Construction Contractors.

The proposed EMP mechanism is described in the figure as follows:



**Figure 4. Proposed Environmental Management Mechanism of the project**

The proposed organization for the EMP is based on this general organization. Three levels of organization, fully complementary, will be set-up:

- The PMU will have to provide for all aspects related to environment and social including (i) general supervision of activities carried out prior, during and after construction of the project and (ii) coordination with other stakeholders including other government agencies and NGOs involved. The PMU will appoint a staff and/or a department in charge of procurement and contract management with all contractors, including construction contractor. The contract shall be added with environmental commitments to the EMP implementation and the procurement staff and/or other relevant staff will be the focal point of the PMU to supervise the progress and quality of EMP implementation in altogether with other technical issue.

- If necessary, an Independent Environmental Monitoring Organization (Environmental IMO) will assist PMU for all aspects dealing with environmental management preparation provide environmental training to PMU staff and quarterly environmental assessment of the construction sites.
- CMC's environmental staff, who is to provide coordination and supervision for all environment-related activities during construction, and to report regularly to the PMU;
- Environmental staff of construction contractor who is to provide resources for, and effective implementation of, all measures which are defined in the EMP and in the contract documentation in addition to health and safety aspects on site.
- Community representatives might also be involved during the process of monitoring the construction as well as operation of the market. The environmental IMO can consult them on the impacts of the construction and their feedbacks will be the basis for make corrective actions if needed on environmental issues.
- Prior, during the construction and operation of the market, the PMU as well as the construction contractor shall coordinate and cooperate with the local authorities, particularly the People's Committee of the Ward 3 to ensure the sound implementation of the EMP as well as stable social security at place.

### **V.3.4. Key Environmental Management Procedures**

#### **V.3.4.1. Communication procedures**

##### **Internal Communication**

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

The following table presents the key links with regard to internal communication among the stakeholders during the construction period. This procedure must be laid down in greater detail before the start of the project in accordance with the Contractor EHS policy and the final project organization.

**Table 11: Principal Phases of Internal Communication**

| FROM                                | TO  | FREQUENCY                | SUBJECT  |
|-------------------------------------|---|--------------------------|--|
| Environmental IMO                   | PMU   | Quarterly/<br>Biannually | Updating the construction programme; specific construction activities that are likely to pose environmental impacts and their locations.   |
| Construction Contractor             | CMC   | Weekly                   | Construction progress and Project implementation schedule  |
| Construction Contractor             | Environmental IMO                           | Quarterly                | EMP implementation progress and quality  |
| Environment – Social Division - PMU | Head of Environment – Social Division - PMU | Monthly and ad-hoc       | Summary report on significant environmental events (Levels II & III) observed, on the decisions taken, and on the measures implemented; request for approval of the proposed modifications |
| PMU                                 | DONRE and Donor                             | Quarterly                | Summary report on significant environmental events (Levels II and III) observed, on the decisions taken, and   |

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| FROM | TO | FREQUENCY | SUBJECT  |
|------|----|-----------|--|
|      |    |           | on the measures implemented; proposal, if necessary, to modify certain mandatory thresholds or obligations of the Contractor |

**Information Disclosure**

Information disclosure of environmental and social subjects will be the prerogative of the PSU through the intermediary of Environment-Social Division of PMU, assisted by the PSU's Director of Communication. This communication will essentially concern exchanges of information with the media, with NGOs and with government representatives at ward and city levels. The Environmental staff of CMC and the Contractor's EHS Coordinator will only intervene in these exchanges when expressly invited to do so by the IA.

The environmental staff from the PMU will regularly contribute for all Environmental aspects to the activity report provided to ADB, various government organizations and NGOs in Vietnam.

***V.3.4.2. Procedures for redressing environment violations***

When detecting environmental violations on site, the environmental staff of CMC and the assigned staff of the PMU shall assess the level of violation, its impacts to propose corrective actions.

Environmental violations are subdivided into three levels. The communication and handling procedures depend on the level of non-conformity. Level III represents the most serious incidents, while level I represents the incidents of least gravity.

**Level I (Minor Incident):** Situations on Level I are addressed on a day-to-day basis at the time of site visits and routine meetings; the recommended measures are generally discussed on the spot with the construction teams concerned. Formal communication takes place through the Environmental Violation report prepared by the Environmental Inspectors and handed to the Social and Environmental staff of the PMU who will officially notify the Environmental Staff of the Contractor.

**Level II (Moderate Incident):** The violation at level II is notified by the environmental staff of the Contractor to the environmental staff of the CMC and the Project Manager of the Contractor the same day as the situation is observed, and within three days to the Environmental staff of the PMU. The PMU's environmental staff shall inform the PMU Director of the situation and details the proposed corrective measures, which must be implemented as rapidly as possible.

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

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

- A mechanism allowing the works to be stopped if the situation is deemed to be hazardous;
- Provision for feedback so that the site inspectors monitoring implementation of the requested measures can ensure that the remedial action has been taken;
- The possibility of initiating an incident enquiry in order to determine the deep-seated causes of the incident and to assess whether they justify changes in the specifications, the requirements or the methods, to prevent reoccurrence of such a situation in the future.

#### ***V.3.4.3. Recruitment procedure***

Recruitment will be made preferentially in Dong Ha and its surroundings to minimize the requirement of worker camps in number and size and minimize attached problems.

Cadres and workers involved in project implementation must have medical checkup certificate to make sure they are healthy enough for their work.

The precise procedures to be put in place will be compliant with the obligations of the Vietnamese Labor Regulations regarding particularly work contract conditions, working time and minimum wages.

#### ***V.3.4. Action plan prior to construction period (PAP)***

All the elements described above reflect the main details of the organization to be set up for supervision and monitoring in the construction phase. However, it is essential to ensure that the necessary means and references are available and totally operational from the time the works start. To this effect, a certain number of activities are to be undertaken before the start of construction works. These actions cover the aspects of recruitment, organization and training for the PMU, and the performance of a series of complementary investigations aimed at defining the baseline situation more precisely. For these studies, the PMU will call on specialized consultants. The main recommended actions, resulting from the IEE are detailed in the following paragraphs in the form of a Preliminary Action Program (PAP).

The baseline situation is the reference state in comparison with which the project's impacts will be effectively evaluated in the course of construction and operation of the project. Some important aspects of this baseline situation need to be analyzed in greater detail before the works are started. Following PAP-01 to 05 are proposed to strengthen the baseline situation knowledge.

##### ***PAP-01: Additional study of water quality***

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

The following parameters will be measured during this first survey, in accordance with the technical regulation QCVN 08: 2008/BTNMT on surface water quality and technical regulation QCVN 14: 2008/BTNMT on wastewater quality. The parameters to be monitored include pH, Total suspended solid (TSS), solved oxygen (DO), COD, BOD<sub>5</sub>, NH<sub>4</sub><sup>+</sup>, oil & grease, Coliform. These results will be the baseline data during construction activities.

##### ***PAP-02: Appointment of the PMU's Environmental Staff (PES)***

The PMU will appoint its Environmental staff early enough for this person to contribute to selection of the Monitoring Laboratory to perform effect monitoring and baseline identification (see PAP-01) before construction activities start on the project site. The CES will be assisted at the beginning of his mandate by the IEC, who will deliver training to the PES and assist him in (i) preparation of tenders regarding monitoring surveys, (ii) selection of the Consultants, (iii) following period reports.

### *PAP-03: Training of the PES and PMU staff*

The Environmental IMO will carry out training of the PES and other PMU staff at the early stage of PES recruitment. The purpose is to have the PES and his staff fully operational at the beginning of the project construction. Training will focus on:

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

### *PAP-04: Preparation of communication instruments*

In support and follow up to public consultations carried out within this project, it is important to prepare appropriate communication materials rapidly, allowing the PMU to present, before starting the works, clear information on the design of the project, on the phase of the construction, on recruitment procedures and on environmental and social measures which will be implemented.

Preparation of proactive communication is indispensable, to ensure the possibly widest circulation of information at the most critical time, since it is during this period prior to the start of construction, when important decisions and negotiations are in progress, that information on the Project must be available in a completely transparent manner. Communication tools to be developed include:

- Notice boards at the construction site;
- Available technical documents of the IEE for consultation by any person at Provincial level and in Districts concerned.

### *PAP-05: Preparation of the contractor Environmental specifications*

Consideration of effect of the environment during construction activities presupposes production of a clear, complete and detailed contractual document at the time the contract is awarded. This means specifications which will lay down the environmental obligations to be imposed on contractors by the PSU are included in the Tender Documentation. These requirements dictated by the Owner will be presented in a document entitled 'Environmental Obligations of Contractors under the project', which will be prepared together with the Technical Specifications (General and Particular) of the Project. For that purpose, the PMU will request a specialized environmental Consultant to assist the Technical Consultant in the Detailed Design and of the Tender Documentation.

The documentation will set out measures that the contractors involved in the construction will have to take to comply with recommendations and measures identified in the course of the IEE and set out in the form of the Action Plan. Without being exhaustive, these documents will include the EHS management directives for contractors and the directives concerning the process of classification, investigation and analysis related to the EHS events as well as general clauses concerning the overall incident prevention program for construction sites. These obligations will be articulated around the principal theme of environmental and social management for the project implementation, which will lie down:

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

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

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

1. Solid waste management plan,
2. Dredging and Sediment management plan,
3. Hazardous substance management plan,
4. Camps management plan,
5. Workers health and safety plan,
6. Air pollution, dust and noise management plan,
7. Road traffic and access management plan,
8. Water quality monitoring plan,
9. Cultural resources protection plan,
10. Environmental training plan.

### ***V.3.5. Action Plan during construction period (PAC)***

The detailed action plan below will provide baseline information for further preparation of Contractor Environmental Specifications to be included later into the Tender documentation. The following Program of Action will be implemented during the construction phase:

#### ***PAC-01: Waste management***

A waste management program will be established and will be mandatory for contractors and their sub-contractors. The first relates to wastes of the domestic type (essentially generated by the camps) and

non-hazardous wastes generated on the construction sites, while the second is related to hazardous wastes. The objectives of the program are:

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

These plans will include procedures in accordance with local regulations or with best international practice concerning handling, transport, storage, treatment and elimination of waste in group:

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

### **Non-hazardous waste management**

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

The workers' camps will be provided with two types of waste bins for selective collection of various products listed above: putrescible in one, for recycling in another. The contractor will carry out systematic awareness campaigns among workers who live in the camps to promote efficient use of these waste bins.

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

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

### **Hazardous waste management**

The Contractor shall prepare a separate area for storing hazardous wastes as stated above. Depending on the amount and volume of the waste, the Contractor shall register with competent authority on hazardous waste management in line with legal regulation. All wastes shall be recorded, monitored and reported regularly with the PMU, environmental IMO and DONRE if required. The Contractor also has to get contract with competent organizations for transporting and treatment of the wastes according to the legal regulations.



### *PAC-02: Accidental spill preparedness and response plan*

A plan will be prepared to define intervention procedures in case of leak or spill of liquid hazardous substance. This plan will include a description of preparation for such situations and roles of key people. Specific training in the activities to be performed in case of emergency intervention will be given for all staff and workers involved in any stage of the procedure.

### *PAC-03: Workers' camp management*

A permanent and temporary camp management program will be prepared by the contractor. Various aspects covered by such a program will include:

- installations of water supply and sewerage, waste management, and drainage of storm water;
- equipment chosen, putting domestic waste bins in camps;
- worker management measures to guarantee security.

### *PAC-04: Public health management plan*

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

- First aid facilities established in the camp site;
- Emergency intervention procedures in case of an accident;
- employee surveillance measures: medical check-up on recruitment, annual medical check-up;
- waste management and regular cleaning of the construction site;
- a systematic program to keep employees aware of good hygienic practices.

### *PAC-05: Management of air quality, dust and noise*

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

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

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

Measures will be taken to reduce noise levels and the corresponding disturbance on the site and along the access roads: maintenance of plant and vehicles, use of soundproofed equipment, reduction of the hours of use of certain installations (crushing plant, blasting).

The Tender Documents will define thresholds to be respected by the contractor in terms of gas, dust and noise.

### *PAC-06: Road traffic management*

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

- awareness-raising and training of drivers of light vehicles and trucks in rules of elementary caution and risks encountered: driving under the influence of alcohol or drugs, excess speed, placing the load (stability), etc.;
- checking licenses of all recruited drivers, and their ability to drive;
- enforcing respect for speed limits;
- signs and traffic guards will direct entrance and exits of the construction site.

### *PAC-07: Water quality monitoring (for the Contractor)*

The contractor will prepare a water quality monitoring plan which will aim at highlighting the quality of the environmental management implemented on the site. This plan will verify discharge compliance, in other words it will concern all points where liquid effluents (waste water, drainage water) leave the limits of the work site concerned to enter the natural environment. The contractor concerned will be under the obligation to ensure conformity with the applicable Vietnamese standards.

The contractor will be responsible for monitoring quality of all discharges leaving its sites. The parameters will be defined according to the type of discharge and details in the Tender Documents:

- discharge of 'grey' water and storm water drained off the camps;
- rainwater discharge sewers;
- discharge of wastewater from vehicles wash area and exits of the construction site;
- discharge of wastewater in the workers' camps;
- Sampling sites and parameters may change in the course of construction in order to adapt to the area of construction.
- The monitoring will be carried out on a monthly frequency.
- This monitoring will be supervised by the environmental staff of CMC. Compliance monitoring will concern at least the following water quality indicators:
  - organic pollution: BOD5, nitrates, phosphates, (particularly related to the camps areas);
  - oils and grease relating to drainage water from the areas used for mechanical activities, storage of hazardous substance (hydrocarbons);
  - suspended solid in waste water.

### *PAC-08: Protection of cultural resources*

The IEE confirms that project components are not affecting any cultural site or building. However, as some components involve extensive excavation, the chance to find objects of cultural value does exist.

The Tender Documents will define an emergency intervention procedure in case a discovery made or an interaction observed during the construction. This procedure will include aspects such as:

- immediate measures to stop the construction and mark out the area to be protected;
- information procedure involving the environmental staff of the contractor, CMC and PES;

- approval of measures decided by the PES;
- organization of removal of resources (if physical);
- closure of the incident and resumption of work.

### *PAC-09: Environmental and social training plan*

The objective of this plan is to ensure effective implementation of measures proposed by the EMP. This Plan will define general training programs (awareness-raising) for all personnel and specialized training programs for workers in environment-related fields. Each employee in charge of sensitive activities will follow a training course every 6 months.

This training will be delivered by the environmental staff of the construction contractor of the lead Contractors or by specialized consultants appointed by the contractors. All personnel will be trained. Training courses will be recorded in registers where the names of all participants will be noted.

The environmental management awareness program on the site will cover the following priority subjects:

- rules for waste management on the site;
- rules for management of hazardous substance and wastes, particularly their storage authorized exclusively in specially adapted areas;
- pollution control, in particular response required in case of an accidental pollutant spill;
- fire prevention and fighting;
- the procedure to follow in case of discovery of objects of cultural value;
- traffic safety rules on public roads and on the site;
- principles for saving energy and other resources;
- applicable penalties in case of infringement against the established rules.

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

The CMC, through the PES and his team, is responsible for ensuring the Contractor complies with environmental obligations. The CMC directly supervises and accepts safety and environment measures of the contractor.

### *PAC-10: Monitoring of construction activities (supervision engineer)*

The contractor' compliance with environmental and social obligations will be the subject of a specific monitoring process, coordinated with the PES. In order to ensure compliance with environmental requirements and efficient implementation of corrective measures, an environmental monitoring program will be set up, including:

- **Environmental supervision of the contractor:** Thanks to regular site inspections, all Environmental measures set out in the Obligations for Contractors and in the Action Plans prepared by the Contractors are effectively and efficiently implemented;
- **Environmental quality monitoring:** monitor changes in the quality of the environment in order to evaluate the efficiency of the mitigation measures applied and, if necessary, to modify acceptability thresholds or methods;

- **Environmental compliance control monitoring:** ensure that all discharges from all project sites are compliant with environmental legislation or with related specifications in the Tender Documents. This monitoring will also confirm or deny the validity of information supplied by the construction contractors on a monthly basis. Analysis will be performed on a limited number of indicators of pollution from construction.

### **Weekly inspections**

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

Each environmental violation will be the subject of a standard record sheet to be filled in by the observer (Inspector) and submitted to the PES. The record sheet signed by the PES is handed over to the environmental staff of the construction contractor who then completes the document by explaining the proposed corrective measure. If the solution is acceptable, the EE is closed after checking that the solution has been effectively and successfully implemented.

### **Coordination meetings**

Regular (weekly or semi-monthly) coordination meetings will be held between the environmental staff of the construction contractors (and their inspectors) and the PES of CMC (and his inspectors), during which they will discuss EEs in progress, solutions taken and any other subject of current concern such as the Action Plan presented by the environmental staff of the construction contractors.

### ***PAC-11: Air quality and noise monitoring (CMC)***

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

There will be two types of sampling monitoring under the responsibility of the CMC:

- Ad-hoc controls of dust in residential areas, the surrounding areas of construction sites and along the hauling routes. Action will be taken as soon as few complaints from residents have been collected for a particular location, or where visual inspection confirms that excessive dust is being generated. The PES will make spot checks of noise levels on the various work sites and in certain residential areas during daytime and night, in order to check that standards applicable within the boundaries of the work sites or in the surrounding residential areas are respected.
- Regular monitoring of air quality and noise carried out by an external registered laboratory on a quarterly basis. Locations may vary according to transportation, particularly on roads. Proposed Monitoring Plan is detailed in the table below.

**Table 12: Environmental effect monitoring plan during the construction**

| Reference   | Parameters   | Locations   | Frequency |
|---|--|---|-----------|
| Ambient air quality compared to standard QCVN 05:2009/BTNMT | CO, SO <sub>2</sub> , NO <sub>x</sub> , TSP, O <sub>3</sub> , lead dust (Pb), (PM <sub>10</sub> ), (PM <sub>2.5</sub> ), | Construction site: Point 1: The beginning of the construction site, the windy point | Monthly   |

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|  |  |  |         |
|--|--|--|---------|
|  | benzene, HC                                | Point 2: The end of the construction point   |         |
| Noise levels compared to standard QCVN 26:2010/BTNMT | Day time and night time noise levels dB(A) | Construction site:<br>Point 1: The beginning of the construction site, the windy point<br>Point 2: The end of the construction point | Monthly |

For the quarterly monitoring of air quality, the CMC will appoint a registered professional laboratory to perform the task.

**PAC-12: Water quality monitoring**

The Contractor carries out a monthly monitoring of all outlet of water sewers of the construction site and camps premises. In addition, the CMC will appoint a registered professional laboratory to carry out an independent monitoring of surface and underground water quality on a quarterly basis.

Proposed monitoring criteria and locations are presented in the following table.

**Table 13: Environmental effect monitoring plan during the construction**

| Reference             | Parameters                        | Locations                                    | Frequency |
|-----------------------|-----------------------------------|--|-----------|
| Surface Water Quality | BOD, COD, DO, E.Coli.<br>Coliform | Drainage ditch next to the construction site | Quarterly |

**PAC-13: Site clearing and rehabilitation program**

By the end of the construction activities, each contractor has to return the site where its activities for Project needs have been performed, which includes:

- Demolishing all structures/buildings developed for the purpose of Project construction.
- Removal from the site of all equipment and safe disposal or recycling of construction and demolition waste and of construction material;
- Restoration of the land as close as possible to the initial state,
- Official handover of the site to its owner, signed by parties.

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

**Cleaning Stage**

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

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- Make use of and recycle waste as much as possible.

The Plan will be submitted to the CMC not later than 1 month before starting demolishing and include methods for carrying out the following activities:

- Identification of Materials and Waste existing on the site: Usable construction surplus, usable hazardous materials surplus, demolition and inert waste (wood, iron sheet, metal scrap, PVC and plastics, glass, tires, etc.), organic waste, hazardous waste, broken machineries etc.;
- Evaluation of quantities of each group of materials/waste identified;
- Identification of registered companies for the recycling of materials and waste;
- Procedures for treatment and disposal of non-recycled material and waste;
- Schedule for cleaning operations;

### Rehabilitation Stage

Rehabilitation will be carried out immediate after or even in parallel with the cleaning stage, taking advantage of the presence of the manpower and the equipment. Consultation with concerned stakeholders will be carried out where necessary. The following principles will be applied:

- All sites must be returned free of any buildings or infrastructures developed for the purpose of Project construction unless specific request is made;
- Construction waste shall be cleared to rehabilitate the sites as close to the initial stage as possible.

After completion of SCR works, the Contractor will inform the environmental staff of CMC regarding the final site status. After acceptance by CMC of the site, the PMU will be notified. To finalize the SCR process a joint site visit with all concerned parties will be organized by the environmental staff of CMC to sign SCR Completion Certificates as follows:

- The SCR Completion Certificate will be signed by the CMC and PMU in the presence of CPC;
- For private land, the SCR Completion Certificate will be signed by the land owner, construction contractor, CMC and PMU.

### ***V.3.6. Action plan for operation stage (PAE)***

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

The following activities are proposed in this EMP.

#### ***PAE-01: Monitoring air quality and noise***

Monitoring of air quality in the construction area of Ward 3 new market is implemented to assess changes of dust and air pollution since the project starts. The same parameters and locations are monitored during construction. It is necessary to monitor parking lots and ventilation in parking lots. The monitoring can be done in 1 month after the market comes into operation

#### ***PAE-02: Monitoring water quality***

Monitoring of water quality will be done in 1 month after the completion of the new market with the same parameters and in the same locations during construction.

#### ***PAE-03: Guaranteeing road safety and security***

There should be a plan to control traffic in the area when the market goes into operation. In addition, a security team should be established to guarantee safety of vendors and customers.

### ***Institutional Arrangement of Environmental Monitoring Plan (EMoP)***

The following table sets out the institutional arrangement of environmental monitoring plan for the period prior, during and after the construction of the market

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**Table 14: Institutional Arrangement of Environmental Monitoring Plan**

| No  | MEASURE / ACTION                                       | RESPONSIBILITY |                    | STAGE/<br>FREQUENCY                                      |
|---|--|----------------|--------------------|--|
|   |  | FUNDING        | IMPLEMENTATION     |  |
| Action plan prior to construction works (PAP) |  |                |                    |  |
| PAP 01  | Additional Study of Water Quality                      | PMU            | Laboratory         | Project preparation                                      |
| PAP-02  | Appointment of PES                                     | PMU            | PMU                | Project preparation                                      |
| PAP-03  | Training of PES & PMU staff                            | PMU            | Environmental IMO  | Project preparation/<br>0.5 month                        |
| PAP 04  | Preparation of Communication instruments               | PMU            | Environmental IMO  | Project preparation/<br>0.5 month                        |
| PAP-05  | Preparation of Contractor environmental specifications | PMU            | Environmental IMO  | Project preparation/<br>0.5 month                        |
| Action plan during construction (PAC)         |  |                |                    |  |
| PAC-01  | Waste Management                                       | Contractor     | Contractor         | Weekly   |
| PAC-02  | Accidental Spill Preparedness and Response             | Contractor     | Contractor         | Weekly   |
| PAC-03  | Management of Permanent & Temporary Camps              | Contractor     | Contractor         | Weekly   |
| PAC-04  | Public Health Management                               | Contractor     | Contractor         | Weekly   |
| PAC-05  | Management of Air Quality, Dust and Noise              | Contractor     | Contractor         | Weekly   |
| PAC-06  | Management of Road Traffic and Access                  | Contractor     | Contractor         | Weekly   |
| PAC-07  | Monitoring of Water Quality (by CMC)                   | Contractor     | CMC/<br>Laboratory | Bi-annually  |
| PAC-08  | Protection of Cultural Resources                       | Contractor     | Contractor         | Weekly   |
| PAC-09  | Environmental Training Plan                            | Contractor     | Contractor         | Bi-annually  |
| PAC-10  | Monitoring of Construction Activities                  | PMU            | CMC                | Weekly   |
| PAC-11  | Air Quality & Noise Monitoring (CMC)                   | PMU            | CMC                | Weekly   |
| PAC-12  | Water Quality Monitoring (CMC)                         | PMU            | CMC                | Weekly   |
| PAC-13  | Site Cleaning & Rehabilitation Program                 | Contractor     | Contractor         | Weekly   |
|   |  |                |                    |  |
| Action plan for operation stage (PAE)         |  |                |                    |  |
| PAE-01  | Monitoring of Air Quality and Noise                    | PMU            | Environmental IMO  | Once in the first month after completion of construction |



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|        |                                       |     |                      |   |
|--------|---------------------------------------|-----|----------------------|---|
| PAE-02 | Monitoring of Water Quality           | PMU | Environmental<br>IMO | Once in the first<br>month after<br>completion of<br>construction |
| PAE-03 | Guaranteeing road safety and security | PMU | Environmental<br>IMO | Once in the first<br>month after<br>completion of<br>construction |

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Notes: (1) Budget internal to PMU, operation costs

(2) Related environmental expenses are included into construction costs of Construction

Contractor

Abbreviations: PMU: Project Management Unit; Environmental IMO: Independent Environmental  
Monitoring Organization; CMC: Construction Management Consultant

## VI. INFORMATION DISCLOSURE AND PUBLIC CONSULTATION

### VI.1. Community consultation

The public consultation during the Project Preparation Stage and is implemented in accordance with Safeguard Policy Statement (SPS) 2009 and the Public Communication Policies (PCP) 2012, including the following activities:

- Reconnaissance surveys of the Project site. On-site discussions with Ward 3 and Dong Ha City officials have provided information on the physical and biological resources, social-economic environment, opportunities and constraints relevant to the project.
- Provide information relating to project: funding source, construction objective, project's beneficiaries and the success possibility of the project.

During the project implementation period, consultation and information disclosure on environmental matters will be handled by the Project Management Unit (PMU) in conjunction with local authorities to come up with suitable modifications if required.

### VI.2. Consultation process and results

#### *Timing and participants*

Consultation meeting was conducted in ward 3 – Dong Ha city. Timing and participants is shown in Table 8. (The list of participants in the consultation meeting is attached in Appendix 1.)

**Table 15: Timing and participants of consultation meeting**

| Date        | City    | Commune/ward | Venue      | Participants |      |        |
|-------------|---------|--------------|------------|--------------|------|--------|
|             |         |              |            | Total        | Male | Female |
| 24 Jun 2015 | Dong Ha | Ward 3       | WPC's Hall | 20           | 7    | 13     |

#### *Information disclosed*

In the consultation meeting, representatives of investor and local authorities have disseminated information relating to project to participants as follows:

- Objectives of the project;
- Location, designs, and cost estimates;
- GOV and ADB environmental safeguards policies and procedures;
- The environmental category according to the ADB and GOV policies;
- Environmental issues related to project location and design;
- Proposed mitigation measures;
- Grievance Redress Mechanism
- Environmental Management & Environmental Monitoring Plan

## *Responses from residents*

- Agree on the construction of the JPRF-funded night market to promote tourism with environmental sustainability to strengthen economic growth in Dong Ha City as well as the GMS.
- Agree with the Consultant on current environmental assessment as well as mitigation measures as proposed by the Consultant.
- Hope that the project will promote tourism and guarantee lives of residents who do business.
- The Consultant and contractors must apply mitigation measures to reduce dust, noise and sediments during construction.
- Construction progress must be timely without delays, which could affect the livelihoods of residents living alongside the transport route of construction waste and materials.
- Relevant parties have agreed that community consultation activities will be continued to assess project's impacts on local residents before and after the project. This activity can be combined with environment monitoring activities conducted periodically or when required.

## **VI.3. Grievance and Redress Mechanism**

### ***VI.3.1. Proposed Mechanism***

- PMU will establish a Project Public Complaint Unit (PPCU). The PPCU will instruct contractors and construction supervisors if people complain about the project. The PPCU will coordinate with Project Management Unit (PMU), and relevant agencies such as Department of Natural Resources and Environment and Department of Transportation (DOT), if necessary, and will be supported by the environmental consultants of the Project Management Support Consultant.
- When construction starts, a sign will be erected at each construction site providing the public with updated project information and summarizing the grievance redress mechanism process including details of the GRM entry points. The contact persons for different GRM entry points, such as PMU, community leaders, contractors, and operators of project facilities, will be identified prior to construction. The contact details for the entry points (e.g. phone numbers, addresses, e-mail addresses, etc.) will be publicly disseminated on information boards at construction sites and on the website of the local government.
- The PPCU will establish a GRM tracking and documentation system. The system will include the following elements: (i) tracking forms and procedures for gathering information from project personnel and complainant(s); (ii) dedicated staff to update the database routinely; (iii) systems with the capacity to analyze information so as to recognize grievance patterns, identify any systemic causes of grievances, promote transparency, publicize how complaints are being handled, and periodically evaluate the overall functioning of the mechanism; (iv) processes for informing stakeholders about the status of a case; and (v) procedures to retrieve data for reporting purposes, including the periodic reports to the ADB.

### ***VI.3.2. Grievance Redress Procedures***

The procedure and timeframe for the grievance redress mechanism are described as follows. The two stages are represented by different colors in the flow diagram:

**Stage 1:** If any individual or organization is affected by construction, the affected person will submit a written or oral complaint to the contractor and Dong Ha Division of Natural Resources and

Environment, PMU, Department of Transport, community leader directly. Whenever possible, the contractor will resolve the issue directly with the affected person. The contractor will give a clear reply within one week. If successful, the contractor will inform the PPCU accordingly.

**Stage 2:** If no appropriate solution can be found, the contractor should forward the complaint to the PPCU within five (5) working days. The complainant may also decide to submit a written or oral complaint to the PPCU, either directly or via one of the GRM entry points (community leader, Dong Ha CPC, Local DONRE, Dong Ha City's Environmental Management Department.). For an oral complaint, complaint file must be made. The PPCU will assess the eligibility of the complaint, identify the solution and provide a clear reply for the complainant within five (5) working days. The PMU will assist the PPCU in replying to the affected person. The PPCU will also inform the ADB project team and submit all relevant documents. Meanwhile, the PPCU will timely convey the complaint/grievance and suggested solution to the contractors or operators of facilities. The contractors during construction and the operators during operation will implement the agreed upon redress solution and report the outcome to the PPCU within seven (7) working days.

The PPCU shall accept complaints/grievances free of charge. Any cost incurred should be covered by the contingency of the project. The grievance procedures will remain valid throughout the duration of project construction and until project closure.

## V. CONCLUSIONS AND RECOMMENDATIONS

The JFPR-funded market is to be constructed in the area of ward 3, Dong Ha city, Quang Tri province. An initial environmental examination has been conducted, which detects that project's key potential environmental impacts mainly incurs from construction on and operation phases.

| Environmental Parameter                                 | Level of Impact | Reason   | Proposed Mitigation Measures   |
|---|-----------------|--|--|
| <b>Environmental Impacts during construction period</b> |                 |  |  |
| Air Impact  | Low             | iii. Dust generated from excavation, backfill and transport of soil for leveling on project site;<br>iv. Emissions generated from operations of construction equipment and machinery on site such as trucks, excavators etc  | iii. For excavation and backfill: transport trucks should be covered with canvas, and construction site should be surrounded by fence to limit the dust amount generated affecting surrounding air environment.<br>iv. Construction equipment and machinery must have full registration and meet safety standards for working on site. Perform regular investigation and maintenance for on-site equipment and machinery.  |
| Surface and underground water impacts                   | Low             | v. Storm water runoff entraining contaminants on construction site;<br>vi. Domestic wastewater from worker's camps;<br>vii. Wastewater from construction process and equipment and machinery cleaning on site<br>viii. Drilling activities which can contaminate ground water. | v. Storm water on construction site should be collected and contaminants deposited or grease/oil salvaged before being discharged into environment.<br>vi. Arrange sanitary toilets for workers on site.<br>vii. Wastewater from construction process and equipment /machinery cleaning must be contaminants deposited and flow into grease traps before being discharged into environment<br>viii. There should be officer in charge of HSE on site, prepare site regulations, disseminate and instruct for workers to follow |
| Solid wastes and hazardous wastes                       | Low             | iv. Domestic wastes: generated from worker's camps such as plastic bags,   | iv. Employ competent agencies for domestic waste collection and conduct communication activities to raise workers'   |

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| Environmental Parameter                       | Level of Impact | Reason  | Proposed Mitigation Measures   |
|---|-----------------|---|--|
|   |                 | leftover food etc.;   | awareness on environmental sanitation.   |
|   |                 | v. Construction waste: generated from construction process;   | v. Construction waste should be utilized or recycled, unused residual materials can be gathered at the temporary stock pile on site and transported away once construction process finishes. |
|   |                 | vi. Hazardous wastes: oil and grease generated from operations of construction equipment and machinery , fluorescent bulbs, etc.                    | vi. Hazardous waste must be collected for being treated and disposed by a hired competent agency   |
| Noise and Vibration                           | Low             | iii. Noise generated from operations of transport trucks and equipment serving the construction process;  | iii. Regular check the construction equipment to limit noise generating level, constrain the use of horn in residential areas.   |
|   |                 | iv. Vibration generated by construction machinery and equipment on site   | iv. Only use equipment generating noise and vibration within permitted standards, consider using noise/vibration reduction device.   |
| Ecosystem                                     | Low             | As no ecologically sensitive place (protected area/reserved forest/Important flora and fauna species) lies within 2 km radius from the project site | Plantation activities will be carried out to compensate for any trees that may have to be cut.   |
| Health and Safety                             | Low             | Accidents and incidents happening during construction period  | There should be officer in charge of HSE on site, prepare site regulations, disseminate and instruct for workers to follow   |
| Environmental Impacts during operation period |                 |   |  |
| Air Impact                                    | Low             | iii. Air pollution due to gas emissions from operation of vehicles like cars and motorbikes of customers coming to the market;                      | iii. Implement communication activities to raise people's awareness on environmental protection: turn off engines and take the vehicles from and to parking lot.                             |
|   |                 | iv. Unpleasant odors from waste treatment system.   | iv. Waste is gathered and transported on daily basis to limit odor emissions during dissociation process.  |
| Wastewater                                    | Medium          | iv. Storm water runoff entraining contaminants  | iii. Storm water should be collected and there should be   |

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| Environmental Parameter               | Level of Impact | Reason   | Proposed Mitigation Measures   |
|---------------------------------------|-----------------|--|--|
|                                       |                 | from market site;  | measures to deposit contaminants before being discharged to environment.   |
|                                       |                 | v. Wastewater from public toilets in market site;  |  |
|                                       |                 | vi. Wastewater from operations of market stalls.   | iv. Build treatment system to treat wastewater from market operations and toilets.   |
| Solid wastes and hazardous waste      | Medium          | iii. Waste from market stalls such as plastic bags, leftover food, reject from selling process etc.; | iii. Sign contract with service provider to collect domestic waste in market area on daily basis. Conduct communication activities and remind traders to classify garbage from source to facilitate transport and treatment process.             |
|                                       |                 | iv. Hazardous waste: oil and grease from operations of equipment and machinery.                      | iv. Hazardous waste: register hazardous waste owner with competent agency; arrange roofed waste storage area according regulation, having system for leachate collection and sign contract with competent agencies for collection and treatment. |
| Noise and Vibration and other impacts | Low             | iii. Noise generated from vehicles of customers;   | iii. Control and coordinate traffic to restrict traffic accidents.   |
|                                       |                 | iv. More accidents due to increased traffic density.   | iv. There should be security group for market and market operation regulation in place to follow.  |

**Monitoring measures:**

- Contractors must prepare and commit to the implementation of mitigation measures. At the same time, they must also prepare detailed plan on environment monitoring and allocate resources for the implementation of the EMP;
- During operation, the MMC must regularly manage and monitor the market security and its environmental indicators;
- The PMU/PSU must closely monitor the contractor's compliances with environmental regulations as well as coordinate with local government to prepare and implement the EMP.

Based on initial findings on environment impacts as well as the EMP in this report, these following conclusions could be drawn:

- The market does not locate in an environmentally sensitive area;
- The market is under Category B according to ADB's environmental safeguards;

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- (iii) The report identified and assessed significant environmental impacts in three phases: preparation, construction and operation, along with mitigation measures, government and affected people (including vulnerable groups) consultations;
- (iv) EMP and impact monitoring plan were established to enable stakeholders' decision making with regular update on project progress;
- (v) Commitment to implement the detailed EMP must be considered as mandatory inputs of contractor during the procurement process;



## **APPENDIX 1. MINUTE OF IEE CONSULTATION MEETING AND PARTICIPANTS**

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### **THE SOCIALIST REPUBLIC OF VIETNAM Independence – Freedom - Happiness**

*Dong Ha, 24 June 2015*

### **CONSULTATION MEETING MINUTE INITIAL ENVIRONMENT EXAMINATION**

PROJECT: NIGHT MARKET CONSTRUCTION IN WARD 3- FUNDED BY ADB

#### **I. General information**

**1.1. Time:** 8.30 -11.30, 24 June 2015

**1.2. Location:** Ward 3 People's Committee

**1.3. Participants**

- Project management unit representatives: Mr. Nguyễn Văn Dũng - Technician
- Consultant representatives: Ms. Lê Thị Định - Environmental Consultant
- Local government representatives: Ms. Nguyễn Thị Phụng - President of Ward 3
- Local community representatives: Mr. Nguyễn Văn Trường - President of Ward 3 Fatherland Front
- Households/Businesses representatives: 17 persons (attached list).

#### **II. Meeting Content**

2.1. Ms. Nguyễn Thị Phụng introduces the participants.

2.2. Mr Nguyễn Văn Dũng introduces the meeting's purposes.

2.3. Consultant representatives present the following issues:

- General information about the project (objectives, location, scale, project's plan, etc.)
- The Project's investment portfolio and features.
- Assess the initial environmental impact of the project implementation including impacts on the natural environment (soil, water, air, ecosystem), and impacts on the socio-economy during project implementing phases.
- The project's beneficial impacts:
  - Create more job and business development opportunities for street vendors, local citizens, thereby increase income and stabilize the economy.
  - Promote the local and Vietnam specialty products to domestic and international tourists.
  - Promote local tourism development
  - Improve the pollution situation of ward 3 market
  - Consultant representatives present the environmental impacts during the following phases:
    - Construction phase: soil, water, air environment, etc.
    - Project's operating phase: soil, water, and air environments
- The project's impact mitigation measures and a number of initial conclusions on the project implementation.

2.4. Stakeholders' comments

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- Ward 3 PC Representative Mr. /Ms. Nguyễn Thị Phụng : Agree with the investment to promote local economic development. The contractor should note the safety measures, especially traffic safety measures due to the project area being very close to kindergartens and office buildings.
- Citizens representative Mr. /Ms. Nguyễn Văn Trường: Received Project's information, support the project, agree to the construction of market. Have the following comments:
- The related stakeholders need to ensure traffic safety due to the project area having kindergartens and office buildings.
- The construction contractor needs to have environmental impact mitigating plan and measures during the market's construction and operation.
- May the Client and agencies begin construction quickly so the works can be in operation soon.

**III. Conclusion**

- The Project Management Unit Representative (Mr. Nguyễn Văn Dũng) agrees with the environmental impacts mitigating measures during Project's construction and operation. PMU will also conduct inspections on the implementation of safety and environmental measures of contractor during the project.

**PMU REPRESENTATIVE****(Signed)****Nguyễn Văn Dũng****LOCAL AUTHORITY REPRESENTATIVE****(Signed)****Nguyễn Thị Phụng****LOCAL COMMUNITY REPRESENTATIVE****(Signed)****Nguyễn Văn Trường****CONSULTANT REPRESENTATIVES****(Signed)****Lê Thị Định**

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## Annex 1. List of local community representatives

| No. | Fullname           | Unit/Address                      | Signature |
|-----|--------------------|-----------------------------------|-----------|
| 1   | Do Hoang Son       | Quarter 7 – Ward 3 – Dong Ha City | Signed    |
| 2   | Tran Quoc Thanh    | Quarter 7 – Ward 3 – Dong Ha City | Signed    |
| 3   | Tran Quoc Khanh    | Quarter 7 – Ward 3 – Dong Ha City | Signed    |
| 4   | Nguyen Van Long    | Ward 3 – Dong Ha City             | Signed    |
| 5   | Ho Thi Lanh        | Quarter 1 – Ward 3 – Dong Ha City | Signed    |
| 6   | Le Thi Thanh Hai   | Quarter 1 – Ward 3 – Dong Ha City | Signed    |
| 7   | Nguyen Thi Linh    | Quarter 1 – Ward 3 – Dong Ha City | Signed    |
| 8   | Nguyen Thi Hien    | Quarter 2 – Ward 3 – Dong Ha City | Signed    |
| 9   | Nguyen Thuong      | Quarter 2 – Ward 3 – Dong Ha City | Signed    |
| 10  | Nguyen Thi Thuy    | Quarter 4 – Ward 3 – Dong Ha City | Signed    |
| 11  | Nguyen Thi Thu     | Quarter 4 – Ward 3 – Dong Ha City | Signed    |
| 12  | Nguyen Thi Gai     | Quarter 4 – Ward 3 – Dong Ha City | Signed    |
| 13  | Nguyen Thanh Tuyen | Quarter 3 – Ward 3 – Dong Ha City | Signed    |
| 14  | Nguyen Thi Phuong  | Quarter 42– Ward 3 – Dong Ha City | Signed    |
| 15  | Tran Thi Ai        | Quarter 1 – Ward 3 – Dong Ha City | Signed    |
| 16  | Nguyen Thi Loan    | Quarter 1 – Ward 3 – Dong Ha City | Signed    |
| 17  | Mr Hieu            | Quarter 9 – Ward 3 – Dong Ha City | Signed    |

**CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM**  
**Độc lập - Tự do - Hạnh phúc**

Đông Hà, ngày 24 tháng 6 năm 2015.

**BIÊN BẢN CUỘC HỌP THAM VẤN**  
**ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG BAN ĐẦU**

**DỰ ÁN: XÂY DỰNG CHỢ ĐÊM TẠI PHƯỜNG 3 - DO ADB TÀI TRỢ**

**I. Thông tin chung.**

**Thời gian:**

Bắt đầu: 8 h. 30' ngày 24 tháng 6 năm 2015

Kết thúc: 11 h. 45' ngày 24 tháng 6 năm 2015

**Địa điểm:** Tại UBND phường 3.

**II. Thành phần tham gia**

**1. Đại diện Ban quản lý dự án:**

- Ông/bà: Nguyễn Văn Dũng Chức vụ: Cán bộ kỹ thuật
- Ông/bà: ..... Chức vụ: .....
- Ông/bà: ..... Chức vụ: .....
- Ông/bà: ..... Chức vụ: .....

**2. Đại diện đơn vị tư vấn**

- Ông/bà: Lê Thị Đình Chức vụ: Tư vấn môi trường
- Ông/bà: ..... Chức vụ: .....

**3. Đại diện chính quyền địa phương:**

- Ông/bà: Nguyễn Thị Phụng Chức vụ: Chủ tịch
- Ông/bà: ..... Chức vụ: .....
- Ông/bà: ..... Chức vụ: .....
- Ông/bà: ..... Chức vụ: .....
- Ông/bà: ..... Chức vụ: .....
- Ông/bà: ..... Chức vụ: .....

**4. Đại diện các hội/đoàn thể địa phương**

- Ông/bà: Nguyễn Văn Dũng Chức vụ: Chủ tịch UBND Phường 3
- Ông/bà: ..... Chức vụ: .....
- Ông/bà: ..... Chức vụ: .....

**5. Đại diện các hộ gia đình/tổ chức:..... người (danh sách kèm theo).**

**III. Nội dung cuộc họp.**

**1. Đại diện UBND phường 3.**

Ông/bà: Nguyễn Thị Phụng giới thiệu thành phần cuộc họp.

**2. Đại diện Ban Quản lý Dự án.....**

Ông/bà: Nguyễn Văn Dũng giới thiệu mục đích cuộc họp.

**3. Đại diện Đơn vị tư vấn trình bày các vấn đề sau:**



- Giới thiệu chung về dự án (mục tiêu, vị trí, quy mô, kế hoạch của dự án...)
- Các hạng mục đầu tư, các đặc điểm của Dự án.
- Đánh giá sơ bộ các tác động môi trường của việc thực hiện dự án bao gồm các tác động đối với môi trường tự nhiên (đất, nước, không khí, sinh thái), các tác động đối với kinh tế xã hội trong các giai đoạn thực hiện dự án.
- Đại diện tư vấn trình bày về các tác động có lợi của dự án:
  - + Tạo thêm cơ hội việc làm, phát triển kinh doanh của người bán hàng rong, người dân địa phương, từ đó tăng thu nhập và ổn định kinh tế.
  - + Quảng bá các sản phẩm đặc sản của địa phương và Việt Nam đến các du khách trong và ngoài nước.
  - + Thúc đẩy phát triển du lịch của địa phương
  - + Cải thiện tình trạng ô nhiễm môi trường của chợ phường 3
- Đại diện tư vấn trình bày các tác động đến môi trường trong các giai đoạn:
  - + Giai đoạn thi công: môi trường đất, nước, không khí, ...
  - + Giai đoạn vận hành của dự án: môi trường đất, nước, không khí
- Tư vấn trình bày về các biện pháp giảm thiểu các tác động của dự án và một số kết luận sơ bộ về việc thực hiện dự án.

#### IV. Các ý kiến tham gia của các bên

Đại diện UBND phường 3 Ông/bà Nguyễn Thị Nhung.....: Nhất trí với việc đầu tư xây dựng công trình để thúc đẩy kinh tế địa phương phát triển. Lưu ý nhà thầu các biện pháp đảm bảo an toàn, nhất là các biện pháp an toàn giao thông do khu vực đi qua dự án có trường mầm non và các cơ quan.

Đại diện các hội/đoàn thể: Ông/bà: Nguyễn Văn Tiến.....: Đã nhận được thông tin của Dự án, ủng hộ việc xây dựng dự án, nhất trí với chủ trương đầu tư xây dựng chợ. Một số ý kiến như sau:

- Đề nghị các đơn vị liên quan đảm bảo các vấn đề về an toàn giao thông do khu vực dự án có các cơ quan như trường mầm non, trường tiểu học.
- Nhà thầu thi công cần có kế hoạch và các biện pháp giảm thiểu các tác động môi trường trong quá trình xây dựng và vận hành chợ.
- Mong chủ đầu tư và các đơn vị nhanh chóng thi công để công trình sớm đưa vào vận hành.

**V. Ý kiến kết luận của Ban quản lý Dự án:**

Đại diện Ban Quản lý dự án Ông/bà: Nguyễn Văn Dũng.....đồng ý với các biện pháp giảm thiểu các tác động tới môi trường khi xây dựng và vận hành Dự án. BQL cũng sẽ thường xuyên kiểm tra việc thực hiện các công tác an toàn và môi trường của nhà thầu khi thực hiện dự án.

**ĐẠI DIỆN BQL DỰ ÁN**



Nguyễn Văn Dũng

**ĐẠI DIỆN CÁC HỘI/ĐOÀN THỂ ĐỊA**

**PHƯỜNG**



Nguyễn Văn Trường

**ĐẠI DIỆN UBND PHƯỜNG 3**




**TM. ỦY BAN NHÂN DÂN  
CHỦ TỊCH**



Nguyễn Thị Phụng

**ĐẠI DIỆN ĐƠN VỊ TƯ VẤN**



Lê Thị Anh



Phụ lục 1: Danh sách các hộ dân tham gia họp tham vấn Đánh giá tác động môi trường ban đầu

| TT | Họ và tên          | Địa chỉ                    | Chữ ký |
|----|--------------------|----------------------------|--------|
| 1  | Đỗ Hoàng Sơn       | KP7- Phường 3- Tp. Đông Hà | Sơn    |
| 2  | Trần Quốc Thanh    | KP7- Phường 3- Tp. Đông Hà | Thanh  |
| 3  | Trần Quốc Khanh    | KP7- Phường 3- Tp. Đông Hà | Khanh  |
| 4  | Nguyễn Văn Long    | Phường 3- Tp. Đông Hà      | Long   |
| 5  | Hồ Thị Lành        | KP1- Phường 3- Tp. Đông Hà | Lành   |
| 6  | Lê Thị Thanh Hải   | KP1- Phường 3- Tp. Đông Hà | Hải    |
| 7  | Nguyễn Thị Linh    | KP1- Phường 3- Tp. Đông Hà | Linh   |
| 8  | Nguyễn Thị Hiến    | KP2- Phường 3- Tp. Đông Hà | Hiến   |
| 9  | Nguyễn Thương      | KP2- Phường 3- Tp. Đông Hà | Thương |
| 10 | Nguyễn Thị Thúy    | KP4- Phường 3- Tp. Đông Hà | Thúy   |
| 11 | Nguyễn Thị Thu     | KP4- Phường 3- Tp. Đông Hà | Thu    |
| 12 | Nguyễn Thị Gái     | KP4- Phường 3- Tp. Đông Hà | Gái    |
| 13 | Nguyễn Thanh Tuyền | KP3- Phường 3- Tp. Đông Hà | Tuyền  |
| 14 | Nguyễn Thị Phượng  | KP2- Phường 3- Tp. Đông Hà | Phượng |
| 15 | Trần Thị Ái        | KP1- Phường 3- Tp. Đông Hà | Ái     |
| 16 | Nguyễn Thị Loan    | KP1- Phường 3- Tp. Đông Hà | Loan   |
| 17 | Anh Hiếu           | KP9- Phường 3- Tp. Đông Hà | Hiếu   |

## APPENDIX 2. RAPID ENVIRONMENTAL ASSESSMENT (REA) CHECKLIST

### Rapid Environmental Assessment (REA) Checklist

|                               |  |
|-------------------------------|--|
| <b>Country/Project Title:</b> | Grant-9173 REG: Greater Mekong Sub-region: Livelihood Support for Corridor Towns (Grant- |
| <b>Sector Division:</b>       | Construction   |

| Screening Questions  | Yes | No | Remarks  |
|--|-----|----|--|
| <b>A. Project Siting</b><br>Is the Project area adjacent to or within any of the following environmentally sensitive areas?                              |     |    | The Project is implemented in Ward 3 – Dong Ha City, which is under the city's planned development area  |
| ▪ Cultural heritage site   |     | x  |  |
| ▪ Legally protected Area (core zone or buffer zone)  |     | x  |  |
| ▪ Wetland  |     | x  |  |
| ▪ Mangrove   |     | x  |  |
| ▪ Estuarine  |     | x  |  |
| ▪ Special area for protecting biodiversity   |     | x  |  |
| <b>B. Potential Environmental Impacts</b><br>Will the Project cause...   |     |    |  |
| ▪ Impairment of historical/cultural areas; disfiguration of landscape or potential loss/damage to physical cultural resources?                           |     | x  | ▪ The project area is not close to historical/cultural heritages, hence there is no presence of these impacts.   |
| ▪ Disturbance to precious ecology (e.g. sensitive or protected areas)?   |     | x  | ▪ There is no impacts to ecology as the project is implemented in cleared site.  |
| ▪ Alteration of surface water hydrology of waterways resulting in increased sediment in streams affected by increased soil erosion at construction site? |     | x  | ▪ Surface water and sediments are collected before being discharged to the environment.  |
| ▪ Deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?              |     | x  | ▪ Wastewater is collected and treated before being released to the environment.<br>▪ There is a sanitation management plan as well as fuel and material used.  |
| ▪ Increased air pollution due to project construction and operation?   | x   |    | Using machines and equipment that meet emission standards.   |
| ▪ Increased traffic flow in the area during the project implementation and operation periods.  |     |    | ▪ During construction period: there should be a management plan in collaboration with local government.<br>▪ During operation period: PMU in collaboration with local authorities and traffic polices to ensure project operation. |



# Initial Environmental Examination Report

Grant-9173 REG: Greater Mekong Sub region: Livelihood Support for Corridor Towns

Detailed Engineering and Construction Supervision Feasibility Study and Initial Environmental Examination Consulting Services for the Dong Ha Ward 3 Market (VIE) (46074-001)

| Screening Questions  | Yes | No | Remarks  |
|--|-----|----|--|
| ▪ Noise and vibration due to project construction or operation?  | x   |    | <ul style="list-style-type: none"> <li>Use equipment that emits least noise</li> <li>Arrange proper construction time, ensuring not to affect local residents.</li> <li>Construct surrounding walls to reduce noises and vibration, regularly inspect equipment and machines.</li> </ul>                 |
| ▪ Involuntary resettlement of people? (physical displacement and/or economic displacement)   |     | x  | <ul style="list-style-type: none"> <li>There is no impacts on resettlement.</li> </ul>   |
| ▪ Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?   |     | x  | <ul style="list-style-type: none"> <li>The vulnerable groups will benefit from the project, therefore there is no harmful impacts.</li> </ul>  |
| ▪ Poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases (such as STI's and HIV/AIDS) from workers to local populations?  |     | x  | <ul style="list-style-type: none"> <li>Solid wastes will be collected and treated in accordance with regulations, ensuring not to cause surrounding environment pollution.</li> </ul>  |
| ▪ Creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents?  |     | x  | <ul style="list-style-type: none"> <li>Sanitation at work camps and the market after construction will be guaranteed as in the EMP.</li> </ul>   |
| ▪ Social conflicts if workers from other regions or countries are hired?   |     | x  | <ul style="list-style-type: none"> <li>Prioritize use of local labors to limit the difference in customs which causes unnecessary disputes/conflicts.</li> </ul>   |
| ▪ Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?  | x   |    | <ul style="list-style-type: none"> <li>Consider and estimate the number of consumers so as to make proper infrastructure improvement that can meet the requirements.</li> </ul>  |
| ▪ Risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?   |     | x  | <ul style="list-style-type: none"> <li>There should be regulation billboards in construction site and workers as well as managers should be trained on safety and incident responses.</li> </ul>   |
| ▪ Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?   |     | x  | <ul style="list-style-type: none"> <li>Materials under the list of dangers are not allowed to use in the project.</li> <li>Explosives are not allowed to use in construction period.</li> <li>Materials used in construction and operation periods should be stored in a separated warehouse.</li> </ul> |
| ▪ Community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning? |     | x  | <ul style="list-style-type: none"> <li>There should be warning signs in the dangerous areas and only people in charger are allowed to access.</li> </ul>   |
| ▪ Generation of solid waste and/or hazardous waste?  | x   |    | <ul style="list-style-type: none"> <li>Solid wastes will be collected and treated by the Urban Environment Company (URENCO)</li> <li>Hazardous waste will be collected, stored and treated under the regulations.</li> </ul>   |
| ▪ Use of chemicals?  |     | x  | <ul style="list-style-type: none"> <li>Using allowable chemicals.</li> <li>There should be plan for use and management and warehoused as regulated.</li> </ul>   |
| ▪ Generation of wastewater during construction or operation?   |     | x  | <ul style="list-style-type: none"> <li>Wastewater during construction will be pre-treated before being discharged into the environment.</li> <li>Wastewater during operation will be collected and treated by the project's wastewater treatment system.</li> </ul>                                      |

## APPENDIX 3. SOME IMAGES OF THE PROJECT AREA

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Picture 1, 2. Location for market construction



Picture 3. Consultation meeting with residents of Ward 3



Picture 4. Road to be constructed to lead in the project area

## APPENDIX 4. CLIMATE RISK SCREENING

### A Project Climate Risk Assessment and Management Reporting Template

#### I. Basic Project Information

|  |
|--|
| <b>Project Title:</b> Grant-9173 REG: Greater Mekong Sub-region: Livelihood Support for Corridor Towns   |
| <b>Project Budget:</b>   |
| <b>Location:</b> Ward 3, Dong Ha City, Quang Tri   |
| <b>Sector:</b> Construction  |
| <b>Theme:</b>  |
| <b>Brief Description:</b> <ul style="list-style-type: none"> <li>Flooding risks as the project area can be affected by storms/rain.</li> <li>The life of construction materials can be reduced due to not meeting the conditions of environment changes.</li> <li>The structures of works can be affected by the extreme weather conditions as rain, storms, sunshine, etc.</li> </ul> |

#### II. Summary of Climate Risk Screening and Assessment

|   |   |
|---|---|
| <b>A. The impacts of climate changes to project:</b>  |   |
| <i>Construction of market:</i> <ol style="list-style-type: none"> <li>Construction of main house</li> <li>Construction of secondary structures (parking places, wastewater treatment areas, waste disposal sites, etc.)</li> </ol>  | <i>Climate conditions:</i> <ol style="list-style-type: none"> <li>Seasonal temperature changes with the big amplitude;</li> <li>Air humidity can greatly change in the year.</li> <li>There will be flooding in the rainy season in the area; the rainfall increase sharply in the short period of time.</li> </ol>   |
| <b>B. Climate Risk Screening</b>  |   |
| <b>Risks:</b> <ol style="list-style-type: none"> <li>Increased temperature</li> <li>Increased rainfall</li> <li>Huge humidity changes</li> <li>Gas house emissions</li> </ol>   | <b>Description:</b> <ol style="list-style-type: none"> <li>The annual average temperature changes significantly in both temperature (high and low) and the amplitude in comparison with the recent statistical data.</li> <li>The actual rainfall goes far from the annual average monitored data, the rainfall increases sharply in the short period of time can cause local flooding and affects project activities.</li> <li>The air humidity sees the big changes against the monitored data over the past periods.</li> <li>The carbon gas emitted from project construction and operation periods.</li> </ol> |
| <b>Climate Risk Classification:</b> <i>Low</i><br><i>According to statistical data on the extreme conditions (rain, sunshine, humidity, etc.) in the area, the change degree and the amplitude are not high, therefore, in the short time, there is no negative impacts to the projects.</i>  |   |
| <b>C. Climate risk assessment</b><br>The climate risk assessment is based on possible impacts of the extreme weather conditions (through the climate change scenarios: increased rainfall and humidity, etc.). Hence, preparing assessments on the changing possibility of these conditions in order to identify the level of impacts to the project, then propose proper measures, solutions on management, construction and structures. |   |

#### III. Climate Risk Management Response within the Project

|  |
|--|
| <ol style="list-style-type: none"> <li>The project is implemented in the cleared site whose elevation is equal to that of Thanh Co street, with installed drainage systems synchronous with the drainage system in the area, the providing pumping system in case of local flooding.</li> <li>Adjust the structures of the works to ensure that the works is not affected by storms, rain; the selected material is resilient with the changes of temperature and humidity in the area.</li> <li>Using machines and equipment that meet standards and regularly inspects and maintain these equipment.</li> <li>For other factors (such as earthquakes, rise sea level, etc.), with the low possibility of occurrence, these factors can be guaranteed by appropriately applied construction standards.</li> </ol> |
|--|

## **APPENDIX 5. TEMPLATE FOR MONITORING REPORT**

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# Safeguard Monitoring Report

## Summary:

### Project Introduction, including:

- Project general information;
- Project components and expected outputs;
- Summary of EMP/RP Implementation;
- Description of monitoring activities carried out (e.g. field visits, survey questionnaire, public consultation meetings, focus group discussions, etc);
- Key issues, any corrective actions already taken, and any grievances;
- Recommendations.

## Safeguards Monitoring Report

(to be included in the annex/appendix of the *main Report*)

### 1. Introduction and Project Overview

|  |  |
|--|--|
| <b>Project Number and Title:</b>                     |  |
| <b>Safeguards Category</b>                           | Environment  |
| <b>Reporting period:</b>                             |  |
| <b>Last report date:</b>                             |  |
| <b>Key sub-project activities since last report:</b> | <p>This section can include, among others, the following:</p> <ul style="list-style-type: none"><li>• Activities of Proponent</li><li>• Progress of Work (% physical completion)</li><li>• Changes of Surrounding Environment</li><li>• Status of Permits / Consents</li></ul> |
| <b>Report prepared by:</b>                           |  |

### 2. Environmental Performance Monitoring

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

| <b>EMAP Requirements</b>  | <b>Compliance Status (Yes, No, Partial)</b>                                 | <b>Comment or Reasons for Non-Compliance</b> | <b>Issues for Further Action</b> |
|---|---|--|----------------------------------|
| Use environmental impact as main heading and EMAP as listing (see example below)  | Use EMoP list as basis for rating/evaluating compliance (see example below) |  |                                  |
| <ul style="list-style-type: none"><li>• Reduce gas emissions during the implementation of project construction</li></ul>                            |   |  |                                  |
| <ul style="list-style-type: none"><li>• Domestic and construction wastewater should be pre-treated before discharge into the environment.</li></ul> |   |  |                                  |

|  |  |  |  |
|--|--|--|--|
| • On-site safety during construction         |  |  |  |
| • Traffic management plan                    |  |  |  |
| • Hazardous waste management                 |  |  |  |
| • Environmental management of workers' camps |  |  |  |
| • ...  |  |  |  |

b. Issues for Further Action

(Including issues mentioned in previous reports in order to evaluate the implementation as well as new findings of this monitoring.)

| Issue   | Required Action | Responsibility and Timing | Resolution |
|---|-----------------|---------------------------|------------|
| <b>Old Issues from Previous Reports</b>   |                 |                           |            |
| List of EMoP measures or activities not completed (last column of previous table) |                 |                           |            |
|   |                 |                           |            |
|   |                 |                           |            |
| <b>New Issues from This Report</b>  |                 |                           |            |
|   |                 |                           |            |
|   |                 |                           |            |
|   |                 |                           |            |

c. Other activities

- Other issues not covered by EMAP/EMoP
- Environmental monitoring as required by GOI (e.g., air quality, water sampling)

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

a. OHS for worker

| Issue                                   | Required Action | Responsibility and Timing | Resolution |
|---|-----------------|---------------------------|------------|
| <b>Old Issues from Previous Reports</b> |                 |                           |            |
|   |                 |                           |            |
|   |                 |                           |            |
|   |                 |                           |            |

| New Issues from This Report |  |  |  |
|-----------------------------|--|--|--|
|                             |  |  |  |
|                             |  |  |  |
|                             |  |  |  |

b. Public Safety

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

#### 4. Information Disclosure and Socialization including Capability Building

- Field Visits (sites visited, dates, persons met)
- Public Consultations and meetings (Date; time; location; agenda; number of participants disaggregated by sex and ethnic group, not including project staff; Issues raised by participants and how these were addressed by the project team)
- Training (Nature of training, number of participants disaggregated by gender and ethnicity, date, location, etc.)
- Press/Media Releases

#### 5. Grievance Redress Mechanism

##### Summary:

- Number of new grievances, if any, since last monitoring period: \_\_\_\_\_
- Number of grievances resolved: \_\_\_\_\_
- Number of outstanding grievances: \_\_\_\_\_

| Type of Grievance                | Details<br>(Date, person, address,<br>contact details, etc.) | Required Action,<br>Responsibility and<br>Timing | Resolution |
|----------------------------------|--|--|------------|
| Old Issues from Previous Reports |  |  |            |
|                                  |  |  |            |

|                                    |  |  |  |
|------------------------------------|--|--|--|
|                                    |  |  |  |
|                                    |  |  |  |
| <b>New Issues from This Report</b> |  |  |  |
|                                    |  |  |  |
|                                    |  |  |  |
|                                    |  |  |  |

## 6. Conclusion

- Important results from the implementation of EMAP/EMoP and RP monitoring
- Recommendations to improve EMAP/EMoP and RP management, implementation, and monitoring

## 7. Attachments

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



## **APPENDIX 6. A CHECKLIST FOR PRELIMINARY CLIMATE RISK SCREENING**

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## A Checklist for Preliminary Climate Risk Screening

**Country/Project Title:** Grant-9173 REG: Greater Mekong Sub-region: Livelihood Support for Corridor Towns

**Sector: Construction**

| Screening Questions                   |   | Score | Remarks <sup>1</sup>  |
|---------------------------------------|---|-------|---|
| <b>Location and Design of project</b> | Taking into account the factors of flood peak, annual rainfall in the area when selecting project locations.  | 0     | <ul style="list-style-type: none"> <li>▪ CPC already considered the flood peak and have the options of selecting construction site so that the works' elevation is above the flood peak to avoid flooding.</li> <li>▪ The rainfall changes are assessed by Consultants in Section IV.1.2</li> </ul> |
|                                       | Taking into account the factors of extreme weather conditions, sunlight, rain, quality of ground water affected when selecting structures and materials for the project.          | 1     | <ul style="list-style-type: none"> <li>▪ The Consultants already assessed water quality and some weather factors as the hours of sunshine (section IV.1.2) for selecting of appropriate materials and structures (mentioned in basic design of FS)</li> </ul>                                       |
| <b>Materials and Maintenance</b>      | Based on the weather factors such as temperature changes, rainfall, the hours of sunshine in a year to select proper materials/inputs.  | 0     | <ul style="list-style-type: none"> <li>▪ The Consultants reviewed Section VI.1.2 of IEE and decided to select materials as in the basic design of FS.</li> </ul>  |
|                                       | Taking into account the likely future climate conditions as flooding possibility, the hours of sunshine and average temperature to propose costs for mitigating negative impacts. | 1     | <ul style="list-style-type: none"> <li>▪ In case of local flooding, the Consultants proposed to use pumps for drainage.</li> <li>▪ The solutions of ventilation and heat insulation are also proposed in detailed designs.</li> </ul>   |
| <b>Performance of project outputs</b> | Consider the extreme weather conditions to identify costs for negative impacts mitigation.  |       | <ul style="list-style-type: none"> <li>▪ Mitigation costs will be calculated and managed by PMU during project operation period.</li> </ul>   |
|                                       | Total score   | 3     | <ul style="list-style-type: none"> <li>▪ IEE Consultants and designers already took into account the weather/climate conditions and proposed proper alternatives.</li> </ul>  |

Options for answers and corresponding score are provided below:

| Response   | Score |
|------------|-------|
| Not Likely | 0     |

<sup>1</sup> If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

|             |   |
|-------------|---|
| Likely      | 1 |
| Very Likely | 2 |

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response, will be categorized as high risk project.

**Result of Initial Screening (Low, Medium, High): Low**

**Other Comments:** The project already took into account the weather conditions in the area and preliminarily assessed weather and climate situation as well as the extreme conditions (rain, storms, etc.) to propose design options, construction materials and estimated costs for reducing or mitigating negative impacts/risks.

**Prepared by:** DED Consultants