ELECTRICITY OF VIETNAM
POWER COMPANY NO.1

REHABILITATION AND EXPANSION OF MV
DISTRIBUTION SYSTEM OF HAIDUONG CITY PROJECT

ENVIRONMENTAL IMPACT ASSESSMENT
(EIA)

Prepared by:
POWER NETWORK PROJECT MANAGEMENT BOARD

June, 2003

FILE COPY
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4. Nguyen Trong Binh  Power Construction Consulting Center - PC1
EXECUTIVE SUMMARY

Introduction

This report is prepared for implementing of the Rehabilitation and Expansion of MV distribution system of Hai Duong city – Hai Duong Province Project.

Now, Hai Duong city – Hai Duong province is only supplied power by the 110KV Pha Lai – Hai Duong transmission line that provide power for 110KV Dong Nien substations. The capacity of 110kV Dong Nien Substation is 105 MVA.

The Hai Duong network is important components of the Northern power network of Vietnam.

The objective of the Rehabilitation and Expansion of MV distribution system of Hai Duong city – Hai Duong Province Project is increasing the national power network for Hai Duong province (supplying power for 110kV Dong Nien substation); enhancing the reliability and safety of transmission in the power network for the additional charges of the Hai Duong province. Thus, the project will speed up the electrification process and agricultural and industrial development for Hai Duong province.

This report is prepared for defining, assessing and forecasting main effects of this project on environment during design, implementation and operation stage; together we promote mitigation measures for negative effects and a plan of Environmental Management and Control for the project.

Project Description

- The “Rehabilitation and Expansion of distribution systems of Hai Duong city – Hai Duong Province Project” will be constructed and reconstructed of total 106,366.00 m of MV transmission line and 246 substations. In which:

<table>
<thead>
<tr>
<th>Description</th>
<th>Total length (m)</th>
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<tbody>
<tr>
<td>Construction</td>
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<td>Salvage line</td>
<td>M 9,025</td>
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<tr>
<td>Substation/capacity</td>
<td>Unit/KVA 246/65,245</td>
</tr>
</tbody>
</table>

Details of scope of the project are described in annex 1.

- The Resettlement Action Plan for the project was conducted. The project main impacts are:
  - There will be a total of 85 affected households (320 persons), of which:
    - 19 households with parcels for permanent land acquisition and trees/crops:
    - 66 households with parcels for temporary land acquisition and trees/crops:
    - No households with partial impact on houses and trees/crops.
  - No households will have to be relocated to other places.
- There is no household with more than 25% of their total residential and agricultural lands their holdings affected.
- Total area of land permanently acquired: 42,897.83 m²
- Total area of land temporarily affected: 357,481.90 m²

The Right of Way (ROW), according to the regulation are: 8m wide for the MV T/Ls, respectively from which all housing and building would be removed and all trees higher than 4m must be cut.

**Legal, policies and administration management**

The EIA is based on:
- Feasibilities studies report of each project component, approved by EVN;
- Agreement by the Hai Duong's people committee where the project is located or traversed on line route and substation located.
- Environmental legal framework as follow:

**Vietnamese legal framework:**
- Laws of forest protection and forest development:
  - Government Decree N° 175/CP dated 18/10/1994 guiding the implementation of the Law on Environmental Protection.
- National Criteria on water quality, air quality, noise and on pollution
- Codes on Electrical Equipment Installation - part II – Power transmission line and distribution system No. 11 TCN 19 - 84.

**WB procedures on environment impact assessment:**
- Environmental Assessment (OP 4.01. BP 4.01. GP 4.01).
- Public Disclosure (BP. 17.50)
- Pest Management (OP 4.09).
- Cultural Property (OPN 11.03).

**Environmental management**

Presently, the responsibility on environmental management is arranged as follows:
- Ministry of Science - Technology and Environment (MOSTE) of Vietnam is the central government environmental management, responsible for the guidance for the preparation, appraisal and supervision of the implementation of EIA report for the investment projects for the project classified as the project of type I.
- Department of Science - Technology and Environment (DOSTE) is responsible on environment in each province.

- EVN, through Department of Science, Technology, Environment and Telecommunication, is responsible for supervising and guiding environmental management and protection in power sector as a whole.

- For the distribution projects, like the RE, the project owner is Power Company, therefore during project preparation and construction, PCI has authorized its Project Management Unit (PMU) to be in charge of project management. After commissioning, the project will be handed over to the Provincial Power Services, where the project are located, for the operation and maintenance. The Power Services will be in charge of environmental management during operation period.

**Project Impacts on Environment.**

The project impacts on the environment can be divided into 4 types:

*Impact on physical environment*

The project could cause some impacts on water, air and land. These include runoff and sedimentation from grading for line and substation facilities; loss of land and increase in soil erosion due to placement of towers and substations; oil contamination from construction equipment; dust, noise and vibration due to material transportation and construction works; disposal of installation and construction materials.

*Impact on biological and ecological system*

The project may cause some negative impacts on biological and ecosystem due to site clearance and maintenance of the project Right of Way (ROW) and substation site. The impacts are effects of clearing and tree cutting, control of vegetable in ROW as all trees of or would be higher 4m in the line ROW must be cut down. The project can also open up more remote lands to human activities and construction of ROW can result in the lost and fragmentation of habitats and vegetation along the ROW.

The total area of the project ROWs is 357,481.90 m², of which 162,543.56 m² is agricultural land; 102,829.82 m² is garden and residential land, the remaining 92,108.52 m² is waste land and road-side.

*Impact on human:

The project could cause impact on the residential areas as 85 households will be affected by the transmission line. The construction in the residential areas would have negative short-term impacts on air and water quality. Some disruption of waterways and transportation would occur during construction if disposal of waste materials not managed properly. Pollution of dust, noise to human residential area may occur during construction period. The impacts are of a short term nature and would not be a considerable impact if the construction will be managed properly and can be monitored against the national environmental standards.

In operation phase of the Project, the electro-magnetic field intensity produced under the design condition meet the Vietnamese recommended standard (less than 5 kV/m). In case some electro-magnetic intensity data under outgoing and ingoing lines of the
substation are more than 5 kV/m, there is no dwelling in the area though without impact incurred on the residents.

Mitigation Measures:
Mitigation measures to reduce the project impacts are to be carried out in 3 stages: design, construction and operation.

During the design of the layout of the lines, the design need to be concurred and cleared by the local authority to minimize the adverse impacts, particularly for the resettlement. In the design phase, the alternatives for each component have been considered and selected to ensure they have the lowest impacts on ecosystem. The route have been discussed and agreed with the local authorities and relevant organisations. The substation will be equipped with all necessary protection devices. No transformers with PCB will be used in the project.

In construction stage, mitigation measures include control on tree cutting, ROW clearance and access road; control of soil erosion; ensure safety regulations in place and mine clearance before construction start; health care regulation for workers in camps and other measures. All measures are to be included in the bidding documents for works.

During operation stage, mitigation measures include control of ROW maintenance, access road to sensitive areas, control of fire hazards and ensure safety for workers and local residents.

Analysis of Alternatives:
The analyses of the alternative is based on the principle of maximizing the customers' services, and minimizing the impact on the environment, including the lowest impact on the property of the PAH.

Public Participation and Information Dissemination:
Public consultation for the project was conducted during the period from September to October 2002.

The draft EIA and RAP of the project were sent to concerned PPC for clearance and to Hai Duong Power Company and PNPMB for public display from May 2003.

Public consultation was carried out by means of holding talks and sending out investigation form. Places involved in the project were investigated in Hai Duong city of Hai Duong province.

Consultants from EVN have met with representatives of local Government (Commune, district, provincial People Committees), local people association such as Women Union, Farmer association etc. in the Project area to inform and receive their comments on three main issues:
- Project objectives, scope and components;
- Potential environmental and Socio economic impact of the Project;
- Mitigation measures applied during different phases of the Project.
The public comments on the above mentioned issues are very positive. They all agreed that the Project will effectively increase quality of life of the local peoples. The potential impacts are quite clear to them and they are willing to help Project's owner to implement suggested mitigation measures such as traffic management, solid waste disposal, noise and dust elimination.... There is no negative comment on the raised issues.

Process of public consultation was carried out in Hai Duong provinces. Minutes of meeting between Consultants and local people was attached in Annex 7.

Environment Management Plan

The EMP consists of mitigation, monitoring measures to be taken during implementation and operation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels.

The environmental management plan has been prepared for construction and operation period of the Project. Environmental management during construction period is implemented by the Project Management Unit (PMU). PMU is responsible for guiding and supervising Contractor during application of mitigation measures as well as environmental monitoring. During the operation phase, the environmental issue will be taken care by Provincials Power Service. Accredited institutions will be hired to measure the environmental quality along transmission lines and substations. Report on environmental monitoring will be made and submitted to relevant responsible authorities. Refer to Table 1 for mitigating measures and the cost applied for the Project. Refer to Table 2 for monitoring plan and cost for the Project.

The EMP also includes plan and costs for institutional strengthening such as training on environmental issues for the Project's staffs as well as related institutions, workers involved.

Table 1. Summarize of main Mitigating measures applied for the Project

<table>
<thead>
<tr>
<th>Phase</th>
<th>Issue</th>
<th>Mitigating measures</th>
<th>Institutional Responsibility</th>
<th>Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>Noise</td>
<td>- Use low noise equipment</td>
<td>Contractor</td>
<td>PMB and local DOSTEs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Working in the permitted hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dust</td>
<td>Guard fence and water spray</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AgriculturaL</td>
<td>Recover damaged vegetation timely when the construction ends</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ecology</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Apply Vietnamese standard TCVN 5949-1998 for the Standard of noise applied for public and residential areas.
<table>
<thead>
<tr>
<th>Phase</th>
<th>Issue</th>
<th>Mitigating measures</th>
<th>Institutional Responsibility</th>
<th>Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Occupat</td>
<td>Minimize land occupation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic disturbance</td>
<td>Excavating in proper time (evening and night time) and shortest duration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid waste disposal</td>
<td>Contract with local environment and hygiene agencies for removal and proper disposal for another construction purposes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training on environme</td>
<td>Educate constructors, Project's staffs, local people</td>
<td>PMB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation</td>
<td>- Equipment noise is conformed with Vietnamese Standards;</td>
<td>PMB</td>
<td>PCs and local DOSTEs</td>
<td></td>
</tr>
<tr>
<td>Noise</td>
<td>- Consolidated enclosures to absorb dust and reduce noise</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMF</td>
<td>- Use transforming devices conform to standards;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Select height of the power the power distributing structure conform to design requirement phase earth and phase-phase distance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training on environme</td>
<td>Strengthen education to local residents, PC's staffs.</td>
<td>PCs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Main features of Monitoring plan of the EMP for the Project
<table>
<thead>
<tr>
<th>Phase</th>
<th>Issue</th>
<th>Monitoring cost (VDN)</th>
<th>Institutional responsibility</th>
<th>Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>Noise (100 samples/city; 50,000 VND/sample)</td>
<td>5,000,000</td>
<td>Accredited institution will be hired by PMB</td>
<td>PMB and local Department for Science, Technology and Environment (DOSTE)</td>
</tr>
<tr>
<td></td>
<td>Dust (100 sample/city; 50,000 VND/sample)</td>
<td>5,000,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td></td>
<td>10,000,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation</td>
<td>Tree cutting and soil erosion</td>
<td>7,000,000</td>
<td>Accredited institution and independent Consultant will be hired by Provincial Power Service</td>
<td>Local Department for Science, Technology and Environment (DOSTE)</td>
</tr>
<tr>
<td>Subtotal</td>
<td></td>
<td>7,000,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>17,000,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Noise monitoring is once during construction period mainly monitoring construction noise during construction; In case residents near transmission lines complain, measurement will be made at that time.

- Dust monitoring is once during construction period and once every half-year during operation period.

- Electric and magnetic field will be monitored once per year during operation period; EMF will be measured at 1 m outside the boundary (ROW).

All measurements should be made on the site along Project’s transmission lines.
CHAPTER 1: INTRODUCTION

1. Introduction

The project of rehabilitation and expansion of MV distribution systems of Hai Duong city - Hai Duong province including rehabilitation the 22kV distribution. It is based on the development demand of Hai Duong province up to 2005 and forecast to 2010. This power network will supply sufficiently, safe and stable power for its course of socio-economic development.

According to the stipulations of Ministry of Science, Technology and Environment (MOSTE) of Vietnam, the power transmission lines of 35 - 220 kV are classified as type II project in terms of environmental consideration. The environmental evaluation of 110 kV transmission line aims at:

- Assessing the current environment status of the region, where the project is located.
- Identification of potential impacts to the environment in the case of the project will be developed (in the period of construction and operation)
- Screening; classification of the impacts (none, small or major)
- Identification of the measures to mitigate the negative impacts caused by the project construction and operation
- Developing an appropriate environmental management plan
- Estimation cost of the proposed mitigation measures.

2. Legal and administrative framework

The EIA is based on:

- Feasibilities studies report of each project component. approved by EVN;
- Agreement by the PPCs of concerned provinces where the project component are located or traversed on line route and substation located. Agreement of the communes authorities on the layout of the project within the communes.

Environmental legal framework as follow:

- WB’s policies: 4.01 Environmental Assessment; 4.12 Involuntary Resettlement

This law stipulates the prevention from bad impacts on the environment and environmental protection as well as improvement of ecological environment. “Environment” is defined as the natural environment and the one created by human comprising air, water, sea, land, mineral mines, forests, grass fields, wildlife, trees, natural and historical sites, natural conservation areas, places of interest, cities, villages, etc.

- Laws of forest protection and forest development:

The laws regulate the management, development and use of forest, the prevention of forest destruction, the enhancement of responsibility and the encouragement for
institutions/individual of forest protection and forest development, the discovery of forest benefits for the purpose of national protection and the national development.

- Government Decree No. 175/CP dated 18/10/1994 guiding the implementation of the Law on Environmental Protection.
- Government Decree No. 54/1999/ND-CP dated 08/07/1999 on Protection of High Voltage Networks.
- National Criteria on air quality TCVN 5949 - 1995
- National Criteria on noise TCVN 5949 - 1995
- National Criteria on pollution TCVN 5937 - 1995

Codes on Electrical Equipment Installation - part II – Power transmission line and distribution system No. 11 TCN 19 - 84. In this standard the minimum clearance between the live parts of the line and trees are identified. Trees outside the ROW must ensure two meters clearance between conductors and tree parts when falling. The clearance between top of the trees and conductors in the ROW must be not less than six meters. The ROW identified by two parallel planes is seven meters far from outer conductors when they are vertical and not less than two meters when conductors are at maximum swing angle.

3. Methodology
The method applied in the report is based on environmental checklist.

Based on the guidance on EIA by World Bank, the potential environmental impacts are classified with levels as follows:

a. Little impact or negligible impact:
For these impacts do not need to have measures for mitigation.

b. Having impact but not much:
For these impacts, the measures for mitigation must be shown.

c. Significant impact:
For these impacts, they are necessary to have strict research, and measures for precaution have to be designed more carefully.
CHAPTER 2: DESCRIPTION OF THE PROJECT

1. Name of the project:
Rehabilitation and expansion MV distribution systems of Hai Duong - Hai Duong province

Implementing agencies
- Investor: Power Company No. 1
- Project manager: Power network project management board - PC1
- Consulting company: Power Construction Consulting Center - PC1

2. Project objectives

Necessary of project:
At this moment, Hai Duong province is not enough power for the economical development work. Therefore, it is necessary to improve the material facilities to develop economy according to 2010 - 2020 construction programs.

In the coming years, the velocity of urbanize will be high, power demand for production and living is increased, while the power network of Hai Duong city is old and backward and it is not satisfied power user demand. So that, it is necessary to improve the Hai Duong city power network.

Project Objectives:
The project of rehabilitation and expansion MV distribution systems of Hai Duong - Hai Duong province is to construct network, which supplying electricity for Hai Duong city - Hai Duong province, including 11 precincts and 2 communes.

- Satisfying development load demand in region
- Supplement current power sources of distribution network Hai Duong Province.
- Increasing reliability trust and convenience during operation process
- Reduction of power losses of Hai Duong Province

Socio-economic objectives of the project
- Supplying power more sufficiently and improve the energy quality for lighting and other civil purposes as well as for industries, agriculture, transportation of area.
- To create premise for development of socio-economy, agricultural production, husbandry, agricultural product processing, etc.
- Improve the spiritual culture life of people
- Develop handicraft industry in households
- Push up development of industry and handcraft industry
Electricity partly supports the prosperity, security stability and upgrades civilization life of the district.

3. Scope of the project

Project name:
- Rehabilitation and expansion MV distribution systems of Hai Duong - Hai Duong province
- The project rehabilitation and expansion of distribution systems of Hai Duong city - Hai Duong Province - period 2000 - 2010.

Components:
- Line ROW: 4.2 m wide for overhead line and 2 m wide for underground cable.
  * Rated Voltage: 22KV
  * Conductor wire: AC150 and AC70 used for the overhead lines and AL-3x240 mm² cable used for underground cable.
  * Tower: Centrifugal Concrete poles
  * Line Right of Way:
    Medium voltage: 4.2m wide for overhead lines and 2m wide for underground cable.
    Conductor-to-ground distance: ≥ 6m.

a. 110kV Dong Nien Substation
- Installing 11 feeders of 22kV at 22kV distribution room. (5 old feeders of 22KV and will install 6 new feeders)
- Constructing and upgrading 600 m cable tunnel and install 4800 m underground cable 24KV-3x240 mm².

b. MV transmission line:
- Constructing and upgrading 106,366.00 m of 22kV transmission line, including:
  + Constructing 21.3 km of 3 x240 mm²-24 kV underground cable with length 21.5 Km. The depth of the trench to be dug for laying down the cable lines is from 0.8 m to 1m and the wide is 0.7m. The underground cable traverse through rice-crop field, pavement, road, ... The underground cable has across-longitudinal system. The underground cable is installed between 2 sand layers. After that, it has a ground layer, concrete layer, protection and photogenic warning nylon layer and coverage layer from asphaltic material.
  + Constructing and upgrading 102 km overhead lines from 6 kV, 35 kV become 22 kV.
  + Installing 4 stations of 22 KV that create one loop supplying stable power to 22 kV feeder.

"Rehabilitation and Expansion of distribution systems of Hai Duong city – Hai Duong Province Project" will be constructed and reconstructed of total 106,366.00 m of MV transmission line and 246 substations. In which:
### Table: Description of Project Components

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<td>Substation/capacity</td>
<td>246/65,245</td>
</tr>
</tbody>
</table>

6. **Project total cost**

Total investment value: 108,133,570,000 VND

Including:
- Equipment: 25,616,376,000 VND
- Construction and installation: 50,492,131,000 VND
- Other costs: 20,439,323,000 VND
- Spare cost: 11,585,740,000 VND
  (Including 11,000,000 VND of monitoring cost)

7. **Proposed Schedule of Project.**

The second phase of the project will be implemented from May 2001 to December 2004.
CHAPTER 3:
ENVIRONMENT BACKGROUND SITUATION

3.1/ Physical Environment of the project area

Hai Duong City is socio-economic and political center of Hai Duong Province. Hai Duong has been constructing the material facilities. Hai Duong’s economic, services and technological science is growing and Hai Duong is the clue of traffic of main economic area Ha Noi - Hai Phong - Quang Ninh. The city travels along the national way 5, far from Ha Noi capital 58Km, far from Ho Chi Minh City 1,710Km.

- The North is next to Nam Sach district and Thai Binh River
- The South is next to Gia Loc district and Ke Sat River
- The West is next to Thai Binh river and Thanh Ha district
- The East is next to Nam Sach district.

Total of national land: 3476 ha, including:

- 6 main precincts : 205,2 ha
- Tu Minh commune : 625,7 ha
- Thanh Binh precinct : 569,1 ha
- Viet Hoa commune : 614,6 ha
- Cam Thuong precinct : 246,2 ha
- Binh Han precinct : 307,7 ha
- Ngoc Chau precinct : 654,6 ha
- Hai Tan precinct : 252,9 ha

The region has an even and flat terrain, and it will be favorable to construction in the future.

The climate of Hai Duong is monsoon with 2 seasons - dry and cold in winter and hot in summer. Average temperature of region is from 14,3 to 29,5°C with 1281-1800mm of annual rainfall coming from late April to October.

The geography of Hai Duong area is rather complicated with many different soil layers. soil structure is quite stable.

3.2/ Socio-economic environment.

Total national land of Hai Duong is 3.476 Km², population: 133.259 people, people density: 38.337 people/Km².

The economical area is very diversified, including industry, small-scale industry and agriculture. Due to development of commodity production and internal - aboard investment, the economy foundation is increased. The GDP level is increased. The living standard is developed.

3.3/ Ecological Environment of the project area.
2.1. Characteristic:

This area is highly populated. There are a few trees in the city. We have to cut down some in construction period, but we will re-grow after that. So the ecological Environment of this area is not impacted by the project.

2.2. Ecological Environment of ROW:

This project is prepared to construct some MV, LV transmission line and distribution stations. Right of way is 2.1m from the center point with 4.2m wide for 22kV overhead line, and 1m from the center point with 2m wide for underground cable.
CHAPTER 4
THE ENVIRONMENT IMPACT DURING CONSTRUCTION

Project is mainly focused on rehabilitation of the existing distribution network of Hai Duong city and 2 communes of the province. New construction work is placed at populated area, there is no new construction work happened in the remote or forested sites. The followings are potential impacts that can be occurred during construction phase of the Project. Generally, the project will not cause any significant impacts to the environment.

246 substations are string substation. They have small size (50 X 70 X100 cm) and are hang up at least 5m high from the ground. The installation of string substations will be carried out by manpower. The upgrading part of 110 kV substations will not require any expansion of land to construction work. The impacts of the Project therefore will be considered just only with activities of rehabilitation and construction of distribution lines.

4.1. Identification of environment

Table. Project impacts during construction phase

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Environment impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Land occupation</td>
<td>Tower foundation occupation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Temporary occupation for construction.</td>
</tr>
<tr>
<td>2</td>
<td>Hydrological condition and flood</td>
<td>No impact</td>
</tr>
<tr>
<td>3</td>
<td>Construction noise</td>
<td>Certain impact on constructors and acoustic environment.</td>
</tr>
<tr>
<td>4</td>
<td>Construction dust</td>
<td>Minor impact on ambient air.</td>
</tr>
<tr>
<td>5</td>
<td>Sanitary water during construction</td>
<td>Minor or no impact</td>
</tr>
<tr>
<td>6</td>
<td>Waste water effluent during construction</td>
<td>No impact</td>
</tr>
<tr>
<td>7</td>
<td>Vegetation</td>
<td>Vegetation damaged in occupied land</td>
</tr>
<tr>
<td>8</td>
<td>Wetland ecology</td>
<td>No impact</td>
</tr>
<tr>
<td>9</td>
<td>Scenic view</td>
<td>Affected a little</td>
</tr>
<tr>
<td>10</td>
<td>Traffic disturbance</td>
<td>Little impact</td>
</tr>
<tr>
<td>11</td>
<td>Highway</td>
<td>No impact</td>
</tr>
<tr>
<td>12</td>
<td>Agricultural production</td>
<td>Little impacts due to temporary occupation of land</td>
</tr>
<tr>
<td>13</td>
<td>Influx of construction team</td>
<td>- No cultural conflict</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- To increase residential incomes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Increase life facilities</td>
</tr>
<tr>
<td>No.</td>
<td>Item</td>
<td>Environment impact</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>14</td>
<td>Cultural relics</td>
<td>No impact</td>
</tr>
<tr>
<td>15</td>
<td>Scenery and places of interest</td>
<td>No impact</td>
</tr>
<tr>
<td>16</td>
<td>Resettlement</td>
<td>No resettlement required; some emigration for the transmission lines.</td>
</tr>
<tr>
<td>17</td>
<td>Post and telecom communication wires and power transmission lines</td>
<td>No impact on the communication wires due to a long distance away in design.</td>
</tr>
<tr>
<td>18</td>
<td>Solid waste</td>
<td>No impact</td>
</tr>
</tbody>
</table>

4.2/ Impact on physical environment

Impact on water:
During construction work of upgrading the 110 kV substations and other underground installation of the power lines, there will be around 50 persons participating in the construction work; most of them (around 90%) are resident nearby. There will not be any camp for constructors. A little sanitary water produced for constructor’s daily consumption would accumulate in the site, but amount is negligible.

The digging work is planned to avoid rainy season. In the case of rain, some run off water will bring soil from work site to the sewage system or to the rice field nearby will not be considered as significant impact due to the time for digging and installing just lasts from 2 to 7 days for each site. The Project will not required a lot of work with mixing concrete, turbid water from construction therefore is very little. Attention should be paid to stopping turbid water from running off to affect water body along.

Construction work is carried out in the areas that have fairly good infrastructure facilities, so no bridge or temporary bridge needs to be constructed to support Project. Water body along the Project’s site will not be impacted.

There is no possibility of construction or rehabilitation work might impact to the underground water.

Impact on air
Certain amount of dust produced when excavating foundation and underground drain for line installation will affect environment and residents nearby. However, such impact will be incurred temporarily and partially. The excavating work is planned to do in the proper time and in the shortest duration to minimize the impact to residents.

Noise impact
For the installation of new distribution lines and upgrading of the existing lines, limited number of construction machines is required; they are mixing machine, vehicle, etc.

Construction machine with low noise level will be selected. Construction, installation of the Project is carried out at daytime during the shortest time. The installation of underground cable will be carried out part by part. In each part the work and the duration are planned to do within 2 to 7 days. Construction machines are required at daytime so the national standards TCVN 5948:1998 is meet during construction work.
Shipping of equipment is carried out by car along the existing roads. Within the Project area, the transportation is common practices with highly growled system of roads. Transportation of the Project will not cause any additional impact intern of noise. Furthermore no transportation of equipment, material will be carrying out in the evening or nighttime so residents nearby will not be affected.

**Solid waste disposal from excavating work for installation of underground cable**

Excavating work for underground cable installation will cause impacts to the traffic within the Project site. The time for excavating work is planned for the late afternoon and evening time. Almost all of the works are done manually. The warning sign "Work Ahead" will be displayed in the site.

Firstly road cover and soil are excavated and temporary put next to the excavated trench. After excavating, a 5cm layer of sand is put in the bottom of the trench. The cable is installed on the sand layer after that it will be covered again by another layer of sand with the same thickness. Photogenic warning paper is covered and then the excavated soil is filled back to the excavated trench. The covering of the road by the asphalt covering machines is planned to carry out two weeks after filling up the trench.

The remaining excavated soil and material is brought away by contract with responsible local environment and hygiene company (EHC). Such kind of solid waste is sold by local EHCs for construction purpose. So the solid waste of the Project will be managed properly, there is no risk of harming to the environment by Project's solid waste.

**Traffic disturbance**

The above-mentioned activities for installation of underground cables is managed to do part by part. In the central of city or in highly traffic road, each part has a length of approximately 500m. In other areas with low traffic demand, each part can be longer with a length of 1 or 2 km. The part that goes through the highly traffic area is planned to do within the evening and nighttime. The traffic is impacted due to road occupation for excavating, for temporary gathering the excavated soil and material and for road covering by asphalt covering machine. This time is not traffic rush hours. so the impact can be considered as a little impact. The installation for each part of underground cables is managed to do within 1 to 2 days. The covering of the road by asphalt is managed to do in the daytime and within half of a day for each part.

Considering the nature and duration of impact that cause for traffic during installation of underground cables it can be concluded that the impact for the traffic caused by the Project is negligible or little impact.

Hanging on of the overhead cables the sector that crosses the road is managed to do by the way that will not cause any traffic disturbance. It can be considered as no impact for the traffic and local transportation.

4.3/ Impacts on Ecological Environment

**Damage to vegetation**

The easement of the 22kV lines is limited by 2 parallel planes. 2.1 m out of the outer conductors when they are vertical. Trees outside the easement must be controlled to
ensure 0.5m clearances in all condition. The clearance from conductor to the treetop in the ROW must be ≥ 2m.

All trees of or would be > 4m in the line ROW must be cut down. So if the line routes pass natural and industrial forests with trees higher than the limit, such trees must be cut down.

The distribution lines of the Project come along the road in the city as well as in the well-developed areas. The requirement of new vegetation clearance is limited.

Temporary occupation of agricultural land will be required for over 160,000 sqm. The loss of agricultural product is for one harvest and is equally compensated for the affected farmers.

Vegetations in the site are common species (rice, shadow trees along the road, grass etc.) with low ecological value. The damage to the vegetation therefore considered as negligible and manageable.

Impact on wetland

Site option for the Project has no impact to the wetland. There is no wetland site in the Project area.

Impact on natural reserves and national park

There is no risk of the Project to the National Parks or natural reserve. 11 precincts and two communes Viet Hoa, Tu Minh communes are located in the Hai Duong city. The forested areas in the Hai Duong Province are rather poor. (See Map of Existing and Proposed areas in Hai Duong for reference). There is no protected area or high ecological value sites located in or nearby the Project site.

4.5. Social impacts

Professional or skilled staffs that have been trained on special technology usually from electric construction team undertake principle work of the substation and distribution lines. Due to specialty of their work, locals cannot replace them. However, some local staff may be hired to take up foundation excavation or underground cable drain. That can offer locals some temporary work opportunities.

The mass of construction peoples will locally increase the consumption and demand of social commodities and services. The staple and non-staple foodstuffs, daily requisites and other services required by the mass of construction people will lead to acceleration of social commodities.

Demand of constructing demand for the building and constructing materials for the Project will promote development of local building material suppliers. That direct or indirect increase the employment opportunities for the locals and forward the development of local economy and enhancement of living standard of local people.

Land occupation and resettlement & rehabilitation
- No resettlement is required. 162,543 sqm will be temporary occupied. Permanent land occupation is 19,505 sqm. No house removal is required. The temporary occupation of land can be recovered for farming when construction is completed.

- In term of land occupation and compensation, the RAP report is reflected in more details.
CHAPTER 5
THE ENVIRONMENT IMPACT DURING OPERATION PHASE

5.1/ Identification of environmental impacts

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Environment impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Land occupation</td>
<td>Foundation permanent occupation</td>
</tr>
<tr>
<td>2</td>
<td>Substation forestation</td>
<td>Helpful to improve atmospheric</td>
</tr>
<tr>
<td>3</td>
<td>EMF</td>
<td>No impact</td>
</tr>
<tr>
<td>4</td>
<td>Noise</td>
<td>No impact</td>
</tr>
<tr>
<td>5</td>
<td>Sanitary water and oily waste water</td>
<td>No impact</td>
</tr>
<tr>
<td>6</td>
<td>PCBs</td>
<td>No PCBs containing matter. no impact</td>
</tr>
<tr>
<td>7</td>
<td>Wetland</td>
<td>No impact</td>
</tr>
<tr>
<td>8</td>
<td>Vegetation</td>
<td>Some vegetation will be cut to protect safe ROW</td>
</tr>
<tr>
<td>9</td>
<td>Rare animal</td>
<td>No impact</td>
</tr>
<tr>
<td>10</td>
<td>Community</td>
<td>No impact</td>
</tr>
<tr>
<td>11</td>
<td>Cultural relics</td>
<td>No impact</td>
</tr>
<tr>
<td>12</td>
<td>Scenic view</td>
<td>No impact</td>
</tr>
<tr>
<td>13</td>
<td>Human health</td>
<td>No impact</td>
</tr>
<tr>
<td>14</td>
<td>Agricultural production</td>
<td>No harvest on lost land</td>
</tr>
</tbody>
</table>

5.2/ Impact on physical environment

Impact on water

Oily wastewater of the substation only comes from overhauling transformers or accidental leakage and blows off. Discharged oily wastewater will be collected in the accidental oil pond. After going through the oil-water separator, oil will be reused and the water will be released to the outside environment.

PCBs and PCBs containing equipment are no longer being in use. Therefore, there is no risk of PCBs contamination in to water or environment.

Impact of Electric Field on Human and Animals

Basing on the criteria of the power sector: “Limitation for power frequency electric field intensity” and stipulations on the working environment “Limitation for electric field intensity, working time in the affected area”, the electric field affected area is the area with the power frequency electric field intensity of > 5kV/m. For inhabitants
living under the lines. the safe electric field intensity is \( \leq 5 \text{kV/m} \). However, the electric field of the HV lines does not affect human's health in the line ROW.

Permitted duration for human and animal under electric field intensity:

<table>
<thead>
<tr>
<th>Elec. field intensity (kV/m)</th>
<th>5</th>
<th>8</th>
<th>10</th>
<th>12</th>
<th>15</th>
<th>18</th>
<th>20</th>
<th>20&lt;E&lt;25</th>
<th>&gt;25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permitted duration Per day (h)</td>
<td>No limit</td>
<td>4.25</td>
<td>3</td>
<td>2.2</td>
<td>1.33</td>
<td>0.8</td>
<td>0.5</td>
<td>1/6</td>
<td>0</td>
</tr>
</tbody>
</table>

**Impact of Electric Field on Telecommunication Projects**

Telecommunication projects include:

- Communication lines going closed to or across the 22 kV lines.
- Audio frequency, PLC telephone lines going closed to or along the lines.

Medium voltage transmission lines and other Project's equipment will have no impact on telecommunication system existing close or along the lines. There is also no risk of impact on wireless communication.

**5.3/ Other potential impacts**

**Impact on agricultural production**

The Project will permanently occupy around 20 000 sqm. (20 ha) which could reduce agricultural output. For example, the harvest would decrease about 100 tons of rice/year based upon a production level of 5 tons rice/ha/year.

Under transmission line corridor, low trees can be planted and there is no impact on further agricultural farming and harvest. The area where residential houses are removed under the ROW can be returned to farm field for planting crops.

**Influx of labor force**

Professional trained technicians will conduct routine operation during operation period of the Project. Similar to the construction phase, the operating personnel would not generate conflict with locals in employment and culture. On contrary, their daily life demand will enhance incomes of local commerce and services.
CHAPTER 6
ENVIRONMENTAL MANAGEMENT PLAN (EMP)

A - Mitigation measures

6.1 Mitigation measures in design phase

For rehabilitation and expansion of Hai Duong city, many supply options have been considered and analysed for different localities in the survey design stage to ensure the techno-economic criteria of the project, meanwhile the project impacts on the environment have also been considered to find out mitigation measures for negative impacts.

The overhead lines are designed to avoid crossing the residential, school, hospital, church and pagoda. In the technical aspect the Project is aimed also to supply the power to some schools (such high school Nguyen Du in Ton Duc Thang street, financial and accounting college in Luong Dinh Cua street, Provincial hospital in Nguyen Luong Bang street). The designed lines should be right next to these premises. Selection of road is considered not only by technical aspects but also social and environmental management terms. There is no line designed to transverse pagoda, church and other public premises.

6.1.1. Line Routes.

Selection of the line routes and mitigation measures:

+ For planted areas:

Overhead line: Cut all trees of potential impact in the line ROW. According to the law on forest protection, tree cutting is strictly under control. Thus, the line routes try to avoid dense planted areas.

The Overhead line and the underground cable are in developed scheme in Hai Duong city – Hai Duong Province.

The activities for installation of the underground cables are described in details in Chapter 4. In the during designed phase, the underground lines are designed according to the present regulations to minimize the land occupation, the excavating work.

The overhead and underground lines are crossed over the city. In Hai Duong city there is no area with high ecological value. The most planted areas are gardens, rice and crop field. No forest is existed in the Project site. It could be concluded that there is no impact in term of ecological loss within the Project site.

+ For residential areas:

The optimal routes have been considered to avoid houses. For those unavoidably traversing residential plots, the mitigation measures are: numerous small angles and road crossings to avoid houses and structures.

Technical measures have been made of full use: Reasonable span, special technical options for: Towers, arms, guys, foundations at dangerous positions to mitigate the project impacts on houses and structures.
The survey results show that the line routes will not traverse any houses and structures.

**+ For communication lines:**

All the designed lines are apart from important telecommunication lines. The lines rarely traverse or go closed to the inter-district and inter-commune telecommunication lines. Moreover, the transmission lines are only some kilometers long with moderate voltage; as such it is not necessary to mention the influence and adverse impact on telecommunication lines.

**+ For lands, army sites, airports, historical places, pagodas and other structures:**

The actual survey shows that the lines would not traverse any historical or cultural places, army sites, airports, pagodas and impacts the surrounding lands.

**+ Other technical solutions for the line configuration:**

To minimize the environmental impacts, the line configuration is selected basing on: most negative temperature and weather of the areas.

Thus, ensure the project bearing acuity and minimize electric shock due to tower fall and conductor break.

The minimum line-to-ground clearance is designed as 6m, other clearances are in compliant with the electrical regulations. as such, the electric field intensity below the lines is much smaller than regulations of WHO and the sector \( \leq 5 \text{ kV/m} \).

### 6.1.2. Substations:

- Type of Hai Duong 22/0.4 kV substation: Outdoor type, kiosk substation. The land acquisition for substations is not very large, substation location is on public land and there is no affection to houses and residential areas.

- The substation is isolated with adjacent area by fence to assure safe operation and prevent people and animal against dangerous area.

- The project transformers will not contain PCB.

- Connection diagram of the substation is designed with protection equipment:
  
  - Over current protection for MV side of transformer used FCO.
  - Over voltage protection for transformer from lightning used LA.
  - Over current protection for HV side of transformer used MCCB.

Thanks to the protection and automatic equipment, all faults occurring in the operation stage would be eliminated at once, safety would be assured, and dangers to people living in the served areas would be mitigated.

Summary of mitigation measures during design phase is provided in the following table:
Table 6.1: Mitigation measures to be implemented during design phase

<table>
<thead>
<tr>
<th>Potential Impact</th>
<th>Mitigating Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impacts on ecological system: trees cutting</td>
<td>Select and design Line routes to avoid planted areas:</td>
</tr>
<tr>
<td>PCB substance</td>
<td>Transformers with cooling oil with PCB substance will not be allowed to use in this project. PCBs containing oils are no longer permitted to be use in any EVN’s project. Supplier should verify new purchased transformers that there is no PCBs transformer. There is no old transformer is removed from the existing power network. So there is no risk of PCBs contamination in the Project.</td>
</tr>
<tr>
<td>Impact on residential areas: Line routes may traverse houses and other constructors; noise disturbance</td>
<td>Align line routes to avoid houses and other structures; increase tower length; design routes to turn frequently to minimize number of houses to be traversed by line routes n equipment to be purchase having maximum noise level during operation not exceeding permitted noise level standards</td>
</tr>
<tr>
<td>Safety from electricity shocks</td>
<td>Substations are designed with hanging type and adequate protection.</td>
</tr>
<tr>
<td></td>
<td>Conductors are designed with the insulation type of cable</td>
</tr>
<tr>
<td></td>
<td>Dropout fuses on transformer’s MV side for short circuit and over current protection</td>
</tr>
<tr>
<td>Fire caused by short circuits</td>
<td>Appropriate specification of conductors connecting the house to the MV system</td>
</tr>
<tr>
<td></td>
<td>Surge arresters for over voltage wave protection.</td>
</tr>
<tr>
<td></td>
<td>Automatic breaker on MV side for short circuit and over current protection</td>
</tr>
<tr>
<td></td>
<td>Lightning arrester is equipped.</td>
</tr>
<tr>
<td>Impact on historical sites, reversed areas...</td>
<td>Design route to avoid these sites. Coordinate and agree with local authorities on locations have T/L traverse through;</td>
</tr>
</tbody>
</table>

6.2. *Mitigation measures in Construction phase:*

Mitigation Strategies for Construction are:

6.2.1. *Construction Arrangement:*

Scientific arrangement, completion of separate project components and the line sections would minimize temporary requisition of land.
Construction activities such as tree cutting, ground clearance, foundation excavation, material transportation; tower erection, wire tensioning, etc. would have certain impacts on the environment. Therefore, concrete mitigation measures required are:

- Tree cutting, route clearances: Apply measures of soil filling, tree and grass planting after construction; minimize the impact of tree cutting to mitigate future impacts. For land supposed to erosion, maintain trees with the allowable height in the ROW after cutting high trees to keep soil.

Discuss with local authorities involved.

- Safety measures:
  - Safety measures for construction must fully respect the safely regulations and procedures:
    - (Use specialized machines for) transportation of tools, material or heavy equipment. Check the machines before use. Ligament must be strong. Respect all regulations on transportation safety.
    - Foundation excavation must comply all safety measures. Since the tower foundations are small, there would not be much excavation. Foundation works would be carried out mainly by manual methods. The maximum unused soil volume of < 1m³, as a result of excavation, would be left in the surrounding areas as agreed with the local authorities.

Any water pipes, underground sewers, communication or power cables found during excavation must be reported to the concerned agency. Strictly follow instructions of the agency.

- Apply safety measures for tower erection, arm and insulator installation, wire works and installation of other fittings.

Workers must respect the regulations on works, safety, labor protection and concentrate on their works. They will be given training on their jobs and safety procedures.

Besides, conductor tensioning and tower transportation would be carried out right after harvest of the annual crops to minimize the impact on crops in the ROW.

6.2.2. Construction Camps:

As for the particular characteristics of the rural electrification project, workers may set up camps in the commune or town center for convenient access to food, foodstuffs, drinking water and communication means.

For construction in difficult terrain, camps may be laid out near the lines and (workers) construction would be carried out very quickly. Thus temporary tents for a limited number of workers would be needed.

There are firm regulations on medical and sanitary measures to assure workers' health. Each construction team would have one official specializing in medical care to take care of the workers and treat common diseases as malaria, typhoid fever, diarrhea, etc.

6.2.3. Safety on Fire and Explosion.
Explosion substances will not be used in construction works; manual excavation and filling are main measures. Construction teams would not use forest resources but kerosene for cooking. All substations would be equipped with fire and explosion protection equipment.

6.2.4. Noise Pollution.

There may be noise and vibration from construction equipment. The distribution voltages are at 22 kV and so the arcing flashover noise occurring in light rain or humid days would not be taken into account.

The impacts of noise, vibration on the environment in construction stage would be insignificant.

In general, with the above mitigation measures, the project impacts would be rendered as small impacts.

Table 6.2: Mitigation measures during construction phase

<table>
<thead>
<tr>
<th>Potential Impact</th>
<th>Mitigating Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impacts on ecological system: trees cutting</td>
<td>Optimize the timing of the construction; the construction works should start after harvest. The cutting of the fruit trees under the ROW only before energizing the system.</td>
</tr>
<tr>
<td>Damaged vegetable cover in ROW</td>
<td>Re-plant of the damaged cover by appropriate type of plant or grass.</td>
</tr>
<tr>
<td>Impact on residential areas: Line routes may traverse houses and other constructors;</td>
<td>During the poles erection, no pole is allowed to be placed within the house’ premise, before main gate, that make inconvenient to the people. The house or structures remained under the lines; need to be protected according to the Degree 54.</td>
</tr>
<tr>
<td>Workers’ safety</td>
<td>Strictly follow the labor safety regulation. no works on the pole erection, wiring during the rainy time. Safety engineer to check before energizing the system</td>
</tr>
<tr>
<td>Safety from electricity shocks</td>
<td>Use only the appropriate conductor for the connection from house to MV lines. Proper schedule for switch off of power when it is required.</td>
</tr>
<tr>
<td>Noise</td>
<td>- Use low noise equipment 2</td>
</tr>
<tr>
<td></td>
<td>- Working in the permitted hours</td>
</tr>
<tr>
<td>Dust</td>
<td>Guard fence and water spray</td>
</tr>
<tr>
<td>Solid waste disposal: excavated soil and disposal construction material</td>
<td>Contract with local environment and sanitation company to removal and proper disposal for other construction purposes</td>
</tr>
</tbody>
</table>

2 Apply Vietnamese standard TCVN 5940-1988 for the Standard of noise applied for public and residential areas
<table>
<thead>
<tr>
<th>Potential Impact</th>
<th>Mitigating Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic disturbance</td>
<td>Excavating work is scheduled to do in the less traffic rush hours. Limitation of time duration for excavating work.</td>
</tr>
<tr>
<td>Agricultural ecology</td>
<td>Recover damaged vegetation timely when the construction ends</td>
</tr>
<tr>
<td>Land Occupation</td>
<td>Minimize land occupation</td>
</tr>
<tr>
<td>Clearance in occupied land</td>
<td>Do compensation in accordance with laws</td>
</tr>
<tr>
<td>Valuable historical and cultural heritages discovered during construction phase</td>
<td>Contractors, workers and Project’s staffs should be awarded that in the case they find some subjects suspected as valuable historical and cultural heritages they should timely inform to local Department of Culture and Information to seek for their interventions</td>
</tr>
</tbody>
</table>

6.3. **In Management and Operation phase.**

6.3.1. **Management, Operation, Repair and Maintenance Works:**

Scope of works includes repair, periodical maintenance and fault treatment for the transmission lines and substations. The provincial power services (PPS) under PCI will undertake such tasks.

To mitigate the adverse impacts and limit the network faults, to ensure safe operation, all workers must strictly follow regulations on safety for management, operation, repair and maintenance of the lines and substations.

According to the project management scheme, PPSs will sign contract with local people on the project management. Prior to the project operation, training on safety, basic techniques of the network operation and management should be provided to the operators. Only the successful trainees with training certificate can undertake the management and operation duty.

6.3.2. **ROW Control:**

PPSs would monitor and control ROW within the province, detect violations in the ROW: houses, trees, etc. and find prompt resolutions for such violations.

- Local authorities and tree owners would supervise tree cutting. Take all cut branches and trees out of the environmental ROWs of the lines and substations. Random tree cutting under the name of network repair and maintenance is prohibited.

- Underground cable management: principally underground projects are managed by the project owner in cooperation with local authority for transportation and public services. One photogenic nylon coverage was covered to the underground cable to warn people. In the case some one or some authority is doing another underground project they will easily notify the cables. The underground cables are managed, maintained by existing technical
regulations. In term of environment there is no need to apply any additional mitigation measure

6.3.3. Public participation:

As the project areas have been electrified and people’s knowledge is high, meetings with local people introducing the most basic knowledge on electricity and the electrical safety to avoid possible incidents should not be organized. All information should be propagated on communes’ radios or signboard on substation.
Table 6.3: Mitigation measures during the operation of the project.

<table>
<thead>
<tr>
<th>Potential Impact</th>
<th>Mitigating Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impacts on ecological system:</td>
<td></td>
</tr>
<tr>
<td>trees cutting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tree cutting within ROW will be carried out manually, and periodically to ensure that no tree higher than 4 m.</td>
</tr>
<tr>
<td>Fire hazard</td>
<td>Periodically check all the protection equipments, in-house wiring, and connection.</td>
</tr>
<tr>
<td>Electric shock</td>
<td>Distribute the safety use of electricity</td>
</tr>
<tr>
<td></td>
<td>Training of one local person per commune.</td>
</tr>
<tr>
<td></td>
<td>Periodically check and test the protection equipment</td>
</tr>
<tr>
<td></td>
<td>Place warning signs in appropriate places</td>
</tr>
<tr>
<td>Noise</td>
<td>- Equipment noise is conformed with Vietnamese Standards</td>
</tr>
<tr>
<td>Protection of underground cable</td>
<td>- Manage and maintain the cables according to technical regulations.</td>
</tr>
<tr>
<td>EMF</td>
<td>- Use transforming devices conform to standards:</td>
</tr>
<tr>
<td></td>
<td>- Select height of the power the power distributing structure conform to design requirement phase earth and phase-phase distance</td>
</tr>
</tbody>
</table>

**B – Monitoring**

As discussed in the previous chapters, for the given project the construction activities are small and spreading over the large thinly populated rural areas, the construction activities are carried out by a large number of small construction teams using the labor extensive methods. Therefore many of the potential impacts such as noises, pollution caused by the construction activities could be considered as marginal and short term. These impacts may not required further monitoring during the operational stage.
## Monitoring Plan

<table>
<thead>
<tr>
<th>What</th>
<th>Where</th>
<th>How</th>
<th>When</th>
<th>Cost</th>
<th>Source of fund</th>
<th>Implemented by</th>
<th>Supervised by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker safety</td>
<td>Construction site</td>
<td>Inspection</td>
<td>During construction</td>
<td>0 (*)</td>
<td>Included in the contracts</td>
<td>Contractor</td>
<td>PMU</td>
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<tr>
<td>1. Noise</td>
<td>Construction site</td>
<td>Accredited institution will be hired by PMB</td>
<td>During construction phase</td>
<td>5,000,000 VND</td>
<td>Included in the Contract</td>
<td>Accredited institution will be hired by Contractor</td>
<td>PMB and local Department for Science, Technology and Environment (DOSTE)</td>
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<tr>
<td></td>
<td>(100 samples x 50,000 VND/sample)</td>
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<tr>
<td>2. Dust</td>
<td>Construction site</td>
<td>Accredited institution will be hired by Contractor</td>
<td>During construction phase</td>
<td>5,000,000 VND</td>
<td>Included in the Contract</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(100 sample/ city X 50,000 VND/sample)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>3. Solid waste disposal and traffic disturbance</td>
<td>Construction site</td>
<td>Accredited institution or Independent Consultant will be hired by Provincial Power Service</td>
<td>During operation phase</td>
<td>7,000,000 VND</td>
<td>Production cost of Provincial Power Service</td>
<td>Accredited institution or Independent Consultant will be hired by Provincial Power Service</td>
<td>EVN through Provincial Power Services</td>
</tr>
<tr>
<td>4. Land use and ROW protection</td>
<td>Operation phase</td>
<td>By the technical staffs of Hai Duong power company</td>
<td>Operation phase</td>
<td>Company production cost</td>
<td>Company production cost</td>
<td>Hai Duong power company</td>
<td>- PC1. EVN</td>
</tr>
<tr>
<td>What</td>
<td>Where</td>
<td>How</td>
<td>When</td>
<td>Cost</td>
<td>Source of fund</td>
<td>Implemented by</td>
<td>Supervised by</td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
<td>-----</td>
<td>------</td>
<td>------------</td>
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<td>---------------</td>
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<tr>
<td>TOTAL</td>
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<td></td>
<td></td>
<td>17,000,000 VND</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: - The Contractor will based on the actual scope of the works and estimate the cost for the activities, and this cost will be included in the contract and final from the project costs.

- Contractor is responsible for hiring of accredited Institution and Independent Consultant to carry out the environmental monitoring. Only accredited or authorized institution can be hired for carrying out of the task. Report on environmental monitoring should be made by the hired body and submitted to Contractor, PMU, DOSTE etc.

- The compensation cost in RAP are estimated for the change of the high trees in ROW. The costs for these activities are in the operational cost of the power sectors. The operational staffs are maintenance, inspect, and repair the system daily. Noise monitoring is once during construction period and once every half years during operation period; mainly monitor construction noise during construction. In case residents near transmission lines complain, measurement will be made at that time.

- Dust monitoring is once during construction period
C - Training:
The staffs will work as monitoring and supervision of this project are skillful staffs and they were trained from other projects, which were invested in Hai Duong city – Hai Duong province. 

Electricity of Vietnam organizes frequent training on environmental management and work safety. Staffs of all PCs and other subsidiaries are invited to attend. The issues for such kinds of training courses are mainly focused on "environmental management for the power project", that is very suitable for the staffs involved with Project. Due to above mention reasons, the specific training is not required for the Project.

D - Supervision
- The Investor - PCI and local resettlement boards (to be established) are in charge of: compensation for lost of crops and assets.
- The provincial environmental monitors (interdisciplinary) are responsible for:
  - Monitoring the implementation of mitigation measures to minimize the project impacts in the construction and operation stage:
  - Controlling and checking health of workers, operators and inhabitants
  - Managing and checking protection measures for plantations and animal subject to the impact caused by the project.
- Hai Duong Power Company undertakes to:
  - Carry out periodical and sudden checks on the network operation, especially after rains and storms for necessary solutions and good operating conditions of the networks. These also help to find out and prevent violations in the line ROW.
  - Monitor and prepare annual statistics on the network incidents and faults.

Give guidance and supervise the implementation of the state regulations on the network protection and safety by the local governments and people. Meanwhile, stop the violations and report to the concerned bodies for violation solving.
CHAPTER 7
PUBLIC CONSULTATION AND INFORMATION DISSEMINATION

World Bank (the Bank) policy regarding community involvement provided in detail in the WB Public disclosure Policy BP 17.50. It is summarized as follows.

It requires that the borrower to publicly solicit, hear and consider the concerns of the local community, other affected groups and local NGOs (non-governmental organizations) and to fully incorporate into the design and implementation of the project and the Environmental Assessment (EA). The rationale for consideration and incorporation of the concerns affected parties is to assure community acceptance and enhance the viability of the project. The Bank has found that where such views have been successfully incorporated into the design and plan of implementation, the projects are more likely to be successful. The Bank has not found community participation to be an impediment to project execution. On the contrary, projects in which affected parties views have been excluded are more likely to suffer from delay and issues resulting from community resistance.

To avoid negative impacts on project affected people. Governmental Decree N 175/CP issued on 18 April 1994 requires that all projects in the development of industry: energy, transport, water resource, agriculture, etc. should conduct a compliant EIA study meeting the requirements of the environmental management authorities and the contents of EIA reports include predicted impacts and mitigation measures must be discussed with the PAP.

All the interested will be provided with access to EIA, RAP and project summary so that they can submit their comments and concerns to the project proponents through their authorized representatives, e.g. governmental agencies (the people Committee, People Council) and/or socio-political organizations (Fatherland Front, Farmers Association, Women Union etc.) or non-governmental organizations (e.g. Vietnam Association for the Conservation of the Nature and Environment, Biological Association, Economic Association, Foresters Association etc.). These organizations should collect all comments from the local people and send them to the environmental management authorities (DOSTE at provincial level or MOSTE at central level) or even to provincial People’s Council or National Assembly. During the environmental review process, all comments and requirements of the PAP should be discussed and conclusions reported to the project proponents, so that the project can develop proper alternatives and implement measures for mitigation of the negative impacts. The, project will receive an investment license. only after appropriate modification of location, design, capacity and/or technology of the project to meet the requirement of environmental protection and resettlement.

As the this project is a continuation of a on going project, the process of the consultation need to be continue for the new project communes. Since one of the project condition is that the commune people need to agree on the project, agree to connect to the project, and agree to pay the connection costs as well as to pay the electricity bill, therefore before the project start PCI together with the commune authority need to organize a consultation meeting with the local people.

Contents of Public Consultation meetings.
PCI together with the communes and precincts authorities have organized meeting with the
people in the project commune during the design stage in 2002 to discuss them about the
major technical, resettlement, land acquisition and environmental issues.

Discuss with the people on the project policies entitlement on the resettlement and
compensation entitlement, potential impact on the environment, and proposed mitigation
measures.

The local authority and people gave their comments on: appropriate designed line routes.
any other potential risk to environment

In the meetings all questions and recommendations of PAP has been recorded and
concerned during the technical design phase.

Time for the public consultation: October 2002.

Information presented in the meetings.
The Consultants has presented the following materials:
- Project objectives, scope and components;
- Potential environmental and Socio economic impact of the Project.
- Mitigation measures applied during different phases of the Project.

The draft reports of EIA and RAP were displayed in the Hai Duong Power Company and
PNPMB for information disclosures.

1. Aims of public consultation and information dissemination

Information dissemination to consultation with and participation of affected people and
involved agencies (i) reduce the potential for conflicts, (ii) help to establish a
comprehensive environment management plan and thus, maximize the project socio-
economic benefit.

(iii) Minimize the risk of project delays, and (iv) enable the project to design the
resettlement and rehabilitation program as a comprehensive development program to fit the
needs and priorities of the affected people, thereby maximizing the economic and social
benefits of the project investment.

Public consultation and information dissemination was scheduled for 2 stages: project
preparation and project implementation.

2. Public consultation and information dissemination during project preparation stage:

During project preparation stage, the following activities were carried out sequentially:

Phase 1-Activity 1: Information & discussion with local authorities on the line route.
During the field survey for the F/S, Consultants discussed with the local authority on the project line route to find the best route with the minimum affect on the compensation and minimum impact on the environment.

After the line route has been designed, Consultants send the designed line route to the communes and precincts for their further comments.

**Activity 2: Impact survey and statistics**

Based on the agreed line route, survey teams had realized the route at site; made the piling and coordinated with the local officials to make a list of PAPs' affected land and crops. The socio-economic survey forms were delivered to affected households (for each commune or precinct) as basis for SLS. The Compensation Committee, with the participation of the local authority, carries out the surveys. This activity was carried out in October to December 2002.

**Activity 3: Meetings with PAPs**

When the survey finished, Compensation Committee in coordination with the commune/precinct officials held meetings with PAPs having land in the line ROW and with all representatives. In these meetings officials informed the participants of the project purposes; presented the project impacts on land and crops in detail; introduce the principles and policies of compensation and advised people not to build new structures in the line ROW. PAPs were consulted on the entitlement policy, property affected, and the compensation amount to each household. If PAH agree they will sign the inventory.

**Activity 4: Approval and clearance by Provincial Authority**

After working with the communes and precincts, the compensation document will sent to Steering Committee, which include Financial and pricing service, Planning and investment service, Agriculture and rural development service, DOSTE, Cadastral Department. The committee will review the related documents and recommend to the Chairman of the People Committee for signing the compensation.

**Activity 5: Consultation and clearance on EIA**

Basing on the survey result, in 10/2002, Power Network Project Management Board (PNPMB) has prepared draft EIA to submit to EVN, WB and concerned DOSTEs and PPCs for review on draft EIA. When related parties clear the RAP and EIA, these reports are submitted to DOSTE applying for an Environmental Permit and these sources of information are available for all peoples who are interested to know about reports and the Project.

3. **Public consultation and information dissemination during project implementation stage:**
Public consultation and information dissemination during project implementation is of great importance as the project impacts on the environment and people at the stage would be worst. The following information campaign will be carried out:

* Information to the Local authority:

Before the contraction of the project starts, the first task for PNPMB is to assist the Provincial Steering Committee to organize meetings with involved departments of the project provinces as to discuss all the aspect of the project, including implementation of RAP, EIA, implementation planning of the project.

* Information to the local people:

All environment impacts, land acquisition and other impacts induced during construction as well as operation of the project, if any, will be announced in meetings with local people so as to find prompt solution in order to avoid conflicts and implementation delays.

4. Opinion on the Project from the public consultation

- Construction of the Project will be good for regional economic development on the spot. can increase employment opportunities and enhance living quality of the public;
- Construction of the Project should minimize clearance of crops and compensate affected crop outputs.

In response to problem put toward by the public, concerning professionals made a detail explanation to residential representatives in terms of potential environmental impact caused by power transmission construction. The acquired land must be compensated stringently according to relevant national regulations (including land occupation and young crop compensation). Land will be reallocated to farmers who lose their farm field and surplus labour force will be arranged.

After their questions were answered carefully, the residential representatives understood that the power construction would not bring impact on them.

In term of environmental impacts, there is no complain or question of local people for the issue. Local people concern is human intervention to natural environment in the Project is minimum or no impact.

6. Public participation investigation results

Local Government, all functional departments and the public on the Project sites supporting construction of the Project consider it beneficial to development of local industry and to enhance met of local living quality; long term and short term occupied land should be compensated in accordance with Vietnamese regulations. Project's affected peoples considered Project as a Project with non-impact on the environment.

7. Summary of the comment received from public

- All o the participants in the meeting have agreed that the project will bring a lot of benefits to the Hai Duong city. Quality of life of the Project beneficiaries is considerably
increased. The Project will increase the stability of the power network of Hai Duong city. Many public organizations such as hospital, schools are supplied by the higher quality of power.

- Generally, the lines routes are well selected. The local peoples about the selection of routes have raised some comments. The Consultants have explained about the principles of line selections, explanation of technical issue during design and operation.

- People are very happy if the line goes close to their places, because that will increase the quality of power supply. They agree that the potential environmental impacts are very minor and can be very well managed. Additional comments are given to the Consultants for the mitigation activities such as where it should be placed warning site, what time is most suitable for the excavating work during construction phase in some specific areas such as hospital and school.

- Local people are willing in their ability to help project owners, contractors to manage the environmental issues such as water supply for spraying, to avoid transportation in the excavating places etc. It is very positive sign from local people to welcome the Project.

- Other issues rose by the local people mainly focused on the compensation issues. This information is available in the Project RAP report.

8. Reflection of public comments on the EIA reports

- The Comments of local peoples are summarized as above mentioned. All of their comment on environmental issues are explained and added if it is necessary in this EIA report. The EIA report and RAP report are displayed in the Hai Duong Power Company and PNPMB as describe above.
Kính gửi: Điện lực Hải Dương

Dự án "Cải tạo và phát triển lưới điện thành phố Hải Dương – Tỉnh Hải Dương" được thực hiện với khoản vay số 3034 của Ngân hàng Thế giới. Theo chính sách của Ngân hàng Thế giới, tài liệu về báo cáo đánh giá tác động môi trường (EIA) và Kế hoạch đến buscar, tài đình cư (RAP) phải được đặt tại một địa điểm để bất kỳ ai quan tâm đều có thể tiếp cận được. Ban QLDA lưới điện kính đề nghị Điện lực Hải Dương cho phép Ban QLDA lưới điện được lưu 2 bản báo cáo này tại văn phòng của cơ quan và đề nghị Điện lực Hải Dương thông báo với công chúng (thông báo ngắn trên các báo, đại diện phương, tờ rơi tại các vị trí công cộng...) trong vùng để những người quan tâm có thể đến tiếp cận với các tài liệu nói trên tại trụ sở Điện lực Hải Dương.

Thời gian tiếp cận tài liệu: từ thời gian thông báo đến khi kết thúc dự án.

Rất mong Điện lực Hải Dương quan tâm giúp đỡ.

Nơi nhận:
- Như trên,
- Lưu TCQT, CBXD

Hà Nội, ngày 14 tháng 7 năm 2003
PHÍEUXÁC NHẬN
BÀN ĐÁNG KÝ ĐẠTTIEUCHUẨN MÔI TRƯỜNG

Tên dự án: Cải tạo và phát triển lưới điện trung áp thành phố Hải Dương, tỉnh Hải Dương
Địa điểm thực hiện Dự án: Thành phố Hải Dương, tỉnh Hải Dương
Chủ dự án: Ban quản lý Dự án lưới điện - Công ty Điện lực 1.

GIẢM ĐỐC
SỞ KHOA HỌC, CÔNG NGHỆ VÀ MÔI TRƯỜNG TỈNH HẢI DƯƠNG
XÁC NHẬN

Điều 1: Dự án cải tạo và phát triển lưới điện trung áp thành phố Hải Dương của Ban quản lý dự án lưới điện - Công ty Điện lực I đã trình nội dung bàn đăng ký đặt tiêu chuẩn môi trường ngày 18 tháng 6 năm 2003 về: Dự án cải tạo và phát triển lưới điện trung áp thành phố Hải Dương, tỉnh Hải Dương.

Điều 2: Chủ dự án có trách nhiệm thuộc đúng những nội dung đã được nêu trong Ban đăng ký đặt tiêu chuẩn môi trường.

Điều 3: Ban đăng ký đặt tiêu chuẩn môi trường của Dự án là cơ sở để các cơ quan Quản lý Nhà nước về bảo vệ môi trường kiểm tra việc thực hiện bảo vệ môi trường của Dự án.

Điều 4: Sau khi hoàn thành các hạng mục về bảo vệ môi trường, chủ Dự án phải có báo cáo bằng Văn bản gửi cơ quan Quản lý Nhà nước về bảo vệ môi trường để kiểm tra.

Nơi nhận:
- BQL lưới điện CTDDLL;
- Bộ KH-CN và Môi trường (để B/c);
- UBND tỉnh Hải Dương (để B/c);
- Lưu VP, MTg.

GIẢM ĐỐC
TS. Hà Bạch Đăng
# Annex 1: Summary of Project Scope

**Rehabilitation and Expansion of Distribution Systems of Hai Duong City - Hai Duong Province**

<table>
<thead>
<tr>
<th>Feeder</th>
<th>Construction</th>
<th>Reconstruction</th>
<th>Old Line</th>
<th>Branch Construction</th>
<th>Reconstruction</th>
<th>Old Line</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Overhead line</td>
<td>Underground Cable</td>
<td>Overhead line</td>
<td>Overhead line</td>
<td>Underground Cable</td>
<td>Overhead line</td>
</tr>
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<td>1,163.00</td>
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<td>482</td>
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<td>519.00</td>
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<td>1,900.00</td>
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<td>Total</td>
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<td>19,052.00</td>
<td>2,787.00</td>
<td>21,470.00</td>
<td>8,102.00</td>
<td>4,457.00</td>
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</table>
ANNEX 2: TEMPORARY LAND ACQUISITION IN ROW

<table>
<thead>
<tr>
<th>22KV Feeders</th>
<th>Agricultural land ( (m^2) )</th>
<th>Residential land ( (m^2) )</th>
<th>CPC land ( (m^2) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>A - Feeder 470</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22KV overhead line</td>
<td>32,475.000</td>
<td>13,531.250</td>
<td>8,118.75</td>
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<tr>
<td>Substations</td>
<td>441.000</td>
<td>189.000</td>
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</tr>
<tr>
<td>B - Feeder 472</td>
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<td></td>
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<tr>
<td>22KV overhead line</td>
<td>24,790.800</td>
<td>8,263.600</td>
<td>8,263.60</td>
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<tr>
<td>Substations</td>
<td>312.000</td>
<td>168.000</td>
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<td>C - Feeder 479</td>
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<tr>
<td>22KV overhead line</td>
<td>21,835.040</td>
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<td>16,376.28</td>
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<td>Substations</td>
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<td>684.00</td>
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<td>D - Feeder 476</td>
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<td>22KV overhead line</td>
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<tr>
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<td>E - Feeder 478</td>
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<td></td>
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<td>22KV overhead line</td>
<td>11,750.200</td>
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<td>11,750.20</td>
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<tr>
<td>Substations</td>
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<td>264.00</td>
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<tr>
<td>F - Feeder 480</td>
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<td>22KV overhead line</td>
<td>52,261.800</td>
<td>17,420.600</td>
<td>17,420.60</td>
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<tr>
<td>Substations</td>
<td>330.000</td>
<td>165.000</td>
<td>165.00</td>
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<tr>
<td><strong>Subtotal</strong></td>
<td><strong>162,543.560</strong></td>
<td><strong>102,829.820</strong></td>
<td><strong>92,108.52</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>357,481.900</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Annex 3: Temporary Land Acquisition Within ROW

<table>
<thead>
<tr>
<th>22KV Feeders</th>
<th>Agricultural land (m²)</th>
<th>Residential land (m²)</th>
<th>CPC land (m²)</th>
</tr>
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<tbody>
<tr>
<td><strong>A - Feeder 470</strong></td>
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<tr>
<td>22KV overhead line</td>
<td>23,382.00</td>
<td>9,742.50</td>
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<tr>
<td>Substations</td>
<td>317.52</td>
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<td></td>
</tr>
<tr>
<td><strong>B - Feeder 472</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22KV overhead line</td>
<td>17,849.38</td>
<td>5,949.79</td>
<td>5,949.79</td>
</tr>
<tr>
<td>Substations</td>
<td>224.64</td>
<td>120.96</td>
<td></td>
</tr>
<tr>
<td><strong>C - Feeder 479</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22KV overhead line</td>
<td>15,721.23</td>
<td>11,790.92</td>
<td>11,790.92</td>
</tr>
<tr>
<td>Substations</td>
<td>164.16</td>
<td>164.16</td>
<td>492.48</td>
</tr>
<tr>
<td><strong>D - Feeder 476</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22KV overhead line</td>
<td>12,713.56</td>
<td>9,535.17</td>
<td>9,535.17</td>
</tr>
<tr>
<td>Substations</td>
<td>142.56</td>
<td>142.56</td>
<td>427.68</td>
</tr>
<tr>
<td><strong>E - Feeder 478</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22KV overhead line</td>
<td>8,460.14</td>
<td>7,251.55</td>
<td>8,460.14</td>
</tr>
<tr>
<td>Substations</td>
<td>190.08</td>
<td>95.04</td>
<td>190.08</td>
</tr>
<tr>
<td><strong>F - Feeder 480</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22KV overhead line</td>
<td>37,628.50</td>
<td>12,542.83</td>
<td>12,542.83</td>
</tr>
<tr>
<td>Substations</td>
<td>237.60</td>
<td>118.80</td>
<td>118.80</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>117,031.36</td>
<td>74,037.47</td>
<td>66,318.13</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>257,386.96</td>
</tr>
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</table>
## ANNEX 4: PERMANENT LAND ACQUISITION WITHIN ROW

<table>
<thead>
<tr>
<th>22KV Feeders</th>
<th>Agricultural land (m²)</th>
<th>Residential land (m²)</th>
<th>CPC land (m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A - Feeder 470</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22KV overhead line</td>
<td>3,897.00</td>
<td>1,623.75</td>
<td>974.25</td>
</tr>
<tr>
<td>Substations</td>
<td>52.92</td>
<td>22.68</td>
<td></td>
</tr>
<tr>
<td><strong>B - Feeder 472</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>22KV overhead line</td>
<td>2,974.90</td>
<td>991.63</td>
<td>991.63</td>
</tr>
<tr>
<td>Substations</td>
<td>37.44</td>
<td>20.16</td>
<td></td>
</tr>
<tr>
<td><strong>C - Feeder 479</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22KV overhead line</td>
<td>2,667.74</td>
<td>1,778.50</td>
<td></td>
</tr>
<tr>
<td>Substations</td>
<td>73.44</td>
<td>48.96</td>
<td></td>
</tr>
<tr>
<td><strong>D - Feeder 476</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22KV overhead line</td>
<td>2,620.20</td>
<td>1,965.15</td>
<td>1,965.15</td>
</tr>
<tr>
<td>Substations</td>
<td>27.36</td>
<td>27.36</td>
<td>82.08</td>
</tr>
<tr>
<td><strong>E - Feeder 478</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22KV overhead line</td>
<td>2,118.93</td>
<td>1,589.19</td>
<td>1,589.19</td>
</tr>
<tr>
<td>Substations</td>
<td>23.76</td>
<td>23.76</td>
<td>71.28</td>
</tr>
<tr>
<td><strong>F - Feeder 480</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22KV overhead line</td>
<td>1,410.02</td>
<td>1,208.59</td>
<td>1,410.02</td>
</tr>
<tr>
<td>Substations</td>
<td>31.68</td>
<td>15.84</td>
<td>31.68</td>
</tr>
<tr>
<td><strong>G - Feeder 482</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22KV overhead line</td>
<td>6,271.42</td>
<td>2,090.47</td>
<td>2,090.47</td>
</tr>
<tr>
<td>Substations</td>
<td>39.60</td>
<td>19.80</td>
<td>19.80</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>19,505.23</td>
<td>12,339.58</td>
<td>11,053.02</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>42,897.83</td>
</tr>
</tbody>
</table>
ANNEX 5: SOCIO-ECONOMIC FEATURES OF PROJECT AREA

<table>
<thead>
<tr>
<th>NO.</th>
<th>LOCATION</th>
<th>NATURAL AREA (KM²)</th>
<th>POPULATION (PEOPLE)</th>
<th>DENSITY (PEOPLE/KM²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Wards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Pham Ngu Lao 0.648</td>
<td>12.64</td>
<td>19,507</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Tran Phu 0.480</td>
<td>9.926</td>
<td>20,679</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Quang Trung 0.864</td>
<td>10.057</td>
<td>11,640</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Tran Hung Dao 0.406</td>
<td>14.31</td>
<td>35,247</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Nguyen Trai 0.478</td>
<td>10.712</td>
<td>22,409</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Le Thanh Nhi 0.400</td>
<td>9.487</td>
<td>23,717</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Thanh Binh 5.691</td>
<td>17.623</td>
<td>3,097</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Cam Thuong 2.462</td>
<td>5.409</td>
<td>2,197</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Binh Han 3.077</td>
<td>11.016</td>
<td>3,580</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Ngoc Chau 6.546</td>
<td>15.23</td>
<td>2,327</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Hi Tan 2.529</td>
<td>7.59</td>
<td>3,001</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Communes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Tu Minh 6.257</td>
<td>17.623</td>
<td>2,817</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Viet Hoa 6.146</td>
<td>8.087</td>
<td>1,316</td>
<td></td>
</tr>
</tbody>
</table>
CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc

BIỆN BAN HỘP THAM VĂN CỘNG ĐỒNG
BÁO CÁO ĐÁNH GIÁ TÁC ĐỒNG MỞ TRƯỜNG
DỰ ÁN: CÁI TẠO VÀ PHÁT TRIỂN LƯỢI ĐIỆN TRUNG ÁP
THÀNH PHỐ HẢI DƯƠNG - TỈNH HẢI DƯƠNG

Hải Dương, ngày 3 tháng 10, năm 2002

Tại địa điểm: Chu Văn Như - Phương (Xã) Ngã Chánh
TP Hải Dương - Tỉnh Hải Dương

I - Thành phần tham dự:
1. Đại diện UBND phường (Xã): ông Hoàng Văn Vinh - Chủ tịch UBND phường

2. Đại diện các tổ chức Xã hội:

III. Sự tham dự:
3. Những người bị ảnh hưởng bởi dự án tham dự: 16
Trong đó: Nam: ; Nữ: 3...

4. Đại diện Ban quản lý/Dồn vị tư vấn:

II- Các vấn đề tham vấn:

Các bên đã cùng xem xét, thảo luận về các vấn đề ảnh hưởng môi trường của dự án trung áp thuộc dự án: Cái tạo và phát triển lực điện trung áp Thành phố Hải Dương.

Đại diện Công ty tư vấn xây dựng diện I đã trình bày sơ bộ về dự án, các phương án tuyển dụng, các ảnh hưởng của dự án đối với các khu vực dân cư, cây cối..., trong đội bàn cùng như các biện pháp giảm thiểu tác động môi trường.
Sau khi xem xét thảo luận các văn đề trên chứng tỏ thống nhất như sau:

Về cư dân tuyên dương dương xây dựng điện 1 lựa chọn trên địa bàn phường (xã) - Thành phố Hải Dương (theo bản đồ mặt bằng tuyên bố. . .) là hợp lý, tránh được các quy hoạch của địa phương và ảnh hưởng tới thiếu đối với khu vực dân cư cũng như đối với môi trường và các công trình liên quan.

Thống nhất với các biện pháp giảm thiểu ảnh hưởng môi trường của dự án trong quá trình chọn tuyển, thì công công trình do Công ty tư vấn Xây dựng điện 1 trình bày.

UBND Phường (Xã) và các tổ chức xã hội được tham vấn sẽ thông báo cho nhân dân trong phường (xã) mình biết để tham gia thực hiện.

III- Các văn đề tồn tại đề nghị xem xét thêm:

- Phải đến đủ cây cỏ hoa màu cho dân trước khi thì công công trình.

Biên bản cuộc họp được thông qua, đại diện các bên thống nhất và ký tên.

DÁI DIỄN TTV XD ĐIỆN LỨC I

CÔNG TY ĐIỆN LỨC I

XÁC NHẬN CỦA UBND

PHƯỜNG (XÃ)

CHỦ TỊCH
HOÀNG VĂN VĨNH
CÔNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc

BIỂN BẢN HỘP THAM VĂN CỘNG ĐỒNG
BÁO CÁO ĐÁNH GIÁ TÁC ĐỒNG MÔI TRƯỜNG
DỰ ÁN : CẢI TẠO VÀ PHÁT TRIỂN LUÔI DIỆN TRUNG ÁP
THÀNH PHỐ HẢI DƯƠNG - TỈNH HẢI DƯƠNG

Hải dương, ngày tháng 10 năm 2002

Tại địa điểm : ...Phường (Xã)...Trâu et...Đo...TP Hải dương - Tỉnh Hải dương

I - Thành phần tham dự:
1. Đại diện UBND Phường (Xã): ông Phạm Hồng Khang – Chủ tịch UBND Phường
2. Đại diện các tổ chức Xã hội:
   - Ông Nguyễn Văn Chuyên – Chủ tịch MTTQ
   - Bà Lê Thị Phao – Chủ tịch Phụ nữ
   - Ông Vũ Hải Đông, Ông Đỗ Văn Thanh, Bà Đặng Bản
   - Ông Phan Công Thanh – Chủ tịch Hội Cựu Chiến Binh
3. Những người bị ảnh hưởng bởi dự án tham dự: 13
   Trong đó : Nam. 9, Nữ. 4...
4. Đại diện Ban quản lý /Đơn vị tu vấn:
   - Ông Nguyễn Trọng Bình – CNAF - TT.60, Đinh Bắc
   - Ông Nguyễn Văn Chuyên – CK.6 - TK

II - Các vấn đề tham vấn:

Các bên đã cùng xem xét, thảo luận về các vấn đề ảnh hưởng môi trường của dự án trung bình áp thức dự án : Cải tạo và phát triển luôi diện trung áp Thành phố Hải dương.

Đại diện Công ty tư vấn xây dựng điện lđa trình bày sự hỗ và dự án, việc phương án tuyển đường dây, các ảnh hưởng của đường dây đối với các khu vực dân cư ,cây cối... trong địa bàn cũng như các biện pháp giảm thiểu tác động môi trường.
Sau khi xem xét thảo luận các vấn đề trên chứng tỏ thống nhất như sau:

Về cử bavn tuyển đường dây do Công ty tư vấn xây dựng điện I lựa chọn trên địa bàn phường (xã) - Thành phố Hải Dương (theo bản đồ mặt bằng tuyển lô .......A7,J,..4,8......) là hợp lý, tránh được các quy hoạch của địa phương và ảnh hưởng tới hiệu đối với khu vực dân cư cũng như đối với môi trường và các công trình liên quan.

Thống nhất với các biện pháp giảm thiểu ảnh hưởng môi trường của dự án trong quá trình chọn tuyển, thi công công trình do Công ty tư vấn Xây dựng điện I trình bày.

UBND Phường (Xã) và các tổ chức xã hội được tham vấn sẽ thông báo cho nhân dân trong phường (xã) minh biết để tham gia thực hiện.

III- Các vấn đề tồn tại đề nghị xem xét thêm:
- Phải đến bù cây cối hoa màu cho dân trước khi thi công công trình.

Biển ban cuộc họp được thông qua, đại diện các bên thống nhất và ký tên./.

ĐẠI DIỆN TTV XD DIỄN LỰC I
CÔNG TY DIỄN LỰC I

XÁC NHÀN CỦA UBND
PHƯỜNG (XÃ)
CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc

BIỂN BẢN HỘP THAM VĂN CỘNG ĐỒNG
BÁO CÁO ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG
DỤ ÁN : CẢI TẠO VÀ PHÁT TRIỂN LUỒI DIỄN TRUNG ÁP
THÀNH PHỐ HẢI DƯƠNG - TỈNH HẢI DƯƠNG

Hải Dương, ngày... tháng ... năm 2002

Tại địa điểm : Khu dân cư số 10 ... Phường (Xã) ... L. Thanh ... Nghĩa ...
TP Hải Dương - Tỉnh Hải Dương

I - Thành phần tham dự:
1. Đại diện UBND Phường (Xã) : ông : Trần Trọng Tài - Chủ tịch UBND Phường
2. Đại diện các tổ chức Xã hội:
   - Ông Nguyễn ... Lê Đại ... Trưởng ban ... xã hội, chính sách xã hội
   - Ông Nguyễn ... Lê Minh ... Phó trưởng ban ...
   - Ông Nguyễn ... Lê Bảo ... Phó chủ tịch ...
   - Bà Nguyễn Thị Thảo ... Chủ tịch ...
3. Những người bị ảnh hưởng bởi dự án tham dự : 12

Trong đó : Nam ... Nữ ...

4. Đại diện Ban quản lý/Đơn vị tư vấn:
   - Ông Nguyễn ... Trần ... ban - ÇAPP - 1111111 - cơ sở 1...
   - Ông Nguyễn ... Văn Chinh ... cơ sở 2...

II - Các vấn đề tham vấn:

Các bên đã cùng xem xét, thảo luận về các vấn đề ảnh hưởng môi trường của đường dây trung áp thuộc dự án : Cải tạo và phát triển lưới điện trung áp Thành phố Hải Dương.

Đại diện Cty tư vấn xây dựng điện I đã trình bày sơ bộ về dự án, các phương án tuyển đường dây, các ảnh hưởng của đường dây đối với các khu vực dân cư, cây cối... trong địa bàn cũng như các biện pháp giảm thiểu tác động môi trường.
Sau khi xem xét thảo luận các văn đề trên chúng tôi thống nhất như sau:

Về cơ bản tuyển đường dây do Công ty tư vấn xây dựng điện 1 lựa chọn trên địa bàn phường (xã) - Thành phố Hải Dương (theo bản đồ mật bùng tuyến lộ 370,473,482...) là hợp lý, tránh được các quy hoạch của địa phương và ảnh hưởng đối diện đối với khu vực dân cư cũng như đối với môi trường và các công trình liên quan.

Thông nhất với các biện pháp giảm thiểu ảnh hưởng môi trường của dự án trong quá trình chon tuyển, thì công công trình do Công ty tư vấn Xây dựng điện 1 trình bày.

UBND Phường (Xã) và các tổ chức xã hội được tham vấn sẽ thông báo cho nhân dân trong phường (xã) mình biết để tham gia thực hiện.

III- Các văn đề tồn tại đề nghị xem xét thêm:

- Phải đề xuất cây cối hoa màu cho dân trước khi thi công công trình.

Biên bản cuộc họp được thống qua, đại diện các bên thống nhất và ký tên.

ĐẠI DIỂN TTV XD DIỄN LỨC I
CÔNG TY DIỄN LỨC I

XÁC NHẬN CỦA UBND
PHƯỜNG (XÃ)

TRÁN TRỌNG TÂN
CÔNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc

BIENVANHỌPTHÁMVĂNCỘNGDỌNG
BÁO CÁO ĐÁNH GIÁ TÁC ĐỘNG MỚI TRƯỞNG
DỰ ÁN: CẢI TẠO VÀ PHÁT TRIỂN LƯỢI ĐIỆN TRUNG ÁP
THÀNH PHỐ HẢI DƯƠNG - TỈNH HẢI DƯƠNG

Hải dương, ngày Mí tháng 10 năm 2002

Tại địa điểm: Chuẩn, cầu...13 Phương (Xã) Trà...Trang,...Phương (Xã)
TP. Hải dương - Tỉnh Hải dương

I - Thành phần tham dự:
1. Đai diện UBNĐ Phương (Xã): Đ ngoại Kinh NĐ: Chủ tịch UBND Phương
2. Đai diện các tổ chức Xã hội:
Đ: Nguyễn Văn...Chủ tịch...Chủ tịch...Phó Chủ tịch
Đ: trần...Phó Chủ tịch...Chủ tịch...Phó Chủ tịch
Đ: Vũ Thị Hằng...Biên...Số...Thuận...Thuận
Đ: Phạm Công...Chủ tịch...Chủ tịch...Chủ tịch

3. Những người bị ảnh hưởng bởi dự án tham dự: 15

Trong đó: Nam...- Nữ...-

4. Đai diện Ban quản lý/Dơn vị tư vấn:
Đ: Nguyễn Đông...Phó...CA...Đ: T.T.K...Văn/...Văn...

II- Các vấn đề tham vấn:

Các bên đã cùng xem xét, thảo luận về các vấn đề ảnh hưởng môi trường của đường dây trung áp thuộc dự án: Cải tạo và phát triển lưới điện trung áp Thành phố Hải dương.

Đại diện Công ty tư vấn xây dựng điện I đã trình bày sơ bộ về dự án, các phương án tuyển đường dây, các ảnh hưởng của đường dây đối với các khu vực dân cư, cây cối... trong địa bàn cũng như các biện pháp giảm thiểu tác động môi trường.
Sau khi xem xét thảo luận các vấn đề trên chúng tôi thống nhất như sau:

Về cơ bản tuyển đường dây do Công ty tự vận xayar dùng điện 1 lựa chọn trên địa bàn phường (xã) - Thành phố Hải Dương (theo bản đồ mặt bằng thuyết lợi ...) là hợp lý, tránh được các quy hoạch của địa phương và ảnh hưởng tới tiêu độ với khu vực dân cư cũng như đối với môi trường và các công trình liên quan.

Thông báo với các biện pháp giảm thiểu ảnh hưởng môi trường của dự án trong quá trình chon lựa, thi công công trình do Công ty tự vận Xay dùng điện 1 trình bày.

UBND phường (xã) và các tổ chức xã hội được tham vấn sẽ thông báo cho nhân dân trong phường (xã) mình biết để tham gia thực hiện.

III- Các vấn đề tồn tại để nghị xem xét thêm:
- Phải đến bước cuối cơ hoa màu cho dân trước khi thi công công trình.

Biến bản cuộc họp được thông qua, đại diện các bên thống nhất và ký tên.

DÀI DIỄN TTV XD DIỄN LỰC I
CÔNG TY DIỄN LỰC I

XÁC NHẬN CỦA UBND
PHƯƠNG (XÃ)

CHỦ TỊCH
PHẠM HỒNG KHẢNH
CÔNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM
Đọc lập - Tự do - Hành phúc

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BIÊN BẢN HỘP THAM VÀN CÔNG ĐỒNG
BÁO CÁO ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG
DỰ ÁN: CẢI TẠO VÀ PHÁT TRIỂN LUỘI DIỆN TRUNG ÁP
THÀNH PHỐ HẢI DƯƠNG - TỈNH HẢI DƯƠNG

Hải dương, ngày 15 tháng 10 năm 2002

Tại địa điểm: Khu dân cư số 5, Phương (Xã) Việt Hòa,.............................

TP Hải Dương - Tỉnh Hải Dương

I - Thành phần tham dự:

1. Đại diện UBND Phương (Xã): Ông Bùi Đức Thanh - Chủ tịch UBND

2. Đại diện các tổ chức xã hội:

- Ông nächste, Chủ tịch tổ chức.
- Anh Nguyễn Văn A, Chủ tịch tổ chức.
- Ông Nguyễn Văn B, Chủ tịch tổ chức.
- Ông Nguyễn Văn C, Chủ tịch tổ chức.

3. Những người ít ảnh hưởng bởi dự án tham dự: 17

Trống đó: Nam: 17, Nữ: 10

4. Đại diện Ban quản lý/Đơn vị tư vấn:

... ...

II - Các vấn đề tham vấn:

Các bên đã cùng xem xét, thảo luận về các vấn đề ảnh hưởng môi trường của đường dây trung áp thuộc dự án: Cải tạo và phát triển lưới điện trung áp Thành phố Hải Dương.

Đại diện Công ty tư vấn xây dựng điện 1 đã trình bày sơ bộ về dự án, các phương án tuyển đường dây, các ảnh hưởng của đường dây đối với các khu vực dân cư, cây cối,... trong địa bàn cũng như các biện pháp giảm thiểu tác động môi trường.
Sau khi xem xét thảo luận các vấn đề trên chúng tôi thống nhất như sau:

Về cơ bản tuyển đường dây do Công ty tư vấn xây dựng điện 1 lựa chọn trên địa bàn phường (xã) - Thành phố Hà Nội (theo bản đồ mặt bằng tuyển lô ...

là hợp lý, tránh được các quy hoạch của địa phương và ảnh hưởng tới điều độ với khu vực dân cư cùng như đối với môi trường và các công trình liên quan.

Thông nhất với các biện pháp giảm thiểu ảnh hưởng môi trường của dự án trong quá trình chọn tuyển, thi công công trình do Công ty tư vấn Xây dựng điện 1 trình bày.

UBND Phường (Xã) và các tổ chức xã, thị, huyện dân cư phường (xã) mình biết để tham gia thực hiện.

III- Các vấn đề tồn tại để nghị xem xét thêm:

- Phải đề nghị Tư Cục điện lực, UBND và UBND tỉnh về việc xử lý các vấn đề đã nêu trên.

Biên bản cuộc họp được thống qua, đại diện các bên thống nhất và ký tên./

DÀI DIỄN TTV XD ĐIỆN LỨC 1
CÔNG TY ĐIỆN LỨC 1

XÂY DỰNG CỦA UBND
PHƯỜNG (XÃ)

CHỦ TỊCH
NGÔ DỨC THÀNH

Trung tâm tư vấn xây dựng điện lực

Tây Nguyên

Nguyễn Văn Chinh
CUỘC HỘP THAM VÀN CÔNG D próprio
BÁO CÁO DÀNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG
DỰ ÁN: CẢI TẠO VÀ PHÁT TRIỂN LUỘI DIỆN TRUNG ÁP
THÀNH PHỐ HẢI DƯƠNG - TỈNH HẢI DƯƠNG
PHƯƠNG : BÌNH HÂN
CUỘC HỘP THAM VĂN CÔNG ĐỒNG
BÁO CÁO ĐÁNH GIÁ TÁC ĐỒNG MÔI TRƯỜNG
DỰ ÁN: CẢI TẠO VÀ PHÁT TRIỂN LƯỢI ĐIỆN TRUNG ÁP
THÀNH PHỐ HẢI DƯƠNG - TỈNH HẢI DƯƠNG
PHƯƠNG : TRẦN HƯNG ĐẠO
CUỘC HỌP THAM VÀN CỘNG ĐỒNG
BÁO CÁO ĐÁNH GIÁ TÁC ĐỒNG MÔI TRƯỜNG
DỰ ÁN: CẢI TẠO VÀ PHÁT TR AçN LƯỜI ĐIỆN TRUNG ÁP
THÀNH PHỐ HẢI DƯƠNG - TỈNH HẢI DƯƠNG
PHƯƠNG: QUANG TRUNG
CUỘC HỘP THAM VÀN CÔNG ĐỒNG
BÁO CÁO ĐÁNH GIÁ TÁC ĐỒNG MÔI TRƯỜNG
DỰ ÁN: CẢI TẠO VÀ PHÁT TRIỂN LƯỢI DIỄN TRƯNG ÁP
THÀNH PHỐ HẢI DƯƠNG - TỈNH HẢI DƯƠNG
PHƯƠNG: LỄ THÀNH NGHỊ
CUỘC HỘP THAM VÀN CỘNG ĐỒNG
BÁO CÁO ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG
DỰ ÂN: CĂI TẠO VÀ PHÁT TRIỂN LƯỢI ĐIỂM TRUNG ÂP
 ThÀNH PHỐ HẢI DƯƠNG - TỈNH HẢI DƯƠNG
PHƯƠNG : NGỌC CHÂU
CUỘC HỘP THAM VĂN CÔNG ĐỒNG
BÁO CÁO ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG
DỰ ÁN: CÁI TẢO VÀ PHÁT TRIỂN LƯỢI ĐIỆN TRUNG ÁP
THÀNH PHỐ HẢI DƯƠNG - TỈNH HẢI DƯƠNG
XÃ : VIỆT HÀ
Existing and proposed protected areas in Hai Duong province
Các khu bảo vệ hiện có và đề xuất ở tỉnh Hải Dương
MẶT BẰNG TỔNG THỂ SÀU CẢI TẠO LƯỜI DIỆN TRUNG ÂP THÀNH PHỐ HÀI ĐƯƠNG TỈNH HÀI ĐƯƠNG

HUYÊN NAM SÁCH

S. THÀI BINH

HUYÊN GIA LỘC

YẾN CẨM GIANG