

E208
Volume 8



ELECTRICITY OF VIETNAM

POWER COMPANY No1

POWER CONSTRUCTION CONSULTING CENTER No1

Project:

110KV LANG SON – CAO BANG LINE

ENVIRONMENTAL MANAGEMENT PLAN

HÀ NỘI - 11/2004

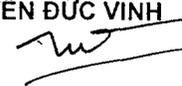
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ENVIRONMENTAL MANAGEMENT PLAN

PROJECT MANAGER: NGUYỄN ĐỨC VINH 

PREPARED: HÀ ANH TUẤN 

Hà nội, date.....month.....year 2004

POWER CONSTRUCTION CONSULTING CENTER NO 1



TRUNG TÂM TƯ VẤN XÂY DỰNG ĐIỆN LỰC
PHÓ GIÁM ĐỐC

Có Hiến Sơn

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Part I. Description of project

1. Table on project data

1. Project name	110kV Lang Son -- Cao Bang line	
2. Program name	3034 project	
3. New- construction or rehabilitation project	New <input checked="" type="checkbox"/>	Rehabilitation <input type="checkbox"/>
4. Project location i. Commune(s) ii. District, town (s) iii. Province	<p>* Tam Thanh, Hoang Dong wards-Lang Son city-Lang Son province</p> <p>* Thuy Hung, Hong Phong wards-Can Loc district-Lang Son province.</p> <p>* Tan My, Hung Viet, Tan Viet, Trung Khanh, Tan Lang communes-Van Lang district-Lang Son province</p> <p>* Hung Viet, Khang Chien, Dai Dong, Tri Phuong, Chi Minh, Chi Lang communes, Trang Dinh townlet-Trang Dinh district-Lang Son province</p> <p>* Duc Tuan, Duc Long, Thuy Hung, Le Lai communes, Dong Khe townlet-Thach An district-Cao Bang province</p> <p>* Luong Thien, My Hung, Hanh Phuc, Hong Dinh communes-Phuc Hoa district-Cao Bang province</p> <p>* Tu Do, Phuc Sen, Quoc Dan communes-Quang Uyen-Cao Bang province</p> <p>* Quoc Toan commune-Tra Linh district-Cao Bang province</p> <p>* Nguyen Hue, Ngu Lao, Vinh Quang communes-Hoa An district-Cao Bang province</p> <p>* De Tham, Ngoc Xuan communes-Cao Bang town-Cao Bang province</p>	
1. Length and voltage of high voltage (HV) line	Length= 145km	Voltage= 110kV
2. Width of Right of Way (ROW)	Width= 13m	
3. Estimated number and height of power pole	Quantity= 665	Heigh= 20-34m
4. Number of substation (s)	0	
5. Total capacitance of substations	Capacitance= 0 kVA	
6. The beginning and the ending of construction stage (month/year)	The beginning March,2005	The ending March,2006
7. Implement construction in rainy season	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
8. Number of project affected households (PAHs)	26	
9. Total land required for project	Temporary= 182,91ha	Permanent=5,59ha
10. Total productive land required for project	Temporary= 79,05ha	Permanent=2,42ha

11. Total forest land required	Temporary= 42,53ha	Permanent=1,30ha
12. Total industrial land	Temporary= 0ha	Permanent=0ha
13. Total residential land	Temporary= 0,058ha	Permanent=0,698ha
14. Total others	Temporary= 61,33ha	Permanent=1,88ha
15. Total project cost (VND&USD)	Cost= 135,748,000,000 VND	Cost= 8,758,000 USD

2. Summary of the feeder

The feeder of 110 kV Lang Son-Cao Bang is 145 km of length with the connected point of 110kV Lang Son substation and the ending point of 110kV Cao Bang substation. The feeder mainly traverses mountainous area, approach of the selected line route is suitable to topography geology, convenient for operation management construction and connection system in the future. The feeder mitigates project's impacts on residential structures, economy, security and planning of locality and historical and cultural vestiges.

The feeder mainly traverse ranges of mountain and hill and along with the left of the old national highway no 1 in direction of the west of Dong Dang town, Can Loc district and along with the national highway no 4 via Van Lang, Trang Dinh, Thach An, Phuc Hoa, Quang Uyen, Tra Linh, Hoa An, Cao Bang districts.

The route that is over mountainous area is mainly natural renewable forest and plantation forests and fruit gardens. In general, the feeder's geology is satisfactory, weight resistant intensity is bit high $R=2.0-3.0 \text{ kg/m}^3$. The whole area's underground and surface water don't erode the concrete.

a. Description of the feeder

- Connected point: 110 kV lang Son substation
- Ending point: 110 kV Cao Bang substation
- First point outgoing from expanding bay of 110 kV Lang Son substation connected to 4 circuit pole of Lang Son-Na Duong line (approved technical design).
- From the second 4-circuit pole) to G4 point A, the feeder turns right and over comes grave on the left of Hospital until G4.
- From G4, the feeder goes along with the west of Lang Son city, traverses high hills that are mainly forest for planting small 1-3 years eucalyptus and it is a bit far from transportation way to avoid the crowded inhabitant.
- From G7 to G13, the feeder goes nearly the old national high way no1, traverses low hills 100-350m that are mainly forest for planting small 2-3 years old eucalyptus, pine.
- From G13 to G18, the feeder traverses high land hills, natural renewable forest, far from transportation way (1200-2000m) to avoid crossing rail way. Until Hong Phong cross-road G18, the feeder over comes high mountain.
- From G18 to G23, the feeder traverses high land hills, natural renewable forest, far from town's belt road 150-500m.
- From G23 to G30, the feeder goes along with the left valley of national high way no 4 nearby Na Sa stream, goes through low hills then over comes high hills to avoid Ban Keo inhabitant. The later part comes back the left of national high way no 4 until G30.
- From G30 to G32, the feeder traverses the west south of Na Sam town and over comes tops of the high hills, until G32 the feeder is far from national high way no 4 250-350m.
- From G32 to G33, the feeder crosses Ky Cung river which is near hydroelectric plant, goes parallel with 35 kV line until G33.

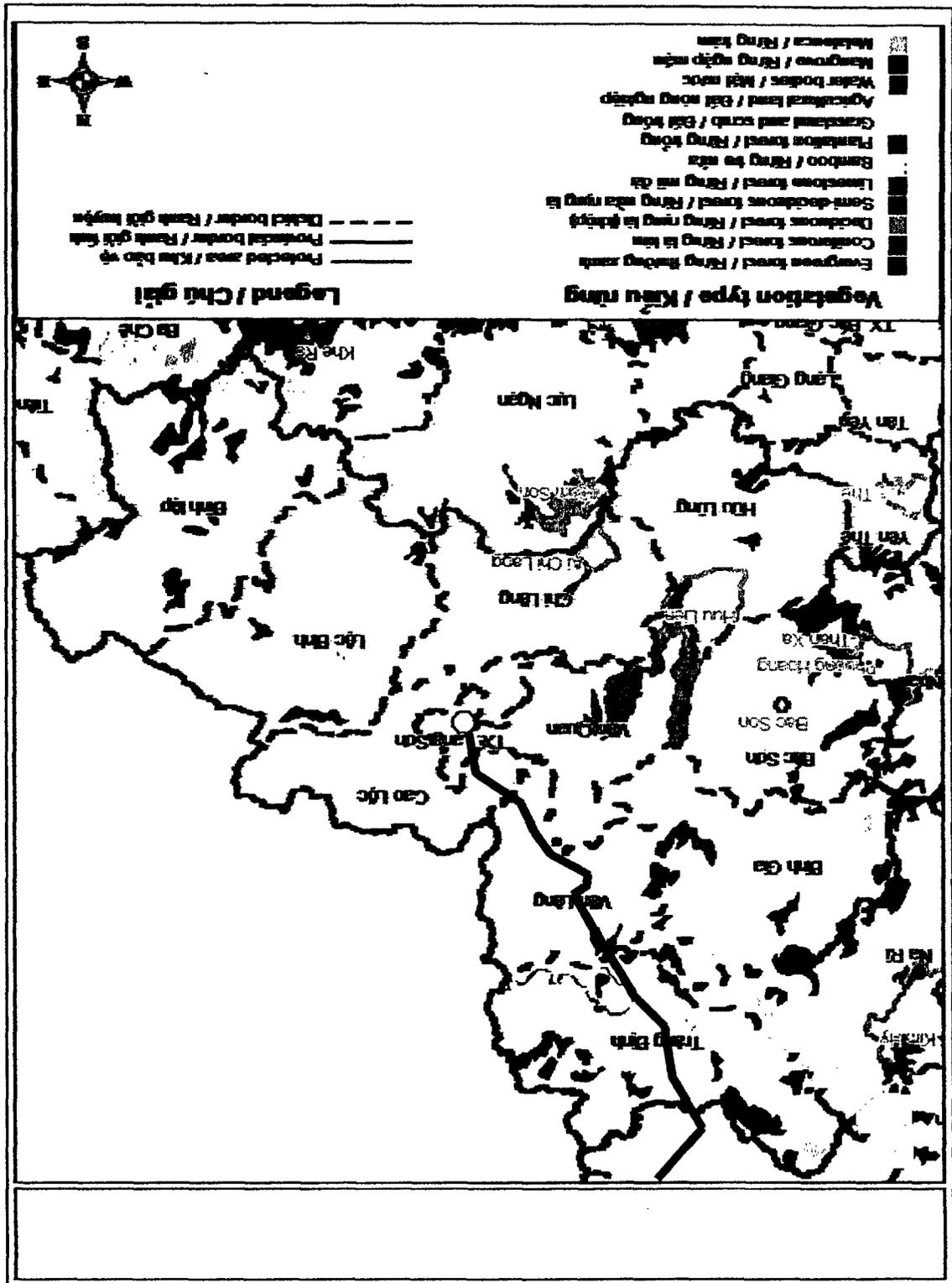
- From G33 to G35, the feeder crosses Ky Cung river and top of the wild renewable high hills, until G35 nearby Na Sam Grave of Martyr.
- From G35 to G37, the feeder goes into valley then crosses river until Brick oven of Na Phai hamlet via crop field, the feeder is far from the road 350-600m.
- From G37 to G40, the feeder crosses top of the stone mountain, hillside far from the road 150-250m, they are mainly natural renewable forest of An Hung commune.
- From G40 to G42, the feeder goes along with the crop field nearby the national high way no 4 at stone mountainous foot.
- From G42to G45, the feeder crosses high land hills, bushy renewable forest far from the road 150-300m of Tan Viet commune, Van Lang district.
- From G45 to G52, the feeder goes parallel with 35 kV Line and traverses high land hills, bushy renewable forest on the left of national high way no4 belonging to Tan Viet commune, Van Lang district to avoid over coming Ky Cung river (span is very large). The feeder is far from the road 150-350m.
- From G52 to G53, the feeder crosses the dangerous turn of Ky Cung river with 2 large spans (550-560m), intersects twice national high way no4 with the width of 5m belonging to Hung Viet commune, Trang Dinh district, mainly hill, natural renewable forest far from the road 300-600m.
- From G53 to G61, the feeder traverses the high land hills of Khang Chien commune, mainly hill, natural renewable forest far from the national high way no4 100-400m.
- From G61 to G62, the feeder over comes Ky Cung river at Tran bridge area, Trai Hamlet (over coming distance of 600m) via Grave hill of That Khe town, Trang Dinh.
- From G62 to G67, the feeder goes into the north east of That Khe town, via the bare hill or garden hills, flat fields nearby Na Pai, Na Trai, Na Kan, Trang hamlets At G67, the feeder over comes high hill nearly town' water pool and national high way no4. There are a bit lot of natural forests and graves in neighbouring areas.
- From G68to G77, the feeder goes along national high way no4A and slope high mountains. This feeder section over comes Bong Lau pass which has very complicated topography, high mountain, deep chasm. Popular slope in which the feeder goes through is 32° – 38°. The feeder is far from the road 80-150m and belongs to Tri Phuong commune, Tang Dinh district.
- From G77 to G80, the feeder crosses the deep valleys via top of the low hill, renewable forest, then it goes along range of the crop narrow valley.
- From G80 to G81, the feeder over comes the national high way no4A with the width of 5m, run briefly through gorge in direction of range of the crop field nearby the national high way no4A .
- From G81 to G89-B point , the feeder goes along the rather flat but oblique valleys that have dangerous mountain on two sides then it crosses 35kV line many time. The feeder is far from national high way no4 with width of 100-400m.
- From B point to G90, the feeder goes through crop field of 2 lime stone mountains, up to Na Lung highland hill on the right of the national high way no4A.
- From G90 to G93, the feeder goes through gorge, goes along the provincial way no28 of Dong Khe townlet and Le Lai commune-Thach An district.
- From G93 to G95, the feeder intersects tops of the high hill, bushy natural forests where growing little pine at 1-2 year old, then crosses constantly the provincial way no28.
- From G95 to G97 with the length of 1410m, the feeder traverses tops of the high, slope hill, over comes valley, deep chasm and goes through the back of Medicine station, People's committee area of Thuy Hung commune.
- From G97 to G99, the feeder traverses tops of the low limestone hill, which have bushy trees, complicated topography.

- From G99 to G103 with the length of 420m, the feeder traverses tops of the low limestone hill, which have bushy trees, complicated topography, far from the provincial way no 28 with the width of 150-400m belonging to Thuy Hung commune, Thach An district.
- From G103 to G106, the feeder crosses tops of the hill, bushy renewable forest far from the way 100-200m which belongs to My Hung commune, Phuc Hoa district.
- From G106 to G108, the feeder traverses range of the flat valley which is nearly Tuc My, Po Sin, Na Sai hamlets, Bang river, then goes up forest hill and far from the provincial way no 28 with the width of 300-2500m.
- From G108 to G109, the feeder over comes the large valley which is mainly bushy natural renewable forest and far from the way with the width of 60-100m belonging to Hong Quang commune.
- From G109 to G110, the feeder goes down the chasm and intersects tops of the high hill on the right of the provincial way no 205 then crosses twice the provincial way no 205 with the width of 4m and goes up top of the high mountain which is covered by a thin soil level and is mainly renewable forest belongs to area of Hong Quang commune.
- From G110 to G112, the feeder traverses the mountain of Lung Luong hamlet belonging to area of Hanh Phuc commune, it is far from the provincial way no 205 50-120 m then crosses the provincial way no 205 with the width of 4m.
- From G112 to G120, the feeder goes along with range of the narrow valley which crops are grown in and is parallel with the provincial way no 205 40-250 m, has the flat topography (Covered by the thin soil level with thickness of 0.3-2.5m). belonging to area of Hong Dinh commune, Quang Uyen district.
- From G120 to G123, the feeder goes up to the hill side of Phia Chang hamlet, Phuc Sen, Quang Uyen area and is far from the provincial way no 205, the farthest m.
- From G123 to G132, the feeder goes along the narrow valleys that plant crop and have dangerous mountain on two sides. The feeder is along the provincial way no 205 belonging to Quoc Dan commune.
- From G132 to G134 the feeder goes along the flat valleys that plant crop. The feeder is along the provincial way no 205 belonging to Quoc Toan commune-Tra Linh district.
- From G134 to G135, the feeder goes back Quoc Toan communal People's Committee up to Ma Phuc pass, stone mountain foot.
- From G135 to G138, the feeder goes along 35 kV line down Ma Phuc pass via the field up to the hill side belonging to An Lai area, Nguyen Hue commune, Hoa An district.. The feeder is far from the provincial way no 205 with the width of 50-200m.
- From G138 to G141, the feeder goes briefly up the land hill behind Khau Chang, Nam Loat hamlets which is far from the provincial way, the farthest is 2000m and mainly bushy renewable forest. Then the feeder comes back the provincial way 205 at G41.
- From G141 to G145, the feeder top of the high mountain and hill, Tra Linh river, bushy renewable forest, and far from the way with the width of 150-300m of Quang Trung commune.
- From G145 to G149, the feeder traverses Ban Gun of Ngu Lao commune- Hoa An district, top of the high mountains and old forestry routes where is mainly bare hill, pine forest, wild trees until G146. The feeder is far from high way, the farthest is 3000m.
- From G149 to G152, the feeder crosses the flat delta nearby the river where rice and crops are grown, then over comes Bang river at crossroad of Na Toan hamlet belonging to Vinh Quang commune, Hoa An district.
- From G152, the feeder over comes the provincial way no 203 and 10 kV Cao Bang line at 12.3m height to the front of Pooctic of 110 kV Cao Bang substation.

This 110kV line will be convenient for power supplying to 110 kV Quang Uyen substation constructed later.

- The length of the feeder: 145 km . .
- 110 kV and 4 circuits line in common: 200 m

- Overcome other lines: 46 times
- Overcome the information line: 16 times
- Overcome the car's road: 72 times
- Number of affected houses: 26 houses
- (House at 4 level, tiled roof, $\leq 5m$)
- Go through industrial tree and fruit forests: 15.8 ha

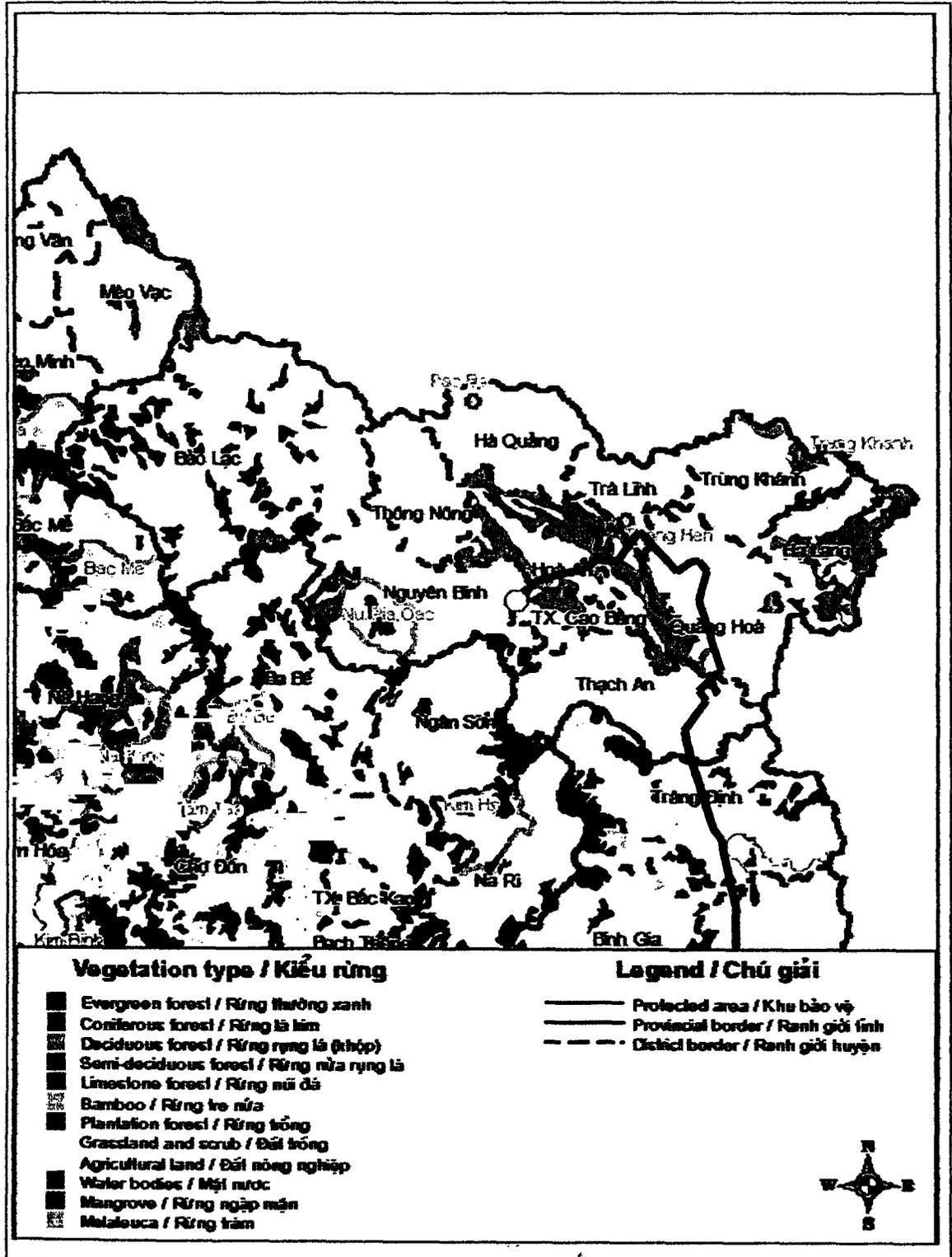


HÌNH 1 - BẢN ĐỒ KHU VỰC DỰ ÁN THUỘC TỈNH LANG SON

Bản đồ sau đây chỉ các thông số: 1) Vị trí dự án; 2) Danh giới địa chính; 3) Các thành phố và địa chính xã; 4) Các đường bộ và đường sắt chính; 5) Các sông hồ chính; 6) Các khu nhầy cảm và bảo vệ; 7) Cultural or Historic sites. — Đường màu xanh kẻ đậm là đường biên thị đường đến 110KV Lang Son - Cao Bằng. ○ Vòng tròn vàng viền đỏ là vị trí TBA 110KV Lang Son.

HÌNH 1 – BẢN ĐỒ KHU VỰC DỰ ÁN THUỘC TỈNH CAO BẰNG

Bản đồ sau đây chỉ các thông số: 1) Vị trí dự án; 2) Danh giới địa chính; 3) Các thành phố và địa chính xã; 4) Các đường bộ và đường sắt chính; 5) Các sông hồ chính; 6) Các khu nhạy cảm và bảo vệ; 7) Cultural or Historic sites. — Đường xanh kẻ đậm là đường biểu thị tuyến đường dây 110kV Lạng Sơn – Cao Bằng. ○ Vòng tròn vàng viền đỏ biểu thị vị trí của TBA 110kV Cao Bằng.



Part II: Environmental Screening

Impact	Potential impact		Comment (about rate and level of impact)
	Yes	No	
Construction phase			
The flora impacted by temporary or permanent land acquisition for Right Of Way (ROW), substation expansion or access road construction.	x		<p>- The flora on the whole feeder of 145km length which starts from Lang Son city to Cao Bang town, is affected. Most of impacts caused by land acquisition for ROW, pole foundation construction. Approach of construction is excluded access road design because material is manually transported from main road, total estimated impacts as follows (permanent/temporary impacts): 1,885,000m²/467,855m². Of which detail amount (permanent/temporary impacts).</p> <ul style="list-style-type: none"> - Rice: 27,910 m²/6927 m² - Crops: 32,265/8007 m² - Fruit: 4,046 trees/1004 trees - Pie: 3,677/913 trees - Eucalyptus: 1950/484 trees - Plantation: 3631/901 trees - Natural forest tree: 53263/13220 <p>- Thus, this project's impacts on renewable forest and plantation forest is low during construction and operation. There are impacts on natural renewable forest included vegetation, wild and small trees... there is no impact on primeval forest. Based on scope of the whole project, level of these impacts are acceptable.</p>
Soil erosion and sediment generation and surface water turbidity caused by earthwork.	x		<p>- During construction, amount of soil and rock for making the pole foundation is about 91,348m³ in which 74,093m³ is for filling pole foundation. The soil, rock residues will be removed to fill in the hollow places or the areas where do not cause mud when water erodes so it will not affect surrounding environment. Soil excavation should be implemented in the dried season but not on the rainy days to avoid the erosion. It's necessary to have approaches for limiting the erosion at foundation positions such as building stone embankment or drainage trench..Moreover there is a big quantity of pole foundation (10,053m³ of dug</p>

			stone) located on stone mountainous area, also the layers will not affect soil erosion and sedimentation in the future. - During investigation and design, pole foundation locations are taken into account the layer structure to avoid construction on the area which is easy to erode or has no tight structure as well as by stream, river where is easy to landslide and affect on the foundation positions. Thus, sediment generation caused by soil erosion has been also limited at the lowest level from investigation and design phase.
Effects on air quality from vehicle and equipment exhausts and dust generated by construction activities.	x		- During construction, vehicle and machine are mainly used for transporting material on the national or provincial way so exhaust amount is at the permissible or controllable limit. In the areas where are far from main road, material is mainly manually transported so it doesn't affect environment at all. During construction, only crane generates exhaust, noise but these impacts is mitigable. - Dust generation may be minor negative in areas where are close to inhabitant of Lang Son and Cao Bang towns. - During construction, transportation only occurs during the short time so level of impacts is limited.
Noise generation from vehicle and equipment use.	x		- Noise generation may be minor negative in areas where are close to inhabitant of Lang Son and Cao Bang towns. - There are proposed construction approaches in areas closed to inhabitant to avoid the night works.
Effects on items of cultural property through direct physical disturbance or effects on surrounding areas.		x	- This project does not affect on cultural vestiges or neighbouring areas such as community of Tam Thanh, Nhi Thanh caves and Tien pagoda in Lang Son and historical sites: Chi lang pass – Chi Lang district.
Contamination of soil, air or water from use of hazardous materials including PCBs.		x	- PCBs were forbidden to use for electric material and equipment long time ago. - Material affecting on environment such as disposal oil, chemical are minor during construction.

Disruption to traffic movements resulting from construction activities near public roads.	x		- Construction activities may be minor negative on traffic near public road belonging to suburb of Lang Son city and Cao Bang town, That Khe townlet. Specifically, the line overcomes land road (national and provincial way) for 72 times. Of which the feeder overcomes national way 4A for 26 times, Nhi Thanh way of Lang Son city for 2 times. This will disturb the circulation of the transportation but this impact is also within short time and acceptable.
Environmental impacts caused by construction worker in the camping sites.	x		- Impact is minor, because camps are built on the fallow areas and far from residential area. In case where the camping sites is close to inhabitant construction worker will stay in hiring house or in house with local people. Total number of camps is about 10 ones spreading on 145 km of the length, there are 7 people in a camp (mainly technician). Campsites will exist between 8 and 10 months, besides it's necessary to build worker's sanitation facilities. Using wells, stream, river water and there are measures for cleaning up the solid waste.
Others	x		- The line traverses areas which remain explosive residues because of the war, so mine clearance required.
Operation phase			
Exposure to EMF levels exceeding GOV standards.		x	- There are no impact because design stage is in compliance with regulation and process of technical design
Effects on flora and fauna from vegetation maintenance activities and/or bird collisions	x		- There are minor impacts during site clearance to ensure operation in accordance with the regulation: cutting tree higher than 4m on the feeder's corridor. Cut trees are taken into account during construction. Only cutting tree higher than 4m. In the feeder's corridor, not permissible to plant crop with short height around pole foundation.
Interference with radio, TV or other communications.	x		- Minor negative because design stage is in compliance with the line regulation.
Public health and safety effects including voltage hazard.		x	- No impact, because houses have been relocated or limited building in area of the electric magnetic field. There are warning, training programs on electricity safety in area which the line traverses. Operation, design measures

			are in compliance with regulation to ensure human safety.
Water quality impacts from discharge of employee sewage (sub-station projects only)		x	- no impact, because of the line project so there are no worker's new accommodation.
Contamination of soil, air or water from use of hazardous materials including PCBs.		x	No comment
Noise generation from sub-station operation		x	No comment

Part III PUBLIC CONSULTATION

CONSULTATION METHOD	DETAILS OF ACTIVITIES		CONSULTATION OUTCOMES	
Public Notice	Date(s) of notice	-	n/a	
	Location of notice	-		
Newspaper Notification	Date(s) of notice	-	n/a	
	Name of newspaper	-		
Public announcement/ radio	Date(s) of announcement		n/a	
	Time(s) of announcement			
Newsletter / questionnaire	Date(s) sent		Number received	-
	Number sent		Main issues	-
	Area of distribution			
	Feedback sought (Yes / No)			
Public meeting	Date(s) held	23 April 2004 to 26 May 2004	Meeting minutes attached (Yes / No) Yes	Issues discussed at meeting: <ul style="list-style-type: none"> • noise impacts • dust impacts • water quality • protecting trees • safe operation
	Location(s) held	Each commune in project	Attendees	CPC's DPC's Women's Union Fatherland Front Youth Union Local residents
	Invitees	CPC's DPC's Women's Union Fatherland Front Youth Union Local residents		
Methods of invitation	CPC called			

	Agenda attached (Yes / No)	No		
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+ Announcement:

Project will get the investment license right after identification of project location, design, capacity and technology which satisfies environmental and resettlement requirements. To inform OP 401's requirements, PC1 will perform the following issues:

- Provides Vietnamese version of EMP, RAP and FS to district (for substation) and provincial people committee (PPC) (for 110kV line in project area).
- Inform on local newspapers and mass media many times within 2 months. This information is clear on EMP, RAP and FS. Announcement is always maintained during administration working in locality. Specifically as work with:
 1. PPC
 2. Provincial Power Services
- Vietnamese and English versions of EMP will be submitted to Vietnam information development Centre in 63 Ly Thai To-Ha Noi for reviewal by NGOs and public.
- Vietnamese and English versions of EMP will be submitted to WB's information office for disclosure.

Part IV: MITIGATION TABLE

Phase	Mitigating Measure	Cost	Responsibility
Construction			
Right of Way (ROW) Clearance	<ul style="list-style-type: none"> • Utilize hand clearing of vegetation if possible. avoid mechanical clearing or herbicide use. save as much vegetation as possible • Dispose at established dump site 	Included in contractor bidding price	Contractor
Temporary Access Roads	<ul style="list-style-type: none"> • Use existing roads/tracks wherever possible. Any new alignments should cause minimum damage/loss to local land use • Restore disturbed areas with native species. avoid non-native species introduction 	Included in contractor bidding price	Contractor
Runoff, Sedimentation and Soil Erosion (Construction in the slope of 10° and easy to be eroded)	<ul style="list-style-type: none"> • Excavate erosion prone areas during dry season. never during rainy conditions • Install sediment traps or screens to control runoff and sedimentation as needed • Design drainage ditches to avoid affecting nearby lands Minimize use of slopes • Plant vegetative cover as soon as possible with native species 	Included in contractor bidding price	Contractor

Phase	Mitigating Measure	Cost	Responsibility
Air Pollution	<ul style="list-style-type: none"> • Insure all machinery using combustion engines has and maintains valid operating permits throughout the project schedule • Insure all trucks transporting dusty materials to/from the site are covered • Water spray dusty areas (construction site, roads etc.) during hot, dry, windy conditions • Avoid burning removed vegetation 	Included in contractor bidding price	Contractor
Noise	<ul style="list-style-type: none"> • All construction activity to be conducted during daytime hours. If evening construction is required, pre-notification and approval by local affected groups required 	Included in contractor bidding price	Contractor
Traffic disturbance	<ul style="list-style-type: none"> • This impact is unavoidable but only mitigable by implementing the construction in the shortest duration as possible and minimizing the construction work at peak time and in traffic intensive sites. 	No cost	Contractor
Construction worker's campsites	<ul style="list-style-type: none"> • - Improve construction team's awareness of environmental protection. • Detail plan on waste water treatment such as: drainage trench, sanitary landfill...Build isolated latrines and dispose solid waste in proper places. Design waste treatment. • Have measures of explosive and fire protection when using fire. 	included in contractor's cost.	Contractor

Phase	Mitigating Measure	Cost	Responsibility
Unexploded mine	<ul style="list-style-type: none"> - Hire specialists for mine clearance before the construction commencement. 	- VND 2 billion (Completed estimated cost establishment and contacted with BQP for hiring specialist)	PMB under PC1 will hire specialists from this field
Operation			
Electric and Magnetic Field	<ul style="list-style-type: none"> • Design to meet government standards or international standards to protect human health (less than 5kV/meter for electric field and 5 microtesla for magnetic field at the edge of the ROW) 	In the operational cost	PECC1
Tree cutting	<ul style="list-style-type: none"> • Do not cut trees below the minimal height requirement (<4 meters) 	In the operational cost	Transmission Company (PTC1)

Part V: Monitoring planTable

<i>No</i>	<i>Parties</i>	<i>Main responsibility</i>	<i>Content and format for report</i>
1	Construction Contractor	<ul style="list-style-type: none"> - Apply proposed mitigation measures - Report to PMU the application of mitigation measures. 	- Refer to Table V.1
2	Technical supervisor of PMU	<ul style="list-style-type: none"> - Monitor (by observation) and assess of the environmental parameters suggested by this IEE report; - Report to PMU 	- Refer to Table V.2
3	Safeguard Monitoring Independent Consultant (SMIC)	<ul style="list-style-type: none"> - Monitor (by observation) and assess environmental quality based on parameters suggested by this IEE report. - Conduct public consultation to received comment, assessment of local people on environmental management of the Project. 	- Refer to Table V.2

V.I EXAMPLE ENVIRONMENTAL TERMS OF REFERENCE FOR SIMC

The Safeguard Independent Monitoring Consultant will:

1. Visually look at the construction sites and make notes related to the following environmental issues, but not limited to:
 - General clean up after construction works,
 - Excessive clear cutting of trees beyond ROW in communal or forest land,
 - Measures taken by the contractor for cleaning up woody residues after tree cutting
 - Status of access roads (have they been closed if in a protected area, are they still being used and to what extent, how are they being controlled/managed and by whom), Application of mitigation measures for or sign of soil erosion along T/L due to tree cutting and/or around tower foundation
 - Status of re-vegetation in the ROWs and tower foundation
 - Impacts on construction works (level of noise, dust, and damage to roads due to earthworks and transportation of building materials)
 - Status of construction worker camps and sanitation facilities for them
 - Proper distance between the houses and T/L,
 - Status of implementation of safety measures (signboards, restricted zone, fences, isolation etc.)
2. Conduct public consultation to:
 - Assess the level of involvement by the local authorities in dealing with environmental issues (dust, noise, and damage to roads due to the transport of construction materials, tree cutting on public lands and protected areas).
 - Identify any other environmental issues and record environmental complaints from the PAHs.
 - Report on responses (if any) from appropriate local authorities on environmental complaints or non-compliance

V.II MONITORING TABLE

Phase/ Environmental Issue	What parameter is to be monitored?	Where is the parameter to be monitored?	How is the parameter to be monitored?	When is the parameter to be monitored?	Responsibility
Right of Way (ROW) Clearance	Clearing technique Disposal of cut vegetation whether clearing affects on the flora	Along ROW At disposal site	Visual observation	Once/month	<ul style="list-style-type: none"> - Project management Unit of PC1 is responsible for supervising and committing with contractor - Contractor is responsible for complying the commitment -Independent monitor implements supervision once/month

Phase/ Environmental Issue	What parameter is to be monitored?	Where is the parameter to be monitored?	How is the parameter to be monitored?	When is the parameter to be monitored?	Responsibility
Temporary Access Roads	Use of existing roads In case of constructing new temporary access road, it will affect on productive land because of temporary land acquisition.	Along route of access road At construction site of access road	Visual observation	Once/month	- Project management Unit of PCI is responsible for supervising and committing with contractor - Contractor is responsible for complying the commitment -Independent monitor implements supervision once/month

Phase/ Environmental Issue	What parameter is to be monitored?	Where is the parameter to be monitored?	How is the parameter to be monitored?	When is the parameter to be monitored?	Responsibility
Runoff, Sedimentation and Soil Erosion	Level of soil erosion and sedimentation caused by project activity	Construction Site and ROW, along any the neighbouring line, auxiliary subs, areas, surface water near runoff waterflow.	Visual observation - Turbidity level of surface water caused by soil erosion especially in rainy conditions. - Mitigation measures applied by contractor.	Once/month And During and after heavy rain conditions	- Project management Unit of PC1 is responsible for supervising and committing with contractor - Contractor is responsible for complying the commitment -Independent monitor implements supervision once/month

Phase/ Environmental Issue	What parameter is to be monitored?	Where is the parameter to be monitored?	How is the parameter to be monitored?	When is the parameter to be monitored?	Responsibility
Air Pollution	Check coverage of vehicles Check unpaved surfaces for wetting	At construction site(s)	Observation	Monthly During dry windy conditions	- Project management Unit of PCI is responsible for supervising and committing with contractor - Contractor is responsible for complying the commitment -Independent monitor implements supervision once/month

Phase/ Environmental Issue	What parameter is to be monitored?	Where is the parameter to be monitored?	How is the parameter to be monitored?	When is the parameter to be monitored?	Responsibility
Noise	Noise level intensity	One meter from equipment At edge of construction site Nearest population center	Noise meter measuring dB(A)	If there are complaints	- Project management Unit of PCI is responsible for supervising and committing with contractor - Contractor is responsible for complying the commitment -Independent monitor implements supervision once/month

Phase/ Environmental Issue	What parameter is to be monitored?	Where is the parameter to be monitored?	How is the parameter to be monitored?	When is the parameter to be monitored?	Responsibility
Mine clearance	Check implementing schedule of PMB and hired units	At construction site		Before construction stage	<ul style="list-style-type: none"> - Project management Unit of PCI is responsible for supervising and committing with contractor - Contractor is responsible for complying the commitment -Independent monitor implements supervision oncc/month

Phase/ Environmental Issue	What parameter is to be monitored?	Where is the parameter to be monitored?	How is the parameter to be monitored?	When is the parameter to be monitored?	Responsibility
Impacts caused by construction worker's campsites	Camps on the whole feeder and campsites' sanitary and safety management	At camping sites on the whole feeder	Visual observation	Since constructed till dispersed	<ul style="list-style-type: none"> - Project management Unit of PCI is responsible for supervising and committing with contractor - Contractor is responsible for complying the commitment - Independent monitor implements supervision once/month
Electric and Magnetic Field	Electric and Magnetic Field Intensity	At edge of ROW (at several points along the route)	Electric and Magnetic Field Meters	in operation phase and there are complaints	<ul style="list-style-type: none"> - Power network PMB - Independent Monitor checks when switching.

Table V.1. Example of Site Environmental impact mitigation measures applying Report

Project name:

Project location:

Name of Contractor:

Commencement of Project report or monthly report:

Date of report:

<i>No</i>	<i>Impact</i>	<i>Mitigation measures implemented</i>	<i>Comment</i>
	<i>Construction phase</i>		
1	Affects on the flora caused by land acquisition		
2	Noise and vibration		
3	Soil erosion		
4	Air pollution caused by vehicle exhausts		
5	Loss of historical and cultural properties		
6	Soil contamination caused by hazardous waste		
7	Traffic disturbance		
8	Environmental impacts caused by construction worker		
9	Mine clearance		

Name of person prepared this Report:

Title:

Address:

Telephone:

Table V.2. An Example of Environmental Performance Monitoring Report
(this Example can be used for environmental monitoring report of Technical supervisor consultant, SMIC)

Project name:

Project location:

Province:

District:

Commune:

Type of Report:

Monthly report (Yes/No):

Quarterly Report to EVN (Yes/No):

Quarterly Report to the WB(Yes/No):

SMIC report (Yes/No):

Date of report:

<i>No</i>	<i>Parameter</i>	<i>Assessment of Consultant/ community complaints</i>	<i>Comments/Recommendations</i>
	During Construction		
1	Surface water turbidity and soil erosion		
2	Noise level around construction sites and adjacent residential areas		
3	Dust		
4	Tree cutting and access roads management and control		
5	Solid waste and site cleaning up after the construction		
6	Workers' sanitation facilities and safety management		
7	Transportation disturbance		
8	Road degradation		
9	Status of application of safety measures		
10	Construction material management		
11	Impact on wild life and natural resources		
	During operation		
12	Maintaining of ROW		
13	Impact on wild life and natural resource		

Report prepared by:

Position:

Part VI: Capacity building

Training/Study Tours

<i>Type of Training*</i>	<i>Number of Students</i>	<i>Duration of Training</i>	<i>Start Date/End Date (for each student)</i>	<i>Venue of Training (Domestic or Abroad)</i>	<i>Institute or Organization to Provide Training</i>	<i>Cost (Local and Foreign)</i>
Environmental management training course in construction and operational stages	2	1 month	Feb,2005	Ha Noi	Ha Noi Polytechnic university	<ul style="list-style-type: none"> - Living cost: VND 70.000x 2x 1= VND 1,400,000 - Accommodation cost: 50.000 x 2 x 30 days = VND 3,000,000 - Cost for trainers: VND 100,000 x 25 periods = VND 2,500,000 <p>Total: VND 6,900,000</p>
Environmental Mitigation and monitor training course.	15	3 days	early April,2005	Ha Noi	EVN and Technical Consultancy	<ul style="list-style-type: none"> - Living cost: VND 70.000x 15x 3= VND 3,150,000 - Accommodation cost: 50,000 x 15 x 3 days = VND 2,250,000 - Cost for trainers: VND 100,000 x 3 periods = VND 300,000 <p>Total: VND 5,700,000</p>

Table 6.9: Estimated costs for implementation of the EMP (VND)

<i>No</i>	<i>Item</i>	<i>Construction</i>	<i>Operation (20 years of life cycle)</i>
1	Mitigation measures	The costs are covered in Contract with Construction Contractors	The cost is covered in production cost of the provincial power service
2	Monitoring costs for substations, lines. (By technical supervisor consultant of PMU)	The cost is covered in running cost of PMU	The cost is covered in running cost of Project owner
3	Monitoring costs for substation (construction usually lasts for 2 month) (SMIC)	1 man-month/substation x 2 substation x 10,000,000/man-month = 40,000,000	
4	Monitoring costs for 110 kV lines (construction usually lasts for 12 month) (SMIC)	1 man-month/line x 5 lines x 10,000,000/man-month x 12 months = 120,000,000	
5	Monitoring cost for the Project by district/commune authority	1 subproject x 200,000/subproject x 44 communes, districts = 8,800,000	
6	Capacity building	5,700,000	
7	Operation cost	20.000.000	
	TOTAL	194,500,000	100,000,000 This cost is covered in production cost of the regional transmission companies
	GRAND TOTAL FOR WHOLE PROJECT	294,500,000 VND	

Part VII: IMPLEMENTATION ARRANGEMENTS

ROLE	RESPONSIBILITIES	ORGANIZATION
Project Owner	<ul style="list-style-type: none"> • Ultimately responsible for overall project management, including environmental management. 	EVN
Environmental Consultant	<ul style="list-style-type: none"> • Responsible for preparation of EMP documentation. 	Power network PMB-PC1
Overall Project Management Agency	<ul style="list-style-type: none"> • Responsible for coordination and management of overall project implementation, including guiding and supervising implementation of the EMP. 	PC1
Environmental Officer	<ul style="list-style-type: none"> • Specific responsibility and point of contact for environmental issues. 	Environmental Officer within PMU
Project Implementation Agency	<ul style="list-style-type: none"> • Responsible for day-to-day project implementation. Activities include: <ol style="list-style-type: none"> i. Planning and implementation of environmental management activities during construction ii. Coordinating with other parties in relation to environmental management activities. iii. Carrying out internal monitoring and supervising independent monitoring iv. Supervising and providing budget for monitoring activities. v. Reporting on environmental information to concerned parties 	Dept. 8-PC1
Civil Works Contractor	<ul style="list-style-type: none"> • Responsible for construction works and following contractor specifications 	Contractor selected by

ROLE	RESPONSIBILITIES	ORGANIZATION
	outlined in the EMP. This includes: <ol style="list-style-type: none"> i. Applying construction-phase mitigation measures. ii. Ensuring safety of construction workers and local people during construction. iii. Following Vietnam and World Bank policies on environmental protection during construction. 	PC1
Contractor Technical Supervision	<ul style="list-style-type: none"> • Responsible for supervision of civil works contractors during construction, including implementation of environmental management activities under the EMP 	Technical Consultant engaged by PC1
Project Operator	<ul style="list-style-type: none"> • Responsible for operation of the project including operation stage environmental management and monitoring activities. 	Electricity of Lang Son- Cao Bang
Safeguard Independent Monitor (SIMC)	<ul style="list-style-type: none"> • Responsible for independent monitoring of EMP implementation 	PC1

Part VIII: MONITORING AND REPORTING SYSTEM

REPORT TYPE	PRIMARY REPORTING LEVEL			SECONDARY REPORTING LEVEL			TERTIARY REPORTING LEVEL		
	BY	TO	FREQUENCY	BY	TO	FREQUENCY	BY	TO	FREQUENCY
SITE ENVIRONMENTAL MANAGEMENT	Contractor	PMU	Once before construction commences & monthly thereafter	-	-	-			
ENVIRONMENTAL PERFORMANCE MONITORING CONSTRUCTION	Technical supervisors of PMU	PMU and PC1	Monthly	PC1	EVN	Quarterly	EVN	World Bank	Quarterly
	SIMC	World Bank	Half-yearly						
ENVIRONMENTAL PERFORMANCE MONITORING OPERATION	Technician of Transmission Company I	PC1	Half-yearly	PC1	EVN	Annually	EVN	World Bank	Annually

¹ A copy will also be sent to DoNRE

Part IX: Copy of Environmental Certificates

Lang Son Provincial People's Committee
Department of Resources & Environment
No:199/PXN-TNMT

Socialist republic of Vietnam
Independent – Freedom - Happiness
-----*****-----

Lang Son, May 6th, 2004

Certificate
Registration on meeting environmental standard.

Project: "110 kV Lang Son- Cao Bang line.

Project site: Lang Son province (Lang Son city, Cao Loc district, Dong Dang townlet, Van Lang district, Tran Dinh district).

Contact with: Power Network Project Management Board – Power Company 1- No3 An Duong Stir.- Tay Ho Dist.-Ha Noi

The Manager of Lang Son Department of Resources & Environment certifies:

Article 1: Power Network Project Management Board – Power Company 1- Project owner : 110 kV Lang Son – Cao Bang line has submitted the content of the registration on meeting environmental standard of project dated on April 23th , 2004.

Article 2: Power Network Project Management Board – Project owner of 110 kV Lang Son – Cao Bang line is responsible for implementing the indicated content in the registration on meeting environmental standard.

Article 3: The registration on meeting environmental standard and attached requirements is the basic for the state management unit for environment protection to check the project environmental protection execution.

Article 4: After completing the environmental phases, the owner has to submit a report in writing to the state management unit for environment protection.

Lang Son Department of Resources & Environment
Director

Destinations:

- project owner.
- Ministry of R & E,
PPC.
- Administration dep.

Hoang Xuan Tuc

Cao Bang Provincial People's Committee
Department of Resources & Environment
No:12/2004/XN-MTg

Socialist republic of Vietnam
Independent – Freedom - Happiness
-----*****-----

CIO Bang, May 4th ,2004

Certificate
Registration on meeting environmental standard.

Project:"110 kV Lang Son- Cao Bang line.

The Manager of Cao Bang Department of Resources & Environment certifies:

Article 1: Power Network Project Management Board – Power Company 1- Project owner : 110 kV Lang Son – Cao Bang line has submitted the content of the registration on meeting environmental standard of project dated on April 23th, 2004.

Article 2: Power Network Project Management Board – Project owner of 110 kV Lang Son – Cao Bang line is responsible for implementing the indicated content in the registration on meeting environmental standard.

Article 3: The registration on meeting environmental standard and attached requirements is the basic for the state management unit for environment protection to check the project environmental protection execution.

Article 4: After completing the environmental phases, the owner has to submit a report in writing to the state management unit for environment protection.

Cao Bang Department of Resources & Environment
Director

Doan Hong Nam

Destinations:

Grid MU-VEPC1.
Ministry of R & E.
PPC.
Administration dep.

**Requirements of 110 kV Lang Son-Cao Bang transmission line project for
Power Network Project Management Board – Power Company 1**

*(Attached Certificate of registration of meeting environmental standard No 199/PXN-TNMT dated
May 6th, 2004 of Lang Son Resource and Environment Dept.)*

1. It's necessary to prepare an annual cost plan for project with purpose of implementing environmental screening, observation and preventing project environmental fault.
2. Seriously implementing measures of exhaust, noise, waste water, dust treatment in compliance with standard and regulations in Article 16, Article 29 of Environmental Management Law and Article 22- Decree 175/CP on direction for environmental management Law compliance dated Oct 18th, 1994 by GOV.
3. Project investigation and design must be carefully reviewed, feeder selection ensures economic benefit and does not affect on landscape, historical vestige, residential areas...Development is based on implementing registered mitigation measures of environmental contamination in compliance with current construction standards of Viet Nam and regulations related to explosive, fire protection, labour safety, Right of Way...
4. Observing, monitoring usually environment in region and neighbouring areas. Reporting on time variations of environment in region and neighbouring areas to Resource and Environment Dept.
5. Changes of activities: Scale, capacity, location...from approved registration of meeting environmental standard must be submitted in writing to R&E Dept. and they are only implemented when there is permissible decision of authority.

Power Company 1
Power Network Project Management Board
No:1339 DL/BQLDA-CBXD

Socialist republic of Vietnam
Independent – Freedom - Happiness
-----*****-----

Ha noi, April 23th ,2004

Application for meeting environmental standard.

Respectfully to: Lang Son Department of Resource and Environment

We are: Power network project management Board-Power Company 1

Project owner: 110kV Lang Son- Cao Bang line

Add: No3 An Duong Str., Tay Ho dist., Ha Noi

Tel: (04) 7166913-Fax: (04) 7166920

Project site: Lang Son province

Project name: 110 kV Lang Son-Cao Bang transmission line

We respectfully send to you registration of meeting environmental standard of 110kV Lang Son-Cao Bang transmission line project.

We make sure that data in the submitted written are correct and commit that the project is excluded chemical which is in forbidden list of Viet Nam and International Agreement. We make sure that the State and International rated standards using in our registration are correct and valid.

We kindly request Lang Son Department of Resource and Environment to certificate.

Best regard,

**Power Network Project Management Board
Manager**

Destinations:

As above

Administration dept.

Basic Construction dept.

Vu Anh Phuong

Annex A: List of establishing EMP

1. Nguyen Duc Vinh- Head of Consulting Dept. no1 -Project manager
2. Ha Anh Tuan- Designer of Consulting Dept. no1

ANNEX B – PUBLIC MEETING AGENDA AND MINUTES OF PUBLIC MEETINGS

**Lang Son TO Cao Bang 110KV TRANSMISSION LINE PROJECT
Minute of meeting in Tam Thanh Precint, Lang Son**

Date: 26 April, 2004
Time:
Location: People Committee Tam Thanh precint, Lạng Sơn

Agenda

- 1) Speech of Chairmen of People Committee Tam Thanh precinct, Lạng Sơn City to introduce the project of transmission line 110KV Lạng Sơn - Cao bằng
- 2) Mr. Nguyen Duc Vinh, Head of Consulting Diviison No.1, representative of PC1 reported he environmental impact such as:
 - a. Project information (objective and benefit of project)
 - b. Project details (Construction stage and operation stage)
 - c. Existing environmental condition in project areas
 - d. Environmental screening (construction, operation ..)
 - e. Environmental management Plan (Mitigation measures and monitoring)
- 3) Other comments

List of participants

- 1) Representative of precinct:
 - a) Mr Tran Van Nai – Chairman of Tam Thanh precinct
 - b) Mr To Cuong Minh – Youth Union
 - c) Mr Tran Trong Khuon – Father land
 - d) Ms Nong Thi Bang – Women Union
 - e) Mr. Vu Minh Tuoc - Elders
 - f) Mr. Ly Viet Xam – Farmer association
 - g) Mrs. Lung Thi Kim – Cros Red
 - h) Mr. Le Viet Song – Veteran association
- 2) Representative of PC1 of project 110kV Lạng Sơn - Cao Bằng
 - a) Mr. Nguyen Duc Vinh - Head of Consulting Division 1 – Power Consulting Center

Unanimous opinions

The transmission line selected in feasible road, avoid the local planning and has limited affect on households.

Agree with mitigation measured, which had been proposed by project representative during the construction stage

Commune People Committee and other organizations will inform this information to all local people for knowing and implementing.

Other Comments

- The Constructor should clean up the construction areas when it is finished
- Having the dust elimination during construction
- Do not operation during rest time.

The meeting was ended same day, all participants agreed with the minutes of meeting.

Signed by person taking minutes:

Position:

Nguyen Duc Vinh

Head of Consulting Dept. 1 of PCC1

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
ĐỘC LẬP - TỰ DO - HẠNH PHÚC

BIÊN BẢN HỌP THAM VẤN CỘNG ĐỒNG BÁO CÁO TÁC ĐỘNG MÔI TRƯỜNG
DỰ ÁN ĐƯỜNG DÂY 110KV CAO BẰNG – LẠNG SƠN

Hôm nay, ngày 26 tháng 4 năm 2004

UBND xã P. Tam Thanh... Huyện... TP. Lạng Sơn... Tỉnh... Lạng Sơn.....

Chúng tôi gồm:

Đại diện UBND xã P. Tam Thanh. Huyện... TP. Lạng Sơn... Tỉnh... Lạng Sơn.....

Ông: Trần Văn Mai..... Chức vụ:..... Chủ tịch UBND Phường

Đại diện các tổ chức xã hội:

- 1, Đoàn Thanh Niên: Ông Tô Lương Minh..... 1, Hội Nữ dân: Ông Lý Việt Xám.....
- 2, V.B.M. Trẻ: Tô Quốc: Ông Trần Trọng Khương..... 2, Hội: Chủ tịch: Ủy ban Mặt trận.....
- 3, Hội phụ nữ: Bà Ngy Thi Hằng..... 3, Hội của chi nhánh: Ông.....
- 4, Hội phụ nữ: Ông Vũ Mạnh Tuấn..... Lê Việt Lợi.....

Đại diện Trung tâm Tư vấn xây dựng Điện lực 1:

Nguyễn Đức Vinh..... Trưởng phòng Trắc 1.....

Đã cùng xem xét, thảo luận về các vấn đề ảnh hưởng môi trường của đường dây 110kV Cao bằng – Lạng sơn. Đại diện Trung tâm tư vấn xây dựng Điện lực 1 đã trình bày sơ bộ về dự án, các phương án tuyến đường dây, các ảnh hưởng của đường dây đối với các khu vực dân cư, rừng, 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 tuyến đường dây do Trung tâm tư vấn xây dựng Điện lực 1 lựa chọn trên địa bàn huyện (theo bản đồ tuyến số. D.D.110.LS.(A.01)) là hợp lý, tránh được các quy hoạch của địa phương và ảnh hưởng tối thiểu đến khu vực dân cư cũng như đối với các khu rừng cần bảo vệ.

- Thống nhất với các biện pháp giảm thiểu ảnh hưởng môi trường của dự án trong quá trình chọn tuyến, thi công công trình do Trung tâm tư vấn xây dựng Điện lực 1 trình bày.

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



Các vấn đề tồn tại đề nghị xem xét thêm.

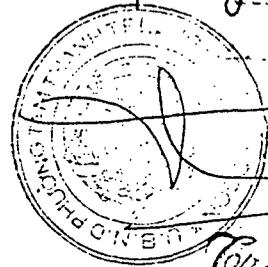
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Số lượng thi công xây nhà có gác, gồm hai tầng
Số vai: Trục qua trục thi công trục đứng
Không thi công vào giờ nghỉ của dân.

ĐẠI DIỆN
TRUNG TÂM TVXD ĐIỆN LỰC 1

Nguyễn Đức Vĩnh

XÁC NHẬN CỦA UBND

XÃ phường Tam Thanh.



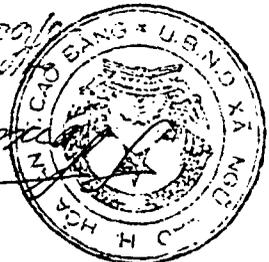
CHỖ TÍCH

Chức danh

Trần Văn Hải



Handwritten signature and date
22/05/2007



XÁC NHẬN CỦA UBND
Xã *Nhị Liên*

Handwritten signature

ĐẠI DIỆN
TRUNG TÂM TVXD ĐIỆN LỰC 1

.....
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.....

Handwritten notes:
Đã gửi tài liệu của Trung tâm TVXD Điện Lực 1
Về việc cấp giấy địa chỉ công tác cho công nhân công nhân
công nhân tại các công nhân công nhân.

Các vấn đề tồn tại đề nghị xem xét thêm.

