Initial Environmental Examination

December 2015

VIE: Power Transmission Investment Program Multi-Tranche Financing Facility Tranche 3

Subproject: Second Transformer Bank for 220 kV Uyen Hung Substation

Prepared by National Power Transmission Corporation (NPT) of Viet Nam and Southern Power Viet Nam Power Project Management Board (SPPMB) for the Asian Development Bank. This is a revised version of the draft originally posted in June 2015 available on http://www.adb.org/projects/documents/vie-ptip-t3-uyen-hung-ss-jun-2015-iee.

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CURRENCY EQUIVALENTS

(as of 14 May 2015)

Currency unit	–	Vietnamese Dong (D)
D1.00	=	$0.000046
$1.00	=	D21,805.49

ABBREVIATIONS

ADB	-	Asian Development Bank
AP	-	Affected person/people
BIWASE	-	Binh Duong Water Supply Sewerage Environment Co. Ltd.
CEMP	-	Construction environmental management plan
CO	-	Carbon monoxide
CPC	-	Commune People's Committee
CSR	-	Corporate social responsibility
DED	-	Detailed engineering design
DMC	-	Developing member country
DONRE	-	Department of Natural Resources and Environment
DPC	-	District People's Committee
EA	-	Executing agency
EARF	-	Environmental Assessment and Review Framework
ECA	-	Environmental Compliance Audit
EEC	-	Energy and Environment Center
EHS	-	Environment, health and safety
EIA	-	Environmental impact assessment
EMF	-	Electromagnetic field
EMoP	-	Environmental monitoring plan
EMP	-	Environmental management plan
EPP	-	Environmental protection plan
ESU	-	Environmental and social unit
EVN	-	Viet Nam Electricity
GOV	-	Government of Viet Nam
GRM	-	Grievance redress mechanism
HW	-	Hazardous waste
IA	-	Implementing agency
IEE	-	Initial environmental examination
HIV/AIDS	-	Human immunodeficiency virus / acquired immune deficiency syndrome
MFF	-	Multi-tranche financing facility
MONRE	-	Ministry of Natural Resources and Environment
MPN	-	Most probable number
MSDS	-	Materials safety data sheet
NOx	-	Oxides of nitrogen
NPT	-	National Power Transmission Corporation
PCB	-	Polychlorinated biphenyl
PCP	-	ADB's Public Communications Policy (2011)
PCR	-	Project completion report
PDMP	-	GOV's Power Development Master Plan
PECC	-	Power Engineering Consulting Joint Stock Company
PIC	-	Project Implementation Consultant

PPE	-	Personal protective equipment
PTC4	-	Power Transmission Corporation No. 4
PVC	-	Polyvinyl chloride
REA	-	Rapid environmental assessment
SOx	-	Oxides of sulphur
SPPMB	-	Southern Viet Nam Power Project Management Board
SPS	-	ADB's Safeguards Policy Statement (2009)
STD	-	Sexually transmitted disease
SR	-	Safeguard requirement
TSP	-	Total suspended particulates
UTM	-	Universal transverse mercator
UXO	-	Unexploded ordnance
WB	-	World Bank

WEIGHTS AND MEASURES

cm^2	-	square centimeter
cm^3	-	cubic centimeter
^oC	-	degree centigrade
ha	-	hectare
m	-	meter
m^2	-	square meter
m^3	-	cubic meter
mg/l	-	milligram per liter
mg/m^3	-	milligram per cubic meter
MW	-	megawatt
km	-	kilometer
kVA	-	kilovolt ampere
kW	-	kilowatt
kV	-	kilovolt
MVA	-	megavolt ampere

NOTE

In this report, "$" refers to US dollars.

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I. EXECUTIVE SUMMARY

1. The Government of Socialist Republic of Viet Nam (GOV) has requested the Asian Development Bank (ADB) to provide financing for the second transformer bank for the 220 kV Uyen Hung Substation. The National Power Transmission Corporation (NPT) of Viet Nam is the executing agency (EA) while the Southern Viet Nam Power Project Management Board (SPPMB) is the implementing agency (IA) of the subproject.

2. The second transformer bank for the 220kV Uyen Hung substation is one of the other subprojects proposed for financing by NPT under Tranche 3 of the multi-tranche financing facility (MFF). The implementation of the subproject will have an investment cost of US$86.47 billion. The SPPMB plans to implement the project in June 2016 for commissioning by January 2017.

3. The proposed subproject aims to:
   (i) ensure the development of power supply for the Binh Duong province and surrounding areas;
   (ii) improve the reliability of power supply continuity;
   (iii) reduce the loss of power and energy in the system; and
   (iv) improve power quality.

4. The components of the subproject include the installation of the second transformer including additional equipment fitted to the 220kV and 110kV compartments at the existing substation. The substation is located at Uyen Hung Town, Tan Uyen District, Binh Duong Province (Figure 1)

5. A screening was carried out using ADB's Rapid Environmental Assessment (REA) checklist (Appendix 1). The screening confirmed that the environmental impacts are not expected to cause irreversible and significant adverse environmental impacts and are easily controllable by appropriate and conventional mitigation measures. Therefore, the subproject is Category B for environment based on ADB Safeguard Policy Statement (SPS, 2009) and that Initial Environmental Examination (IEE) report will be required for submission to ADB.

6. This IEE report is prepared for the Uyen Hung Second Transformer subproject based on ADB SPS (2009); ADB Operational Manual Section F1/BP; ADB Public Communications Policy (ADB PCP, 2011); Government of Viet Nam's (GOV) Decree No. 29/2011/ND-CP on environmental impact assessment (EIA) and other GOV applicable environmental laws, policies, rules and regulations for energy projects.

7. Information in the IEE is based on reports prepared by the Power Engineering Consulting Joint Stock Company No. 3 (PECC3); secondary data from other agencies, field inspection, and information gathered during community and stakeholder consultations. The objectives and scope of the IEE are to (i) establish current environmental conditions; (ii) identify key environmental issues; (iii) assess magnitude of impacts and provide mitigating measures; (iv) integrate the environmental issues in the project planning and design stage; and (v) develop an environmental management plan for implementation, monitoring and reporting of the environmental mitigation and enhancement measures.

8. In general, the subproject is expected to result to beneficial impacts to the community in Binh Duong Province and other neighboring provinces in the southern region brought about by proposed improvements in reliability and security of power supply. However, there are

anticipated negative environmental impacts during subproject implementation, which have to be considered in the design, construction and operational phases.

9. **Impacts during construction.** Most of the anticipated impacts of the proposed subproject are related to nuisances, which may happen during the construction and installation of equipment. These identified environmental impacts are related to hazards to occupational health and safety, generation of wastes, and movement of construction vehicles along access roads to the site that could increase ground level concentration of dust, noise, and cause potential hazards to surrounding areas. The adverse impacts are limited to the surrounding area within the substation site itself and are considered temporary in nature. Recommendations formulated in the environmental management plan (EMP), its inclusion in the contractual framework, and an effective inspection of construction sites will reduce these risks to an acceptable level.

10. **Impacts during the operational phase.** The operation and maintenance of the transformers and other equipment at the substation may result to the generation of wastes, including hazardous materials such as used oil, spent lead acid batteries, and busted lamps which require appropriate management and disposal. There is also a potential for the substation to cause risks to occupational health and safety due to exposure to electromagnetic field (EMF) and high voltage electricity. Mitigation measures to address hazardous waste management and occupational health and safety need to be instituted.

11. An EMP has been prepared and will be implemented during all phases of subproject implementation. The EMP identifies the potential environmental impacts from the subproject and includes institutional arrangements for its implementation to ensure its sustainability and effectiveness.

12. **Public Consultation.** SPPMB and the consultant team have carried out consultations with affected communities of the substation and along the alignment of the connecting lines on April 3, 2015 at the Uyen Hung Town, Tan Uyen District. Representatives from the commune requested the subproject's construction contractor to report the number of workers coming to the locality to avoid conflicts between local residents and construction workers. The stakeholders also raised their concern about the impact of the project construction on transportation and living conditions of the local residents. The stakeholders warned that the contractor should be responsible in environmental protection and in the management of impacts to the local residents. Appendix 2 presents the minutes of the public consultation meeting.

13. **Grievance Redress Mechanism.** As a general policy, the SPPMB will work proactively toward preventing complaints through the implementation of impact mitigation measures and through community liaison activities that anticipate and address potential issues before they become grievances. The subproject's Grievance Redress Mechanism (GRM) will consist of a system of receiving, evaluating, and addressing affected people's (AP) grievances related to the subproject.

14. A grievance resolution process for compensation was established during the pre-construction phase based on the provisions in Decree No. 44/2014/ND-CP of May 15, 2014. The GRM established for land acquisition and compensation will be applied for environment-related complaints of the community. The GRM during the construction phase will be supervised by the SPPMB and the decision will be based on the resolution of the district and provincial committees. For cases wherein the complaint cannot be resolved at the district and provincial

level, the final decision will decided by the People's Court. The details of the GRM are presented in this IEE.

15. **Environmental Compliance Audit of Existing Substation.** In compliance with ADB SPS (2009), an environmental compliance audit was performed at the existing 220kV Uyen Hung substation to determine existence of any areas where the existing project may cause or is causing environmental risks or impacts.

16. In general the existing 220kV Uyen Hung substation is newly built and has just started operating in late December 2014. It has instituted measures to ensure that potential adverse impacts during the operation of the substation are managed and controlled. Notably, the following are good practices of the substation which need to be sustainably continued:

a) Management of potential oil spill
b) Segregation of hazardous wastes
c) Segregation and regular collection of solid waste
d) Management of occupational health and safety
e) Treatment of wastewater prior to disposal to ensure compliance with the effluent standards
f) Control and abatement of noise and air pollution.

17. The substation will be submitting an environmental monitoring report to the Tan Uyen People's Committee. In the environmental monitoring report, the substation is reminded to include the monitoring of EMF levels, air quality, noise, and wastewater quality at the substation to check whether levels are beyond the allowable limits as prescribed by the national standards of the GOV. Monitoring of quantities of hazardous waste generated, waste stored onsite and then waste treated/disposed offsite will form part of the regular environmental monitoring activities.

18. In addition, the status of EMP implementation will also be included in the monitoring report of the EHS Officer aside from the regular monitoring of environmental parameters. The EHS Officer will refer to the EMP developed for the substation. Furthermore, it is recommended that further training for the EHS Officer of PTC4 on the implementation of the EMP and H&S measures needs to be organized to increase capacity on the implementation of EMP measures, waste management (segregation, labeling, storage, transport), and occupational and community health and safety procedures.

19. **Conclusion and Recommendation.** The results of the IEE show that the proposed subproject will not result to significant adverse environmental impacts and that the impacts are primarily confined within the site of the existing substation. Environmental mitigation measures have been designed as outlined in the subproject EMP to address any adverse impacts during the various phases of project implementation. The EMP also presents the institutional responsibilities for implementing the mitigation measures.

20. In compliance with the requirements of GOV Decree No. 29/2011/ND-CP dated April 18, 2011, the proposed installation of the second transformer at Uyen Hung substation is required to prepare and submit an EIA to the Department of Natural Resources and Environment (DONRE) of Binh Duong Province where the project is located. A Decision of Approval (Decision No. 652/QD-UBND dated March 20, 2015) on the EIA for the project was issued by the People's Committee of Binh Duong Province.

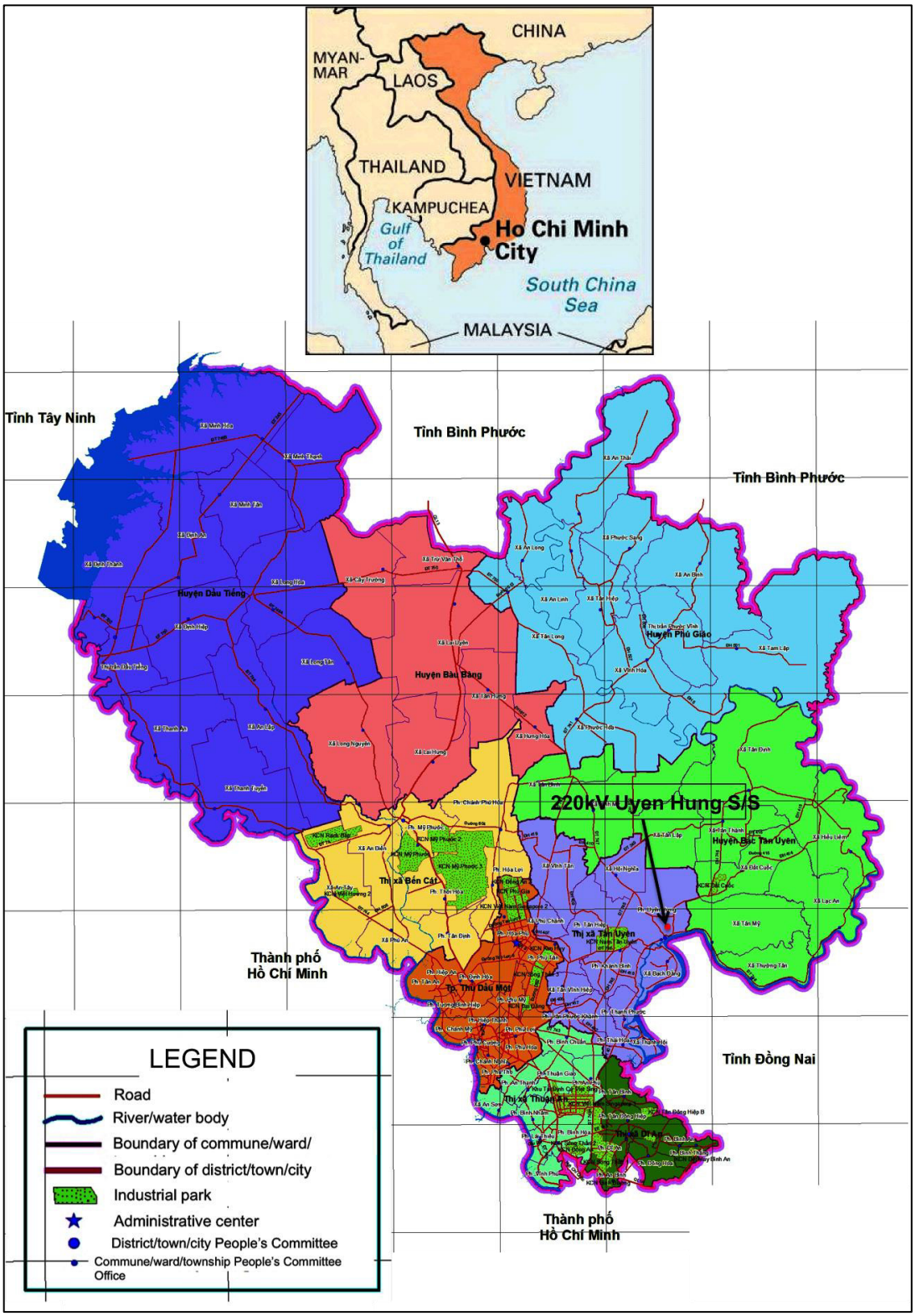


Figure 1: Location Map

Base map: http://binhduong.gov.vn/trangchu/index.php

II. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

A. ADB'S Environmental Safeguards Policies

21. The environment safeguards requirements of ADB are presented in the following guidelines:

a) Safeguard Policy Statement (2009)
b) Operational Manual Section F1/BP[1] and
c) Public Communications Policy (PCP) 2011.

22. The environmental safeguards requirement follows ADB's Strategy 2020[2], which emphasizes the pursuit of environmentally sustainable and inclusive economic growth for developing member countries (DMCs) and requires mitigation to address environmental and social impacts of projects. The ADB's Safeguards Policy Statement (SPS, 2009) governs the environmental and social safeguards of ADB's operations. When a project has been identified for ADB financing, it is screened and categorized to determine the following:

a) Significance of potential impacts or risks of the project to the environment;
b) Level of assessment and institutional resources required to address the safeguard issues; and
c) Information disclosure and consultation requirements.

23. The Environmental Safeguard Requirements 1 (SR1) of the SPS outlines the requirements that borrowers/clients have to meet. These requirements include assessing impacts, planning and managing impact mitigations, preparing environmental assessment reports, disclosing information and undertaking stakeholder consultations, establishing a grievance redress mechanism, and monitoring and reporting. It also includes specific environmental safeguard requirements pertaining to biodiversity conservation and sustainable management of natural resources, pollution prevention and abatement, occupational and community health and safety, and conservation of physical cultural resources.

24. Through the use of environment screening checklists that have been developed by the ADB, the project is initially categorized for potential environmental impacts and risks. ADB assigns a proposed project to one of the following categories:

Category A – if a proposed project is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented; impacts may affect an area larger than the sites or facilities subject to physical works. A full-scale EIA including an EMP is required.

Category B – if a proposed project's potential environmental impacts are less adverse and fewer in number than those of category A projects; impacts are site-specific, few if any of them are irreversible, and impacts can be readily addressed through mitigation measures. An IEE, including an EMP, is required.

Category C – if a proposed project is likely to have minimal or no adverse environmental impacts. No EIA or IEE is required although environmental implications need to be reviewed.

Category FI – is assigned to projects that involve investment of ADB funds to or through a financial intermediary.

[1] Operations Manual Bank Policies (BP) issued on 1 October 2013, based on ADB Safeguard Policy Statement, 2009.
[2] ADB. 2008. Strategy 2020: The Long-Term Framework of the Asian Development Bank 2008-2020. Manila.

25. The category of the proposed project is determined by screening using the ADB's sector-specific Rapid Environmental Assessment (REA) checklist. The environmental categorization will be based on the most sensitive environmental component. For instance, if one component of the project has potential for significant adverse impacts, the entire project will be classified as Category A, even if all other components have no significant environmental impacts. If the most sensitive component falls under Category B, the project will be classified as Category B even if the other components are unlikely to have adverse environmental impacts.

26. The EIA or IEE Report will include the EMP that specifies the proposed mitigating measures specific to a potential impact,environmental monitoring requirements, institutional arrangements, and budget requirements.

27. ADB also requires public disclosure for Category A and B projects. For Category A, there will be at least two consultations, once during the early stages of the EIA and once when the draft EIA is available prior to ADB loan appraisal. For Category B, the draft IEE report will be available to interested stakeholders before project approval and posted on the ADB's website upon Board approval of a project.

B. Legal and Institutional Framework on Environmental Management in Viet Nam

1. Environmental Protection

28. National laws and regulations for environmental protection, which are applicable to the proposed subproject, are presented in Table 1. The Environment Protection Law (Law No. 55/2014/QH13 of June 23, 2014) is the main governing law on environmental management in Viet Nam. The implementation of this law was subsequently guided by implementation guidelines, amendments, regulations on impact assessments, sanctions on violations, incentives, regulations on waste management, and national technical regulations or standards on environmental quality. The Ministry of Natural Resources and Environment (MONRE) is the governing body in-charge of the implementation of the Environmental Protection Law in Viet Nam.

Table 1: Environmental Protection Laws and Regulations

Laws and Regulations	Description
A. Laws	
Law on Environmental Protection No. 55/2014/QH13, in effect on January 1, 2015	This Law provides statutory provisions on environmental protection activities; measures and resources used for the purpose of environmental protection; rights, powers, duties and obligations of regulatory bodies, agencies, organizations, households and individuals who are tasked with environmental protection.
Biodiversity Law No. 20/2008/QH12 dated November 13, 2008	Pursuant to the 1992 constitution of the Socialist Republic of Viet Nam, which was amended and supplemented under Resolution 5/2001/QH10 dated December 25, 2001 of the 10th National Assembly, this law stipulates biodiversity conservation and sustainable development.
B. Decrees	
Decree No. 18/2015/ND-CP, dated Feb. 14, 2015	Provides the requirements for Environmental Protection Plan, Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Scheme. This Decree took effect on April 1, 2015.

Laws and Regulations	Description
Decree No. 19/2015/ND-CP, dated Feb. 14, 2015	Regulation detailing a number of articles of the Environmental Protection Law. This Decree took effect on April 1, 2015.
Decree No 80/2014/ND-CP issued on August 6, 2014	This Decree regulates drainage and treatment of wastewater in urban areas, industrial zones, economic zones, processing and export zones, and rural residential areas. It also prescribes the rights and obligations of organizations, individuals and households having activities related to drainage and treatment of wastewater within Viet Nam's territory.
Decree No.179/2013/ND-CP dated November 14, 2013	This Decree took effect on December 30, 2013 and prescribes the sanction on administrative violations on the domain of environmental protection.
Decree No.59/2007/NĐ-CP dated April 9, 2007	Prescribes the regulations on solid waste management
C. Circulars	
Circular No.26/2011/TT-BTNMT dated December 8, 2011	Guidance for Strategic Environmental Assessment, Environmental Impact Assessment, and Environmental Protection Commitment.
Circular No. 01/2012/TT- BTNMT dated March 16, 2012	Regulation on setting-up, assessment, approval, inspection and certification of the implementation of detailed environmental protection project; setting up and registration of simple environmental protection projects.
Circular No. 22/2014/TT-BTNMT dated May 5, 2014	Provides the guidelines for the implementation of the Government's Decree No. 35/2014/ND-CP of April 29, 2014, amending and supplementing a number of articles of the government's decree No. 29/2011/ND-CP of April 18, 2011, providing strategic environmental assessment, environmental impact assessment and environmental protection commitment.
Circular No 12/2011/TT-BTNMT dated April 14, 2011	Regulation on the management of Hazardous Waste. Under this law, generators of hazardous waste are required to register with MONRE/DONRE and to have separate hazardous waste storage area. The treatment and disposal of hazardous waste should be contracted through a registered hazardous waste management company.
Circular No. 39/2010/TT-BTNMT dated December 16, 2010	National technical regulation on noise (QCVN 26/2010/BTNMT) and on vibration (QCVN 27/2010/BTNMT)
Circular No 25/2009/TT-BTNMT dated November 16, 2009	National technical regulation on hazardous waste threshold (QCVN 07:2009/BTNMT).
Circular No 32/2013/TT-BTNMT dated October 25, 2013	National technical regulation on ambient air quality (QCVN 05/2013/BTNMT)
D. Decisions	
Decision No. 16/2008/QD-BTNMT dated December 31, 2008	National technical regulation on surface water quality (QCVN 08.2008/BTNMT); Underground water quality (QCVN 09/2008/BTNMT) and Domestic wastewater (QCVN 14/2008/BTNMT)

2. Environmental Assessment

29. Based on Decree No. 29/2011/ND-CP dated April 18, 2011, the installation of the second transformer is required to submit a simpler version of the EIA report. The report is

prepared by the investor and submitted to the Department of Natural Resources and Environment (DONRE) of Binh Duong Province, where the project is located. The Decision of Approval of the project was issued by the People's Committee of Binh Duong Province (Decision Ref. No. 652/QD-UBND) on March 20, 2015. The Decision of Approval is presented in Appendix 3.

30. The project is not required to be assessed by a Review Committee nor required to measure environmental conditions at the site. The requirements also do not include the conduct of public consultation.

31. The duration for processing the submitted report is forty-five (45) working days. Once approved, a Decision of Approval is released for the project. Under the Circular 26/2011/TT-BTNMT of July 18, 2011, guided by Decree No. 29/2011/ND-CP of April 18, 2011,investors only needs to obtain the approval decision.

32. There are new provisions under the new Environmental Protection Law dated January 1, 2015 related to environmental impact assessment. Under Article 20 of the law, if a project is not executed within a period of 24 months from the date of the approval of the decision on the environmental impact assessment, a new EIA report is required for submission to DONRE or MONRE. In addition, the new law prescribes the licensing requirement for EIA consultants.

33. Under the new Decree No. 18/2015/ND-CP, dated Feb 14, 2015, the EIA requirements for investment projects were revised. Table 2 outlines the revised requirements for power supply projects in GOV:

Table 2: EIA Requirements for Electricity Transmission Lines and Power Stations Projects

Type of Project	Scale	EIA Requirement
Substation	<500kV	EPP (Environmental Protection Plan)
	≥500kV	EIA
Transmission Line	<110kV	EPP
	≥110kV	EIA

Source: Decree No. 18/2015/ND-CP, Feb 14, 2015

3. Environmental Monitoring

34. The environmental monitoring requirements are prescribed in Clause 2, Article 16, Decree No. 18/2015/ND-CP. Under this Circular, environmental monitoring reports are to be prepared by the investor for submission to MONRE or DONRE on a semi-annual or annual basis, based on the approved program written in the EIA. The environmental monitoring report shall contain the progress of project implementation, status of implementation of the environmental management plan (EMP) and environmental monitoring plan (EMoP), and the results of the monitoring of emissions and wastewater discharges and other project-related parameters.

4. Electricity Law

35. The regulations regarding power supply and power network protection is prescribed in the Electricity Law No. 18/2004/QH11 of December 3, 2004. In general, the law prescribes electricity development planning and investment, electricity markets, rights and obligations of

organizations and individuals conducting electricity activities and using electricity, protection of electric equipment and facilities, electricity works and electrical safety.

Table 3: Power Network Legislation and Associated Legal Instruments

Laws and Regulations	Description
A. Law	
Law No. 24/2012/QH13 issued on November 20, 2012	Amends and supplements a number of articles of the Electricity Law No. 28/2004/QH11 of December 3, 2004
Electricity Law No. 18/2004/QH11 dated December 3,2004	Prescribes the electricity development planning and investment; electricity saving; electricity markets; rights and obligations of organizations and individuals conducting electricity activities and using electricity; protection of electric equipment and facilities, electricity works and electric safety.
B. Decrees	
Decree No 81/2009/NĐ-CP, issued August 17, 2005	On the safety and protection of high-voltage power grids.
Decree No 14/2014/ND-CP dated February 26, 2014	Decree stipulates in detail the implementation of electricity law regarding electricity safety, including: safety in generation, transmission, distribution and use of electricity in production; compensation and assistance of housing, works, land and plants in the safety corridor of overhead power transmission line upon the construction of high-voltage grid.
C. Circular	
Circular No 22/2010/BXD issued on December 3, 2010	Regulation on labor safety in work construction, construction and installation of equipment which are newly built, repaired, renovated, relocated, embellished or restored; dismantling of works and warranty for maintenance works.
Ministry of Industry and Trade Circular No. 03/2010/TT-BCT, issued January 22, 2010	Regarding protection on high-voltage power network

5. Land and Construction

36. The Land Law No. 45/2013/QH13 of November 29, 2013 prescribes the requirements on land use, details of compensation, support and resettlement. The implementation guidelines and amendments are detailed in succeeding government decrees and ministry circular. Regulations on construction management in investment projects including labor safety in construction and use of equipment are described in detail in Table 4.

Table 4: Land and Construction Laws and Regulations

Laws	Description
A. Law	
Land Law No 45/2013/QH13 dated November 29, 2013	This Law prescribes the regime of land ownership, powers and responsibilities of the State in representing the entire-people, owner of land and uniformly managing land, the regime of land management and use, and the rights and obligations of land users.
B. Decrees	
Decree No. 44/2014/ND-CP dated May 15, 2014	This Decree regulates methods for land pricing, adjustment to land price brackets and land price lists, specific land pricing

	and provision of consultancy on land pricing.
Decree No. 37/2014/ND-CP dated May 15, 2014	The Decree details some articles of the Law on Land concerning compensation, support, and resettlement upon land expropriation by the State.
C. Circulars	
Circular No. 36/2014 / TT-BTNMT dated June 30, 2014	Specifying detailed methods of valuation of land prices, construction, adjustment of land prices; specific land prices valuation and land prices valuation consulting service.
Circular No. 37/2014/TT-BTNMT dated June 30, 2014,	Providing detailed regulation on compensation, assistance, and resettlement when the State acquires land.
Document of Prime Minister No. 1665/TTg-CN, dated October 17, 2006	Regarding management of clearance of site, mine and explosive ordnance for construction

C. Milestones for Environmental Compliance of Subproject

37. In compliance with GOV environmental requirements, the proposed subproject was approved by the Prime Minister of Viet Nam, the NPT, the People's Committee of the provinces covered by the project, and by the People's Committee of Tan Uyen District where the project substation is located. A Certificate of Registration on Commitment to Environmental Protection was issued by the People's Committee of Tan Uyen District (Document No. 1709/GXN-UBND) on August 8, 2007. The EIA for the installation of the second transformer for 220kV Uyen Hung substation was approved under the Decision No. 652/QD-UBND on March 20, 2015 by the Bing Duong Province People's Committee. The list of the legal documents and approvals required for the project are shown in Table 5.

Table 5: Legal Documents and Approvals of the 220kV Uyen Hung Substation

Documents and Approvals	Description
National Power Transmission Corporation Decision No: 0859/QD-EVNNPT Date issued: 15/05/2014	Approval of the construction of the investment project, i.e. 2nd transformer for 220kV Uyen Hung substation
Tan Uyen People's Committee Document No: 1709/GXN-UBND Date issued: 08/08/2007	Certificate of Registration of Environmental Protection Commitment of the 220 kV Uyen Hung Substation Project of the Southern Viet Nam Power Project Management Board
Binh Duong Province People's Committee Decision No.: 652/QD-UBND Date issued: 20/03/2015	Approval of EIA report for the project "Installing the secondary transformer for Uyen Hung 220kV substation"
Military Command Zone 7 – 25th Infantry Brigade Document No: 139/BB-LD25 Date issued: July 16, 2012	Report on accepting the results of the investigation, survey and engineering plans, and construction estimates for demining of UXO

III. DESCRIPTION OF THE PROJECT

38. The Power Transmission Investment Program supports partial implementation of the GOV's Power Development Master Plan VII (PDMP VII) to meet the growing electricity demand of industrial, commercial and residential consumers throughout Viet Nam and to ensure reliable

electricity supply. The program was approved by the ADB for financing through multi-tranche financing facility (MFF). Components of the investment program contribute to expanding Viet Nam's power transmission network by financing construction of 500kV and 220kV transmission lines and associated substations. The facility is anticipated to consist of four financing tranches. ADB approved Tranche 1 in December 2011 and Tranche 2 in November 2012.

39. Nine subprojects have been identified for inclusion under Tranche 3. The provision of additional power equipment to be installed at the existing 220kV Uyen Hung Substation is one of the subprojects under Tranche 3.

A. Sub-Project Scope

40. The subproject will involve the installation of a second transformer including additional equipment fitted to the 220kV, 110kV compartments. Improvement in its existing capacity will aid in meeting increasing electricity demand in Tan Uyen District and surrounding areas in Binh Duong province. This improvement is expected to enhance the stability of the province's power supply, provide safe operation of the electric line network, and supply the surcharge for domestic use in Binh Duong province.

41. The substation, covering an area of 27,293 m^2, in Uyen Hung Town currently consists of the operation building, lodging house, security post, water station, fire pump house, internal roads, and switchyard area (Table 6). A space has been allocated within the substation for the second transformer.

Table 6: Coordinates of the 220kV Uyen Hung Substation (WGS84/UTM zone 49)

N(Y)	E(X)
Y=605.214;	X=1.206.557
Y=605.654;	X=1.206.353
Y=605.894;	X=1.206.126
Y=605.204.	X=1.206.099
Y=605.214;	X=1.206.557

42. The Uyen Hung Substation supplies high voltage (220kV, 110kV) and medium voltage (22kV for local grid only). It currently has one (1) 250MVA transformer in the switchyard area. Through the subproject, the substation will be equipped with another 220/110/22kV power transformer and related equipment in the switchyard intended for this subproject. Aside from the second transformer, related equipment that will be installed is the surge (lightning) arrester, power and control cables, feeders and additional support equipment such as fire extinguishers and emergency oil spill containment. Equipment currently in the substation will function as is.

43. An environmental compliance audit of the existing substation has been conducted. The details are presented in Appendix 6.

44. **Transformer.** The specifications for the 220/110/22kV second transformer are as follows:

- Rated power: 250/125/40MVA
- Type: Outdoor, 3 phase, 50 Hz, self-protected
- Vector group winding: YNa0d11

- High voltage winding: 225KV±8x1.25% with voltage regulator (OLTC); star configuration; neutral effectively earthed; rated power of 125MVA
- Medium voltage winding: 115kV; self-protected for high voltage winding; rated power of 125MVA
- Low voltage winding: 23kV; delta configuration for balancing; rated power of 10MVA
- Type of cooling: ONAN/ONAF1/ONAF2
- Package with porcelain bushings for all voltage levels
- Package with protection relays (eg. 96, 26, 33)
- Waterproof/dustproof (IP65, IEC 60529) protection relays and accessories
- Intermediate protection relay, control locks, and buttons, among others, must be exclusive for substation use (for reliable performance) and not affected by vibrations
- Allowable noise: <70dB.

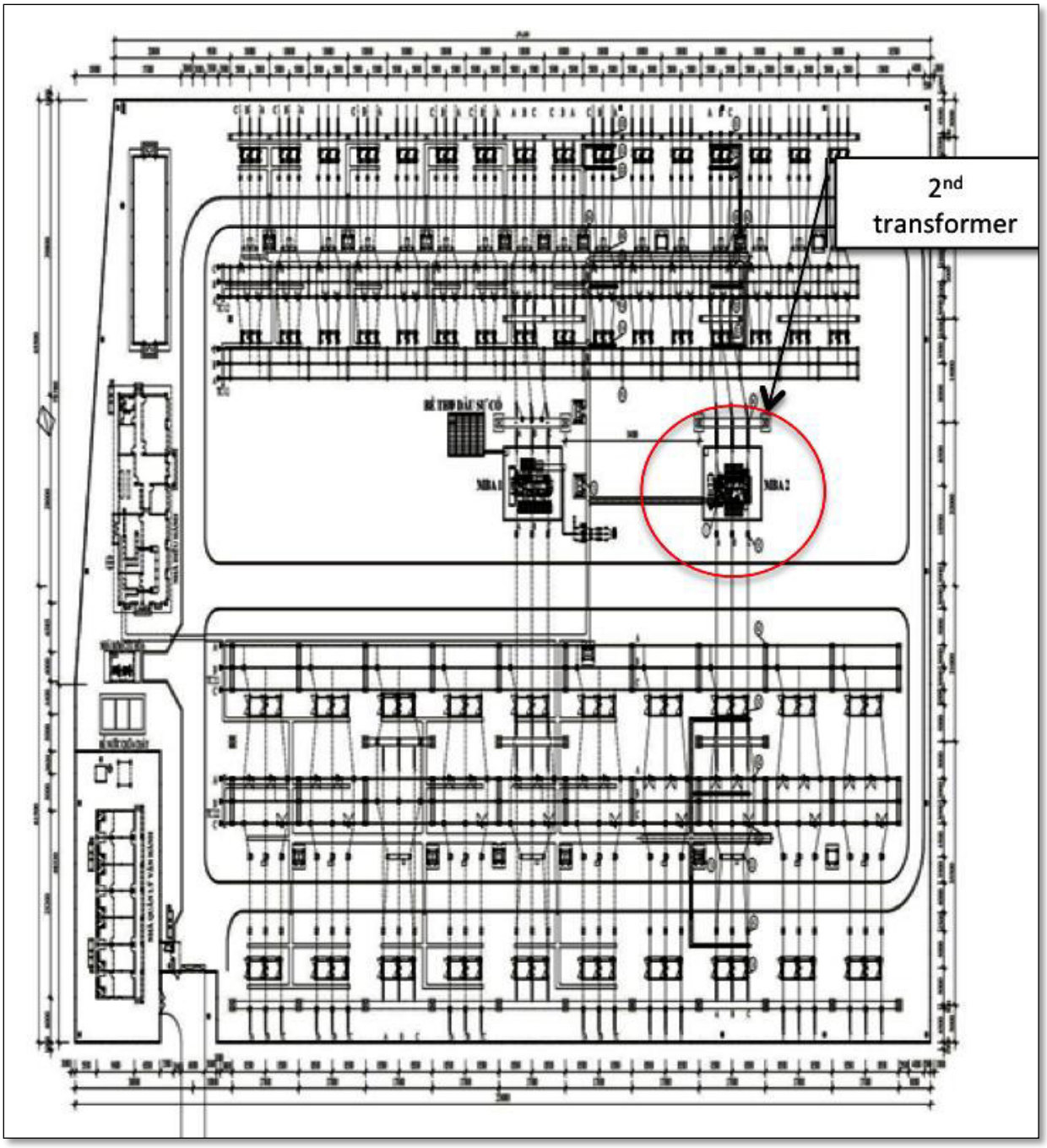
Current 250 MVA transformer

Drainage

Operation house

110kV switchyard

Photo 1. Existing equipment and facilities at the 220kV Uyen Hung Substation



Source: EIA on the installation of the secondary transformer in the 220kV Uyen Hung Substation. Power Engineering and Consulting Joint-stock Company No. 3 (PECC3). 2014. Unpublished

Figure 2: Layout of the 220kV Uyen Hung Substation

45. **Surge (lightning) arrester**. The surge arrester has the following specifications:
- Type: Outdoor, ZnO, 1 phase
- Rated voltage: 30kV
- Nominal discharge current: 10kA
- Lightning discharge level: Class 3
- Creepage distance: 25mm/kV

46. **Power and control cables**. Cables will have the following specifications:
- Type: multiple cores
- Conductive material: copper
- Insulation: PVC
- Core cross-sectional area: 1.5 mm^2; 4 mm^2; 6 mm^2
- For signal cable lines, extensive armor protection for pressure control

47. **Feeders**. Feeders will have the following specifications:
- At 220kV side: Two busbar systems with contact breaker, one (1) additional feeder for the second transformer
- At 110kV side: Two busbar systems with contact breaker, one (1) additional feeder for the second transformer; and one (1) feeder bay to Binh Tan.

48. In relation with the installation of the second transformer, added fire protection, back-up oil collection tank, and earthing systems are required in the substation to ensure safety.

49. **Fire protection.** The following will be supplied for added fire protection:
- Fire detectors
- Signal circuit and automated sprinkler system
- Spray system connected to the water station

50. **Secondary oil collection tank**. This will be installed for the second transformer to manage oil spills.

51. **Earthing system.** The following will be required for the installation of the second transformer in the existing system:
- Round iron: 16-mm
- Copper wires: 50, 95 and 120 mm^2

B. Project Schedule and Activities

52. The subproject commenced with the preparation of the Feasibility Study in September 2014. The second transformer is expected to be operational by January 2017 (Table 7).

Table 7: Estimated implementation schedule

Activity	Schedule
Feasibility Study	09/2014 – 11/2014
Approval of the Feasibility Study	12/2014
Design and preparation of equipment list	01/2015 – 03/2015
Approval of Bid Documents and Equipment List	04/2015 – 06/2015
Organize Bidding and Bid evaluation	07/2015 – 09/2015

Activity	Schedule
Review bid evaluation results and Contracts	10/2015
Delivery of equipment	11/2015 – 04/2016
Design and construction drawings	03/2016– 05/2016
Construction, installation and commissioning	06/2016 – 12/2016
Start of operation	01/2017

Source: EIA on the installation of the secondary transformer in the 220kV Uyen Hung Substation. Power Engineering and Consulting Joint-stock Company No. 3 (PECC3). 2014. Unpublished

1. Pre-Construction

53. Since the substation already exists and has an allotted area for the second transformer, minimal preparations is required for this subproject as compared to putting up a new substation. Preconstruction activities involve the conduct the feasibility study, design, bid and evaluation and awarding of contracts.

54. Contractor will be chosen based on the set bidding procedure. The Bid & Contract (B&C) Documents will include implementation of construction phase mitigation measures discussed in the chapter on Environmental Management Plan (EMP).

2. Construction

55. Construction activities include the civil works for the transformer pad, oil containment system, and equipment installation. These will include preparation of site and storage area, transportation of equipment and materials, construction of foundations involving excavations and placement of concrete, installation and commissioning of equipment, and site restoration. There will be no construction camps but only temporary storage of equipment and materials will be inside the premises of the substation. The duration of the construction works is estimated at six (6) months.

56. **Manpower during Construction.** A total of 20 workers will be required during the construction phase. There will be 16 construction workers, two (2) service workers, one (1) technical officer and one (1) Project Manager. Hiring of work force will be entirely dependent on the Contractor. However, the SPPMB will encourage the Contractor to hire local workers for some of the works.

57. **Transport of construction materials**. Construction materials will be purchased locally. Transportation distance will just be about 5 km. The National Highway TL747 and district road DH 422 will be used as main access roads, along with other existing national, provincial, and district roads.

58. **Electricity and water supply.** For power supply, the contractor will lease from the substation an auxiliary power source. Similarly for water supply, it is envisaged that daily water supply for the construction team and works will be subleased from the existing water source of the substation. The substation uses tap water.

59. **Wastewater and storm water management.** The substation has a sewer system for the domestic wastewater from the operation building. Storm water collection pits are positioned along the internal roads of the substation. The domestic wastewater goes to the septic tanks

and is subsequently discharged. It is envisaged that wastewater produced from construction activities can and will be handled by the existing sewer system.

60. **Construction equipment and materials**. Building materials will include use of cement, sand, gravel, steel and wooden formwork (Table 8). Major equipment such as trucks for carrying other equipment and building materials will be utilized (Table 9).

Table 8: Construction materials

No.	Materials	Unit	Quantity
1	Cement PC30	tons	12
2	Yellow sand	m^3	71
3	Gravel	m^3	37
4	Steel	tons	18
5	Wooden formwork	tons	4

Source: EIA on the installation of the secondary transformer in the 220kV Uyen Hung Substation. Power Engineering and Consulting Joint-stock Company No. 3 (PECC3). 2014. Unpublished

Table 9: Construction equipment and materials

No.	Equipment	Quantity
1	Water pump (10m^3/hour)	1
2	Crane (10 tons)	2
3	Crane (90 tons)	2
4	Set of equipment for installation, fire protection piping, and pump	1
5	Concrete mixer (250 L)	1
6	Mortar mixer (80 L)	1
7	Various tables	2
8	Concrete needle and platform vibrator	2
9	Truck (5–15 tons)	8
10	Excavator (1–1.25m^3)	1
11	Vacuum pump	1
12	Welding machine (23kW)	3
13	Powered- and hand-operated winch	1
14	Drill	2

Source: EIA on the installation of the secondary transformer in the 220kV Uyen Hung Substation. Power Engineering and Consulting Joint-stock Company No. 3 (PECC3). 2014. Unpublished

Table 10: Construction works

Item	Unit	Value
Earthworks		
Excavation pit	m^3	2,832.74
Landfill pit	m^3	2,633.04
Concrete works		
Concrete stone marks 200 1x2	m^3	369
Concrete lining stone marks 100 4x6	m^3	122
Reinforcement works		
Fabrication and erection of steel rod round đk<= 10	ton	11

Item	Unit	Value
Fabrication and erection of steel rod round đk<= 18	ton	21
Fabrication and erection of steel	ton	8
Fabrication and erection of galvanized steel	ton	71
Building brick walls (flat/rectangular-type)	m^3	18
Building brick wall (square type)	m^3	126
Plaster and mortar works	m^3	
Painting	m^2	473

Source: EIA on the installation of the secondary transformer in the 220kV Uyen Hung Substation. Power Engineering and Consulting Joint-stock Company No. 3 (PECC3). 2014. Unpublished

3. Operation

61. The substation will operate with an increase of capacity due to the second transformer. Similar procedures for checking and maintenance during operation will be implemented for the second transformer. Routine testing of transformer mineral oil forms part of the regular maintenance and operation of transformers to check insulating oil resistance, impedance, and quality specifications. The substation has an oil containment area around the transformers to address any potential spill. In addition, routine inspection on the growth of weeds will be conducted to protect the integrity of the grounding system below the ground of the substation. Under the provisions of EVN and NPT, mineral oil, which does not contain PCB, will also be used as insulating fluid for the new transformers. In terms of the workforce in the substation, there will be no additional staff to be hired. The existing 17 officers and employees (1 station chief, 11 executive officers, and 5 security guards) will operate the entire substation. All other existing systems of the substation together with the additional transformer will operate as one complete facility. The systems for the SCADA, battery, waste management, and fire protection system, among others, will be synchronized with the operation of the new transformer.

IV. DESCRIPTION OF THE ENVIRONMENT

62. Baseline information on the relevant physical, biological, and socio-economic conditions of the environment at the subproject area is described in this chapter. Aspects on various environmental parameters which are likely to be affected (either directly or indirectly) by the proposed installation of the second transformer in the 220kVUyen Hung Substation are discussed. Current and proposed development activities within the subproject's area of influence, including those not directly connected to the subproject, are also presented.

A. Geography

63. Viet Nam lies in the eastern part of the Indochina Peninsula. It has a land area of 331,211.6 km^2. International borders are shared with the People's Republic of China on the north, the Lao People's Democratic Republic on the west, and the Kingdom of Cambodia on the southwest. It is bounded by the East Sea on the east and south[3].

64. The province of Binh Duong is in the southern region of Viet Nam and shares borders with Binh Phuoc Province on the north; Ho Chi Minh City on the south; Dong Nai Province on the east; and Tay Ninh Province and Ho Chi Minh City on the west. It is divided into 1 city, 4 districts, and 2 towns. Thu Dau Mot City is the provincial capital[4].

65. Tan Uyen District is at the southeast of the province. It has a total land area of 613.44km^2 and 22 administrative units (20 communes and 2 towns)[5]. The 220 kV Uyen Hung Substation is located at the lower middle part of Tan Uyen District, in Uyen Hung town (Figure 3).

66. Rubber tree plantations border the substation. There are warehouses to its west and northeast sides and to its south is the DH 422 district road. The area within the immediate vicinity of the substation is sparsely populated. The nearest household to the substation site is located about 80m away(Figure 4).

B. Topography

67. The substation is at an area where the surrounding environment is relatively flat and with low-lying topography. In general, the topography of the province is relatively flat, sloping from north to south. Across the province are different topographic regions, including low mountainous terrain with slight undulation, flat plains, and alluvial valley. Further, there are some low mountains, including Chau Thoi mountain (Di An District) and Cau mountain (Dau Tieng District), and some low hills[6].

[3] Vietnam National Administration of Tourism. The Socialist Republic of Vietnam. http://vietnamtourism.com/e_pages/country/overview.asp
[4] Binh Duong E-Government Information Center. General information. http://eng.binhduong.gov.vn/en/
[5] Binh Duong E-Government Information Center. Tan Uyen District. http://eng.binhduong.gov.vn/en/
[6] Binh Duong E-Government Information Center. Natural conditions. http://eng.binhduong.gov.vn/en/

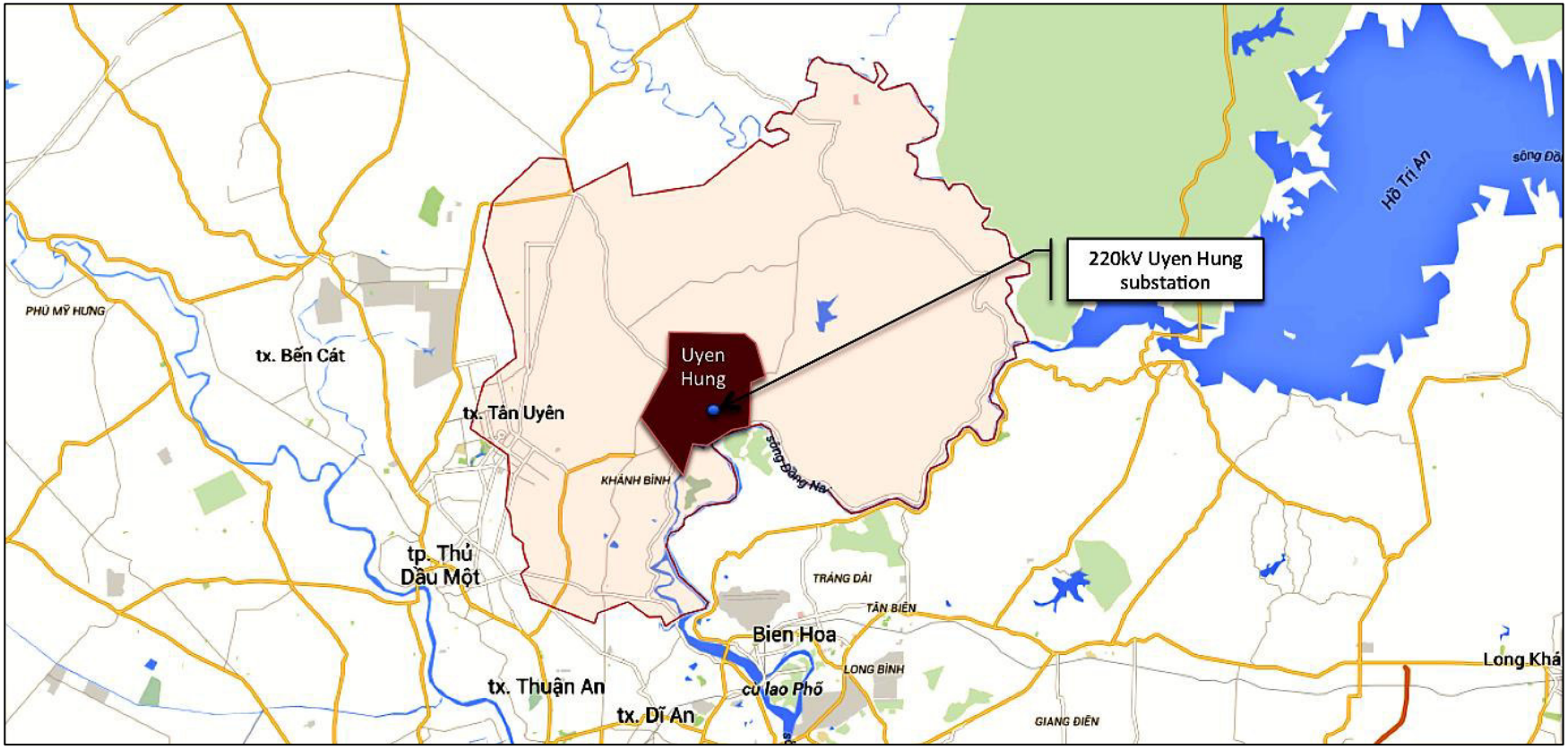


Figure 3: Location Map of Uyen Hung Town and Tan Uyen District

Base Map: https://www.google.com/maps

Figure 4: Vicinity Map of the 220 kV Uyen Hung Substation
Base Map: https://www.google.com/maps

C. Geology

68. Based on the results of the field geological surveys, the geological conditions in the survey area are as follows:

a) Homogeneous strata: Class (SC) clay, sand, gravel and little laterite gravel with good load-bearing capacity. When water saturation occurs, very large sink is washed under the influence of surface water.
b) Region is located in an area with seismicity level 5 MSK, repeated cycle TI≤200 years and probability of occurrence P≥0.1 over a period of 20 years.
c) Average ground resistivity is at depth of 18 – 20m.

69. In general, the geology of the province is mainly of alluvial soil. An area of 200,000 hectares has ancient gray alluvial soil distributed over the districts of Dau Tieng and Ben Cat, Thuan An Town, and Thu Dau Mot City. The soil is suitable for intensive cropping, especially used for industrial plantations and fruit trees. Yellow-brown ancient alluvial soil, covering approximately 35,206 hectares, is located on the low sloping hills in the districts of Tan Uyen and Phu Giao, Thu Dau Mot City, Thuan An Town, and a few areas along Highway 13. The land was found suitable for vegetable crops as well as fruit and nut trees such as jackfruit or cashew. Further, alluvial flat humus clay of about 7,900 hectares is scattered in depressed areas along rivers and streams and identified on slope convergence. These are located in the north of the districts of Tan Uyen, Phu Giao, Ben Cat, Dau Tieng, and towns of Thuan An and Di An. The soil is acidic because of its iron sulfate and aluminum sulphate content. Treated soil was found to grow rice, vegetables and fruit trees, among other crops[7].

D. Climate

70. The province is influenced by tropical monsoon climate. Climate data were taken from Dong Nai province's Statistical Yearbook and Bien Hoa meteorological station, the nearest meteorological station to the project site.

71. According to the 2012 Statistical Yearbook, annual average temperatures are seasonably constant at 26.5°C. The highest temperatures recorded are in the months of April and May. The lowest temperatures occur in the month of January with 25.1°C. Monthly average temperature recorded at Bien Hoa Meteorological Station from 2008 – 2012 is presented in Table 11.

Table 11: Average Temperature at Bien Hoa Meteorological Station (2008-2012), °C

Year / Month	2008	2009	2010	2011	2012	Average
January	25.0	23.4	26.4	25.3	25.5	25.12
February	25.0	25.7	27.9	25.6	25.7	25.98
March	25.0	26.9	28.3	27.2	27.8	27.04
April	26.2	27.2	29.2	28.4	28.1	27.82
May	28.0	26.6	28.8	27.1	27.6	27.62
June	26.2	26.5	28.0	26.8	27.2	26.94
July	26.4	25.9	27.3	25.9	26.3	26.36
August	26.4	26.6	27.2	25.9	26.1	26.44

[7]Binh Duong E-Government Information Center. Natural conditions. http://eng.binhduong.gov.vn/en/

Year / Month	2008	2009	2010	2011	2012	Average
September	25.7	25.7	27.0	25.9	26.2	26.10
October	26.0	25.7	27.2	25.6	25.2	25.94
November	25.2	25.9	27.9	25.0	25.6	25.92
December	24.7	25.1	26.6	25.2	25.1	25.34
Average	25.9	25.9	27.7	26.2	26.5	26.44

Source: Statistical Yearbook of Dong Nai Province, 2013

72. The annual average humidity in the province range from 82% – 84%, with maximum humidity occurring in the month of September while the minimum humidity occurs in February or March (Table 12).

Table 12: Average Humidity in Bien Hoa Meteorological Station, %

Year / Month	2008	2009	2010	2011	2012
January	76	75	78	77	79
February	71	75	72	68	73
March	71	77	74	74	72
April	75	81	75	72	76
May	86	85	81	84	80
June	86	87	85	86	83
July	85	87	88	88	87
August	87	86	88	87	89
September	88	89	88	88	88
October	87	88	87	88	86
November	85	81	80	83	83
December	81	78	79	78	78
Average	82	82	83	83	84

Source: Statistical Yearbook of Dong Nai Province, 2013

73. Rainfall levels in Binh Duong province are relatively low in comparison with some provinces in Dong Nai and Ho Chi Minh City. Average annual rainfall in Binh Duong is 2,550mm. The rainy season starts from May to November, with rainfall amounts accounting for 86% - 90% of the total and little variation from year to year. The dry season occurs from November to April, which accounts for 12% to 13% of the total rainfall and significantly changes from year to year.

74. There are about 159 rainy days in a year. The maximum rainfall occurs in July with an average of 343.1mm and the minimum rainfall happens in February with an average of 28.4mm. The yearly rainfall intensity recorded in Bien Hoa meteorological station from 2008 to 2012 in shown in Table 13.

Table 13: Yearly Rainfall Intensity at Bien Hoa Meteorological Station, mm

Year / Month	2008	2009	2010	2011	2012
January	8.1	0.6	1.6	2.9	1.8
February	8.4	91.2	1.8	1.9	2.0
March	12.5	102.6	9.2	76.8	10.1

Year / Month	2008	2009	2010	2011	2012
April	72.9	173.7	165.9	117.0	182.5
May	382.3	240.8	277.4	278.8	305.1
June	162.1	238.9	250.2	246.5	275.2
July	336.9	265.3	230.2	366.1	253.2
August	266.7	367.1	445.0	444.4	489.5
September	433.8	489.2	507.1	545.9	557.8
October	211.0	269.1	357.9	358.7	393.7
November	160.0	43.3	122.5	205.3	134.8
December	25.4	19.8	23.6	1.7	26.0
Average	2,080.1	2,301.6	2,325.7	2,387.3	2,558.3

Source: Statistical Yearbook of Dong Nai Province, 2013

75. During the last 20 years, climate has varied much. Based on the Climate Change Knowledge Portal of the World Bank Group, monthly mean and historical rainfall and temperature data were taken. For Uyen Hung Town, the month of September registered the highest average monthly rainfall (292.26 mm) and from May to November at least 170 mm was recorded. The months of December to April registered below 54 mm, with February being the least (8.34 mm). In these months, the temperature pattern increased, with January the least (25.19°C) and June the highest (29.59°C) (Figure 5).

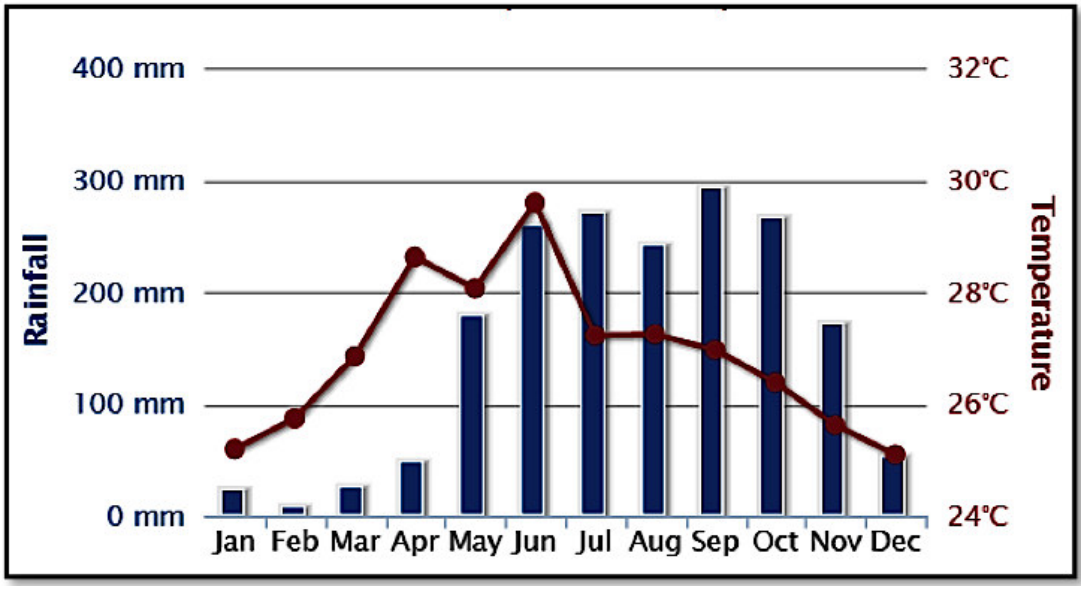


Figure 5: Average monthly temperature and rainfall at Uyen Hung Town, Tan Uyen District, Binh Duong Province from 1990 – 2009

Source: The World Bank Group Climate Change Knowledge Portal (2015). Average monthly temperature and rainfall for Viet Nam at location (11.08, 106.82) from 1990-2009. http://sdwebx.worldbank.org/climateportal/

E. Water Resources and Wastewater

76. **Surface Water.** The province has three (3) major rivers, namely, Dong Nai River, Saigon River, and Song Be River. There are also many canals in the riverside areas and numerous small streams.

77. There are no surface water resources within 1 km radius of the substation. The nearest is the Dong Nai River located about 2.7 km to the south of the Uyen Hung substation. The Dong Nai River is the largest river in the southeast, with its source from the Lam Vien Plateau in Lam Dong Province. It is 635 km long but only flows through the territory of Binh Duong Province in Tan Uyen District at about 90 km in length. The river is of great value for transportation, minerals, and supplying water for industrial parks, urban centers, tourism, and agriculture[8].

78. **Groundwater.** Due to depositional geology, adequate rainfall, and low-lying topography, in the area, the hydrogeological characteristic of the groundwater reserve is quite large, averaging 400,000 m^3/day. The ground aquifer is on average 3 – 5 m from the land surface. It is about 40m thick and produces good quality water. Groundwater abstraction by industries and residential communities in the surrounding area is through pumping[9].

79. Groundwater quality testing was done in one (1) household near the substation in Tran Thi Muoi (X: 1,207,112; Y: 604,904) by PECC3 with the assistance of EEC on January 12, 2015.All parameters tested for the sample are within the QCVN 09:2008/BTNMT standard (Table 14).

Table 14: Representative groundwater quality sampling

No.	Parameters	Unit	Result	QCVN 09:2008/BTNMT
1	pH	-	6.5	5.5-8.5
2	Hardness	mg/L	420	500
3	COD	mg/L	2.8	4
4	Ammonia	mg/L	0.005	0.1
5	Chloride	mg/L	160	250

Note: QCVN 09: 2008/BTNMT: National Technical Regulation on Groundwater Quality

Source: EIA on the installation of the secondary transformer in the 220kV Uyen Hung Substation. Unpublished. Power Engineering and Consulting Joint-stock Company No. 3 (PECC3). 2014.

80. **Wastewater**. The substation has its own sewer system that collects the domestic wastewater from its operations. There are 17 officers and employees working in the substation and wastewater produced from the daily operations goes through the septic tank. In the substation, wastewater quality sampling was performed by PECC3 and EEC in January 2015. All parameters analyzed are within the effluent standards as prescribed by QCVN 14:2008/BTNMT (Table 15).

Table 15: Representative wastewater quality sampling

No.	Parameters	Unit	Result	QCVN 14:2008/BTNMT, Column A
1	pH	-	6.5	5 – 9
2	TSS	mg/L	45	50
3	BOD_5	mg/L	29	30
4	Nitrate	mg/L	3.74	30
5	Phosphate	mg/L	0.38	6
6	Coliform	MPN	2,700	3,000

Notes: QCVN 14: 2008/BTNMT: National Technical Regulation on Domestic Wastewater;

[8]Binh Duong E-Government Information Center. Natural conditions. http://eng.binhduong.gov.vn/en/

[9]EIA on the installation of the secondary transformer in the 220kV Uyen Hung Substation. Unpublished. Power Engineering and Consulting Joint-stock Company No. 3 (PECC3). 2014.

pH – acidity/alkalinity; TSS – total suspended solids; BOD5 – biological oxygen demand (5 days);
MPN – most probable number; mg/L – milligram per liter

Source: EIA on the installation of the secondary transformer in the 220kV Uyen Hung Substation. Unpublished. Power Engineering and Consulting Joint-stock Company No. 3 (PECC3). 2014.

F. Air and Noise Quality

81. Ambient air quality and noise sampling was also performed by PECC3 and EEC. Sampling was conducted on October 2014. The representative samples were taken at three (3) sampling stations, namely: K1: Near the 250kV transformer; K2: in front of operation house; and K3: access road to 220kV Uyen Hung substation.

82. **Ambient Air Quality.** Total suspended particulates (TSP), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and carbon monoxide (CO) were analyzed. Table 16 presents the results of the ambient air quality sampling.

Table 16: Ambient Air Quality Sampling Results

Sampling Station	Description	TSP (mg/m^3)	SO_2 (mg/m^3)	NO_2 (mg/m^3)	CO (mg/m^3)
K1	Near 250kV transformer	0.175	0.056	0.044	2.87
K2	In front of operation house	0.132	0.046	0.032	2.41
K3	Access road to 220kV Uyen Hung SS	0.264	0.083	0.068	4.76
QCVN 05:2013/BTNMT		0.3	0.35	0.2	30

Source: EIA on the installation of the secondary transformer in the 220kV Uyen Hung Substation. Unpublished. Power Engineering and Consulting Joint-stock Company No. 3 (PECC3). 2014.

83. Results show that air quality in the area is good and that all parameters are below the permitted levels. The TSP level at the entrance gate leading to the access road is understandably higher than the results from the other sampling stations since it is near the district road DH 422.

84. **Noise.** Noise was measured at the same monitoring stations for ambient air quality. The results were compared with the permitted level of noise in the area. Noise levels also show that it is within the limit of 70dBA as prescribed by QCVN 26:2010/BTNMT (Table 17). At night (2100H to 0500H), the level is expected to be lower. Nevertheless, the distance of the nearest household from the substation is 80 m.

Table 17: Noise Level Measurements

Sampling Station	Description	Noise, dBA
K1	Near 250kV transformer	52.7
K2	In front of operation house	55
K3	Access road to 220kV Uyen Hung SS	61.74
QCVN 05:2013/BTNMT		70

Source: EIA on the installation of the secondary transformer in the 220kV Uyen Hung Substation. Unpublished. Power Engineering and Consulting Joint-stock Company No. 3 (PECC3). 2014.

G. Biological Resources

1. Flora

85. There are no rare plant species found in the substation and immediate vicinity of the project. Rubber tree plantations border the site almost in all directions. These trees grow favorably in areas with abundant rainfall and warm weather. Other types of vegetation are mainly rice and crops in farmlands. Plants such as lemon, sugar cane, and legumes are abundant in the area.

2. Fauna

86. There are no rare animal species found in the substation area and vicinity. The substation area is already developed and is no longer considered a habitat for rare or endangered species.

H. Land Use

87. The installation of the second transformer at 220kV Uyen Hung substation will not directly affect land uses anymore since the facility is already existing and operational.

88. However, there may be impacts associated with land use changes brought about by the project. According to the Prime Minister's Decision No. 81/2007/QD-TTg of June 5, 2007, the south of Binh Duong (Region I: Thu Dau Mot City, Thuan An and Di An Towns, and Tan Uyen and Ben Cat Districts) is for urban, industrial and service development. Urban space would be developed in the direction of rural urbanization and economic restructuring from agriculture to non-agricultural sectors. Region 1 has a total land area of 538 km^2 (19.96% of the total), and a population of 1,248,000 persons (62.4% of total). The Decision serves as a basis for the elaboration, approval and implementation of specialized plans (construction plans, land use plans and other specialized plans) and investment projects in Binh Duong Province up to 2020[10]. The land use in Tan Uyen District most likely is on the process of restructuring, in transition to become a non-agricultural sector (Figure 6).

[10] Decision No.81/2007/QD-TTg of 5 June 2011 by the Prime Minister on approving the Master Plan on Socioeconomic Development of Binh Duong Province up to 2020

Figure 6: Land use map

1. Ecologically protected areas

89. There are no nearby ecologically protected areas from the substation and none in Binh Duong Province. The nearest protected area is the Cat Tien Biosphere Reserve which is located about 20 km to the east of the substation. The Cat Tien Biosphere Reserve in Dong Nai Province covers an area of 257,357 hectares in total and includes the Cat Tien National Park in the core area. It extends from the Annamite Range moist forest in the north to the forests of the Mekong Delta Complex in the south.[11]The Cat Tien Biosphere Reserve is included under the UNESCO-Man and the Biosphere Program (MAB).

90. Another ecologically sensitive area is the Can Gio Mangrove, which is located about 50 km to the south. The Can Gio Mangrove is also a UNESCO-MAB Biosphere Reserve, located in Ho Chi Minh City (Figure 7).

2. Culturally protected areas

91. In terms of protected areas of cultural and historical significance, the nearest is about 40 km to the northwest of the substation, the Boi Loi National Cultural and Historical Site (20 km^2). Subsequently much farther than Boi Loi and have similar significance are the sites Duong Minh Chau (50 km^2) and Nui Ba Den (16.38 km^2)[12].

[11] UNESCO – MAB Biosphere Reserves Directory. http://www.unesco.org/mabdb [online], May 2015
[12] IUCN and UNEP-WCMC (2015), The World Database on Protected Areas (WDPA) [On-line], [May2015], Cambridge, UK: UNEP-WCMC. Available at: www.protectedplanet.net.

Notes: Purple boundary– UNESCO-MAB Biosphere Reserve;
Orange boundary – National Cultural and Historical Sites

Figure 7: Protected areas at the southern region of Viet Nam

Source: IUCN and UNEP-WCMC (2015), The World Database on Protected Areas (WDPA) [On-line], [May/2015],Cambridge, UK: UNEP-WCMC. www.protectedplanet.net.

92. Other socially and culturally significant sites in the area are shown in Table 18.

Table 18: Socially ad Culturally Significant Sites in Uyen Hung Town

No	Distance to Uyen Hung S/S	Cultural heritage sites
1	2.8km	Primary school of Uyen Hung
2	2.8km	Le Thi Trung High school
3	3.2km	Huynh Van Nghe High School
4	3.2km	Huynh Thi Chau Kindergarten
5	3.5km	Uyen Hung ward's health station
6	3.7km	Uyen Hung CPC 's office
7	2.6km	Buu Son temple
8	2.8km	Tan Uyen Hospital

3. UXO Contaminated areas

93. The risk of encountering unexploded ordnances (UXO) and land mines is most significant in the southern region of Viet Nam due to previous decades of war. However, during the development of the 220kV Uyen Hung Substation, demining of UXO was investigated and surveyed by the military's 25th infantry brigade. The report on the completion of the demining was issued on July 16, 2012.

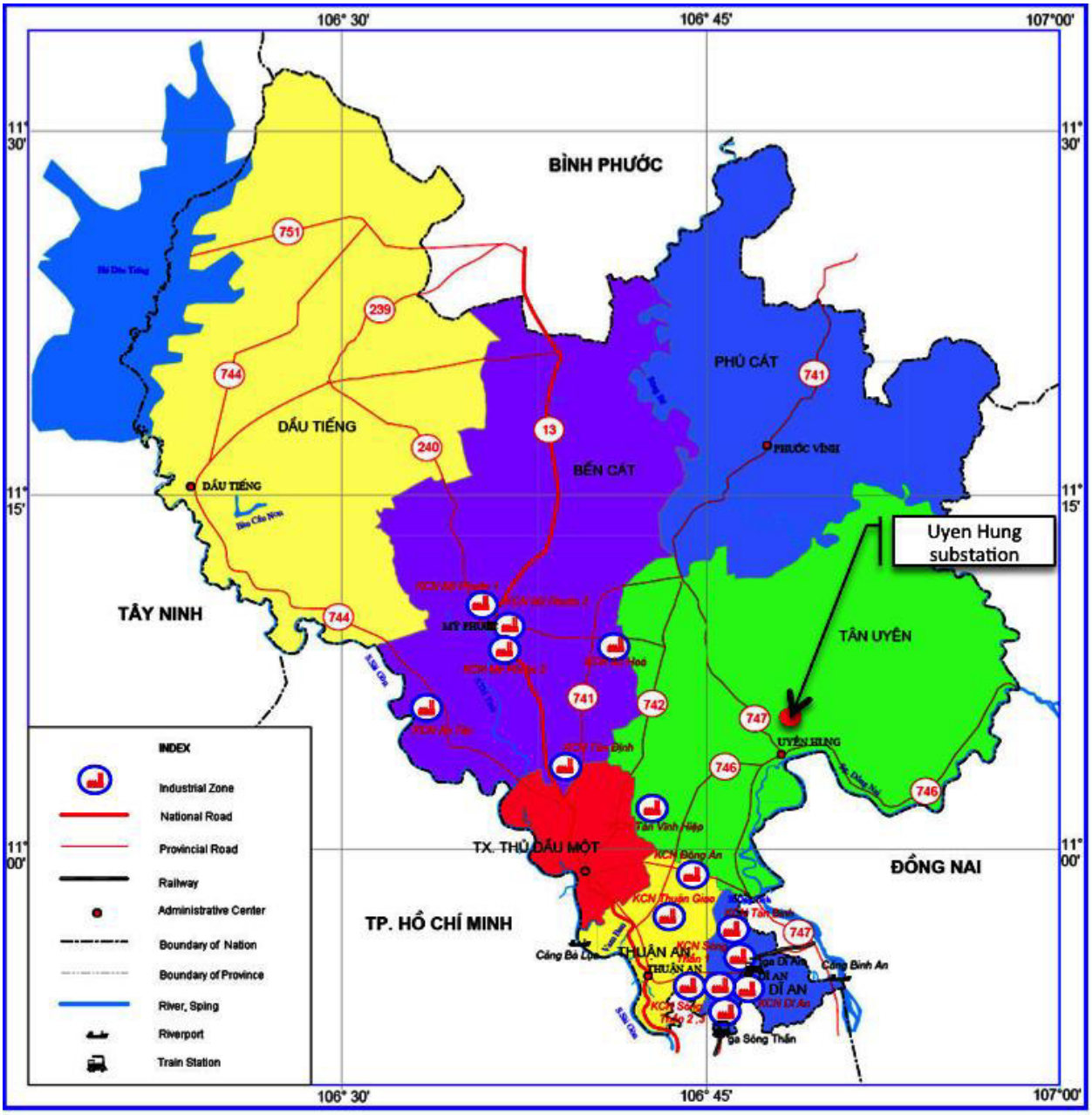


Figure 8: Location of industrial zones in Binh Duong Province
Base map: http://www.sitesatlas.com/Maps/Maps/vnm-pol.htm

I. Socio-Economic Condition

1. Population

94. As of 2011, the province of Binh Duong has a population of 1,691,400 of which 64% is urban[13]. The province has a population density of 628 persons/km^2[14]. The population growth rate was 4.41% in 2011 and is considered the highest in the Southeast Region. This is followed

[13]General Statistics Office of Vietnam. 2015. Average urban population by province. http://www.gso.gov.vn/
[14]General Statistics Office of Vietnam. 2015. Area, population, and population density in 2011 by province. http://www.gso.gov.vn/

by Dong Nai Province (3.5%)[15]. About 10% (169,309) of the provincial population is in Tan Uyen District[16].

2. Economy

95. The province is part of the Southern Key Economic Zone of Viet Nam, along with Ho Chi Minh City, Dong Nai, Ba Ria – Vung Tau, Binh Phuoc, Tay Ninh, Long An and Tien Giang Province. Binh Duong Province has experienced rapid economic growth rate in recent years and with GDP increase at 14.5% annually on average. It also has a dynamic industrial development with its economic structure actively changing. The industrial and service sectors have grown rapidly and account for high proportion with construction, 63%; service, 32.6%; and forestry & agriculture, 4.4% (2010). Currently, it has 28 industrial parks and zones with the total area of over 8,700 hectares and with more than 1,200 domestic and foreign enterprises under operation. The total capital investment is over US$ 13 billion[17]. Figure 8 presents the location of industrial parks in Tan Uyen District.

96. According to report on the socio – economic status of Binh Duong in 2015, the GDP growth rate of Binh Duong province in 2014 was 11%, and the average income per capita per month in the area was D2,168,333[18].

3. Power and Water Supply

97. **Water Supply.** Tan Uyen District is serviced by the Tan Uyen Water Treatment Enterprise, a subsidiary enterprise of the Binh Duong Water Supply Sewerage – Environment Co., Ltd (BIWASE). The BIWASE has a total capacity of 200,000 m^3/day, serving 100% of urban area and 50% of rural areas in Binh Duong province. It has a total of 12 subsidiary enterprises in the province that provide services to industrial parks, business establishments, institutions, and residential areas combined[19].

98. In Tan Uyen town, only 92% of households have access to potable water.[20] Some households use drilled wells to tap groundwater source. For the substation, domestic water is obtained from groundwater through drilled wells (2 wells at 70 m depth) in the area[21].

99. **Power Supply.** The power sources of the province are the Thac Mo Hydropower Plant (2x75MW), Can Don Hydropower Plant (2x38.8MW), Tri An Hydropower Plant (4x100MW), Thu Duc Thermal Power Plant (2x37.5MW), and VSIP Power Plant (12MW)[22]. Binh Duong Province has vast electrical network of substations and transmission lines throughout the province because of the growing electricity demand. The existing 220kV Uyen Hung Substation supplies electricity to Tan Uyen District.

[15]General Statistics Office of Vietnam. 2015. Population growth rate by province. http://www.gso.gov.vn/
[16]Binh Duong E-Government Information Center. Tan Uyen District. http://eng.binhduong.gov.vn/
[17]Binh Duong E-Government Information Center. General Information. http://eng.binhduong.gov.vn/
[18] Result of socio – economic survey in 2015
[19]Binh Duong Water Supply – Sewerage Co., Ltd. (BIWASE). 2014. Message from BIWASE's President. http://www.biwase.com.vn/
[20]People's Committee of Van Lam. Van Lam District - Development Resources. http://hungyen.gov.vn/vi-vn/vanlam/Pages/Article.aspx?ChannelID=1&articleID=15
[21]EIA on the installation of the secondary transformer in the 220kV Uyen Hung Substation. Unpublished. Power Engineering and Consulting Joint-stock Company No. 3 (PECC3). 2014.
[22] ADB. 2011. Feasibility Study: Summary Report on 220kV Song May – Uyen Hung Transmission Line. http://www.adb.org/sites/

4. Health

100. **Healthcare Facilities**. As of 2011, under the provincial departments of health, there are a total of 112 health establishments, 2,503 patient beds, and 2,257 medical staff. About 81% of the health establishments are medical service units and which comprised about 18% of the total patient beds (Table 19). The number of health establishments is low (5 out of 6) in the Southeast Region, despite being a key economic zone. Other than the above, there are also private hospitals and clinics throughout the province.

Table 19: Healthcare facilities in Binh Duong Province (2011)

Item	Hospital	Regional polyclinic	Sanitarium and rehabilitation hospital		Medical service unit	Total
Health establishments	10	10	1		91	112
Patient beds	1892	136	20		455	2,503
	Doctor	Physician	Nurse	Midwife	Pharmacist	
Medical staff	425	494	600	293	445	2,257

Source: General Statistics Office of Viet Nam. 2015. http://www.gso.gov.vn/

101. The nearest hospital to the substation is the Tan Uyen District General Hospital in Uyen Hung Town, which is about 2.8 km to the southwest. Another public hospital in the district is the Chau Thanh–South Tan Uyen General Hospital. There are hospitals in other districts: five (5) in Thu Dau Mot City, two (2) in Thuan An District, one (1) in Phu Giao District, one (1) in Dau Tieng District, one (1) in Di An District, and two (2) in Ben Cat District[23].

102. **HIV/AIDS.** Provincial statistics on HIV infected people and AIDS patients alive (3,146 persons) ranked 4th in the Southeast Region and topped by Ho Chi Minh City (64,333 persons). From the provincial accumulated total, 5.69% of which are new cases reported in 2011. In the same year, there are 18 AIDS deaths in the province, accounting for 2.58% in the Southeast Region. It is worth noting that about 20% of AIDS deaths in the country are in Ho Chi Minh City alone and accounts for 69% of the Southeast Region (Table 20).

Table 20: HIV/AIDS Statistics in the Southeast Region (2011)

Southeast Region	New cases in 2011		Accumulation as of December 31, 2011		Number of AIDS deaths
	HIV infected people	AIDS patients	HIV infected people alive	AIDS patients alive	
Binh Duong	108	71	2455	691	18
Binh Phuoc	100	52	1423	341	13
Ba Ria – Vung Tau	342	75	4157	657	76
Dong Nai	250	123	4926	623	42
TayNinh	230	231	1985	682	68
Ho Chi Minh City	1,943	1,470	46,507	17,826	481
Southeast Region Total	2,973	2,022	61,453	20,820	698
Country Total	14,113	6,429	197,072	48,717	2,413

Source: General Statistics Office of Viet Nam. 2015. Number of people infected with HIV/AIDS and number of AIDS deaths by province. http://www.gso.gov.vn/

[23]Binh Duong E-Government Information Center. Health care centers in Binh Duong. http://eng.binhduong.gov.vn/en/

5. Education

103. There are lot of schools of general education in the province and the number have been continuously increasing since 2002 up to 2011 with 23% increase from 189 to 233. In terms of the province's upper secondary graduates compared to the total candidates, it has come far since its lowest rate in 2002 (72.53%). It has never gone down below 74% since then, and latest data showed 89.47% graduates in 2011[24].

104. In Uyen Hung Town, there are four (4) schools within 4 km radius of the substation. The nearest schools (a preschool and high school) are about 2.8 km away from the substation.

6. Infrastructure Facilities

105. The networks of roads and waterways are very important in connecting regions inside and outside of Binh Duong Province. Data on volume of freight traffic by roads and waterways in the province has increased. From 2000 to 2010, there was an increase of 739% (2010: 1046 million tons.km)[25]. The volume of freight traffic by road traffic contributes to about 93% (2010: 971.2 million tons.km) of the total[26].

106. A very important transport route is Highway 13 which runs from Ho Chi Minh City through the province, from south to north, crossing Binh Phuoc Province and connecting Cambodia to Thailand border. This highway is vital and meaningful in economic aspects and for security and defense. Another one, Highway 14 from Tay Ninh Province runs through the province, to Binh Phuoc Province, and across the vast Central Highlands. The road is strategically important not just to the province, but also to Viet Nam's development. Aside from these major national highways, there are also inter-provincial highways, which provide key access routes to connect Thu Dau Mot City with the other areas in the province.

107. In terms of the water transport system, the province has three (3) major rivers, including the important Saigon River. These waterways connect the province to major ports in the south, enabling the exchange of goods with Mekong Delta provinces[27].

108. The nearest access roads to the site of the 220kV Uyen Hung substation are the TL747 national highway and the DH422 district road. DH422 district road to the substation site is a two-lane asphalt road.

[24]General Statistics Office of Vietnam. 2015. Percentage of graduates of general education in the school by province. http://www.gso.gov.vn/
[25]General Statistics Office of Vietnam. 2015. Volume of freight traffic by province. http://www.gso.gov.vn/
[26]General Statistics Office of Vietnam. 2015. Volume of freight traffic by the road by province. http://www.gso.gov.vn/
[27] Binh Duong E-Government Information Center. Natural conditions. http://eng.binhduong.gov.vn/en/

V. INFORMATION DISCLOSURE, CONSULTATION AND PARTICIPATION

A. Methodology

109. Formal disclosure to stakeholders about the installation of the second transformer at the 220kV Uyen Hung Substation occurred during the preparation of the initial environmental examination (IEE). A stakeholder consultation strategy was developed to meet the requirements of conducting meaningful consultation with stakeholders as stipulated by the ADB SPS (2009). The strategy embodied the principles of meaningful engagement, transparency, participation, and inclusiveness to ensure that the affected and marginalized groups such as women and the poor are given equal opportunities to participate in the planning of the subproject.

1. Identification of Stakeholders

110. Stakeholders were identified and were engaged in a participatory manner. Stakeholder consultation focused on institutional stakeholders, affected communities, and persons directly affected by proposed subproject interventions. The stakeholders of the subproject which have been identified include:

a) Institutional stakeholders such as: (i) People's Committee and Commission (PCC), (ii) District People's Committee (DPC); (iii) Project EA, (iv) PECC3, and (v) commune leaders. The Project EA and PECC3 provided information for the design of the subproject and in the implementation of measures and interventions;

b) Mass organizations such as Women's Union and Farmer's Union;

c) Affected households living along access roads and near the substation site who may be directly and/or adversely affected, and who have an interest in the identification and implementation of measures to avoid or minimize negative impacts; and

d) Other institutions or individuals with vested interest in the outcomes and/or impacts of the subproject.

2. Public consultation meeting

111. The initial consultation with the People's Committee was conducted by PECC3 in October 2014 during the preparation of the EIA report of the subproject that was submitted to DONRE. Follow-up community consultation meeting was held on April 3, 2015 in Uyen Hung Commune, Tan Uyen Town in Binh Duong Province. The follow-up consultation meeting aims to discuss the location and potential impacts on the environment and people of the second transformer installation. The meeting included a representative from the nearest household at the back substation.

112. Copies of the EIA in Vietnamese language were made available at Commune PC office. The Executive Summary in Vietnamese language was posted at the affected Commune PC offices. Local loud speakers were also used to facilitate invitation, understanding and communication of the IEE. The public meeting was conducted in local language and consisted of the following component procedures:

a) The engineering consultant introduced the subproject, including the substation location and design.
b) The environmental consultant presented ADB's environmental policy, safety regulations in Viet Nam power sector, anticipated environmental impacts and mitigation measures to be developed in the IEE, the grievance redress mechanism for environment and resettlement issues;
c) Open discussion of issues and concerns by the stakeholders.

B. Issues and Concerns Raised During the Public Consultation

113. The following are the comments raised by during the consultation meeting held last April 2015:

a) The commune authorities agree with the environmental impacts of the project to the location and the proposed solutions and measures to mitigate environmental impacts of the project.
b) The rubber plantations should be protected against disposal of waste materials. The nearest household asked that the problem of lack of toilets during the construction of the substation is not repeated.
c) The project owner should ensure all mitigation measures during the construction phase are implemented.
d) The operator of the substation should strictly follow regulations during the upgrading and operation of the substation.
e) Majority of the workforce should come from the commune.
f) Large and overloaded construction vehicles should secure a permit from the local government.

114. The summary of the comments and questions from the authorities and local people and the responses from the consultants are summarized in Table 21.

Table 21: Summary of Issues and Concerns Raised by Stakeholders and Responses from PECC3, IEE Consultant and SPPMB

Location and time	Comments/Questions from Stakeholders	Responses of Consultants
Uyen Hung Commune, Tan Uyen Town, Binh Duong Province Apr. 3, 2015 Time: 8AM	Construction activities must comply with the schedule in order to avoid negative influence on living conditions and local security.	A detailed EMP is prepared to ensure that the Contractor of the subproject will avoid and prevent any potential impacts on the local environment and social life. Majority of the workforce during construction will be from the locality.
	Provide adequate sanitary condition at the workers camp so that the workers will not discharge to the rubber plantation.	The current Uyen Hung substation has enough sanitary conditions for workers. A directive/regulation against disposal of wastes into adjacent surroundings will be issued for workers guidance.

Location and time	Comments/Questions from Stakeholders	Responses of Consultants
	The transportation of oversized and overloaded equipment should have the permission of local government.	Noted.
Conclusion	Uyen Hung Commune People's Committee (CPC) and local people agree with the installation of the 2nd transformer in Uyen Hung 220kV substation. Impacts from the current operation of the substation on local people should be handled. Project Owner and the Contractor will implement the EMP to minimize potential adverse impacts of the proposed subproject.	

C. Follow-up Stakeholder Consultations

115. According to the national requirements, subsequent formal consultations are not required for the substation project. Inputs from stakeholders and responses from project owners will be acted upon through follow-up consultations and coordination with communities.

116. As part of the information disclosure strategy, the IEE is readily available to stakeholders in local Vietnamese language. The IEE is also available at the substation site. Similarly, all subproject environmental reports with specific reference to minutes of stakeholder consultation, environmental monitoring, and reports on EMP implementation submitted by the SPPMB and the Power Transmission Corporation (PTC) No. 4 are available at the same offices.

VI. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

117. The environmental impacts were identified based on the project activities that may occur in each environmental component and by evaluating the environmental and social baseline situation at the subproject area. The identification of environmental impacts was mainly based on the technical information related to project components design and operation, field visits, information from stakeholder consultations, and the ADB REA checklist of potential impacts of the subproject.

118. The impacts are presented according to those that are related with the design, selection and location of the project facilities; impacts associated with construction activities; and impacts related to the actual operation of the substation.

A. Anticipated Benefits from the Project

119. Currently, the 220kV Uyen Hung substation supplies electricity to Tan Uyen District and nearby areas. The subproject will ensure development of power supply in the district, improve reliability and continuity of supply, and reduce power outages. The implementation of the subproject is in line with the socio-economic development direction of the province up to Year 2020, whereby investment in electricity development is prioritized to meet the demand in the industrial sector and the general public.

B. Impacts Related to Pre-Construction Phase

120. There are no anticipated major impacts during the pre-construction phase. The subproject is to be implemented inside the substation, which is managed by the Power Transmission Corporation No. 4 (PTC4). Furthermore, the substation has been designed with an allocated location for the second transformer.

C. Impacts and Mitigation during Construction Phase

121. Construction activities will include excavation of the oil containment and transformer pad, filling, movement of construction vehicles, operation of heavy equipment, and installation of electrical equipment. Construction activities of the proposed subproject are expected to generate the following impacts:

a) Sediment generation and soil runoff caused by excavation and earthworks
b) Effect on air quality from vehicle and equipment exhaust and dust generated from construction activities
c) Noise and vibration caused by vehicle and equipment
d) Contamination of soil and groundwater due to spill or leakage of construction chemicals
e) Effect on the surrounding environment, particularly the adjacent rubber plantations, from disposal of construction wastes, including domestic waste
f) Traffic hazards and road degradation during the transport of heavy construction equipment and materials
g) Effect on heath and safety of workers
h) Disruption of existing substation operation.

1. Soil runoff

122. **Impacts.** There will be excavation of 2,832.74 m^3 of soil and backfilling of about 2,633.04m^3 for the second transformer pad and oil containment system. The excavated soil will be utilized as backfill materials, hence, will not require significant borrow materials.

123. The excavation period is estimated to be short, but will result to exposure of bare soil to weather elements. Surface soil stratigraphy of the substation was analyzed to be sandy, which has low runoff potential. However, subsequent layers of sandy clay and clay belong to the hydrologic soil group with highest runoff potential due to very low infiltration rates.

124. In addition, based on the project implementation schedule, the construction will be scheduled during the rainy season, June to December 2016. Therefore, soil runoff to the drainage system of the substation is expected to be highly probable. Runoff may be transported to canals and creeks causing sedimentation and turbidity, i.e. deterioration of water quality. The adjacent rubber plantations may be affected by soil runoff coming from the construction activities at the substation site.

125. **Mitigation Measures.** Although the substation has a storm water collection system, the impacts of soil runoff have to be minimized by the Contractor to avoid clogging of the existing storm drainage system inside the substation. The Contractor will be required to institute proper preventive and control measures that includes the following:

a) Excavation activities will be scheduled during the dry season.
b) Stockpile of excavated soil may be covered and stabilized to prevent runoff.
c) Provide sediment trap or inlet protection (fabric barriers around inlet entrances or block and gravel protection) to slow runoff velocity and catch sediment and other debris at the drain inlet.
d) Upon completion of the construction stage, exposed surfaces will be restored using native vegetation while other areas will have trees and plants as part of the architectural landscape.

2. Impact of fugitive dust and other emissions

126. **Impacts.** The operation of vehicle and equipment, excavation and backfilling of soil, and transport of materials can affect air quality. There will be exhaust gas emissions containing TSP, SOx, NOx, and CO during operation of vehicle and equipment. Dust generation is expected with an increase in TSP ground level concentration due to earthworks, contact of machinery with bare soil, and exposure of bare soil and soil piles to wind.

127. Construction activities are limited within the substation that is located in a sparsely populated area. Use of vehicle and equipment will be periodic and temporary. Therefore, impact on air quality to the community is low and localized within the substation site. Directly affected receptors are the workers of the substation.

128. **Mitigation Measures.** Best management practices will be applied to minimize impacts coupled with effective environmental monitoring. An Air Emission and Dust Control Plan will be prepared and implemented by the Contractor as part of the Construction Environmental Management Plan (CEMP). Mitigation measures to be applied include:

a) Stockpile of excavated soil will be covered and kept moist.

b) Vehicles and equipment will be maintained regularly to ensure emissions comply with the standards and that valid operating permits are secured throughout the project schedule. This will be included in the bid documents.
c) Construction materials such as cement, sand and aggregates will be covered during transit and while stored on-site.
d) Burning of waste materials will be prohibited.
e) Inform and educate workers on the Air Emission and Dust Control Plan in the CEMP prior to start of construction works.
f) Require construction haulers to cover materials with tarpaulin or other suitable materials during transport of materials.
g) Impose speed limits on construction vehicles.

3. Noise and Vibration

129. **Impacts.** Noise and vibration are generated by activities such as operation of earthmoving and excavation equipment, concrete mixers, and cranes. Furthermore, vehicles transporting construction materials will add to the average noise level along the transport route. Immediate and nearest receptors are households and establishments along routes of materials transport. Impacts may be immediately felt by these receptors and can create nuisance to the normal living conditions.

130. Considering that the substation is in a sparsely inhabited area and that the construction activities are limited within the substation site, noise and vibration impacts are considered low, localized and short-term.

131. **Mitigation Measures.** Measures that can be applied to minimize impacts of noise and vibration are:

a) Operate construction equipment only at daytime and minimize works at night. Approval of the household at the back of the substation will first be sought before initiating works at night.
b) Install suitable mufflers on engine exhausts when appropriate
c) Maintain regularly all vehicle and equipment to ensure good-working condition condition and that these have valid operating permits throughout the project schedule. This condition will be included in the bid documents.
d) Require drivers to minimize blowing of horn and to comply with speed limits, particularly when passing through residential areas.

4. Spill or leakage of hazardous construction chemicals

132. **Impacts.** Hazardous chemicals such as oil, grease, fuel, paint, lead-acid batteries, etc. will be used during construction. Improper management, storage, handling, and use can lead to spill or leakage to the soil, groundwater, and biological resources. Impact of a spill is high although localized for a short-term. The adjacent rubber plantations will be protected against disposal of any waste materials as requested during the consultation meeting at the commune.

133. **Mitigation Measures.** A Hazardous Chemicals Management Plan will be prepared and implemented by the Contractor as part of the CEMP. Mitigation measures to be applied include:

a) Prepare a list of hazardous chemicals (with quantity and hazard classification) to be brought to the site. The Environment Officer of the PTC4 will have to verify the list and approve prior to introduction to the substation site.
b) Minimize, if not avoid, storage of hazardous materials onsite.
c) Implement proper labeling and storage in leak-proof containers, on areas with concrete surface and secondary containment to prevent potential spills and leakages reaching soil or groundwater.
d) Display the Materials Safety Data Sheet (MSDS) of all hazardous chemicals used in work areas.
e) Designate areas of impervious surface for equipment services and refueling.
f) Provide oil and grease traps.
g) Provide portable spill containment and cleanup equipment.
h) Train workers on safe use, handling, storage, disposal, and spill response for the hazardous chemicals.
i) Provide workers with personal protective equipment (PPE).
j) Inform and educate workers about the Hazardous Chemicals Management Plan in the CEMP prior to the start of construction.

5. Generation of construction wastes

134. **Impacts.** Different types of construction wastes are expected from project construction. These are domestic solid waste, domestic wastewater, inert construction waste, hazardous waste, and excavated soil.

a) **Domestic solid waste.** In general, construction workers generate the domestic solid waste, which may include food wastes, plastic and glass bottles, paper, cardboard, and packaging wastes, among others. The impact is considered low, localized and short-term. There is an existing solid waste hauling system within the substation, which can be commissioned during project construction.

b) **Domestic wastewater.** The direct discharge of domestic wastewater by construction workers may result to unsanitary conditions within the substation. This may also cause degradation of water quality and contamination of groundwater that may lead to spread of water-borne diseases. These impacts are considered minimal since there only about 20 workers during the construction phase and that there are available sanitary facilities in the substation which may be utilized by workers.

c) **Inert construction waste.** These wastes can be scrap wood and metals, cement bags, aggregates and concrete debris, among others. These wastes are generally disposed of and/or landfilled in appropriate sites and represent no direct danger to health and thus considered of low impact.

d) **Hazardous waste.** Hazardous waste may include contaminated soils and machinery maintenance materials such as oily rags, used oil filters, used oil, empty paint and solvent containers, spent batteries, and spill cleanup materials. Potential release activities may be during storage, transfer, and disposal of these wastes. Wastes generated are anticipated to be small yet harmful to the environment and public health. The impact is considered high and localized for a short-term.

e) **Excavated soil.** Most of the excavated soils are intended as fill material onsite. There is no anticipated waste from excavated soil.

135. **Mitigation Measures.** The Contractor will be required to prepare and implement a Waste Management Plan as part of the CEMP. Mitigation measures to be applied include:

a) Reuse and recycle, where possible, and dispose wastes only in approved sites.
b) Implement stringent waste segregation of hazardous and non-hazardous waste.
c) Prohibit burning of wastes.
d) Provide properly labeled waste disposal bins.
e) Implement proper labeling and storage in leak-proof containers for hazardous wastes, on areas with concrete surface and secondary containment to prevent potential spills and leakages reaching soil or groundwater.
f) Contract only an accredited company by MONRE for wastes collection, transport and disposal.
g) Designate areas of impervious surface for equipment services, refueling, and wash down.
h) Provide oil and grease traps.
i) Provide portable spill containment and cleanup equipment.
j) Inform and educate workers on the Waste Management Plan in the CEMP prior to start of construction.

6. Traffic hazard and road degradation

136. **Impacts.** There will be increase movement of heavy vehicles to the site during the transport of materials and equipment. This will result to an increase in risk of traffic-related accidents and injuries to local communities and local road degradation. Local road networks particularly DH422 district road and TL747 national highway, will be used and large vehicles containing special loads may cause traffic if unplanned and uncontrolled.

137. Road degradation is anticipated due to use of cranes (10 and 90 tons) and repeated use of trucks (5 – 15 tons) for transport of other construction materials. Delivery of construction materials by trucks is only for a short and intermittent period of time. For the 90-ton crane, it will only be used once during transformer installation. Duration of use will be within the day the transformer is delivered onsite. Therefore, impacts on traffic are anticipated to be moderate and short-term.

138. **Mitigation Measures.** The Contractor will be required to prepare and implement a Traffic Management Plan as part of the CEMP. Mitigation measures to be applied will include:

a) Schedule of movement of heavy vehicles will avoid peak hours of local road network wherever practicable.
b) Monitor traffic at access roads to ensure project vehicles are not causing congestion.
c) Ensure vehicles are maintained regularly.
d) Implement road safety training and adherence to speed limits.
e) Rehabilitate any damage to existing roads that may be caused by the movement of construction vehicles to the site. . This will be a condition for the release of the contractor's performance bond.

7. Impact on health and safety

139. **Impacts.** Since the construction site is within the existing substation, the impacts will be more important on occupational health and safety. Hazards during project construction and equipment installation include exposure to electromagnetic field (EMF), live power

lines/equipment, chemicals and fire and explosion. General construction impacts include physical hazards, trip and fall hazards, exposure to dust and noise, falling objects, and ergonomic injuries and illnesses. These impacts are anticipated to be high considering that there are already operational and energized equipment within the substation.

140. It is expected that impacts to community health and safety is low since most of the hazardous activities are within the substation site.

141. **Mitigation Measures.** The Contractor will be required to prepare and implement a Health and Safety Plan as part of the CEMP. The plan shall be prepared in reference to the Health and Safety Guidelines of the substation. Coordination with the substation officers of PTC4 will be necessary at all times. Mitigation measures to be applied will include:

a) Implement associated plans and mitigation measures previously mentioned as part of the CEMP (Air Emission and Dust Control Plan, Hazardous Chemicals Management Plan, Traffic Management Plan, and Waste Management Plan).
b) Contractor must prepare and implement an Electrical Safety Plan; Fire Prevention, Safety and Management Plan; Education and Awareness Plan for HIV/AIDS and other STDs; and Integrated Control Strategy for Mosquito and Other Arthropod-borne Diseases as part of the Health and Safety Plan of the CEMP.
c) Ensure workers' awareness and compliance to the minimum distance for trained employees to alternating current and EMF source as outlined in Table 2: Alternating Current – Minimum Working Distance for Trained Employees and Table 3: ICNIRP exposure limits for occupational exposure to electric and magnetic fields.
d) Provide PTC4 with a list of workers and require them to register with the security officer of the substation before entering the facility.
e) Prohibit workers from entering areas, which are energized within the substation.
f) Provision of first-aid facilities readily accessible by workers.
g) Post safety signs, reminders, or warning notices at visible areas onsite.
h) Follow electrical safety regulations and good practices.
i) Hire only trained and certified workers on electrical works.
j) Plan work site layout to minimize need for manual transfer of loads.
k) Provide appropriate and accessible fire fighting equipment.
l) Ensure unobstructed access of fire responders and egress of vehicles
m) Provide security personnel in areas where appropriate.
n) Strictly implement a "No Alcohol and Drug Policy".
o) Prohibit illegal activities such as but not limited to gambling.
p) Inform and educate workers on the Health and Safety Plan.

8. Disruption of substation operation

142. **Impacts.** It is expected that there will be disruption in the operation of the existing 220kV substation since the construction site is within the substation itself. Disarray brought about by the construction works within the substation is anticipated and therefore will require proper coordination between SPPMB and its Contractor and PTC4 (operator of the substation). In addition, although the existing substation will operate as normal as possible, temporary disturbance may occur particularly during testing, commissioning, and synchronization. The temporary disruption, if any, will only occur for a short period and would not last very long.

143. **Mitigation Measures.** During construction, the SPPMB will be the implementing agency and will supervise the activities of the Contractor. Coordination by SPPMB and the Contractor

with PTC4 will be undertaken to avoid disruption of operation of the existing equipment of the substation. Based on the coordination between SPPMB and PTC4, a designated area for the construction activities will be used by the Contractor and workers. The Contractor will install barriers around the construction area.

144. During the synchronization of the extension facilities, the PTC4 will provide back-up supply, if necessary, to avoid inconvenience to customers.

9. Impact on Natural Resources and Protected Areas

145. The site is already a disturbed habitat. There are no environmentally sensitive areas in the immediate vicinity of the subproject site. The nearest protected area is the Cat Tien Biosphere Reserve, which is located approximately 20 km away from the substation.

10. Impact on Culturally Sensitive Areas

146. The subproject will not affect any culturally sensitive area such as mosques, temples, and burial sites since the second transformer will be installed within an existing substation. Chance find procedures will be developed in the event that physical cultural resources are unearthed during digging. The relevant Government authorities will be informed in case of chance find.

D. Impacts and Mitigation during Operational Phase

147. The potential impacts of the operation and maintenance of the new transformer and the substation, in general, are confined within the substation area. These are generally related to the occupational health and safety issues as well as management of hazardous wastes. The impacts are reversible, manageable, and can be mitigated with proper engineering and management controls. Among the significant environmental impacts of the substation operation are:

a) Hazards to occupational health and safety such as exposure to high-voltage electrical equipment, working in high elevation, exposure to electromagnetic field (EMF)
b) Generation of domestic and hazardous wastes.
c) Transformers and certain types of breakers contain mineral oil which is essential for both insulation and cooling. Although relatively inert, major release of this substance would be a significant environmental incident if not properly monitored and managed.
d) The grid of wires buried beneath the gravel in the substation yard for grounding of the high voltage equipment may be compromised be vegetation growth and could pose safety risk to workers and the public.

1. Occupational health and safety hazards

148. **Impacts.** The occupational health and safety issues inherent to the operation of the transmission line and substation include hazards due to exposure to live power lines and high voltage systems, working in heights and risks of accidents, and potential exposure to electromagnetic fields (EMF). Accidents that may occur include electrocution, fires, and explosion.

149. Workers may come in contact with live power lines during the maintenance of the facilities and electrocution from direct contact with high-voltage electricity. Electrocution is a

hazard directly related to power substations and facilities.[28] Furthermore, electric utility workers have higher exposure to EMF than the general public because of working in close proximity to electric power lines.

150. Accidents may also happen when working in high elevation. However, a worker safety plan will be implemented to reduce risks that include testing of structural integrity prior to proceeding with the work and the use of fall protection measures. Furthermore, grid of wires buried beneath the gravel in the substation yard may be compromised by vegetation growth and may cause safety risk to workers.

151. **Mitigation Measure.** Once the subproject is turned over by SPPMB to PTC4, all matters related to the operation and maintenance of facilities of the substation shall be supervised by PTC4, including compliance with environment, health, and safety measures. The PTC4 shall be guided by the "Environmental, Health, and Safety Guidelines – Electric Power Transmission and Distribution" (IFC) dated 30 April 2007 when working at the substation facilities. Some of the prevention and control measures for health and safety when working with live high-voltage electrical equipment are:

(i) Restricting access to electrical equipment by workers only trained and certified to work on electrical equipment. Personnel will wear PPEs at all times when entering safety zones.
(ii) Adherence to electrical safety standards.
(iii) Proper grounding and deactivation of live power equipment during maintenance work or if working in close proximity to the equipment.
(iv) Provision of personal safety devices or PPEs for workers and other precautions.
(v) Observe guidelines to minimum approach distances when working around operational substation equipment. The entrance to all buildings, vaults, rooms, or enclosures containing exposed live parts or exposed conductors will be kept locked unless such entrances are under the observation of a qualified person at all times.
(i) Identification of potential exposure levels in the work area including surveys of exposure levels and establishment of safety zones.
(ii) Posting of safety and warning signs.
(iii) Use manual weed maintenance or an environmentally-safe herbicide to manage ground vegetation in the substation yard to prevent compromise of the ground grid system, where applicable.
(iv) Conduct monitoring of EMF levels at substation is in compliance with World Bank Group's EHS Guidelines for Electric Power Transmission: Table 3 on ICNIRP exposure limits for occupational exposure to electric and magnetic fields and Table 2: Alternating Current – Minimum Working Distance for Trained Employees
(v) Check compliance with government requirement based on Article 7, Decree 14/2014/NP-CP in terms of number of working time at the substation.

152. Switchboards, panel boards, industrial control panels, meter socket enclosures, and motor control centers that are likely to require examination, adjustment, servicing, or maintenance while energized will be field marked to warn qualified persons of potential electric arc flash hazards.

[28] International Finance Corporation (IFC), *Environmental, Health, and Safety Guidelines – Electric Power Transmission and Distribution.* 30 April 2007.

2. Generation of domestic and hazardous wastes

153. **Impacts.** Chemicals that are commonly handled in the transmission lines and substation are mineral oil in transformers and other electrical components and liquid petroleum fuel. There are potential hazardous materials and oil spills associated with the maintenance and retrofitting of equipment. Storage facilities of liquid petroleum fuels for the generator sets and for vehicles and other equipment are also potential sources of accidental spills. Other hazardous wastes from substations include used lead acid batteries, oily rags from maintenance activities, and busted lamps. Oil leak and accidental spills of hazardous waste could give rise to contamination of soil and groundwater.

154. There are also domestic wastes such as garbage and sewage from workers at the substation. Improper disposal may lead to unsanitary conditions around the substation.

155. **Mitigation Measures.** The transformers and equipment will meet international standards including comprehensive and regular maintenance and inspection program to check leaks. The areas around the substation transformers and oil storage areas will be provided with secondary containment with impervious bund capable of holding the oils, fuels, and hazardous wastes in the area. Discharges from these spill bunds with the potential to be contaminated with oil will be directed to the oil-water separators. These are particularly necessary within the substation site and at the maintenance yard.

156. Waste segregation system of the substation needs to be improved including the provision of waste bins at the workers quarters. Guidelines on waste segregation will be issued to workers to direct everyone to use these waste bins properly and to avoid indiscriminate dumping at adjacent land.

3. Emergency Preparedness at Substation

157. **Impacts.** There are several risks that could occur with the operation of the substation. Among these are the likelihood of cable being damaged, corrosion of the towers and equipment over time, which could compromise its structural integrity, potential fire events, explosion of equipment, and being hit by lightning.

158. **Mitigation Measures.** Lightning arresters are provided in the substation. There will also be provision for ensuring security of the substation equipment to avoid vandalism. Regular inspections of the facilities would help identify missing or corroded parts.

159. In case of fire events, explosion, and other related situations, a fire management program is included in the emergency preparedness and response plan of the subproject. Sufficient number of fire protection equipment, fire suppressants, and fire water tank are available to address the emergency requirements of the substation.

160. Workers are also trained on emergency preparedness and response procedures and a manual on safety and emergency procedures is prepared and disseminated to workers. The health and safety guidelines include measures for fighting oil fires, e.g. from transformer.

4. Existing Facility

161. An environmental compliance audit at the existing 220kV Uyen Hung substation was conducted to ensure that potential construction or operational impacts of the proposed

installation of the second transformer will be managed alongside impacts of the existing substation. The environmental due diligence on the existing 220kV Uyen Hung substation is presented in Appendix 6.

5. Cumulative Impacts

162. The operation of the existing substation and the proposed installation of the second transformer are expected to result to beneficial social impacts to the community, particularly in Binh Duong province, because of improvement in power supply. Furthermore, there are anticipated impacts associated with land use changes because of the subproject. Rural urbanization and economic restructuring from agricultural to non-agricultural sectors is anticipated.

6. Climate Change

163. The sensitivity of the 220kV Uyen Hung substation to climate change is considered low as determined by the rapid environmental assessment of the subproject and from projected changes in weather patterns in Binh Duong province. The substation is well-drained as required by the rubber tree plantations, which limits exposure to increased flooding from increased severity and frequency of rainfall events. The substation site is not within a flood-prone area. In addition, the substation site is not sensitive to frequency and severity of typhoons and storm surge.

VII. GRIEVANCE REDRESS MECHANISM

A. Type of Grievances

164. Any affected person (AP) can submit a grievance with SPPMB or PTC4 if they believe a practice is having a detrimental impact on the community, the environment, or on their quality of life. Grievances may include:

- Negative impacts on a person or a community (e.g. health and safety issues, nuisances, etc.).
- Dangers to health and safety or the environment.
- Social impacts due to construction activities or impacts on social infrastructure.
- Failure to comply with standards or legal obligations.
- Improper conduct or unethical behavior of Contractor leading to nuisance of affected person(s).

B. Grievance Redress Mechanism

165. A subproject grievance can be defined as an actual or perceived subproject-related problem that gives ground for complaint by an affected person (AP). As a general policy, SPPMB (during construction) and PTC4 (during operation) will work proactively toward preventing grievances through the implementation of impact mitigation measures and community liaison activities that anticipate and address potential issues before they become grievances. Nonetheless, during construction and operation it is possible that unanticipated impacts may occur if the mitigation measures are not properly implemented, or unforeseen issues occur. In order to address complaints, a project grievance redress mechanism (GRM) will be developed in accordance with ADB requirements and Government procedures. The GRM was presented during the consultation meetings.

166. The GRM will be established to provide an effective and transparent channel for lodging complaints and for addressing grievances. The GRM will be established prior to the construction of the subproject and will be maintained during operation and maintenance.

167. For complaints received about the construction works, the SPPMB will involve the Contractor. When these are not resolved, any complaint is then facilitated by the SPPMB through the Environment and Social Unit (ESU) under the Compensation Department. For complaints about substation operation, the PTC4 will act on the complaint. These will be entry points to whom the AP could directly register their complaints. Contact details for the entry point of complaints will be publicly disseminated on information boards at the substation. Mechanisms to contact the point of entry will be through face-to-face meetings, written complaint, telephone conversations, or email.

168. The following are the steps for the GRM: (Figure 9)

169. **Step 1:** For complaints occurring during the construction phase, affected persons can register the complaint directly to the Contractor and the head of the commune by means of contact information prescribed in the information boards at the substation site. Upon receipt of

the complaint, the Contactor is required to record/document all complaints and to coordinate with the complainant immediately and to provide mitigation actions to the complaint within two weeks. The Contractor is required to report complaints received, resolved, and unresolved to the SPPMB through the monthly progress report.

170. **Step 2:** If the complainant is not satisfied with the action(s) undertaken by the Contractor, the affected person can inform the head of the commune about the matter, which will document the complaint in the complaints register. The commune head/authority through the Commune People's Committee will then call a meeting of the complainant, SPPMB-Compensation Department and the Contractor to resolve the complaint. After discussion of the possible solutions, the SPPMB monitors the resolution of the complaint. The Contractor shall be required to report any action to the SPPMB in the monthly project progress reports.

171. **Step 3:** If the complainant is not satisfied with the action(s) undertaken at the level of Commune People's Committee, the affected person may elevate the case to the district level for resolution.

172. **Step 4:** Complaints not resolved at the district level is elevated to the People's Committee at the provincial level for resolution.

173. **Step 5:** When the complaint is not resolved at the People's Committee at the provincial level, the complaint is then elevated to the People's Court. The decision of the People's Court becomes the final legal basis for the decision on the complaint.

C. Legal Guarantees for Complaints and Grievances

174. Under the regulations in Viet Nam, APs having complaints or grievances will not be responsible for paying any administrative and legal fees in filing their complaints. Any site clearing is not allowed while the resolution of the complaint is still pending.

175. In cases where the AP is illiterate, the AP can ask assistance from one representative of his household who can then write all the complaints and grievances to be submitted to the district level for resolution.

176. Under the law, all meetings to resolve complaints and grievances will be documented and the minutes of meetings will be disclosed and posted at the Commune People's Committee.

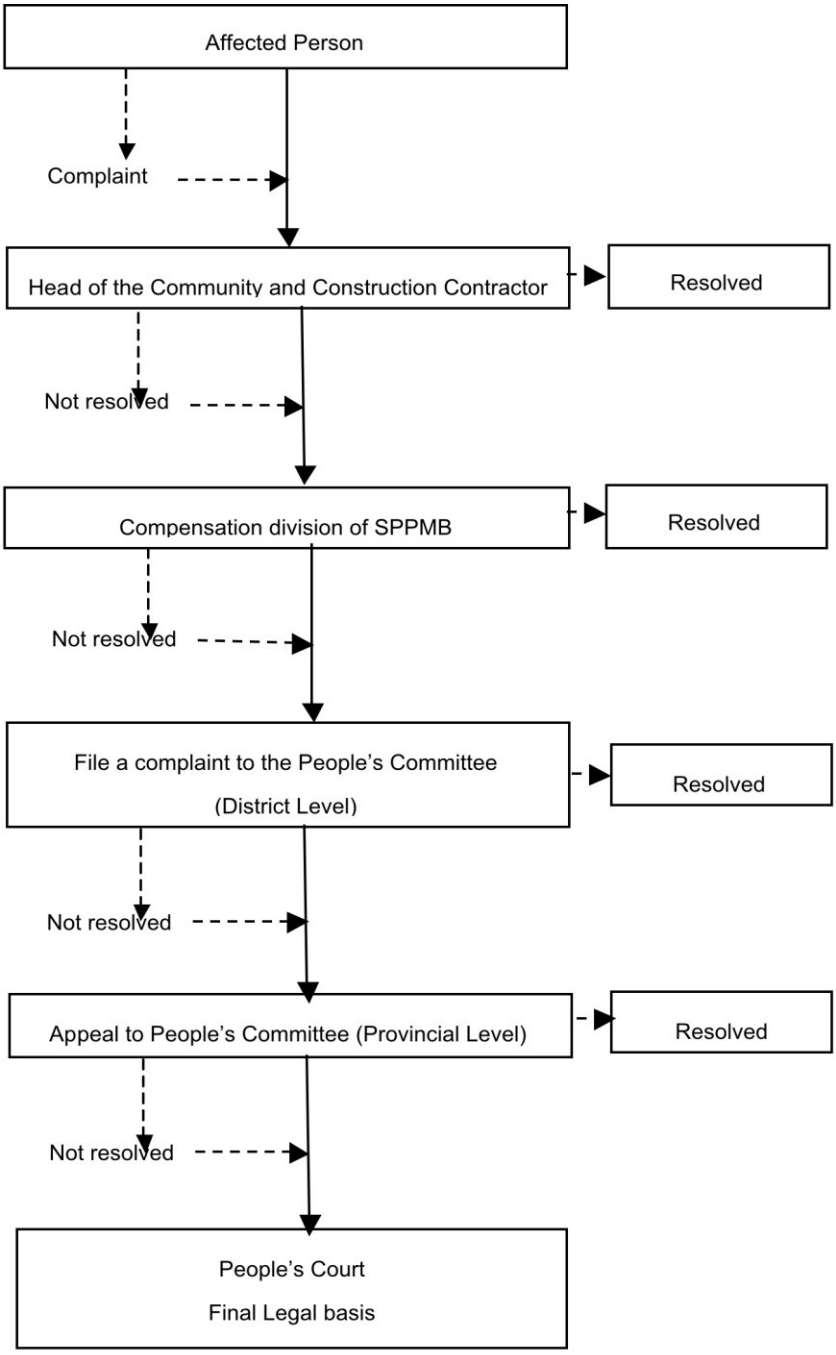


Figure 9: Steps in the Grievance Resolution Process

VIII. ENVIRONMENTAL MANAGEMENT PLAN

177. This Chapter presents the mitigation and management measures for the installation and operation of the second transformer at the 220kV Uyen Hung substation. Information includes the mitigation measures to the implemented, required monitoring associated with the mitigating measures, and the implementation arrangements. The institutional set-up presents the responsibilities during construction and operation phases.

A. Implementation Arrangements

178. The NPT/EVN, SPPMB and PTC4 are the key institutions that will play crucial roles in the implementation of the subproject as well as in ensuring environment safeguards. The following are the administrative and environmental management responsibilities of these institutions:

1. National Power Transmission Corporation (NPT) / Viet Nam Electricity (EVN)

179. The NPT of the Viet Nam Electricity is the Executing Agency (EA) for the subproject and the primary point of contact with ADB. The NPT/EVN will assume overall responsibility in implementation and compliance with loan assurances, including all the requirements specified in the EMP.

180. The NPT/EVN will be responsible for the following:

a) Overall project planning and management, coordination, monitoring and supervision of the project
b) Preparation and submission to ADB of progress reports and evaluation reports.
c) Allocate sufficient budget for EMP implementation and monitoring.

181. In relation to environment safeguards, the NPT/EVN will be responsible for the following:

a) Monitor, coordinate and supervise that environmental management measures are incorporated in the project design and construction activities of SPPMB and Contractor.
b) Ensure that the SPPMB has conducted an EIA, prepared an EMP, and secured the necessary environmental clearance and permit for the subproject.
c) Develop guidelines and capacity development programs for SPPMB and PTC4 in relation to the preparation and implementation of EMP.
d) Provide training to the SPPMB and PTC4 on ADB SPS (2009), World Bank Environmental, Health and Safety (EHS) Guidelines, EMP implementation, and grievance redress mechanism.
e) Identify any environmental issues during implementation and propose necessary corrective actions.
f) Review the environmental monitoring reports submitted by SPPMB.

2. Southern Power Project Management Board (SPPMB)

182. The SPPMB is the implementing agency (IA) of the subproject during the construction phase. Under supervision of the NPT/EVN, the SPPMB through its implementation unit will be responsible for the field surveys, detailed engineering and design (DED), preparation of bid

documents, pre-qualification of bidders, bidding and award of contracts, contract administration and construction supervision, and the testing and handover of facilities.

183. With regards to environment safeguards, the SPPMB through its Environmental and Social Unit (ESU) will be responsible for the following.

- Ensure that environmental management is taken into consideration in the design and construction of the subproject.
- Ensure that the EIA/IEE/EMP and approved environmental clearance are included in the bidding documents and civil works contracts.
- Review and approved contractors' construction environmental management plan and various subplans prepared and to be implemented by Contractors.
- Ensure sufficient funding for implementation of required mitigation and monitoring measures in the EMP throughout the construction phase.
- Provide oversight on the environmental management aspects of the subproject and ensure that contractors implement the EMPs properly.
- Ensure that the contractors comply with the GOV environmental rules and regulations.
- Review and consolidate the monthly environmental monitoring reports submitted by construction contractors for submission to the NPT/EVN on a quarterly basis.

184. Prior to project construction, the SPPMB through the ESU will require the construction Contractor to develop a Construction Environmental Management Plan (CEMP) that will include sub-plans for air emission and dust control, hazardous chemicals management, waste management, traffic management, and health and safety plan, spill prevention and management, among others.

185. Specifically, the SPPMB through the ESU will be responsible for the following:

a) Conduct bid evaluations, including evaluation of completeness of CEMP
b) Coordinate with the substation officers and PTC4 regarding the schedule of construction activities, environment, health and safety procedures
c) Assign a staff within ESU to undertake regular construction site inspections to ensure the proper implementation of the CEMP by the Contractor
d) Ensure that the project implementation is in accordance to the requirements of the GOV and ADB on environmental management and protection
e) Ensure that necessary actions and resolution of complaints by communities related to environment are implemented
f) Conduct monitoring of environmental parameters specified in the EIA/IEE report through the EMC
g) Consolidate the monthly monitoring reports prepared by the Contractor and prepare the quarterly environmental monitoring reports for submission to NPT/EVN.

3. Power Transmission Corporation No. 4 (PTC4)

186. Once the subproject is turned-over by the SPPMB, the PTC4 will act as the subproject implementing unit during the operational phase. The PTC4 will be involved in the day-to-day operations including the monitoring of waste management and health and safety of workers.

187. Specifically, the PTC4 through its designated Environment Officer will have the following tasks with regards to environment safeguards:

a) Ensure that environment, health and safety management is taken into consideration during substation operation.
b) Ensure overall compliance of the subproject with all GOV environmental rules and regulations.
c) Conduct tests on environmental parameters such as air quality, wastewater quality, noise, EMF and other parameters outlined in the environmental monitoring plan.
d) Conduct regular inspections on the implementation of environmental mitigation measures during the operational phase.
e) Act on community complaints related to the subproject operation.
f) Prepare and submit quarterly environmental monitoring reports to NPT/EVN and semi-annual environmental monitoring reports to DONRE.

188. The following summarizes the tasks of the key institutions involved in subproject implementation:

Table 22: Responsibilities on Environment Safeguards

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	**Detailed Engineering Design**	**Tendering and Pre-construction**	**Construction**	**Operation**
NPT/EVN	The Executing Agency (EA) responsible for overall implementation and compliance with loan assurances and the EMP.				
	• Ensure that SPPMB has conducted an EIA, prepared an EMP and secured the necessary environmental clearance.	• Confirm that mitigation measures have been included in detailed engineering design.	• Oversee the procurement process of SPPMB	• Review the quarterly project progress reports and quarterly environment monitoring reports of SPPMB prior to submission to ADB. • Allocate sufficient budget for EMP implementation and monitoring.	• Instruct PTC4 on environment management and monitoring requirements. • Allocate sufficient budget for EMP implementation and monitoring. • Review quarterly environmental monitoring reports of PTC4 until a Project Completion Report (PCR) is issued.
SPPMB	The Implementing Agency (IA) for the subproject component during the construction phase. The IA will ensure that Contractor implements the CEMP, through regular inspection and monitoring of construction works and environmental mitigation measures.				
	• Engage consultants to prepare the FS, EIA report, RP. • Check alignment of subproject proposal with the Power Development Plan.	• Engage consultants to assist SPPMB with the DED, preparation of bid documents, pre-qualification of bidders, tender administration, and award of contracts. • Contract administration	• Incorporate EIA/EMP clauses in tender documents and contracts • Appoint at least one environment specialist staff from the ESU to review and evaluate the Contractor CEMP. • Coordinate with substation officers of PTC4 regarding	• Supervise contractors and ensure compliance with the CEMP. • Coordinate construction supervision and quality control • Coordinate with EMC on environmental monitoring according to the	

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	Detailed Engineering Design	Tendering and Pre-construction	Construction	Operation
			construction schedule and environment, health and safety guidelines. • Review/approve various plans/subplans prepared and to be implemented by contractors.	environmental monitoring program in the approved CEMP. • Review and consolidate monthly environmental monitoring reports submitted by construction contractors. • Submit quarterly environmental monitoring reports to NPT/EVN. • Testing and handover of the subproject to PTC4.	
Contractors			• Prepare site-specific CEMP containing method statements on implementation of pollution control and mitigation measures listed in the EMP. • Submit the CEMP to SPPMB/ESU for review and approval. • Ensure sufficient funding for proper and timely	• Appoint an environment, health and safety (EHS) officer to oversee EMP implementation. • Coordinate with substation officers and comply with the substation's security, environment, health and safety procedures. • Ensure health and	

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	**Detailed Engineering Design**	**Tendering and Pre-construction**	**Construction**	**Operation**
			implementation of required mitigation and monitoring measures in the CEMP throughout the construction phase.	safety of workers. • Act as the local entry point for the project GRM. • Prepare monthly construction progress and status of implementation of CEMP for submission to SPPMB / ESU.	
Environmental monitoring consultant (EMC)				• Field sampling • Prepare quarterly environmental monitoring reports and provide copies to SPPMB/ESU and PTC4.	• Field sampling with Environment Officer of PTC4 • Evaluate compliance of subproject with the EMP and determine corrective actions, if necessary. • Prepare quarterly environmental monitoring reports.
PTC4	The PTC4 will be the IA during the operational phase and will ensure continued implementation of the EMP.				
					• Ensure proper operation of the subproject according to design standards. • Act on community complaint(s) related to the project operation.

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	Detailed Engineering Design	Tendering and Pre-construction	Construction	Operation
					• Undertake regular inspection and environmental monitoring. • Submit periodic environmental monitoring results to DONRE and EVN/NPT.

B. Mitigation Plan

189. There The following tables present the environmental mitigation measures to be implemented to address potential adverse impacts of the proposed subproject, according to stages of implementation.

Table 23: Environmental Management Plan during Pre-construction Phase

Environmental Aspect	Potential Impact	Options for Prevention or Mitigation or Enhancement	Responsible Entity	Cost	Guarantee/ Financial Arrangements
Update of EMP	EMP does not reflect final subproject design	Review mitigation measures defined in this EMP, update as required to reflect detailed design including requirement of additional drainage diversion structures, where necessary. Include updated EMP in all bid documents. Review and approve various environmental, health and safety subplans to be implemented by contractors.	SPPMB	Part of design cost	Include EMP in bid documents and contract
Grievance redress mechanism	Handling and resolving complaints	Establish a GRM	SPPMB	Part of design cost	Include EMP in bid documents and contract
Tender documents and works contracts	Environmental clauses in all tender documents and contracts	Include environmental clauses in the EMP in tender documents and works contracts	SPPMB	Part of design cost	Include EMP in bid documents and contract

Table 24: Environmental Management Plan during Construction Phase

Environmental Aspect	Potential Impact	Options for Prevention or Mitigation or Enhancement	Responsible Entity	Cost	Guarantee/ Financial Arrangements
Sediment runoff	Erosion and surface soil runoff Clogging of drainage canals at substation	Inspect if runoff of soil flows into nearby rubber plantations Schedule excavation work during the dry season. Cover stockpile of excavated soil Install silt traps, deviation channels mounting, barriers or trenches around the stockpiles.	SPPMB / Contractor	Part of construction management cost	Include EMP in bid documents and contract
Dust emission from the earthworks and movement of vehicles.	Air pollution	Contractor will be required to prepare an Air Emission and Dust Control Plan in the CEMP. Measures to be applied include: • Cover and keep moist excavated soil and stockpiles • Regularly maintain vehicles and equipment to ensure emissions comply with standards • Prohibit burning of waste materials. Unauthorized burning of construction materials and refuse shall be subject to penalties for the Contractor. • Inform and educate workers on the Air Emission and Dust Control Plan. • Cover materials with tarpaulin or other suitable materials while in transit. • Impose speed limits on construction vehicles	SPPMB /Contractor	Part of construction cost	Include EMP in bid documents and contract
Noise and vibration	Noise from vehicles and construction	Noise levels from equipment and machinery shall conform to the GOV	SPPMB / Contractor	Part of construction management cost	Include EMP in bid documents and contract

Environmental Aspect	Potential Impact	Options for Prevention or Mitigation or Enhancement	Responsible Entity	Cost	Guarantee/ Financial Arrangements
	activities	standard for noise limits and WB EHS standards Property maintain machinery to minimize noise No construction shall be allowed between nighttime hours of 22:00 to 06:00 ~~Prohibit~~ Drivers of construction vehicles to minimize blowing of horn and limit speed when passing through residential areas.			
Use of hazardous construction chemicals	Spill or leakage of hazardous chemicals which could contaminate land and groundwater	Contractor will be required to prepare Hazardous Chemicals Management Plan in the CEMP. Measures to be applied include: • Prepare a list of hazardous chemicals to be brought at the site including information on quantity and hazard classification. • Commission the services of Government-certified hazardous waste handlers • Contractor to secure approval of PTC4 Environment Officer when delivering these hazardous chemicals onsite. • Minimize or avoid long storage of hazardous materials onsite. • Comply with the labeling and storage requirements of hazardous chemicals, including provision of MSDS • Conduct refueling and equipment servicing only in designated areas with impervious surface. • Provide oil and grease traps and other spill containment measures. • Contractor to provide readily available clean-up equipment. • Inform and education workers about the			

Environmental Aspect	Potential Impact	Options for Prevention or Mitigation or Enhancement	Responsible Entity	Cost	Guarantee/ Financial Arrangements
		Hazardous Chemicals Management Plan in the CEMP through training and orientation. • Provide workers with PPE.			
Generation of construction wastes	Domestic solid wastes, domestic wastewater, inert construction wastes, and hazardous wastes during construction may result to pollution of land.	Contractor will be required to prepare Waste Management Plan in the CEMP. Measures to be applied include: • Undertake waste reuse and recycling, where possible, and dispose only in approved sites. • Undertake segregation of hazardous and non-hazardous wastes, including properly labeled waste disposal bins. • Instruct workers not to indiscriminately dispose wastes particularly at surrounding rubber plantations • Comply with the GOV requirements on hazardous waste labeling, temporary storage, transport, and disposal. • Store hazardous wastes on leak-proof containers with proper label and place on areas with concrete surface and secondary containment. • Contract only accredited company by MONRE for waste collection, transport and disposal. • Prohibit burning of wastes • Conduct refueling and equipment servicing only in designated areas with impervious surface. • Provide oil and grease traps and other spill containment measures. • Contractor to provide readily available clean-up equipment.	SPPMB / Contractor	Part of construction cost	Include EMP in bid documents and contract

Environmental Aspect	Potential Impact	Options for Prevention or Mitigation or Enhancement	Responsible Entity	Cost	Guarantee/ Financial Arrangements
		• Inform and education workers about the Waste Management Plan in the CEMP through training and orientation.			
Traffic hazard and road degradation	Risks to community health and safety and road degradation due to movement of heavy vehicles during transport of materials and equipment.	Contractor will be required to prepare Traffic Management Plan in the CEMP. Measures to be applied include: • Movement of heavy vehicles to avoid peak hours of local road network, wherever practicable • Monitor traffic at access roads • Ensure vehicles are maintained regularly • Conduct road safety training for drivers • Impose speed limits particularly when passing through settlement areas. • Rehabilitate damaged sections of roads.	SPPMB / Contractor	Part of construction cost	Include EMP in bid documents and contract
Occupational health and safety	Workers may be exposed to dangers of live power lines/equipment, chemicals, fire and explosion, physical hazards, exposure to dust and noise, falling objects, and ergonomic injuries	Contractor will be required to prepare Health and Safety Plan in the CEMP. Measures to be applied include: • Implementation of electrical safety plan, fire prevention, safety and management plan, education and awareness plan for HIV/AIDS and other diseases • Prohibit workers from entering areas, which are energized at the substation. • Provision of first-aid facilities readily accessible by workers • Posting of safety signs, reminders or warning notices • Hire only trained and certified workers on electrical works • Plan work site layout to minimize need for manual transfer of loads • Provide appropriate and accessible fire	SPPMB / Contractor	Part of construction cost	Include EMP in bid documents and contract

Environmental Aspect	Potential Impact	Options for Prevention or Mitigation or Enhancement	Responsible Entity	Cost	Guarantee/ Financial Arrangements
		fighting equipment • Ensure unobstructed access of fire responders and egress of vehicles • Provide security personnel in areas where appropriate • Strictly implement a "No Alcohol and Drug Policy" • Prohibit illegal activities including gambling • Inform and educate workers on the Health and Safety Plan. • Covering energized parts and hardware • Ensuring live-wire work is conducted by trained and certified workers with strict adherence to specific safety and insulation standards. • Require workers to adhere to local legislation, standards and guidelines relating to minimum approach distances for excavations, tools, vehicles, pruning, and other activities in the ROW. • Implement fall protection systems that includes provision of hoisting equipment, safety belts, second (backup) safety strap for workers • Conduct training of workers in the identification of occupational hazards.			
Impact on normal operation of existing substation	Disruption of substation operation due to construction activities at the substation	SPPMB and Contractor need to coordinate with the PTC4 regarding the schedule of construction activities, workers entering the site, and the designated area for construction activities and materials and waste storage. Contractor to install barrier around the construction area.	SPPMB / Contractor	Part of construction cost	Include EMP in bid documents and contract

Table 25: Environmental Management Plan during Operational Phase

Environmental Aspect	Potential Impact	Options for Prevention or Mitigation or Enhancement	Responsible Entity	Cost	Guarantee/ Financial Arrangements
Occupational health and safety	Exposure of workers to hazards due to exposure to live power lines and high voltage systems, working in heights, fires, explosion, and potential exposure to EMF.	All workers will be required to undergo orientation on the substation's security and EHS procedures before entering the premises and to strictly follow these guidelines when inside the premises. Only authorized and trained personnel will be allowed to work or have access to electrical equipment. Hire trained and certified workers to install, maintain, or repair electrical equipment. Adhere to electrical safety standards. Provide proper grounding and deactivation of live power equipment during maintenance work or if working in close proximity to equipment. Provide PPE for workers Observe guidelines to minimum approach distances when working around operational substation equipment. Identify potential exposure levels in work area including surveys of exposure levels and establish safety zones at the substation. Post safety reminders and warning	PTC4 thru the Environment Officer	Part of the operational cost	Health and safety guidelines

Environmental Aspect	Potential Impact	Options for Prevention or Mitigation or Enhancement	Responsible Entity	Cost	Guarantee/ Financial Arrangements
		signs. Warn personnel of potential electric arc flash hazards when inspecting or working with energized equipment. Comply with the WB EHS guidelines for electric power transmission and distribution (April 2007), Table 3 on ICNIRP exposure limits for occupational exposure to electric and magnetic fields and Table 2: Alternating Current – Minimum Working Distance for Trained Employees Use manual weed maintenance or an environmentally-safe herbicide (if needed) to manage ground vegetation in the substation yard to prevent compromise of the ground grid system, where applicable. Observe compliance with Article 7, Decree 14/2014/NP-CP in terms of number of working time at the substation.			
Generation of hazardous waste	Potential oil spill from maintenance or retrofitting of equipment and accidental spills of hazardous waste may contaminate soil and groundwater.	Transformers and equipment will comply with the international standards and will not contain PCB. Undertake comprehensive leak detection and management program,	PTC4 thru the Environment Officer	Part of the operational cost	Hazardous waste storage area Registration of hazardous waste with MONRE

Environmental Aspect	Potential Impact	Options for Prevention or Mitigation or Enhancement	Responsible Entity	Cost	Guarantee/ Financial Arrangements
		including regular inspection and thorough check for leaks. Provide secondary containment with impervious bund around the transformers and oil storage areas. Provide a hazardous waste storage area Undertake labeling of hazardous wastes Register all generated hazardous waste with MONRE and regularly report storage and disposal measures.			Reports of hazardous waste generated, stored and disposed.
Emergencies and accidents	Possible fire events, explosion of equipment, lighting strikes, damage to cables, and corrosion of equipment may result to emergency situations at the substation	Install lightning arresters at the substation. Ensure security of cables and equipment Conduct regular inspection of facilities to identify missing or corroded parts Implement the fire management program that includes adequate fire protection equipment, fire suppressants, fire water tank, and fire extinguishers within the substation. Conduct training of workers on emergency preparedness and response procedures.	PTC4 thru the Health and Safety Officer	Part of the operational cost	Manual on safety and emergency procedures for the substation operation

C. Monitoring Plan

190. Considering that the substation is already operational, the environmental monitoring program at identified monitoring stations at the 220kV Uyen Hung substation will be adopted during the construction phase and will continue when the second transformer becomes fully operational. Monitoring reports as required by DONRE will be prepared by the EMC and copies of these reports shall be provided to SPPMB/ESU and PTC4 for evaluation and review and submission to EVN/NPT and ADB. The following tables present the proposed environmental monitoring plan of the subproject during the construction and operations phases.

Table 26: Environmental Monitoring Plan during Construction Phase

Item	Monitoring Parameter	Location of Monitoring	Method of Monitoring	Monitoring Frequency	Implementing Entity	Supervising Entity
Groundwater quality	pH, hardness, ammonia, COD, chloride, oil/grease	Nearest household well Vicinity of transformer area Hazardous/toxic materials storage site	Sampling and laboratory testing If leaks are detected, conduct monthly sampling until acceptable levels are reached. Afterwards conduct annual sampling.	Quarterly	EMC	SPPMB / PTC4
Runoff and sedimentation and soil erosion	Runoff and sediments	Construction sites	By observation	Once a month and during and after heavy rain	EMC	SPPMB/ESU
Wastewater quality	pH, TSS, BOD, nitrate, phosphate, coliform	Substation discharge point	Sampling and laboratory testing; compare results with QCVN 14:2008/BTNMT, column A)	Quarterly	EMC	SPPMB / PTC4
Air quality	PM_{10}, TSP, SOx, NOx, CO	1: in front of operation building 2: at the entrance gate of substation 3: site boundary at direction of nearest household	24-hours continuous ambient air sampling and laboratory testing; compare results with QCVN 05:2013/BTNMT	Quarterly	EMC	SPPMB / PTC4
	Dust generation, stockpile of bare	Construction site	Inspection and checking of implementation of air	Daily	EHS Officer of Contractor	SPPMB /ESU

Item	Monitoring Parameter	Location of Monitoring	Method of Monitoring	Monitoring Frequency	Implementing Entity	Supervising Entity
	soil, exhaust gases from equipment/vehicles and complaints		emission and dust control plan Check validity of operating permit before vehicle/equipment can be used on site	Before vehicle/equipment use on site	Inspection and observation	
	Dust	Local road and village nearby where trucks pass through and construction sites	Monitor and inspect dust condition in areas that are sprayed with water. Conduct interviews with villagers on comments on dust pollution	Weekly, continuous throughout construction period	EHS Officer of Contractor	SPPMB / ESU
Noise	Noise levels, dB	1: in front of operation building 2: at the entrance gate of substation 3: site boundary at direction of nearest household	Use noise meter; compare results with QCVN 26:2010/BTNMT	Daily or every time high-noise generating equipment is used	EMC	SPPMB / PTC4
	Mufflers, noise barriers, complaints	Construction site	Inspection and checking of noise management	Daily	EHS Officer of Contractor	SPPMB / ESU
	Noise complaints	Local road and village nearby where trucks pass through	Monitor noise during delivery of materials which is allowed only at daytime hours Conduct interviews with villagers on concerns about noise and vibration	Weekly, continuous throughout construction period	EHS Officer of Contractor	SPPMB / ESU
Vibration	Vibration	1: in front of operation building 2: at the entrance gate of substation 3: site boundary at direction of nearest household	Use vibration meter; compare results with QCVN 27:2010/BTNMT	Daily or every time high-vibrating equipment is used	EHS Officer of Contractor	SPPMB / ESU

Item	Monitoring Parameter	Location of Monitoring	Method of Monitoring	Monitoring Frequency	Implementing Entity	Supervising Entity
	Vibration complaints	Local road and village nearby where trucks pass through	Monitor vibration during delivery of materials which is allowed only at daytime hours Conduct interviews with villagers on concerns about noise and vibration	Weekly, continuous throughout construction period	EHS Officer of Contractor	SPPMB / ESU
Waste management	Domestic waste, hazardous waste, inert construction waste, presence of leaks/spills and complaints	Construction site and at adjacent rubber plantations	Inspection and checking of waste management and hazardous chemicals / waste management	Daily	EHS Officer of Contractor	SPPMB / ESU
Traffic management	Traffic congestion, delivery schedule, and complaints	Construction site and access roads	Site inspection and random interviews with residents along roadsides	Daily at construction site Monthly spot interviews with residents	EHS Officer of Contractor	SPPMB / ESU
	Damage to road transportation infrastructure	Access roads	Monitoring and inspect road condition and measures used to protect road and ensure public safety	Weekly, continuous throughout construction period	EHS Officer of Contractor	SPPMB / ESU
Occupational health and safety	Implementation of occupational health and safety plan, wearing of PPEs, safety reminders, sanitation at construction area, training/orientation on safety	Construction site	Review and audit implementation of contractor/construction worker health and safety plan and training activities on health and safety	At least monthly review of contractor's health and safety plan	EHS Officer of Contractor	SPPMB / ESU

Table 27: Environmental Monitoring Plan during Operational Phase

Item	Monitoring Parameter	Location of Monitoring	Method of Monitoring	Monitoring Frequency	Implementing Entity	Supervising Entity
Groundwater quality	pH, hardness, ammonia, COD, chloride, oil/grease	Nearest household well Vicinity of hazardous/toxic material storage site or spills and transformer area	Sampling and laboratory testing	Once a year and when any leak/spill is detected within the premises of the substation. If leaks are detected, conduct monthly sampling until acceptable levels are reached. Afterwards conduct annual sampling.	EMC in cooperation with EHS officer of substation	PTC4
Wastewater quality	pH, TSS, BOD, nitrate, phosphate, coliform	Substation discharge point	Sampling and laboratory testing; compare results with QCVN 14:2008/BTNMT, column A)	Every 6 months	EMC in cooperation with EHS officer of substation	PTC4
Soil quality	Pb, Zn, As, Cd, oil/grease	Transformer area Hazardous/toxic material storage site	Sampling and laboratory testing; compare results with QCVN 05:2013/BTNMT) Check insulating oil leaks in transformers in the substation.	Once a year and when any leak/spill is detected. Once a month	EMC in cooperation with EHS officer of substation	PTC4
Air quality	PM_{10}, TSP, SOx, NOx, CO	1: in front of operation building 2: at the entrance gate of substation 3: site boundary at direction of nearest household	24-hours continuous ambient air sampling and laboratory testing; compare results with QCVN 05:2013/BTNMT	Every 6 months	EMC in cooperation with EHS officer of substation	PTC4
Noise	Noise levels, dB	1: in front of operation building	Use noise meter; compare results with QCVN	Every 6 months	EMC in cooperation with	PTC4

Item	Monitoring Parameter	Location of Monitoring	Method of Monitoring	Monitoring Frequency	Implementing Entity	Supervising Entity
		2: at the entrance gate of substation 3: site boundary at direction of nearest household	26:2010/BTNMT		EHS officer of substation	
Electromagnetic field	EMF, kV/m	Near operations building	EMF meter; compare results with Decree 14/2014/NDD-CP and Table 1 (ICNIRP Exposure limits for general public exposure to EMF) and Table 3 (ICNIRP exposure limits for occupational exposure to EMF) of EHS Guidelines for Electric Power Transmission System	Every 6 months	EMC in cooperation with Environment Officer of substation	PTC4
Waste management	Waste segregation, presence of leaks/spills, quantity of hazardous waste stored onsite and collected by third party HW treater, HW labels	Domestic waste segregation and disposal area Temporary hazardous waste storage area	Inspection and checking of waste management and hazardous chemicals / waste management Check hazardous waste manifest, waste labels and permits Check indication of spills	Daily	EMC in cooperation with EHS officer of substation	PTC4
Occupational health and safety	Implementation of occupational health and safety plan, wearing of PPEs, safety reminders, training/orientation on safety, annual emergency and fire drill, accidents at substation	Substation	Review and audit implementation of worker health and safety plan; training activities on health and safety; emergency and fire drill Observe substation weed maintenance and ROW vegetation maintenance	At least monthly review of substation's health and safety plan implementation Once a month	EHS officer of substation	PTC4

Note: The monitoring activities during the operational phase will be in line with the environmental monitoring program of the existing Uyen Hung substation.

D. Reporting

191. **Construction Phase.** Throughout the construction period, the Contractor will submit monthly progress reports to SPPMB through the ESU while the SPPMB will coordinate environmental monitoring in accordance with the monitoring plan and prepare quarterly environmental monitoring reports in English to be submitted to NPT/EVN. The quarterly reports of SPPMB will consolidate the monthly reports submitted by the Contractor and will highlight a summary of the progress of construction, results of site inspections, progress made in EMP implementation, status of compliance with GOV environmental regulatory requirements, record of community complaints, unforeseen environmental impacts and suggested remedial actions for the next monitoring period.

192. The ESU will supervise and validate the implementation of the mitigation measures specified in the EMP through site visits once a month or more frequently as necessary and review of EMP implementation reports of the Contractor.

193. Once the monthly reports from the Contractor are received by the SPPMB, these will be reviewed by the ESU under the Compensation Department relative to subproject compliance with the indicators defined in the EMP. Likewise, environmental monitoring reports prepared and submitted by the EMC shall be reviewed by SPPMB/ESU for inclusion in the quarterly environmental monitoring reports to be submitted to EVN/NPT.

194. **Operational Phase.** The EMP monitoring during the operational phase of a subproject will continue according to the current system of the PTC4 through a contracted environmental monitoring consultant (EMC). The environmental monitoring report shall contain the project's adherence to the EMP, information on project implementation, and environmental compliance. The operation and performance of the project environmental institutional strengthening and training, and compliance with the EMP and EMoP and other environmental requirements of the GOV.

195. The following presents the reporting plan.

Table 28: EMP Reporting Plan

Type of Report	Basic Content	Prepared by	Submitted to	Frequency
Construction Phase				
Construction progress report	Progress of construction, including EMP monitoring results	Contractors	SPPMB	Monthly
Environmental Monitoring Report	Progress of construction, EMP implementation, environmental monitoring, compliance with GOV environmental requirements, complaints received and actions undertaken	SPPMB	NPT/EVN	Quarterly until project completion report (PCR)
Reports to ADB	Subproject progress report, including section on EMP	NPT/EVN	ADB	As provided in the legal agreements

Type of Report	Basic Content	Prepared by	Submitted to	Frequency
	implementation and monitoring			
Operational Phase				
Environmental monitoring report	Subproject progress report, EMP implementation and monitoring	EMC	PTC4	Quarterly
Reports to DONRE	Subproject progress report, EMP implementation and monitoring	PTC4	DONRE	Semi-annual

196. EA/IA will prepare and submit periodic environment monitoring reports to ADB as provided in the legal agreements (at the minimum on a semi-annual basis during the construction stage and on an annual basis during the operation stage). The monitoring reports will be disclosed on ADB website upon receipt by ADB following the ADB Public Communications Policy (2011).

E. Environmental Management and Monitoring Costs

197. The cost for the environmental safeguard activities, i.e. environmental assessment, review, and monitoring, for the subproject will be primarily borne by NPT/EVN and SPPMB, as subproject proponent. The indicative cost is presented in Table 29.

Table 29: Activities and Indicative Cost for Environmental Management for Installation of 2nd Transformer at 220kV Uyen Hung Substation

Activity Type	Estimated Cost (USD)
Construction Phase	
Environmental quality monitoring	$1,000.00
Community consultation and coordination	$500.00
Training and capacity development of SPPMB / ESU Orientation of contractors on EHS	$3,000.00
Operation Phase	
Environmental quality monitoring	(a)
Training and capacity development of PTC4 / EHS Officer	$1,000
Total	**$8,500.00**

Note: (a) Cost for environmental monitoring of the installation of the 2nd transformer will form part with the environmental monitoring program of the existing Uyen Hung substation.

IX. CONCLUSION AND RECOMMENDATIONS

198. The environment assessment process has highlighted the environmental issues and concerns on the proposed installation of the second transformer at 220kV Uyen Hung substation. The assessment has considered that the subproject would result to improvements in the current power supply situation in Binh Duong province and nearby areas. The anticipated impacts are not expected to cause irreversible and significant adverse environment impacts and that these impacts are manageable by appropriate and conventional mitigation measures. Therefore, the subproject category is confirmed as B for environment based on ADB Safeguard Policy Statement (SPS, 2009).

199. Based on the assessment of environmental impacts, the anticipated negative impacts which have to be considered during project design and implementation are mainly related to construction activities such as health and safety of workers, waste generation, traffic hazard, fugitive dust and exhaust emissions, noise and vibration, and general construction hazards, among others. Improper disposal of waste generated from construction activities may also generate impacts on adjacent rubber plantations and communities. These can be generally reduced to acceptable levels through practical mitigation measures associated with good engineering practices and also with proper coordination with affected stakeholders. Recommendations formulated in the EMP and its inclusion in the construction contract documents will reduce these impacts to an acceptable level.

200. During the operation of the second transformer and the entire substation, in general, the main impacts identified are hazards to occupational health and safety and generation of hazardous waste materials. Based on the environmental compliance audit, the substation has successfully proven its ability to operate the substation safely in conformance with Government and international standards. Therefore, this impact is considered moderate and manageable with proper implementation of the health and safety guidelines. In the EMP, it is recommended that management of the substation will continually review, update and upgrade its Occupational Health and Safety Plan including the Emergency Response Plan to prevent occupational risks. Refresher trainings are also recommended for employees in the aspect of engineering safety and emergency response preparedness.

201. In general, the results of the IEE show that the proposed subproject will not result to significant adverse environmental impacts. Environmental mitigation measures have been designed as outlined in the subproject EMP to address any adverse impacts during the various phases of project implementation. The EMP also presents the institutional responsibilities for implementing the mitigation measures.

Appendix 1: Rapid Environmental Assessment Checklist

Instructions:

(i) The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Environment and Safeguards Division (RSES) for endorsement by the Director, RSES and for approval by the Chief Compliance Officer.

(ii) This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB's (a) checklists on involuntary resettlement and Indigenous Peoples; (b) poverty reduction handbook; (c) staff guide to consultation and participation; and (d) gender checklists.

(iii) Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Country/Project Title:	VIE: Power Transmission Investment Program MFF Tranche 3 Subproject: Second Transformer Bank for 220kV Uyen Hung Substation
Sector Division:	SEEN

Screening Questions	Yes	No	Remarks
A. Project Siting Is the Project area adjacent to or within any of the following environmentally sensitive areas?			2nd transformers were installed in the existing Uyen Hung 220kv substation site. Uyen Hung 220kV substation was constructed completely and began operation on December 25, 2014.
• Cultural heritage site		X	
• Protected Area		X	
• Wetland		X	
• Mangrove		X	
• Estuarine		X	
• Buffer zone of protected area		X	
• Special area for protecting biodiversity		X	
B. Potential Environmental Impacts Will the Project cause…			
Encroachment on historical/cultural areas, disfiguration of landscape and increased waste generation?		X	
encroachment on precious ecosystem (e.g. sensitive or protected areas)?		X	

Screening Questions	Yes	No	Remarks
alteration of surface water hydrology of waterways crossed by roads and resulting in increased sediment in streams affected by increased soil erosion at the construction site?		X	
damage to sensitive coastal/marine habitats by construction of submarine cables?		X	
deterioration of surface water quality due to silt runoff, sanitary wastes from worker-based camps and chemicals used in construction?	X		Moderate impact. Contractor will be required to provide silt traps. There are available sanitary facilities in the substation for use of workers.
increased local air pollution due to rock crushing, cutting and filling?		X	
risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?	X		Workers may be exposed to electromagnetic fields and other electric hazards when working near energized equipment. To minimize potential risks, an Occupational Health and Safety Plan (OHSP) will be developed and implemented.
chemical pollution resulting from chemical clearing of vegetation for construction site?		X	
noise and vibration due to blasting and other civil works?	X		Noise and vibration may occur during movement of heavy construction vehicles along access roads to the substation. Mitigation measures to manage noise and vibration caused by construction-related activities are specified in the EMP of the subproject.
dislocation or involuntary resettlement of people?		X	
dis-proportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		X	
social conflicts relating to inconveniences in living conditions where construction interferes with pre-existing roads?		X	
hazardous driving conditions where construction interferes with pre-existing roads?		X	
creation of temporary breeding habitats for vectors of disease such as mosquitoes and rodents?		X	
dislocation and compulsory resettlement of people living in right-of-way of the power transmission lines?		X	

Screening Questions	Yes	No	Remarks
environmental disturbances associated with the maintenance of lines (e.g. routine control of vegetative height under the lines)?		X	Not applicable. There is no tree in the construction area for the second transformer.
facilitation of access to protected areas in case corridors traverse protected areas?		X	
disturbances (e.g. noise and chemical pollutants) if herbicides are used to control vegetative height?		X	
large population influx during project construction and operation that cause increased burden on social infrastructure and services (such as water supply and sanitation systems)?		X	Impact will be minimal since there are only 20 workers during construction period. Existing sanitation facilities at the substation are available for use of workers.
social conflicts if workers from other regions or countries are hired?		X	No impact since majority of the workforce will be qualified local workers.
poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations?		X	There will be no construction camp within the substation site since the number of workers is small. However, the Contractor shall implement measures to ensure sanitation and heal that the work site by commissioning the services of solid waste haulers to collect waste daily and through good housekeeping.
risks to community safety associated with maintenance of lines and related facilities?		X	Not applicable. Subproject is within substation site only.
community health hazards due to electromagnetic fields, land subsidence, lowered groundwater table, and salinization?		X	Not applicable. Subproject is within substation site only.
risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?	X		There is minimal risk to community on the transport, storage and use of fuel and chemicals and disposal of hazardous wastes during construction and operation. An Occupational Health and Safety Plan, including Emergency Response Plan will be included in the EMP.
community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project (e.g., high voltage wires, and transmission towers and lines) are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?		X	Not applicable. Subproject is within substation site only.

A Checklist for Preliminary Climate Risk Screening

Country/Project Title: VIE: Power Transmission Investment Program MFF Tranche 3

Subproject: Second Transformer Bank for 220kV Uyen Hung Substation

Sector : Energy

Subsector:

Division/Department: SERD

Screening Questions		Score	Remarks[29]
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather related events such as floods, droughts, storms, landslides?	0	The project site is not located in flood-prone area.
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc)?	0	Not applicable
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?	0	The project inputs will not be affected by climate conditions.
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s)?	0	Not applicable. Maintenance works can be scheduled at any time.
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?	0	Project outputs and goals will remain the same.

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

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

Result of Initial Screening (Low, Medium, High): LOW
Other Comments:_____
Prepared by: _____

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

Appendix 2: Summary, Minutes, Attendance and Photo of Consultation Meeting

Second transformer bank for the 220 kV Uyen Hung Substation Project

Location: Uyen Hung Town, Tan Uyen District, Binh Duong Province
Date: April 3, 2015

The consultation meeting was held by initially discussing about project background and scope, Viet Nam regulations on power projects, anticipated environmental impacts and mitigating measures, and grievance redress mechanism; and subsequently addressing issues and questions raised by stakeholders. Five (5) stakeholders, out of about 25 present, officially signed the meeting minutes. They are the Vice-head of Uyen Hung Town; representative of Natural Resource Office; resident of Uyen Hung Town; ADB National Environment Consultant; and Vice-head of Forest Protection Unit - North Front, Tan Uyen District.

Everyone showed agreement with the presented environmental impacts and mitigating measures of the project. However, the following environmental issues were raised:

1. Schedule of construction activities must be followed in order to avoid negative impacts on local daily life and security conditions
   Response to this comment:
   - A detailed EMP is prepared to ensure that the Contractor will prevent any potential environmental and social impacts
   - Local workers will be hired for the project.

2. Sanitation facility should be adequate for 30 people so others will not practice open defecation
   Response to this comment:
   - Worker camps will not be put up on-site; workers will go home after work
   - Substation has a sanitation facility, which workers can definitely use.

3. Obtain permission from the government in relation to transporting heavy equipment in the area.

In conclusion, all stakeholders approved of the project. The Project Owner and Contractor are expected to implement the EMP to minimize potential project impacts.

TA-7742 VIE: Power Transmission Investment Program (MFF)
CHƯƠNG TRÌNH ĐƯỜNG DÂY TRUYỀN TẢI ĐIỆN (MFF)

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

Uyên Hưng, Ngày 03 tháng 04 năm 2015

BIÊN BẢN HỌP THAM VẤN CỘNG ĐỒNG VỀ ĐÁNH GIÁ MÔI TRƯỜNG, TÁI ĐỊNH CƯ VÀ PHÁT TRIỂN DÂN TỘC THIỂU SỐ

Tiểu dự án: Lắp MBA thứ 2 TBA 220kV Uyên Hưng
Phường Uyên Hưng, thị xã Tân Uyên, tỉnh Bình Dương

1. Thành phần tham dự

- Ông/Bà. Phan Văn Niên ..... Chức vụ Phó C.T. P. Uyên Hưng
- Ông/Bà. Nguyễn Văn Tân ..... Chức vụ Cán Bộ Địa Chính
- Ông/Bà. Nguyễn Tấn Lợi ..... Chức vụ Đại diện dân cư
- Ông/Bà. Phạm Thị Thanh Thủy ..... Chức vụ Chuyên gia môi trường ADB
- Ông/Bà. Hồ Văn Quẫn ..... Chức vụ Phó Hạt Trưởng Hạt KL Bắc Tân Uyên
- Ông/Bà. ..... Chức vụ .....
- Đại diện những người bị ảnh hưởng: .....người (*chi tiết xem danh sách đính kèm*)

I. Nội dung tham vấn

- ***Tư vấn thiết kế giới thiệu dự án***: Lắp MBA thứ 2 TBA 220kV Uyên Hưng trên địa bàn phường.
- ***Tư vấn môi trường trình bày về:*** Chính sách môi trường của ADB; Các quy định về môi trường trong ngành điện của chính phủ Việt Nam; Các tác động về môi trường và các biện pháp giảm thiểu tương ứng (như trong IEE); Cơ chế khiếu nại khi có các vấn đề môi trường xảy ra.

III. Ý kiến thảo luận

III.1 Về các tác động môi trường tiêu cực và biện pháp giảm thiểu

- Thống nhất với đánh giá tác động nhưng trong thời gian tập trung công nhân xây dựng có thể ảnh hưởng đến an ninh trật tự của địa phương.
- Nước thải sinh hoạt có bao gồm sinh hoạt phát sinh của 30 người để đảm bảo Không ảnh vệ sinh lưu lại bên ngoài.

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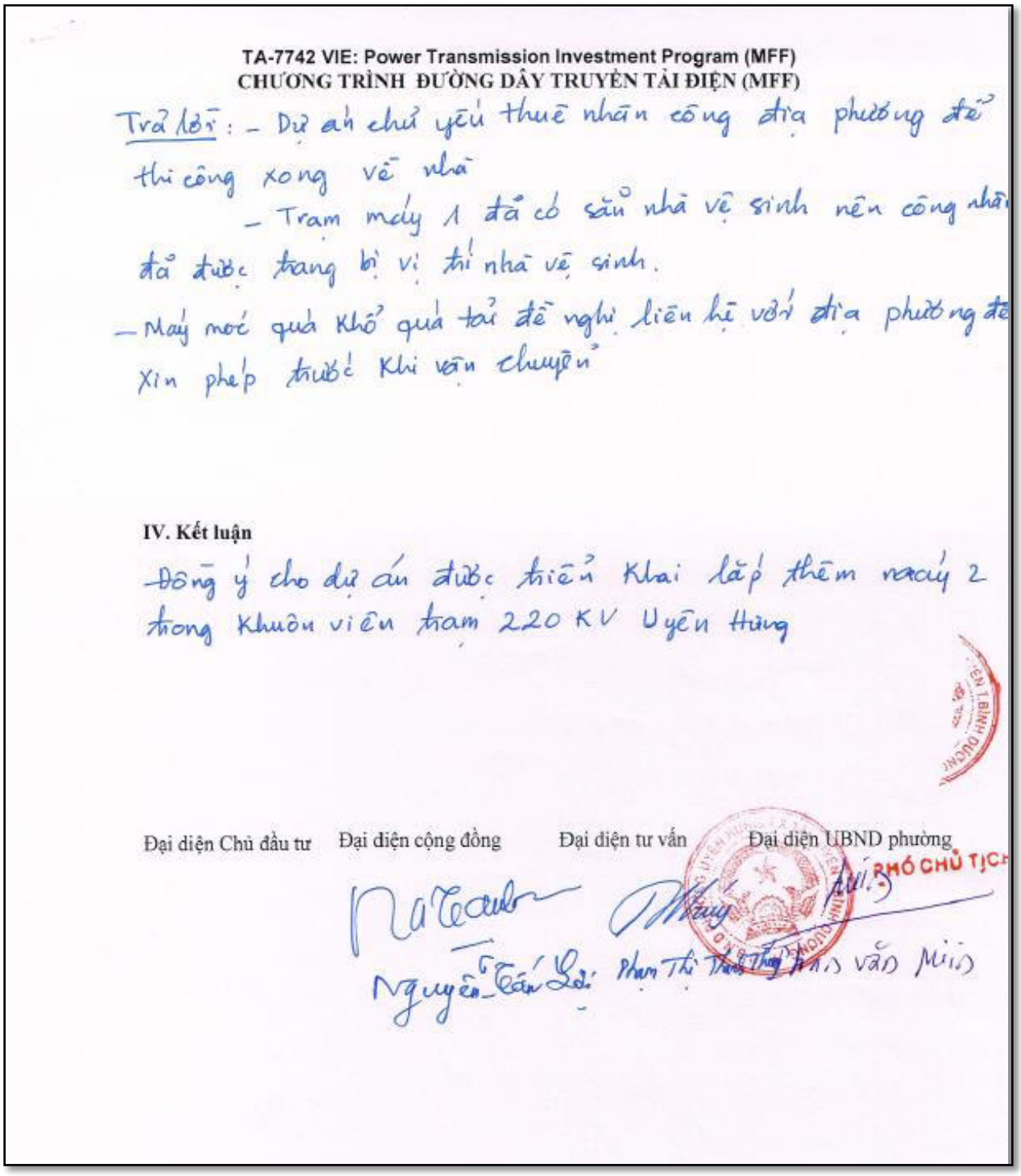

TA-7742 VIE: Power Transmission Investment Program (MFF)
CHƯƠNG TRÌNH ĐƯỜNG DÂY TRUYỀN TẢI ĐIỆN (MFF)

Trả lời: - Dự án chủ yếu thuê nhân công địa phương để thi công xong về nhà

- Trạm máy 1 đã có sẵn nhà vệ sinh nên công nhân đã được trang bị vị thí nhà vệ sinh.

- Máy móc quá khổ quá tải đề nghị liên hệ với địa phương để Xin phép trước Khi vận chuyển

IV. Kết luận

Đồng ý cho dự án được triển Khai lắp thêm mạch 2 trong Khuôn viên trạm 220 KV Uyên Hưng

Đại diện Chủ đầu tư | Đại diện cộng đồng | Đại diện tư vấn | Đại diện UBND phường

PHÓ CHỦ TỊCH

Nguyễn Tấn Lợi

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TA-7742 VIE: Power Transmission Investment Program (MFF)
CHƯƠNG TRÌNH ĐƯỜNG DÂY TRUYỀN TẢI ĐIỆN (MFF)

PUBIC CONSULTATION ON ENVIRONMENT AND SOCIAL/RESETLEMENT

THAM VẤN CỘNG ĐỒNG VỀ MÔI TRƯỜNG

LIST OF PARTICIPANTS
DANH SÁCH NGƯỜI THAM DỰ

Date (Ngày tháng) :
Location (địa điểm) : UBND phường Uyên Hưng, thị xã Tân Uyên, tỉnh Bình Dương

No. TT	Họ và tên (Name)	Nam (M)	Nữ (F)	Chức vụ (Position)	Cơ quan/Địa chỉ (Organization/Address)	Chữ ký (Signature)
1	Bồ Hoàng Long	Nam		Thực tập sinh P.CT	xã. Vĩnh Tân	
2	Trương Hoàng Vinh	Nam		Thực tập sinh P.CT	P. Khánh Bình	
3	Lê Văn Ba	Nam		Thực tập Sinh PBT	TT. Tân Thành	
4	Trần Thanh Nghiệp	Nam			Tổ 3 - Khu 7 VH	
5	Ng Thị Kim Chưa		x		Tổ 3 - Khu 7 - VH	
6	Ng Tấn Lợi	x				
7	Bùi Thị Mỹ Hạ		x	PBT Đoàn		
8	Nguyễn Văn Bé	-			Tổ 1 Kpb.	
9	Ng. văn Dũng	-			Tổ 2 Kpb.	
10	Ng. Thúc Nhân	x			Tổ 2 Kpb.	
11	Phan Thanh Bình	x			Tổ 3 Kpb.	
12	Nguyễn Vĩnh Trường				Tổ 3, Kp TT	
13	Ngô T. Hoàng Phương		x	Hội LHPN	Khu 1	
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						

Attendance List

Stakeholder Meeting in Uyen Hung Town, Tan Uyen District (April 3, 2015)

Appendix 3: EIA Approval Letter for 220kV Uyen Hung Second Transformer by Binh Duong Provincial People's Committee

Về việc phê duyệt Báo cáo đánh giá tác động môi trường
Dự án lắp máy biến áp thứ 2 trạm biến áp 220Kv Uyên Hưng tại phường Uyên Hưng, thị xã Tân Uyên, tỉnh Bình Dương của Ban quản lý dự án các công trình điện Miền Nam

ỦY BAN NHÂN DÂN TỈNH

Căn cứ Luật Tổ chức Hội đồng nhân dân và Ủy ban nhân dân ngày 26 tháng 11 năm 2003;

Căn cứ Luật Bảo vệ môi trường ngày 23 tháng 6 năm 2014;

Căn cứ Nghị định số 29/2011/NĐ-CP ngày 18 tháng 4 năm 2011 của Chính phủ quy định về đánh giá môi trường chiến lược, đánh giá tác động môi trường, cam kết bảo vệ môi trường;

Căn cứ Thông tư số 26/2011/TT-BTNMT ngày 18 tháng 7 năm 2011 của Bộ Tài nguyên và Môi trường quy định chi tiết một số điều của Nghị định số 29/2011/NĐ-CP ngày 18 tháng 4 năm 2011 của Chính phủ quy định về đánh giá môi trường chiến lược, đánh giá tác động môi trường, cam kết bảo vệ môi trường;

Theo đề nghị của Hội đồng thẩm định báo cáo đánh giá tác động môi trường của Dự án lắp máy biến áp thứ 2 trạm biến áp 220Kv Uyên Hưng tại phường Uyên Hưng, thị xã Tân Uyên, tỉnh Bình Dương của Ban quản lý dự án các công trình điện Miền Nam họp ngày 08 tháng 01 năm 2015 tại Hội trường Chi cục Bảo vệ môi trường;

Xét nội dung báo cáo đánh giá tác động môi trường của Dự án lắp máy biến áp thứ 2 trạm biến áp 220Kv Uyên Hưng tại phường Uyên Hưng, thị xã Tân Uyên, tỉnh Bình Dương của Ban quản lý dự án các công trình điện Miền Nam;

Xét đề nghị của Giám đốc Sở Tài nguyên và Môi trường tại Tờ trình số: 13/TTr-STNMT ngày 2 tháng 02 năm 2015,

QUYẾT ĐỊNH:

Điều 1. Phê duyệt nội dung báo cáo đánh giá tác động môi trường Dự án lắp máy biến áp thứ 2 trạm biến áp 220Kv Uyên Hưng tại phường Uyên Hưng, thị xã Tân Uyên, tỉnh Bình Dương của Ban quản lý dự án các công trình điện Miền Nam với các nội dung chủ yếu sau đây:

1. Phạm vi, quy mô, công suất của dự án:

1.1 Vị trí thực hiện: phường Uyên Hưng, thị xã Tân Uyên, tỉnh Bình Dương;

1.2 Ngành nghề hoạt động: trạm biến áp 220KV.

1.3 Quy mô, công suất: cấp điện áp 220/110/22KV, công suất 250 MVA.

2. Yêu cầu bảo vệ môi trường đối với dự án:

2.1 Các yêu cầu về xử lý chất thải:

- Xây dựng hệ thống thoát nước mưa, nước thải riêng biệt; nước thải sinh hoạt phải được xử lý đạt quy chuẩn QCVN 14 : 2008/BTNMT, cột A hệ số K=1,2 trước khi thải ra môi trường;

- Tiếng ồn, độ rung phải đảm bảo đạt quy chuẩn kỹ thuật quốc gia về tiếng ồn (QCVN 26 : 2010/BTNMT) và quy chuẩn kỹ thuật quốc gia về độ rung (QCVN 27 : 2010/BTNMT);

- Các chất thải rắn phải được thu gom, quản lý và xử lý đúng quy định tại Nghị định số 59/2007/NĐ-CP ngày 09 tháng 4 năm 2007 của Chính phủ về quản lý chất thải rắn;

- Phải đăng ký chủ nguồn thải chất thải nguy hại và quản lý chất thải nguy hại theo Thông tư số: 12/2011/TT-BTNMT ngày 14 tháng 4 năm 2011 của Bộ Tài nguyên và Môi trường Quy định về quản lý chất thải nguy hại.

2.2 Các yêu cầu về phòng chống và khắc phục sự cố

- Thực hiện các biện pháp quản lý và kỹ thuật để phòng chống và khắc phục các sự cố do cháy, nổ, các rủi ro và sự cố môi trường khác.

- Đảm bảo khoảng cách cách ly và tuân thủ các điều kiện an toàn đối với các thiết bị điện theo đúng quy định của Luật Điện lực và các văn bản hướng dẫn hiện hành.

2.3 Các yêu cầu về chế độ kiểm tra, giám sát nguồn thải

Tổ chức giám sát chất thải với tần suất tối thiểu 3 tháng 01 lần; giám sát môi trường xung quanh, môi trường lao động với tần suất tối thiểu 6 tháng 01 lần; định kỳ tổng hợp báo cáo giám sát môi trường gởi cơ quan quản lý nhà nước về môi trường với tần suất tối thiểu 01 lần/năm.

Điều 2. Các yêu cầu về công khai thông tin và trách nhiệm của chủ dự án trước khi đưa dự án đi vào hoạt động chính thức

- Sau khi được phê duyệt báo cáo đánh giá tác động môi trường, chủ dự án có trách nhiệm lập, phê duyệt và niêm yết công khai kế hoạch quản lý môi trường tại trụ sở Ủy ban nhân dân cấp phường nơi thực hiện việc tham vấn cộng đồng để nhân dân biết, kiểm tra, giám sát theo quy định tại Điều 22 Nghị định số 29/2011/NĐ-CP ngày 18 tháng 4 năm 2011 của Chính phủ quy định về đánh giá môi trường chiến lược, đánh giá tác động môi trường, cam kết bảo vệ môi trường.

- Trước khi đưa dự án vào vận hành chính thức, chủ dự án phải thực hiện đầy đủ trách nhiệm theo quy định tại Điều 23 Nghị định số 29/2011/NĐ-CP ngày 18 tháng 4 năm 2011 của Chính phủ và Điều 35, 36, 37 Thông tư số 26/2011/TT-BTNMT ngày 17 tháng 8 năm 2011 của Bộ Tài nguyên và Môi trường quy định

chi tiết một số điều của Nghị định số 29/2011/NĐ-CP ngày 18 tháng 4 năm 2011 của Chính phủ. Cụ thể như sau:

+ Tổ chức thực hiện các biện pháp bảo vệ môi trường trong giai đoạn chuẩn bị đầu tư và giai đoạn thi công xây dựng dự án;

+ Thiết kế, xây lắp các công trình bảo vệ môi trường;

+ Thông báo kế hoạch vận hành thử nghiệm các công trình xử lý chất thải của dự án; tổ chức vận hành thử nghiệm các công trình xử lý chất thải;

+ Lập hồ sơ đề nghị kiểm tra, xác nhận việc thực hiện các công trình, biện pháp bảo vệ môi trường phục vụ giai đoạn vận hành của dự án.

Điều 3. Trong quá trình thực hiện nếu dự án có những thay đổi so với các khoản 1 và 2 Điều 1 của Quyết định này, Chủ dự án phải có văn bản báo cáo và chỉ được thực hiện những thay đổi sau khi có văn bản chấp thuận của các cơ quan có thẩm quyền.

Điều 4. Quyết định phê duyệt báo cáo đánh giá tác động môi trường của dự án là cơ sở để các cơ quan quản lý nhà nước có thẩm quyền kiểm tra, thanh tra việc thực hiện công tác bảo vệ môi trường của dự án.

Điều 5. Chánh Văn phòng Ủy ban nhân dân tỉnh, Giám đốc Sở Tài nguyên và Môi trường, Chủ tịch Ủy ban nhân dân thị xã Tân Uyên, người đại diện pháp luật của Ban quản lý dự án các công trình điện Miền Nam và Thủ trưởng các cơ quan liên quan chịu trách nhiệm thi hành Quyết định này, kể từ ngày ký./.

Nơi nhận:
- Bộ Tài nguyên và Môi trường;
- CT, PCT;
- Sở TN&MT; Sở XD;
- UBND thị xã Tân Uyên;
- Chủ dự án;
- LĐVP (Tr, Lg), Phong, TH;
- Lưu: VT.

TM.ỦY BAN NHÂN DÂN
CHỦ TỊCH

Trần Văn Nam

BINH DUONG's PEOPLE COMMITTEE	**SOCIALIST REPUBLIC OF VIET NAM** **Independent – Freedom – Happiness**
No. 652 /QĐ-UBND	*Binh Duong, March 20th, 2015*

DECISION

Approval Environmental impact assessment report for the project "Installing the secondary transformer for Uyen Hung 220 Kv substation" in Uyen Hung ward, Tan Uyen town, Binh Duong province of Southern Viet Nam Power Project Management Board

BINH DUONG'S PEOPLE COMMITTEE

Pursuant to the Law on Organization of People's Councils and People's Committees November, 26th, 2003;

Pursuant to the Environment protection law dated on June 6, 2014;

Pursuant to the Decree No.80/2006/ND-CP, dated August 9, 2006 by the GOV concerning instruction on environment protection law implementation;

Pursuant to the Decree No.29/2011/ND-CP, dated on Apr 18, 2011 by the GOV concerning instruction on implementation of the environment protection law;

Pursuant to the Circular No. 26/2011/TT-BTNMT dated on Junly18, 2011 by Ministry of Natural Resources and Environment (MONRE), concerning instruction on strategic enviromental impact assessment, enviromental impact assessment and environmental protection commitment;

At the request of the Board evaluation report on environmental impact assessment of the project "Installing the secondary transformer for Uyen Hung 220 Kv substation" in Uyen Hung ward, Tan Uyen town, Binh Duong province of Southern Viet Nam Power Project Management Board conference January 08th, 2015 at the Environmental Protection Agency hall;

Considering the contents of the environmental impact assessment report of the project "Installing the secondary transformer for Uyen Hung 220 Kv substation" in Uyen Hung ward, Tan Uyen town, Binh Duong province of Southern Viet Nam Power Project Management Board;

Considering the request of Ninh Thuan Environment and Natural Resource Department Chief's on Document No. 113/TTr-STNMT dated February 26th, 2015,

DECISION:

Article 1. To approve the report of environmental impact assessment of the project "Installing the secondary transformer for Uyen Hung 220 Kv substation" in Uyen Hung ward,

Tan Uyen town, Binh Duong province of Southern Viet Nam Power Project Management Board with the following main items:

1. The scope, scale and capacity of the project:

1.1. Location: Uyen Hung ward, Tan Uyen town, Binh Duong province;
1.2. Operation: 220Kv Substation.
1.3. Scale and capacity: voltage level 220/110/22KV, capacity 250MVA.

2. Requirements for environmental protection projects:

2.1. Requirements about waste treatment:
- Building the drainage system, sewerage system separately; Domestic wastewater must be treated achieving QCVN 14: 2008/BTNMT, column A, K = 1.2, before discharged into the receiving water.
- The noise must be treated achieving QCVN 26: 2010/BTNMT; the vibration must be treated achieving QCVN 27: 2010/BTNMT.
- Solid waste must be collected, managed and treated in accordance with the provisions of decree No. 59/2007/NĐ-CP dated April 9th, 2007.
- Registering waste source generators and managing hazardous waste in accordance with the provisions of Circular No.12/2011/TT-BTNMT dated Apr. 14th 2011 of the Ministry of Natural Resources and Environment on hazardous waste management.

2.2. Requirements for prevention and remedy the problems
- Implement strict the management and technique measures to prevent and overcome the fire, explosion, risks and other environmental problems.
- Ensure the isolation distance and compliance with safety conditions for electrical equipment in accordance with the provisions of power law and the current regulations.

2.3. Requirements for test mode, monitoring sources of waste
Implement of monitoring waste at least 3 months/time, monitoring ambient and monitoring working environment at least 6 months/time. The results of monitoring should be updated and provided to the Department of Natural Resources and Environment inspection, periodic monitoring at least 1 time/year.

Article 2. Requirements for public information and responsibility of the project before the official operation.

- Project Owner must approve and publicly disclose the environmental management plan of the project before the project implementation; Implement strict requirements on environmental protection provisions; Review, check, validate works, and environmental protection measures of the project and submit to the competent authorities for inspection and certification prior to project full implementation as stipulated in article 22th Decree No. 29/2011/ND-CP dated April 18, 2011 regulations on strategic environmental assessment, environmental impact assessment and environmental protection commitment.
- Before officially operate, Project Owner must implement fully the responsibilities as stipulated in article 23th Decree No. 29/2011/ND-CP dated Apr. 18th 2011 and article 35th, 36th, 37th, Circular No. 26/2011/TT-BTNMT dated Jul. 18th 2011 of the Ministry of

Natural Resources and Environment Regulations detailing a number of articles of Decree No. 29/2011/ND-CP dated April 18, 2011. as follows:

+ Implement environmental protection provisions in preparation of investment phase and construction phase.
+ Design, build environmental protection measures.
+ Notify operating test plan of the waste treatment construction of project; Operate test plan for the waste treatment construction.
+ Review, checking, confirming the implementation of projects, environmental protection measures during the operational phase of the project.

Article 3. In the course of project implementation if there are changes compared with paragraphs 1 and 2 of Article 1 of this Decision, the project owner must provide written reports and shall be made only after the change documents approval of Binh Duong province.

Article 4. The decision to approve the report of environmental impact assessment of the project as a basis for decisions on investment projects; the basis for the state agency authorized test and inspect the implementation of environmental protection project.

Article 5. The Director of the Department of Natural Resources and Environment, Head of the Management Board of Industrial Zones Province, Chairman of Tan Uyen District, the Director of Environmental Protection, Legal representative of Southern Viet Nam Power Project Management Board and Heads of agencies and units concerned shall implement this decision from the date of signing.

Recipients:
- Same as above;
- Save office;

ON BEHALF OF THE COMMUNE PEOPLE'S COMMITTEE
Vice CHAIRMAN
(Signed and sealed)

Tran Van Nam

Appendix 4: Emergency Response Plan

1. The Contractor must develop emergency or incident response procedures (ERP) during construction. In the operational phase the operator/civil authorities will have responsibility for any emergencies or serious incidents. The construction phase should ensure:

i) Emergency Response Team (ERT) of the Contractor as initial responder;
ii) the District fire and police departments, emergency medical service, the Department of Public Health (DPH), collectively referred to as the External Emergency Response Team (EERT), as ultimate responders.

2. The Contractor will provide and sustain the required technical, human and financial resources for quick response during construction.

Table 1. Roles and Responsibilities in Emergency Incident Response

Entity	Responsibilities
Contractor Team (ERT)	- Communicates / alerts the EERT. - Prepares the emergency site to facilitate the response action of the EERT, e.g., vacating, clearing, restricting site. - When necessary and requested by the EERT, lends support / provides assistance during EERT's response operations.
External Emergency Response Team (EERT)	- Solves the emergency/incident
Contractor Resources	- Provide and sustain the people, equipment, tools and funds necessary to ensure Subproject's quick response to emergency situations. - Maintain good communication lines with the EERT to ensure prompt help response and adequate protection, by keeping them informed of Subproject progress.

3. The ERT will be led by the senior Contractor engineer (designated ERTL) on site with a suitably trained foreman or junior engineer as deputy. Trained first-aiders and security crew will be the core members of the ERT.

4. The Contractor will ensure that ERT members are physically, technically and psychologically fit for their emergency response roles and responsibilities.

5. Prior to the mobilization of civil works, the Contractor, through its Construction Manager, ERTL, in coordination with the EA/IA, will meet with the ultimate response institutions to discuss the overall construction process, including, but not limited to:

i) subproject sites;
ii) construction time frame and phasing;
iii) any special construction techniques and equipment that will be used;
iv) any hazardous materials that will be brought to and stored in the construction premise and details on their applications and handling/management system;
v) the Contractor's Emergency Management Plan;
vi) names and contact details of the ERT members.

6. The objective of this meeting is to provide the ultimate response institutions the context for:

i) their comments on the adequacy of the respective Emergency Management Plans
ii) their own assessment of what types, likely magnitude and likely incidence rate of potential hazards are anticipated
iii) the arrangements for coordination and collaboration.

7. To ensure effective emergency response, prior to mobilization of civil works, the Contractor will:

i) set up the ERT;
ii) set up all support equipment and facilities in working condition
iii) made arrangements with the EERT;
iv) conducted proper training of ERT members, and encouraged and trained volunteers from the work force;
v) conducted orientation to all construction workers on the emergency response procedures and facilities, particularly evacuation procedures, evacuation routes, evacuation assembly points, and self-first response, among others; and
vi) conducted drills for different possible situations.

8. To sustain effective emergency response throughout Subproject implementation an adequate budget shall be provided to sustain the capabilities and efficiency of the emergency response mechanism, the emergency response equipment, tools, facilities and supplies. Drills and reminders will take place regularly, the former at least every two months and the latter at least every month.

Alert Procedures

9. Means of communicating, reporting and alerting an emergency situation may be any combination of the following: i) audible alarm (siren, bell or gong); ii) visual alarm (blinking/rotating red light or orange safety flag); iii) telephone (landline); iv) mobile phone; v) two-way radio; and vi) public address system/loud speakers. Some rules relative to communicating/alerting will be:

(i) Whoever detects an emergency situation first shall immediately :

- call the attention of other people in the emergency site,
- sound the nearest alarm, and/or
- report/communicate the emergency situation to the ERT.

(ii) Only the ERTL and, if ERTL is not available, the Deputy ERTL are authorized to communicate with the EERT. Exceptional cases to this rule may be necessary and should be defined in the Emergency Management Plans.

(iii) When communicating/alerting an emergency to the EERT, it is important to provide them with at least: i) the type of emergency situation; ii) correct location of the emergency; ii) estimated magnitude of the situation; iii) estimated persons harmed; iv) time it happened; v) in case of a spill, which hazardous substance spilled; and vi) in case of fire and explosion, what caused it. Such details would allow the EERT to prepare for the appropriate response actions. For an effective reporting/alerting of an emergency situation:

(i) The names and contact details of the relevant persons and institutions should be readily available in, or near to, all forms of communication

equipment, and strategically posted (at legible size) in all Subproject sites and vehicles:

- Most relevant construction/operations staffs namely, the ERTL, Deputy ERTL, first-aiders, supervising engineers, foremen
- EERT institutions/organizations
- Concerned village authority/ies
- IA Office, SS

(ii) All Subproject sites should have good access to any combination of audible and visual alarms, landline phones, mobile phones and two-way radio communication at all times.

(iii) Contractor's construction vehicles should also be equipped with the appropriate communication facilities.

Emergency Response Situations

The following tables suggest general procedures that will be refined in the final EMP during detailed design, and described in more detail in the Emergency Management Plans of the Contractor.

Table 2. Evacuation Procedure

Procedure	Remarks
▪ Move out as quickly as possible as a group, but avoid panic.	▪ All workers/staff, sub-contractors, site visitors to move out, guided by the ERT.
▪ Evacuate through the directed evacuation route.	▪ The safe evacuation shall have been determined fast by the ERTL/Deputy ERTL and immediately communicated to ERT members.
▪ Keep moving until everyone is safely away from the emergency site and its influence area.	▪ A restricted area must be established outside the emergency site, all to stay beyond the restricted area.
▪ Once outside, conduct head counts.	▪ Foremen to do head counts of their sub-groups; ERTL/Deputy ERTL of the ERT.
▪ Once outside, conduct head counts.	▪ Foremen to do head counts of their sub-groups; ERTL/Deputy ERTL of the ERT.
▪ Report missing persons to EERT immediately.	▪ ERTL/Deputy ERTL to communicate with the EERT.
▪ Assist the injured in evacuation and hand them over to the ERT first-aiders or EERT medical group	▪ ERT to manage injured persons to ensure proper handling.
▪ If injury warrants special care, DO NOT MOVE them, unless necessary and instructed/directed by the EERT.	▪ ERTL/Deputy ERTL communicates with EERT to get instructions/directions in handling the injured.

Table 3. Response Procedure During Medical Emergency

Procedure	Remarks
▪ Administer First Aid regardless of severity immediately.	▪ Fundamentals when giving First Aid: - Safety first of both the rescuer and the victim. - Do not move an injured person unless: - victim is exposed to more danger

Procedure	Remarks
	when left where they are, e.g., during fire, chemical spill - it would be impossible for EERT to aid victims in their locations, e.g., under a collapsed structure - instructed or directed by the EERT. ▪ First AID to be conducted only by a person who has been properly trained in giving First Aid.
▪ Call the EERT emergency medical services and/or nearest hospital.	▪ ERTL/Deputy ERTL or authorized on-site emergency communicator
▪ Facilitate leading the EERT to the emergency site.	▪ ERTL/Deputy ERTL to instruct: - an ERT member on- site to meet EERT in access road/strategic location. He/she shall hold orange safety flag to get their attention and lead them to site. - Other ERT members to clear access road for smooth passage of the EERT.
▪ If applicable, vacate site and influence area at once, restrict site, suspend work until further notice.	▪ Follow evacuation procedure.

Table 4. Response Procedure in Case of Fire

Procedure	Remarks
▪ Alert a fire situation.	▪ Whoever detects the fire shall immediately: - call the attention of other people in the site, - sound the nearest alarm, and/or - Foreman or any ERT member among the construction sub-group contacts the fire department (in this case it should be agreed on that it is alright for any ERT member in the sub-group to alert the fire department) - report/communicate the emergency situation to the ERTL/Deputy ERTL.
▪ Stop all activities/operations and evacuate.	▪ All (non-ERT) workers/staff sub-contractors, site visitors and concerned public to move out to safe grounds following the evacuation procedure.
▪ Activate ERT to contain fire/control fire from spreading.	▪ Guided by the training they undertook, ERT members assigned to mitigate the fire shall assess their own safety situation first before attempting to control fire spread.

Procedure	Remarks
▪ Call the nearest fire and police stations and, if applicable, emergency medical services.	▪ When alerting the EERT, ERTL will give the location, cause of fire, estimated fire alarm rating, any injuries.
▪ Facilitate leading the EERT to the emergency site.	▪ ERTL/Deputy ERTL to instruct: - an ERT member to meet the EERT in the access road or strategic location and lead them to the site. He/she shall hold the orange safety flag to get their attention and lead them to the site. - some ERT members to stop traffic in, and clear, the access road to facilitate passage of the EERT.
▪ ERT to vacate the site as soon as their safety is assessed as in danger.	▪ Follow appropriate evacuation procedure.

Appendix 5: Photographs of the Site and Surroundings

Surrounding of 220 KV Uyen Hung Substation

Site of the proposed access road

At the back of the substation is a house and the rubber tree plantation

Rubber tree plantation adjacent to the substation

The drainage surrounding the substation

Appendix 6: Environmental Compliance Audit of Existing 220kV Uyen Hung Substation at Binh Duong Province

A. INTRODUCTION

ADB SPS (2009) requires the conduct of environmental audits for projects involving existing activities or facilities to determine existence of any areas where the project may cause or is causing environmental risks or impacts. This environmental compliance audit covers the current condition of the existing 220kV Uyen Hung Substation located at Uyen Hung Ward, Tan Uyen Town, Binh Duong Province.

B. AUDIT AND SITE INVESTIGATION PROCEDURE

Information was gathered through site visits and discussions with substation staff and workers. Observations on environmental conditions and implementation of the environmental management plan were noted. Measures to address waste management and health and safety procedures were also observed during the site visits. Copies of environmental clearances, results of environmental monitoring, and health and safety guidelines were also reviewed.

C. SUBSTATION INFORMATION

Name of Facility: Uyen Hung 220 kV Substation

Name of Operating Power Company: Power Transmission Company No.4 (PTC4)

Location: Uyen Hung Ward, Tan Uyen Town, Binh Duong province

Capacity of substation:220 kV

Connection Lines:

- Transmitting power to:
  a. 110kV Uyen Hung – Dat Cuoc T/L
  b. 110kV Uyen Hung – Tan Uyen T/L
  c. 110kV Uyen Hung – Thuong Tan T/L
  d. 110kV Uyen Hung – Binh Tan – Phu Giao T/L
  e. 110kV Uyen Hung – Vinh Hoa – Phu Giao T/L

- Receiving power from:
  a. From 220 KV Tan Dinh Substation through 220 KV Tan Dinh – Uyen Hung transmission line

Area serviced by substation: Binh Duong province

D. DESCRIPTION OF EXISTING 220KV UYEN HUNG SUBSTATION

The 220KV Uyen Hung Substation was constructed by the SPPMB in 2012. The substation was turned-over to PTC4 and became operational on December 27, 2014. The substation is located in a property with an area of 27,293 m^2 in Uyen Hung Town. Rubber tree plantations border the substation. There are warehouses to its west and northeast sides and to its south is the DH 422

district road. The area within the immediate vicinity of the substation is sparsely populated. The nearest household to the substation site is located about 80m away.

The existing substation consists of the operation building, lodging house for staff, security post, water station, fire pump house, internal roads, and switchyard area.

The Uyen Hung Substation supplies high voltage (220kV, 110kV) and medium voltage (22kV for local grid only). It currently has one (1) 250MVA transformer in the switchyard area. A space has been allocated within the substation for a second transformer to enhance the stability of the province's power supply, provide safe operation of the electric line network, and supply the surcharge for domestic use in Binh Duong province.

Operation building

Switchyard

Transformer

Staff house and security post

Photo 2: Facilities at the Existing 220kV Uyen Hung Substation

E. FINDINGS AND OBSERVATIONS

The following are the observations noted during the audit:

1. Environmental Protection Commitment

An Environmental Protection Commitment (EPC) for the 220kV Uyen Hung Substation was prepared and submitted to the Tan Uyen District on August 1, 2007 in compliance with the Law on Environmental Protection and Decree No 80/2006/ND-CP (2006), Decree No. 21/2008/ND-CP (2008) and Articles of Decree No. 80/2006/ND-CP. The EPC was reviewed and approved by the Tan Uyen People's Committee on August 8, 2007 according to Decision No. 1709/GXN-UBND (Annex A).

3. UXO Clearance

Prior to the development of the 220kV Uyen Hung Substation, demining of UXO was investigated and surveyed by the Military Command Zone 7, 25th Infantry Brigade. The report on the completion of the demining was issued on July 16, 2012.

4. Hazardous Waste Registration and Management

The substation has registered its hazardous waste consisting of printer ink, busted fluorescent lamps, electrical facilities, used oil, oily rags, and organic wastes with the DONRE with the management code: QLCTNH: 74.000650.T. The registration was issued on January 30, 2015.

The PTC4 had signed the contract with Viet Uc Environmental Joint Stock Company for the collection, transport and treatment of hazardous waste from PTC4 substations in Binh Duong province including the 220 KV Uyen Hung substation with the contract number: 001455 dated 05/03/2014.

A hazardous waste storage area is currently being painted and completed within the substation. The temporary storage area is provided with concrete housing and impervious concrete floors.

Hazardous waste storage house

Inside the HW storage house

Photo 3: Hazardous Waste Storage Area

5. Oil Containment System

The existing transformer has an oil containment tank with a capacity of about 120m^3. According to the substation staff, when the second transformer is installed, a separate oil containment tank will be provided.

Photo 4: Oil Containment for Existing Transformer

6. Solid Waste Management

The solid waste collector from the local government collects solid waste from the substation staff house and operation building twice a week. Solid waste segregation bins are provided at the substation.

7. Designation of Environment, Health and Safety Officer

The substation has 12 staff, working at three shifts per day. A substation staff has been designated to work as Environment, Health and Safety (EHS) Officer. The EHS Officer inspects the waste segregation and collection practices, wastewater treatment system and implementation of health and safety procedures at the substation. The health and safety procedures follow EVN's guidelines. The EHS Officer will also prepare the environmental monitoring report, with assistance from a third party environment monitoring company, for submission to Tan Uyen People's Committee and ADB.

8. Environmental Complaints and Incidents

There has been no complaint received against the substation to date.

9. Environmental Training

Most of the trainings conducted for PTC4 staff are related to orientation on health and safety. There is twice a year training on health and safety, which is organized by PTC4 for all its facilities.

10. Environmental Monitoring

The substation has just operated and there is still no environmental monitoring report that was prepared to date.

11. Implementation of Environmental Management Plan (EMP)

In general, the substation is implementing the EMP particularly the management of solid and hazardous wastes. It is also strictly adhering to the Health and Safety Guidelines as evidenced by safety warning signs in strategic areas at the substation and fire control and abatement measures.

First-aid kit inside the operation building

Fire suppressants at the SS

Fire extinguisher inside the operation building

Photo 5: Safety warning signs and fire control measures at the substation

The following checklist presents the findings on the EMP implementation at the substation:

Table 1: Compliance Checklist on Implementation of Environmental Management Plan at 220kV Uyen Hung Substation

No.	Item	Yes	No	Remarks
Maintenance of Equipment				
1	Is there an oil containment area around transformers?	x		There is oil containment tank measuring about 120 m^3.
2	Is equipment maintenance being done frequently? How often?	x		All equipment are new and still do not require maintenance and repair.
3	Is PCB-containing equipment still in the SS or not?		x	New substation. There are no PCB transformers.
4	Is the SS doing the reliability check on the transformer regularly?	x		Reliability check is done through SCADA
5	When the SS is changing insulating oil of the transformer, is the oil being collected in a container (not to drip on land or discharge into canal)?	x		The SS has a hazardous waste storage house for used oil.
Waste Management				
1	Is domestic solid waste collected and disposed at regularly place?	x		Twice a week
2	Does the SS register for hazardous management license?	x		
3	Is hazardous waste collected and disposed by regulated organization?	x		SS is new. There is still no HW generated.
4	Is used oil being managed? and how	x		To be contained and placed in HW storage house.
5	Are old and used equipment being disposed? How?		x	New substation
6	Does the SS have domestic wastewater treatment facilities? Describe.	x		Operation building and staff house has septic tank.
7	Does the SS have facilities to prevent noise? Describe.	x		Follow the design
8	Does the SS have facilities to prevent dust? Describe.	x		Follow the design
Health and Safety				
1	Are there safety warning signs within the site?	x		
2	Are there safety guidelines?	x		Follow EVN's H&S guidelines/instructions
3	Has safety orientation and trainings been conducted for workers?	x		
4	Are workers wearing personal protective equipment (PPE)?	x		
5	Are workers aware of EMF and social diseases?	x		
Permits and license/s to operate				
1	Has the Environmental Certificate for this SS obtained?	x		
2	What kind of permits on environment, fire safety was obtained for this SS?			Training and employing certificated workers
EMF monitoring conducted				
1	Is the EMF level within the permitted standard?		x	SS is still new. EMF will be monitored within the year.
2	Are there measures to prevent the EMF? Describe	x		Safety clearance provided according to design. Safety

No.	Item	Yes	No	Remarks
				warnings installed within the substation.
Air quality monitoring				
1	Does noise level meet standard?		x	SS is still new. Noise levels will be monitored within the year.
2	Does dust level meet standard		x	SS is still new. Air quality will be monitored within the year.

F. CORRECTIVE ACTION PLAN

In general the existing 220kV Uyen Hung substation is newly built and has just started operating in late December 2014. It has instituted measures to ensure that potential adverse impacts during the operation are managed and controlled. Notably, the following are good practices of the substation which need to be sustainably continued:

a) Management of potential oil spill
b) Segregation of hazardous wastes
c) Segregation and regular collection of solid waste
d) Management of occupational health and safety
e) Treatment of wastewater prior to disposal to ensure compliance with the effluent standards
f) Control and abatement of noise and air pollution.

The substation will be submitting an environmental monitoring report to the Tan Uyen People's Committee. In the environmental monitoring report, the substation is reminded to include the monitoring of EMF levels, air quality, noise, and wastewater quality at the substation to check whether levels are beyond the allowable limits as prescribed by the national standards of the GOV. Monitoring of quantities of hazardous waste generated, waste stored onsite and then waste treated/disposed offsite should form part of the regular environmental monitoring activities.

In addition, the status of EMP implementation should also be included in the monitoring report of the EHS Officer aside from the regular monitoring of environmental parameters. The EHS Officer should refer to the EMP developed for the substation. Furthermore, it is recommended that further training for the EHS Officer of PTC4 on the implementation of the EMP and H&S measures needs to be organized to increase capacity on the implementation of EMP measures, waste management (segregation, labeling, storage, transport), and occupational and community health and safety procedures.

Annex A. Environmental Protection Commitment Certificate

ỦY BAN NHÂN DÂN
HUYỆN TÂN UYÊN

Số: 1709/GXN - UBND

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

Tân Uyên, ngày 08 tháng 8 năm 2007

GIẤY XÁC NHẬN ĐĂNG KÝ BẢN CAM KẾT BẢO VỆ MÔI TRƯỜNG

Dự án Trạm biến áp 220 kV Uyên Hưng

của Ban quản lý dự án các công trình điện miền Nam

Địa chỉ: khu phố 6, thị trấn Uyên Hưng,

Tân Uyên, Bình Dương

ỦY BAN NHÂN DÂN HUYỆN XÁC NHẬN

Điều 1. Ngày 01 tháng 08 năm 2007, Chủ Dự án là Ban quản lý dự án các công trình điện miền Nam đã có Văn bản số 3410/CV-AMN-PĐB ngày 23 tháng 07 năm 2007 đăng ký bản cam kết bảo vệ môi trường của Trạm biến áp 220 kV Uyên Hưng.

Điều 2. Chủ Dự án có trách nhiệm thực hiện đúng và đầy đủ những nội dung về bảo vệ môi trường nêu trong bản cam kết bảo vệ môi trường.

Điều 3. Bản cam kết bảo vệ môi trường của Dự án là cơ sở để các cơ quan quản lý Nhà nước về bảo vệ môi trường giám sát, kiểm tra, thanh tra việc thực hiện bảo vệ môi trường của Dự án.

Điều 4. Giấy xác nhận này có giá trị kể từ ngày ký.

Nơi nhận:
-Ban quản lý dự án
các công trình điện miền Nam;
-Sở Tài nguyên và Môi trường;
-Phòng TNMT;
-Lưu.

TM. ỦY BAN NHÂN DÂN
KT CHỦ TỊCH

SOCIALIST REPUBLIC OF VIET NAM
Independent – Freedom – Happiness

TAN UYEN PEOPLE
COMMITTEE

Ref: 1709 /GXN-UBND *Tan Uyen, August, 8th, 2007*

CERTIFICATE of REGISTRATION OF ENVIRONMENTAL PROTECTION COMMITMENT
for
220 KV Uyen Hung substation
In Uyen Hung ward, Tan Uyen town, Binh Duong province of Southern Viet Nam Power Project Management Board

TAN UYEN 'S PEOPLE COMMITTEE Certifies

Article 1. On August 1st 2007, the project owner, Southern Viet Nam Power Project Management Board submitted official letter 3410/VC-AMN-PĐB dated 23/07/2007 to register Environmental Protection commitment for 220 KV Uyen Hung Substation.

Article 2. The project owner has responsibilities to fully implement the content of stated environmental protection commitment.

Article 3. The environmental protection commitments of the project constitutes the basic for environmental management stage agencies to supervise, control and inspect the implementation of environmental content of the project.

Article 4. This Certificate is effective from the date of issuance.

Recipients:
- Same as above;
- Save office;

ON BEHALF OF THE TAN UYEN DISTRICT COMMUNE PEOPLE'S COMMITTEE
Vice CHAIRMAN
(Signed and sealed)

Annex B. Hazardous Waste Registration of 220kV Uyen Hung Substation

SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG
TỈNH BÌNH DƯƠNG
CHI CỤC BẢO VỆ MÔI TRƯỜNG

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

Bình Dương, ngày 30 tháng 01 năm 2015

SỔ ĐĂNG KÝ CHỦ NGUỒN THẢI CHẤT THẢI NGUY HẠI
Mã số QLCTNH: 74.000650.T
(Cấp lần 4)

I. Thông tin chung về chủ nguồn thải :

Địa chỉ văn phòng/trụ sở chính: Truyền tải điện Miền Đông 1 - Công ty Truyền tải điện 4.

Địa chỉ: số 18, đường 2A, Khu công nghiệp Biên Hòa 2, tỉnh Đồng Nai.

Điện thoại: 0612 211222 – 0612 211334 – 0612 211336 ; Fax: 0613 832366

Email: ktatmd1@gmail.com

Tài khoản số: 102010000268631 tại Ngân hàng thương mại cổ phần công thương Chi nhánh Khu công nghiệp Biên Hòa- Đồng Nai.

Giấy chứng nhận đăng ký kinh doanh số: 313823.

Ngày cấp: ngày 19 tháng 4 năm 2001.

Nơi cấp: Phòng Đăng ký kinh doanh –Sở Kế hoạch và Đầu tư tỉnh Đồng Nai.

II. Nội dung đăng ký :

Chủ nguồn thải CTNH đã đăng ký cơ sở phát sinh CTNH kèm theo danh sách CTNH và chất thải thông thường theo Phụ lục kèm theo.

III. Trách nhiệm của chủ nguồn thải:

1. Tuân thủ các quy định tại Luật Bảo vệ môi trường và các văn bản quy phạm pháp luật về môi trường có liên quan.

2. Thực hiện đúng trách nhiệm quy định tại Điều 25 Thông tư số 12/2011/TT-BTNMT ngày 14 tháng 4 năm 2011 của Bộ trưởng Bộ Tài nguyên và Môi trường.

3. Đăng ký cấp lại Sổ đăng ký chủ nguồn thải CTNH khi có các thay đổi, bổ sung, điều chỉnh theo quy định tại khoản 4 Điều 16 Thông tư số 12/2011/TT-BTNMT ngày 14 tháng 4 năm 2011 của Bộ trưởng Bộ Tài nguyên và Môi trường.

IV. Điều khoản thi hành:

Sổ đăng ký này có giá trị sử dụng cho đến khi cấp lại hoặc chấm dứt hoạt động và thay thế Sổ đăng ký có mã số QLCTNH: 74.000650.T cấp lần 3 ngày 07 tháng 10 năm 2014./.

Nơi nhận:
- Truyền tải điện Miền Đông 1;
- Lưu: VT, Mq3.

CHI CỤC TRƯỞNG

SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG TỈNH BÌNH DƯƠNG
CHI CỤC BẢO VỆ MÔI TRƯỜNG

Tào Mạnh Quân

10	Các loại chất thải khác có các thành phần nguy hại vô cơ và hữu cơ (hạt hút ẩm silicagel…)	Rắn	240	19 12 03	-
Tổng số lượng:			**509 kg**		

4.2. Danh sách chất thải thông thường đã đăng ký phát sinh thường xuyên:

Stt	Tên chất thải	Trạng thái tồn tại	Số lượng (kg/năm)
1	Chất thải rắn sinh hoạt	Rắn	2.304
Tổng số lượng:			**2.304 kg**

5. Cơ sở phát sinh CTNH 05 (đăng ký mới):

Tên: Trạm biến áp 220kV Uyên Hưng.

Địa chỉ: Khu phố 6, phường Uyên Hưng, thị xã Tân Uyên, tỉnh Bình Dương.

Điện thoại: 0650 3642986; Fax: 0650 3642985.

Giấy chứng nhận đăng ký kinh doanh số: 313823.

Ngày cấp: ngày 19 tháng 4 năm 2001.

Nơi cấp: Phòng Đăng ký kinh doanh - Sở Kế hoạch và Đầu tư tỉnh Đồng Nai.

5.1. Danh sách chất thải nguy hại đã đăng ký phát sinh thường xuyên:

Stt	Tên chất thải	Trạng thái tồn tại	Số lượng *(kg/năm)*	Mã CTNH
1	Cặn sơn, sơn thải	Lỏng	03	08 01 01
2	Hộp mực in thải có các thành phần nguy hại	Rắn	03	08 02 04
3	Bộ lọc dầu đã qua sử dụng	Rắn	03	15 01 02
4	Bóng đèn huỳnh quang thải	Rắn	06	16 01 06
5	Dầu truyền nhiệt và cách điện tổng hợp thải (của máy biến áp, tụ bù, máy cắt, kháng, biến điện áp, biến dòng điện)	Lỏng	120	17 03 04

6	Vật liệu lọc (bao gồm cả vật liệu lọc dầu), giẻ lau, vải bảo vệ thải bị nhiễm các thành phần nguy hại	Rắn	24	18 02 01
7	Thiết bị điện thải có HCFC, HFC (máy lạnh, tủ lạnh, máy nước nóng lạnh…)	Rắn	10	19 02 03
8	Các thiết bị, linh kiện điện tử thải (các bo mạch máy tính, card, diode, tụ điện, điện trở, điện thoại, máy bộ đàm, máy ảnh, ti vi, camera, máy in, máy fax, máy photo)	Rắn	70	19 02 06
9	Pin, ắc quy chì thải	Rắn	30	19 06 01
10	Các loại chất thải khác có các thành phần nguy hại vô cơ và hữu cơ (hạt hút ẩm silicagel…)	Rắn	240	19 12 03
		Tổng số lượng:	**509 kg**	

5.2. Danh sách chất thải thông thường đã đăng ký phát sinh thường xuyên:

Stt	Tên chất thải	Trạng thái tồn tại	Số lượng (kg/năm)
1	Chất thải rắn sinh hoạt	Rắn	2.304
		Tổng số lượng:	**2.304 kg**

6. Hồ sơ kèm theo Sổ đăng ký:

Bộ hồ sơ đăng ký "Kèm theo Sổ đăng ký chủ nguồn thải CTNH có Mã số QLCTNH: 74.000650.T do Chi cục Bảo vệ môi trường cấp lần 4 ngày 30 tháng 01 năm 2015" được Chi cục Bảo vệ môi trường đóng dấu xác nhận trên trang bìa và dấu giáp lai là bộ phận không tách rời kèm theo Sổ đăng ký này./.