Initial Environmental Examination

December 2015

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

Subproject: Second Transformer Bank for 500kV Cau Bong 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-cau-bong-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
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.

Table of Contents

List of Tables

List of Figures

I. EXECUTIVE SUMMARY

1. Recognizing the need to overcome constraints in the power sector due to the rapidly growing demand for electricity, the Government of Viet Nam (GOV) approved in 2011 the Power Development Master Plan (PDMP VII) consisting of multiple power generation and transmission projects to be implemented throughout the country from 2011 – 2020. The GOV has requested the Asian Development Bank (ADB) to support the financing of power transmission projects under the PDMP VII. The ADB approved the multi-tranche financing facility for the implementation of the Power Transmission Investment Program that includes expansion of Viet Nam's power transmission network through the construction and expansion 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. There are nine (9) subprojects which have been identified under Tranche 3.

2. One of the subprojects identified under Tranche 3 is the second transformer bank for the existing 500kV Cau Bong substation. A feasibility study was undertaken by PECC2 in 2014 which shows that the existing 500kV Cau Bong substation will be at risk of lacking capacity and that installation of additional equipment is necessary to meet the requirement of the power network in Ho Chi Minh City (HCMC) and adjacent provinces. 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.

3. The subproject will have an investment cost of US$77.06 billion. The SPPMB plans to implement the subproject in June 2016 for commissioning by January 2017.

4. The proposed subproject aims to:
   (i) Increase the capacity of the existing 500kV Cau Bong substation;
   (ii) Provide safe and reliable power network in HCMC and adjacent provinces such as TayNinh, Binh Duong, and Long An;
   (iii) Contribute to economic development in HCMC and surrounding provinces;
   (iv) Reduce the loss of power and energy in the system; and
   (v) Improve power quality.

5. The components of the subproject includes the installation of the 3 x 300MVA transformers including additional equipment fitted to the 500kV, 220kV, 35kV compartments at the existing substation. The substation is located at Tan PhuTrung commune, Cu Chi District, HCMC (Figure 1)

6. 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.

7. This IEE report is prepared for the extension of the 500kV Cau Bong substation 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.

8. Information in the IEE is based on reports prepared by thePower Engineering Consulting Joint Stock Company (PECC2), 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.

9. In general, the subproject is expected to result to beneficial impacts to the community in HCMC 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 impactsduring subproject implementation, which have to be considered in the design, construction and operational phases.

10. **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.

11. **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.

12. 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 andincludes institutional arrangements for its implementation to ensure its sustainability and effectiveness.

13. **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 March 25, 2015 at the Tan PhuTrung commune, Cu Chi District, HCMC. The participants to the public consultation meeting included commune leaders, representatives of mass organizations such as Women's Union and Farmer's Union, and affected people. A total of 56 participants attended the consultation meeting. Local authorities requested the subproject's construction Contractor to strictly comply with the mitigation measures during the construction phase of the substation. The stakeholders also requested full rehabilitation of drainage systems and irrigation canals after construction as well as the management of waste materials during the

operation of the substation. The stakeholders also warned about workers growing plants in the vicinity of the substation without permission of the land owner. The minutes of the public consultation meeting is presented in Appendix 2.

14. **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.

15. 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 GRMare presented in this IEE.

16. **Environmental Compliance Audit of Existing Substation.** In compliance with ADB SPS (2009), an environmental compliance audit was performed at the existing 500kV Cau Bong Substation located at Tan Phu Trung Commune, Cu Chi District, Ho Chi Minh City to determine existence of any areas where the existing project may cause or is causing environmental risks or impacts.

17. In general the existing 500kV Cau Bong substation 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 fire, explosions, line tripping and other incidents that may affect occupational and community 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.

18. For the subsequent environmental monitoring, the EMF levels at the substation and along the connection lines have to be measured to check whether levels are beyond the allowable limits on safety. The results of the EMF monitoring will be included in the subsequent environmental monitoring report to be submitted to DONRE and ADB.

19. The status of EMP implementation will also be included in the monitoring report of the Environment Officer aside from the regular monitoring of environmental parameters. The Environmental Officer will refer to the EMP developed for the substation. Furthermore, it is recommended that further training for PTC4 Environment Officer and Health and Safety Officer on the implementation of the EMP and H&S measures needs to be organized to increase their capacity on EMP measures, waste management, occupational and community health and safety.

20. On hazardous waste management, the substation will practice proper HW labeling. Likewise, the substation will commission only hazardous waste treatment facility with approved license from MONRE. 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.

21. Community consultation and coordination activities will be continued to ensure that the substation and the activities of staff are not causing adverse impacts on the local villagers. Previous complaints about improper solid waste dumping and planting at adjacent land by substation workers without permission of landowners will be monitored.

22. **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.

23. In compliance with the requirements of GOV Decree No. 29/2011/ND-CP dated April 18, 2011, the proposed extension of the 500kV Cau Bong substation is required to prepare and submit an EIA to the Department of Natural Resources and Environment (DONRE) of HCMC where the project is located. A Decision of Approval (Decision No. 227/QD-TNMT-CCBVMTdated December 17, 2014)on the EIA for the project was issued by the DONRE HCMC.

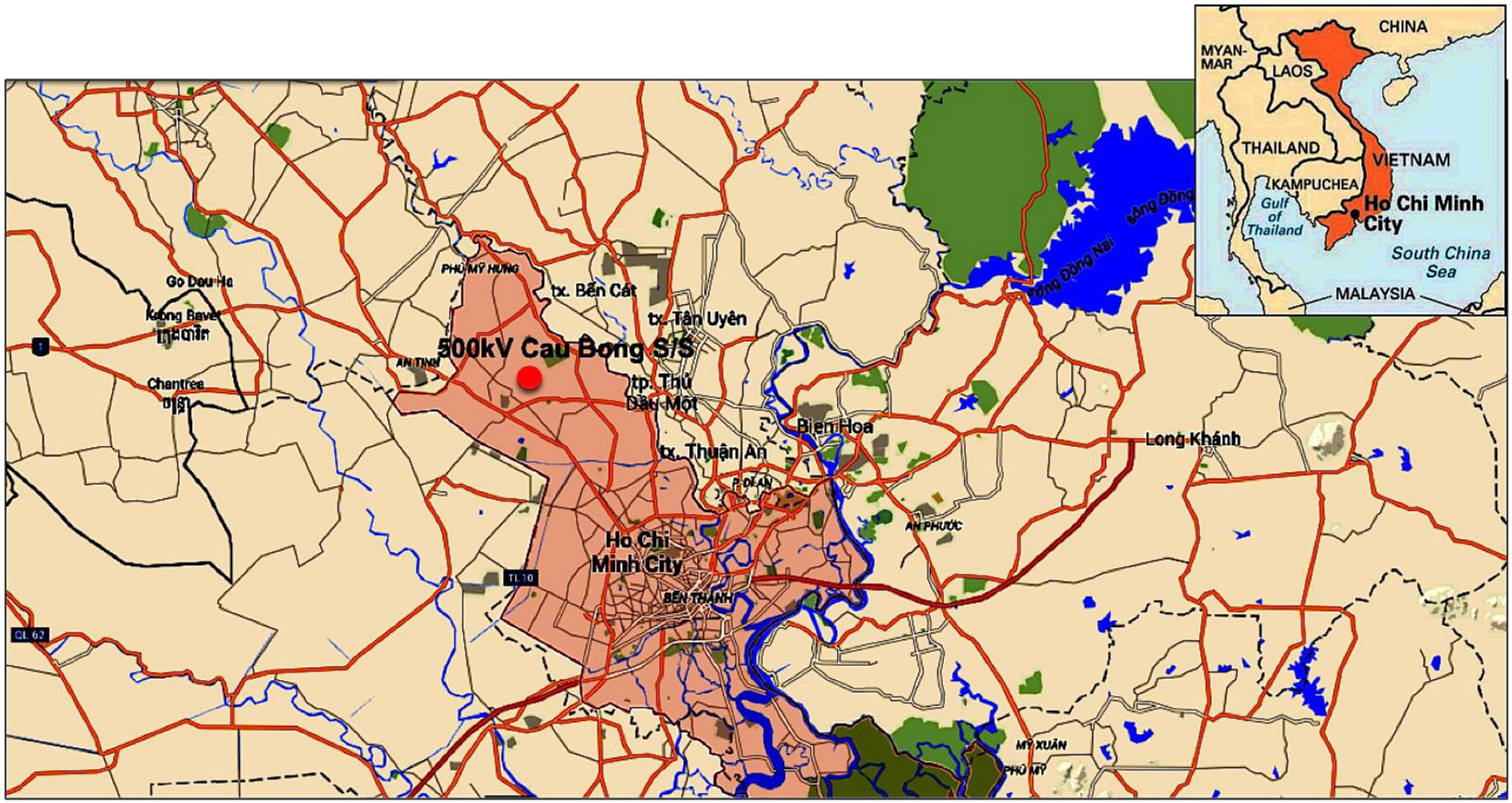


Figure 1: Location Map
Base map: http://www.googleearth.com

II. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

A. ADB'S Environmental Safeguards Policies

24. 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.

25. 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.

26. 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.

27. 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.

[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.

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

28. 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.

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

30. ADB also requires public disclosure for Category A and B projects. For Category A, there should 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 should 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

31. 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	

Laws and Regulations	Description
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.
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,	National technical regulation on surface water quality (QCVN 08.2008/BTNMT); Underground water quality (QCVN

Laws and Regulations	Description
2008	09/2008/BTNMT) and Domestic wastewater (QCVN 14/2008/BTNMT)

2. Environmental Assessment

32. Based on Decree No. 29/2011/ND-CPdated April 18, 2011, the extension of the 500kV substation 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 Ho Chi Minh City, where the project is located. The Decision of Approval of the project was issued by the People's Committee of HCMC (Decision Ref. No. 227/QD-TNMT-CCBVMT) on December 17, 2014. The Decision of Approval is presented in Appendix 3.

33. 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.

34. 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.

35. 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.

36. Under the new Decree No. 18/2015/ND-CP, dated Feb 14, 2015, the EIA requirements for investment projects were revised. The following 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

37. 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

38. The regulations regarding power supply and power network protection is prescribed in the Electricity Law No. 18/2004/QH11 ofDecember 3, 2004. In general, the law prescribeselectricity 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

39. 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.

40. 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

41. 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 Ho Chi Minh Citywhere the project substation is located.The EIA for the extension of the 500kV Cau Bong substation was approved under the Decision No. 227/QD-TNMT-CCBVMT on December 17, 2014 by the DONRE HCMC. The list of legal documents and approvals required for the project are shown in Table 5.

Table 5: Legal Documents and Approvals of the 500kV Cau Bong Substation

Documents and approvals	Description
Viet Nam Electric Group Decision No.1079/QD-EVN Date issued: 26 June 2008	Approval of construction investment project– "500 KV Cau Bong substation and its connection"
Department of Natural Resources and Environment of HCMC Decision No.227/QD-TNMT-CCBVMT Date issued: 11 February 2015	Approval of EIA report for the project "Installing the second transformer for 500KV Cau Bong substation"
Centre of environment and treatment of mines of Military Command Zone 5 Document No: 01/BMMT Date issued: 15 January 2013	Verifying the completion of workload on mine and explosive clearance for the 500KV substation and its connection.

III. DESCRIPTION OF THE PROJECT

42. 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.

43. Nine subprojects have been identified for inclusion under Tranche 3. The provision of additional power equipment to be installed at the existing 500kV Cau Bong Substation is one of the subprojects under Tranche 3.

A. Sub-Project Scope

44. The subproject will involve the installation of 3 x 300MVA transformers including additional equipment fitted to the 220kV, 110kV and 35kV compartments. Improvement inthe substation's existing capacity will aid in meetingincreasing electricity demand in HCMC and adjacent provinces of TayNinh, Binh Duong, and Long An. The subproject is expected to enhance the stability of power supply, provide safe operation of the electric line network, and meet the growing demand for electricity for the socio-economic development in the southern area of Viet Nam.

45. The substation covers an area of 155,051 m^2, inLang Cat village, Tan PhuTrung commune, Cu Chi District, HCMC. It is situated about 2km from the Highway No. 22 and about 2.4km from the An Ha Bridge. The site is surrounded by paddy fields of Tan PhuTrung commune.

46. The existing substationcurrently consists of the operation building, lodging house, security post, water station, fire pump house, internal roads, and switchyard area. A space has been allocated within the substation for the second transformer.

47. The 500kV Cau Bong Substation was constructed in 2012 and started operating in April 2014. The substation is supplied by the transmission line grids, namely, Pleiku-My Phuoc-Cau Bong transmission line, Dak Non-Cau Bong Transmission Line, and Tan Dinh-Cau Bong transmission line. The current operation of the substation transmits power to the 500kV Cau Bong – Phu Lam, 220kV Cau Bong – Cu Chi transmission lines, and 110kV Lang Cat substation. The substation currently has 3 x 300MVA transformers for 500/220/35 kV and 2 x 250MVA transformers for 220/110/22kV.

48. Through the subproject, the substation will be equipped with another 900MVAcapacity (3x300MVA power transformers)and related equipment in the switchyard intended for this subproject.Aside from the second transformer, related equipment that will be installed consists of the surge (lightning) arrester, power and control cables, feeders and additional support equipment such as fire extinguishers and emergency oil spill containment. The equipment currently in the substation will function as is.

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

50. **Transformer.** The specifications for the transformers are as follows:

- Capacity ratio: 500/220/35kV – 3 x 300MVA
- High voltage winding: 500kV, 220kV, 110kV
- Medium voltage winding: 35kV, 22kV
- Low voltage winding: 380/220V.
- 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.

Existing transformers

Access road to substation

Operation house

Switchyard

Photo 1. Existing equipment and facilities at the 500kV Cau Bong Substation

Figure 2: Layout of the 500kV Cau Bong Substation

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

52. **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

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

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

B. Project Schedule and Activities

55. The construction of the transformer pad and installation of the transformer pads and associated facilities will be undertaken within a period of four months (Table 6).

Table 6: Implementation Schedule

No	Work content	Tentative work schedule			
		1st	2nd	3rd	4th
I.	**Preparation time**				
II.	**Foundation construction**				
1	Foundation excavation				
2	Foundation reinforcement				
III.	**Foundation concrete**				
1	Reinforce and iron preparation				
2	Foundation concrete and fill ground				
3	Cable channel				
IV.	**Erection of steel poles**				
V.	**Equipment installation**				
VI.	**Trial and completion**				
VII.	**Verification and hand over**				

1. Pre-Construction

56. Since the substation already exists and has an allotted area for the additional transformers, 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.

57. 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

58. Construction activities include the civil works for the foundation for the transformer pads, gate tower, electric box, cable trench, oil containment system, and the installation of equipment. 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 four months.

59. **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.

60. **Transport of construction materials**. Construction materials will be purchased locally. Transportation distance will just be about 2 km from Highway No. 22 and 2.4 km from An Ha Bridge. The National Highway 22 and commune road going to the substation will be used as main access roads. The commune road is a gravel-paved road where there is ongoing bridge construction and drainage improvements.

Photo 2: Access road to substation

61. **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.

62. **Wastewater and stormwater management.** The substation has a sewer system for the domestic wastewater from the operation building. Stormwater collection pits are also 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.

63. **Construction equipment and materials**. Building materials will include use of cement, sand, gravel, steel and wooden formwork. Major equipment such as trucks for carrying other equipment and building materials will be utilized. These equipment will include crane (10 tons and 90 tons) for positioning transformer, concrete mixer, mortar mixer, concrete needle and platform vibrator, water pump, excavator, vacuum pump, welding machine, among others.

3. Operation

64. The substation will operate with an increase of capacity due to the additional transformers. Similar procedures for checking and maintenance during operation will be implemented for the additional transformers. 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 insulating 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 23 officers and employees will operate the entire substation. All other existing systems of the substation together with the additional transformers 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 transformers.

IV. DESCRIPTION OF THE ENVIRONMENT

65. 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 additional transformers at the 500kVCau Bong 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

66. 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].

67. The Cau Bong substation is located at Long Lat village, Tan PhuTrung commune, Cu Chi district, Ho Chi Minh City. The city is bordered by the Binh Duong Province on the north; by TayNinh Province on the northwest; by Dong Nai Province on the east and northeast; by Ba Ria-Vung Tau Province on the southeast; and by Long An and Tien Giang provinces on the west and southwest.[4]

68. Cu Chi District is one of the suburban districts of HCMC, located at the northwestern section of the province. It has a total land area of 435km^2. The district consists of one town (Cu Chi Town) and 20 communes.[5]. The 500 kV Cau Bong Substation is located at the southern part of Cu Chi District.

69. The area within the immediate vicinity of the substation is sparsely populated. The nearest household to the substation site is located about 4km away. Rice paddy field and irrigation canals border the substation(Figure 3).

B. Topography

70. The substation is at an area where the surrounding environment is relatively flat and low, with elevations ranging from -0.5m to 2.7m. At the planned location of the additional transformers, the ground has already been leveled to an average height of 2.39m, compared to the natural elevation.

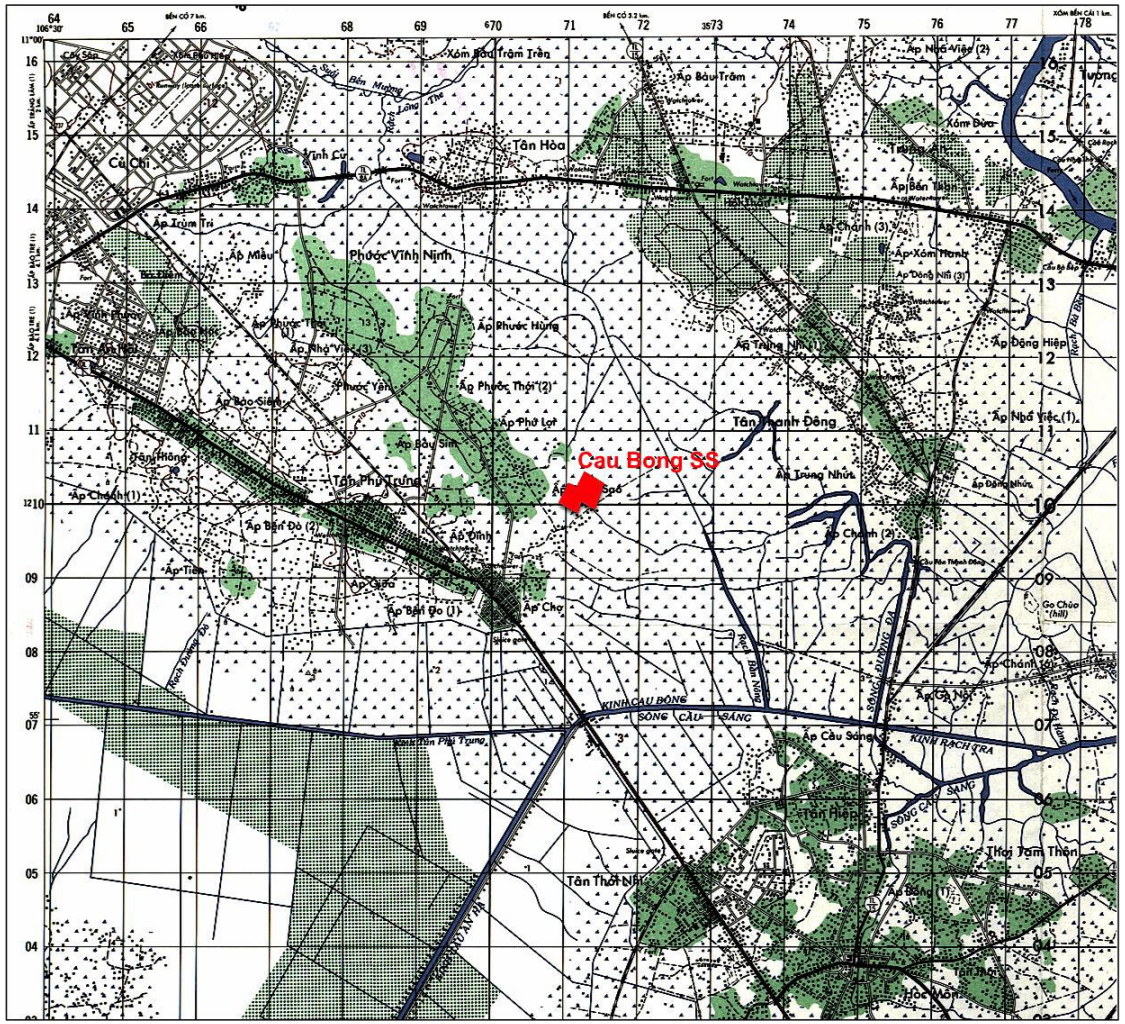
71. In general, the topography of HCMC is located in the transitional zone between southeast plains and the Mekong delta. Topography is lower from the north to the south and from west to east. The location of the 500kV Cau Bong substation is on the flood plain of Saigon River and formed from accumulated relief that is overlain by deep quaternary period deposits of clay, clay loam, sand and sandy clay which overlie the Holocene bedrock. Figure 4 present the topographic map of the Cu Chi area.

[3] Viet Nam National Administration of Tourism. The Socialist Republic of Viet Nam. http://vietnamtourism.com/e_pages/country/overview.asp

[4] HoChiMinh City. Integrated Information Network on internet of HCM City. Ho Chi Minh People's Committee. http://www.eng.hochiminhcity.gov.vn/abouthcmcity/

[5] Cu Chi District. http://en.wikipedia.org/

Figure 3: Vicinity Map of 500kV Cau Bong Substation
Base Map: https://www.google.com/maps



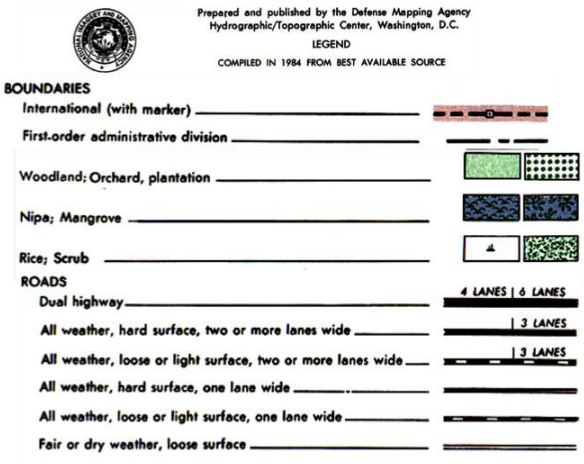


Figure 4: Topographic Map

Base Map: Topographic Map, Ho Chi Minh Viet Nam, 1:50,000 Defense Mapping Agency, Washington, D.C.; www.lib.utexas.edu

C. Geology

72. Soil investigation at the site was performed by field exploratory drilling, up to a depth of 30m (PECC2, 2014). Based on the results of the soil analysis, the subsurface structure is composed of three classes, as follows:

a) Class 1: surface soil with thickness of 7.7 – 10m. Contains gray and brown sludge, clayey and in liquid state, saturated with water together with vegetation. Humus, and shell fragments.

b) Class 2: lies beneath Class 1, with thickness varying from 10.5m – 10.8 m. Contains gray clay, yellow gray, and while, soft plastic state and moderately hard.

c) Class 3: lies below Class 2 to a depth of 30m. Contains coarse grained sand, gray-brown, sandy loam, yellowish gray.

D. Climate

73. The subproject area is situated in the Southern Climate Zone, which is characterized by tropical monsoon climate with high temperatures and very little seasonal variation. Climate data were taken from Tan Son Nhat and Tan Son Hoa meteorological stations, the nearest meteorological stations to the substation site.

74. **Temperature.** Air temperature is high and do not vary much all year round. Annual average temperature is 26 – 28°C. The difference between the hottest month and the coldest month is about 3 – 4°C. Average temperature in the coldest month is above 24°C (Table 7).

Table 7: Average Temperature at Tan Son Nhat and Tan Son Hoa Meteorological Stations,

Station	Temperature	Average Temperature, °C												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Tan Son Nhat (long-term average)	T_{max}°C	36.4	38.7	39.4	40.0	39.0	37.5	35.2	35.0	35.3	34.9	35.0	36.3	40.0
	T_{min}°C	13.8	16.0	17.4	20.0	20.0	19.0	16.2	20.0	16.3	16.5	15.9	13.9	13.8
	$T_{average}$°C	26.0	26.8	28.0	29.2	28.8	27.8	27.5	27.4	27.2	27.0	26.7	26.0	27.4
Tan Son Hoa (2011)	$T_{average}$°C	26.9	27.6	28.3	29.11	29.5	28.5	27.9	28.4	28.1	28.1	28.1	27.2	28.1

Sources: Data from Tan Son Nhat station, National technical regulation on natural condition data in construction, QCVN 02:2009/BXD and Data of Tan Son Hoa station, Statistical Yearbook 2011 of HCMC.

75. **Sunlight Hours.** The average number of sunlight hours in HCMC is fairly high as compared to other provinces in the country. The number of sunlight hours in a year is 1,800 – 2,500 hours. Table 8 shows the average number of sunlight hours observed in Tan Son Hoa and Tan Son Nhat meteorological stations.

Table 8: Average number of sunlight hours

Station	Average Sunlight Hours, hour												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Tan Son Nhat	245	246	272	239	195	171	180	172	162	182	200	226	2489

Station	Average Sunlight Hours, hour												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Tan Son Hoa (2011)	120.1	188.9	157.8	187.0	165.0	163.6	162.6	198.1	144.8	154.3	141.0	109.7	1892.2

Sources: Data from Tan Son Nhat station, National technical regulation on natural condition data in construction, QCVN 02:2009/BXD and Data of Tan Son Hoa station, Statistical Yearbook 2011 of HCMC.

76. **Humidity and Rainfall.** The area is humid and there is little difference in rainfall between the monsoon seasons. Annual average humidity is about 78% - 82%. Rainfall regime is divided into two seasons, i.e., rainy season from May to October and dry season from November to April. Maximum rainfall in the region is 20mm per day. The total annual average rainfall in the region is from 1,800mm to 2,000mm (Table 9).

Table 9: Monthly and annual average rainfall and humidity in Tan Son Nhat Station

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Rainfall, mm	12	4	13	51	207	294	307	281	305	291	135	28	1926
Humidity (%)	72.0	70.0	70.0	72.0	79.0	82.0	83.0	83.0	85.0	84.0	80.0	77.0	78.0

Sources: Data from Tan Son Nhat station, National technical regulation on natural condition data in construction, QCVN 02:2009/BXD and Data of Tan Son Hoa station, Statistical Yearbook 2011 of HCMC.

77. **Wind.** From November to April, the wind is mainly from the northeast and dry while from May to October, the wind is mainly from the southwest and brings heavy rainfall to the low-lying plains and eastern slopes of Truong Son Mountains. The annual average wind speed recorded at Tan Son Nhat is 2.8m/s. The high number of thunderstorm days is mainly in the rainy season from May to October. (Table 10).

Table 10: Wind velocity and number of thunderstorm-days in Tan Son Nhat Station

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Wind velocity (m/s)	2.3	3.1	3.6	3.3	2.5	2.7	2.9	3.8	2.7	2.2	2.2	2.0	2.8 (average)
Number of thunderstorm-days (day)	0.0	0.3	0.2	2.0	11.0	8.0	13.0	9.0	9.0	8.0	6.0	1.0	67.5 (total)

Sources: National technical regulation on natural condition data in construction, QCVN 02:2009/BXD

78. 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 Tan PhuTrung, the month of September registered the highest average monthly rainfall (313 mm). From May to November, average rainfall was 171 mm from 1990 - 2009. The months of December to April registered below 30 mm, with February being the least (4.97 mm). In these months, thetemperature pattern increased, with January the least (25.44^{o}C) and April the highest (28.76^{o}C). (Figure 5).

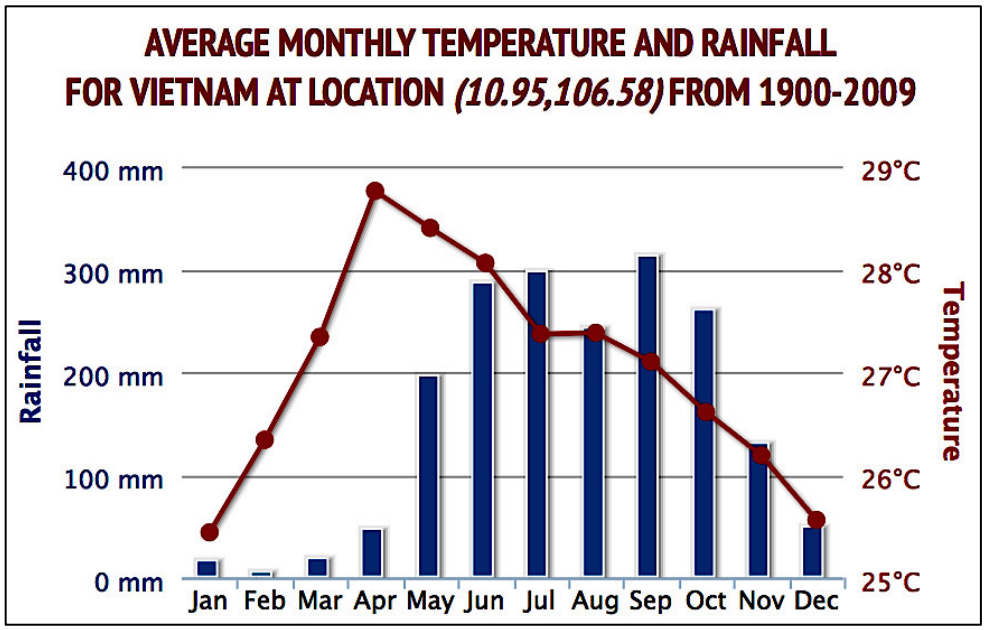


Figure 5: Average monthly temperature and rainfall at Tan PhuTrung, Cu Chi District, Ho Chi Minh City from 1990 – 2009

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

79. **Surface Water.** The 500kV Cau Bong substation is surrounded by irrigation canals on the southern and eastern section. There are about 35 canals, with a total length of 38 km in the province. About 13,625 km is concreted. The canal network is distributed throughout the agricultural areas of the commune to serve as both drainage and irrigation system for the intensive rice cropping of the flood plain areas. Similarly, flood levels and the tidal effects from the Saigon River and Vam Co Dong River also influence the water level in the canals. However, based on different studies on flooding in HCMC, the Cau Bong substation area is not considered as vulnerable to flooding risks.

Irrigation canal at eastern area of S/S

Irrigation canal at southern area of S/S

Photo 3: Irrigation canals adjacent to the 500kV Cau Bong Substation

80. **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 communitiesin the surrounding area is through pumping.

81. **Wastewater**. The substation has its own sewer system that collects the domestic wastewater from its operations. There are 23 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 ETC in October 2014. All parameters analyzed are within the effluent standards as prescribed by QCVN 14:2008/BTNMT (Table 11).

Table 11: Representative wastewater quality sampling at 500kV Cau Bong Substation

No.	Parameters	Unit	Result	QCVN 14:2008/BTNMT, ColumnB, K-1.2)
1	pH	-	7.82	5 – 9
2	TSS	mg/L	51.6	120
3	BOD_5	mg/L	42.1	60
4	Nitrate	mg/L	19.41	60
5	Phosphate	mg/L	5.20	12
6	Coliform	MPN	4,400	6,000
7	Oil & grease	mg/l	2.36	24
8	Ammonia	mg/l	6.17	12
9	COD	mg/l	63.8	-

Notes: QCVN 14: 2008/BTNMT: National Technical Regulation on Domestic Wastewater; pH – acidity/alkalinity; TSS – total suspended solids; BOD5 – biological oxygen demand (5 days); MPN – most probable number; mg/L – milligram per liter; COD – chemical oxygen demand

Source: Environment Technology Service Study Centre (ETC), October 10, 2014.

F. Air and Noise Quality

82. Ambient air quality and noise sampling was also performed by Environment Technology Service Study Centre (ETC). Sampling was conducted on October 10, 2014. The representative samples were taken at three (3) sampling stations, namely: KK1: near the gate of 500kV Cau Bong substation; KK2: proposed area for the second transformer; and KK3: near the operations building of the substation.

83. **Ambient Air Quality.** Total suspended particulates (TSP), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and carbon monoxide(CO) were analyzed. Table 12 presents the results of the ambient air quality sampling.

Table 12: 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)
KK1	Near substation gate	0.16	0.043	0.064	3.25
KK2	Proposed area for second transformer	0.15	0.068	0.071	4.10
KK3	Near operations building	0.08	0.042	0.034	2.37
QCVN 05:2013/BTNMT		0.3	0.35	0.2	30

Source: Environment Technology Service Study Centre (ETC), October 10, 2014

84. Results show that air quality in the area is good and that all parameters are below the permitted levels.

85. **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. At night (2100H to 0500H), the level is expected to be lower.

Table 13: Noise Level Measurements

Sampling Station	Description	Noise, dBA
KK1	Near substation gate	61.1
KK2	Proposed area for second transformer	64.3
KK3	Near operations building	60.7
QCVN 05:2013/BTNMT		70

Source: Environment Technology Service Study Centre (ETC), October 10, 2014

G. Electromagnetic Field

The electric field intensity was measures at the same monitoring stations (KK1, KK2, and KK3) in October 2014. The results show that within the 500kV Cau Bong substation, the electric field intensity is within allowable levels and therefore are safe for workers working in the substation. The results of the EMF measurements are presented in Table 14.

Table 14: Electromagnetic Field Intensity within 500kV Cau Bong Substation

No	Position	Results (kV/m)	Decree 14/2014/NDD-CP
1	KK1	0.020	≤ 5kV/m
2	KK2	4.730	≤ 5kV/m
3	KK3	0.579	≤ 1kV/m (inside houses)

Source: Environment Technology Service Study Centre (ETC), October 10, 2014

H. Biological Resources

1. Flora

86. Tan PhuTrung commune in Cu Chi District is mainly an agricultural area. The agricultural land in these areas is mainly grown with crops, vegetables, and rice. There are no rare plant species found in the substation and immediate vicinity of the project. Rice paddy fields border the site almost in all directions.

Rice land at the northern area of the substation

Riceland at the eastern area of the substation

Vegetation at the southern area of the substation

At the northern section of the substation

Photo 4: Typical vegetation surrounding the 500kV Cau Bong Substation

2. Fauna

87. 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.

I. Land Use

88. The installation of the additional transformers at 500kV Cau Bong substation will not directly affect land uses anymore since the facility is already existing and operational.

89. The vicinity is characterized as agricultural land (Figure 6). However, there may be impacts associated with land use changes brought about by the project. There are existing industrial zones in the commune such as the Tan PhuTrung Industrial Park as well as other planned industrial zones. Agricultural land continuous to be converted for industrial or residential uses. Figure 7 presents the industrial zones in Ho Chi Minh City.

1. Ecologically protected areas

90. There are no ecologically protected or conservation areas in the vicinity of the substation.

2. Cultural and heritage sites

91. There are no temples and other public infrastructure found within the immediate vicinity of the substation. Some are found outside the vicinity, at a distance of more than 2km. A list of sites in the area and distance from the substation is shown in Table 15.

Table 15: Historical Buildings and Public Infrastructure within 500m of 500kV Cau Bong Substation

No	Distance from center line (km)		Name of infrastructure	Location
	Left	Right		
1	3		CPC's office	912 highway 22, Tan PhuTrung
2	3		Primary school	Dinh village, Tan PhuTrung
3	3		Health station	Tan PhuTrung township
4		2	Kindergarten No 1	Dinh village, Tan PhuTrung
5		3	Bac Doan Church	Dinh village Tan PhuTrung
6		3	Lien Tri Temple	Cho village, Tan PhuTrung

Source: PECC2

3. UXO Contaminated areas

92. 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, prior to the development of the 500 kV Cau Bong Substation, demining of UXO was investigated and surveyed by the Center of Environment and Treatment of Mines of the Military Command Zone No. 5. The report on the completion of the demining was issued on January 15, 2013.

J. Socio-Economic Condition

1. Population

93. As of 2013, the population of Tan PhuTrung commune is 30,926 persons, of which 15,869 (51%) are female and 15,507 (49%) are male. The population is distributed in the 11 villages of the commune. Majority of the population belong to the Kinh group with 99.8% and the rest are the minority groups composed of Khmer and Cham ethnic groups.

2. Economy

94. Tan PhuTrung commune belongs to the Cu Chi district which is an outskirt district of HCMC to the north. It has a relatively high percentage of urbanization. The economy of the commune is focused on industry, with 42%; trade services with 42%; agriculture with 12%; and other enterprises with 4%. The average income per capita per year is D22,000,000, which is high as compared with the other communes in Cu Chi district.

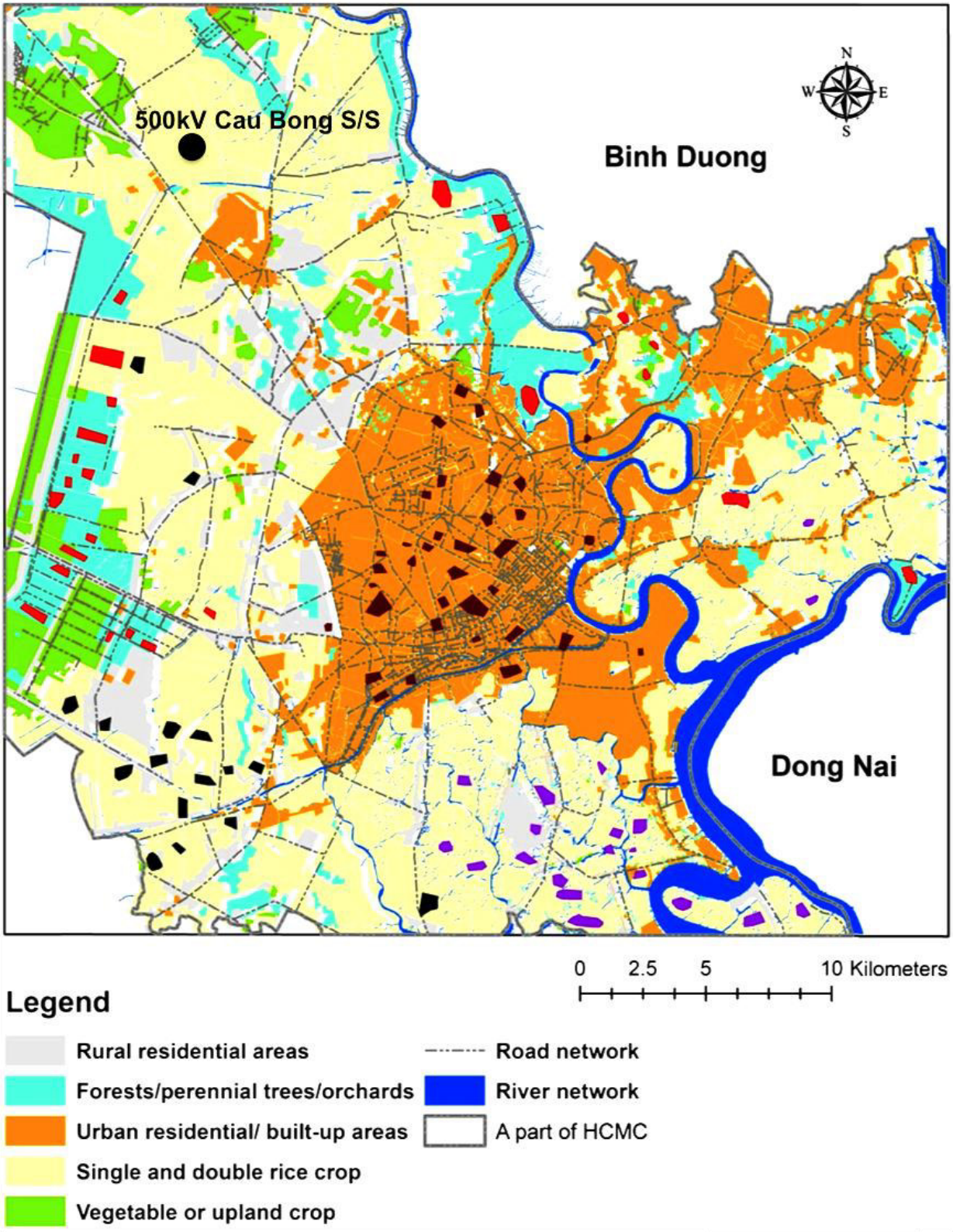


Figure 6: Land Use Map
Base Map: http://www.remotesensing.spidigitalibrary.org

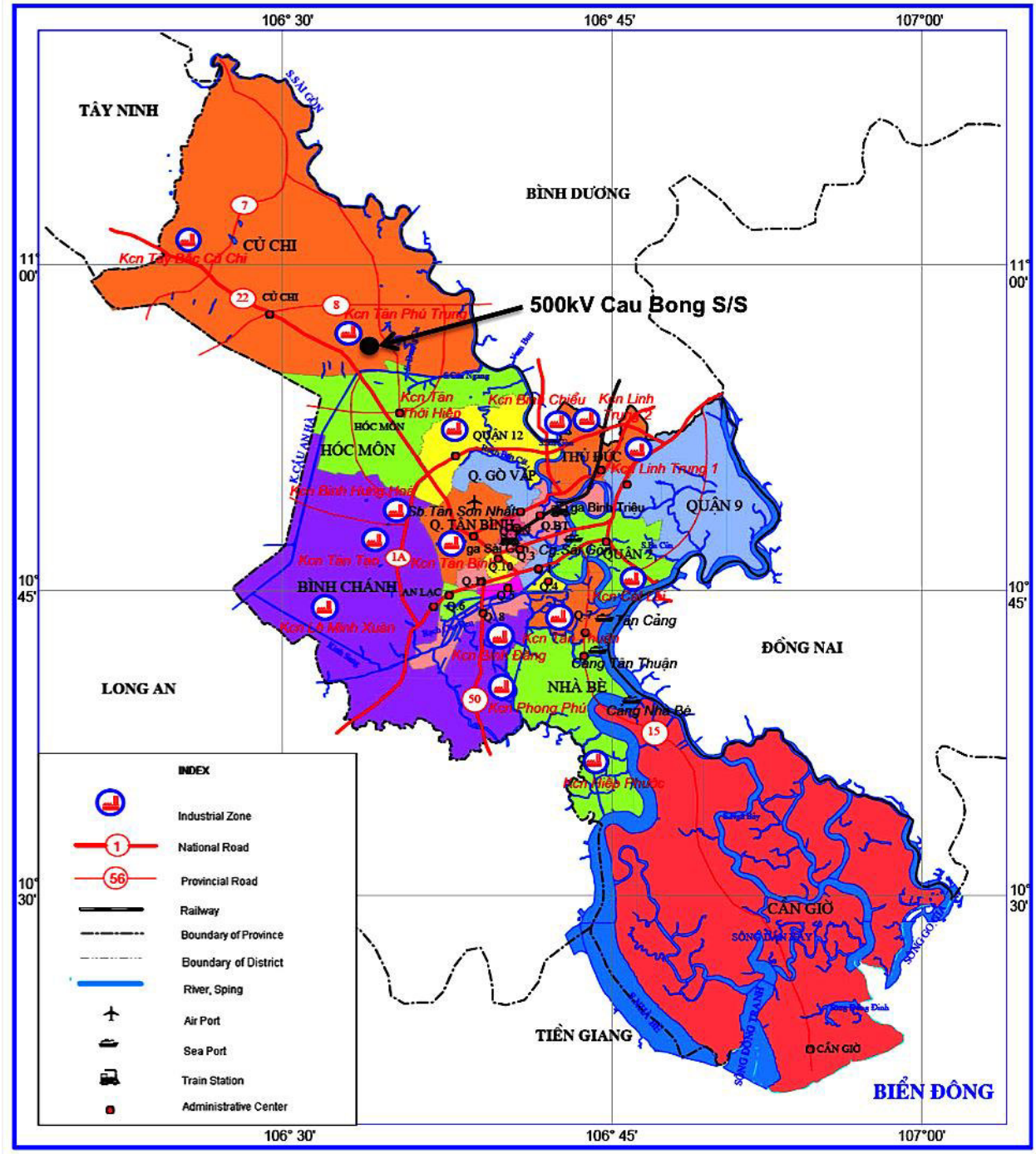


Figure 7: Location of Industrial Parks in Ho Chi Minh City
Base Map: http://investinvietnam.vn

95. For the agricultural sector, agricultural land is about 1,700 ha, accounting for 55% of the total area of the commune. Unsuitable land for agriculture has been converted for growing crops, bonsais, vegetables and for livestock raising on a large scale. Because of the high rate of urbanization, agricultural land has been greatly reduced and remaining open spaces are used for the development of industrial zones, trading and services.

96. The commune has 40 medium and small enterprises, mostly located in the Tan PhuTrung industrial zone. The industrial zone employs more than 500 laborers. Handicraft industry in the area is focused on producing rice paper by hand. Recently, some households have expanded their production with machines.

97. Trade and services businesses are within the residential areas and are focused on restaurants and hostels.

3. Power and Water Supply

98. Tan PhuTrung commune is serviced by the Kenh Dong water treatment plant with capacity of 200,000 m^3/day. Electricity of the commune is supplied from Hoc Mon 220/110kV substation and Lang Cat 110kV substation and several intermediate transformers of 110/22kV. All households in the commune have access to electricity.

4. Health

99. **HealthcareFacilities**. The location of Cau Bong substation is close to HCMC which means that the communities have good access to medical services. Local medical facilities include healthcare stations at the commune level, which has first aid and medical assistance services for minor illnesses and maternal services. Medical emergencies are referred to district hospitals and the Asian Transit Hospital, located in the commune, while the more complex surgery is carried out in the main hospitals in HCMC.

100. **HIV/AIDS**. The incidence of HIV/AIDS in HCMC is the highest in Viet Nam. According to the "Analysis and Advocacy" project of the USAID, the total number of people living with HIV in HCMC is expected to rise from 72,400 in 2006 to 89,900 in 2010 and 105,800 in2020. In 2006, there were about 4,800 new AIDS cases in HCMC. In 2012, there were about 1,099 new cases, which is 18.5% of the total new cases in the entire country.[6] The number of people with HIV is 49,429 people according to statistics in the first quarter of 2012. Table 16 presents the HIV/AIDS statistics.

Table 16: 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
BinhPhuoc	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

[6] According to the report No. 755/BC-BYT, Ministry of Health dated September 4, 2012

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	
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/

5. Education

101. There are lot of schools of general education in HCMC. The commune has 5 schools, including 2 kindergartens, 2 primary schools and 1 secondary school. The percentage of high school graduates at the primary and secondary schools in 2013 reached 100% and 98.82%, respectively.

6. Communications

102. Many telephone networks such as Vietel and VNPT telecoms serve the area. Communication services are conveniently available.

7. Transportation

103. Infrastructure development for transportation is constantly being improved in the area to improve access and the standard of living of people. The road network is reasonably well-developed throughout the subproject area. A network of provincial, district, commune and village roads serve the community. Roads in the substation area is linked to many important roads such as the Highway No. 22 and Provincial Road No. 2, which are then linked to district and commune roads.

104. The commune has 193 roads with a total length of 110.29 km. The road to the project area from Highway No. 22 is a two lane road which is gravel paved. There is an ongoing construction of the bridge going to the substation site.

V. INFORMATION DISCLOSURE, CONSULTATION AND PARTICIPATION

A. Methodology

105. Formal disclosure to stakeholders about the installation of the additional transformers at the 500kV Cau Bong 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

106. 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) PECC2, and (v) commune leaders.The Project EA and PECC2provided 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

107. Formal community consultation meetings were held to discuss the location and potential impacts on the environment and people of the extension of the 500kV Cau Bong substation. The community consultation meeting was held on March 25, 2015 at the Commune People's Committee office in Tan PhuTrung, Cu Chi district, HCMC.

108. 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) The social/resettlement consultants presented ADB's resettlement policy, impacts due to acquisition of land and properties, policies of the GOV and local authorities, the subproject's policies on compensation as required by the State; and
d) Open discussion of issues and concerns by the stakeholders.

B. Issues and Concerns Raised During the Public Consultation

109. During the meeting, the participants raised their questions and comments on the subproject. The PECC2 consultants answered and explained all questions to the participants. The majority of the concerns raised about environment were related to site rehabilitation and garbage management during the operational phase. The following are the comments raised during the consultation meeting held last March 2015:

a) The commune authorities request that the SPPMB should comply strictly with the mitigation measures during construction and operation phases.
b) The site should be fully rehabilitated including the drainage system from construction activities.
c) The access road to the substation may impact the irrigation canals of paddy fields along the road.
d) Workers of substation often use the land outside of the substation for growing trees without permit of the land owner.
e) Wastes are not well-managed by the workers of the existing substation.

110. The summary of the comments and questions from the authorities and local people and the responses from the consultants are summarized in Table 17. Concerns raised during the consultation meetings are taken into account in the subproject design and implementation.

Table 17: Summary of Issues and Concerns Raised by Stakeholders and Responses from Consultants and SPPMB

Location and time	Comments/questions from local authorities[7]	Responses of SPPMB and consultants	Project Response[8]
Tan PhuTrung commune on March 25, 2015	Project owner must comply with all mitigation measures during construction and operation phases	The project owner and its contractors will comply with the mitigation measures to meet the requirements of community.	Agree with local comments and the response of consultants.The project owner will incorporate all mitigation measures developed in IEE/EMP and all local comments into bidding document, select those who have capacity and experience both in technical requirements and implementation of the EMP, conduct internal

[7] Questions, issues raised during public consultation meetings recorded in table as received
[8] Issues to be addressed by EMP

Location and time	Comments/questions from local authorities[7]	Responses of SPPMB and consultants	Project Response[8]
			and external environmental monitoring to correct any shortcomings immediately with an aim to protect the environment and comply with the requirements of the community.
	Request that the site is fully rehabilitated after completion of construction	The project owner and its contractors will rehabilitate site after completing construction to ensure that the irrigation system will not be clogged.	
	Workers in the substation must manage garbage more properly during operation phase.	Project owner committed to collecting and treating garbage as regulated to avoid impacts on the surrounding environment.	
Conclusion	Tan PhuTrung People's Committee (CPC) and affected households agree and will support the construction of the extension of the 500KV Cau Bong substation.		Follow-up consultations of community views of subproject will occur.

C. Follow-up Stakeholder Consultations

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

112. As part of the information disclosure strategy, the IEE/EMP 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

113. 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.

114. 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

115. Currently, the 500kV Cau Bong substation supplies electricity to HCMC and nearby areas. The subproject will ensure development of power 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, 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

116. 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 additional transformers.

C. Impacts and Mitigation during Construction Phase

117. 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 rice fields and irrigation canals, 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

118. **Impacts.** There will be excavation of soil for the transformer pads and oil containment system of the additional transformers. The excavated soil will be utilized as backfill materials, hence, will not require significant borrow materials.

119. 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 clayey which has high 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.

120. Soil runoff to the drainage system of the substation is expected to be highly probable. Runoff may be transported to the irrigation canals and creeks causing sedimentation and turbidity, i.e. deterioration of water quality. The adjacent rice plantations may be affected by soil runoff coming from the construction activities at the substation site.

121. **Mitigation Measures.** Although the substation has a stormwater 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 and from reaching the adjacent irrigation canals. 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

122. **Impacts.** Air quality can be affected by the operation of vehicle and equipment, excavation and backfilling of soil, and transport of materials. 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.

123. 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.

124. **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

125. **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 but may create minor nuisance.

126. 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. The nearest household is too far from the substation to be affected by noise during construction. Noise will be primarily confined within the substation site and the immediate vicinity (agricultural rice land).

127. **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.
b) Install suitable mufflers on engine exhausts when appropriate
c) Maintain regularly all vehicle and equipment to ensure good-working 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

128. **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 rice plantations and irrigation canals will be protected against disposal of any waste materials as requested during the consultation meeting at the commune.

129. **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

130. **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.

131. **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

132. **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 the 2-lane commune road to the substation and Highway No. 22 and Provincial Road No. 2, will be used and large vehicles containing special loads may cause traffic if unplanned and uncontrolled.

133. Road degradation particularly of the commune road 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.

134. **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

135. **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.

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

137. **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

138. **Impacts.** It is expected that there will be disruption in the operation of the existing 500kV 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 of the new transformers. The temporary disruption, if any, will only occur for a short period and would not last very long.

139. **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.

140. 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

141. The site is already a disturbed habitat. There are no environmentally sensitive areas in the immediate vicinity of the subproject site.

10. Impact on Culturally Sensitive Areas

142. The subproject will not affect any culturally sensitive area such as mosques, temples, and burial sites since the additional transformers 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

143. The potential impacts of the operation and maintenance of the new transformers 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

144. **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.

145. 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.[9] Furthermore, electric utility workers have higher exposure to EMF than the general public because of working in close proximity to electric power lines.

146. 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.

147. **Mitigation Measure.** Once the subproject is turned over by SPPMB to PTC4, all matters related to the operation and maintenance of extension 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 reminders 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.

148. 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.

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

2. Generation of domestic and hazardous wastes

149. **Impacts.** Chemicals that are commonly handled in the transmission lines and substationare 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 repairof 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.

150. 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. The communities have raised the problem of waste disposal by substation workers during the consultation meeting held last March 2015. It was reported that the wastes are indiscriminately thrown by workers at the adjacent rice fields. It is therefore important for the substation workers and PTC4 to observe good housekeeping at the substation and to avoid disposal of the waste materials at adjacent areas.

151. **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.

152. 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 agricultural land.

3. Emergency Preparedness at Substation

153. **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.

154. **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.

155. 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.

156. 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 Facilities

157. An environmental compliance audit at the existing 500kV Cau Bong substation was conducted to ensure that potential construction or operational impacts of the proposed installation of the additional transformers will be managed alongside impacts of the existing substation. The environmental due diligence on the existing 500kV Cau Bong substation is presented in Appendix 6.

5. Cumulative Impacts

158. The operation of the existing substation and the proposed installation of the additional transformers are expected to result to beneficial social impacts to the community, particularly in HCMC and adjacent provinces, 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. The remaining agricultural land of Tan PhuTrung commune may be converted and developed into industrial or residential areas.

6. Climate Change

159. The sensitivity of the 500kV Cau Bong 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 Tan PhuTrung commune and HCMC. The substation is well-drained which limits exposure to increased flooding from increased severity and frequency of rainfall events. The substation site is not within a flood-prone area (Figure 8). In addition, the substation site is not sensitive to frequency and severity of typhoons and storm surge.

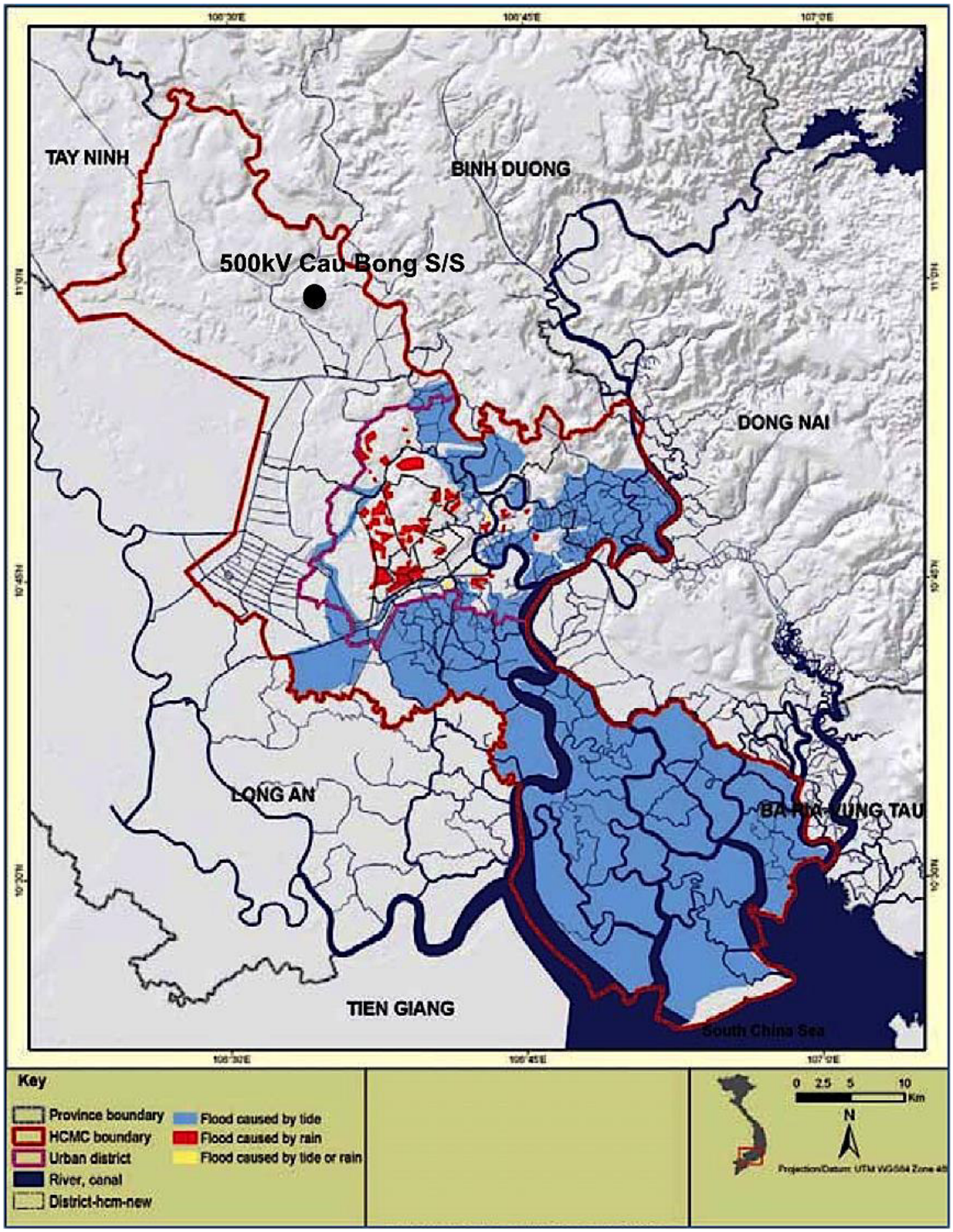


Figure 8: Areas subject to flooding in Ho Chi Minh City

Source: Ho Chi Minh City, Adaptation to Climate Change, Summary Report. Asian Development Bank. 2010 and http://www.icem.com.au/

VII. GRIEVANCE REDRESS MECHANISM

A. Type of Grievances

160. 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

161. 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.

162. 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.

163. 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.

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

165. **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.

166. **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.

167. **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.

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

169. **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

170. 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.

171. 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.

172. 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.

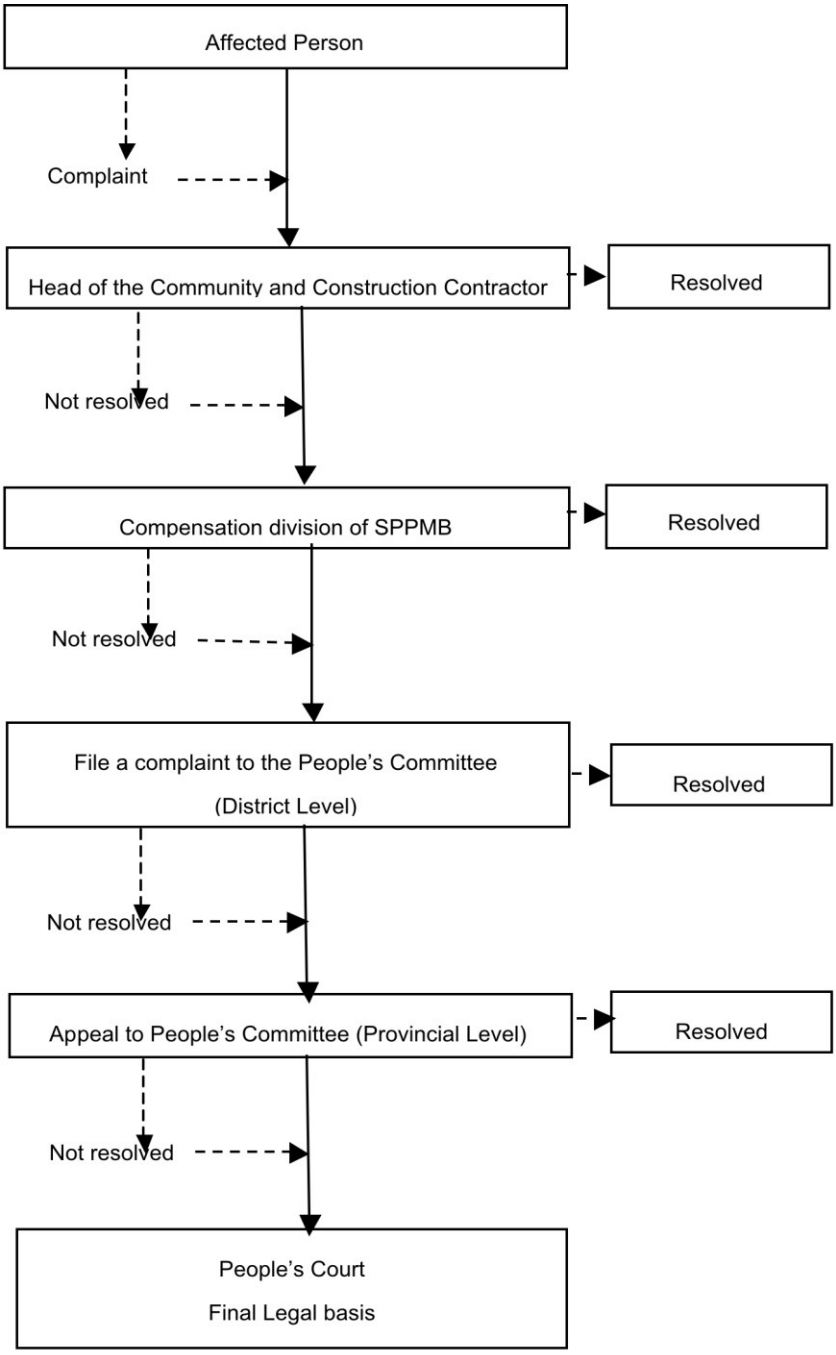


Figure 9: Steps in the Grievance Resolution Process

VIII. ENVIRONMENTAL MANAGEMENT PLAN

173. This Chapter presents the mitigation and management measures for the installation and operation of the additional transformers at the 500kV Cau Bong 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

174. 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)

175. 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.

176. 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.

177. 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)

178. 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.

179. With regard 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.

180. 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.

181. 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) Ensure the monitoring of environmental parameters specified in the EIA/IEE report through the EMC
g) Consolidate the monthly monitoring reports prepared by the Contractor and EMC and prepare the quarterly environmental monitoring reports for submission to NPT/EVN.

3. Power Transmission Corporation No. 4 (PTC4)

182. 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.

183. 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) Through the EMC, 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.

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

Table 18: 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. • 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, 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. • 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

185. 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 19: 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 20: 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 Damage to rice fields and irrigation canals	Inspect if runoff of soil flows into nearby rice fields and irrigation canals. Schedule excavation work during the dry season. Cover stockpile of excavated soil Install silt traps, deviation channels mounting, barriers or trenches around the stock piles.	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 activities	Noise levels from equipment and machinery shall conform to the GOV standard for noise limits and WB EHS standards Property maintain machinery to minimize noise	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
		No construction shall be allowed between nighttime hours of 22:00 to 06:00 Require 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 educate workers about the Hazardous Chemicals Management Plan in the CEMP through training and orientation. • Provide workers with PPE.			

Environmental Aspect	Potential Impact	Options for Prevention or Mitigation or Enhancement	Responsible Entity	Cost	Guarantee/ Financial Arrangements
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 ricefields • 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. • Inform and educate workers about the Waste Management Plan in the CEMP through training and orientation.	SPPMB / Contractor	Part of construction cost	Include EMP in bid documents and contract
Traffic hazard and road	Risks to community health and safety and	Contractor will be required to prepare Traffic Management Plan in the CEMP. Measures to be	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
degradation	road degradation due to movement of heavy vehicles during transport of materials and equipment.	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.			
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	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. 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	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
		• Provide appropriate and accessible fire 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 21: 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 signs. Warn personnel of potential electric arc flash hazards when inspecting or working with energized equipment.	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
		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, 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	PTC4 thru the Environment Officer	Part of the operational cost	Hazardous waste storage area Registration of hazardous waste with MONRE Reports of hazardous waste generated, stored and disposed.

Environmental Aspect	Potential Impact	Options for Prevention or Mitigation or Enhancement	Responsible Entity	Cost	Guarantee/ Financial Arrangements
		Undertake labeling of hazardous wastes Register all generated hazardous waste with MONRE and regularly report storage and disposal measures.			
Emergencies and accidents	Possible fire events, explosion of equipment, lightning 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

186. Considering that the substation is already operational, the environmental monitoring program at identified monitoring stations at the 5000kV Cau Bong substation will be adopted during the construction phase and will continue when the additional transformers 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. The following tables present the proposed environmental monitoring plan of the subproject during the construction and operations phases.

Table 22: 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: near the entrance gate 2: area near the construction site for additional transformers 3: near the operations building	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 soil, exhaust gases from equipment/vehicles and complaints	Construction site	Inspection and checking of implementation of air emission and dust control plan Check validity of operating permit before vehicle/equipment can be used on site	Daily Inspection before vehicle/equipment use on site	EHS Officer of Contractor	SPPMB / ESU
	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	Weekly, continuous throughout construction period	EHS Officer of Contractor	SPPMB / ESU

Item	Monitoring Parameter	Location of Monitoring	Method of Monitoring	Monitoring Frequency	Implementing Entity	Supervising Entity
			villagers on comments on dust pollution			
Noise	Noise levels, dB	1: near the entrance gate 2: area near the construction site for additional transformers 3: near the operations building	Use noise meter; compare results with QCVN 26:2010/BTNMT	Daily or everytime 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: near the entrance gate 2: area near the construction site for additional transformers 3: near the operations building	Use vibration meter; compare results with QCVN 27:2010/BTNMT	Daily or everytime high-vibrating equipment is used	EMC in coordination with EHS Officer of Contractor	SPPMB / ESU
	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,	Construction site and at adjacent rice fields and	Inspection and checking of waste management and	Daily	EHS Officer of Contractor	SPPMB / ESU

Item	Monitoring Parameter	Location of Monitoring	Method of Monitoring	Monitoring Frequency	Implementing Entity	Supervising Entity
	inert construction waste, presence of leaks/spills and complaints	irrigation canals	hazardous chemicals / waste management			
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 23: 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 Environment 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 Environment Officer of substation	PTC4
Soil quality	Pb, Zn, As, Cd, oil/grease	Transformer area Hazardous/toxic material storage area	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 Environment Officer of substation	PTC4
Air quality	PM_{10}, TSP, SOx, NOx, CO	1: near the entrance gate 2: near transformer area 3: near the operations building	24-hours continuous ambient air sampling and laboratory testing; compare results with QCVN 05:2013/BTNMT	Every 6 months	EMC in cooperation with Environment Officer of substation	PTC4
Noise	Noise levels, dB	1: near the entrance gate 2: near transformer area 3: near the operations building	Use noise meter; compare results with QCVN 26:2010/BTNMT	Every 6 months	EMC in cooperation with Environment Officer of substation	PTC4

Item	Monitoring Parameter	Location of Monitoring	Method of Monitoring	Monitoring Frequency	Implementing Entity	Supervising Entity
Electromagnetic field	EMF, kV/m	Near operation 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 domestic waste management and hazardous chemicals / waste management Check hazardous waste manifest, waste labels and permits Check indication of spills	Daily	EMC in cooperation with Environment 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	At least monthly review of substation's health and safety plan implementation Once a month	EMC in cooperation with Health and Safety Officer of substation	PTC4

D. Reporting

187. **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 the 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.

188. 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.

189. 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.

190. **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.

191. The following presents the reporting plan.

Table 24: 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 implementation and	NPT/EVN	ADB	As provided in the legal agreements

Type of Report	Basic Content	Prepared by	Submitted to	Frequency
	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

192. 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

193. 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 25.

Table 25: Activities and Indicative Cost for Environmental Management for Extension of 500kV Cau Bong Substation

Activity Type	Estimated Cost (USD)
Construction Phase	
Environmental quality monitoring	$5,000.00
Community consultation and coordination	$1,000.00
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 Officers	$2,000.00
Total	**$11,000.00**

Note: (a) Cost for environmental monitoring of the subproject will form part with the environmental monitoring program of the existing 500kV Cau Bong substation.

IX. CONCLUSION AND RECOMMENDATIONS

194. The environment assessment process has highlighted the environmental issues and concerns on the proposed extension of the 500kV Cau Bong substation. The assessment has considered that the subproject would result to improvements in the current power supply situation in HCMC and nearby provinces. 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).

195. 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. Construction activities may also generate impacts and damage on adjacent rice fields, irrigations canals and along commune access roads to the site. 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.

196. During the operation of the additional transformers and the entire substation, in general,the main impacts identified are hazards to occupational health and safety and generation of domestic and 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.

197. 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 500kV Cau Bong 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?			
• Cultural heritage site		X	No cultural or historical heritage sites are affected. The substation is already existing.
• Protected Area		X	The substation does not interfere with any protected area.
• Wetland		X	The substation does not interfere with any wetland land.
• Mangrove		X	Not applicable
• Estuarine		X	Not applicable
• Buffer zone of protected area		X	The substation does not intrude into the buffer zone of any protected area.
• Special area for protecting biodiversity		X	Not applicable
B. Potential Environmental Impacts Will the Project cause…			
Encroachment on historical/cultural areas, disfiguration of landscape and increased waste generation?		X	Not applicable
encroachment on precious ecosystem (e.g. sensitive or protected areas)?		X	Not applicable

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	Not applicable. The transformer will be installed inside the premises of Cau Bong substation.
damage to sensitive coastal/marine habitats by construction of submarine cables?		X	Not applicable
deterioration of surface water quality due to silt runoff, sanitary wastes from worker-based camps and chemicals used in construction?	X		Improper management of excavated soils may cause runoff of sediments into the adjacent irrigation canals. 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	Minor impact is anticipated during excavation and filling works. The substation is located away from residential areas.
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. During operation phase, Decree No.14/2014/ND-CP dated 26 February 2014 regulating on safety in power will be strictly applied by the operational companies.
chemical pollution resulting from chemical clearing of vegetation for construction site?		X	Not applicable
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	

Screening Questions	Yes	No	Remarks
dislocation and compulsory resettlement of people living in right-of-way of the power transmission lines?		X	
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.
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 health at 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 500kV Cau Bong Substation

Sector :Energy

Subsector:

Division/Department: SERD

Screening Questions		Score	Remarks[10]
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: _____

[10] 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 500kV Cau Bong Substation

Location: Tan PhuTrungTown, Cu Chi District, HCMC
Date: March 25, 2015

The comments/questions of local authorities/people, and the answers of subproject owners and consulting company PECC2 are summarized in attached table. The main concerns on the subproject are as follows:

i. Request that the project owner should comply strictly the mitigation measures during construction and operation phases
ii. Request that the site is fully rehabilitated including sewage drainage from construction activities.
iii. Several problems generating after completion of substation construction should be concerned to deal with include:
- The access road to the substation may impact on the irrigation canals of paddy field along the road;
- Workers of substation often use the land outside the vicinity of substation for growing trees without permission of the land owner.
- Recreational waste is not well managed by the workers during the operation phase.

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

Summary of Public Questions, and Response by PECC2, and Subproject

Location and time	Comments/questions from local authorities[11]	Answers of Project owners and consultants company PECC2	Project Response[12]
Tan PhuTrung commune on 25th of March 2015	Project owner must comply with all mitigation measures during construction and operation phases	The project owner and its contractors will absolutely comply with the mitigation measures to meet the requirement of community.	Agreed with local comments and the response of consultants, the project owner will incorporate all mitigation measures developed in IEE/EMP and all local comments into bidding document, select those who have capacity and experience both in technical requirements and implementation of the EMP, conduct internal and external environmental monitoring to correct any shortcomings immediately with an aim to protect the environment and meet local wishes.
	Request that the site is fully rehabilitated after completion of construction	The project owner and its contractors will be in compliance with rehabilitation of site after completing construction to ensure not blocking irrigation system.	
	Request that workers in the substation must manage garbage more properly during operation phase.	Project owner committed to collecting and treating garbage as regulated without impacting on the surrounding environment.	
Conclusion	Tan PhuTrung People's Committee (CPC) and affected households agree and will support the construction of the second transformer to increase the capacity of 500KV Cau Bong substation.		Follow-up consultations of community views of subproject will occur.

[11] Questions, issues raised during consultation meetings recorded in table as received
[12] Issues to be addressed by EMP

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
--------***--------

TP.HCM....., Ngày 25 tháng 3 năm 2015

BIÊN BẢN HỌP THAM VẤN CỘNG ĐỒNG VỀ ĐÁNH GIÁ MÔI TRƯỜNG

Tiểu dự án: Lắp máy 2 Trạm 500kV Cầu Bông.....
Phường/Xã Tân Phú Trung..., Quận/Huyện Củ Chi.....Thành phố Hồ Chí Minh

1. Thành phần tham dự

- Ông/Bà.....Đặng Văn Hưng.....Chức vụ .....PCT xã.....
- Ông/Bà.....Nguyễn Văn Thông.....Chức vụ .....trưởng ấp Lớn Cát
- Ông/Bà.....Phan Thanh Tùng.....Chức vụ .....Cán bộ địa chính
- Ông/Bà.....Nguyễn Văn Thuỹ.....Chức vụ .....Cán bộ địa chính
- Ông/Bà.....Trương Hoàn Dung.....Chức vụ .....Tư vấn ADB
- Ông/Bà.....Nguyễn G Minh Hoàng..... Chức vụ .....tư vấn điện.....
- Ông/Bà.....Huỳnh Thị Vàng..... Chức vụ .....Cán bộ môi trường xã
- Ông/Bà..... Chức vụ .....
- Đại diện những người bị ảnh hưởng: .....người (*chi tiết xem danh sách đính kèm*)

2. Nội dung tham vấn

- ***Tư vấn thiết kế giới thiệu dự án***: Vị trí và quy mô trạm biến áp trên địa bàn phường, xã.
- ***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 xã hội và môi trường xảy ra.

3. Ý kiến thảo luận

3.1 Về các tác động môi trường tiêu cực và biện pháp giảm thiểu

- Về cơ bản thống nhất về các tác động tiêu cực của việc lắp máy 2 của trạm biến áp
- Đồng ý về các biện pháp giảm thiểu trong quá trình thi công trạm như đưa ra trong phần trình bày

Minutes of Stakeholder Consultation (March 25, 2015), page 1

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

- Chủ đầu tư và đơn vị thi công cần lưu ý hơn đến giai đoạn vận hành của dự án

3.2 Về các biện pháp giảm thiểu

- Thống nhất về các biện pháp giảm thiểu đã đề ra trong phần trình bày và báo cáo
- Đơn vị thi công cần làm tốt công tác hoàn trả mặt bằng.
- Một số vấn đề phát sinh sau khi hoàn thành trạm điện bao gồm:

  a) Đường vào trạm cản trở việc tiêu thoát của mương rãnh tại hai bên đường.

  b) Trạm điện lấn đất của mương liền kề trạm để trồng cây cho trạm.

  c) Việc quản lý rác thải của trạm điện chưa tốt

Minutes of Stakeholder Consultation (March 25, 2015), page 2

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

4. Kết luận

- Chính quyền địa phương và người dân đồng ý với việc xây dựng dự án mở rộng Trạm 500 kV Cầu Bông
- Chủ đầu tư và đơn vị thi công cần thực hiện tốt các biện pháp giảm thiểu đã đề ra.
- Các tác động trong giai đoạn vận hành dự án cần được giảm thiểu để đảm bảo đời sống của người dân và môi trường khu vực dự án
- Tuy nhiên, qua thảo luận với các bên và quan sát hiện trường, phần lớn các tác động kể trên không thuộc phạm vi dự án đang xem xét và do đó là không phù hợp để kiến nghị với chủ đầu tư và cơ quan tài trợ.

Đại diện Chủ đầu tư	Đại diện cộng đồng	Đại diện tư vấn	Đại diện UBND xã
	Nguyễn Văn Thông	Nguyễn Lê Hải	KT. CHỦ TỊCH PHÓ CHỦ TỊCH Đặng Văn Hùng

Minutes of Stakeholder Consultation (March 25, 2015), page 3

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

PUBIC CONSULTATION ON ENVIRONMENT

THAM VẤN CỘNG ĐỒNG VỀ MÔI TRƯỜNG

LIST OF PARTICIPANTS
DANH SÁCH NGƯỜI THAM DỰ

Date (Ngày tháng): 25/03/2015
Location (địa điểm):

No. TT	Họ và tên (Name)	Nam (M)	Nữ (F)	Chức vụ (Position)	Cơ quan/Địa chỉ (Organization/Address)	Chữ ký (Signature)
1	Trương Văn Cung	√			62 Giồng Cát. Ấp Lang Cát	
2	Trần Văn Phát	√			Ấp Phú lợi	
3	Trần Văn Đế	√			Ấp Lang Cát	
4	Huỳnh Thị Hải		√		Ấp Lang Cát	
5	Nguyễn Thị		√		Ấp Giồng Sau	
6	Phương Mai					
7	Trần Ngọc Dung		√		Ấp Lang Cát	
8	Lý Thị Hường		√		Ấp Trạm Bơm	
9	Lâm Văn Thắt	√			Ấp Cây Da	
10	Nguyễn Văn Rê	√			Ấp Lang Cát	
11	Nguyễn Văn Hải	√			Ấp Giồng Sau	
12	Huỳnh Văn Phú	√			Ấp 8 Xáo Đôi	
13	Nguyễn Thị Lăng				//	
14	Đặng Văn Triết	√			Ấp Giồng Sau	
15	Trần Văn Nhẻ	√			Ấp Phú Lợi	
16	Trần Thị Tấn		√		Ấp Lang Cát	
17	Trần Văn Hùng	√			Ấp Chà	
18	Nguyễn Thị Vỏ		√		Ấp Chà	
19	Lê Văn Xôi	√			Ấp Lang Cát	
20	Huỳnh Công Phá	√			Ấp Trạm bơm	
21	Đặng Văn Thuận	√			Ấp Trảng Đôi	
22	Võ Văn Hực	√			Ấp Lang Cát	

Attendance List (March 25, 2015), Page 1

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

PUBIC CONSULTATION ON ENVIRONMENT

THAM VẤN CỘNG ĐỒNG VỀ MÔI TRƯỜNG

LIST OF PARTICIPANTS
DANH SÁCH NGƯỜI THAM DỰ

Date (Ngày tháng): 25/03/2015
Location (địa điểm):

No. TT	Họ và tên (Name)	Nam (M)	Nữ (F)	Chức vụ (Position)	Cơ quan/Địa chỉ (Organization/Address)	Chữ ký (Signature)
23	Nguyễn Thị Lành		✓		Ấp Láng Cát	
24	Bùi Thị Lời		✓		Ấp Chộ	
25	Đinh Văn Đức	✓			Láng cát	
26	Phạm Công Tạo	✓			Phú Lợi	
27	Lê Thị Hết		✓		Xóm Đồng	
28	Lê Văn Lê		✓		Ấp Cây Da	
29	Phạm Văn Đen		✓		Ấp Cây Da	
30	Đặng Văn Trung		✓		Láng Cát	
31	Nguyễn Văn Mát		✓		Ấp Giữa	
32	Nguyễn Thị Khiết		✓		Chòng Sao	
33	Nguyễn Thị Đạt		✓		Cây Da	
34	Trần Văn Đực	✓			Ấp Chộ	
35	Nguyễn Thị Cải		✓		Láng Cát	
36	Nguyễn Thị Kim		✓		Phú Lợi	
37	Bùi Văn Thơm	✓			Cây da	
38	Nguyễn Văn Tâm	✓			Xóm Đồng	
39	Phạm Văn Phúc	✓			Cây Da	
40	Phạm Thế Sa		✓		Láng Cát	
41	Đỗ Thị Dung		✓		Láng Cát	
42	Nguyễn Thu Thanh		✓		Láng Cát	
43	Nguyễn Ngọc Anh	✓			KP 2	
44	Trần Thị Liễu		✓		Ấp 2	

Attendance List (March 25, 2015), Page 2

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

PUBIC CONSULTATION ON ENVIRONMENT

THAM VẤN CỘNG ĐỒNG VỀ MÔI TRƯỜNG

LIST OF PARTICIPANTS
DANH SÁCH NGƯỜI THAM DỰ

Date (Ngày tháng): 25/05/2015
Location (địa điểm):

No. TT	Họ và tên (Name)	Nam (M)	Nữ (F)	Chức vụ (Position)	Cơ quan/Địa chỉ (Organization/Address)	Chữ ký (Signature)
45	Võ Văn Ninh	√			Ấp Lang Cát	
46	Huỳnh Ngọc Tân	√			Ấp Trần Bàm	
47	Trần Văn Tới	√			Ấp Giồng Sau	
48	Nguyễn Văn Phát	√			Ấp Lang Cát	
49	Nguyễn Văn Ngọ	√			Ấp Chợ	
50	Trần Thị Bói		√		"	Bói
51	Trần Thị Thoảng		√		Ấp Lang Cát	
52	Nguyễn Thị Xích		√		Ấp Giồng Sau	
53	Trần Văn Giáp	√			Ấp Giồng Sau	Giáp
54	Lê Văn Giờn	√			Ấp Giồng Sao	
55	Trần Thị Thanh		√		"	
56	Trần Thị Huộc		√		Lang Cát	Huộc

Attendance List (March 25, 2015), Page 3

Stakeholder Meeting in Tan Thu Trung, Cu Chi District (March 25, 2015)

Appendix 3: EIA Approval Letter for Extension of 500kV Cau Bong Substation by HCMC DONRE

ỦY BAN NHÂN DÂN
THÀNH PHỐ HỒ CHÍ MINH
SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG

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

Số: 227 /QĐ –TNMT–CCBVMT

Tp. Hồ Chí Minh, ngày 21 tháng 01 năm 2015

QUYẾT ĐỊNH

Về việc phê duyệt Báo cáo đánh giá tác động môi trường dự án "Lắp máy biến áp thứ 2 trạm biến áp 500KV Cầu Bông" tại huyện Củ Chi của Ban quản lý Dự án các công trình Điện Miền Nam

GIÁM ĐỐC SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG THÀNH PHỐ HỒ CHÍ MINH

Căn cứ Luật Bảo vệ môi trường ngày 29/11/2005;

Căn cứ Nghị định số 29/2011/NĐ-CP ngày 18/4/2011 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 18/07/2011 của Bộ Tài nguyên và Môi trường quy định chi tiết một số điều của Nghị định số 29/2011/NĐ-CP ngày 18/4/2011 của Chính phủ quy định về hướng dẫn về đánh giá môi trường chiến lược, đánh giá tác động môi trường, cam kết bảo vệ môi trường;

Căn cứ Quyết định số 121/2003/QĐ-UB ngày 18/7/2003 của Ủy ban nhân dân thành phố về việc thành lập Sở Tài nguyên và Môi trường;

Căn cứ Quyết định số 04/2012/QĐ-UBND ngày 31/01/2012 của Ủy ban nhân dân thành phố về việc chuyển đổi mô hình tổ chức Chi cục Bảo vệ môi trường thuộc Sở Tài nguyên và Môi trường;

Theo đề nghị của Hội đồng thẩm định Báo cáo đánh giá tác động môi trường dự án "Lắp máy biến áp thứ 2 trạm biến áp 500KV Cầu Bông" tại xã Tân Phú Trung, huyện Củ Chi, Thành phố Hồ Chí Minh, họp ngày 17/12/2014 tại Sở Tài nguyên và Môi trường;

Xét nội dung Báo cáo đánh giá tác động môi trường dự án "Lắp máy biến áp thứ 2 trạm biến áp 500KV Cầu Bông" tại xã Tân Phú Trung, huyện Củ Chi đã được chỉnh sửa, bổ sung kèm văn bản giải trình số 0812/AMN-ĐB ngày 30/01/2015 của Ban quản lý Dự án các công trình Điện Miền Nam;

Theo đề nghị của Chi cục trưởng Chi cục Bảo vệ môi trường,

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 500KV Cầu Bông tại xã Tân Phú Trung, huyện Củ Chi, thành phố Hồ Chí Minh được lập bởi Ban quản lý Dự án các công

trình Điện Miền Nam (sau đây gọi là Chủ dự án) với các nội dung chủ yếu sau đây:

1. Phạm vi, quy mô Dự án:

1.1. Phạm vi: Dự án được triển khai trong khuôn viên Trạm biến áp 500kV Cầu Bông hiện hữu tại xã Tân Phú Trung, huyện Củ Chi, Thành phố Hồ Chí Minh. Tổng diện tích mặt bằng Trạm biến áp là 103.145,5 m^2.

1.2. Quy mô:

- Lắp mới 01 máy biến áp 500/220/35kV, công suất 900MVA.

Phía 500kV: lắp đặt 01 ngăn lộ 500kV với các thiết bị 500kV phục vụ đóng cắt, đo lường cho lộ tổng phía 500kV của máy biến áp lắp mới, đấu nối lên thanh cái 500kV.

Phía 220kV: lắp đặt 01 ngăn lộ 220kV với các thiết bị 220kV phục vụ đóng cắt, đo lường cho lộ tổng phía 220kV của máy biến áp lắp mới, đấu nối lên thanh cái 220kV.

- Bổ sung tủ bảng cho hệ thống điều khiển bảo vệ.
- Cấu hình lại hệ thống điều khiển bảo vệ trạm cho phần lắp đặt mới.

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

2.1. Thực hiện các biện pháp giảm thiểu, xử lý ô nhiễm trong giai đoạn thi công xây dựng đối với bụi, tiếng ồn, rung, khí thải, nước thải, chất thải rắn đảm bảo đạt các Quy chuẩn kỹ thuật quốc gia về môi trường theo QCVN 05:2013/BTNMT; QCVN 06:2009/BTNMT, QCVN 26:2010/BTNMT, QCVN 27:2010/BTNMT, QCVN 14:2008/BTNMT; có biện pháp giảm thiểu tác động tới hoạt động giao thông khu vực dự án trong suốt quá trình thi công xây dựng của Dự án;

2.2. Xây dựng tách riêng hệ thống thoát nước mưa và nước thải; có biện pháp thu gom, xử lý nước thải sinh hoạt phát sinh từ giai đoạn vận hành của Dự án đảm bảo đạt Quy chuẩn kỹ thuật quốc gia về nước thải sinh hoạt QCVN 14:2008/BTNMT (cột B, K=1,2) và đấu nối đúng quy định vào hệ thống thoát nước khu vực; xây dựng hố ga sau xử lý thuận tiện cho công tác kiểm tra, giám sát;

2.3. Bố trí khu vực lưu chứa chất thải rắn thông thường và nguy hại riêng biệt. Phân loại, lưu giữ và hợp đồng với các đơn vị có chức năng để thu gom, vận chuyển, xử lý chất thải rắn thông thường và nguy hại theo đúng quy định;

2.4. Thực hiện các biện pháp giảm thiểu tác động do điện từ trường, an toàn nối đất cho các hộ dân trong hành lang an toàn lưới điện;

2.5. Thực hiện các biện pháp an toàn lao động, các phương án phòng chống và ứng phó sự cố cháy nổ, điện giật, sự cố rò rỉ dầu từ máy biến áp, đảm bảo an toàn trong công tác quản lý, vận hành, sửa chữa và bảo dưỡng các công trình điện;

2.6. Thực hiện chương trình quản lý môi trường trong suốt quá trình thi công xây dựng và hoạt động của Dự án. Thực hiện chương trình giám sát môi trường, báo cáo kết quả giám sát môi trường định kỳ cho Sở Tài nguyên và Môi trường (Chi cục Bảo vệ môi trường) và các cơ quan chức năng.

Điều 2. Ban quản lý Dự án các công trình Điện Miền Nam có các trách nhiệm sau đây:

1. Lập, phê duyệt và niêm yết công khai kế hoạch quản lý môi trường của Dự án trước khi triển khai Dự án.

2. Thực hiện nghiêm túc các yêu cầu về bảo vệ môi trường quy định tại khoản 2 Điều 1 Quyết định này và các trách nhiệm khác theo quy định của pháp luật về bảo vệ môi trường.

3. Lập hồ sơ đề nghị kiểm tra, xác nhận việc đã thực hiện các công trình, biện pháp bảo vệ môi trường phục vụ giai đoạn vận hành của Dự án gửi cơ quan có thẩm quyền kiểm tra, xác nhận trước khi đưa Dự án vào vận hành chính thức.

Điều 3. Trong quá trình thực hiện nếu Dự án "Lắp máy biến áp thứ 2 trạm biến áp 500KV Cầu Bông" tại xã Tân Phú Trung, huyện Củ Chi 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 Sở Tài nguyên và Môi trường.

Điều 4. Quyết định phê duyệt báo cáo đánh giá tác động môi trường dự án "Lắp máy biến áp thứ 2 trạm biến áp 500KV Cầu Bông" tại xã Tân Phú Trung, huyện Củ Chi của Ban quản lý Dự án các công trình Điện Miền Nam là căn cứ để quyết định việc đầu tư 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. Quyết định này có hiệu lực thi hành kể từ ngày ký. Quyết định gồm 03 trang, có đóng dấu giáp lai./.

Nơi nhận:
- BQL Dự án các công trình Điện Miền Nam;
- UBND Tp.Hồ Chí Minh;
- Sở Công Thương;
- UBND/P.TNMT huyện Củ Chi;
- UBND xã Tân Phú Trung, huyện Củ Chi;
- Giám đốc Sở;
- Lưu: VT, TĐMT, CCBVMT (A.Thảo.08).

KT.GIÁM ĐỐC
PHÓ GIÁM ĐỐC

SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG

Nguyễn Thị Thanh Mỹ

People's Committee of Ho Chi Minh City
Department of Natural Resources and Environment
No: 227/ QĐ-TNMT-CCBVMT

Socialist Republic of Viet Nam
Independence- Freedom -Happiness

HCMC, February 11, 2015

DECISION
APPROVING THE REPORT ON ENVIRONMENTAL IMPACTS ASSESSMENT OF PROJECT

"Installation of 2nd transformer for 500kV Bong Cau Substation" in Cu Chi District of Southern Power Projects Management Board (SPPMB)

DIRECTOR OF DEPARTMENT OF NATURAL RECOURSES AND ENVIRONMENT HO CHI MINH CITY

Pursuant to the Law on Environmental Protection dated 29th November 2011.

Pursuant to the Decree No. 29/2011/NĐ-CP dated 18th April 2011 providing strategic environmental assessment, environmental impact assessment and environmental protection commitment.

Pursuant to the Circular 26/2011/TT-BTNMT dated 18th July 2011 of the Minister of Ministry of Natural Recourses and Environment detailing a number of articles of the Government's Decree No. 29/2011/ND-CP of April 18, 2011, on strategic environmental assessment, environmental impact assessment and environmental protection commitment.

Pursuant to the Decision No. 121/2003/QD-UB dated 31st December 2012 of the City People's Committee about establishing Department of Natural Recourses and Environment.

Pursuant to the Decision No. 04/2012/QD-UB dated 31st January 2012 of the City People's Committee about the transformation of organizational model in Branch of Environmental Protection belonging to Department of Natural Recourses and Environment.

At the proposal of Board of Evaluating THE REPORT ON ENVIRONMENTAL IMPACTS ASSESSMENT OF "Installation of 2nd transformer for 500kV Bong Cau Substation" (hereinafter called " the Project") at Tan PhuTrung Commune, Cu Chi District, Ho Chi Minh City, in the meeting on 17th December 2014 at Department of Natural Recourses and Environment.

Considering the content of the report on environmental impact assessment of project "Installation of 2nd transformer for 500kV Bong Bridge Substation" at Tan Phu Trung Commune, Cu Chi District, which has been revised and supplemented together with Written Explanation No 0812/AMN-DB dated 30th Jan 2015 of Southern Power Projects Management Board (SPPMB);

At the proposal of the Manager of Branch of Environmental Protection;

DECIDES:

Article 1. To approve the content of the report on environmental impact assessment of project "Installation of 2nd transformer for 500kV Bong Cau Substation" (hereinafter called " the Project") at Tan PhuTrung Commune, Cu Chi District, Ho Chi Minh City of Southern Power Projects

Management Board (SPPMB) (hereinafter called " Project Owner") with main contents as following:

1. Scope and scale of the project:

1.1 Scope:

The project is implemented in the premise of 500kV Bong Cau Substation situated at Tan PhuTrung Commune, Cu Chi District, Ho Chi Minh City. The total surface area of the substation is 103,145.5 m^2.

1.2 Scale:

- Install a new 500/220/35kV transformer, capacity of 900MVA;

On 500kV side: install a 500kV feeder bay with 500kV devices used for cutting and measuring total route on 500kV side of the new installed transformer, connecting to 500kV busbar.

On 200kV side: install a 220kV feeder bay with 220kV devices used for cutting and measuring total route on 500kV side of the new installed transformer, connecting to 220kV busbar.

- Supplement additional panels for protection control system.
- Reconfigure the protection control system for the new installation.

2. Environmental Protection Requirements to the Project:

2.1 Implement measures of mitigation and processing of dust, noise, vibration, emissions, wastewater and solid waste in the construction stage to ensure that they meet the National technical standards on environment QCVN 05:2013/BTNMT; QCVN 06/2009/BTNMT; QCVN 26:2010/BTNMT, QCVN 27:2010/BTNMT, QCVN 14:2008/BTNMT; measures to minimize the impact on traffic operations in project area during the construction of the project.

2.2 Build separate drainage and sewer systems; implement measures to collect and process wastewater generated from operation phase of the project to ensure that they meet National technical regulations on domestic wastewater QCVN 14: 2008 / BTNMT (column B, K = 1.2) and connect to regional sewerage system complying with regulations, construct manholes after processing to facilitate the inspection and supervision.

2.3 Layout separate areas to store ordinary and hazardous solid waste. Classify, store and deal with the relevant agencies to collect, transport and dispose of ordinary and hazardous solid waste as prescribed.

2.4 Implement measures to minimize the impact of electromagnetic fields, safe ground for households in electric safety passageway.

2.5 Implement safety measures, plans to prevent and respond to emergency fire, electric shock, oil leakage from the transformer, ensure safety in the management, operation, repair and maintenance of electrical constructions;

2.6 Implement environmental management programs during the construction and operation of the Project. Implement environmental monitoring programs, submit periodic report of results in monitoring environment to Department of Natural Resources and Environment (Branch of Environmental Protection) and relevant authorities.

Article 2. Southern Power Projects Management Board (SPPMB)'s responsibilities are:

1. Prepare, approve and public the environmental management plan of the project prior to project implementation.
2. Seriously implement the requirements of environmental protection specified in Paragraph 2, Article 1 of this Decision and other provisions prescribed by law on environmental protection.
3. Prepare documents to propose the examination and confirmation of having implementing construction and measures to protect environment serving the operation phase of the Project to submit to the competent authority for the examination and confirmation before the official operation of the Project.

Article 3. In the course of implementation, if the project "Installation of 2nd transformer for 500kV Bong Cau Substation" at Tan Phu Trung Commune, Cu Chi District has any change compared to the paragraph 1 and paragraph 2, Article 1 of this Decision, the project owner must provide with written reports and changes that are applied only after the written approval of the Department of Natural Recourses and Environment issued.

Article 4. The Decision approving the report on environmental impact assessment of the Project "Installation of 2nd transformer for 500kV Bong Cau Substation" at Tan Phu Trung Commune, Cu Chi District of Southern Power Projects Management Board (SPPMB) is the basis for Project Investment Decision; the inspection and examination of implementing environmental protection from authorized state agencies.

Article 5. This Decision takes effect on the date of its signing. The decision includes three pages with a linking seal.

Receivers
- SPPMB
- HCM's CPC
- Trading and industrial department
- Cu Chi DPC
- Tan PhuTrung CPC
- Director of HCM DONRE
- Stored: office

DEPUTY OF HCM DONRE DIRECTOR

NGUYEN THI THANH MY
(SIGNED)

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 will 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 will 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 will 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 will 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 will 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 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	▪ ERTL/Deputy ERTL or authorized on-site emergency

Procedure	Remarks
emergency medical services and/or nearest hospital.	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 will 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.
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

Gate of SS

Access road of SS

Western area of SS


Northern area of SS


Eastern area of SS


Southern area of SS

Appendix 6: Environmental Compliance Audit of Existing 500kV Cau Bong Substation

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 500kV Cau Bong Substation located at Tan Phu Trung Commune, Cu Chi District, Ho Chi Minh City.

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: Cau Bong 500 kV Substation

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

Location: Tan PhuTrung commune – Cu Chi district – HCMC

Capacity of substation: 500KV

Connection Lines:

- Transmitting power to:
  a. 500KV Cau Bong – Phu Lam 1-2
  b. 220KV Cu Chi substation.
  c. 110KV Lang Cat substation
  d. 220KV DucHoa substation (in some months)
  e. 220Kv Hoc Mon – Binh Tan substation (in some months)

- Receiving power from:
  a. The 500KV Pleiku, My Phuoc, Cau Bong TL
  b. The 500KV Daknong – Cau Bong TL
  c. The 500KV Tan Dinh – Cau Bong TL

Area serviced by substation: Most of the southern area in HCMC

D. DESCRIPTION OF EXISTING 500KV CAU BONG SUBSTATION

The 500KV Cau Bong Substation was constructed by the SPPMB in 2012. The substation was turned-over to PTC4 and became operational in April 2014. The substation is located in a property with an area of 155,051 m^2 in Lang Lat Village. It is situated about 2 km from Highway

No. 22 and about 2.4 km from the An Ha Bridge. The site is surrounded by paddy fields of Tan PhuTrung Commune.

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 existing substation has 3 x 300MVA transformers for 500/220/35 kV and 2 x 250MVA transformers for 220/110/22kV. There is a proposal to provide additional 900MVA transformer (3x300MVA) in a planned area adjacent to the existing transformer bank to meet the electricity demand in HCMC and adjacent provinces of TayNinh, Binh Duong, and Long An.

Transformers

Operation building

Switchyard

Drainage

Security post

Access road to substation next to staffhouse

Photo 5: Facilities at the Existing 500kV Cau Bong 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 500kV Cau Bong Substation and Connecting Lines was prepared and submitted to the Department of Natural Resources and Environment (DONRE) of HCMC on April 16, 2008 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 DONRE-HCMC on April 24, 2008 according to Decision No. 947/XN-UBNC (Annex A).

3. UXO Clearance

Prior to the development of the 500kV Cau Bong Substation, demining of UXO was investigated and surveyed by the Center of Environment and Treatment of Mines of the Military Command Zone No. 5. The report on the completion of the demining was issued on January 15, 2013.

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 in accordance with QLCTNH79.005100.T on October 15, 2014.

A hazardous waste storage area has been built at the substation site for the temporary storage of hazardous wastes. The storage area is provided with concrete housing and impervious concrete floors.

Some waste materials were already noted inside the hazardous waste storage area. There are those that are contained in bins with labels while others are without any proper label.

Hazardous waste storage house

Wastes inside labeled bins


Unlabelled wastes inside the storage area

Photo 6: Hazardous Waste Storage Area

5. Oil Containment System

The existing transformer bank has three compartments of oil containment tank with a capacity of 120m^3 each. According to the substation staff, when the new transformer bank is installed, separate oil containment tank will be provided.

Photo 7: Oil Containment for Existing Transformers

6. Solid Waste Management

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

7. Designation of Environment, Health and Safety Officers

The substation has 23 staff, working at three shifts per day, with five teams in each shift (8 hours). There is only one woman staff at the substation.

One substation staff has been designated to work as Environment Officer while another staff was appointed as the Health and Safety Officer. The Environment Officer prepares the environmental monitoring report, with assistance from a third party environment monitoring company. He also inspects the waste segregation and collection and wastewater treatment system of the substation.

The Health and Safety (H&S) Officer is in-charge of ensuring the implementation of the Health and Safety Guidelines which was adopted from the EVN instruction. The H&S officer monitors any oil spill within the substation.

8. Environmental Complaints and Incidents

There has been no formal complaint received against the substation to date except during the public consultation wherein the local villagers complained about planting of trees by substation workers without permission from landowners. In addition, the villagers complained about the disposal of garbage by workers at adjacent land. The substation workers acted upon these concerns of the villagers and started clean-up works. Waste segregation bins have been provided at the substation for proper waste disposal by substation staff. Planting by staff at adjacent land have been prohibited.

In terms of incidents, there has been a reported incident of line tripping at the transmission line in May 2014 wherein the safety clearance was compromised. PTC4 immediately responded to the line tripping incident and no complaint was received.

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. Likewise, the substation has just conducted the annual fire drill last May 19, 2015.

10. Environmental Monitoring

Environmental monitoring report was prepared and submitted to DONRE on December 12, 2014. In general, the monitoring report presents the results of the sampling conducted for noise, air quality and wastewater. The report does not mention the status of implementation of the environmental management plan (EMP).

Electromagnetic Field (EMF). Based on the environmental monitoring plan of the substation, the EMF is supposed to be monitored once a year. However, the EMF monitoring was not included in the monitoring report which was submitted to DONRE on December 12, 2014 since the substation was not yet operational during that time. According to the substation staff, the EMF will be monitored and included in the next monitoring report.

Wastewater. Wastewater effluent quality was monitored at the substation. Parameters that were tested include pH, total suspended solids (TSS), chemical oxygen demand (COD), biochemical oxygen demand (BOD), total nitrates (T-N), total phosphates (T-P), coliform, ammonia ($N\text{-}NH_4$), and oil & grease. All parameters analyzed are within the effluent standards as prescribed by QCVN 14:2008/BTNMT.

Table 1: Wastewater Quality at 500kV Cau Bong Substation

No.	Indicators	Unit	Result	QCVN 14: 2008/ BTNMT column B	Cmax = C*1.2
1	pH	-	7.3	5-9	5-9
2	TSS	mg/ L	52	100	120
3	BOD5 (20oC)	mg/L	22	50	60
4	T-N	mg/L	9.7	-	-
5	T-P	mg/L	2.8	10	12
6	Coliform	MPN/100mL	4600	5000	6000
7	N-NH4	mg/L	7.6	-	-
8	Grease oil	mg/L	0.32	20	24

Notes: The quality of wastewater after treatment is good.All parameters are within the allowable standards based on sampling conducted on October 22, 2014.

Noise. Noise was monitored on October 22, 2014 through the Environmental Analysis Centre. Noise levels show that it is within the limit of 70dBA as prescribed by QCVN 26:2010/BTNMT.

Air Quality. Total suspended particulates (TSP), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and carbon monoxide (CO) were sampled and analyzed on October 22, 2014. Results show that air quality in the area is good and that all parameters are below the permitted levels.

Table 2: Air Quality at 500kV Cau Bong Substation

No.	Indicators	Unit	Result	QCVN 05: 2013/ BTNMT
1	TSP	mg/m3	0.2	0.3
2	NO_2	Mg/m3	0.065	0.2
3	SO_2	Mg/m3	0.070	0.35
4	CO	Mg/m3	1.70	30
5	Noise	dBA	60.8	70 (QCVN26/2010)

Note: The quality of ambient air within the substation is good. All parameters are within the allowable standards based on sampling conducted on October 22, 2014.

11. Implementation of Environmental Management Plan (EMP)

In general, the substation is implementing the EMP particularly the management of solid and hazardous wastes and oil spills. 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.

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

Table 3: Compliance Checklist on Implementation of Environmental Management Plan at 500kV Cau Bong Substation

No.	Item	YES	No	Remarks
MAINTENANCE OF EQUIPMENT				
1	Is there an oil containment area around transformers?	X		There is oil containment in the transformer area.
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	No, substation is relatively new. Mineral oil is the insulating oil for existing 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 oil will be collected in a container when changing insulating oil of the transformer. Indication of spills are monitored through the SCADA. The substation is new and there were

No.	Item	YES	No	Remarks
				no oil spills at the site.
WASTE MANAGEMENT				
1	Is domestic solid waste collected and disposed regularly?	X		
2	Does the SS register for hazardous management license	X		SS has a specified room to store temporary hazardous wastes with clear instruction and protective equipment provided
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? How?	X		Used oil will be contained and temporarily stored at the HW area.
5	Are old and used equipment being disposed?How		X	SS is relatively new.
6	Does the SS have domestic wastewater treatment facilities? Describe	X		About 50 -60L/day is treated by biological technology in septic tank before discharging into water body.
7	Does the SS the facilities to prevent noise? Describe.	X		
8	Does the SS have facilities to prevent dust? Describe.	X		
HEALTH AND SAFETY				
1	Are there safety warning signage within the site?	X		There are safety signs within the substation.
2	Are there safety guidelines?	X		Health and safety guidelines of PTC4 is in place.
3	Has safety orientation and trainings been conducted for workers?	X		2x per year training on health and safety is being conducted by PTC4. Workers are certified to conduct work in electrical installations.
4	Areworkers wearing personal protective equipment (PPE)?	X		Workers are required to wear PPEs
5	Are workers aware on EMF and social diseases?	X		Through training and orientation
6	Is there weed maintenance on the substation grounds to protect the integrity of underground grid wires.	X		The grid wires are laid on concrete to prevent weed growth. There are no weeds in the underground grid wires.
PERMITS AND LICENSE/S TO OPERATE				

No.	Item	YES	No	Remarks
1	Is the Environmental Certificate for this SS being obtained?	X		An environmental clearance has been obtained.
2	What kind of permits on environment, fire safety were obtained for this SS?	X		There are fire safety clearance and equipment at the SS
EMF MONITORING CONDUCTED				
1	Is the EMF level within the permitted standard?		X	No monitoring to date.
2	Are there measures to prevent the EMF? Describe.	X		Allowable safe distances from energized equipment are being observed.
AIR QUALITY MONITORING				
1	Does noise level meet standard?	X		
2	Does dust levelmeet standard?	X		

Photo 8: Safety warning signs and fire control measures at the substation

F. CORRECTIVE ACTION PLAN

In general the existing 500kV substation 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:

g) Management of potential oil spill
h) Segregation of hazardous wastes
i) Segregation and regular collection of solid waste
j) Management of fire, explosions, line tripping and other incidents that may affect occupational and community health and safety
k) Treatment of wastewater prior to disposal to ensure compliance with the effluent standards
l) Control and abatement of noise and air pollution.

For the subsequent environmental monitoring, the EMF levels at the substation and along the connection lines have to be measured to check whether levels are beyond the allowable limits on safety. The results of the EMF monitoring will be included in the subsequent environmental monitoring report to be submitted to DONRE and ADB.

The status of EMP implementation will also be included in the monitoring report of the Environment Officer aside from the regular monitoring of environmental parameters. The Environmental Officer will refer to the EMP developed for the substation.

Furthermore, it is recommended that further training for PTC4 Environment Officer and Health and Safety Officer on the implementation of the EMP and H&S measures needs to be organized to increase their capacity on EMP measures, waste management, occupational and community health and safety.

On hazardous waste management, the substation will practice proper HW labeling. Likewise, the substation will commission only hazardous waste treatment facility with approved license from MONRE. 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.

Community consultation and coordination activities will be continued to ensure that the substation and the activities of staff are not causing adverse effects on the local villagers. Previous complaints about solid waste disposal and planting at adjacent land by substation workers without permission of landowners will be monitored.

Annex A.

Approval of Environmental Protection Commitment

Ho Chi Minh City
People's Committee of Cu Chi District

The Socialist Republic of Viet Nam
Independence- Freedom –Happiness

No:947/XN- UBND

Cu Chi 24 April, 2008

REGISTRATION CERTIFICATE
OF ENVIRONMENTAL PROTECTION COMMITMENT

Project: 500kV Cau Bong Substation and connecting lines

After reviewing the registered document of the environmental protection commitment (EPC) of the 500KV Cau Bong substation and its connecting line project owned by SPMB belongs to EVN at a Letter No. 1762/CV/AMN-PDB dated 16 April 2008 signed by Mr. Nguyen Cong Toan as a representative side, Cu Chi district People Committee answered the following:

Pursuant to Law on environmental protection of the Socialist Republic of Viet Nam dated on 29 November 2005; Decree No. 80/2006/ND-CP dated 09 August 2006 on stipulating detail and guidance on implementing several Articles of the Law; Decree No. 21/2008/ND-CP dated 28 February 2008 on adjusting several Articles of Decree No 80/2006/ND-CP, Certification of the EPC of 500KV Cau Bong substation and its connecting line with its capacity of 500/220KV transformer: 2 x3x200KV MVA (stage 1 installing 01 x 3x 200KVMVA); 220/110KV transformer: 3x 250MVA (stage 1 installing 2x250MVA) and 110/15KV transformer: 2x 63MVA, which is constructed on a total area of 155,051m2 in Lang Cat village, Tan Phu Trung commune, Cu Chi district and 1.41km of 500KV transmission line of connection;

The project owner has responsibility for implementing all contents mentioned in the EPC adequately and rightly. All noise, dust, construction and recreational wastes, wastewater generated during the construction phase have to be collected and treated to meet the national technical standards on environment.

The EPC of the project is a basis for the state environmental protection agencies to monitor, examine and inspect the implementation of EPC during the construction and operation phases.

The certificate takes effect on the day it is signed.

Recipients

Office of natural resource and environment
SPMB
Storing in office

Chair person
Deputy of Chair Person

Ho Van Anh Dung
signed

THÀNH PHỐ HỒ CHÍ MINH
UBND HUYỆN CỦ CHI

Số: 947/XN-UBND

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

Củ Chi, ngày 24 tháng 4 năm 2008

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

của Dự án xây dựng trạm biến áp 500KV Cầu Bông và đường dây 500KV đấu nối

Qua xem xét hồ sơ đăng ký bản cam kết bảo vệ môi trường của của Dự án xây dựng trạm biến áp 500KV Cầu Bông và đường dây 500KV đấu nối do Ban Quản Lý dự án các công trình điện miền nam thuộc Tập đoàn điện lực Việt Nam làm chủ dự án do Ông Nguyễn Công Toàn làm đại diện tại văn bản số 1762/CV – AMN- PĐB ngày 16/04/2008. UBND huyện Củ Chi có ý kiến như sau:

Căn cứ vào Luật Bảo vệ môi trường của Nước Cộng Hòa Xã Hội Chủ Nghĩa Việt Nam ngày 29/11/2005; Nghị định 80/2006/NĐ-CP ngày 09/08/2006 của Chính Phủ v/v quy định chi tiết và hướng dẫn thi hành một số điều của Luật Bảo Vệ môi trường, Nghị định 21/2008/NĐ – CP ngày 28/02/2008 về sửa đổi, bổ sung một số điều của Nghị định 80/2006/NĐ-CP ngày 09/08/2006 của Chính Phủ v/v quy định chi tiết và hướng dẫn thi hành một số điều của Luật Bảo Vệ môi trường;

1./ Xác nhận bản cam kết bảo vệ môi trường của Dự án xây dựng trạm biến áp 500KV Cầu Bông và đường dây 500KV đấu nối với qui mô công suất các máy biến áp: MBA 500/200kV: 2x(3X200)MVA(giai đoạn 1 lắp 1x(3x200MVA); MBA 220/110kV: 3x250MVA (giai đoạn 1 lắp 2x250MVA); MBA 110/15kV: 2x63MVA trên diện tích 155.051m^2 tại địa điểm ấp Láng Cát – Xã Tân Phú Trung - Huyện Củ Chi và đường dây 500 KV đấu nối dài 1,41 km do Ông Nguyễn Công Toàn làm đại diện.

2./ Chủ dự án có trách nhiệm thực hiện đúng và đầy đủ những nội dung đã được nêu trong bản cam kết bảo vệ môi trường về tiếng ồn, bụi, nước thải, chất thải rắn, nước thải sinh hoạt của công nhân phát sinh trong quá trình thi công dự án phải được thu gom, xử lý đảm bảo đạt tiêu chuẩn môi trường.

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 trong quá trình thi công và đưa vào hoạt động.

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

Nơi nhận:
- Phòng Tài nguyên & Môi trường;
- BQL dự án các công trình điện Miền Nam;
- Lưu VT, TNMT.

KT. CHỦ TỊCH
PHÓ CHỦ TỊCH

Hồ Văn Dũng Anh