Initial Environmental Examination – Subproject 4

January 2014

Viet Nam: Ha Noi and Ho Chi Minh City Power Grid Development Sector Project

(EVN HCMC: Tham Luong 110 kV Substation and Underground Transmission Line)

Prepared by Ho Chi Minh City Power Corporation for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 07 January 2014)

Currency Unit	–	Dong D
D1.00	=	$0.000047
$1.00	=	D20,966

ABBREVIATIONS

ADB:	Asian Development Bank
AH:	Affected Household
AP:	Affected people
BOD:	Biochemical Oxygen Demand
CTF:	Clean Technology Fund
COD:	Chemical Oxygen Demand
DARD:	Department of Agriculture and Rural Development
DoNRE:	Department of Natural Resources and Environment
DCST:	Department of Culture Sport and Tourism
DoLISA:	Department of Labour Invalids and Social Assistance
EA:	Executing Agency
EIA:	Environment Impact Assessment
EMP:	Environment Management Plan
EO:	Environmental Officer
ESU:	Environmental and Social Unit
EVN:	Electricity of Viet Nam
EVN HANOI:	Ha Noi Power Corporation
EVNHCMC:	Ho Chi Minh Power Corporation
GHG:	Greenhouse gas
GRM:	Grievance Redress Mechanism
HCMC:	Ho Chi Minh City
HN:	Ha Noi
IA:	Implementation Agency
IEE:	Initial Environmental Examination
MoLISA	Ministry of Labour Invalids and Social Assistance
MoNRE:	Ministry of Natural Resources and Environment

NPA:	National Protected Area
OHL:	Overhead lines
PCB:	Polychlorinated biphenyls
PCR:	Physical Cultural Resources
PIC:	Project Implementation Consultant
PPC:	Provincial Peoples Committee
REA:	Rapid Environment Assessment
ROW:	Right-of-way
PPMB:	Power Project Management Board
TSS:	Total Suspended Solids
UGC:	Underground cable
UXO:	Unexploded Ordnance

WEIGHTS AND MEASURES

km:	kilometre
kg:	kilogram
kV:	kilovolt
ha:	hectare
mm:	millimetre
MV:	medium voltage

NOTE

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

I. EXECUTIVE SUMMARY

1. The Project, financed through Asian Development Bank's (ADB) sector loan modality, will strengthen the capacity and reliability of the power infrastructure in Ha Noi and Ho Chi Minh City through the rehabilitation and development of the 110 kV and 220 kV substation and power transmission to supply their medium voltage (MV) distribution system. The Project will also strengthen the institutional capacities of Hanoi Power Corporation (EVN HANOI) and Ho Chi Minh City Power Corporation (EVNHCMC), which are responsible for the power supply in their respective areas. Additionally, the project includes a smart grid component financed by the Clean Technology Fund (CTF)..

2. The Initial Environmental Examination (IEE) presented herein addresses the new Tham Luong 110 kV Substation and Transmission Line subproject in HCMC which represents two of the eight core subprojects identified by Electricity of Viet Nam (EVN) for Ha Noi and Ho Chi Minh City. The original eight core subprojects were defined Category B for environment. The consolidated subproject consists of construction of a new 110 kV substation and a new 2.2 km underground (UGC) transmission line in western HCMC. The IEEs of the other core subprojects have been prepared separately.

A. Subproject Summary

3. The Tham Luong core subproject consists of a new 110kV Substation and 2.2 km 110kV below ground transmission line. The underground cable (UGC) will stem from the existing 110 kV Hoc Mon – Vinh Loc overhead (OHL) transmission line and will run under and along city streets to the site of the new 110 kV Substation. The UGC will cross Tien Lan Hamlet of Ba Diem ward, Hoc Mon District to Tan Thoi Nhat ward of District 12.

4. The new 110 kV Tham Luong substation will be constructed to respond to the power demand primarily in Tan Thoi Nhat ward, part of Dong Hung Thuan ward, District 12, and neighbouring area of Ba Diem ward of Hoc Mon. The substation infrastructure is located in Tan Thoi Nhat ward, District 12. The site was selected by the District Peoples Committee.

B. Potential Impacts and Mitigations

5. The IEE of the 110 kV Substation and UGC transmission line indicates that the potential environmental impacts of the subproject are restricted to the construction phase of the subproject components. The common construction-related disturbances such as noise, dust, erosion, sedimentation, solid and liquid waste pollution, worker camp issues, reduced access, increased vehicle and boat traffic and traffic disruptions, increased risk of worker and public injury can be managed with standard construction practices and management guidelines (e.g., IFC/World Bank 2007). There are no rare or endangered wildlife, critical habitat, or protected areas in the subproject site which is located in high density urban areas of the city.

6. Some residential and commercial land will be permanently and temporarily lost due to the subproject. The lost land and compensation is addressed in detail in the Resettlement Plan (RP) prepared under separate cover.

7. The construction-related disturbances to the environment and community concern the short-term disturbances caused by the civil works that will occur to construct the new substation and the trenched UGC transmission line. The UGC will be trenched along urban streets near the new 220 kV substation site. The construction-related impacts and disturbances associated with the placement of the UGC section will be minimized with all work on the trenched line being conducted between 23:00 and 06:00 including restoration of roadway sections for normal daily use.

8. There are no perceived negative induced, or cumulative environmental impacts of the subproject. The objective of providing needed additional electrical power to western HCMC supports the overall goal of urban and socioeconomic development in the city.

9. The Environmental Management Plan (EMP) prepared for the subproject provides a comprehensive impacts Mitigation Plan and Environmental Monitoring Plan to minimize and manage the potential impacts of the subproject. The EMP also prescribes an Emergency Response Plan for the construction sites and identifies the need for capacity development and training of the IA/ESU in environmental management and assessment as focused on the implementation of the EMP.

C. Conclusions

10. The IEE concludes that the feasibility design of the subproject combined with available information on affected environments is sufficient to identify the scope of potential environmental impacts of the subproject. Providing that significant changes to the subproject description do not occur at the detailed design phase, and that new sensitive environmental, or cultural resources are not determined, further detailed environmental impact assessment (EIA) is not required.

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II. INTRODUCTION

A. Background to IEE

11. The Ha Noi and Ho Chi Minh City Power Grid Development aims to strengthen the capacity and reliability of the power infrastructure in Ha Noi and Ho Chi Minh City, Viet Nam through the rehabilitation and development of the 220 kilovolt (kV) and 110 kV high-voltage power transmission systems and associated substations to supply their medium voltage (MV) distribution system. The Project also aims to strengthen the institutional capacities of Ha Noi Power Corporation (EVN HANOI) and Ho Chi Minh City Power Corporation (EVNHCMC) that are responsible for the supply of power in their respective areas. Additionally, the project includes a smart grid component financed by the Clean Technology Fund (CTF).

12. The Project in Ho Chi Minh City and Ha Noi consists of eight core subprojects (Table 1) that were originally defined by Electricity of Viet Nam (EVN).

Table 1. Core Subprojects forming the Project in Ho Chi Minh and Ha Noi[1]

Ho Chi Minh City
EVNHCMC
• Construct new 220 kV District 8 Substation
• Upgrade existing 110kV to 220 kV transmission line from Nam Sai Gon IBinh Chanh) substation to new District 8 Substation
• Construct new 110 kV Tham Luong Substation
• Construct new 110 kV underground transmission line to new Tham Luong Substation
Ha Noi
EVN HANOI
• Construct new Noi Bai Airport 110 kV Substation and associated 110 kV transmission line from existing Van Tri 220/110 kV Substation
• Upgrading of Phuong Liet 110 kV Substation
• Renovation of Son Tay 110 kV Substation
• Improving and upgrading of Tran Hung Dao 110 kV Substation

[1] Adapted from Project Inception Report 10/13

B. Consolidation of IEEs

13. During the Project inception mission the eight core subprojects sites were visited, subproject documentation was reviewed, and meetings were held with EVN HANOI and EVNHCMC. The inception phase identified the need to consolidate the core subprojects in order to maximize the coherence and overall usefulness of the Initial Environmental Examinations (IEE) of the core subprojects. The original 8 core subprojects were consolidated into the following four core subprojects and IEEs:

EVNHCMC:

1) New Tham Luong 110 kV Substation and UGC transmission line
2) New District 8, 220 kV Substation and upgraded 100/220kV OHL and UGC transmission line

EVN HANOI:

1) New Noi Bai 110 kV Substation and OHL and UGC transmission line
2) Rehabilitation/renovation of Tay Son, Phuong Liet, and Tran Hung Dao 110 kV Substations

14. The IEE presented herein addresses the new Tham Luong 110 kV Substation and underground transmission line in HCMC. The IEEs for the other 3 consolidated core subprojects are found under separate cover.

C. Assessment Context

15. The Project was assigned Environmental Category B pursuant to the ADB's Safeguard Policy[2] and recent good practice sourcebook guidance[3]. A category B project will have potential adverse impacts that are less adverse than the impacts of category A project, are site-specific, largely reversible, and can be mitigated with an environmental management plan[4]. The IEE was prepared for the consolidated Tham Luong core subproject in the feasibility design stage using available data and information on sensitive ecological and cultural receptors that exist for the subproject site.

16. The detailed design for the Tham Luong subproject will follow subproject approval. The Environmental Management Plan (EMP) that has been prepared for the subproject (see section X) will need to be updated where necessary to meet the final detailed designs of the subproject.

III. POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK

17. The Tham Luong 110 kV Substation and 110 kV transmission line subproject will be implemented according to the directives set down for use of Official Development Assistance

[2] ADB, 2009. Safeguard Policy Statement, ADB Policy Paper.
[3] ADB, 2012, Environmental Safeguards, A Good Practice Sourcebook, Draft.
[4] Footnote 2, pg 19.

(ODA) by GoV Decree No. 131/2006/ND-CP which was promulgated November 9, 2006, and in accordance with the provisions of for the parent Sector Project.

A. Viet Nam Regulatory Framework for Environmental Assessment

18. The Viet Nam Law on Environmental Protection (LEP 2005) prescribes the requirements for environmental assessment (EA) for development and domestic project interventions that affect the natural and social environments. Government Decree 29/2011/ND-CP on strategic environmental assessment (SEA), environmental impact assessment (EIA), and environmental protection commitment (EPC) in conjunction with Circular 26/2011/TT-BTNMT on stipulation of specific articles of Decree 29 both elaborate the EA requirements specified by the LEP (2005). Decree 29 and Circular 26 are implemented in conjunction with Decree 80/2006/ND-CP, and Decree 21/2008/ND-CP (see below).

19. The updated screening criteria of Decree 29 distinguish projects that require an Environmental Impact Assessment (EIA) from projects requiring the simpler Environmental Protection Commitment (EPC). The difference between the two processes reflects the level of assessment, and final review and appraisal that is required. At the time of writing Decree 29 requires that an EIA be prepared for the Tham Luong substation and transmission line subproject.

B. Applicable Environmental Laws, Policy, Environmental Standards, and Guidelines

20. The following are key directives for environmental assessment and protection in Viet Nam:

- Law on Environmental Protection No. 52/2005/QH11, in effect on June 12, 2005;
- Law on Water Resources No 08/1998/QH10.
- Biodiversity Law 20/2008/QH12 dated 13th November 2008
- Cultural Heritage Law 28/2001/QH10 dated 29th June 2001
- Land law No.13/2003/QH11 dated 26th November 2003
- Decree No. 29/2011/ND-CP, dated April 18, 2011, on Regulating Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Commitment.
- Circular No. 26/2011/TT-BTNMT dated on 08/12/2011 by the Ministry of Natural Resources and Environment on Guidance for Strategic Environmental Assessment, Environmental Impact Assessment, and Environmental Protection Commitment.
- Decree No.12/2009/ND-CP which replaces Decree No. 16/2005/ND-CP and Decree No. 112/2006/ND-CP on Investment Management on Construction Projects.
- Decree No.21/2008/NĐ-CP dated on 28/02/2008 about Amendment and Addition of Some Articles in Decree No.80/2006/NĐ-CP dated on 09/8/2006 by the Government.

- Decree No.59/2007/NĐ-CP dated on 09/4/2007 by the Government about Solid Waste Management.
- Decree No. 117/2009/ND-CP Regulation on sanctioning administrative violations in environmental protection, issued: 31/12/2009
- Decree No. 04/2009/ND-CP, Incentives and support for environment protection activities, issued: 14/01/2009.
- Decree 110/2002/ND-CP, supplementing some Articles of Decree 06/1995 on Labour Code of Occupational Safety and Health
- Decree 06/1995, Elaborating Provisions of Labour Code on Occupational Safety and Health.
- Decree No.140/2006/NĐ-CP dated on 22/11/2006 by the Government which regulates Environmental Protection, Designing, Approval and Implementation of Development Strategies, Plans, Programs and Projects.
- Decree No.80/2006/NĐ-CP dated on 09/8/2006 about Guiding for the Implementation of Some Articles in the Law on Environmental Protection (2005).
- Decree No.149/2004/NĐ-CP dated on 27/7/2004 about Issuing Permits for Water Resource Exploration, Exploitation and Utilization and Permits for Discharge to Water Bodies.
- Decision No.16/2008/QĐ-BTNMT dated on 31/12/2008 by the Ministry of Natural Resources and Environment about Promulgation of the National Ttechnical Regulations for the Environment.
- Decision No.18/2007/QĐ-BTNMT dated on 05/11/2007 about Promulgation of Statistic Indicator System for the Field of Natural Resources and Environment.
- Decision No.23/2006/QĐ-BTNMT dated on 26/12/2006 about Promulgation of the List of Hazardous Waste.
- Decision No.27/2004/QĐ - BXD dated on 09-11-2004 by the Minister of Ministry of Construction on the promulgation of TCXDVN 320:2004 "Landfill for hazardous waste – Design standards"
- Decision No.22/2006/QĐ-BTNMT dated on 18/12/2006 about Obligations to Apply Vietnamese Standards for the Environment.
- Decision No.233/2006/QĐ-TTg dated on 18/10/2006 about approving the National Program on Labor Protection, Safety and Sanitation up to 2010.
- Decision No.1222/QĐ-BTNMT dated on 20/09/2006 about Organization of Reception and Progressing Recommendations from Individuals, Organizations and Enterprises on Aspects which are managed by Ministry of Natural Resources and Environment.
- Decision No.35/2002/QD-BKHCNMT dated on 25/6/2002 about Promulgation of Series of Vietnamese Standards for the Environment.
- Decision No.60/2002/QĐ-BKHCNMT dated on 07/8/2002 about Promulgation of the Guidance for Disposal of Hazardous Wastes.

- Decision No.3733/2002/QĐ-BYT issued by Ministry of Healthcare dated on 10/10/2002 About the Application of 21 Labour Health and Safety Standards

- Decision No.155/1999/QĐ-TTg dated on 16/7/1999 by the Government on Promulgation of the Management Mechanism for Hazardous Waste.

- Decision No.505 BYT/QĐ, dated on 13/4/1992 by the Ministry of Healthcare on the Regulation for Allowed Concentrations.

- Circular No. 16/2009/BTNMT and No. 25/2009/BTNMT on Promulgation of Vietnamese National Standards.

- Circular No.10/2007/TT-BTNMT dated on 22/10/2007 about Guidance for Assurance and Control of the Quality of Environmental Monitoring.

- Circular No.12/2006/TT-BTNMT dated on 26/12/2006 by the Ministry of Natural Resources and Environment on Guidance for Practice Conditions, Procedures for Application, Registration, Endorsement and Issuing the Code for Hazardous Waste Management.

Environmental Standards and Regulations

Water quality:

- QCVN 01:2008/BYT – National technical regulations on quality of drinking water
- QCVN 08:2008/BTNMT – National technical regulations on quality of surface water
- QCVN 09:2008/BTNMT – National technical regulations on quality of groundwater
- QCVN 10:2008/BTNMT – National technical regulations on quality of about coastal water
- QCVN 14:2008/BTNMT – National technical regulations on quality of domestic wastewater
- QCVN 24:2008/BTNMT– Industrial wastewater discharge standards
- QCVN 02:2009/BYT - National standard of domestic water supply
- TCVN 5502:2003 – Supplied water – Requirements for quality
- TCVN 6773:2000 – Water quality – Water quality for irrigational purposes
- TCVN 6774:2000 – Water quality – Water quality for aquaculture protection
- TCVN 7222:2002 – Water quality for concentrated domestic WWTP
- TCVN / QCVN - Standard methods for analyzing environmental quality

Air Quality:

- QCVN 05:2008 – Standards for ambient air quality
- QCVN 06:2008 – Maximum allowable concentration of hazardous substances in the ambient air
- TCVN 6438:2001 – Maximum permitted emission limits of exhausted gases from vehicles

Solid Waste Management:

- TCVN 6696:2009 – Solid waste – Sanitary landfill. General requirements for environmental protection.
- QCVN 07:2009– National technical regulations for classification of hazardous wastes
- QCVN 25:2009 – National technical regulations for wastewater of solid waste sites
- QCVN 15:2008/BTNMT: - National regulation on allowable pesticide residues in soil
- QCVN 03:2008/BTNMT: - National regulation heavy metals concentrations in soil

Vibration and Noise:

- QCVN 26:2010/BTNMT: national technical standard for noise

- TCVN 6962: 2001 Allowable vibration level for public and residential areas
- TCVN 6962:2001: - Allowable vibration and shock from construction activities

International Guidelines

- World Bank Group, 2007. Environmental Health and Safety Guidelines, Wash. DC.
- AWWA Standard Methods for Measurement and Analysis Environmental Quality

Specific regulations for resettlement and compensation

- Decree No. 197/2004/ND-CP dated 03/12/2004, on comprensation support,and resettlement
- Circular 14/2009/TT-BTNMT dated 01/10/2009, on detailed regulations on compensation, support and resettlement.

Directives of Electrical Power Industry in Viet Nam and Information for Tham Luong

- Electricity Law, No. 28/2004/QH11, Issued: 03/12/2004
- Government Decree, No. 81/2009/NĐ-CP, on the safety protection of high-voltage power grids, Issued 17/08/2005
- MIT Circular, No. 03/2010/TT-BCT, on safety protection of high-voltage power grid works, Date issued: 22/01/2010
- Decision No. 6493/QD-BCT dated 09/12/2010, Approved electricity development plan in Ho Chi Minh City period up to 2015 and 2020.
- Document No. 4808/ALDTP-CBDT dated 14/11/2011, Complete site plan and building solutions Tham Luong 110kV substation and connection lines.

International Environmental Management Conventions

21. Viet Nam is signatory to the following relevant international conventions:

- 2009, Stockholm Convention on Protection of Human Health and the Environment from Persistent Organic Chemicals [including PCBs]
- 1971, Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar)
- 1982, Protocol to Amend the Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Paris
- 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage October 1987]
- 1973, Convention on International Trade in Endangered Species Wild Fauna and Flora
- 1985 FAO International Code of Conduct on the Distribution and Use of Pesticides
- 1985 Vienna Convention for the Protection of the Ozone Layer

- 1987 Montreal Protocol on Substances that Deplete the Ozone Layer
- 1992, Copenhagen Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Copenhagen
- 1989, Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal
- 1992, United Nations Framework Convention on Climate Change
- 1992, Convention on Biological Diversity

C. ADB Safeguard Policy

22. The ADB Safeguard Policy Statement (ADB SPS, 2009) along with the recent good safeguard practice sourcebook clarify the rationale, scope and content of an EA and supported by technical guidelines (e.g., Environmental Assessment Guidelines 2003). Projects are initially screened to determine the level of assessment that is required according to the following three environmental categories (A, B, or C).

23. Category A is assigned to projects that normally cause significant or major environmental impacts that are irreversible, diverse or unprecedented such as hydroelectric dams (an Environmental Impact Assessment is required). Category B projects have potential adverse impacts that are less adverse than those of category A, are site-specific, largely reversible, and for which mitigation measures can be designed more readily than for category A projects (an Initial Environmental Examination is required). Category C projects are likely to have minimal or no negative environmental impacts. An environmental assessment for Category C projects is not required but environmental implications need to be reviewed. Appendix A presents the Rapid Environmental Assessment (REA) of the Tham Luong 110kV substation and transmission line.

IV. DESCRIPTION OF SUBPROJECT

24. The Tham Luong core subproject consists of two major components defined by a new the 110kV substation; and 110kV UGC transmission line. The description of the subproject is provided below[5]. Figure 1 shows the route of the UGC as it will leave the open field of the 110 kV Hoc Mon – Vinh Loc OHL transmission line, along city roads to site of new 110 kV substation in open field area.

1. Tham Luong 110 kV Substation

25. The new 110 kV Tham Luong substation will be constructed to respond to the power demand primarily in Tan Thoi Nhat ward, part of Dong Hung Thuan ward, District 12, and neighbouring area of Ba Diem ward of Hoc Mon.

[5] Adapted from Draft Final Report 12/13

26. The substation infrastructure is located in the in the 38 ha resettlement zone Tan Thoi Nhat ward, District 12. This site was selected by the District Peoples Committee and is near Nguyen Anh Thu temple. The site is a non-residential flat area devoid of trees. Buildings form the western boundary, and a solid waste transfer station is planned just to the south of the site. The main component specifications of the substation are summarized in Table 2

Figure 1. Route of new 110 kV UGC (red) from Hoc Mon OHL (green) to new substation

Table 2. Component specifications of 110 kV Tham Luong Substation

Voltage level	110 kV, 22 kV.
Capacity	3x63 MVA (in this phase, only 02 transformers are installed).
110 kV level	• Using full bridge diagram with communicating circuit breaker.

	• 07 bays (02 bays to spare)
22 kV level	• Using diagram of 1 bus bar system with communicating circuit breaker. • 16 outgoing bays
Communication and SCADA	Setting up data transmission channel for load dispatch, managing and operating power system; Hotline channel and SCADA from 110 kV Tham Luong substation transits at 220 kV Binh Tan substation and goes to Load Dispatch Centres (LDC) of HCMC and Southern Region (A2)
Control system	The substation is designed with new technology, computerized control system, having connection to system of A2 and HCM LDC
Protection system	Main relays of protection circuits are digital relays with microprocessor. They are able to communicate with computerized control system and SCADA system.
System of lightning arrestors	Lightning rods are 2.5 m long and installed on roof of GIS house.
Earthing system	Earthing grid is bare cooper wire with cross section of 150 mm^2, pile of Φ16-2.4 m and 2 wells of 80 m depth.

2. Tham Luong 110 kV Underground cable

27. The 110 kV underground transmission cable will supply power to the new Tham Luong substation. The cable will be connected to the existing 110 kV Hoc Mon – Vinh Loc overhead transmission line.

28. The underground cable will cross Tien Lan Hamlet of Ba Diem ward, Hoc Mon District to Tan Thoi Nhat ward, District 12. The main component specifications of the substation are summarized in Table 3.

Table 3. Component specifications of Tham Luong underground transmission cable

Cable length	2,169 m
Open trench width	0.75 m
Location of cable	From field connection to Hoc Mon TL along city streets to field location of new substation
Voltage level	110 kV
Number of circuits	double circuits
Location	Going underground 55/3B alley, Tien Lan hamlet, Ba Diem ward, Phan Van Hon street (Hóc Môn district, district 12), road in resident area 5, Tan Thoi Nhat ward; being put underground.

Beginning point	Pole 28a where underground cable connects overhead line (Tien Lan hamlet, Ba Diem ward, Hoc Mon district).
Ending point	110 kV bus bar of Tham Luong substation (resident area 5, Tan Thoi Nhat ward, district 12).
Length	2,169 m.
Conductor	single core cooper cable of 1000 mm^2, XLPE insulation
Overvoltage protection	Lightning arrestor LA 96 kV
Cable arrangement	Going through HDPE Φ225 pipes, all of them are buried.

V. DESCRIPTION OF AFFECTED ENVIRONMENT

29. The environmental baseline information was obtained primarily from HCMC Statistical Yearbooks, state of the environment reports (SoER) prepared by HCMC DoNRE, reports from PECC3, and supplemented from the literature including other EAs conducted for the same area. The description of affected environments focuses on natural features and land use.

A. Physical Environment

1. Climate

30. The subproject area is situated in the Southern Climate Zone which is typified by a tropical monsoon climate characterised by high temperatures with very little seasonal variation. Annual average temperature for lowland areas are reasonably constant within a narrow range of 27.2 - 27.7 ^oC. The highest temperature recorded is 40 ^oC (April) and the lowest recorded was 13.8 ^oC in January. Average sunshine hours are 2,400 hr/yr up to 2,700 hr/yr. The subproject area belongs to wet and hot monsoon tropical climate region with characteristic of the South climate as as summarized below.

a. Temperature

31. Air temperature is high and changes little in year-round. Annual average temperature is 26 – 28^oC, difference between the hottest month and the coldest month is about 3 – 4^oC. Average temperature in the coldest month is above 24^oC (Table 4)

Table 4. Temperature regime at Tan Son Nhat and Tan Son Hoa Meteorological Stations

Station	Feature	Months, year												
		Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Year**
Tan Son Nhat	T_{max} ^oC	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} ^oC	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

(long-term average)	$T_{average}$ °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

Source: Data of Tan Son Nhat station referred to National technical regulation on natural condition data in construction _QCVN 02:2009/BXD; data of Tan Son Hoa station referred to the statistic yearbook 2011 of HCMC)

32. According to the report of the Working Group on Climate Change and Development, (2007), in the Mekong region (Ho Chi Minh City) average temperatures over the last century, have risen between 0.3 to 0.8°C. Further temperature increases are expected along with more extreme weather events, such as floods and droughts, changes in the amount and distribution of rainfall, disruption of seasonal monsoons, and rising sea levels

b. Sunlight hours

33. Average number of sunlight hours in Ho Chi Minh City is fairly high as compared with many other provinces in the country. Number of sunlight hours in a year is of 1800 - 2500 hours or more. Table 5 shows the average number of sunlight hours observed in Tan Son Hoa and Tan Son Nhat meteorological station.

Table 5. Average number of sunlight hours

Station	**Months, year (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
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

Source: Data of Tan Son Nhat station referred to National technical regulation on natural condition data in construction _QCVN 02:2009/BXD; data of Tan Son Hoa station referred to the statistic yearbook 2011 of HCMC)

c. Humidity and Rainfall

34. 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 the separated two reasons such as rain season from May to October and dry season from November to the next year's April. Maximum rainfall in the region is 200 mm per day. Total annual average rainfall in the region is from 1800 mm to 2000 mm (see Table 6).

Table 6. Monthly and annual average rainfall and Humidity in Tan Son Nhat Station

	Months, year (mm)												
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	Year
Rainfall	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
Humidity (%)	23	22	20	21	26	30	40	44	43	40	33	29	20

Source: Data of Tan Son Nhat station referred to national technical regulation on natural condition data in construction _QCVN 02:2009/BXD; data of Tan Son Hoa station %, *statistic yearbook 2011 of HCMC*

d. Wind velocity.

35. 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 the Truong Son Mountains. The annual average wind speed recorded at Tan Son Nhat is 2.8 m/s. The high number of thunderstorm days is mainly in the rainy season from May to October (Table 7).

Table 7. Wind velocity and Number of thunderstorm-days in Tan Son Nhat station

Parameters	**Months, year**												
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Year**
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)

(Source: National technical regulation on natural condition data in construction _QCVN 02:2009/BXD)

2. Air quality

36. Air quality in HCMC has been monitored frequently and almost focused on pollutants due to traffic activity. The monitoring has been conducted at 6 stations located in the territory of Ho Chi Minh city, including Dinh Tien Hoang – Dien Bien Phu, An Suong, Go Vap, Hang Xanh, Nguyen Van Linh – Huynh Tan Phat (District 8), and Phu Lam stations. The monitoring results in 2012 and the first half of 2013 are presented in Table 8.

Table 8. Air pollutants measured in the 6 stations in 2012 and the first half of 2013

		Hang Xanh	DTH-DBP	Phu Lam	An Suong[6]	Go Vap	HTP-NVL
CO (mg/m^3)	Average 2012	9.7	12.77	8.78	11.79	14.47	8.76
	% Samples over standard	1%	2%	0%	2%	1%	1%
	Average first half 2013	10.48	13.47	10.06	12.94	16.4	9.64
	% Samples over standard	0%	0%	0%	0%	3%	0%
particle content (mg/m^3)	Average 2012	0.44	0.53	0.51	0.65	0.5	0.51
	% Samples over standard	95%	98%	99%	100%	95%	91%
	Average first half 2013	0.43	0.46	0.51	0.61	0.5	0.52
	% Samples over standard	85%	98%	98%	100%	98%	88%
Lead (mg/m^3)	Average 2012	0.28	0.32	0.28	0.32	0.28	0.31
	Average first half 2013	0.32	0.36	0.33	0.39	0.3	0.34
NO_2 (mg/m^3)	Average 2012	0.17	0.21	0.18	0.21	0.18	0.17
	Average first half 2013	0.15	0.19	0.17	0.2	0.17	0.17
Noise (mg/m^3)	Average 2012	77.89	78.49	76.97	80.14	77.89	77.3
	% Samples over standard	100%	100%	100%	100%	100%	98%

(Source: Reports on monitoring results of environmental quality in HCMC in 2012 and the first half of 2013, by Environmental Monitoring and Analysis Center – DONRE of HCMC)

37. Noise is the most polluting factor in HCMC's roads, with 100% of the measured values exceeding the standard limit, fluctuating from 77 to 80dB (measured in 2012), 71-88dB (measured in the first half of 2013).

38. The second pollutant is dust which is also a serious concern in the monitoring program. In 2012, the measured values at the 6 stations were from 0.44 – 0.65mg/m^3, with 96% of them over the permitted standard of 0.30mg/m^3. However, in comparison to the figures of 2011 and 2010, dust concentration tends to reduce. In the first half of 2013, the concentration of dust was measured from 0.43 – 0.61 mg/m^3, with 95% over the standard.

39. NO_2 content was 0.17 – 0.21 mg/m^3 in 2012, and 0.15-0.20 mg/m^3 in the first 6 months of 2013. Overall, this content has been declined during the period from 2010 to half of 2013.CO and Pb content measured in 2012 met the standard level and lesser than in 2011 and 2010, while these figures increased in the first half of 2013.

40. Air quality in the subproject area was measured by the South environment and meteo-hydrology Branch in July 2013. The results show that air quality in the area is relatively good because most of analyzed parameters are under the permitted levels in QCVN 05:2009/BTNMT. However, noise at one point (KK1) is higher than the permitted level at QCVN 26:2010/BTNMT (see Table 9).

Table 9. Analyzed results of air quality in the subproject site

[6] An Suong station is nearest to project site located 1.5 km north at An Suong intersection, District 12.

No	Parameter	Analysed Method	Unit	Result			QCVN 26:2010/BTNMT (6-21 hours)	QCVN 05:2009/BTNMT
				KK1	KK2	KK3		
1	Noise	Q2900E Quest-USA	dB	62	75	51	**70**	**-**
2	Total suspended particle (TSP)	TCVN 5067-1995	mg/m^3	0.15	0.24	0.09		**0.3**
3	Particle ≤ 10 µm (PM10)	TCVN 5067-1995	mg/m^3	0.012	0.015	0.007		**-**
4	SO_2	TCVN 5971-1995	mg/m^3	0.034	0.046	0.022		**0.35**
5	NO_2	TCVN 6137-1996	mg/m^3	0.027	0.063	0.013		**0.2**
6	CO	52 TCN 352-1989	mg/m^3	2.47	3.12	2.16		**30**
7	O3	TQKT – YHLĐ and VSMT 1993	mg/m^3	0.023	0.029	0.024		**0.18**
8	Pb	SMEWW 3500-2005	$\mu g/m^3$	0.08	0.14	0.05		-

KK1: Group 55, Quarter 6, Tan Thoi Nhat ward, District 12
KK2: Ba Diem – Phan Van Hon crossroad
KK3: Tien Lan village, Ba Diem commune, Hoc Mon district

3. Topography, Geology and Soils

41. Ho Chi Minh City belongs to a transitional region between the southeastern and Mekong Delta regions. The general topography is that the terrain gets lower from North to South and from East to West. There are three types of terrain as summarized below.

a) The *high terrain* lies in the North-Northeast area and part of the Northwest area encompassing North Cu Chi, Northeast Thu Duc and District 9. This is the bending terrain with average height of 10-25 meters. Long Binh Hill in District 9 is the highest at 32 meters.
b) The *depression terrain* lies in the South-Southwest and Southeast part encompassing districts 9, 8, 7, Binh Chanh, Nha Be and Can Gio. The area's height is in the range of 0.5 to 2 meters.
c) The *medium terrain* lies in the middle of the city, encompassing most old residential areas, part of districts 2 and Thu Duc, and the whole of districts 12 and Hoc Mon. The area's height is 5-10 meters.

42. In general, the topography of Ho Chi Minh City is fairly diverse and therefore has good conditions for multi-faceted development. According to survey report of subproject "110kV Tham Luong substation and connected underground cable" in feasibility study, the geology and geography condition in the subproject area as summarized below.

43. The subproject area's topography is accumulative relief type. The surface is relatively smooth with separation of canals and traffic roads. The topography types' formed rocks include clay, clay loam, sand, clay sand, alluvium - Quaternary (a - Q).

44. The results of geologic exploration drilling under 40m in depth at the site, in combination with relevant geological data, show that the subproject area's geological structure includes the rock layers described from bottom to top. The bottom is gray-brown, gray-green clay layer with un-wet soil and hard state. The unconformable covering layers including smooth - rough sand with spongy – medium tight state, plastic clay sand, clay loam with– hard plastic state, clay with medium hard – hard state. The top is backfilled soil with smooth sand, clay loam, grit clay loam.

a. Soil

45. The soil of Ho Chi Minh City was formed upon two sediment classes: Pleistocene and Holocene. In which, Hoc Mon district and district 12 belonging to the Pleistocene sediment - ancient alluvial sediment. Main characteristics of the sediment class are hilly terrain, with a depth range of 3 to 25 meters, and oscillation in the southeastern direction. Due to the combined effects of natural factors, including creatures, climate, time and human activities, and erosion and decomposition, the sediment class has developed into grey soil.

i. Alluvial soil

46. Alluvial soil formed in the highlands terrain, which is as deep as 1.5-2 meters, the areas include Hoc Mon districts. The alluvial soil is classified into three types: alluvial soil with speckled layers, grley alluvial soil, and sweet alluvial soil. The main mechanical constituent of the alluvial soil is clay with a medium to high amount. Surface layers have a pH of 4.2 to 4.5. The pH degree of deeper layers is up to 5.6 or 6.0 but the acidity is higher. The soil has a medium humus content and fairly high nutrient content. In general, the alluvial soil is fertile and suitable for growing high-yielding paddy.

47. According to the results of field survey and analysis in lab, soil in the subproject area is divided the following layers:

Layer 1: covered soil: fine sand, clay loam, clay loam with rounded material. The average thickness is from 0.5 to 1.0m

Layer 2: clay loam with colors such as green grey, gold grey, red brown, damp soil, soft–hard plastic state. This layer only appeared at the bore hole No.1 of the survey item for underground cable. This layer has 1.3 m in thickness.

Layer 3: clay with colors such as brown grey, gold grey, red brown, damp soil, medium hard – hard state. This layer appeared at all the bore holes of the survey items for both underground cable and substation. This layer has from 5.8 to over 15m in thickness (this layer still appeared even at the deepest point (40m) of the bored hole No.1.

Layer 4: clay sand with colors such as green grey, gold grey, red brown, damp soil, plastic state. The layer only appeared in the two bore hole. The layer has 1.9-5m in thickness.

Layer 5: salty sand with grey, gold grey colors, water-saturated soil, loosed state. This layer only appeared at the bore hole No.1 of the survey item for underground cable. This layer has 5.0 m in thickness.

Layer 5a: medium - crushed sand with black grey, green grey, gold, water – saturated soil, and compact state. The layer only appeared in the two bore hole. The layer has 5.0 – 7.5m in thickness.

4. Surface water / groundwater resources

48. Ho Chi Minh City has a diverse river system. Dong Nai River has mean flow about 20–500 m^3/s, supplying 15 billion m^3 water. This river supplies main source of fresh water for the city. In addition, Sai Gon River has 80 km in length flowing through the city, mean flow is 54 m^3/s. The river's width of the section through HCMC is 225 - 370 m with a depth of 20 m. Dong Nai and Sai Gon rivers are connected inside the city by Rach Chiec canal system. Another river in HCMC is Nha Be river, which is the confluence of Dong Nai and Sai Gon river, flowing to the East Sea through two estuaries such as Soai Rap and Ganh Rai. In addition to the main rivers, HCMC has still a tangled canal system, such as Lang The, Bau Nong, Tra, Ben Cat, An Ha, Tham Luong, Cau Bong, Nhieu Loc-Thi Nghe, etc.

49. Because of Pleistocene sediment, the north of HCMC (including the subproject area) has the plentiful source of underground water. However, at the City South part, due to Holocene sediment, underground water usually has alum or salt. The old inner city has significant reserves of underground water, although the quality is not quite good, this water is still used at three layers like 0–20 m, 60–90 m and 170–200 m (Miocene sediment).

50. In the District 12, Hoc Mon and Cu Chi district, underground water has better quality and considerable reserve. The exploitation has been conducted in 60–90 m layers. This is important water resource for the area. The survey in the subproject area showed that underground water at the bore holes appears to be stable in 3.0-3.5 in depth[7].

5. Water quality

51. Surface water in HCMC is monitored under three categories that are water for supply purpose, water for other purposes and water in canal system. There are 22 stations monitoring water surface of rivers and canals around of HCMC, from which, three stations are near to the subproject site (Phu Cuong, canal N46, and Rach Tra), and 10 stations monitoring water surface of canals inner the city, including 1 station monitoring Tham Luong – Vam Thuat canal, which is near to the subproject site.

52. Overall, the quality of supply water is clean in thers of biochemical and chemical oxygen demand as well as coliform contents while the quality of water in canals inner the city is seriously contaminated. Tables 10 and 11 show some parameters measured in the stations close to the subproject site in 2012 and 2013 respectively.

[7] *Source: Survey report of the 110kV Tham Luong substation and connected underground cable, PECC4, October 2012*

Table 10. Surface water quality at the stations near subproject site in 2012

No.	*Station*[8]	*pH*	*Salinity (mg/l)*	*DO (mg/l)*	*COD (mg/l)*	*BOD_5 (mg/l)*	*Oil (mg/l)*	*Coliform (MPN/100ml)*	*Mn (mg/l)*
I	***Monitoring results of surface water quality for supply purpose***								
	Phu Cuong	6.25	63.64	4.33	4.10	1.98	0.028	11,993	0.046
	Canal N46	6.74	35.32	5.97	3.07	1.67	0.022	32.835	0.037
	QCVN 08:2008/BTNMT column A1[9]	**6-8.5**	**250**	**≥6**	**<10**	**<4**	**0.01**	**≤2,500**	-
	TCXD 33:2006, column A	-	-	-	-	-	-	-	<0.2
II	***Monitoring results of surface water quality for other purposes***								
	Rach Tra	6.29	-	2.30	6.18	2.92	0.027	40075	-
	QCVN 08:2008/BTNMT column B1	**5.5-9**	**-**	**≥4**	**<30**	**<15**	**0.1**	**7500**	-
III	***Monitoring results of the water quality from canals***								
	Tham Luong – Ben Cat – Vam Thuat (high tide)	6.97			72	30.5		$6.0x10^5$	
	Tham Luong – Ben Cat – Vam Thuat (low tide)	7.01			159	44.8		$1.1x10^6$	
	QCVN 08:2008/BTNMT column B2	5.5-9			<25	<50		<10.000	

(Source: Reports on monitoring results of environmental quality in HCMC in 2012, prepared by Environmental Monitoring and Analysis Center – DONRE of HCMC)

[8] Phu Cuong station is 16 km northeast of project site. Canal N46 station is 15 km northwest of project site, Rach Tra station is 10 km northeast of project site, and Tham Luong – Vam Thuan canal is about 2km south of project site.

[9] QCVN 08:2008/BTNMT: national technical regulation on surface water quality. Specifically, Column A1 means good use for drinking water and others, B1 – use for irrigation or relevant purposes, B2 – use for waterway traffic.

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Table 11. Surface water quality at stations near subproject site in the first half of 2013

No.	*Station*	*pH*	*Salinity (mg/l)*	*DO (mg/l)*	*COD (mg/l)*	*BOD_5 (mg/l)*	*Oil (mg/l)*	*Coliform (MPN/100ml)*	*Mn (mg/l)*
I	***Monitoring results of surface water quality for supply purpose***								
	Phu Cuong	6.27	114.17	3.56	4.10	2.35	0.028	5,547	0.034
	Canal N46	6.77	30.83	5.78	2.49	1.88	0.019	574	0.040
	QCVN 08:2008/BTNMT colume A1	6-8.5	250	≥6	<10	<4	0.01	≤2,500	-
	TCXD 33:2006, column A	-	-	-	-	-	-	-	<0.2
II	***Monitoring results of surface water quality for other purposes***								
	Rach Tra	6.24		2.40	6.27	2.67	0.025	13,035	
	QCVN 08:2008/BTNMT column B1	5.5-9	-	≥4	<30	<15	0.1	7500	-
III	***Monitoring results of the water quality from canals***								
	Tham Luong – Ben Cat – Vam Thuat (high tide)	6.91			91.56	10.54		1,187,300	
	Tham Luong – Ben Cat – Vam Thuat (low tide)	7.00			145.15	26.21		993.184	
	QCVN 08:2008/BTNMT column B2	5.5-9			<25	<50		<10.000	

(Source: Reports on monitoring results of environmental quality in HCMC in the first half of 2013, established by Environmental Monitoring and Analysis Center – DONRE of HCMC)

53. The results from Tables 8 and 9 show that almost all parameters of the supply water stations meet the standard (pH, BOD_5, COD, salinity, Mn) with the exception of DO, coliform

and oil contents which exceed the standard level. The water for other purposes has DO and coliform exceeding the standard level. Between 2012 and the first half of 2013, the parameters such as pH, BOD_5, COD increased in the two categories of water-body (supply purpose and others), but they decreased in the Tham Luong – Vam Thuat canal.

a. Groundwater quality

54. Groundwater in HCMC is polluted by microorganisms, especially at Pleistocene and upper Pliocene layers. Hoc Mon is one of locations where two layers are contaminated by microorganism and this content increased in 2012 compared to 2011 (Table 12). Water quality of under the Pliocene layer at Hoc Mon district and District 12 is relatively good.

Table 12. Groundwater quality in Hoc Mon and District 12 (2012)

District	stations	pH	TDS	hardness	NO3-	Fe	total coliform	fecal foliform
			mg/l	mgCaCO3/l	mg/l	mg/l	MPN/100ml	MPN/100ml
I. Pleistocene layer								
Hoc Mon	Thoi Tam Thon	6.08	9	22.42	0.04	3.38	86	3
	Dong Thanh company	7.35	1604	107.41	0.11	3.44	8011	0
district 12	Tan Chanh Hiep	4.85	223	29.36	6.61	0.69	140	10
	Dong Hung Thuan	6.06	477	163.08	20.5	5.32	907	41
II. Upper Pliocene layer								
Hoc Mon	Thoi Tam Thon	6.59	91	42.97	0.07	2.11	514	500
district 12	Tan Chanh Hiep	5.06	124	16.78	2.26	0.77	1198	4
III. Under Pliocene layer								
Hoc Mon	Thoi Tam Thon	6.07	16.14	21.92	0.04	1.19	161	1
district 12	Tan Chanh Hiep	5.8	96.68	25.09	3.32	1.08	7158	227

(*Source: Reports on monitoring results of environmental quality in HCMC in 2012, established by Environmental Monitoring and Analysis Center – DONRE of HCMC*)

55. There are no surfaces affected by subproject construction and operation, with the result that water environment was monitored through underground water at three positions (two in Tan Thoi Nhat Ward, and one in Ba Diem commune). The results show that most of parameters

meet the permitted standard at QCVN 09:2008/BTNMT, except for the organic content which exceed the standard (Table 13).

Table 13. The analyzed results of underground water quality in the subproject area

No	Parameter	Approach	Unit	Result			QCVN 09:2008/BTNMT
				N1	N2	N3	
1	Temperature	machine	^{o}C	27,4	28,8	27,2	-
2	Color	SMEWW 2120 B:2005	Pt-Co	20	16	18	-
3	Odor	SMEWW 2150 B:2005	TON	KPH	KPH	KPH	-
4	taste	SMEWW 2160 B:2005	FTN	KPH	KPH	KPH	-
5	pH	TCVN 6492:1999 (*)		6,57	6,67	6,81	5,5 - 8,5
6	DO	SMEWW 4500O-C:2005 (*)	mg/l	6,3	5,7	5,9	-
7	TSS	TCVN 6625:2000 (*)	mg/l	27	22	29	-
8	COD	SMEWW 5220 COD-C (*)	mg/l	9	10	12	4
9	BOD_5 ($20^{o}C$)	TCVN 6001-1: 2008 (*)	mg/l	4	5	5	-
10	$N\text{-}NH_4^+$	SMEWW 4500 – NH_3 F (*)	mg/l	0,036	0,012	0,042	0,1
11	$N\text{-}NO_3^-$	SMEWW 4500-NO_3-E	mg/l	0,028	0,064	0,016	15
12	$N\text{-}NO_2^-$	SMEWW 4500-NO_2-B(*)	mg/l	0,006	0,008	0,012	1,0
13	PO_4^{3-}	SMEWW 4500P-E-2005(*)	mg/l	0,096	0,021	0,075	-
14	Cl^-	TCVN 6194 - 1996	mg/l	12	25	13	250
15	T -Fe	TCVN 6177 - 1996	mg/l	0,087	0,042	0,061	5
16	Chì (Pb)	SMEWW 3111-B	mg/l	KPH	KPH	KPH	0,01
17	*T- Ecoli*	SMEWW 9221 E – 9222E	(MPN/100ml)	KPH	KPH	KPH	KPH
18	T- *Coliform*	SWEWW 9221:2005	(MPN/100ml)	KPH	KPH	KPH	3

(Source: The south environment and meteo-hydrology sub-institute, July /2012)

B. Biological Environment

1. Vegetation and Land Use

56. District 12 and Hoc Mon have more area of agricultural land than many inner districts in HCMC. Agricultural land in these areas is mainly grown crops, vegetation, and rice. This kind of land is primarily found in Thoi An, Tan Thoi Nhat, An Phu Dong and Thoi Hung wards of District 13, and overall communes in Hoc Mon district.

57. Vegetation and land use systems occurring within the RoW is shown in Table 14 which shows that the majority of the RoW is roads occupying 1955 m of the RoW while the other feature is paddy agriculture which occupies 43 m of the RoW. There is no undisturbed natural forest remaining anywhere within the RoW.

2. Wildlife

58. The area has been residential area for long-term period and therefore no original habitats remain in the area. No significant wildlife occurs any longer within the area. There are no animals that could interfere with the underground cable.

3. Conservation Areas

59. There are no conservation areas within the proximity of the transmission line. The route does not cross or intrude into any conservation area, buffer area or any possible planned future extension of these areas.

Table 14. Vegetation and Land Use within RoW of transmission line

No	Section	Length (m)	Area (m^2)	Vegetation and land use within ROW (m)					Vegetation and land use within substation and tower foundation (m2)		Remark
				Agricultural land	Tree	Road	Residential area	Commercial area	Agri-cultural land	Commercial area	
I	**Transmission line**										
	Foundation of tower 28a		57.6						**57.6**		
1	Starting point - G1	173	360	43	-	130	-	-	89.44		
2	G1-G21	1489	3097	-	-	1489	-	-			The existing roads like HW 1A, Phan Van Hon, Tan Thoi Nhat 1
3	G21 - G22	59	123	-	-	59	-	-			21m of Tan Thoi Nhat 1B street, 38m of the planned road for the planned residential area
4	G22 – Ending point	296	616	-	-	296	-	-			this section is on the territory of the 38-ha planning area
	TOTAL	2017	4196	43	0	1974	0	0	147.0		
II	**Substation**		1338.9							**1338.9**	These locations are on the territory of the 38-ha planning area
	Access road		2671.1							**2671.1**	

C. Socioeconomic condition

1. Population

60. The transmission line and substation is situated within Ho Chi Minh City and includes 1 district with 1 commune and 1 ward. The population within the immediate subproject communes is 65,363 persons with 71% of the population being rural-based and the remaining 29% as being urban-based. Population statistics for the subproject communes is shown in Table 15. There are no ethnic groups in the area, except a few Chinese people.

Table 15. Population distribution within the subproject area

Location			Rural Communes	Urban Wards	Population (no)	Female (%)	Male (%)
Province	District/	Commune/ Ward					
HCM City	District 12	Tan Thoi Nhat		46673	46673	49,8	50,2
	Hoc Mon	Ba Diem	18690		18690	50,5	49,5
TOTAL			**18690**	**46673**	65363		
%			**29%**	**71%**	**100%**		

Source: Statistical Data from 2010 Census

2. Local Economy

61. Ho Chi Minh City leads the country on economic growth. According to the statistics of HCMC Bureau of Statistic, the GDP growth rate in 2010 was 11.8%, which in 2012 decreased to 9,2% (nearly double that of Vietnam ‘s GDP). Ho Chi Minh City now accounts for one third of the country's GDP and is the main economic area and growth centre in the south of Vietnam where it contributes 66.1% of GDP in the southern key economic area and 30% of the total GDP of the southern region.

62. Tân Thới Nhất ward is the Northwest entrance gate to the centre of HCMC. The economic development can ensure the annual average growth rate of 18%-20%. The economy of the ward is focused in industry, commerce and services with 2 clean industrial areas at zone 4.5 which is intermingled with residential areas. Presently there are 160 companies, factories located in the ward and more than 1000 small business of handicraft products, commerce, and services. The number in labor age of the ward is 31,920 persons accounting for 68.39% of total population of the ward. GDP per capita in 2010 reached 4,690,000 VND/ month.

a. Bà Điểm commune

Agriculture:

The agricultural land is about 371.51 ha accounted for 52.69%. There are 1487 agricultural labors accounting for 2.24%. The plantations are mainly spicy vegetables, various decorative plants and husbandry. The agricultural product value is about 35.000 mils VND.

Industry

Industry consists of small industry and handicraft. Presently, there are 263 units for industry-handicraft production. The output of industry-handicraft production reached 690,000 mils VND.

Commerce and Services

The revenue in the year of 2011 reached 805,000. There are 2,620 HH performing commercial businesses; the goods are diversified. There are 818 HH performing room renting business (8,771 rooms) for nearly 24,005 tenants. There are 38 HH performing in hotel and guesthouse. The number in labor age of the ward is 10,035 persons accounting for 53.69% of total population of the commune.

3. Social Infrastructure

a. Public Health and Sanitation.

63. The location of the underground cable close to Ho Chi Minh City means that all communities have good access to medical services. Local medical facilities include healthcare stations at the commune level which includes first aid and medical assistance for minor illnesses and maternal services. Medical emergencies are referred to district hospitals while more complex surgery is carried out in the main hospitals in Ho Chi Minh City. Services and trained medical staff are increasing.

64. The incidence of HIV/AIDS in Ho Chi Minh is the highest in Vietnam. According to the "Analysis and Advocacy" subproject of USAID the total number of people living with HIV in Ho Chi Minh City is expected to rise from 72,400 in 2006 to 89,900 in 2010 and 105,800 in 2020. In 2006, there were about 4,800 new AIDS cases in Ho Chi Minh City, in 2012 this figure was 1099 new cases which held 18.5% of total new cases in the whole country (According to report No. 755/BC-BYT of Health Ministry dated September 4th 2012). The number of people with HIV is 49.429 people as per statistics in the first quarterof 2012.

65. In Tan Thoi Nhat: 100% of HHs can use clean water. The percentage of collected/treated solid wastes is about 95%. Percentage of HHs having proper toilet is about 100%. In Bà Điểm commune: By the year 2010, in the whole district, there were 10 clinics with 187 beds for patients. Close attention was paid on medical care for children. Total number of children enjoying the extended vaccination program is about 1,190. Total number of children fully enjoying the extended vaccination program with 6 shots in the district reached 97,39%. Total number of turns of treated patients is about 240,722 turns. Number of in-patients 2,668 persons.

b. Education

66. Presently, Tân Thới Nhất ward has completed the universalization of high school program. Number of 5-year old children entering kindergarten is higher than 95%; Number of 5-year old children entering primary schools reached 100%. Percentage of high school graduates in the year 2011 in the area reached 90,08%. In Ba Diem commune in 2010 there are 34 schools, 486 classes with 1,.842 students of all levels. Percentage of high school graduates in the year 2010 in the district reached 90%.

c. Communications:

67. The subproject area is being covered by many telephone networks such as Vietel and VNPT telecoms, and some other telecom companies. Therefore, it is highly convenient for people to communicate and develop this sector.

d. Water and electricity:

68. The subproject area does not have tap-water system, main water source supplying people's life is underground water at drilled well. District 12 and Hoc Mon district are supplied electricity from Hoc Mon 220kV SS, Vinh Loc 220kV SS; Tan Binh 1 110kV SS; Go Vap 1 110kV SS; Tan Hiep 110kV SS. The substations supply large area with crowded population, high electric load.

e. Infrastructure for transportation

69. Infrastructure development for transportation is being constantly improved which has increased the standard of living and access to services. The road network is reasonably well developed throughout the subproject area. A network of provincial, district, commune and village roads also serve the area. Traffic in the subproject area is convenient with many important roads such as HW 22 (Truong Chinh street), HW 1A, provincial roads No. 9, 12, 14, 15, 16, and thickness of district-road system. Most of roads in the subproject area are concreted and asphalted which is convenient to traffic movement of cars, buses, and tipper trucks. In the future, District 12 will have a railway system which create advantageous conditions for the region's traffic. Districts 12 and Hoc Mon have Sai Gon river covering the east border which are also important means of river navigation.

4. Cultural and Heritage Sites

70. HCMC is one of largest and oldest city in Vietnam, and has many cultural and heritage sites. The most prominent cultural and heritage sites in the city center are the Reunification Palace (*Dinh Thống Nhất*), and Notre-Dame Cathedral (*Nhà thờ Đức Bà*). The city has various museums including the Ho Chi Minh City Museum, Museum of Vietnamese History, the Revolutionary Museum, the Museum of Southeastern Armed Forces, the War Remnants Museum, the Museum of Southern Women, the Museum of Fine Art, the Nha Rong Memorial House, and the Ben Duoc Relic of Underground Tunnels. The Củ Chi tunnels are northwest of the city in Củ Chi District.

71. The PECC4 have complied a list of cultural and heritage sites within 500 m from the transmission lines. There are several temples and other public infrastructure within the vicinity of the underground cable has been sited to avoid these structures. However, based on the subproject scale and activities, it can be confirmed that the subproject activities will not have an impact on those cultural heritage sites. The PECC4 confirms that the separation distances are acceptable and as such none of these structures will be affected by the subproject. A list of sites within the vicinity of the transmission line is given in Table 16. A list of sites within the vicinity of the substation is given in Table 17.

Table 16. Historic Buildings and Public Infrastructure within 500m of Transmission Line

No	Distance from center line (m)		Name of infrastructures	Location
	Left	Right		
1	78		Cemetery	78m far from the starting point. Tien Lan village, Ba Diem commune, Hoc Mon dsitrict
4		5	Tuong Quang 2 Temple	11/9 Phan Van Hon, Tan Thoi Nhat ward, district 12. 20m in the west of Phan Van Hon - Tan Thoi Nhat crossroads
5		5	Nguyen Anh Thu Temple	5m far from G24. Located on Tan Thoi Nhat 1B street, Tan Thoi Nhat ward, district 12.

Source: investigated by PECC4

Table 17. Historic Buildings and Public Infrastructure within 500m of the Substation

Substation	Name of infrastructures	Distance and direction from the substation
110kV Tham Luong Substation	Nguyen Anh Thu temple	122m on the east
	Tường Quang Temple	300m on the north

(Source: investigated by PECC4)

5. UXO Clearance

72. After decades of war UXO remains a significant issue in Vietnam. The presence of UXO was confirmed by District 12 military command in which the RoW is located who told that they will cooperate with PECC4 to clear UXO before construction commences[10]. Clearing of UXO within the RoW is the responsibility of NPT and is not funded as a part of the loan (see letter 234/BCH-HC in Appendix C).

6. Subproject affected people

73. A few communities will be affected by loss of land and loss of assets within the RoW. All households that are affected by permanent or temporary losses will be compensated according to the Resettlement Plan (RP). Loss of land includes both permanent and temporary loss of land as defined below.

.

a. Permanent loss

74. This land includes: (i) loss of 57.6 m^2 for the construction of the tower foundation (28a) and substation which will be acquired by HCM PC, and which will affect 1 household (hh) with 2

[10] Details of landmine clearance are presented in the Circular 146/2007/TT-BQP by Ministry of Defence dated September 11 2007 guiding UXO clearance for project construction.

persons; and (ii) loss of 89.44 m^2 caused by 43 metres of the first section of the underground cable which is located on the agricultural land without trees.

b. Temporary loss

75. This includes land along the underground cable. The loss will be about 3411m^2 of the existing roads which are managed by the HCMC Department of Traffic and Transport (HCMC DOT), urban transport management board No.3 – under HCMC DOTT, and the DPCs of Hoc Mon and District 12. During operation normal use of the roads will occur provided vehicle loads do not exceed road bed load capacity.

D. Additional Features of Substation and Transmission Line Sites

76. Figure 2 shows views of origin of 110 kV line at Hoc Mon OHL, sections of street/lanes the UGC will run, and the site of the new substation site in open field area just east of abandoned buildings.

Figure 2. Views of route of new Tham Luong 220 kV UGC line and Substation site

Fig 2a:
Origin of new 110 kV UGC line at existing Hoc Mon OHL - in distance.

	Fig 2b: Initial section of lane UGC will run under
	Fig 2c: Mid-section of UGC route - to be placed street-side of curb.

	Fig 2d: Location of final section of UGC near SS site
	Site of new 110 kV substation in mid-field of photo

VI. INFORMATION DISLCOSURE AND PUBLIC CONSULTATION

A. Information disclosure

77. Formal disclosure to affected persons and stakeholders of information on the Tham Luong 110 kV Substation and Underground Transmission Line that occurred during the IEE is meant to form the beginning of continued information disclosure and stakeholder involvement as the subproject is implemented. As part of the stakeholder communication strategy regular information exchange meetings with stakeholders are strongly encouraged throughout implementation of the subproject.

78. The IEE must be easily available to the stakeholders contacted during examination in written and verbal forms in local language of Vietnamese. At a minimum the Executive Summary of the IEE should be translated to local language and distributed to all APs. The IEE should be available on the EVNHCMC website, at the EVNHCMC office in Ho Chi Minh, and at the subproject sites. Similarly, all subproject reporting with specific reference to stakeholder consultation minutes, environmental monitoring, and reports on EMP implementation released by the EA/IA should be available at the same offices and websites. The IEE will be available on the ADB website as well as EMP reporting that is prepared by the EA/IA after implementation begins.

B. Public Consultation

79. A stakeholder consultation strategy was developed to meet the requirements of meaningful consultation as stipulated by the SPS (2009). The strategy embodied the principles of meaningful engagement, transparency, participation, and inclusiveness to ensure that affected and marginalized groups such as women, and the poor, were given equal opportunities to participate in the design of the subproject.

1. Identification of Stakeholders

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

- Institutional stakeholders such as: (i) PPC, (ii) DPC; (iii) Project EA, (iv) PECC4, and (v) commune leaders;

- Mass organizations such as Womens Union, and Farmers Union which provided information for the design of the various subproject interventions, and which might participate in implementation of measures and interventions;

- Affected households and businesses living along the transmission line 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

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

2. Public consultation meeting

81. Formal community consultation meetings were held to discuss the location and impact of the transmission line and substations for both environmental and social aspects. Public consultations were held in Tan Thoi Nhat Ward – District 12 and Ba Diem commune- Hoc Mon District of Ho Chi Minh City on 30th of October 2013.

82. The public meeting consisted of the following three component procedures:

(i) The engineering consultant introduced the subproject including the substation location, the route of underground cable, and the length of the cable that will traverse communes and wards;

(ii) The environmental consultant presented ADB's environmental policy, safety regulations in the Vietnam power sector, anticipated environmental impacts and respective mitigation measures (to be developed in IEE), the grievance redress mechanism for environmental and resettlement problems; and

(iii) The social/resettlement consultants presented: ADB's resettlement plan; impacts due to the acquisition land and properties; policies of GOV and local authorities, the Project's policies in compensation for loss as the state acquired land and properties on land; and Potential impacts due to land acquisition/resettlement

83. During the meeting people raised their questions and comments on the environmental issues. The PECC4 consultants answered and explained all questions to the participants. The majority of the concerns that were raised were related to compensation of lost land and crops.

84. The participants of the public consultation meeting included Commune leaders, representatives of mass organization such as Women Union, Farmer union and affected people. The total number of people consulted was 35 (Appendix B).

3. Results of Public consultations

a. Comments from communal authorities

85. The comments/questions of local authorities/people, and the answers of subproject owners and consulting company PECC4 are summarized in Table 18. The main concerns of the subproject are as follows:

i. Request advanced notice to the local authorities from the subproject owner/contractor when the field survey and construction are taking place. The contractor must comply with the work schedule in order to avoid negative effects on life and livelihoods of the local community.

ii. Request that the street is fully restored including sewage drainage from construction activities. Specific construction methods used to prevent/minimize noise during construction are desired.

iii. Request advance notice of the time when the underground cable is laid into the trench so that local people can put their sewage drain-pipes into the same trench at the same time.

iv. Request understanding of the risks of the underground cable to human health and safety.

Table 18. Summary of Public Questions, and Response by PECC4, and Subproject

Location and time	Comments/questions from local authorities[11]	Answers of Project owners and consultants company PECC4	Project Response[12]
Tan Thoi Nhat Ward-District 12-HCM city 30 October 2013	It is necessary to inform local authorities when conducting surveys and doing construction.	Will do that	The EMP specifies that local authorities and the community along subproject site will be notified of construction schedule and activities
	Construction activities must comply with the schedule in order to avoid negative influence on life and production of local people.	The IEE has identified these issues and the contractor will be required to carry out dust and noise suppression activities. If these continue unabated communes may report the matter to the Subproject Engineer which will be addressed according to the Grievance Reporting Mechanism.	The Mitigation Plan of EMP prescribes specific mitigation sub-plans for all construction-related disturbances and impacts which includes optimal timing of construction activities such as trench digging for UGC.
	The foundation of the street, and sewage drainage must be restored where trench for UGC is dug.	When construction finished damaged sewer/drainage will be reconstructed.	The planned 50 m sections of trench for the UGC that are excavated / night are restored completely before 06:00 including drainage
	The compensation rate that was presented by the consultant is reasonable.	Agree	n/a
Ba Diem Commune Hoc Mon District-HCM city 30 October 2013	(i) How many meters are excavations deep? (ii) How many meters is the safety corridor wide?	(i) 1.7 m and (ii) 4m, 2m each side, respectively	The excavated trench width and depth of trench will be minimal in order to minimize impact on street, drainage and to minimize disturbance.
	What are construction methods? How to reduce noise?	Cutting and digging roads. Construction work will be conducted at short sections each for one day. The ground will be restored as it was after construction finished	See above, and the specific mitigation sub-plans in Mitigation Plan in EMP for construction noise, dust etc

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

Location and time	Comments/questions from local authorities[11]	Answers of Project owners and consultants company PECC4	Project Response[12]
		within one day. To reduce the noise at night time the digging maybe conducted in the daytime.	
	When the underground cable is put into the canal, sewage drain-pipes would have to put at the same time.	Will do that	As indicated at left the restoration of wastewater drainage will coincide with trench restoration
	The local people need to be informed about construction time in advance in order that they can install their sewage drain-pipes.	When installation of cable begins the contractor will inform people to coordinate replacing/installing drain piping for wastewater from their houses	As indicated at left, new or repaired hook-ups to street drain will occur before trench is filled
	Specific construction schedule is necessary.	Local people will be informed of construction schedule in advance.	As part of continued public consultation, the affected community will be given schedule of all construction activities
	Local people need to be informed about safety level of the underground cable to the human health	Impacts of electro-magnetic field on the human health and infrastructures under the corridor of the line were discussed with local people, and that if the height of houses under the safety corridor meet electrical safety regulations, they shall be allowed to exist. The safety of underground cables has been approved by the DONRE of HCM city.	The IEE and EMP indicate that health issues from EMF are unfounded.
	Compensation rate should be identified at the compensation time	Compensation rates will be appropriately calculated in accordance with decision 35/2010/QD-UBND.	As per RP
	Are the compensated land areas calculated the		As per RP

Location and time	Comments/questions from local authorities[11]	Answers of Project owners and consultants company PECC4	Project Response[12]
	safety corridor of the underground cable?		
Conclusion	Tan Thoi Nhat Ward People's Committee (CPC), Ba Diem Commune People's Committee and affected households agree and will support the construction of Tham Luong 110kV substation and the 110kV underground cable connecting to Tham Luong SS.		Follow-up consultations of community views of subproject will occur.

b. Comments from Military Headquarter of District 12-Ho Chi Minh City:

86. The Power Engineering Consulting Joint Stock Company 4 will contact the authorities to carry out the unexploded ordnance clearance in accordance with regulations. Thus, the PECC4 has sent a letter No. 199/TVD4-CNPN dated 28 September 2012 to District 12 Military Command to get comments on the potential effects of the "110kV underground cable connecting to Tham Luong substation" on military zones, communication system, and mine situation in the subproject area.

87. The District 12 Military Command conveyed the following comments:

"To ensure that the implementation of the 110kV underground cable will not affect communication system of security and national defense, District 12 Military Command suggests that PECC4 – the South branch contact the management units of communication system of security and nation defense. They are:

1) Communication regiment No.23 – military region No.7
2) Communication brigade No.596/communication high command
3) Viettel trade and import-export limited company

88. District 12 Military Command will assist in clearance of mines, un-exploded ordnances based on request".

VII. POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATIONS

89. The assessment of potential impacts of the subproject is structured by the three development phases of the subproject defined by: *pre-construction*, *construction*, and *post-construction operational phase.* The two major components of the subproject (Substation and Transmission line) addressed within this assessment.

90. In this way potential impacts of common activities of the three phases can be addressed together thereby minimizing redundant assessments. Potential impacts specific to the subproject component are discussed separately. This structure is carried forward and used to structure the environmental management plans (EMP) that will be prepared for the subproject (Section X).

A. Subproject Benefits

91. The single comprehensive benefit of the subproject is the provision of needed electrical power to western Ho Chi Minh City to support the rapid urban, commercial, and industrial development that is occurring. The additional electrical power will significantly reduce power outages or brownouts that occur in the area, and the need to shunt electrical power from other parts of the city.

B. Pre-construction Phase

92. Negative impacts associated with the pre-construction phase of the subproject concern land acquisition and compensation. At the feasibility design stage some residential and agricultural land will be permanently lost whereas much more temporary land loss will also occur. The temporary loss is associated with the UGC while the permanent land will occur as a result of the the substation. The details of the land losses and compensation are found in the Resettlement Plan (RP) which is under separate cover.

a. Updating Environmental Management Plans

93. The subproject EMP will need to be updated during the pre-construction to ensure that the EMP fully addresses the potential impacts of the final detailed design of the Tham Luong 110 kV Substation and Transmission Line. This will involve finalization of the Mitigation and Monitoring Plans of the EMP that will manage and measure potential impact areas such as erosion, noise, dust and air quality, construction waste and spoil disposal, construction traffic, and worker and public safety at the subproject sites. The updated EMP will be used by the contractors to prepare their contractor environmental management plans (CEMP).

94. The key impact management measures to be implemented during the pre-construction phase are:

1) Initiation of the RP and land compensation for affected households and businesses;
2) Completion of detailed designs of the subproject; and
3) Updating and initiation of the subproject EMP.

C. Construction Phase

95. The potential environmental impacts of the subproject are associated primarily with the construction phase of the two subproject components. The substation and entire transmission line is not located in a national protected area, and there are no documented rare or endangered wildlife in the area.

1. Potential impacts of the Substation and Transmission Line

96. Short-term construction-related impacts common to the construction of the Substation and Transmission Line are, for example, reduced and/or blocked public access, disrupted agriculture, noise, dust and air pollution from NOx, SOx, and CO caused by construction truck traffic and heavy equipment use, soil and paddy pollution caused by equipment operation and maintenance, public and worker accidents, increased traffic accidents, erosion and paddy sedimentation, drainage and flooding problems, solid waste and domestic pollution from worker camps, social disease and community problems caused by migrant workers.

97. The different short-term construction-related impacts will likely differ in magnitude at the substation site compared to the UGC corridor site. The disturbances to street residences of the trenching of the new UGC will likely be greater that the construction of the substation in the open field area.

2. Mitigation measures

98. Construction management measures to mitigate the potential common impacts associated with the construction phase of the substation and transmission line are exemplified below. The mitigation measures are detailed further in the subproject EMP.

1) The entire substation area and corridor for the transmission line must be reviewed, and surveyed for unexploded ordnance (UXO) by the military of Viet Nam prior to construction. If such ordnance is detected clearing work will need to be commissioned prior to undertaking civil works.
2) Open excavations should be fenced, and trenches covered where public walkways or vehicles must cross.
3) A cultural chance find management sub-plan must be in place in the EMP for cultural artifacts and property.
4) Regular use of wetting agents should be employed at construction sites and along construction roads to minimize dust.
5) All construction vehicles and gas powered equipment should be maintained in proper working order to minimize emissions, and not operated at night if possible to minimize noise.
6) Speed limits should be posted and adhered to by construction vehicles.
7) Where possible construction vehicles should use different roads or dedicated lanes of roads shared by the public.
8) Trees and other vegetation at all construction sites and along road corridors should be protected with minimal removal.
9) Present and past land use should be reviewed to assess whether excavated soils are contaminated spoil. Contaminated spoil should be disposed at a landfill or a location approved by DoNRE.
10) Berms and/or silt curtains should be constructed around all excavation/trench sites and along all rice paddy and surface waters to prevent soil erosion and sedimentation.
11) Local workers should be used as much as possible to prevent or minimize influx of migrant workers, and incidence of social disease and community unrest.
12) Worker camps must have adequate domestic waste collection facilities and sufficient pit latrines that are located away from public areas and surface waters.
13) Dedicated fuel storage areas must be established away from public areas and marked clearly.
14) To minimize the risk of public and worker injury appropriate GoV regulations on Occupational, Safety, and Community Health must be applied[13], or the IFC/World Bank

[13] e.g. Decree 110/2002/ND-CP, supplementing some Articles of Decree 06/1995 on Labour Code of Occupational Safety and Health, MoLISA.

Environment, Health, and Safety Guidelines (2007) that govern the safe and orderly operation of civil works should be followed.

15) Aggregates (e.g., sand, gravel, rock) that are transported by truck should be covered.

16) Prolonged use of temporary storage piles of file should be avoided, or covered, or wetted regularly to prevent dust and erosion.

17) Sand extraction from any rivers for construction fill should be done at licensed areas only.

18) Storage of bulk fuel should be on covered concrete pads away from the public and worker camp. Fuel storage areas and tanks must be clearly marked, protected and lighted. Contractors should be required to have an emergency plan to handle fuel and oil spillage.

3. Component-specific potential construction impacts, and mitigations

99. The short-term construction-related impacts and required mitigations summarized above will vary between the substation site and UGC transmission line. Listed below are highlighted potential construction-related impacts specific to both subproject components.

a. Substation

100. Potential construction-related impacts of the substation are the congestion, blocked access, and increased risk of accidents along the access road to the open field site. The existing last section of narrow road to the site could become too small for future construction traffic requiring some widening. The final approach to the site passes beside a temple which will be exposed to construction traffic-related disturbances such as noise, dust, and risk of accidents.

b. Transmission line

101. The installation of the UGC transmission line at the curb of the streets will directly affect adjacent residences and businesses. Business activity and access to commercial establishments and residences will potentially be disrupted when the UGC is installed. Traffic along the sections being trenched will be disrupted with the additional construction traffic and the movement of construction materials in/out of the area.

102. The key mitigation of for the construction-related disturbances associated with the UGC transmission line is to schedule the work at night. For example during the inception phase EVNHCMC indicated that approximately 50 m sections of the UGC would be buried and the road restored between midnight and 06:00 section in order to minimize disruption to local businesses and community.

4. Protected Areas, Rare and Endangered Species, and Physical Cultural Resources (PCR)

103. The substation and entire transmission line is not located in a protected area, and there are no documented rare or endangered wildlife in the area.

D. Operation Phase

1. Substation

104. The potential impact of the completed 110 kV substation is restricted to worker safety, the potential for children of the community gaining access to the property, and spills of hazardous waste such as transformer oils. An increase in local traffic caused by substation employee traffic is not expected because the current bus and truck traffic that use the site for parking will be decreased after the site is constructed.

2. Transmission Line

105. Potential impacts associated with the operation of the UGC transmission line are restricted to worker and public safety during routine maintenance activities. The risk of negative health effects of electromagnetic fields (EMF) from the UGC is essentially zero, but also not tenable because negative health effects of EMF have not been established by the medical profession.

106. The collective mitigation for potential operation effects is to prevent public access to the substation property with effective fencing, and clear signage indicating the dangers of the different facilities. The public should be kept clear of all equipment maintenance areas

3. Climate Change

107. Regional Global Circulation Modeling project greenhouse-climate change induced changes to the frequency and severity of rainfall events in the subproject area. The design of the substation site includes sufficient infilling to a grade that will be resilient to flooding associated from a 100 year storm. Similarly, the UGC transmission line will be designed to withstand long periods of overlying standing water from flooding.

VIII. ANALYSIS OF ALTERNATIVES

108. Engineering alternatives to substation design focused primarily on cost of the transmission line with the current placement of the UGC being optimal. The subproject alternative of doing nothing and not building the new Tham Luong 110 kV substation and transmission line would result in the continued situation of power shortages in the area.

IX. PUBLIC GRIEVANCE REDRESS MECHANISM

109. A well-defined grievance redress and resolution mechanism will be established to address affected persons (AP) grievances and complaints regarding environmental issues, land acquisition, compensation and resettlement in a timely and satisfactory manner. All APs will be made fully aware of their rights, and the detailed procedures for filing grievances and an appeal process will be published through an effective public information campaign. The grievance redress mechanism and appeal procedures will also be explained in a subproject information booklet (PIB) that will be distributed to all APs.

110. APs are entitled to lodge complaints regarding any aspect of affected environments, land acquisition and resettlement requirements such as, noise, pollution, entitlements, rates and payment and procedures for resettlement and income restoration programs. APs complaints can be made verbally or in written form. In the case of verbal complaints, the committee on grievance will be responsible to make a written record during the first meeting with the APs.

111. A Grievance Committee with appointed environmental and social issues experience will be organized in local communes comprising of local leaders designated for such tasks. The designated commune officials shall exercise all efforts to settle APs issues at the commune level through appropriate community consultation. All meetings shall be recorded by the grievance committee and copies shall be provided to APs. A copy of the minutes of meetings and actions undertaken shall be provided to the EA/IA[14], and ADB upon request.

112. The procedures for grievance redress is defined below and summarized in Figure 3. The procedure described below should apply easily to both social and environmental issues and be consistent with the legal process for resolution of disputes in Viet Nam.

i) Stage 1: Complaints from APs for the first time shall be lodged verbally or in written form with the village head or commune leader. The complaints shall be discussed with the APs and the designated Head of Grievance Committee or members of the committee. Because initial environmental issues will most likely be construction-related the EO/contractor and then the ESU/IA need to be notified immediately. It will be the responsibility of the Head of Grievance Committee to resolve the issue within 15 days from the date the complaint is received. All meetings shall be recorded and copies of the minutes of meetings will be provided to APs.

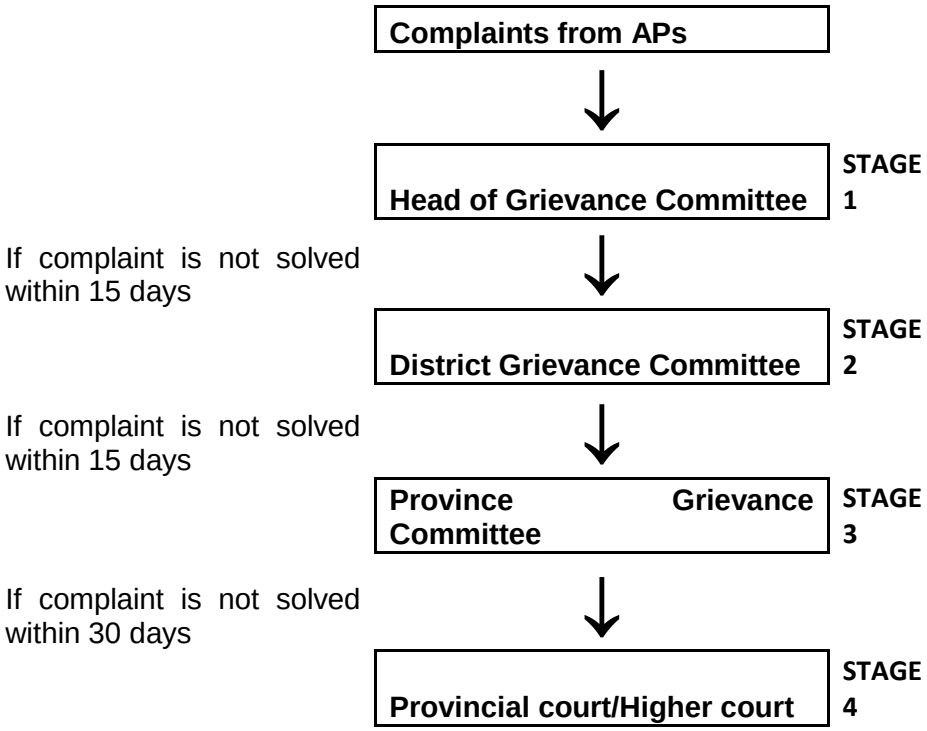
ii) Stage 2: If no understanding or amicable solution can be reached or if no response is received from the grievance committee within 15 days from filing the complaint, the APs can elevate the case to the District Grievance Committee. The District Grievance Committee is expected to respond within 15 days upon receiving the APs appeal.

iii) Stage 3: If the AP is not satisfied with the decision of the District Office, or in the absence of any response, the APs can appeal to the Provincial Grievance Committee (PGC). The PGC will review and issue a decision on the appeal within 30 days from the day the complaint is received.

[14] See Section XB below for institutional responsibilities for EMP

iv) Stage 4: If the AP is still not satisfied with the decision of the PGC or in the absence of any response within the stipulated time, the APs, as a last resort may submit his/her case to the provincial court. The court will address the appeal by written decision and submit copies to the respective entities which include the EA, DGC/PGC and the APs. If however, the AP is still not satisfied with the court's decision, the case may be elevated to the provincial court. If however, the decision of the provincial court is still unsatisfactory to the APs, the APs may bring the complaints to the Higher Court.

Figure 3. The public grievance redresses process



113. The EA and EVN will be responsible for checking the procedures and resolutions of grievances and complaints. The EVN/EA must have expertise and experience in social and environmental issues associated with infrastructure developments. The EVN/EA may recommend further measures to be taken to redress unresolved grievances. The environmental specialists will provide the necessary training to improve grievance procedures and strategy for the grievance committee members when required.

114. In cases where APs do not have the writing skills or are unable to express their grievances verbally, they are encouraged to seek assistance from the recognized local groups, NGOs, or other family members, village heads or community chiefs to have their grievances recorded in writing, and to have access to documentation, and any survey or valuation of assets, to ensure that where disputes do occur, all the details have been recorded accurately

enabling all parties to be treated fairly. Throughout the grievance redress process, the responsible committee will ensure that the concerned APs are provided with copies of complaints and decisions or resolutions reached.

115. If efforts to resolve disputes using the grievance procedures remain unresolved or unsatisfactory, APs have the right to directly discuss their concerns or problems with the ADB Southeast Asia Department through the ADB Viet Nam Resident Mission (VRM). If APs are still not satisfied with the responses of VRM, they can directly contact the ADB Office of the Special Project Facilitator (OSPF).

X. ENVIRONMENTAL MANAGEMENT PLAN

116. An EMP has been developed for the implementation of the Tham Luong 110 kV substation and UGC transmission line subproject. The purpose of the EMP is to integrate the results of the IEE into a formal management plan that is implemented in parallel with the subproject to prevent or minimize the potential environmental impacts and issues that were identified by the IEE. The EMP addresses the results of the public consultations on the subproject that were convened as part of the IEE.

117. The EMP, *inter alia*, consists of an Impacts Mitigation Plan, a Monitoring Plan, and an Emergency Response Plan. The EMP also prescribes the institutional responsibilities for the implementation of the EMP. The EMP is a management tool that provides a set of directives and guidelines that the subproject owner follows to prevent or minimize unnecessary environmental impacts of the subproject.

A. Institutional Arrangements and Responsibilities

At the feasibility stage the primary management framework[15] responsible for the implementation of the environmental management plan (EMP) for the new Tham Luong 110 kV Substation and UGC Transmission Line subproject is summarized as follows. The EVNHCMC is the executing agency (EA). The EA takes overall responsibility for implementing the EMP with executive support from the Power Project Management Board (PPMB); a subsidiary of EVN HCMC and the implementing agency (IA) of the subproject. The IA under the direction of the EA implements the subproject and EMP with an assigned environmental and social unit (ESU) whose sole responsibility is to implement the EMP.

118. The IA/ESU is supported by the [international] Project Implementation Consultant[16] (PIC). The PIC assists with completion of the detailed subproject designs, updates the EMP to address the detailed subproject designs, and assist with the implementation of the EMP. The PIC also delivers required capacity development and training to the IA/ESU. The ESU oversees and assists the work of the environmental officer (EO) of the construction contractor who implements the contractors EMP (CEMP)[17].

[15] Adapted from kick-off meeting presentation slides, December 10-13 in Ho Chi Minh City
[16] PIC to be defined
[17] Contractor Environmental Management Plan prepared by contractor as part of bid documents based on EMP

119. External support of the ESU for the implementation of the EMP is provided by the international and national environment specialists (ES) of the PIC, and an Environmental Monitoring Consultant (EMC) which is required to conduct the field sampling and laboratory analyses of the environmental monitoring plan (e.g., water quality, air quality) of the EMP that cannot be that cannot be performed by the contractor or IA/ESU. A summary of indicative responsibilities for implementation of the EMP is provided below.

120. The responsibilities of the EA with support from EVN include:

1. Overall responsibility for implementation of EMP;
2. Provide coordination and supervision for environmental and social safeguards and monitoring for IA/ESU;
3. Liaise with EVN and ADB on the implementation of the EMP; and
4. Coordinate resolution with IA/ESU with issues arising from the implementation of EMP.
5. Submit semi-annual monitoring reports to the ADB

121. The responsibilities of the ESU of IA include:

6. Assist PIC with updating the EMP to meet final detailed subproject design;
7. Notify DoNRE to verify GoV approvals of subproject are met;
8. Assist PIC with inclusion of CEMP requirements in contractor bid documents including bid evaluations based on updated EMP;
9. Undertake day to day management of EMP implementation activities;
10. Work with EMC on implementation of monitoring plan of EMP;
11. Ensuring compliance with loan covenants and assurances in respect of entire subproject, including EMP (as well as IPPs, GAPs, resettlement plans);
12. Lead follow-up meetings with all affected stakeholders;
13. Prepare and submit quarterly reports on EMP implementation to IA/EA;
14. Oversee implementation of CEMP by contractor;
15. Coordinate with ES of PIC for EMP implementation;
16. Undertake regular construction site inspections to ensure contractor implements CEMP properly; and
17. Ensure EO of contractor submits monthly reports on construction mitigations and monitoring.

The responsibilities of the ES (International and Naional) of the PIC are:

18. Updating the EMP to meet final detailed design of subproject;
19. Provide technical direction and support to ESU/IA for implementation of EMP;

20. Oversee design and delivery of capacity development and training of ESU/IA and EO of contractor(s);

21. Provide advice and support to EMC with their monitoring activities;

22. Review all reports prepared ESU/IA and EMC for EA and ADB; and

23. Review location of any possible contaminated sites near subproject.

The responsibilities of Environmental Officer (EO) of Contractor include:

24. Implement CEMP for construction phase of subproject; and

25. Prepare and submit monthly reports on mitigation and monitoring activities of CEMP any environmental issues at construction sites.

The responsibilities of external Environmental Monitoring Consultant (EMC) include:

26. Implement the environmental sampling required for monitoring plan of EMP that cannot be conducted by the contractor and ESU/IA/EO.

27. Perform required laboratory analyses for monitoring program detailed in EMP; and;

28. Prepare and submit quarterly reports to IA/ESU on monitoring activities.

122. The Department of Natural Resources and Environment (DoNRE) is the provincial agency which oversees environmental management of Ha Noi. The DoNRE with District staff provides direction and support for environmental protection-related matters including application of the Law on Environmental Protection No. 02/99/NA (1999), EIA, and environmental standards.

123. The ADB provides guidance to EA/IA with any issues related to EMP, and reviews biannual reports on EMP activities compiled and submitted by EA.

B. Summary of Potential Impacts of Subproject

The potential impacts of the subproject are summarized in Table 19.

Table 19. Summary of Potential Impacts of Subproject

Pre-construction Phase
• Permanent loss of some residential and agricultural land
Construction Phase

• Temporary loss of residential and agriculture land along TL • Common construction-related civil works disturbances such as dust, noise, reduced and/or blocked public access, disrupted business and recreation, noise, dust and air pollution from NOx, SOx, and CO caused by increased truck traffic and heavy equipment use, soil and surface water pollution caused by equipment operation and maintenance, public and worker accidents, disruption of traffic, increased traffic accidents, land erosion and surface water sedimentation, drainage and flooding problems, damage to existing roads and drainage canals, solid and domestic waste from worker camps, social issues and community problems caused by migrant workers.
Operational Phase
• Risk of worker and public safety at facilities • Spills of hazardous materials such as transformer oil

C. Mitigation Plan

124. The impact mitigation measures of the EMP are presented in a comprehensive mitigation plan for the subproject in Table 20. Similar to IEE the mitigation plan is structured by the three development phases of the subproject defined by the pre-construction; construction; and post construction operational phase. The mitigation plan addresses the environmental issues and concerns raised at the stakeholder meetings.

125. The mitigation plan combines construction phase impacts common to all subproject components for which single mitigation measures are prescribed. In this way redundant mitigation measures are not re-stated numerous times. However, impacts and required mitigations specific to subproject component are also identified or common mitigations that are particularly important for a subproject component are underscored. The mitigation plan identifies potential impacts, required mitigations, responsible parties, location, timing, and indicative costs.

1. Mitigation subplans

126. The mitigation plan is comprehensive by design because it will need to be updated to meet the final detailed designs of the subproject. The mitigation plan is organized into a series of mitigation sub-plans that address specific potential impact areas of the subproject. The sub-plans will assist the contractors with the development of their CEMPs as part of their bid documents, and ultimately will allow the ESU/IA, PIC, and contractors to focus more or less on the different potential impact areas as they arise with the implementation of the final designs of the subproject. Mitigation sub-plans of the EMP are drafted for example for: a) Construction drainage; b) Erosion; c) Noise and Dust; d) Contaminated Spoil Disposal; e) Solid and Liquid Waste Disposal; f) Construction and Urban Traffic; g) Utility and Power Disruption; h) Worker and Public Safety; i) Tree and Vegetation Removal and Site Restoration; j) Construction Materials Acquisition, Transport, and Storage, and k) Cultural chance finds.

Table 20. Environmental Impact Mitigation Plan

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[18] (USD)	Responsibility	
							Supervision	Implementation
Pre-Construction, Detailed Design Phase								
Confirmation of required resettlement, relocations, and compensation	No negative environmental impacts	1. Affected persons well informed well ahead of Subproject implementation.	All affected persons in subproject areas	Before subproject implemented	See resettlement plans	See resettlement plan	EA/IA/ESU	Resettlement committees
Disclosure, and engagement of community	No negative impacts	2. Initiate Information Disclosure and Grievance process of IEE	For all construction sites.	Beginning of subproject	Quarterly	No marginal cost[19]	IA/ESU	IA/ESU
GoV approvals	No negative impact	3. Notify DoNRE of Subproject initiation to complete EA requirements, and obtain required subproject permits and certificates.	Entire subproject	Before construction	As required	No marginal cost	EA/DoNRE	DoNRE

[18] Costs will need to be updated during detailed design phase.
[19] No marginal cost indicates that costs to implement mitigation are to be built into cost estimates of bids of contractors

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[18] (USD)	Responsibility	
							Supervision	Implementation
Detailed designs of Subproject,	Minimize negative environmental impacts	4. Work with PIC[20] to complete detailed designs of the upgraded access roads and cave tourist facilities. Ensure the following measures are included: a) identification of spill management prevention plans, and emergency response plans for all construction sites; b) no disturbance or damage to culture property and values; c) minimal acquisition of agriculture and forested lands d) locate aggregate borrow pits and rock supply areas away from human settlements with fencing and access barriers; e) none or minimal disruption to village water supplies along access roads, utilities, and electricity with contingency plans for unavoidable disruptions; f) none or minimal disruption to normal pedestrian and vehicle traffic along all road segments with contingency alternate routes; g) for built-up areas include specific plan to notify and provide residents and merchants of construction activities and schedule to minimize disruption to normal commercial and residential activities.	Final siting	Before construction initiated	Once with detailed designs documents	No marginal cost	PIC	EA/IA

[20] PIC is Project Implementation Consultant at detailed design phase to be determined

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[18] (USD)	Responsibility	
							Supervision	Implementation
Update EMP	Positive environmental impacts	5. Review finalized RoW of TL to confirm absence of valued ecological or cultural resources. 6. Re-clarify with DoNRE that no known rare or endangered species inhabit the Subproject areas 7. Identify any new potential impacts of subproject and include in EMP with special attention to residential areas. 8. Update mitigation measures and monitoring requirements of EMP where necessary to meet detailed designs, and to protect affected environments. 9. Submit updated EMP with new potential impacts to ADB to review. 10. Develop individual management subplans for: a) Construction drainage; b) Erosion; c) Noise and Dust; d) Contaminated Spoil Disposal; e) Solid and Liquid Waste Disposal; f) Construction and Urban Traffic; g) Utility and Power Disruption; h) Worker and Public Safety; i) Tree and Vegetation Removal and Site Restoration; j) Construction Materials Acquisition, Transport, and Storage, and k) Cultural chance finds.	All sites	Before construction initiated	Once with detailed designs documents		PIC	IA/ESU
Update EMP	Positive environmental impacts	11. Update information where necessary on water quality and presence of valued aquatic biota at/near SS site	At SS site	Before construction initiated	Once with updated EMP	See Monitoring Plan below	PIC	PIC/ESU
Confirm approved construction waste disposal sites	No negative impact	12. Notify DoNRE to confirm locations of sites for borrow pits and disposal areas for construction and hazardous waste for Subprojects, and obtain required permits.	Entire Subproject	Before construction	As required	No marginal cost	IA/DoNRE	ESU

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[18] (USD)	Responsibility	
							Supervision	Implementation
UXO survey, and removal	Injured worker or public	13. Ensure GoV military is consulted and clears UXO areas where necessary	All construction sites.	Beginning of Subproject	Once	See Monitoring Plan below	EA/IA	ESU/GoV
Develop bid documents	No negative environmental impact	14. Ensure updated EMP is included in contractor tender documents, and that tender documents specify requirements of EMP must be budgeted. 15. Specify in bid documents that contractor must have experience with implementing EMPs, or provide staff with the experience.	All Subproject areas	Before construction begins	Once for all tenders	No marginal cost	PIC	IA/ESU
Create awareness of physical cultural resources in area	No negative environmental impact	16. EA to review potential locations of physical resources, and explain possible PCR to contractors and PIC	All Subproject areas	Before construction begins	Once	No marginal cost	EA/IA	IA/ESU
Obtain and activate permits and licenses	Prevent or minimize impacts	17. Contractors to comply with all statutory requirements set out by GoV for use of construction equipment, and operation construction plants such as concrete batching.	For all construction sites	Beginning of construction	Once	No marginal cost	EA/PIC	ESU and contractors
Capacity development	No negative environmental impact	18. Develop and schedule training plan for IA/ESU/EO to be able to fully implement EMP, and to manage implementation of mitigation measures by contractors. 19. Create awareness and training plan for contractors whom will implement mitigation measures.	All Subproject areas	Before construction begins	Initially, refresher later if needed	No marginal cost	PIC	PIC
Recruitment of workers	Spread of sexually transmitted disease	20. Use local workers as much as possible thereby reducing number of migrant worker	All work forces.	Throughout construction phase	Worker hiring stages	No marginal cost	EA/IA	Contractor's bid documents

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[18] (USD)	Responsibility	
							Supervision	Implementation
Construction Phase of 1100 kV Substation and Transmission Line								
Initiate EMP and sub-plans,	Prevent or minimize impacts	21. Initiate updated EMP and CEMP including individual management sub-plans for different potential impact areas that are completed in pre-construction phase (see sub-plan guidance below).	For all construction sites	Beginning of construction	Once	No marginal cost	IA/PIC	ESU and contractors
Worker camps	Pollution and social problems	22. Locate worker camps away from human settlements. 23. Ensure adequate housing and waste disposal facilities including pit latrines and garbage cans. 24. A solid waste collection program must be established and implemented that maintains a clean worker camps 25. Locate separate pit latrines for male and female workers away from worker living and eating areas. 26. A clean-out or infill schedule for pit latrines must be established and implemented to ensure working latrines are available at all times. 27. Worker camps must have adequate drainage. 28. Local food should be provided to worker camps. Guns and weapons not allowed in camps. 29. Transient workers should not be allowed to interact with the local community. HIV Aids education should be given to workers. 30. Camp areas must be restored to original condition after construction completed.	All worker camps	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[18] (USD)	Responsibility	
							Supervision	Implementation
Training and capacity	Prevent of impacts through education	31. Implement training and awareness plan for IA/ESU/EO and contractors.	ESU office, construction sites	Beginning of construction	After each event	No marginal cost	PIC	PIC/ESU

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[18] (USD)	Responsibility	
							Supervision	Implementation
Implement Construction materials acquisition, transport, and storage sub-plan	Pollution, injury, increased traffic, disrupted access	32. All borrow pits and quarries should be approved by DoNRE. 33. Select pits and quarries in areas with low gradient and as close as possible to construction sites. 34. Required aggregate volumes must be carefully calculated prior to extraction to prevent wastage. 35. Pits and quarries should not be located near surface waters, forested areas, critical habitat for wildlife, or cultural property or values. 36. If aggregate mining from fluvial environments is required small streams and rivers should not be used, and dry alluvial plains preferred. 37. All topsoil and overburden removed should be stockpiled for later restoration. 38. All borrow pits and quarries should have a fence perimeter with signage to keep public away. 39. After use pits and quarries should be dewatered and permanent fences installed with signage to keep public out, and restored as much as possible using original overburden and topsoil. 40. Unstable slope conditions in/adjacent to the quarry or pit caused by the extractions should be rectified with tree planting. 41. Define and schedule how materials are extracted from borrow pits and rock quarries, transported, and handled and stored at sites. 42. Define and schedule how fabricated materials such as steel, wood structures, and scaffolding will transported and handled. 43. All aggregate loads on trucks should be covered. .	For all construction areas.	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[18] (USD)	Responsibility	
							Supervision	Implementation
DBST production, and application	Air pollution, land and water contamination, and traffic and access problems,	44. Piles of aggregates at sites should be used/or removed promptly, or covered and placed in non-traffic areas 45. Stored paving materials e.g., DBST or asphalt, well away from all human activity and settlements, and cultural (e.g., schools, hospitals), and ecological receptors. Bitumen production and handling areas should be isolated. 46. Contractors must be well trained and experienced with the production, handling, and application of bitumen. 47. All spills should be cleaned immediately and handled as per hazardous waste management plan, and according to GoV regulations. 48. Bitumen should only be spread on top of cable trench not near or in any surface waters, or near any human activities. 49. Bitumen should not be used as a fuel.	For all construction areas.	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[18] (USD)	Responsibility	
							Supervision	Implementation
Implement Spoil management subplan	Contamination of land and surface waters from excavated spoil, and construction waste	50. Uncontaminated spoil to be disposed of in GoV-designated sites, which must never be in or adjacent surface waters. Designated sites must be clearly marked and identified. 51. Spoil must not be disposed of on sloped land, near cultural property or values, ecologically important areas, or on/near any other culturally or ecologically sensitive feature. 52. Where possible spoil should be used at other construction sites, or disposed in spent quarries or borrow pits. 53. A record of type, estimated volume, and source of disposed spoil must be recorded. 54. Contaminated spoil disposal must follow GoV regulations including handling, transport, treatment (if necessary), and disposal. 55. Suspected contaminated soil must be tested, and disposed of in designated sites identified as per GoV regulations. 56. Before treatment or disposal contaminated spoil must be covered with plastic and isolated from all human activity.	All excavation areas	Throughout construction phase	Monthly	See Monitoring Plan for contaminated soil analyses	PIC/ESU and DoNRE	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[18] (USD)	Responsibility	
							Supervision	Implementation
Implement Solid and liquid construction waste sub-plan	Contamination of land and surface waters from construction waste	57. Management of general solid and liquid waste of construction will follow GoV regulations, and will cover, collection, handling, transport, recycling, and disposal of waste created from construction activities and worker force. 58. Areas of disposal of solid and liquid waste to be determined by GoV. 59. Disposed of waste should be catalogued for type, estimated weigh, and source. 60. Construction sites should have large garbage bins. 61. A schedule of solid and liquid waste pickup and disposal must be established and followed that ensures construction sites are as clean as possible. 62. Solid waste should be separated and recyclables sold to buyers in community. <u>Hazardous Waste</u> 63. Collection, storage, transport, and disposal of hazardous waste such as used oils, gasoline, paint, and other toxics must follow GoV regulations. 64. Wastes should be separated (e.g., hydrocarbons, batteries, paints, organic solvents) 65. Wastes must be stored above ground in closed, well labeled, ventilated plastic bins in good condition well away from construction activity areas, all surface water, water supplies, and cultural and ecological sensitive receptors. 66. All spills must be cleaned up completely with all contaminated soil removed and handled with by contaminated spoil sub-plan.	All construction sites and worker camps	Throughout construction phase	Monthly	No marginal cost	PIC/ESU and DoNRE	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[18] (USD)	Responsibility	
							Supervision	Implementation
Implement Noise and dust sub-plan	Dust Noise	67. Regularly apply wetting agents to exposed soil and construction roads. 68. Cover or keep moist all stockpiles of construction aggregates, and all truck loads of aggregates. 69. Minimize time that excavations and exposed soil are left open/exposed. Backfill immediately after work completed. 70. As much as possible restrict working time at substation site between 07:00 and 17:00. For UGC place 50 m sections between 23:00 and 06:00 hrs 71. Maintain equipment in proper working order 72. Replace unnecessarily noisy vehicles and machinery. 73. Vehicles and machinery to be turned off when not in use. 74. Construct temporary noise barriers around excessively noisy activity areas where possible.	All construction sites.	Fulltime	Monthly	No marginal cost	PIC/ESU	contractor
Implement Utility and power disruption sub-plan	Loss or disruption of utilities and services such as water supply and electricity	75. Develop carefully a plan of days and locations where outages in utilities and services will occur, or are expected. 76. Contact local utilities and services with schedule, and identify possible contingency back-up plans for outages. 77. Contact affected community to inform them of planned outages. 78. Try to schedule all outages during low use time such between 24:00 and 06:00.	All construction sites.	Fulltime	Monthly	No marginal cost	PIC/ESU and Utility company	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[18] (USD)	Responsibility	
							Supervision	Implementation
Implement Tree and vegetation removal, and site restoration sub-plan	Damage or loss of trees, vegetation, and landscape	79. Contact DoT/DARD for advice on how to minimize damage to trees and vegetation along transmission line 80. Restrict tree and vegetation removal to within RoWs. 81. Within RoWs minimize removals, and install protective physical barriers around trees that do not need to be removed. 82. Where possible all RoWs to be re-vegetated and landscaped after construction completed. Consult DoT/DARD to determine the most successful restoration strategy and techniques. Aim to replant three trees for each tree removed. 83. Restore sections of roads, culverts, irrigation canals and other public infrastructure damaged by the construction of the transmission line and other facilities.	All construction sites.	Beginning and end of Subproject	Monthly	No marginal cost	PIC/ESU	contractor
Implement Erosion control sub-plan	Land erosion	84. Berms, and plastic sheet fencing should be placed around all excavations and earthwork areas. 85. Earthworks should be conducted during dry periods. 86. Maintain a stockpile of topsoil for immediate site restoration following backfilling. 87. Protect exposed or cut slopes with planted vegetation, and have a slope stabilization protocol ready. 88. Re-vegetate all soil exposure areas immediately after work is completed.	All construction sites	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[18] (USD)	Responsibility	
							Supervision	Implementation
Implement worker and public safety sub-plan	Public and worker injury, and health	89. Proper fencing, protective barriers, and buffer zones should be provided around all construction sites. 90. Sufficient signage and information disclosure, and site supervisors and night guards should be placed at all sites. 91. Worker and public safety guidelines of MoLISA should be followed. 92. Population near possible blast areas should be notified 24 hrs ahead, and evacuated well before operation. Accepted GoV blast procedures and safety measures implemented. 93. Speed limits suitable for the size and type of construction vehicles, and current traffic patterns should be developed, posted, and enforced on all roads used by construction vehicles. 94. Standing water suitable for disease vector breeding should be filled in. 95. Worker education and awareness seminars for construction hazards should be given at beginning of construction phase, and at ideal frequency of monthly. A construction site safety program should be developed and distributed to workers. 96. Appropriate safety clothing and footwear should be mandatory for all construction workers. 97. Adequate medical services must be on site or nearby all construction sites. 98. Drinking water must be provided at all construction sites. 99. Sufficient lighting be used during necessary night work. 100. All construction sites should be examined daily to ensure unsafe conditions are removed.	All construction sites.	Fulltime	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[18] (USD)	Responsibility	
							Supervision	Implementation
Civil works	Degradation of water quality and aquatic resources	101. Protective coffer dams, berms, plastic sheet fencing, or silt curtains should be placed between all earthworks and surface waters. 102. Erosion channels must be built around aggregate stockpile areas to contain rain-induced erosion. 103. Earthworks should be conducted during dry periods. 104. All construction fluids such as oils, and fuels should be stored and handled well away from surface waters. 105. No waste of any kind is to be thrown in surface waters. 106. No washing or repair of machinery near surface waters. 107. Pit latrines to be located well away from surface waters. 108. No unnecessary earthworks in or adjacent to water courses. 109. No aggregate mining from rivers or lakes. 110. All irrigation canals and channels to be protected the same way as rivers, streams, and lakes	All construction sites	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor
Civil works	Degradation of terrestrial resources	111. All construction sites should be located away forested or all plantation areas as much as possible. 112. No unnecessary cutting of trees along RoW. 113. All construction fluids such as oils, and fuels should be stored and handled well away from forested and plantation areas. 114. No waste of any kind is to be discarded on land or in forests/plantations.	All construction sites	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[18] (USD)	Responsibility	
							Supervision	Implementation
Implement Construction and urban traffic sub-plan	Traffic disruption, accidents, public injury	115. Schedule construction vehicle activity during light traffic periods. Create adequate traffic detours, and sufficient signage and warning lights. 116. Post speed limits, and create dedicated construction vehicle roads or lanes. 117. Inform community of location of construction traffic areas, and provide them with directions on how to best co-exist with construction vehicles on their roads. 118. Demarcate additional locations where pedestrians can develop road crossings away from construction areas. 119. Increase road and walkway lighting.	All construction sites	Fulltime	Monthly	No marginal cost	PIC/ESU	contractor
Implement Construction Drainage sub-plan	Loss of drainage and flood storage	120. Provide adequate short-term drainage away from construction sites to prevent ponding and flooding. 121. Manage to not allow borrow pits and quarries to fill with water. Pump periodically to land infiltration or nearby water courses. 122. Install temporary storm drains or ditches for construction sites 123. Ensure connections among surface waters (ponds) are maintained or enhanced to sustain existing stormwater storage capacity. 124. Protect surface waters from silt and eroded soil.	All areas with surface waters	Design and construction phases	Monthly	No marginal cost	PIC/ESU	contractor
Civil works and Chance finds sub-plan	Damage to cultural property or values, and chance finds	125. As per detailed designs all civil works should be located away from all physical cultural property and values. 126. Chance finds of valued relics and cultural values	All construction sites	At the start , and throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[18] (USD)	Responsibility	
							Supervision	Implementation
		should be anticipated by contractors. Site supervisors should be on the watch for finds. 127. Upon a chance find all work stops immediately, find left untouched, and EA/IA notified to determine if find is valuable. Culture section of DCST notified by telephone if valuable. 128. Work at find site will remain stopped until DCST allows work to continue.						
Post-construction Operation of 110 kV Substation								
Operation of new substation	Increased risk of worker or public injury	129. Occupational health and safety regulations and guidelines of MoLISA should be applied to operations of substation. 130. Ensure substation property is adequately fenced with clearly visable danger warning signs to keep public out. 131. Store and handle transformer fluids and other hazardous materials according to international procedures and standards	At substation	Fulltime	Biannual	OandM	EVNHCM / PPMB	
Post-construction Operation of 110 kV Transmission Line								
Operation of new transmission line		132. Occupational safety and health regulations and guidelines of MoLISA should be applied to operations and maintenance of TL 133. Ensure TL towers are marked with clearly visable danger warning signs to keep public out.	At all TL towers	Fulltime	Biannual	OandM	EVNHCM / PPMB	

D. Monitoring Plan

127. The environmental monitoring plan for the EMP is provided in Table 21. The monitoring plan focuses on all three phases (pre-construction, construction, post-construction operation) of the subproject and consists of environmental indicators, the sampling locations and frequency, method of data collection, responsible parties, and estimated costs. The purpose of the monitoring plan is to determine the effectiveness of the impact mitigations, and to document any unexpected positive or negative environmental impacts of the subproject.

128. The independent environmental monitoring consultant (EMC) identified above will implement the environmental monitoring program. The EMC will be responsible for the sampling of environmental parameters that must be analyzed in a laboratory. The ESU and EO will coordinate with the EMC. The PIC/IU will provide logistical support to the EMC where necessary for the implementation of environmental monitoring plan.

129. The standards for ambient environmental quality (e.g., water and air quality) for Viet Nam listed in section III will guide the monitoring program. The environmental standards provided by the Environmental, Health and Safety Guidelines of the IFC/World Bank (2007) should be followed to supplement standards that are not provided by the GoV..

130. After construction is completed the potential impacts of the operation of the new Tham Luong 110 kV substation and UGC transmission line will be monitored by EVNHCMC. Monitoring of the success of the minor resettlement in the affected areas will be undertaken as part of the separate RP prepared for the subproject.

E. Performance Monitoring

131. Performance monitoring is required to assess the overall performance of the EMP. A performance monitoring system is normally developed by the EA for the subproject. Select indicators of major components of the environment that will be affected primarily by the construction phase are drawn from the mitigation and monitoring plans and summarized in Table 5.

F. Reporting

132. Regular reporting on the implementation of mitigation measures, and on monitoring activities during construction phase of the subproject is required. Reporting is the responsibility of IA/ESU and should be conducted in conjunction with regular meetings with stakeholders as part of the continuation of stakeholder communications. The mitigation and monitoring plans (Tables 20 and 21) summarize proposed timing of reporting.

133. A report on environmental monitoring and implementation of EMP will be prepared quarterly for the EA by the IA/ESU. The IA report will compile monthly reports provided by the EO of contractor, the reports of the EMC on monitoring, and input from the ES of the PIC. The IA/ESU report will also be sent to the DoNRE and ADB. The reports will table all indicators measured with the monitoring plan of EMP including performance monitoring indicators (Table 22), and will include relevant GoV environmental quality standards.

Table 21. Environmental Monitoring Plan

ENVIRONMENTAL EFFECTS MONITORING							
Environmental Indicators	**Location**	**Means of Monitoring**	**Frequency**	**Reporting**	**Responsibility** Supervision / Implementation		**Estimated Cost (USD)**
					Supervision	**Implementation**	
Pre-construction Phase – Update Baseline Conditions							
Update where necessary baseline on sensitive receptors (e.g., cultural property and values, new schools or hospitals, rare/endangered species, critical habitat along TL corridor.	A) RoW for transmission line (TL) B) Substation (SS) location	Original field work, community consultations	Once	Once	PIC/ESU	Environmental Monitoring Consultant	$1,000.
A) Air quality: dust, CO, NOx, SOx, noise B) Affected surface water quality: TSS, oil and grease, BOD_5, , TDS, TP, TN	A): Along TL and at SS site B): At SS site	Using field and analytical methods approved by DoNRE.	A) One day and one night measurement b) One measurement	One baseline supplement report before construction phase starts	PIC/ESU	Environmental Monitoring Consultant	A) $1,500 B) $1,000 .
Inventory of present and past land uses that could cause contaminated soil.	Possible contaminated lands at all excavation sites	Using field and analytical methods approved by DoNRE.	Once	Once	PIC/ESU	Environmental Monitoring Consultant	$500.
Construction Phase of Tham Luong 110 kV Substation and Transmission Line							
Analysis of soil quality (heavy metals (As, Cd, Pb, oil and	Possible contaminated lands at all excavation sites	Using field and analytical methods approved by DoNRE.	Once if	Once	ESU	Environmental Monitoring	$2,500.

grease, hydrocarbons).			**needed**			Consultant	
A) Air quality: dust, CO, NOx, SOx, noise B)) Affected surface water quality: TSS, oil and grease, BOD_5, , TDS, TP, TN C) Analysis of contaminated soil quality (heavy metals (As, Cd, Pb, Hg, Mn), hydrocarbons. D) Domestic (worker) and construction solid waste inside and outside construction sites including worker camps. E) Public comments and complaints F) Incidence of worker or public accident or injury	A and B): Baseline sites of pre-construction phase. C) At sites where contaminated soil is suspected. D) All construction sites and worker camps E) Using hotline number placed at construction areas F) At all construction areas	A – C : Using field and analytical methods approved by DoNRE. Include visual observations of dust and noise from contractor and public reports . D) Visual observation E) Information transferred by telephone hotline number posted at all construction sites. F) regular reporting by contractors/ESU	(A – B): Quarterly during construction periods Daily visual records C) Once at start of excavations D) Monthly E) Continuous public input F) Continuous	Monthly	(A - D):		A and B: $2,500./yr C: $2,000./yr D: no marginal cost
					ESU	Monitoring Consultant	
					(E and F) and daily observations:		
					EA/ESU	contractor	E: $1,000./yr F: no marginal cost
Operation of 110 kV Substation and Transmission Line							
Incidence of worker accidents, or spills on hazardous materials	At substation and along UGC transmission line	Regular documentation and reporting	Continuous		EVNHCMC /PPMB		O and M

Table 22. Performance Monitoring Indicators for Subproject

Major Environmental Component	Key Indicator	Performance Objective	Data Source
Pre-construction Phase			
Public Consultation and Disclosure	Affected public and stakeholders	Meetings with public stakeholders contacted during IEE and new stakeholders convened for follow-up consultation and to introduce grievance mechanism	Minutes of meeting, and participants list
EMP	Updated EMP	All stakeholders contacted during IEE re-contacted for follow-up consultation	EMP
Bid Documents	Requirements of EMP (CEMP[21])	EMP appended to bidding documents with clear instructions to bidders for CEMP	Bid documents
Training of IA/ESU	Training course(s) and schedule	By end of pre-construction phase, required course(s) that will be delivered are designed and scheduled	Course(s) outline, participants, and schedule
Construction Phase			
All Subproject areas	Critical habitat, rare or endangered species ***if present***	All *present* critical habitat and rare and endangered species if unchanged, and unharmed	Monitoring by EMC[22]
Affected water quality	TSS, oil and grease, BOD_5, , TDS, TP, TN,	GoV environmental standards and criteria met	Monitoring by EMC
Air quality	dust, CO, NOx, SOx, noise	Levels never exceed pre-construction baseline levels	EMC and contractor monitoring reports,
Soil quality	Solid and liquid waste	Rigorous program of procedures and rules to collect and store all waste from construction camps and sites practiced.	Contractor and EMC monitoring reports
Hazardous materials and waste	Oil, gasoline, grease,	Rigorous program of procedures to manage and store all waste from construction camps and sites practiced.	Contractor and EMC monitoring reports
Public and worker safety	Frequency of injuries	Adherence to GoV occupational health and Safety regulations[23]	Contractor reports
Cultural property	Incidence of damage, or complaints	No valued cultural property, or unearthed valuable relic is harmed in any way	Public input, contractor reports, public input, EMC

[21] Contractor Environmental Management Plan developed from EMP in contractor bidding document
[22] Environmental Monitoring Consultant hired to assist implementation of Environmental Monitoring Plan
[23] OSH Guidelines provided by MoLISA, *or* IFC World Bank EHS (2007)

Major Environmental Component	Key Indicator	Performance Objective	Data Source
			reports
Traffic	Frequency of disruptions and blocked roadways	Disruptions, stoppages, or detours are managed to absolute minimum.	Public input, contractor reports, EMC reports
Operation Phase of Substation and Transmission Line			
Worker and Public Safety	Frequency of accidents, and spills	No increase in pre-construction frequency	EA

XI. ESTIMATED COST OF EMP

134. The marginal costs for implementing the EMP are primarily for environmental monitoring because the costs for implementing impact mitigation measures are included with the construction costs in contractor bid documents. From Table 21 the preliminary cost for the implementation of the EMP for the subproject including an estimated environmental training budget for EVNHCMC / PPBM is approximately USD $27,000.00 which is summarized in Table 23.

Table 23. Estimated costs for Environmental Monitoring Plan of EMP

Activity Type	Estimated Cost (USD)
Pre-construction Phase	
Updating Environmental Baseline	
cultural receptors	$1,000.00
environmental quality	$4,000.00
Construction Phase	
environmental quality	$14,000.00
public consultation	$2,000.00
Operation Phase	
environmental quality	no cost
public input	no cost
Training and capacity development of EVNHCM / PPBM / ESU	$6,000.00
Total	**$27,000.00**

The environmental costs in Table 23 are for field sampling and laboratory analyses which include professional per diems of technicians.

135. An estimated budget of USD $6,000.00 is required for training of the EA/IA/ESU on environmental assessment and management, and the implementation of the EMP. The estimated costs of the EMP and training will need to be updated by the PIC in conjunction with the IA/ESU during the pre-construction phase.

XII. EMERGENCY RESPONSE PLAN

A. Overview

136. The Contractor must develop emergency or incident response procedures during construction and operation phases of the new Tham Luong 110 kV Substation and UGC Transmission Line to protect workers and the public. The emergency response plan (ERP) outlines the roles and responsibilities of persons from first identification of an incident or emergency to the final steps of safe and complete closure of the situation. The detailed requirements for the ERP are described in Appendix E.

XIII. INSTITUTIONAL CAPACITY REVIEW AND NEEDS

137. Currently there is insufficient experience and capacity for environmental assessment and management in EVNHCMC for the implementation of the EMP, and to develop future safeguards for the non-core subprojects. The PIC with assistance from the ESU/IA of the subproject will develop and deliver training courses to the IA staff including the EO of the contractor. The purpose of the course(s) is to strengthen the ability of the subproject owner including the ESU to oversee implementation of the EMP by construction contractors, and EMC. Costs for training should be included with costs for implementation of the EMP.

138. Training on the implementation of an EMP should address two thematic areas. The first area should be principles environmental assessment and management focused on the potential impacts of subproject activities on the natural and social environments. The second area should be environmental safeguard requirements of the ADB and GoV with specific reference to the EMP.

XIV. CONCLUSIONS AND RECOMMENDATION

139. The initial examination of the Tham Luong 1100 kV Substation and UGC Transmission Line subproject in HCMC indicates that potential environmental impacts are largely construction-related impacts and disturbances that can be mitigated and managed.

140. The public consultation meetings underscored the need for effective management of construction impacts such as noise, dust, traffic disruptions, and public safety. Follow-up meetings with the consulted stakeholders to address any construction-related issues are

required. The civil construction impacts of elevated dust, noise, traffic disruptions, erosion and sedimentation, and public and worker safety can be managed effectively with standard construction practices (e.g., IFC/World Bank 2007).

141. The IEE concludes that the description of the feasibility design of the subproject combined with available information on the affected environment is sufficient to identify the scope of potential environmental impacts of the subproject. Providing that significant changes do not occur to the design of one or more of the subproject components, and that new sensitive environmental or PCR components are not identified in pre-construction phase, further detailed environmental impact assessment (EIA) of the subproject is not required.

XV. REFERENCES CITED

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APPENDICES

A. Rapid Environmental Assessment (REA) Checklist

B. Minutes of Public Consultation Meetings

B.1 Tan Thoi Nhat Ward – District 12
B.2 Ba Diem Commune, Hoc Mon District

C. Letter of District 12 Military Command on Unexploded Ordnances Clearance

D. Acceptance Letters of EIA Reports Submitted to Ho Chi Minh City DONRE

D.1 Acceptance Letters of EIA Report for Tham Luong 110kV Substation
D.2 Acceptance Letter of EIA Report for 110kV Underground Cable Connecting to Tham Luong Substation

E. EMERGENCY RESPONSE PLAN

Appendix A : Rapid Environmental Assessment (REA) 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 Environment and Safeguards Division (RSES) for endorsement by 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.

Preparing the Ha Noi and Ho Chi Minh City Power Grid Development Sector Project TA 8205-VIE

Country/Project Title:

Sector Division:

Tham Luong 110kV substation and the 110kV underground cable connecting to Tham Luong SS

Screening Questions	Yes	No	Remarks
A. Project Siting Is the Project area adjacent to or within any of the following environmentally sensitive areas?			

Screening Questions	Yes	No	Remarks
▪ Cultural heritage site		X	The proposed underground cable is near to the sites, such as Nguyen Anh Thu temple at 5m far from G24, a cemetery at 78m far from the starting point, and Tuong Quang temple at 20 m far from G14.
▪ Protected Area		X	
▪ Wetland		X	
▪ Mangrove		X	
▪ Estuarine		X	
▪ Buffer zone of protected area		X	
▪ Special area for protecting biodiversity		X	
B. Potential Environmental Impacts Will the Project cause…			
▪ Encroachment on historical/cultural areas, disfiguration of landscape and increased waste generation?		x	The project will not cut through the temples and cemetery. The contractors will manage and ban their workers to encroach into these sites. The Project owner and contractors will strictly implement mitigation measures in construction phase.
▪ encroachment on precious ecosystem (e.g. sensitive or protected areas)?		x	
▪ 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	There is no river, stream flowing through the project area
▪ damage to sensitive coastal/marine habitats by construction of submarine cables?		x	There are no submarine cables to be installed by the project.

Screening Questions	Yes	No	Remarks
▪ deterioration of surface water quality due to silt runoff, sanitary wastes from worker-based camps and chemicals used in construction?		x	Low impact level during construction phase. Construction water will settled down in grid chamber before flow into the city's drainage. No domestic wastewater of worker-based camps. No chemicals used in construction Mitigation measures will be implemented.
▪ increased local air pollution due to rock crushing, cutting and filling?		x	Low level. There is no rock crushing, cutting in the project. However, rock is used to mix concrete and filled into dug channel. The mitigation measures will be implemented to reduce air pollution
▪ risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?		x	Low impact level due to electromagnetic fields in the operation phase. To minimize potential risks, an Occupational Health and Safety Plan (OHSP) will be developed and implemented.
▪ chemical pollution resulting from chemical clearing of vegetation for construction site?		x	
▪ noise and vibration due to blasting and other civil works?		x	Medium impact level due to noise and vibration occurred during road cutting and movement of construction vehicles along access road in construction phase. Mitigations for noise and vibration caused by construction-related activities are specified by the EMP for the subproject **.**
▪ dislocation or involuntary resettlement of people?		x	The project affects only agricultural land without houses/accommodations. Required resettlement and compensation for land loss is addressed by RP for subproject.
▪ dis-proportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		x	

Screening Questions	Yes	No	Remarks
▪ social conflicts relating to inconveniences in living conditions where construction interferes with pre-existing roads?		x	Small impacts. The construction of underground cable sections on roadways will obstruct traffic. Also, noise and dust from excavation and construction works will affect household who are living along the roads cable run through. However, the Project owner, contractors will implement the proposed mitigation measures which are highly feasible such as: constructing completely each section (50m/section) during one night, putting signs, and barricades, clean the site daily to ensure temporary traffic back to normal, repair damaged road after the construction.
▪ hazardous driving conditions where construction interferes with pre-existing roads?	x		Small impact. The digging cable ditches on roadways and increase of project heavy trucks can cause risk in traffic accident. However, mitigation measures, and ensuring safety will be taken strictly, as railings, set the speed control signs, traffic regulation etc.
▪ creation of temporary breeding habitats for vectors of disease such as mosquitoes and rodents?		x	
▪ dislocation and compulsory resettlement of people living in right-of-way of the power transmission lines?		x	The AH who have affected land is only acquired 8.26% of his landholding. Minor resettlement or land loss is addressed by resettlement is addressed by RP
▪ environmental disturbances associated with the maintenance of lines (e.g. routine control of vegetative height under the lines)?		x	No tree with height higher than 6 m under transmission line
▪ facilitation of access to protected areas in case corridors traverse protected areas?		x	No protected areas within 10 km of the project area

Screening Questions	Yes	No	Remarks
▪ disturbances (e.g. noise and chemical pollutants) if herbicides are used to control vegetative height?		x	No herbicides will be used to control vegetative height
▪ 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		Potential local social issues with construction worker population are identified in the IEE and are addressed by the Mitigation Plan of IEE.
▪ social conflicts if workers from other regions or countries are hired?		x	No impact. All workers are Vietnamese. Workers from other regions or countries are not hired
▪ poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations?	x		Small impact. Since the number of workers is small, no worker camps are built but hired local houses. Work sites are also small areas, thus solid waste generated is small. The transmission of communicable diseases from workers to local populations is not likely However, the Contractor shall implement measures to ensure the hygiene and health of workers and local people, such as hiring hygiene sufficient accommodation, and hiring specialized units to collect waste daily.
▪ risks to community safety associated with maintenance of lines and related facilities?	x		Maintenance of cable connection cellars on Phan Van Hon street can interfere with the movement of local people. An operation safety plan will be set up and implemented by operating unit to reduce negative impacts.

Screening Questions	Yes	No	Remarks
▪ community health hazards due to electromagnetic fields, land subsidence, lowered groundwater table, and salinization?		x	Minor impact. No land subsidence, lowered groundwater table, and salinization would be happed. Electromagnetic fields occur in operation phase - Underground cable is designed according to the electromagnetic current standards should not impact public health. Risk of subsidence at cable cellar may occur if heavy trucks illegal run through the road, or by the construction of other infrastructure systems. - Electromagnetic field of the substation will not affected surrounding communities because the wall serves as a safety corridor.
▪ 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 that accidents could happen but not expected to be significant. If so, measures will be in place to deal with them.
▪ 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		Low risk level. These risks maybe happen only at locations of the connecting tower No.28a of the substation. The tower may be collapsed due to typhoons or tropical cyclones. The underground cable may cause risks of power shock, cable broken when it happen earthquake, but this hazard will rarely appear in this project area and the project was designed to probably stand the earthquake. Also, in the process of maintenance, the operate unit will conduct regular inspection for timely detection and treatment.

Climate Change and Disaster Risk Questions The following questions are not for environmental categorization. They are included in this checklist to help identify potential climate and disaster risks.	Yes	No	Remarks
▪ Is the Project area subject to hazards such as earthquakes, floods, landslides, tropical cyclone winds, storm surges, tsunami or volcanic eruptions and climate changes (see Appendix I)?		x	The project area has been suffered by local flood due to rain (flooded level about 10-20 cm). This is because of the effects of the urbanization process in the region. Also, the area has elevation about 5-10m which can be affected by tides and sea water level rises due to climate change.
▪ Could changes in precipitation, temperature, salinity, or extreme events over the Project lifespan affect its sustainability or cost?		X	
▪ Are there any demographic or socio-economic aspects of the Project area that are already vulnerable (e.g. high incidence of marginalized populations, rural-urban migrants, illegal settlements, ethnic minorities, women or children)?		X	
▪ Could the Project potentially increase the climate or disaster vulnerability of the surrounding area (e.g., increasing traffic or housing in areas that will be more prone to flooding, by encouraging settlement in earthquake zones)?		x	

Appendix I: Environments, Hazards and Climate Changes

Environment	Natural Hazards and Climate Change
Arid/Semi-arid and desert environments	Low erratic rainfall of up to 500 mm rainfall per annum with periodic droughts and high rainfall variability. Low vegetative cover. Resilient ecosystems & complex pastoral and systems, but medium certainty that 10–20% of drylands degraded; 10-30% projected decrease in water availability in next 40 years; projected increase in drought duration and severity under climate change. Increased mobilization of sand dunes and other soils as vegetation cover declines; likely overall decrease in agricultural productivity, with rain-fed agriculture yield reduced by 30% or more by 2020. Earthquakes and other

	geophysical hazards may also occur in these environments.
Humid and sub-humid plains, foothills and hill country	More than 500 mm precipitation/yr. Resilient ecosystems & complex human pastoral and cropping systems. 10-30% projected decrease in water availability in next 40 years; projected increase in droughts, heatwaves and floods; increased erosion of loess-mantled landscapes by wind and water; increased gully erosion; landslides likely on steeper slopes. Likely overall decrease in agricultural productivity & compromised food production from variability, with rain-fed agriculture yield reduced by 30% or more by 2020. Increased incidence of forest and agriculture-based insect infestations. Earthquakes and other geophysical hazards may also occur in these environments.
River valleys/ deltas and estuaries and other low-lying coastal areas	River basins, deltas and estuaries in low-lying areas are vulnerable to riverine floods, storm surges associated with tropical cyclones/typhoons and sea level rise; natural (and human-induced) subsidence resulting from sediment compaction and ground water extraction; liquefaction of soft sediments as result of earthquake ground shaking. Tsunami possible/likely on some coasts. Lowland agri-business and subsistence farming in these regions at significant risk.
Small islands	Small islands generally have land areas of less than 10,000km^2 in area, though Papua New Guinea and Timor with much larger land areas are commonly included in lists of small island developing states. Low-lying islands are especially vulnerable to storm surge, tsunami and sea-level rise and, frequently, coastal erosion, with coral reefs threatened by ocean warming in some areas. Sea level rise is likely to threaten the limited ground water resources. High islands often experience high rainfall intensities, frequent landslides and tectonic environments in which landslides and earthquakes are not uncommon with (occasional) volcanic eruptions. Small islands may have low adaptive capacity and high adaptation costs relative to GDP.
Mountain ecosystems	Accelerated glacial melting, rockfalls/landslides and glacial lake outburst floods, leading to increased debris flows, river bank erosion and floods and more extensive outwash plains and, possibly, more frequent wind erosion in intermontane valleys. Enhanced snow melt and fluctuating stream flows may produce seasonal floods and droughts. Melting of permafrost in some environments. Faunal and floral species migration. Earthquakes, landslides and other geophysical hazards may also occur in these environments.
Volcanic environments	Recently active volcanoes (erupted in last 10,000 years – see www.volcano.si.edu). Often fertile soils with intensive agriculture and landslides on steep slopes. Subject to earthquakes and volcanic eruptions including pyroclastic flows and mudflows/lahars and/or gas emissions and occasionally widespread ashfall.

APPENDIX B: MINUTES OF PUBLIC CONSULTATION MEETINGS

Table 1The summary of public consultation meeting and number of participants

No	Name of subprojects	Location	Date	Participants*		
				Male	Female	Total
1	New Tham Luong 110 kV Substation	**B1**.Tan Thoi Nhat Ward- District 12	30 October 2013	10	8	18
2	Tham Luong UGC Transmission line.	**B2**. Ba Diem Commune, Hoc Mon District	30 October 2013	11	6	17
			TOTAL	***21***	***14***	***35***

**This numbers is counted from list of participants; some persons are repeatedly counted since they participated in all meeting.*

B.1 : PUBLIC CONSULTATION OF TAN THOI NHAT WARD

a. LIST OF PARTICIPANTS

Date (Ngày tháng) : 30 October

Location (địa điểm) : Tan Thoi Nhat Ward, district 12, HCMC

No. TT	Họ và tên (Name)	Nam (M)	Nữ (F)	Chức vụ (Position)	Cơ quan/Địa chỉ (Organization/Address)	Chữ ký (Signature)
1	Le Thi Bich Van	X		Vice manager of the investment division	HPPMB - EVNHCM	
2	Nguyen Thi Truong Hai		X	Staff	HPPMB - EVNHCM	
3	Vo Huu Thang		X	Staff	HPPMB - EVNHCM	
4	Nguyen Anh Tai		X	Citizen	Tan Thoi Nhat ward, district 12, HCMC	
5	Le Van Nghia		X	leader of quarter 60	Tan Thoi Nhat ward, district 12, HCMC	
6	Le Phuong Thuan	X		Secretary of Quarter 5	Tan Thoi Nhat ward, district 12, HCMC	
7	Nguyen Van Chien	X		Household	Tan Thoi Nhat ward,	

					district 12, HCMC	
8	Nguyen Minh Thanh	X		The ward's official	Tan Thoi Nhat ward, district 12, HCMC	
9	Luu Minh Dat	X		vice chairman of the ward	Tan Thoi Nhat ward, district 12, HCMC	
10	Duong Tuan Anh	X		The consultants		
11	Khuc Thi Thanh Van	X		ADB Resettlement consultant		
12	Nguyen Thi Loan	X		ADB Environment consultant		
13	Ha Van Toi	x		Official	Fatherland front of Tan Thoi Nhat ward	
14	Dang Thi Sam		X	Women's union	Tan Thoi Nhat ward	
15	Nguyen Minh Hieu	X		Household	Quarter 5, Tan Thoi Nhat ward	
16	Le Duy Nhat		x	Household	Quarter 5, Tan Thoi Nhat ward	
17	Tran Thi Hoang Yen		X	Household	Quarter 5, Tan Thoi Nhat ward	
18	Nguyen Ngoc Thi	X		Household	Quarter 5, Tan Thoi Nhat ward	

Ha Noi and Ho Chi Minh City Power Transmission Development Sector Project

DỰ ÁN NGÀNH PHÁT TRIỂN ĐƯỜNG DÂY TRUYỀN TẢI ĐIỆN THÀNH PHỐ HÀ NỘI VÀ HỒ CHÍ MINH

PUBIC CONSULTATION ON ENVIRONMENT AND SOCIAL/RESETTLEMENT

THAM VẤN CỘNG ĐỒNG VỀ MÔI TRƯỜNG VÀ XÃ HỘI/TÁI ĐỊNH CƯ

LIST OF PARTICIPANTS
DANH SÁCH NGƯỜI THAM DỰ

Date (Ngày tháng) : 30/10/2013

Location (địa điểm) : Tân Thới Nhất quận 12 TP Hồ Chí Minh

No. TT	Họ và tên (Name)	Nam (M)	Nữ (F)	Chức vụ (Position)	Cơ quan/Địa chỉ (Organization/Address)	Chữ ký (Signature)
1	Lê Thị Bích Vân		✓	Phó P. CĐBT	Ban QLDALĐ TPHCM	[signature]
2	Ng Thị Trường Hải		✓	NV P. CĐBT	"	[signature]
3	Võ Hữu Thắng	✓		NV Ban QLDT	Ban QLDT	[signature]
4	Ng Anh Tài	✓		CB QSPĐ		[signature]
5	Lê Văn Nghĩa			Tổ trưởng tổ 60		[signature]
6	Lê Phương Thuận	x		Bí thư chi bộ KP5		[signature]
7	Nguyễn Văn Chiến			Tổ 60 Khu phố 5		[signature]
8	Nguyễn Anh Thái	✓		CB. TT KT phường		[signature]
9	Lưu Minh Đạt	×		PCT	P. Tân Thới Nhất	[signature]
10	Dương Tuấn Anh	✓		CNPA	Cty CP TVXD Điện 4	[signature]
11	K Thị Thanh Vân		✓			[signature]
12	Nguyễn Thị Loan		✓			[signature]
13	Võ Văn Tài	×		MTTQ		[signature]
14	[illegible]		×	HĐ DTX	P. TTN	[signature]
15	Nguyễn Minh Hiếu	×		KP5		[signature]
16	Lê Duy Nhất		×	T60 KP5		[signature]
17	Trần Thị Hoàng Yến		x	T60 KP5		[signature]
	Nguyễn Ngọc Thi 4/4			KP5	P TTN	[signature]

b. MINUTES OF MEETINGS AND PHOTOS-TAN THOI NHAT WARD

Opinions people	Reply by project owner and PECC4
Where construction is taking place?	The digging activities is on the right site of road near pavement
When road digging is completed, How does it cleanup?	All In the process of implementation must comply on time with the asphalt
When conduct road survey and construction activities project owner, constructor need to inform local authorities	Will do that. Construction Making road from 1 hour to 5 am: not affect the access of people
For the earth road section, the compensation procedures are ongoing to make road. If possible, conduct two activities at the same time	Will try to implement the construction during road construction time to avoid road excavating two times
Sewer may be damaged from construction activities	When construction finished damaged sewer will be reconstructed.
Prior to construction, road needs to consolidated	Will be do that for the road where heavy tructs transporting on.

Ha Noi and Ho Chi Minh City Power Transmission Development Sector Project
DỰ ÁN NGÀNH PHÁT TRIỂN ĐƯỜNG DÂY TRUYỀN TẢI ĐIỆN THÀNH PHỐ HÀ NỘI VÀ HỒ CHÍ MINH

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

Tân Thới Nhất Ngày 30 tháng 10 năm 2012

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

Tiểu dự án: Trạm biến áp 110kV Thạnh Lưỡng và cáp ngầm 110kV đấu nối trạm Thạnh Lưỡng
Phường/Xã Tân Thới Nhất, Quận/Huyện 12 Thành phố HCM

1. Thành phần tham dự

- Ông/Bà Lâu Minh Đạt Chức vụ Phó chủ tịch Phường
- Ông/Bà Lê Thị Bích Vân Chức vụ Phó phòng chuẩn bị đầu tư
- Ông/Bà Lê Văn Ngàn Chức vụ Tổ trưởng tổ 60
- Ông/Bà Lê Phương Thuần Chức vụ Bí thư chi bộ khu phố 5
- Ông/Bà Nguyễn Thị Hoàng Chức vụ Tư vấn PECC4
- Ông/Bà ..... Chức vụ .....
- Đại diện những người bị ảnh hưởng: .....người (*chi tiết xem danh sách đính kèm*)

I. Nội dung tham vấn

- ***Tư vấn thiết kế giới thiệu dự án***: Vị trí trạm, tuyến đường; vị trí và chiều dài tuyến đường dây 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 môi trường xảy ra
- ***Tư vấn xã hội/tái định cư trình bày về:*** Kế hoạch tái định cư của ADB; Những tác động khi thu hồi đất và các tài sản trên đất; Những chính sách của Chính phủ nước Cộng hoà xã hội chủ nghĩa Việt Nam và địa phương, chính sách của dự án trong vấn đề bồi thường thiệt hại khi Nhà nước thu hồi đất đai và các tài sản trên đất; Các tác động thu hồi đất/tái định cư dự kiến trên địa bàn; Các phương án bồi thường đề xuất (*theo Khung chính sách của dự án đã được phê duyệt*); Tổ chức thực hiện, kế hoạch thực hiện kế hoạch tái định cư.

- **III. Ý kiến thảo luận**

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

- Khi khảo sát thi công phải báo với chính quyền địa phương
- Trong quá trình thi công phải tuân thủ về thời gian để không ảnh hưởng đến sinh hoạt và sản xuất của người dân
- Cần sửa chữa nền đường và cống thoát nước bị ảnh hưởng

III.2 Về các vấn đề thu hồi đất và các tài sản trên đất và các chính sách

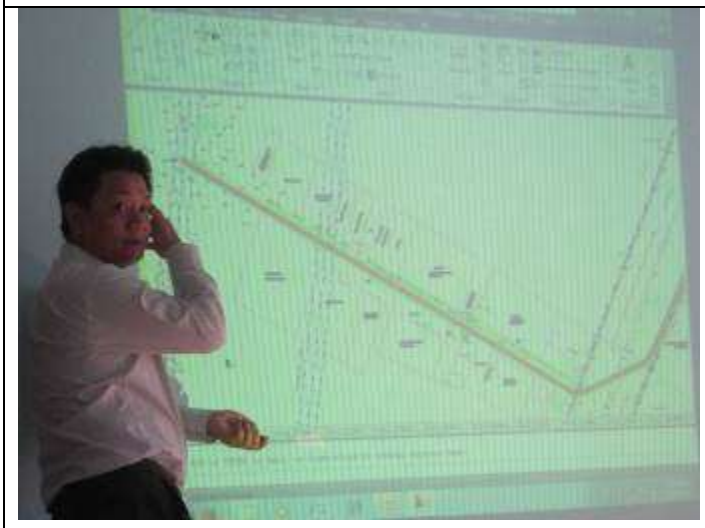
Đền giải bồi thường như tư vấn trình bày là phù hợp

IV. Kết luận

UBND phường Tân Thới nhất và các hộ dân có liên quan nhất trí với chủ trương xây dựng trạm biến áp 110kV Tham Lương và cáp ngầm 110kV đấu nối trạm Tham Lương.

Đại diện Chủ đầu tư	Đại diện cộng đồng	Đại diện tư vấn	Đại diện UBND xã
Lê Thị Bích Vân	Lê phương Thảo Lê văn nghĩa	Ng Đình Hùng Nguyễn Thị Loan	Lưu Minh Đạt

c.**PHOTOS- TAN THOI NHAT WARD, DISTRICT 12, HCMC**

APPENDIX B.2 PUBLIC CONSULTATION IN OF BA DIEM COMMUNE

a. LIST OF PARTICIPANT AND MINUTE OF MEETINGS OF BA DIEM COMMUNE

Date (Ngày tháng) : 30 October
Location (địa điểm) : the CPC office of Ba Diem commune, Hoc Mon district

No. TT	Họ và tên (Name)	Nam (M)	Nữ (F)	Chức vụ (Position)	Cơ quan/Địa chỉ (Organization/Address)	Chữ ký (Signature)
1	Vo Huu Thang	X		Staff	HPPMB - EVNHCM	
2	Le Thi Bich Van		X	Vice manager of the investment division	HPPMB - EVNHCM	
3	Nguyen Thi Truong Hai		X	Staff	HPPMB - EVNHCM	
4	Luu Ngoc Ngan		X	Leader	Famer's union of Ba Diem commune	
5	Pham Thi Thanh Thuy		X	Leader	Women's union of Ba Diem commune	
6	Pham Minh Hoang	X		Vice chairman	CPC of Ba Diem Commune	
7	Nguyen Du Khai	X		Household	58/2F Tien Lan, Ba Diem, Hoc Mon	
8	Phan Van Luan	X		Staff	PECC4	
9	Nguyen Duc Hoang	X		Staff	PECC4	
10	Nguyen Y loi	X		Vice leader of village	Village Tien lan 1, Ba Diem commune, Hoc Mon	
11	Do viet Ty	X		Household	Village Tien lan 1, Ba Diem commune, Hoc Mon	
12	Nguyen Van Lo	X		Household	Village Tien lan 1, Ba Diem commune, Hoc Mon	
13	Vo Thanh Duoc	X		Official	Ba Diem CPC	
14	Nguyen Thi Loan		X	ADB Environmental Consultant		
15	Khuc Thi Thanh Van		X	ADB Resettlement Consultant		
16	Huyen Ngoc Thanh Van		X	Household		
17	Nguyen Huu Nghia	X		Household	18/1 Truong Chinh, Tan Hung Thuan ward, district 12	

Hanoi and Ho Chi Minh City Power Transmission Development Sector Project
DỰ ÁN NGÀNH PHÁT TRIỂN ĐƯỜNG DÂY TRUYỀN TẢI ĐIỆN THÀNH PHỐ HÀ NỘI VÀ HỒ CHÍ MINH

PUBIC CONSULTATION ON ENVIRONMENT AND SOCIAL/RESETLEMENT

THAM VẤN CỘNG ĐỒNG VỀ MÔI TRƯỜNG VÀ XÃ HỘI/TÁI ĐỊNH CƯ

LIST OF PARTICIPANTS
DANH SÁCH NGƯỜI THAM DỰ

Date (Ngày tháng) : 30/11/2013
Location (địa điểm) : Xã Bà Điểm huyện Hóc Môn, TP Hồ Chí Minh

No. TT	Họ và tên (Name)	Nam (M)	Nữ (F)	Chức vụ (Position)	Cơ quan/Địa chỉ (Organization/Address)	Chữ ký (Signature)
1	Võ Hiếu Thông	✓		Nhân viên	Ban QHĐT. EVNHCMC	[signature]
2	Cổ Thị Bích Vân			CV	Ban ĐLDA	[signature]
3	Nguyễn Thị Trường Hải			CV		[signature]
4	[illegible] Ngọc Hạnh		x	CT. Hội nông dân	Xã Bà Điểm	[signature]
5	Phạm Cao Thanh Thủy		x	CT. Hội phụ nữ	Xã Bà Điểm	[signature]
6	Phạm Minh Hùng	x		PCT.UBND xã	Xã Bà Điểm	[signature]
7	Nguyễn Bá Cảo	x		Dân Bàn Phường	58/2F Tiền Lân, BĐHM	[signature]
8	Phan Văn Luận	x		CB tư vấn điện	11 Hàng Hạ thân-NT	[signature]
9	Nguyễn Đức Hùng			CB TVĐ4		[signature]
10	Ng Lợi	x		Phó ấp TL1.	Xã Bà Điểm	[signature]
11	Đỗ Viết Tỷ.	+		Tổ 1 Tiền Lân 1	Tổ Phó	[signature]
12	Nguyễn Văn [illegible]	x		[illegible]	[illegible]	[signature]
13	Võ Thanh Dũng	x		ĐC XD	UB xã Bà Điểm	[signature]
14	Nguyễn Thị Loan		x	Tư vấn ADB		[signature]
15	Khúc Thị Thanh Vân		x	Tư vấn ADB		[signature]
16	Huỳnh Ngọc Thanh Vân					[signature]
17	Nguyễn Tiến Nghĩa				8/1, Trưng Chinh p. Tân Hưng Thuận, Q12	[signature]

b. MINUTE OF MEETINGS AND PHOTOS-BA DIEM COMUNE

Opinions people	Reply by project owner and PECC4
How deep is the dug channel ?	1.7 m
How wide is the safety corridor?	4m, 2m each side
When laying cable, a road will be constructed at high level than that of existing road, constructor should put drainage tubes under the road to drain waste water from one side to other side	Will put drainage tube When laying cable starts the constructor will inform people for putting drain tube to drain wastewater from their house
How is the construction activity implemented?	Cutting and digging roads. construction work will be conducted at short sections each for one day. The ground will be restored as it was after construction finished within one day
How to reduce noise	Maybe digging in the daytime
Need to inform people about the safety of underground cables to people's health	Local people were explained about impact of electro-magnetic field on the human health and infrastructures under the corridor of the line that if the height of houses under the safety corridor meet electrical safety regulations, they shall be allowed to exist. The safety of underground cables has been approved by the DONRE of HCM city
Can the safety corridor area be used?	Only for the temporarily purpose use, growing annual crop or low tree, not for construction of high concrete building

Hanoi and Ho Chi Minh City Power Transmission Development Sector Project
DỰ ÁN NGÀNH PHÁT TRIỂN ĐƯỜNG DÂY TRUYỀN TẢI ĐIỆN THÀNH PHỐ HÀ NỘI VÀ HỒ CHÍ MINH

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

Bà Điểm ..., Ngày 30 tháng 10 năm 2013

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

Tiểu dự án: Trạm biến áp 110 kV Tham Lương và cáp ngầm 110kV nối trạm Tham Lương
Phường/Xã: Bà Điểm ....., Quận/Huyện: Hóc Môn ... Thành phố: Hồ Chí Minh

I. Thành phần tham dự

- Ông/Bà: Phạm Minh Hoàng ..... Chức vụ: Phó chủ tịch Xã
- Ông/Bà: Lâu Ngọc Ngân ..... Chức vụ: chủ tịch Hội nông dân
- Ông/Bà: Phan Thị Thanh Thủy ... Chức vụ: cán bộ Hội phụ nữ
- Ông/Bà: Nguyễn Lợi ..... Chức vụ: Phó ấp Tiền ... lần 9
- Ông/Bà: Lê Thị Bích Vân ..... Chức vụ: HCM EVN .....
- Ông/Bà: ..... Chức vụ: .....
- Đại diện những người bị ảnh hưởng: .....người (*chi tiết xem danh sách đính kèm*)

I. Nội dung tham vấn

- ***Tư vấn thiết kế giới thiệu dự án***: Vị trí trạm, tuyến đường; vị trí và chiều dài tuyến đường dây 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 môi trường xảy ra
- ***Tư vấn xã hội/tái định cư trình bày về:*** Kế hoạch tái định cư của ADB; Những tác động khi thu hồi đất và các tài sản trên đất; Những chính sách của Chính phủ nước Cộng hoà xã hội chủ nghĩa Việt Nam và địa phương, chính sách của dự án trong vấn đề bồi thường thiệt hại khi Nhà nước thu hồi đất đai và các tài sản trên đất; Các tác động thu hồi đất/tái định cư dự kiến trên địa bàn; Các phương án bồi thường đề xuất (*theo Khung chính sách của dự án đã được phê duyệt*); Tổ chức thực hiện, kế hoạch thực hiện kế hoạch tái định cư.

c. PHOTOS OF BA DIEM COMMUNE

APPENDIX C. LETTER OF DISTRICT 12 MILITARY COMMAND ON UNEXPLODED ORDNANCES CLEARANCE

Ho Chi Minh City High Command ***The Socialist Republic of* Vietnam**

District 12 military command ***Independence – freedom – happiness***

No. 234/BCH-HC

Re: Regarding possible effects of the "110kV underground cable connecting to Tham Luong substation" on military zones, communication system, and mine situation in the project area

District 12, 08 October 2012

To: PECC4 – The South branch

Pursuant to letter No. 199/TVD4-CNPN date 28 September 2012 on getting comments on proposed effects of the "110kV underground cable connecting to Tham Luong substation" on military zones, communication system, and mine situation in the project area

Based on the actual status, District 12 Military Command has some comments as follows:

In order that the implementation of the 110kV underground cable will not affect communication system of security and national defense. District 12 Military Command suggests that PECC4 – the South branch contacts the management units of communication system of security and nation defense. They are:

1. Communication regiment No.23 – military region No.7
2. Communication brigade No.596/communication high command
3. Viettel trade and import-export limited company

District 12 Military Command will assist in clearance of mines, un-explosive ordinances based on request.

Now, we inform you to know and contact.

Receivers:

- as above;
- District 12 Military Command;
- Filing clerk

COMMANDER

(signed and stamped)

Nguyen Trung Dong

APPENDIX D. ACCEPTANCE LETTERS OF EIA REPORTS SUBMITTED TO HO CHI MINH CITY DONRE

APPENDIX D1. ACCEPTANCE LETTERS OF EIA REPORT FOR THAM LUONG 110KV SUBSTATION

SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG
THÀNH PHỐ HỒ CHÍ MINH
CHI CỤC BẢO VỆ MÔI TRƯỜNG

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

Số: 86.2013 /BN(ĐTM)-CCBVMT

Tp. Hồ Chí Minh, ngày 10 tháng 12 năm 2013

BIÊN NHẬN
HỒ SƠ THẨM ĐỊNH BÁO CÁO ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG

- **Tên đơn vị:** ban QA Điện lực TP H.CM
- **Tên Dự án:** Trạm biến áp 110 kV Tham Lương
- **Địa chỉ đăng ký:** Q. 12
- **Thông tin liên lạc:** .....
- **Điện thoại:** .....
- **Tên đơn vị tư vấn:** Cty CP TV & XD Điện 4
- **Người nộp hồ sơ:** Phạm Kim Nguyên
- **Số điện thoại:** 0906 950 005
- **Đặc điểm hồ sơ:** Thẩm định ĐTM
- **Hồ sơ gồm có:**

STT	Tên hồ sơ	Bản chính	Bản chứng thực sao y	Bản Photo
1.	Văn bản của chủ dự án đề nghị thẩm định và phê duyệt báo cáo đánh giá tác động môi trường	01		
2.	Bản báo cáo đánh giá tác động môi trường của dự án	10		
3.	Báo cáo đầu tư hoặc báo cáo kinh tế kỹ thuật hoặc dự án đầu tư	01		
4.	Hồ sơ năng lực (nếu có)			

Đề nghị liên hệ lại kết quả giải quyết hồ sơ vào ngày 18 tháng 01 năm 2014

NGƯỜI NỘP
(Ký và ghi rõ họ tên)

Phạm Kim Nguyên

CHUYÊN VIÊN TIẾP NHẬN
(Ký và ghi rõ họ tên)

Lê Thị Thu Vân

Lưu ý :
- Mang theo biên nhận này đến khi lấy kết quả hồ sơ. Trường hợp đánh mất biên nhận phải thông báo ngay đến Phòng thẩm định đánh giá tác động môi trường.
- Người đến nhận kết quả phải có giấy giới thiệu của đơn vị, phải ghi rõ nội dung liên hệ (Nhận kết quả hồ sơ Thẩm định báo cáo đánh giá tác động môi trường theo biên nhận số .....ngày.....) và chứng minh nhân dân.
- Mọi chi tiết xin liên hệ Chi cục BVMT-phòng Thẩm định ĐTM, điện thoại 38277874 -22 để được hướng dẫn thêm.

APPENDIX D2. ACCEPTANCE LETTER OF EIA REPORT FOR 110KV UNDERGROUND CABLE CONNECTING TO THAM LUONG SUBSTATION

SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG
THÀNH PHỐ HỒ CHÍ MINH
CHI CỤC BẢO VỆ MÔI TRƯỜNG

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

Số: 15208 /BN(ĐTM)-CCBVMT

Tp. Hồ Chí Minh, ngày 17 tháng 12 năm 2013

BIÊN NHẬN
HỒ SƠ THẨM ĐỊNH BÁO CÁO ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG

- **Tên đơn vị:** BQL Dự án Đầu tư TPHCM
- **Tên Dự án:** Cáp ngầm 110 kV đấu nối trạm Tham Lương
- **Địa chỉ đăng ký:** Q. 12, H. Hóc Môn
- **Thông tin liên lạc:** .....
- **Điện thoại:** .....
- **Tên đơn vị tư vấn:** Cty CP XD xã TV Địa ốc
- **Người nộp hồ sơ:** Phạm Kim Nguyên
- **Số điện thoại:** 0906 950 005
- **Đặc điểm hồ sơ:** Thẩm định ĐTM
- **Hồ sơ gồm có:**

STT	Tên hồ sơ	Bản chính	Bản chứng thực sao y	Bản Photo
1.	Văn bản của chủ dự án đề nghị thẩm định và phê duyệt báo cáo đánh giá tác động môi trường	01		
2.	Bản báo cáo đánh giá tác động môi trường của dự án	12		
3.	Báo cáo đầu tư hoặc báo cáo kinh tế kỹ thuật hoặc dự án đầu tư	01		
4.	Hồ sơ năng lực (nếu có)			

Đề nghị liên hệ lại kết quả giải quyết hồ sơ vào ngày 29 tháng 01 năm 2014.

NGƯỜI NỘP
(Ký và ghi rõ họ tên)

Phạm Kim Nguyên

CHUYÊN VIÊN TIẾP NHẬN
(Ký và ghi rõ họ tên)

Lê Thị Hiền Vinh

Lưu ý :
- Mang theo biên nhận này đến khi lấy kết quả hồ sơ. Trường hợp đánh mất biên nhận phải thông báo ngay đến Phòng thẩm định đánh giá tác động môi trường.
- Người đến nhận kết quả phải có giấy giới thiệu của đơn vị, phải ghi rõ nội dung liên hệ (Nhận kết quả hồ sơ Thẩm định báo cáo đánh giá tác động môi trường theo biên nhận số .....ngày.....) và chứng minh nhân dân.
- Mọi chi tiết xin liên hệ Chi cục BVMT-phòng Thẩm định ĐTM, điện thoại 38277874 -22 để được hướng dẫn thêm.

APPENDIX E: EMERGENCY RESPONSE PLAN

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

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

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

Table 1. Roles and Responsibilities in Emergency Incident Response

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

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

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

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

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

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

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

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

i) set up the ERT;
ii) set up all support equipment and facilities in working condition
iii) made arrangements with the EERT;
iv) conducted proper training of ERT members, and encouraged and trained volunteers from the work force; v) conducted orientation to all construction workers on the emergency response procedures and facilities, particularly evacuation procedures,

evacuation routes, evacuation assembly points, and self-first response, among others; and vi) conducted drills for different possible situations.

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

Alert Procedures

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

(i) Whoever detects an emergency situation first shall immediately :
- call the attention of other people in the emergency site,
- sound the nearest alarm, and/or
- report/communicate the emergency situation to the ERT.

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

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

(i) The names and contact details of the relevant persons and institutions should be readily available in, or near to, all forms of communication equipment, and strategically posted (at legible size) in all Subproject sites and vehicles:

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

(ii) All Subproject sites should have good access to any combination of audible and visual alarms, landline phones, mobile phones and two-way radio communication at all times.
(iii) Contractor's construction vehicles should also be equipped with the appropriate communication facilities.

Emergency Response Situations

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

Table 2. Evacuation Procedure

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

Table 3. Response Procedure During Medical Emergency

Procedure	Remarks
▪ Administer First Aid regardless of severity immediately.	▪ Fundamentals when giving First Aid: - Safety first of both the rescuer and the victim. - Do not move an injured person unless: - victim is exposed to more danger when left where they are, e.g., during fire, chemical spill - it would be impossible for EERT to aid victims in their locations, e.g., under a collapsed structure - instructed or directed by the EERT. ▪ First AID to be conducted only by a person who has been properly trained in giving First Aid.
▪ Call the EERT emergency medical services and/or nearest hospital.	▪ ERTL/Deputy ERTL or authorized on-site emergency communicator
▪ Facilitate leading the EERT to the emergency site.	▪ ERTL/Deputy ERTL to instruct: - an ERT member on- site to meet EERT in access road/strategic location. He/she shall hold orange safety flag to get their attention and lead them to site. - Other ERT members to clear access road for smooth passage of the EERT.
▪ If applicable, vacate site and influence area at once, restrict site, suspend work until further notice.	▪ Follow evacuation procedure.

Table 4. Response Procedure in Case of Fire

Procedure	Remarks
▪ Alert a fire situation.	▪ Whoever detects the fire shall immediately: - call the attention of other people in the site, - sound the nearest alarm, and/or - Foreman or any ERT member among the construction sub-group contacts the fire department (in this case it should be agreed on that it is alright for any ERT member in the sub-group to alert the fire department) - report/communicate the emergency situation to the ERTL/Deputy ERTL.

Procedure	Remarks
▪ 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.