Initial Environmental Examination

June 2015

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

EVN HANOI: Thanh Xuan 110kV Substation – E1.20

Prepared by Ha Noi Power Corporation for the Asian Development Bank.

CURRENCY EQUIVALENTS

(As of 15 April 2015)

Currency Unit	-	Vietnam Dong VND
1.00 VND	=	$ 0.000047
$1.00	=	21.195

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
GHG:	Greenhouse gas
GRM:	Grievance Redress Mechanism
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

This initial environmental examination is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature.

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EXECUTIVE SUMMARY

1. The Project, which financed through Asian Development Bank's (ADB) sector loan modality, will strengthen the capacity and reliability of power infrastructure in Ha Noi and Ho Chi Minh City through the rehabilitation and development of 110 kV and 220 kV transmission system and associated substations to supply their medium voltage (MV) distribution system. The Project also strengthens 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.

2. The Initial Environmental Examination (IEE) presented herein addresses the expansion of Thanh Xuan 110 kV Substation, in Nam Tu Liem District, Ha Noi City which represents one of the non- core subprojects that were identified by Electricity of Viet Nam (EVN) for Ha Noi. The IEEs of other non-core subprojects1 are being prepared separately.

A. Subproject Summary

3. The subproject consists of installation of a new 110 kV transformer at Me Tri Ward, Nam Tu Liem District, Ha Noi City. With the expansion to the southernwest corner of the existing substation, Thanh Xuan 110kV substation will meet the load demand in the area, improve the reliability and flexibility of power supply, and increase the operational safety for Hanoi power grid Project.

B. Potential Impacts and Mitigation

4. The IEE of the Thanh Xuan 110 kV substation indicates that the potential environmental impacts of the subproject will primarily occur during 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, damage to existing roads, 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 sites which are located in developed urban Ha Noi.

5. The subproject will result in permanent loss of 777 m^2, on the land property of Me Tri Sport and Leisure Ltd.Co (TTMT). There is no human residence on this part of land. The compensation will be undertaken by the Project Owner for the acquired land area and number of removed trees in accordance with related regulations set by the Government of Vietnam and Government of Hanoi City addressing public interest projects.

[1] The non-core subprojects were developed by EVN to follow implementation of the higher priority core subprojects

6. There are no expected negative induced, or cumulative environmental impacts associated with the subproject objectives of meeting the load demand in the area, improving the reliability and flexibility of power supply, and increasing the operational safety for Hanoi power grid.

7. 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

8. The IEE concludes that the feasibility design of the 110 kV Thanh Xuan 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) of the subproject is not required.

CONTENTS

I. INTRODUCTION

A. Background to IEE

9. The goal of the Ha Noi and Ho Chi Minh City Power Grid Development Sector Project is to strengthen the capacity and reliability of the power infrastructure in Ha Noi and Ho Chi Minh City 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 power supply in their respective areas.

10. The Thanh Xuan 110kV Substation subproject will be implemented as part of a sector loan for the overall Project under ADB's Operation Manual Section D3 – Sector Lending. The subproject was selected by EVNHANOI as one of the non-core projects which are being further detailed and prepared for project implementation.

B. Assessment Context

11. The overall 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 Thanh Xuan subproject in the feasibility design stage using available data and information on sensitive ecological and cultural receptors that exist for the subproject site.

12. The detailed design for the Thanh Xuan subproject will follow subproject approval. The Environmental Management Plan (EMP) that has been prepared for the subproject (Section IX) will need to be updated where necessary to meet the final detailed designs of the Thanh Xuan substation subproject.

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

II. POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK

13. The Thanh Xuan subproject will be implemented according to the directives set down for use of Official Development Assistance (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

14. The Viet Nam Law on Environmental Protection (LEP 2014) 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 has been replaced by Decree 35/2014/ND-CP and the latest Decree 18/2015/ND-CP in February 2015;

15. The updated screening criteria of Decree 29/2011/ND-CP 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 this subproject preparation, Decree 29 requires that an EIA be prepared for the Thanh Xuan substation.

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

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

Environmental Protection regulations

- Law on Environmental Protection by the National Assembly on June 23, 2014 (Law No. 55/2014/QH13);
- Environmental Protection Tax Law of the Socialist Republic of Vietnam approved by the National Assembly on November 15, 2010;
- Decree No. 59/2007/ND-CP dated April 09, 2007 of the Government on management of solid waste;
- Decree No. 174/2007/ND-CP dated November 29, 2007 of the Government on environmental protection charges for solid waste;
- Decree No. 29/2011/ ND-CP dated April 18, 2011 of the Government prescribing regulation on strategic environmental assessment, environmental impact assessment, environmental protection commitments;
- Decree No. 35/2014/ND-CP dated April 29, 2014 of the Government amending and supplementing a number of articles of Decree No. 29/2011/ND-CP of April 18, 2011

of Government regulations on strategic environmental assessment, environmental impact assessment.

- Decree No.18/2015/ND-CP dated February 14, 2015 on environmental protection masterplan, strategic environmental assessment, environmental impact assessment and environmental management plan.
- Decree No.179/2013/ND-CP of the Government dated November 14, 2013 on handling administrative violations in the field of environmental protection;
- Circular No. 32/2013/TT-BTNMT dated October 25, 2013 by Ministry of Natural Resources and Environment promulgating national technical regulations on environment;
- Circular No.12/2011/TT-BTNMT dated April 14, 2011 on hazardous waste management;
- Circular No.26/2011/TT-BTNMT dated July 18, 2011 of the Ministry of Natural Resources and Environment on the detailed provisions of some articles of Decree No. 29/2011/ND-CPof government regulations on strategic environmental assessment, environmental impact assessment, environmental protection commitments;
- Circular 22/2014/TT-BTNMT prescribing regulations and guidelines for implementation of Decree No. 35/2014/ND-CP of April 29, 2014 of the Government amending and supplementing a number of articles of Decree No. 29/2011/ND-CPof Government regulations on the strategic environmental assessment, environmental impact assessment

Land Law

- Land Law No. 45/2013/QH13 dated November 29, 2013 of the National Assembly of the Socialist Republic of Vietnam, coming into force on July 1, 2014;
- Decree No. 43/2014/ND-CP dated May 15, 2014 of the Government on the implementation of the Land Law;

Construction Law

- Construction Law No.50/2014/QH13 dated June 18, 2014 of the National Assembly of the Socialist Republic of Vietnam, coming into effect on January 1, 2015;
- Procurement Law No.61/2005/QH 11 dated November 29, 2005 of the National Assembly providing for the procurement activities;
- Decree No. 12/2009/ND-CP dated February 12, 2009 of the Government on management of investment project construction;
- Decree No.15/2013/ND-CP dated June 02, 2013 of the Government on management of construction quality;

Electricity Law

- Electricity Law No. 28/2004/QH11, Issued: 03/12/2004;
- Supplemented Electricity Law No. 24/2012/QH13 by the National Assembly of the Socialist Republic of Vietnam dated November 20, 2012;

- Decree No.14/2014/ND-CP dated February 26, 2014 of the Government detailing the implementation of the Electricity Act on electrical safety;
- Decree No.137/2013/ND-CP of the Government providing detailed regulations for implementation of a number of articles of the Law on Electricity and the Supplemented Law on Electricity;
- Decree No. 68/2010/ND-CP dated June 15, 2010 of the Government stipulating sanctions in the field of electricity;
- Circular No.03/2010/TT-BCT dated January 22, 2010 of the Ministry of Industry and Trade providing a number of provisions on protection of safety of high-voltage grid;

Law on Fire Protection

- Law on Fire Prevention of the Socialist Republic of Vietnam National Assembly adopted on 26 June 2001;
- Revised Law on Fire Prevention No. 40/2013/QH13 by the National Assembly of the Socialist Republic of Vietnam dated November 22, 2013;
- Decree No. 35/2003/ND-CP of the Government on detailed regulations for implementation of a number of articles of the Law on Fire Prevention;
- Decree No.52 / 2012/ND-CP of the Government stipulating sanctions against administrative violations in the field of fire prevention and fighting;
- Decree No.130/2006/ND-CP of the Government dated August 11, 2006 prescribing mandatory fire insurance policy;

Project related Documents

- Decision No.4351/QD-BTC of the Ministry of Industry and Commerce dated August 20 2011 approving the plan for power development in Hanoi in 2011 - 2015 period with vision to 2020;
- Decision No.1454/UBND-CT of the Hanoi People's Committee dated February 22, 2013 on the expansion of Thanh Xuan 110kV substation E1.20;
- Decision No.0201/PA-EVN HANOI-B04 of the Technical Department - Hanoi Power Corporation date January 01, 2012 approving the design task of construction investment, for the project " Installation of New Transformer in Thanh Xuan 110kV substation E1.20";
- Decision No.481/QD-EVN HANOI dated February 17, 2012 of Hanoi Power Corporation on approving approving the design task of construction investment, for the project " Installation of New Transformer in Thanh Xuan 110kV substation E1.20".

Technical Regulations

- TCVN 2295-78: Cabinet's electricity distribution systems and substations Modular Modular - Safety requirements;
- TCVN 2329-78: Solid electrical insulating materials, test methods, criteria and conditions of the surroundings and sample preparation;
- TCVN 2330-78: Solid Insulation Materials, methods to determine reliable electricity with an alternating voltage of industrial frequency;
- TCVN 2572- 78: Signs on electrical safety;

- TCVN 3144-79: electrical engineering products - General requirements for safety;
- TCVN 3145-79: Gas engine circuit breaker, voltage 1000V - Safety requirements;
- TCVN 3259 - 1992: Transformer and power reactor - Safety requirements;
- TCVN 3623-81: Electric tools of 1000V voltage switchgear - General Technical Requirements;
- TCVN 4086-85: Electrical Safety in Construction - General requirements;
- TCVN 4114-85: Electrical equipment with voltage 1000V and higher - Safety requirements;
- TCVN 4115-85: Power switches protecting users from the computer and the mobile electrical appliances with voltage of 1000V and higher - General Technical Requirements;
- TCVN 46: 1984: Lightning protection for buildings - Standard design and construction;

Environmental Technical Regulations

- QCVN 01: 2008/BCT - National Technical Regulation for Safety;
- QCVN 08: 2008/BTNMT - National Technical Regulations on surface water quality;
- QCVN 09: 2008/ BTNMT - National Technical Regulation on groundwater quality;
- QCVN 05: 2013/ BTNMT - National Technical Regulation on ambient air quality;
- QCVN 06: 2009/ BTNMT - National Technical Regulation on certain hazardous substances in the ambient air;
- QCVN 26: 2010/ BTNMT - National Technical Regulations on noise;
- QCVN 27: 2010/ BTNMT - National Technical Regulation on vibration;
- QCVN 03: 2008/ BTNMT - National Technical Regulations on the permissible limits of heavy metals in the soil;
- QCVN 14: 2008/ BTNMT - National Technical Regulation on waste water quality;
- Decision 3733: 2002/BYT: Decision on issuing 21 labor hygiene standards, 5 principles and 7 occupational health parameters.

International Environmental Management Conventions

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 Trans-boundary Movements of Hazardous Wastes and their Disposal
- 1992, United Nations Framework Convention on Climate Change
- 1992, Convention on Biological Diversity

C. ADB Safeguard Policy

17. 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).

18. 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. The Rapid Environmental Assessment (REA) checklist of the subproject is presented in Appendix A.

III. DESCRIPTION OF SUBPROJECT

19. The expansion of Thanh Xuan 110kV substation will meet the load demand in the area, improve the reliability and flexibility of power supply, and increase the operational safety for Hanoi power grid.

20. Thanh Xuan 110kV station is located in an area of 4,423m^2. It currently operates with 02 transformers of a total capacity of 126MVA. This subproject will install 01 additional 63MVA power transformer on an expansion area of approximately 777m2. The whole expansion is made on part of plantations which is property of Me Tri Sports and Leisure Ltd.Co.

21. The location of the 110 kV Thanh Xuan Substation is shown in Figure 1.

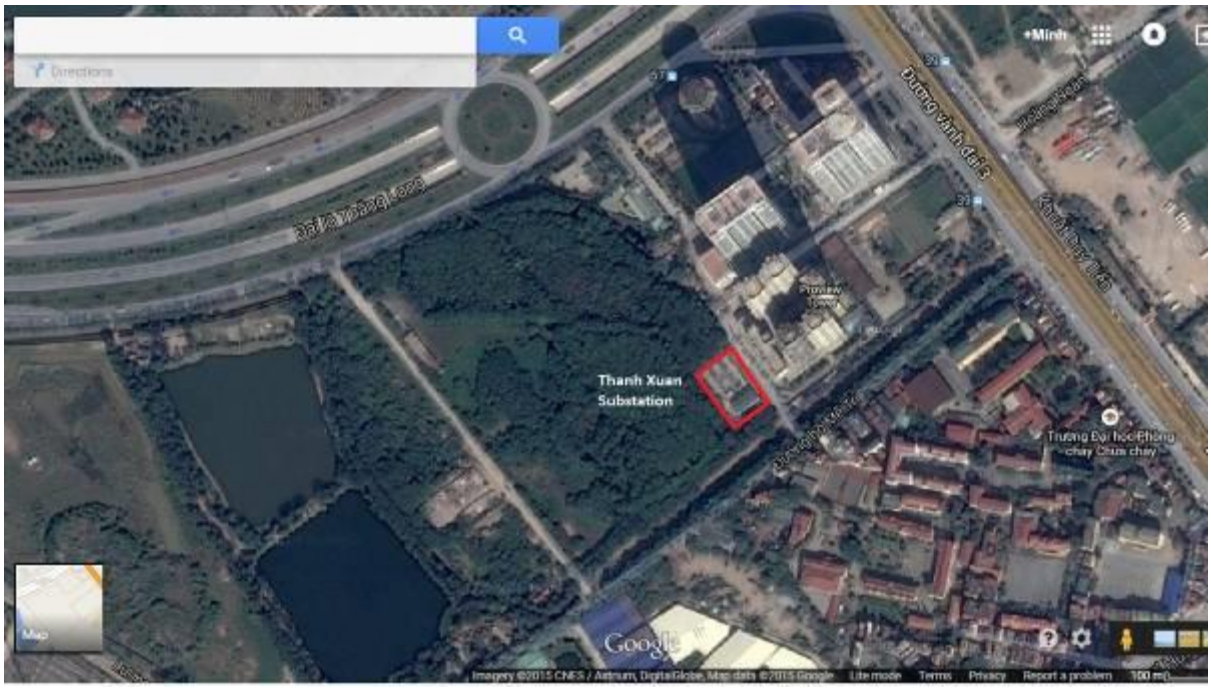

Figure 1 Location of Thanh Xuan 110kV Substation

22. The components of the Subproject includes:

Primary electric component

- 110kv side: Installing 01 outdoor three phase automatic power transformer 63MVA; 01 circuit breaker, 03 current transformers; 01 switch disconnector and 03 lightning arresters.
- 22kV side: constructing a new 22kV distribution chamber for busbar C43.

Civil works

- 22kV distribution house for the 3rd transformer including 23 cubicles
- Distribution chamber
- Transformer base

- New cable trench
- Pumping house
- Fire fighting system

The Layout of Thanh Xuan substation is illustrated in Figure 2

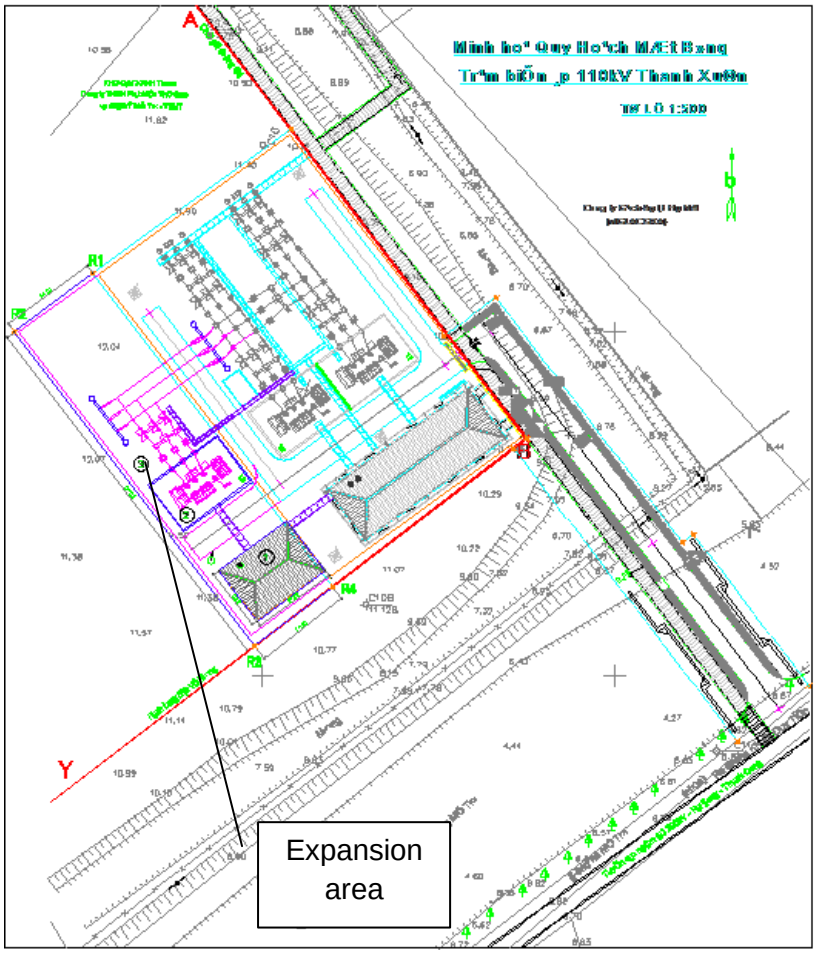

Figure 2. Layout of Thanh Xuan substation

SCADA communication system:

SCADA additional components for 01 100kV switch, the transformer T3 and 11 22kV cubicles will be connected to the existing SCADA system of the substation.

23. Upon completion, the substation will be equipped with 3 transformers of total capacity of 189 MVA on an area of 5200 m2.

IV. DESCRIPTION OF EXISTING ENVIRONMENT

24. The environmental baseline information was obtained primarily from Ha Noi Statistical Yearbooks, state of the environment reports (SoER) prepared by Ha Noi DoNRE, reports from EVN's technical consultant, and other environmental assessments conducted for the same area. The description of the affected environment focuses on natural features and land use.

A. Physical Environment

1. Climate

a. Temperature

25. The climate of project area in Hanoi Capital is under the influence of the Northern region characterized by humid tropical monsoon, that is, hot and rainy summer, and cold and cloudless winter. From May to October, hot and humid climate is dominant with the average temperature of 28.4oC. From November to April of the following year, cold climate is seen with average temperature of 20.1oC. The values of the average temperature from 2009 to 2013 are shown in Table 1.

Table 1 Monthly average temperature from 2009 to 2013 (^oC)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year avg.
2009	15.4	22.0	20.6	24.1	26.4	29.6	29.1	29.2	28.3	25.9	21.2	19.5	24.3
2010	18.1	20.9	21.9	23.5	28.7	30.9	30.7	28.6	28.6	25.7	22.1	19.4	24.9
2011	12.8	17.7	17.1	23.8	27.2	29.5	29.9	28.9	27.6	24.5	23.8	17.4	23.4
2012	14.6	16.2	20.2	26.2	28.9	30.3	29.6	29.3	28.0	26.8	23.4	18.7	24.4
2013	15.3	19.9	24.0	25.0	28.9	30.0	28.7	29.1	27.0	25.6	22.8	16.3	24.4
Avg.	15.2	19.3	20.8	24.5	28.0	30.1	29.6	29.0	27.9	25.7	22.7	18.3	24.3

(Source: Hydrometeorological Documentation Centre - National Hydrometeorological Center, 2013 and Hanoi Statistical Yearbook, 2013.)

b. Rainfall and Humidity

26. The rainy season in the Hanoi area occurs in the period from May to October. Months with the largest rainfall are usually July or August associated with tropical storm season in the Red River Delta. The smallest monthly rainfall is in February. The average rainfall from year to year is 1.639,9mm. The largest monthly rainfall is 541.4mm in 2009-2013 period (appearing in Aug 2013). Monthly and yearly rainfall average is shown in the following table.

Table 2 Monthly rainfall in Hanoi (mm)

Y / M	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2009	4.5	6.5	36.5	54.5	234.5	232.5	505.0	95.0	179.5	78.0	0.5	0.0	1427.0
2010	80.9	8.1	5.8	55.6	149.7	175.4	280.4	274.4	171.8	24.9	0.6	11.6	1239.2
2011	9.3	17.5	105.9	42.0	149.0	388.3	255.3	313.2	247.3	177.6	31.8	51.5	1788.7
2012	20.3	16.5	16.9	31.8	386.7	268.9	388.3	487.8	54.7	77.5	34.8	25.7	1809.9
2013	13.9	17.6	46.1	23.3	242.5	216.7	305.9	541.4	374.3	61.2	69.6	22.3	1934.8
Avg.	25.8	13.2	42.2	41.4	232.5	256.4	347.0	342.4	205.5	83.8	27.5	22.2	1639.9

(Source: Hydrometeorological Documentation Centre - National Hydrometeorological Center, 2013 and Hanoi Statistical Yearbook, 2013.)

27. Humidity in this area is subject to seasonal variations; the highest values are in February and March when they can reach to 90%. The lowest humidity, from November to January, is from 77% to 81%. The average moisture in the project area from 2009 to 2013 is 79%. The average values of the monthly and yearly humidity from 2009 to 2013 are shown in the Table 3.

Table 3 Average Relative Humidity in months (%)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Avg.
2009	77	88	86	86	86	80	84	84	83	82	71	78	82
2010	81	80	78	85	81	74	74	82	79	70	71	77	78
2011	71	83	81	80	76	80	78	81	81	79	77	68	78
2012	83	83	83	80	76	80	78	81	81	79	77	68	78
2013	82	86	80	81	80	74	83	81	82	73	73	68	79
Avg.	79	84	82	82	80	78	79	82	81	77	74	72	79

(Source: Hydrometeorological Documentation Centre - National Hydrometeorological Center, 2013 and Hanoi Statistical Yearbook, 2013).

b. Wind direction

28. Hanoi is located in the monsoon affected area. In summer south-easterly moonsoon winds are prevailing with frequency from 41.5% to 57.5%, bringing cool and moist air from the Pacific Ocean. Prevailing in winter are northeast monsoon winds with the frequency 28.6% to 29.8%; dry in the early season and wet in the end. In winter Southeastern monsoon appears with frequency of 28.3%, creating a pleasant weather. In addition, Hanoi summer is also affected by hot dry west monsoon with lesser frequency.

29. The northeast monsoon in the moonson with thunderstorms can create a wind presure of 95daN/m2 and wind speed can reach up to 40m/s.

c. Sunlight hours

30. The total number of average hours of sunlight measured in 5 years, from 2009 to 2013, is 1,191.2 hours/year. The sunlight regime is closely related to the radiation and cloudness status. From December to April due to the cloudy weather, the number of sunshine hours is as few as 5 with a monthly average of only 70.0 hours. From May the sunshine hours rise up to 131.7 hours/month. The duration of sunlight in year is shown in the Table 4.

Table 4 . Yearly and monthly sunlight hours from 2009 to 2013 (hrs)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2009	96.8	0.0	45.2	97.6	143.6	168.3	161.9	202.4	139.8	126.4	141.4	67.1	1390.5
2010	32.8	93.6	50.7	48.3	130.8	159.2	180.1	120.8	145.0	102.3	103.1	78.6	1245.3
2011	3.7	38.5	15.2	56.0	141.2	126.1	149.9	150.1	102.4	72.6	104.6	95.0	1055.3
2012	4.5	21.0	23.8	88.7	146.2	106.9	142.2	159.2	109.6	98.2	92.2	40.4	1032.9
2013	12.2	38.2	74.3	69.4	156.3	158.7	118.8	139.0	92.8	140.1	76.0	156.3	1232.1
Avg.	30	38.3	41.8	72	143.6	143.8	150.6	154.3	117.9	107.9	103.5	87.5	1191.2

(Source: Hydrometeorological Documentation Centre - National Hydrometeorological Center, 2013 and Hanoi Statistical Yearbook, 2013).

d. Thunderstorms

31. Locating in a storm prone area, the subproject is directly affected by storms and thunderstorms. Storm season lasts from June to September, with 1-2 storms per year of 12 level intensity and strong gales. During storms, wind speeds may exceed level 12 (corresponding to 20 year cycle). The storm rainfall can reach from 100 to 500 mm, or 1000mm at times.

32. Regarding thunderstorms, the number of thunderstorm days on average is about 51 days, i.e., an average of 219.1 hours. The average thunder density is 6.47; the peak month of thunderstorm is August.

2. Air quality

33. The ambient air quality in the project area and adjacent areas were monitored by the Institute of Physics, Vietnam Academy of Natural Sciences and Technology. The air samples were taken at 5 points as shown in the Table 5 within the Thanh Xuan substation. Subsequent analysis results reveal that, inside the substation, some monitored indicators such as NO_2, SO_2 in points KK1-KK3 are beyond permitted limits. The analysis results of air quality are presented in Table 6.

Table 5 Sampling locations

No	Symbol	Location	Coordinates
1	KK1	At the rear of the transformer attaching to the proposed expansion area	N: $21^0$00'071'' E: $105^0$47'504"

No	Symbol	Location	Coordinates
2	KK2	At the operation house	N: $21^0$00'055'' E: $105^0$47'514"
3	KK3	At emergency oil tank	N: $21^0$00'065'' E: $105^0$47'494"
4	KK4	At gate of the transformer	N: $21^0$00'061'' E:$105^0$47'513''
5	KK5	At the proposed expansion area	N: $21^0$00'105'' E:$105^0$47'490''

Table 6 Air quality analysis for the subroproject area

Parameter	Unit	Results					QCVN 05:2013/ BTNMT	QCVN 26:2010/ BTNMT
		KK1	KK2	KK3	KK4	KK5		
Temperature	(^{0}C)	31.2	32	34.1	33.7	34	-	-
Humidity	(%)	68	67	66	68	67	-	-
Wind velocity	(m/s)	1.4	1.6	1.1	1.4	1.5	-	-
Total suspended particle	($\mu g/m^3$)	147	159	142	147	166	300	-
CO	($\mu g/m^3$)	3050	2700	3200	3300	3350	30000	-
NO_2	($\mu g/m^3$)	420	517	420	223	203	200	-
SO_2	($\mu g/m^3$)	537	640	432	235	227	350	-
VOC	($\mu g/m^3$)	147	141	154	137	121	-	-
Noise level	(dBA)	55.5	61.4	63.4	56.8	52.1	-	70
Vibration	m/s^2	0.034	0.04	0.041	0.022	0.02	0.055	-
Electric field intensity	(kV/m)	1.5	1.9	2.4	55	n/a	-	-

(Source: Institute of Physics, Vietnam Academy of Natural Sciences and Technology, 2015)

- QCVN 05:2013/BTNMT: National technical regulations on ambient air quality

- QCVN 26:2010/BTNMT: National technical regulations on noise.

34. At the entrance of the substation and the expansion area (KK4 and KK5), there are no signs of contamination; all analytical parameters are within the limits allowed by QCVN 05: 2013/BTNMT. Also is the noise level at all monitoring locations as regulated by QCVN 26: 2010/BTNMT.

35. In the survey area, the values of electric field strength measured range from 1.5 to 2.4 kV/m, lower than the level safe for human health of 5 kV/m recommended by the

International Radiation Protection Association (IRPA). Thus, the value electromagnetic field intensity in the project area is considered low.

3. Topography, Geography and Soil

a. Topography

36. The subproject site is located in Nam Tu Liem District, Hanoi, an area with relatively flat terrain which slopes slightly from Northwest to Southeast. The elevation level of the expansion area, on the closed Me Tri landfill, is 2.5m higher than the existing 110kV substation Thanh Xuan.

37. The distance from the nearest house to the existing substation and the expansion area is 100m and 150m respectively.

b. Geography

38. According to the geological survey in the project area, the geological composition of the soil layers include clay, sand and accretionary clay. Soil layers are described as follows:

- **Layer KQ:** Yellowish-brownish grey, reddish brown sandy clay with organic substances. This layer distributes in the surface of the terrain in all boreholes with depths ranging from 0.4m (K12) to 0.6m (K11).
- **Layer 1:** Plastic to stiff yellowish grey, reddish brown, bluish grey sandy clay. This stratum is found in boreholes at the transformer area (K11 and K12). The depths of top layer and bottom layer are 0.4-0.6m and 3.9-4.0m respectively. The thickness of this layer varies from 3.3m (K11) to 3.6m (K12).
- **Layer 2:** Medium dense brownish-yellowish grey silty sand. This soil stratum underlies directly the layer 1. The depth of top layer varies from 3.9m (K11) to 4.0m (K12). The depth of bottom layer and thickness are unidentified as the drillholes stop at this layer.

c. Soil quality

39. From the analysis results, it is found that the soil at the survey locations (Table 7) is not contaminated with heavy metals. Values of analyzed parameters are within permitted limits set by QCVN 03: 2008/BTNMT for industrial soil as presented in results shown in Table 8.

Table 7 Soil sampling locations

No	Symbol	Location	Coordinates
1	D1	At the emergency oil tank	N: $21^0$00'066” E: $105^0$47'495”
2	D2	At the expansion area	N: $21^0$00'105” E: $105^0$47'490”
3	D3	At the entrance to the substation	N: $21^0$00'060” E: $105^0$47'511”

QCVN03: 2008/BTNMT- National Technical standards on permissible limits of heavy metals in soil.

Table 8 Analysis of soil quality in the subproject site

No	Parameter	Unit	Result			QCVN 03:2008/BTNMT (industrial soil)
			D1	D2	D3	
1	Zn	mg/kg dry soil	71.5	80.1	72.7	300
2	Pb	mg/kg dry soil	32.8	32.2	32.6	300
3	As	mg/kg dry soil	4.21	4.19	4.21	12
4	Fe	mg/kg dry soil	18.4	18.5	18.4	-
5	Oil and grease	mg/kg dry soil	2.1	0.2	0.3	-

(Source: Institute of Physics, Vietnam Academy of Natural Sciences and Technology, 2015)

4. Surface water/groundwater resources

a. Surface water

40. Surface water in Hanoi comes from 19 rivers with a surface area of 32.6 km^2 and 3,600 hectares of ponds, lakes and marshes. The surface water reserve is 49.4 million m^3 surface with reservoir capacity of 10.7 million m^3. The surface water in Hanoi is heavily contaminated by wastewater of the city.

41. Me Tri Ward has relatively abundant surface water. The subproject site is surrounded by Me Tri Lake, drainage canals and small ponds. To assess the water quality in the subproject area, the Institute of Physics, Vietnam Academy of Natural Sciences and Technology has sampled surface water and groundwater samples (water in wells).

42. Table 9 presents sampling locations for surface and groundwater in the subproject area and the analysed results in Table 10 showed that surface water in the project area is contaminated. One reason is that the surface water is affected by the old Me Tri landfill. At the same time, high traffic density in Thang Long Avenue and Me Tri Road nearby brought a large amount of dust and emissions into open drainage ditches and canals.

Table 9. Sampling locations for surface and groundwater in the subproject area

No	Symbol	Location	Coordinates
I. Surface water sampling			
1	NM1	At the drainage canal 50m from the substation	N: $21^0$00'040” E: $105^0$47'535”
2	NM2	At Me Tri Lake, 200m westward from the subproject	N: $21^0$00'465” E: $105^0$47'090”
3	NM3	At the drainage ditch near Thang Long Avenue, 150m from the subproject	N: $21^0$00'365” E: $105^0$47'127”

II. Groundwater sampling			
1	NN1	At the water well in the substation	N: $21^0$00'055" E: $105^0$47'504"

Notes: (-): unregulated or undetected.

QCVN08:2008/BTNMT: National Technical Regulation on Surface Water Quality
- Column B1: For water used for irrigation purposes or other uses that require the same water quality or intended uses as described in B2.
- Column B2: For water used for the purpose of waterway navigation and other purposes with low water quality requirements.

Table 10 Surface water quality at the subproject site

No	Parameter	Unit	Result			QCVN 08:2008/ BTNMT (Column B1)
			NM1	NM2	NM3	
1	pH	-	6,6	6,5	6,7	5,5-9
2	Conductivity	µΩ/cm	95	119	102	-
3	Turbidity	NTU	40	12	36	-
4	Temporary hardness	mg/l	185	167	173	-
5	COD	mg/l	98,2	39,7	85,3	30
6	BOD_5	mg/l	45,2	21,4	44,6	15
7	DO	mg/l	2,8	3,6	2,9	≥ 4
8	TSS	mg/l	120	67	113	50
9	TDS	mg/l	1200	690	1100	-
10	SO_4^{2-}	mg/l	194	190	199	-
11	Zn	mg/l	0.25	0.04	0.24	1.5
12	Pb	mg/l	-	-	-	0.05
13	As	mg/l	-	-	-	0.05
14	NO_3^-	mg/l	13.9	9.20	12.4	10
15	Total N	mg/l	4.15	2,31	5.10	-
16	Total P	mg/l	1.24	0.73	1.37	-
17	Oil and grease	mg/l	0.11	0.08	0.1	0.1
18	Total Coliform	MPN/100ml	20300	14000	18200	7.500

(Source: Institute of Physics, Vietnam Academy of Natural Sciences and Technology, 2015)

b. Groundwater resources

43. Reports on water quality in Hanoi demonstrated that groundwater resources are being depleted and polluted. Ground water is exploited through a system of wells, with more than 170,000 wells, for extraction of 700,000 m^3 per day. The Center for water resource monitoring and forecast (MONROE) also confirms that the depth of the water table in Hanoi is increasing, which means that groundwater is being depleted. By 2020, the extraction is expected to reach 1.4 million m^3 per day. Based on geological and hydrological surveys in

the project area, groundwater levels are relatively stable in the boreholes, changing from 4,4m to 4.5m. Surface water and groundwater are subject to seasonal fluctuations.

44. In regards of groundwater quality, results from analyzing well water post-processed through sand filter tank showed that a majority of parameters are within allowed standards by QCVN09:2008/BTNMT - National Technical Regulation on groundwater quality; only iron content exceeds 1.24 times over the permitted standards. Furthermore, groundwater in wells will be used to supply to the fire control water tank, rather than domestic use, and it should not have health impacts on substation operators. Groundwater quality in the project area is relatively good as shown in Table 11.

Table 11 Analysis of groundwater quality at the substation site

No	Parameter	Unit	Result	QCVN09:2008/ BTNMT
			NN1	
1	pH	-	5.9	5.5- 8.5
2	Hardness	mg/l	235	500
3	TSS	mg/l	68.2	-
4	Total Fe	mg/l	6.21	5
5	As	mg/l	0.04	0.05
6	Zn	mg/l	0.12	3.0
7	Cd	mg/l	-	0.005
8	Cr	mg/l	0.001	0.05
9	Ca^{+2}	mg/l	31.2	-
10	Al^{3+}	mg/l	18.4	-
11	Mn^{2+}	mg/l	0.003	0.5
12	NO_3^-	mg/l	7.28	15
13	SO_4^{2-}	mg/l	120	400
14	Cl^-	mg/l	102	250
15	Coliform	MPN/100ml	1	3
16	E.Coli	MPN/100ml	-	-
17	Oil and grease	mg/l	-	-

(Source: Institute of Physics, Vietnam Academy of Natural Sciences and Technology, 2015)

Note:

- NN1: Groundwater sampling at the substation

- QCVN 09:2008/BTNMT: National technical regulation on groundwater quality.

(-) : unregulated, undetected.

c. Biological Environment

Vegetation and Land Use

45. There are 23,510 ha of forest land in Hanoi (inlcuding 16,770 ha of former Ha Tay Province), accounting for 6.9% of total natural land area; including 3,922 hectares of natural forests and 19,568 ha of forest plantations. Some nature reserves exist in the area such as Ba Vi National Park, Huong Pagoda Forest in My Duc District. Forest in Hanoi is an

important resource to maintain the ecological balance, prevent soil erosion and facilitate tourism and relaxation activities.

46. The project site is characterized by urban ecology in plain area. Terrestrial flora of the area consists of plain land species, mostly crops like vegetables, rice, fruit trees (custard apple, guava, mango) and several types of timber trees.

47. Surrounding the substation area are canals and ponds which host underwater flora including 28 identified species of plants. However, the dominant group consists mostly algae, moss, and some floating plants such as water hyacinth and lilies,.

2. Wildlife

48. 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 wild animals that could interfere with or have impact on the subproject site.

3. Conservation areas

49. There are no conservation areas within the proximity of the subproject site.

B. Socio-economic conditions

1. Population

50. Nam Tu Liem District has a total area of 32.2736 square kilometers (2013), with 232 894 people (2013). The district is divided into 10 administrative units (10 wards): Cau Dien, My Dinh 1, My Dinh 2, Me Tri, Phu Do, Trung Van, Tay Mo, Dai Mo. Phuong Canh and Xuan Phuong.

51. The subproject is situated in Me Tri Ward that has 467 ha area with 26,688 inhabitants and the population density of 57.15 people/ha.

2. Local Economy

52. In 2012, the GDP of Hanoi accounted for 10% of the national GDP and revenue accouting for almost 20% of the national budget, respectively. It witnessed a twofold increase since 2008. In 2012, the Hanoi's production value per capita increased by 1.33 times, the total social investment capital increased by 1.87 times and exports increased by an average of 10.5 times compared with 2008. The welfare sector is of particular interest, especially policies on the poor. In the period 2008 - 2012, the poverty incidence has decreased by 1.5-2 times per annum, and in 2013, the figure anchoring down to 2.35%.

3. Social Infrastructure

Public Health and Sanitation

53. The project site is located in the central area of Hanoi that means good access to social services from local to central level is secured. The local health facilities include health centers at ward level, first aid and medical assistance for minor illnesses and health care services for mothers and children, such as immunization, pregnancy care, family planning, ..

At upper levels there are hospitals at municipal and central level, in addition to a broader system of private clinics and hospitals of high quality and expertise.

54. Ha Noi is the largest Vietnamese health center. According to the figures from Vietnam Statistics Agency in 2007, former Ha Noi had 232 health stations, 26 clinics, 19 hospitals, 4,448 patient beds, 1,705 doctors under the Ministry of Health. Its health system is more and more developed; many health centers in districts were upgraded to increase health care services for patients from other provinces. Coupled with the state-run health system, Ha Noi has private hospitals and clinics. In 2008, Ha Noi had 8 private hospitals with some 300 patient beds. Ha Noi is to have more 8-10 private hospitals by 2010 when total patient beds amount to some 2,500.

55. Nam Tu Liem District has one health centers and there is one clinic in every ward. Me Tri Ward Clinic has 1 doctor and 5 nurses who are in charge of health care for local people.

56. Hanoi is one of two provinces where the number of people infected with HIV is the highest, after Ho Chi Minh City. Information from the Center for HIV / AIDS, Hanoi Department of Health showed that, according statistics to mid-2013, around Hanoi there are about 24,000 people who are infected by HIV (of which 3,800 people died of AIDS). All 29 districts in the city have reported detection of the infection; 536 of the total 577 communes, wards and townships (92.8%) have reported data from HIV infection. The number of people infected with HIV are mainly concentrated in urban districts, such as Dong Da, Hoan Kiem, Hai Ba Trung, Ba Dinh. By contrast, in the outlying districts Ha Noi such as Thach That, Thanh Oai, Quoc Oai, the number of infected people is low. In Hanoi area, nearly 2,000 HIV infected persons are non-Hanoian.

57. In Me Tri Ward 100% of households have access to electricity, tap water and solid waste is collected by the Hanoi URENCO.

Education

58. Ha Noi has hundreds of leading institutes, more than 50 universities and colleges that are training important laborers and supplying some 80,000 graduates to the laborer market.

59. Thanh Xuan District covers all schooling levels: preschool, elementary, junior high, high school and vocational training and higher. Some institutions include, for example, Hightech Vocational College of Hanoi, Construction College no.1, Hanoi College of Natural Resources and Environment and College of Fire Prevention. In Ha Dinh Ward, 4 levels of school exist: kindergarten, elementary school, secondary school and high school.

Communications

60. Ha Noi is the biggest communications center in the country. Its communications network satisfies swift communication information demand nationwide and worldwide. Infrastructure for transport, communications and electricity are being constantly improved so that people's standard of living and access to services has improved appreciably. All households in the subproject area have TV and telephone. All communes or wards have

their own mass communication facilities. The post office locations are a short distance for all people.

61. The subproject area is covered by post stations, many telephone networks as Viettel and VNPT telecommunications, and a number of other telecommunications companies. Internet services are very common and convenient in the area.

Water supply, electricity and transport

62. Water supply: Currently 96-97% of Ha Noi urban dwellers are supplied with 120 liters/person/day. 100% households of Me Tri Ward are supplied with Da River water supply system.

63. Drainage: In Hanoi, the drainage system is used for both stormwater and wastewater. In urban areas, apart from the major underground system, rivers and canals as Lich, Kim Nguu, Set, Kim Giang play an inportant role for drainage. Me Tri Canal, adjacent to the project site, is one of the main drainage system for Me Tri Ward.

64. Power supply: Ha Noi currently has 7 electric stations and 200kV and 500kV lines, 23 10-kV electric downloading stations. Levels of 35, 10, and 6kV are gradually shrunk, and levels of 22kV/ 0.4kV are retained. A 22kV line in urban and neighboring areas is designed.

65. Transport. Nam Tu Liem District is located at the gateway to the west, intersected by key transport routes of Hanoi include Ring Roads no.3 and no.4. Nam Tu Liem District is also home to the start of Thang Long Highway linking central Hanoi to the western districts (from Hoa Lac, Thach That, Hoai Duc to Hoa Binh Province, and Highway 32 to Son Tay Town). All roads and pathways in residential areas in the District are concretized and asphalted.

4. Cultural and Heritage Sites

66. : Ha Noi is one of the city's largest cities and oldest in Vietnam. There are many heritage and cultural relics. The most prominent cultural heritage sites in the city center are Ho Chi Minh Mausoleum, Ethnographic Museum, Hoan Kiem Lake, Ngoc Son temple, Cathedral, Temple of Literature, Mot Cot temple, Quan Su Pagoda, Kim Lien Pagoda, Hanoi Old Quarter, Hanoi Opera House, Presidential Palace, Historical Museum, Ho Chi Minh Museum, Ba Dinh Square, Ly Thai To monument, Lenin monument, Hang Co railway station, Hanoi Museum etc.

67. In Thanh Xuan district there are several public places of local communities as communal houses, pagodas, and offices, schools that are considered sensitive receptors in Ha Dinh ward. However, given the scale and operation of the project it is confirmed that the project implementation will not have any impact on these sites. A list of nearby sites is presented in Table 12:

Table 12 Sensitive receptors surveyed around the subproject site

No	Sites	Distance to the project site
1	Me Tri Thuong Pagoda	4km
2	Me Tri Thuong Communal House	4km
3	Me Tri Ha Communal House	4km
4	National Conventional Center	2km
5	College of Fire Prevention	0.5km
6	Academy of Politics and Administration	1km
7	Trung Van High School	0.7km
8	National Institute of Malariology, Parasitology and Entomology	0.9km
9	Vietnam Army Barrack	0.9km

(*Source: IEE consultant survey, 2015*).

5. UXO Clearance

68. After decades of war UXO is a significant issue in Vietnam, especially in Hanoi. As reported by Me Tri Ward authority, UXO clearance has been conducted for specific projects, instead of the entire ward. However, no UXO has been found for a long time and given the scale and the subproject, UXO risk is minimal and it is not required to survey and clear UXO in the expansion area before construction.

6. Subproject affected people

69. The subproject will be implemented on an area of 777m^2 acquired from Me Tri Sports and Leisure Ltd.Co., which is part of the old Me Tri landfill. This acquired land is being vegetated, accounting for 0.97% of the total landfill area, and places insignificant impact on the company's business.

70. No people are residing in this area; therefore it is not a requirement for resettlement.

C. Additional features of Thanh Xuan 110 kV

71. Thanh Xuan 110kV substation is located in relatively isolated location and easily accessed. The substation is bounded by a drainage canal to the left and planted trees to the right and rear which is also the proposed expansion area. Figure 3 presents different perspective of Thanh Xuan 110 kV substation

The Substation gate on the large road

Station location

Front of station

Me Tri Canal to the left of the Substation

Rear view of the Substation

Expansion area

Figure 3 presents various perspectives of Thanh Xuan 110 kV substation

V. INFORMATION DISCLOSURE AND PUBLIC CONSULTATION

A. Information Disclosure

72. Formal disclosure of information on the Thanh Xuan 110 kV Substation project that occurred to affected persons and stakeholders during the IEE is meant to form the beginning of continued information disclosure and stakeholder involvement with the subproject 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.

73. The IEE must be easily available to the stakeholders contacted in written and verbal forms and in Vietnamese. At a minimum, the Executive Summary of the IEE should be translated to Vietnamese and distributed to all APs. The IEE should be available on the EVN HANOI website, at the EVN HANOI office in Ha Noi, 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.

B. Public Consultation

74. The stakeholder consultation strategy was developed to meet the requirements of meaningful consultation as stipulated by the ADB SPS (2009) as well as Vietnam Law on Environmental Protection (2014). 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

75. 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.

76. The stakeholders of the subproject include:

- Institutional stakeholders such as: (i) District People's Committee, People's Council, (ii) Ward People's Committee, People's Council; (iii) Project EA, (iv) PMU
- Mass organizations 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 near the substation site who may be directly and/or indirectly 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.

77. Formal community consultation meetings were held to discuss the location and potential environmental and social impacts of the substation. Public consultations were held in Me Tri ward on 4 April 2015.

78. The public meeting consisted of the following activities:

- 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;
- 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

79. During the meeting, people raised their questions and comments on the environmental issues. A total of 19 people (2 females and 17 males) were consulted on the views and concerns of the subproject (see Appendix B).

2. Results of Public Consultation

Comments from Me Tri Ward authorities

The main comments of Ward authorities are as follows:

- Clarify the effects of electromagnetic fields on human health and preventive measures for community
- Project Owner should strictly implement the mitigation measures outlined in the report of environmental impact assessment.
- Coordinate with local authorities in registration for the workers and employees.
- Engage local workers in construction activities for the project.

80. The summary of comments/questions from local authorities/people and answers of project owners and consultants are summarized in Table 13. Subsequent formal consultations are not required by an IEE. However, required input from stakeholders and response from project owners will occur through the Grievance Redress Mechanism (see below). In summary, the local authority and community has agree with the implementation of the project.

Table 13. Discussion summary of public consultation in Ha Dinh Ward

No	Comments	Response of Project Owner/consultants	Response from the Project
1	The long term effects of the electromagnetic field on people health	Electromagnetic field has no impact on the community as the construction location, layout and technical plans are prepared to ensure the	Mitigation measures are presented in Section VII. Potential Impacts and Mitigation Measures

		safety standards on electromagnetic fields	
2	The Project Owner must seriously implement the mitigation measures as presented	The Project Owner and the contractor will have the commitment in the implementation process. Communities are encouraged to perform their supervisory role.	Mitigation measures are presented in Section IX. Environmental Management Plan
3	Coordinate with local authority in managing workers to avoid social disturbances	Workers will be registered and strictly follow the Code of Conduct at construction camps.	Mitigation measures are presented in Section IX. Environmental Management Plan
4	Concerns on fire accidents and lightning strikes	Safety measures and equipment will be prepared. During normal operation risk of fire and lightning strikes is minimal.	Mitigation measures are presented in Section VII. Potential Impacts and Mitigation Measures
8	Large oil tank has high risk of fire	Safety measures and equipment will be prepared. During normal operation risk of fire is minimal.	Mitigation measures are presented in Section VII. Potential Impacts and Mitigation Measures

VI. POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATIONS

81. 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. 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 is also used to structure the EMP for the subproject.

A. Subproject Benefits

82. The primary targeted benefits of the subproject are i) to meet the load demand in the area, ii) to enhance the stability and safe operation of the grid in Hanoi, and iii) to improve the power supply reliability and flexibility in power supply.

B. Pre-construction Phase

83. The project will incur a cost of compensation for trees in a public land which is currently managed by Me Tri Sports and Leisure ltd.,Co. The details of the land losses and compensation are found in the draft Resettlement Due Diligence Document (RDDD).

84. The main impacts of this phase focused on devegetation activites and land clearance. The potential impacts may include dust, noise, emissions; biomass from removal of trees; domestic and construction waste. Indirect effects include increased traffic vehicles; inflow of workers; working accidents and community safety.

85. As the expansion area will be built on an old landfill, closed since 1997, the potential impacts also include leachate, odor pollution, erosion and subsidence while interacting with the remaining area of the landfill.

86. Details of mitigation measures in pre-construction stage, for each type of pollutants, are specifically expressed in the EMP, which may include:

- Complete detailed design of the project, which takes into account the safety and the effectiveness of the project;
- All transportation equipment and machinery are required to meet the standards for noise, vibration, emissions and regularly be maintained and serviced to minimize adverse impacts.
- Install equipment for solid waste collection and drainage to limit leakages to surrounding environment; For leachate that may arise, an detailed scheme for collecting and anti-leaking to avoid spreading contamination should be in place.
- Trees and vegetation should be protected; tree clearance should be done within designated area.
- Management of hazardous waste in accordane with regulations to avoid dispersal into the environment;

- Transport time, number of vehicles and speed should allocated reasonably to avoid distubances to the daily life of the people;
- Ensure the regulations on occupational safety, health protection of workers and the community to reduce to risks of injury for workers and communities ; develop response plans in case of incidents.
- Manage stockpiles to avoid spreading dust or erosion, causing sediment.

C. Construction Phase

87. The potential environmental impacts of the subproject are associated primarily with the construction phase of the subproject. The substation 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

88. Short-term construction-related impacts common to the construction of the Thanh Xuan substation are, for example, reduced and/or blocked public access, noise, dust and air pollution from NOx, SOx, and CO caused by construction truck traffic and heavy equipment use, public and worker accidents, increased traffic accidents, damage to existing roads; Soil and surface water pollution caused by equipment operation and maintenance, especially erosion and sedimentation, solid waste and domestic pollution from worker camps, social disease and community problems caused by migrant workers; The potential risk of public and worker injury, especially for local people living along the access road to the substation site.

- Open excavations should be fenced, and trenches covered where public walkways or vehicles must cross.
- A cultural chance find management sub-plan must be in place in the EMP for cultural artifacts and property.
- Regular use of wetting agents should be employed at construction sites and along construction roads to minimize dust.
- 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.
- Trees and other vegetation at all construction sites and along road corridors should be protected with minimal removal.
- 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.
- 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.
- Worker camps must have adequate domestic waste collection facilities and sufficient pit latrines that are located away from public areas and surface waters.

- Dedicated fuel storage areas must be established away from public areas and marked clearly.
- To minimize the risk of public and worker injury appropriate GoV regulations on Occupational, Safety, and Community Health must be applied, or the IFC/World Bank Environment, Health, and Safety Guidelines (2007) that govern the safe and orderly operation of civil works should be followed.
- Aggregates (e.g., sand, gravel, rock) that are transported by truck should be covered.
- Prolonged use of temporary storage piles of file should be avoided, or covered, or wetted regularly to prevent dust and erosion.
- 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.

2. Operation Phase

89. The potential impacts of the operation of the completed 110 kV Thanh Xuan substation could be worker safety, spills of hazardous materials, perceived harm from electromagnetic field exposure to workers and local people, lightning, and noise of machine operation to people visiting the cemetery. However, the design of the substation excludes use of harmful materials such as PCBs, and negative health effects of EMF are unfounded. However, the substation will be operated following EVN and international accepted procedures and regulations which protect workers and local community and physical cultural resources such as cemeteries. The risk of lightning strikes is a non-issue because all components of the substation will be earthed using appropriate technology.

3. Climate Change Adaptation

90. Regional Global Circulation Modelling project greenhouse-climate change induced changes to the frequency and severity of rainfall events in the subproject area. However, there are no records of flooding in the area of Thanh Xuan substation. Furthermore, the elevation of the expansion area is +2.5m higher than the existing level of Thanh Xuan Substation. It is concluded that impacts from climate change may not impose longterm risks for the whole substation area.

VII. PUBLIC GRIEVANCE REDRESS MECHANISM

91. 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.

92. 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.

93. The designated unit who is responsible for handling complaints shall exercise all efforts to settle APs issues at the ward level through appropriate community consultation. All meetings shall be recorded and copies shall be provided to APs. A copy of the minutes of meetings and actions undertaken shall be provided to the EA/IA5, and ADB upon request.

94. The procedures for grievance redress is defined below and summarized in Figure 4. 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 to the Contractor. The complaints shall be received by the Contractor and discussed with the APs to seek possible solutions.

ii) Stage 2: If no understanding or amicable solution can be reached or if no response is received from the Contractor, the APs can elevate the case to the Project Owner. The Project Owner is responsible to work with the Contractor for resolutions.

iii) Stage 3: If no understanding or amicable solution can be reached again, the APs can appeal to Ward People's Committee. The Ward PC will review and issue a decision on the appeal within 15 days from the day the complaint is received. All meetings shall be recorded and copies of the minutes of meetings will be provided to APs.

iv) Stage 4: If no understanding or amicable solution can be reached or if no response is received from the Ward PC within 15 days from the day the complaint is received, APs can elevate the case to the District People's Committee. The District People's Committee is expected to respond within 15 days upon receiving the APs appeal.

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

v) Stage 5: 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 Municipal People's Committee (MPC). The MPC will review and issue a decision on the appeal within 30 days from the day the complaint is received.

vi) Stage 6: If the AP is still not satisfied with the decision of the MPC or in the absence of any response within the stipulated time, the APs, as a last resort may submit his/her case to the district court. The court will address the appeal by written decision and submit copies to the respective entities which include the EA, W P C / DPC/MPC and the APs. If however, the AP is still not satisfied the court's decision, the case may be elevated to the municipal court. If however, the decision of the municipal court is still unsatisfactory to the APs, the APs may bring the complaints to the Higher Court.

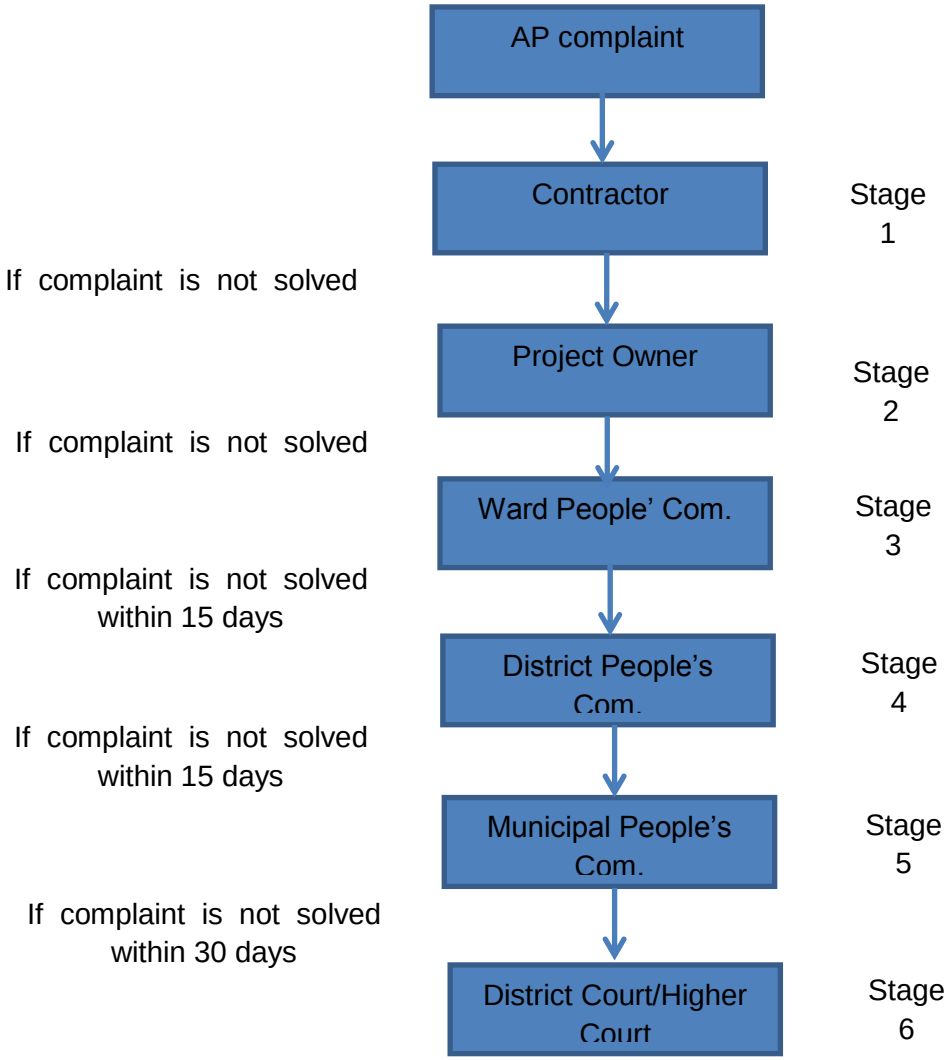

Figure 4. Summary of GRM

95. 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 People's Committees when required.

96. 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, residential group heads or Ward 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.

97. 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).

VIII. ENVIRONMENTAL MANAGEMENT PLAN

A. Overview of Environmental Management Plan

98. An environmental management plan (EMP) has been developed for the implementation of the Thanh Xuan 110 kV Substation 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.

99. The EMP 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 project owner follows to prevent or minimize unnecessary environmental impacts of the subproject.

B. EMP Responsibilities

100. Responsibilities for implementing the EMP shall be borne by all stakeholders in the project implementation process, including:

- Electricity of Vietnam is the Executive Agency responsible for implementing the entire project and implementation of the EMP and in the case of necessity will review and adjust the EMP accordingly. Hanoi Power Management Board representative of the Contractor will directly implement all related content, including direct responsibility for the management, implementation, support and supervision of compliance of contractors; evaluate EMP performance and report to EVN and ADB upon request.
- The Contractor will make plans necessary for the implementation of the EMP as required and ensure strict implementation of the mitigation measures outlined in the EMP
- The Environmental Supervisor of the Contractor supervise the Contractor's compliance with the EMP, environmental monitoring in the field. Local governments and communities are responsible for monitoring the implementation of the EMP as brought forward in the commitment of the Contractor.
- 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 (2014), EIA, and environmental standards.
- ADB provides guiding documentation for EVN or PMU on issues related to EMP, and evaluate the periodic reports on activities of EMP submitted.

101. The specific responsibilities of the parties concerned are indicated in the Table 14:

Table 14. Stakeholder's responsibilities

Stakeholder	Responsibilities
Electricity of Vietnam	• General oversight role in the construction phase • Overall responsibility for the implementation of the EMP during operational phase • Review reports of the Independent Environmental Monitoring Consultant (IEMC). • Approve changes in EMP if necessary
Hanoi Power Management Board	• Establish a Environment Unit led by an Enviromental Staff to implement EMP tasks
	• Manage, implement and supervise the compliance of the EMP and any conditions for approval, including the supervision of construction and operation of all Board staff and Contractor
	• Evaluate the performance of EMP and conduct revisions, or suspension of operations in cases of violating the conditions of the EMP, which can cause serious impacts on the local community.
	• Ensure the effective communication and dissemination of content and requirements in EMP to the Contractor.
	• Assist the Contractor in implementing sub-plans
	• Supervise EMP performance
	• Report EMP performance to EVN, ADB
	• Prepare summary reports on Project's environmental activities upon request
	• Brief the Project's information in community meetings
	• Ensure continuing communication with local communities and fulfill commitments to facilitate for community consultations during project life.
Supervision Consultant	• Prepare and implement Construction Environmental Management Plan during construction phase
	• Prepare and implement Environmental Monitoring Plan during construction phase
	• Report on any incidents or non-compliance of EMP to PPMB
	• Ensure adequate education and training to all staff related to environmental supervision
	• Provide recommendations on EMP performance to PPMB
Contractor	• Prepare and keep records and necessary data as required in EMP and submit to Supervision Consultant
	• Ensure that workers are informed of purposes of EMP and

Stakeholder	Responsibilities
	aware of necessary measures to implement EMP
Local authority and community	• Participate in monitoring EMP implementation

C. Summary of Potential Impacts of Subproject

Table 15 Summary of Potential Impacts of Subproject

Phase	Impacts
Pre-construction	Dust, noise and emissions; loss of vegetation; domestic and construction waste. Increased traffic vehicles; workers residence; labor safety incidents and community safety. Leachate, odor pollution, erosion and subsidence caused from the rest of the landfill, adjacent to the project area.
Construction	Dust, emissions; waste water and construction, solid waste and construction activities, hazardous waste Noise, vibration, increased temporary workers, spread of disease; increased vehicles and traffic jam.
Operation	Electromagnetic fields, noise and vibration; safety issues; technical incidents as fires, explosions, oil leaks, ...

D. Mitigation Plan

102. The impact mitigation measures of the EMP are presented in a comprehensive mitigation plan for the subproject in Table 16. 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.

103. 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.

Table 56 Environmental Impact Mitigation Plan

Subproject Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Location	Timing	Activity Reporting	Estimated Cost[6] (USD)	Responsibility	
							Supervision	Implementation
Pre-Construction, Detailed Design Phase								
Confirmation of required resettlement, relocations, and compensation	No negative environmental impacts	1. No affected people 2. Lost land and trees are compensated as per regulations	Subproject site	Before subproject implemented	See Resettlement Due Diligence Document	See Resettlement Due Diligence Document	-	-
Disclosure, and engagement of community	No negative impacts	3. Initiate Information Disclosure and Grievance process of IEE	Subproject site	Beginning of subproject	Quarterly	No marginal cost[7]	IA / ESU	ESU
GoV approvals	No negative impact	4. 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
		5. Work with PIC[8] to complete detailed designs of the Thanh Xuan substation. Ensure the following measures are						

[6] Costs will need to be updated during detailed design phase.
[7] No marginal cost indicates that costs to implement mitigation are to be built into cost estimates of bids of contractors
[8] PIC is Project Implementation Consultant at detailed design phase to be determined

Detailed designs of Subproject,	Minimize negative environmental impacts	included: a) identification emergency response plans for all construction sites; b) no disturbance or damage to culture property and values; c) locate stockpiles areas away from human settlements with fencing and access barriers; d) none or minimal disruption to utilities, and electricity with contingency plans for unavoidable disruptions; e) none or minimal disruption to normal pedestrian and vehicle traffic along all road segments with contingency alternate routes; f) 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

Update EMP	Positive environmental impacts	6. Identify any new potential impacts of subproject and include in EMP with special attention to residential areas. 7. Update mitigation measures and monitoring requirements of EMP where necessary to meet detailed designs, and to protect affected environments. 8. Submit updated EMP with new potential impacts to ADB to review.	All sites	Before construction initiated	Once with detailed designs documents		PIC	IA / ESU
Update EMP	Positive environmental impacts	9. 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	10. Notify DoNRE to confirm locations of sites for borrow pits and disposal areas for construction and hazardous waste for Subprojects, and obtain required permits. 11. Create registry for local and migrant workers.	Entire Subproject	Before construction	As required	No marginal cost	IA/DoNRE	ESU
Develop bid	No negative	12. Ensure updated EMP is	All Subproject	Before	Once for all	No marginal	PIC	IA/ESU

documents	environmental impact	included in contractor tender documents, and that tender documents specify requirements of EMP must be budgeted. 13. Specify in bid documents that contractor must have experience with implementing EMPs, or provide staff with the experience.	areas	construction begins	tenders	cost		
Create awareness of physical cultural resources in area	No negative environmental impact	14. 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	15. 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	16. Develop and schedule training plan for IA/ESU/EO to be able to fully implement EMP, and to manage implementation of	All Subproject areas	Before construction begins	Initially, refresher later if needed	No marginal cost	PIC	PIC

		mitigation measures by contractors. 17. Create awareness and training plan for contractors whom will implement mitigation measures.						
Recruitment of workers	Spread of sexually transmitted disease	18. 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
Construction Phase of Thanh Xuan 110 kV Substation								
Initiate EMP and sub-plans,	Prevent or minimize impacts	19. Initiate updated EMP 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	20. Ensure adequate housing and waste disposal facilities including pit latrines and garbage cans. 21. A solid waste collection program must be established and implemented that maintains a clean worker camps 22. Worker camps must have adequate drainage.. 23. HIV Aids education should be given to workers. 24. Camp areas must be restored to original condition after construction completed.	All worker camps	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor
Training and capacity	Prevent of impacts through education	25. 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

Implement Construction materials acquisition, transport, and storage sub-plan	Pollution, injury, increased traffic, disrupted access	26. Required aggregate volumes must be carefully calculated prior to extraction to prevent wastage. 27. Stockpiles should not be located near surface waters, residential areas, or cultural property or values. 28. All stockpiles should have a fence perimeter with signage to avoid contamination 29. Define and schedule how fabricated materials such as steel, wood structures, and scaffolding will transported and handled. 30. All aggregate loads on trucks should be covered. .	For all construction areas.	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor

Implement Spoil management subplan	Contamination of land and surface waters from excavated spoil, and construction waste	31. A record of type, estimated volume, and source of disposed spoil must be recorded. 32. Contaminated spoil disposal must follow GoV regulations including handling, transport, treatment (if necessary), and disposal. 33. Suspected contaminated soil must be tested, and disposed of in designated sites identified as per GoV regulations. 34. 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

Implement Solid and liquid construction waste sub-plan	Contamination of land and surface waters from construction waste	35. 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. 36. Areas of disposal of solid and liquid waste to be determined by GoV. 37. Disposed of waste should be catalogued for type, estimated weigh, and source. 38. Construction sites should have large garbage bins. 39. A schedule of solid and liquid waste pickup and disposal must be established and followed that ensures construction sites are as clean as possible. 40. Solid waste should be separated and recyclables sold to buyers in community. <u>Hazardous Waste</u> 41. Collection, storage, transport, and disposal of hazardous waste such as used oils, gasoline, paint, and other toxics must follow GoV regulations.	All construction sites and worker camps	Throughout construction phase	Monthly	No marginal cost	PIC/ESU and DoNRE	contractor

Implement Noise and dust sub-plan	Dust Noise	42. Wastes should be separated (e.g., hydrocarbons, batteries, paints, organic solvents) 43. 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. 44. All spills must be cleaned up completely with all contaminated soil removed and handled with by contaminated spoil sub-plan. 45. Regularly apply wetting agents to exposed soil and construction roads. 46. Cover or keep moist all stockpiles of construction aggregates, and all truck loads of aggregates. 47. Minimize time that excavations and exposed soil are left open/exposed. Backfill	All construction sites.	Fulltime	Monthly	No marginal cost	PIC/ESU	contractor

		immediately after work completed. 48. As much as possible restrict working time at substation site between 07:00 and 17:00. 49. Maintain equipment in proper working order 50. Replace unnecessarily noisy vehicles and machinery. 51. Vehicles and machinery to be turned off when not in use. 52. Construct temporary noise barriers around excessively noisy activity areas where possible.						

Implement Utility and power disruption sub-plan	Loss or disruption of utilities and services such as water supply and electricity	53. Develop carefully a plan of days and locations where outages in utilities and services will occur, or are expected. 54. Contact local utilities and services with schedule, and identify possible contingency back-up plans for outages. 55. Contact affected community to inform them of planned outages. 56. 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

Implement worker and public safety sub-plan	Public and worker injury, and health	57. Worker and public safety guidelines of MoLISA should be followed. 58. 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. 59. 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. 60. Appropriate safety clothing and footwear should be mandatory for all construction workers. 61. Adequate medical services must be on site or nearby all construction sites. 62. Drinking water must be provided at all construction sites. 63. Sufficient lighting be used during necessary night work.	All construction sites.	Fulltime	Monthly	No marginal cost	PIC/ESU	contractor

Civil works	Degradation of water quality and aquatic resources	64. All construction sites should be examined daily to ensure unsafe conditions are removed. 65. Protective coffer dams, berms, plastic sheet fencing, or silt curtains should be placed between all earthworks and surface waters. 66. Earthworks should be conducted during dry periods. 67. All construction fluids such as oils, and fuels should be stored and handled well away from surface waters. 68. No waste of any kind is to be thrown in surface waters. 69. No washing or repair of machinery near surface waters. 70. Pit latrines to be located well away from surface waters.	All construction sites	Throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor

Implement Construction and urban traffic sub-plan	Traffic disruption, accidents, public injury	71. Schedule construction vehicle activity during light traffic periods. Create adequate traffic detours, and sufficient signage and warning lights. 72. 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. 73. Demarcate additional locations where pedestrians can develop road crossings away from construction areas for those people who are living in Lane 282 when necessary.	All construction sites	Fulltime	Monthly	No marginal cost	PIC/ESU	contractor
Implement Construction Drainage sub-plan	Loss of drainage and flood storage	74. Provide adequate short-term drainage away from construction sites and stockpiles to prevent ponding and flooding. 75. Install temporary storm drains or ditches for construction sites 76. Ensure connections among	All areas with surface waters	Design and construction phases	Monthly	No marginal cost	PIC/ESU	contractor

		surface waters (ponds) are maintained or enhanced to sustain existing stormwater storage capacity.						
Civil works and Chance finds sub-plan	Damage to cultural property or values, and chance finds	77. As per detailed designs all civil works should be located away from all physical cultural property and values. 78. Chance finds of valued relics and cultural values should be anticipated by contractors. Site supervisors should be on the watch for finds. 79. 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. 80. Work at find site will remain stopped until DCST allows work to continue.	All construction sites	At the start , and throughout construction phase	Monthly	No marginal cost	PIC/ESU	contractor
Post-construction Operation of Thanh Xuan 110 kV Substation								

Operation of new substation	Operation of new substation	81. Occupational health and safety regulations and guidelines of MoLISA should be applied to operations of substation. 82. Ensure substation property is adequately fenced with clearly visible danger warning signs to keep public out. 83. Store and handle transformer fluids and other hazardous materials according to international procedures and standards 84. Secure a safety corridor for the substation in accordance with regulations and guidelines on noise and electromagnetic fields	At substation	Fulltime	Biannual	O and M	EVNHANOI / PPMB

E. Monitoring Plan

104. The environmental monitoring plan for the EMP is provided in Table 17. 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.

105. 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/PIU will provide logistical support to the EMC where necessary for the implementation of environmental monitoring plan.

106. The standards for environmental quality 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.

107. After construction is completed the potential impacts of the operation of the new Thanh Xuan 110 kV substation will be monitored by EVNHANOI.

Table 17. Environmental Monitoring Plan

ENVIRONMENTAL EFFECTS MONITORING							
Environmental Indicators	**Location**	**Means of Monitoring**	**Frequency**	**Reporting**	**Responsibility**		**Estimated Cost (USD)**
					Supervision	**Implementation**	
Pre-construction Phase – Update Baseline Conditions							
A) Air quality: dust, CO, NOx, SOx, noise B) Affected surface water quality: TSS, oil and grease, BOD_5, , TDS, TP, TN	At SS site	Using field and analytical methods approved by DoNRE.	One measurement	One baseline supplement report before construction phase starts	PIC/ESU	Environmental Monitoring Consultant	A) $1,000 B) $1,000.
Construction Phase of Thanh Xuan 110 kV Substation							
A) Air quality: dust, CO, NOx, SOx, noise B) Domestic (worker) and construction solid waste inside and outside construction sites including worker camps.	A): Baseline sites of pre-construction phase.	A : Using field and analytical methods approved by DoNRE. Include visual observations of dust	(A): Quarterly during construction periods Daily visual records	Monthly	(A - B):		
					ESU	Monitoring Consultant	A and B: $1000./yr

C) Public comments and complaints D) Incidence of worker or public accident or injury	B) All construction sites and worker camps C) Using hotline number placed at construction areas D) At all construction areas	and noise from contractor and public reports. B) Visual observation C) Information transferred by telephone hotline number posted at all construction sites. D) regular reporting by contractors/ESU	B) Monthly C) Continuous public input D) Continuous				D: no marginal cost
					(C and D) and daily observations:		
					EA/ESU	contractor	E- F: no marginal cost
Operation of Thanh Xuan 110 kV Substation							
Incidence of worker accidents, or spills on hazardous materials, noise and EMF	At substation	Regular documentation and reporting	Continuous		EVNHANOI /PPMB		O and M

F. Performance Monitoring

108. 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 18.

Table 18. 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	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[16])	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			
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
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	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 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			
Worker and Public Safety	Frequency of accidents and	No increase in pre-construction	EA
EMF safety, noise, fire	Noise, electric field,	In compliance to GoV regulations on noise,	EA

16 Contractor Environmental Management Plan developed from EMP in contractor bidding document

17 Environmental Monitoring Consultant hired to assist implementation of Environmental Monitoring Plan

G. Reporting

109. 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 17) summarize proposed timing of reporting which is on monthly basis.

110. 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 18), and will include relevant GoV environmental quality standards.

IX. ESTIMATED COST OF EMP

111. 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 17 the preliminary cost for the implementation of the EMP for the subproject including an estimated environmental training budget for EVNHANOI/PPBM is approximately USD $9,000.00 which is summarized in Table 19.

Table 19. Estimated costs for Environmental Monitoring Plan of EMP

Activity Type	Estimated Cost (USD)
Pre-construction Phase	
environmental quality	$2,000.00
Construction Phase	
environmental quality	$1,000.00
Operation Phase	
environmental quality	no cost
public input	no cost
Training and capacity development of EVNHANOI/PPBM/ESU	$6,000.00
Total	**$9,000.00**

112. The environmental costs in Table 19 are for field sampling and laboratory analyses which include professional per diems of technicians.

113. 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.

X. EMERGENCY RESPONSE PLAN

114. The Contractor must develop emergency or incident response procedures during construction and operation phases of the new Thanh Xuan 110 kV Substation 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 C.

XI. INSTITUTIONAL CAPACITY REVIEW AND NEEDS

115. Currently there is insufficient experience and capacity for environmental assessment and management in EVNHANOI 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.

116. 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.

XII. CONCLUSIONS AND RECOMMENDATION

117. The initial examination of the Thanh Xuan 110 kV in Ha Noi indicates that potential environmental impacts are largely construction-related impacts and disturbances that can be mitigated and managed.

118. 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.

119. The public consultation meetings underscored the need for effective management of construction impacts such as noise, dust, traffic disruptions, and public safety as indicated in EMP. Especially, the public concerns were raised on the measures to ensure safe traffic, minimal disruption as the access road to the substation is the only way for local residents.

120. 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 components are not identified in pre-construction phase, further detailed environmental impact assessment (EIA) of the subproject is not required.

XIII. REFERENCES CITED

ADB, 2009. Safeguard Policy Statement, ADB Policy Paper
ADB, 2003, Environmental Assessment Guidelines of the Asian Development Bank
ADB, 2012, Environmental Safeguards, A Good Practice Sourcebook, Draft
General Statistics Office, 2013. Ha Noi City Statistical Yearbook 2013
Institute of Physics 2014, EIA report fo Transformer 3 of Thanh Xuan 110kV Substation
Me Tri Ward PC, 2014. Socio-economic review report 2014
PECC2, 2014. FS report for the project ”Expansion of Thanh Xuan 110kV Substation”
World Bank Group, 2007. Environmental, Health, and Safety Guidelines. Washington DC., 96 pp.

Appendices

A. Rapid Environmental Assessment (REA) Checklist
B. Minutes of Public Consultation Meetings – Me Tri Ward, Thanh Xuan District, Ha Noi
C. 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.

Country/Project Title: **Preparing the Ha Noi and Ho Chi Minh City Power Grid Development Sector Project TA 8205-VIE**

Sector Division: **Thanh Xuan 110kV substation**

Screening Questions	Yes	No	Remarks
A. PROJECT SITING IS THE PROJECT AREA ADJACENT TO OR WITHIN ANY OF THE FOLLOWING ENVIRONMENTALLY SENSITIVE AREAS?			
▪ CULTURAL HERITAGE SITE		X	
▪ 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…			

Screening Questions	Yes	No	Remarks
▪ Encroachment on historical/cultural areas, disfiguration of landscape and increased waste generation?		x	
▪ 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.
▪ 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. 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. 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	
▪ chemical pollution resulting from chemical clearing of vegetation for construction site?		x	

Screening Questions	Yes	No	Remarks
▪ noise and vibration due to blasting and other civil works?		x	No blasting. 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 trees without houses/accommodations. Required compensation for land loss is addressed by RDDD for subproject.
▪ dis-proportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		x	
▪ social conflicts relating to inconveniences in living conditions where construction interferes with pre-existing roads?		x	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 nearby. However, the Project owner, contractors will implement the proposed mitigation measures such as: no transport in rush hours, repair damaged road after the construction etc.

Screening Questions	Yes	No	Remarks
▪ 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	No transmission line component in this subproject
▪ environmental disturbances associated with the maintenance of lines (e.g. routine control of vegetative height under the lines)?		x	
▪ facilitation of access to protected areas in case corridors traverse protected areas?		x	No protected areas within 10 km of the project area
▪ disturbances (e.g. noise and chemical pollutants) if herbicides are used to control vegetative height?		x	
▪ large population influx during project construction and operation that cause increased burden on social infrastructure and services (such as water supply and sanitation systems)?	x		Small impact. 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

Screening Questions	Yes	No	Remarks
▪ 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. 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		
▪ 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- Electromagnetic field of the substation will not affected surrounding communities.
▪ 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. There is no transmission line. 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 is located in an urban area where the drainage system is well developed. In addition, the expansion area is 2.5m higher than the existing substation and the risk of flooding is minimal.
▪ 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-	Low erratic rainfall of up to 500 mm rainfall per annum with periodic droughts

arid and desert environments	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 A2 – Questionnaire for implementation of the preliminary appraisal

The preliminary appraisal (Screening) is performed on the basis of both the checklist below and consideration of existing and additional, easily accessible information.

	No	Yes
Environmental assessment:		
Does the measure potentially have a substantial negative impact on one or more of the following subjects of protection? • Humans, including human health • Animals, plants and biological diversity • Soil, water, air and landscape • Cultural goods and other assets	x	
Does the measure have considerable potential to improve environmental quality, resource protection or strengthen ecologi-	x	
Is an environmental assessment required by the national law of the partner country?		
Climate adaptation assessment (Climate Proofing):	**No**	**Yes**
Are the intended developmental impacts of the measure substantially dependent on climatic parameters such as tempera-	x	
Does the measure present the possibility of substantially increasing the adaptation capacity of the target groups or eco-	x	
Climate change reduction assessment (Emission Saving):	**No**	**Yes**
Is the measure expected to make a substantial contribution to greenhouse gas emissions?	x ☐	☐

Can it be assumed that the measure will have the potential to considerably reduce emissions of greenhouse gases or in-	x	☐	☐

If one or more of the questions are answered with "Yes", then an in-depth environmental and/or climate change impact assessment should certainly be carried out. The in-depth assessment can be limited to the sub-areas or protected resources for which an impact is affirmed.

The following criteria should be used to judge **relevance**:

- extent of the expected impacts (e.g. number of affected persons),
- frequency, duration and expected time of the expected impacts,
- sensitivity of the affected natural spaces, population groups and economic activities as well as their adaptation capacity,
- irreversibility of changes,
- requirements in legal regulations (e.g. threshold values for pollutants).

Considerable negative risks and positive potentials can also result from other aspects than those mentioned in the checklist. Therefore the checklist should not exclude a more extensive analysis.

In accordance with the precautionary principle, an in-depth environmental and/or climate change assessment should also be performed if, due to uncertainties, no clear decision can be taken in terms of the relevance of the environmental and climate risks or potentials.

APPENDIX B: MINUTES OF PUBLIC CONSULTATION MEETINGS

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

No	Name of subprojects	Location	Date	Participants*		
				Male	Female	Total
1	Thanh Xuan 110kV Substation	Me Tri Ward, Nam Tu Liem District, Ha Noi	April 3, 2015	17	2	19

a. List of participants

Date : April 3, 2015

Location : Me Tri Ward, Nam Tu Liem District, Ha Noi

No	(Name)	(M)	(F)	(Position)	(Organization)	(Signature)
1	Đào Duy Quang	X			Residential Group5 – Me Tri Ward	
2	Nguyễn Khác Vịnh	X		Ward Radio staff	Residential Group6 – Me Tri Ward	
3	Đỗ Đức Thông	X			Residential Group4 – Me Tri Ward	
4	Nguyễn Tiến Thành	X			Residential Group4 – Me Tri Ward	
5	Nguyễn Tiến Hòa	X			Residential Group4 – Me Tri Ward	
6	Phạm Văn Định	X			Residential Group4 – Me Tri Ward	
7	Nguyễn Viết Nghi	X			Residential Group5 – Me Tri Ward	
8	Nguyễn Thị Kiều		X		Residential Group5 – Me Tri Ward	
9	Trần Văn Xuyến	X			Residential Group5 – Me Tri Ward	
10	Nguyễn Văn Bi	X			Residential Group4 – Me Tri Ward	
11	Ngô Xuân Hải	X			Residential Group5 – Me Tri Ward	
12	Nguyễn Viết Toản	X			Residential Group6	

					– Me Tri Ward	
13	Nguyễn Văn Vĩnh	X			UBND P.Mễ Trì	
14	Nguyễn Viết Sản	X			Residential Group4 – Me Tri Ward	
15	Nguyễn Đăng Hưng	X			Me Tri People's Committee	
16	Bùi Văn Thành	X			Me Tri People's Committee	
17	Đỗ Đức Thông	X		Chairman	Me Tri People's Commission	
18	Nguyễn Thị Mai Anh		X		Me Tri People's Committee	
19	Nguyễn Minh Tuân	X		Staff	Hanoi Power Project Management Board	

a. Scanned copies of minutes and list of participants

DỰ ÁN: LẮP MỚI MBA T3, TRẠM 110 kV THANH XUÂN E1.20

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

..Mễ Trì.., Ngày...1...tháng...11...năm 2015

BIÊN BẢN HỌP THAM VẤN CỘNG ĐỒNG VỀ ĐÁNH GIÁ MÔI TRƯỜNG VÀ XÃ HỘI/TÁI ĐỊNH CƯ

Phường/Xã.....Mễ Trì..........., Quận/Huyện..Nam Từ Liêm..Thành phố ...Hà Nội

1. Thành phần tham dự

- Ông/Bà...Khúc Đức Nhuệ......................Chức vụ ..PCT UBND Phường
- Ông/Bà...Đỗ Thị Xoan..............................Chức vụ .CBT Phường trưởng
- Ông/Bà...Đỗ Đức Thắng............................Chức vụ .PCT HĐND........
- Ông/Bà...Nguyễn Mạnh Tuấn......................Chức vụ ..[illegible]
- Ông/Bà...Nguyễn Thị Thu...........................Chức vụ .[illegible]
- Đại diện những người bị ảnh hưởng: ....người (*chi tiết xem danh sách đính kèm*)

2. Nội dung tham vấn

- ***Tư vấn thiết kế giới thiệu về***: mục tiêu, vị trí xây dựng, các hạng mục đầu tư lắp đặt, xây dựng của dự án Lắp mới MBA T3 Trạm 110kV Thanh Xuân E1.20.
- ***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*).

3. Ý kiến thảo luận

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

- Dự án XD trên nền đất sẵn nên cần phải như thiết kế cải thiện về các ảnh hưởng của tiếng ồn, điều kiện địa chất.

- Chủ đầu tư lưu ý và thực hiện nghiêm túc các quy định về an toàn điện, vệ sinh môi trường, phòng chống cháy nổ trong khi thi công.
- Đề nghị chủ đầu tư có cam kết, phân công trách nhiệm cụ thể giữa các bên liên quan.

3.2 Về các vấn đề thu hồi đất và các tài sản trên đất và các chính sách

4. Kết luận

Nhất trí triển khai dự án sau khi tiếp nhận, hoàn thiện các ý kiến góp ý.

Đại diện chủ đầu tư	Đại diện cộng đồng	Đại diện tư vấn	Đại diện UBND Phường
			PHÓ CHỦ TỊCH Hứa Đức Minh

HĐND phường

DỰ ÁN: LẮP MỚI MBA T3, TRẠM 110 kV THANH XUÂN E1.20

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

DANH SÁCH NGƯỜI THAM DỰ

Thời gian: Ngày...8...tháng.4.....năm 2015

Địa điểm: UBND phường Mễ Trì.

No. TT	Họ và tên (Name)	Nam (M)	Nữ (F)	Chức vụ (Position)	Cơ quan/Địa chỉ (Organization/Address)	Chữ ký (Signature)
1	Đào Duy Quang	✓			TDP5 - P Mễ Trì	[illegible]
2	Nguyễn Khắc Vinh	✓		Truyền thanh P	TDP6 - P Mễ Trì	[illegible]
3	Đỗ Đức Thắng	✓				
4	Nguyễn Tiến Thành	✓		T	TDP4 - P. Mễ Trì	[illegible]
5	Nguyễn Tuấn Hoài	✓			TDP4 - P Mễ Trì	[illegible]
6	Phạm Văn Anh	✓			TDP4. P Mễ Trì	[illegible]
7	Nguyễn Viết Khải	✓			TDP2. P Mễ Trì	[illegible]
8	Nguyễn Thị Kiều		✓		TDP5. P Mễ Trì	[illegible]
9	Trần Văn Xuyến	✓			TDP5. P Mễ Trì	[illegible]
10	Nguyễn Văn Sơn	✓			TDP4. P Mễ Trì	[illegible]
11	Ngô Xuân Tân	✓			TDP5. P Mễ Trì	[illegible]
12	Ngô Văn Tiến	✓			TDP6 P Mễ Trì	[illegible]
13	Ngô Văn Vệ	✓			UBND P Mễ Trì	[illegible]
14	Ng. Việt Sơn	✓			TDP4 P Mễ Trì	[illegible]
15	Nguyễn Đăng Hưng	✓			UBND P Mễ Trì	[illegible]
16	Bùi Văn Thịnh	✓			UBND phường Mễ Trì	[illegible]
17	Đỗ Đức Thắng	✓		CT HĐND phường	P. Mễ Trì	[illegible]
18	Ngô Thị Mai Anh		✓		UBND P Mễ Trì	[illegible]
19	Ngô Hinh Tuấn			Cán bộ	BQL DA Điện lực Hà Nội	[illegible]
20						

APPENDIX D: 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:

a. 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

b. 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.

c. Contractor's construction vehicles should also be equipped with the appropriate communication facilities.

a. **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
▪ Evacuate through the directed evacuation route.	▪ The safe evacuation shall have been determined fast by the ERTL/Deputy ERTL and immediately communicated
▪ Keep moving until everyone is safely away from the emergency site and its	▪ A restricted area must be established outside the emergency site, all to stay
▪ Once outside, conduct head counts.	▪ Foremen to do head counts of their sub-groups; ERTL/Deputy ERTL of
▪ Once outside, conduct head counts.	▪ Foremen to do head counts of their sub-groups; ERTL/Deputy ERTL of
▪ 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	▪ 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

Table 4. 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
▪ 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
▪ If applicable, vacate site and influence area at once, restrict site, suspend	▪ Follow evacuation procedure.

Table 5. Response Procedure in Case of Fire

Procedure	Remarks
▪ Alert a fire situation.	▪ Whoever detects the fire shall immediately: - call the attention of other people in the site, - sound the nearest alarm, and/or - Foreman or any ERT member among the construction sub-group contacts the fire department (in this case it should be agreed on that it is alright for any ERT member in the sub-group to alert the fire department) - report/communicate the emergency situation to the ERTL/Deputy ERTL.
▪ Stop all activities/operations	▪ 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
▪ ERT to vacate the site as soon as their safety is assessed as in danger.	▪ Follow appropriate evacuation procedure.