Initial Environmental Examination

Project Number: 42079-013
August 2020

Viet Nam: University of Science and Technology of Hanoi Development (New Model University) Project

Prepared by the Viet Nam Academy of Science and Technology for the Asian Development Bank. This version replaces the version originally posted in August 2009 available on https://www.adb.org/projects/42079-013/main#project-documents.

NOTES

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LOAN No. 2750/2751-VIE

UNIVERSITY OF SCIENCE AND TECHNOLOGY OF HANOI DEVELOPMENT (USTH) – NEW MODEL UNIVERISTY PROJECT

INITIAL ENVIRONMENTAL EXAMINATION (IEE)

Prepared by ASEAN Development and Management Consulting Ltd., (ASEC)

August 2020

CURRENCY EQUIVALENT
(As of 15 July 2020)

Currency unit: Viet Nam Dong (VND)
USD1 = VND 23,250

WEIGHTS AND MEASURES
km^2 – square kilometer
m^3 cubic meter

NOTE
In this report "$" refers to US Dollars

ACRONYMS AND ABBREVIATIONS

ADB	Asian Development Bank
CEMP	Construction Environmental Management Plan
CSC	Construction Supervision Consultant
DoNRE	Department of Natural Resources and Environment
EA	Executing Agency
EHS	Environment, Health and Safety
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPP	Environmental Protection Plan
ESO	Environmental Safeguards Officer
ERP	Emergency Response Plan
ERT	Emergency Response Team
HHTP	Hoa Lac High Tech Park
IEE	Initial Environmental Examination
IFC	International Finance Corporation
LEP	Law on Environmental Protection
MoNRE	Ministry of Natural Resources and Environment
PMU-USTH	Project Management Unit for USTH
PPE	Personal Protective Equipment
SPS	Safeguard Policy Statement
Project	New Model University Project
USTH	University of Science and Technology of Hanoi
UXO	Unexploded ordnance

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I. EXECUTIVE SUMMARY

1. The University of Science and Technology of Hanoi Development (USTH) - New Model University Project (the Project) is funded by the Asian Development Bank (ADB) with the total budget of USD 210 million, plus USD 3 million for land clearance to be paid by the Vietnamese Government. The Project aims to: (i) set up and pilot a new policy framework for the governance, financing and quality assurance of new-model research universities; (ii) establish and develop one university as center of research and teaching excellence that create dynamic synergies between research and teaching by strengthening university-industry linkages in science and technology fields, as well as by presenting a "public-private partnership model" of higher education/research institutions. The tentative duration for project implementation is 05 years (2011 -2017) with four outputs as below:

- Output A: an effective management and governance system for the USTH will be developed and implemented.
- Output B: systems to promote high-quality and relevant academic programs at the USTH will be developed and implemented.
- Output C: Physical facilities at the USTH will be constructed and outfitted.
- Output D: Effective project management and implementation.

2. The Project is developed at the 63.8-hectare land within the Hoa Lac High Tech Park (HHTP)[1]. The consolidation stage: implement teaching and research on the new campus and operating at initial design capacity for 5,000 students in 2028. It will be expanded with range of programs and student growth up to 15,000 students in 2030 – 2035.

3. Based on this assessment, the Project is classified as Category B on environment following ADB SPS 2009, therefore requiring an Initial Environmental Examination (IEE).

4. Literature review and field assessment for collection of secondary data for this IEE show that the potential environmental impacts of USTH will mainly occur during the preconstruction and construction phases. Negative impacts during pre-construction phase will be basically related to land clearance and consequent compensation, changes in livelihoods of people, and changes in landscape; during construction there may be increased traffic, emission of gases, construction noise, dust, vibration, solid waste and sewage, pressure on neighboring villages for housing, and increased risks of injuries and casualties of workers and residents.

5. Although many of these impacts are temporary, land acquisition and changes in landscape will be permanent. In general, impacts are considered to be moderate, and turn into negligible after application of mitigation measures.

6. The implementation of Output C shall result in the involuntary resettlement through loss of land and assets of households, utilities and organizations at: (i) land of 65 hectare [26 hectare at Tan Xa and 39 hectare at Thach Hoa commune which is currently managed by the 02 military units]; and (ii) 52.7 hectare of land at Binh Yen commune for the relocation of the 02 army units. 3. Resettlement Plan for the Project was prepared in 2010 and updated in September 2013. The resettlement activities of the Project have been implemented since 20082 and completed by end of June 2015. The total land of 117.7 ha, including 65 ha for the development of USTH and 52.7 for the relocation of the two army units have been handed over to the USTH Project management Unit (USTH PMU) and the two army units by June 2015. Livelihood restoration and stabilization of those affected by the Project has been

[1] HHTP has total land area of 1,432 ha, including land of communes of: Thach Hoa; Tan Xa; Ha Bang; Dong Truc of Thach That Dist., and Phu Cat of Quoc Oai Dist., Ha Noi City

completed by June 2016. Independent resettlement reviews have been implemented since 2012[2].

7. The Project will be constructed within the planning area of HTTP, and no rare or endangered wildlife or natural or critical habitats were found inside the Project or surrounding areas.

8. The Environmental Management Plan (EMP) provides a comprehensive overview on the identified mitigation and management measures to avoid, minimize, mitigate and compensate for anticipated adverse environmental impacts, implementation of monitoring and reporting, responsibilities and regulations applicable to the Project.

[2] Final Independent Resettlement Review Report of the Project

II. INTRODUCTION

9. The purpose of this report is to incorporate any environmental concerns regarding the Project, with focus on the construction of proposed infrastructure construction within the USTH area in HTTP, to assure its environmental feasibility.

10. Literature review of existing studies and field investigations were performed to predict and evaluate possible impacts as well as proposed mitigation measures for the planning, construction and operation phase of the USTH area in HTTP.

11. USTH is established in 2009 under the cooperative agreement between the two government of Vietnam and France and set up in a modern model of a public university. The Prime Minister has approved the USTH Construction Project under Official document No. 368/TTg dated March 11, 2011 by a Loan from ADB. The Project has also approved by the Minister of Education and Training under the Decision No. 1057/QD- BGDDT dated March 16, 2011. Loan agreement No. 2750/2751-VIE between the Government and ADB has defined the total budget of US$178.87 million, of which a Loan from ADB is US$158.87 million and US$20.87 million is the counterpart fund.

12. After the adjustment of the boundaries, the Prime Minister has approved the revised USTH Construction Project under Decision No. 372/QD-TTg dated April 4, 2019. The general plan of HTTP and USTH in plain view are show in Figure 1 and 2 below.

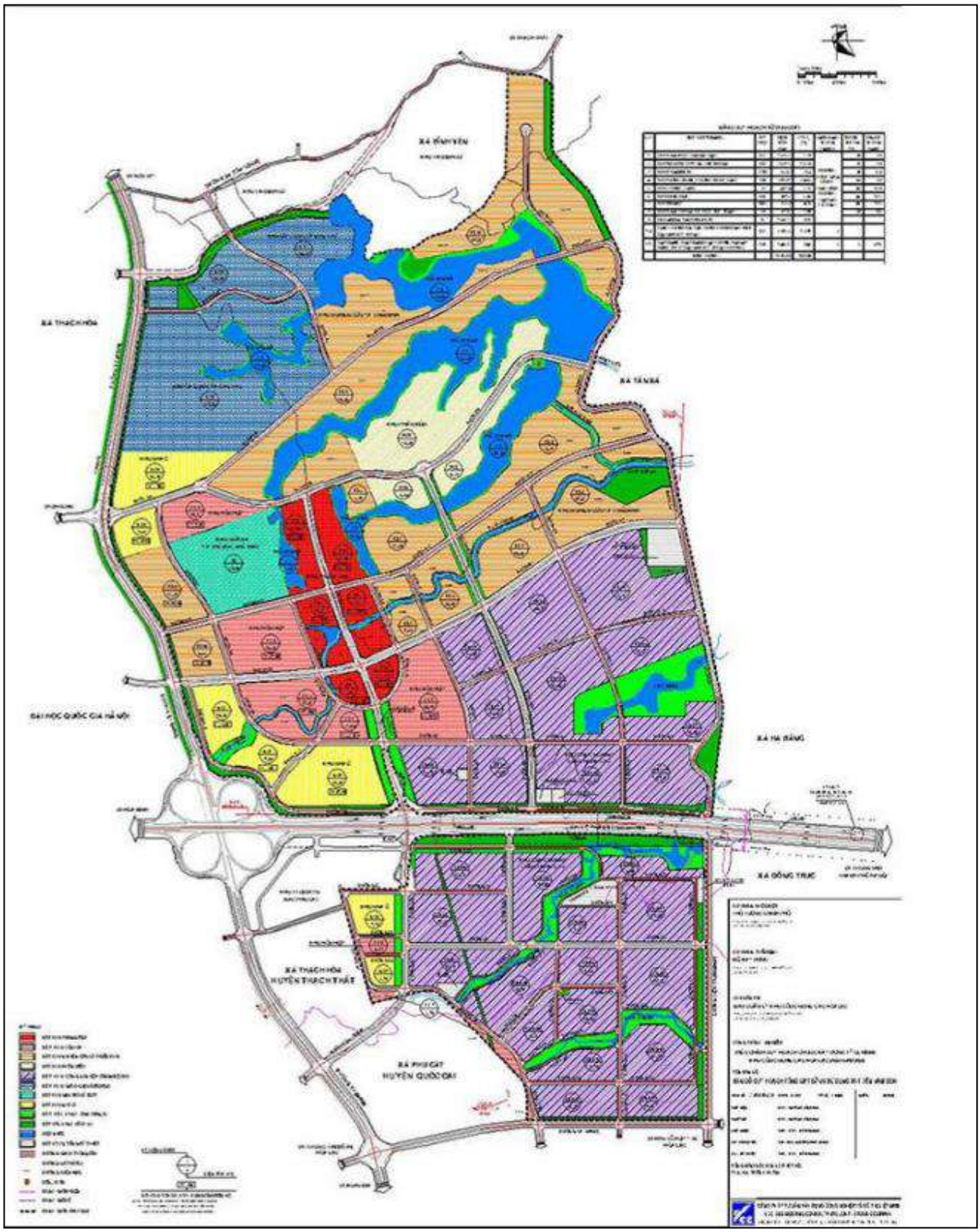

Figure 1 – General planning of HTTP in plain view

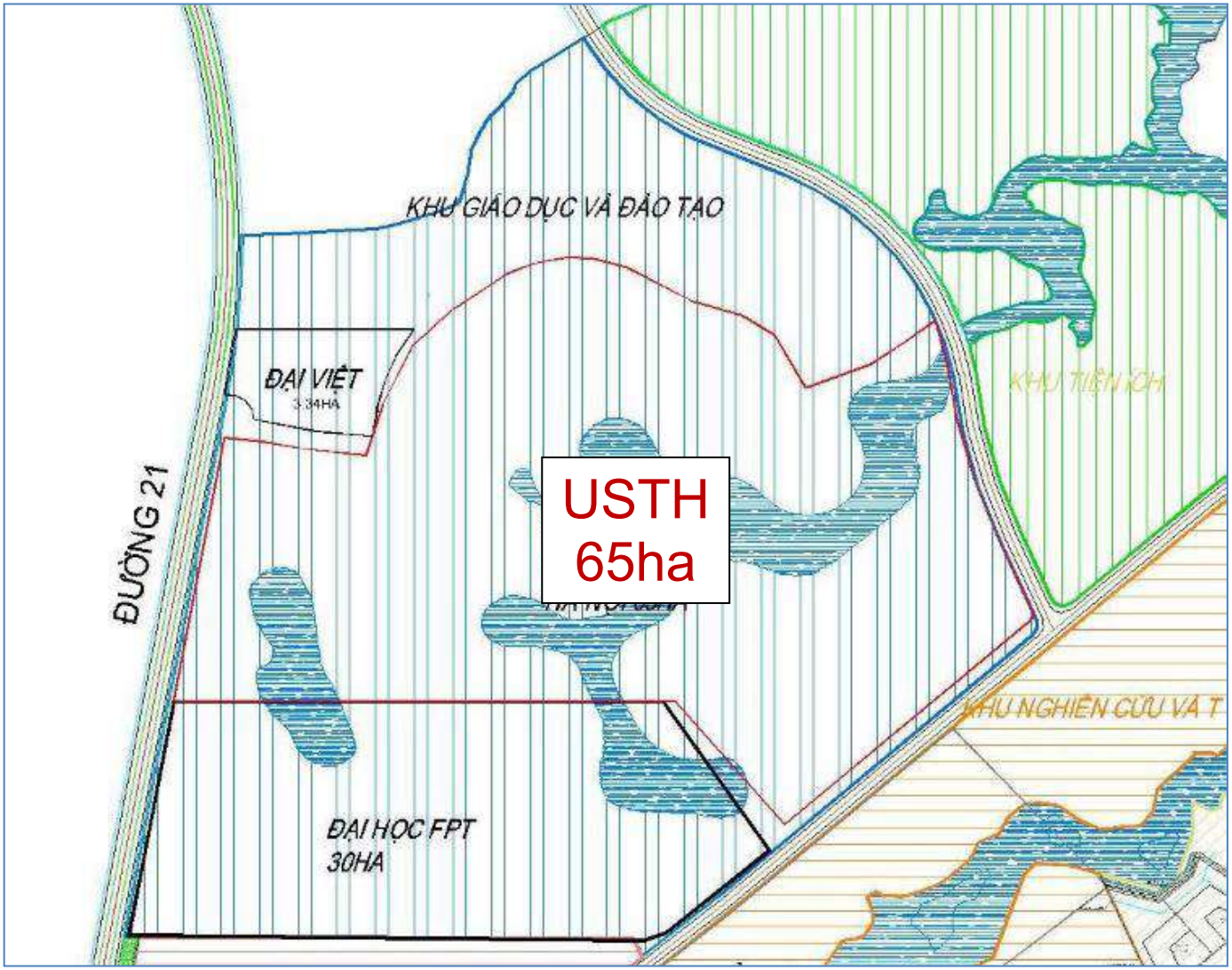

Figure 2 – General initial planning of USTH in HTTP

OBJECTIVES OF THE PROJECT

13. The Project will be implemented with the following objectives

a) Building USTH as a new sufficient model in using resources, self-implementation and self-responsibility in administration and management works.
b) Building USTH in international standards, advance in science and technology, training student to meet the requirement of high-skill labor market. Provide high-skill trainer and researcher of other university and research institute in Vietnam
c) Build up a professional database of researcher and doctor and be able to solve theoretical and practical issues, integrate USTH's activity with general socio-economic development.
d) Create a modern working environment for domestic and foreign professors, doctors doing research and contribute to the development of the country.
e) Strengthen and develop foreign relationship, especially with the developed countries through education development at university level.
f) Setup an advance university as the center of learning and doing research, integrate learning and doing research through the connection between universities and science and technology industrial disciplines
g) Build up an integrated and modern infrastructure as international standard for 5,000 students in 2023, up to 15,000 students in 2030.

14. The main Beneficiaries of the Project will be the students of USTH, since the new facilities have new and modern spaces for study and practice, adapted to international standard training program. Indirect beneficiaries will be the students working in the field of sciences and technologies, who will also have change to join new training programs and new training facilities.

15. Lecturers will also be able to develop competencies from the adaptation to new training programs at international standards. The development of new campuses will increase number of staff, which also be defined as direct beneficiaries of the Project

III. POLICY AND LEGAL FRAMEWORK

16. The Project shall comply with requirements of ADB SPS 2009 and the GOV's Guidelines on Implementation of the Law on Environmental Protection 2014. Decree No. 18/2015/ND-CP has detailed information on strategic environmental assessment, environmental impact assessment and environmental protection plans. Decree No. 40/2019/ND-CP dated May 13, 2019 of the Government on amendments and revisions and guidance of some articles of the Law on Environmental Protection provide detailed instruction for conducting environmental impact assessment for projects in Vietnam including key items: project classification, scoping, description, public consultation, environmental management and monitoring plans etc.

A. ADB SPS REQUIREMENTS

17. The ADB safeguard policy statement (SPS) 2009 imposes safeguard requirements for all its funded projects. The SPS 2009 clarifies the rationale, scope and contents of environmental assessment. It emphasizes environmental and social sustainability in progress of economic growth and poverty reduction in Asia and the Pacific, with the following aims:

- Avoid adverse impacts of projects on the environment and affected people, where possible;
- Minimize/mitigate and/or compensate for adverse impacts on environment and affected people when avoidance is not possible; and
- Help borrowers/clients to strengthen their safeguard systems and develop the capacity to manage environmental and social risks.

18. The ADB SPS 2009 also requires, during the design, construction and operation of a project that the borrower follows environmental standards consistent with good international practices as reflected in internationally recognized standards like International Finance Corporation Environmental, Health and Safety Guidelines (IFC EHS Guidelines). The IFC EHS Guidelines contain discharge effluent, air emissions, and other numerical guidelines and performance indicators as well as prevention and control approaches that are normally acceptable to ADB and are generally considered to be achievable at reasonable costs by applicable technology.

19. The nature of the environmental assessment required for a Project depends on the significance of its impacts, which are related to the type and location of the Project, the sensitivity, scale, nature and magnitude of its potential impacts, and the proposed mitigation measures. Project are screened for their anticipated environmental impacts and allocated to one of the four categories: A; B; C; and FI. The Project was classified as Category B Project and will prepare an IEE, including an EMP, which addresses the potential impacts and risks identified by the environmental assessment.

B. LEGAL AND ADMINISTRATIVE FRAMEWORK FOR ENVIRONMENTAL PROTECTION IN VIETNAM

The subproject shall comply with Vietnam's legal framework on environmental protection which is mentioned in this section:

1. Laws

- Law No. 55/2014/QH13 dated 23 June 2014 by the National Assembly on environment protection.
- Law No. 17/2012/QH13 dated 21 June 2012 by the National Assembly on water resources
- Law No. 20/2008/QH12 dated 13 November 2008 by the National Assembly on biodiversity
- Law No. 68/2006/QH11 dated 29 June 2006 by the National Assembly on standards and technical regulations.
- Law on Land No. 45/2013/QH13 dated 29th November 2013 by the National Assembly.

2. Decree and regulations

- Decree No.18/2015/ND-CP dated February 14, 2015 on Environmental protection plan, strategic environmental assessment, environmental impact assessment and environmental protection plans.
- Decree No.40/2019/ND-CP by the Government dated May 13, 2019 on amendments to decrees on guidelines for the law on environment protection.
- Circular No. 27/2015/TT-BTNMT dated May 29, 2015 on strategic environmental assessment, environmental impact assessment and environmental protection plans.
- Circular No. 36/2015/TT-BTNMT of 30 June 2015 by the Ministry of Natural Resources and Environment stipulating hazardous waste management.
- National Technical Regulations on air and noise quality

  + QCVN 05: 2013/BTNMT on ambient air quality

  + QCVN 06:2009/BTNMT on Hazardous gases in the ambient air

  + QCVN 26: 2010/BTNMT on noise

  + QCVN 27: 2010/BTNMT on vibration

- National Technical Regulations on water quality

  + QCVN 08-MT: 2015/BTNMT on surface water quality

  + QCVN 09-MT: 2015/BTNMT on ground water quality

  + QCVN 14: 2008/BTNMT on domestic wastewater

- National Technical regulations on solid waste management

  + QCVN 07:2009/BTNMT on threshold of the hazardous waste

3. Other regulations applicable to the subproject:

- Law No. 27/2001/QH10 dated 29 June 2001 by the National Assembly on fire prevention and fire fighting.
- Law No. 40/2013/QH13 dated 22 November 2013 by the National Assembly amending and supplementing some articles of the Law No. 27/2001/QH10 dated 29 June 2001 on fire prevention and fire-fighting.
- Decision No. 3733/2002/QD-BYT dated 10 October 2002 by the Ministry of Health promulgating 21 labor hygiene standards, 5 principles and 7 labor hygiene measurements.
- Law No. 50/2014/QH13 dated 18 June 2014 by the National Assembly on construction.
- Circular No. 22/2010/TT-BXD dated 03 December 2010 by the Ministry of Construction on labor safety in work construction.
- Law No. 10/2012/QH13 dated 18 June 2012 by the National Assembly on labor code.

4. International guidelines

- IFC/World Bank Group, 2007. Environmental Health and Safety Guidelines. General Guidelines. Wash. DC.

IV. PROJECT DESCRIPTION

A. LOCATION AND SCOPE OF SUBPROJECT

20. The Project is classified as a Category B Project according to ADB SPS 2009 environmental categories. This means the Project will have site-specific, few and some reversible potential adverse impact than a Category A Project, and mitigation measures can be designed more readily. This IEE was prepared for the Project accounting for preconstruction, construction and operational phases, using the information available from previous studies, further collection of information (especially considering the history of the development on-site, natural conditions and biological data) and site visits.

21. The construction site of USTH is located in the Lot DH1 under Education and Training Zone of HHTP, Thach That district, Hanoi. DH1 Lot has the following borders:

- North boundary: Internal Road No. 1A and one lot under Education and Training Zone of HHTP
- East boundary: Internal road No.1 of HHTP
- South boundary: E internal road, FPT University
- West boundary: Education and Training Zone of HTTP.

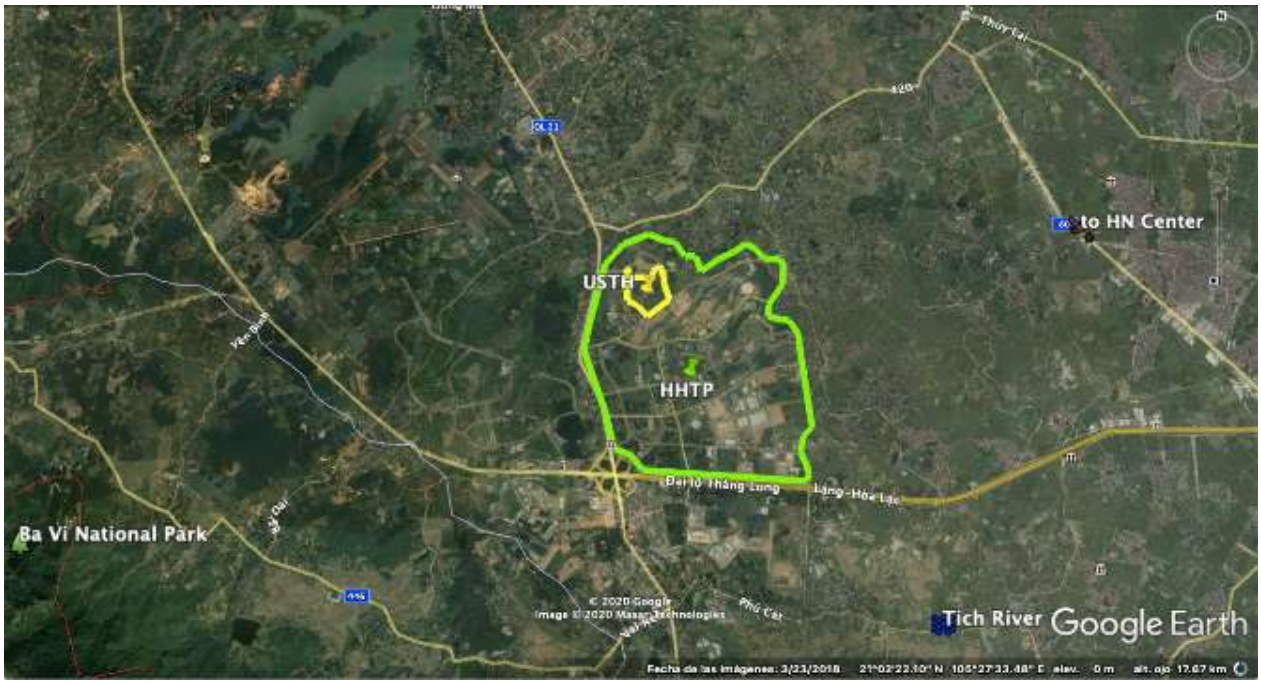

Figure 3 – General map of USTH in HHTP – Google Earth

B. PROJECT AREA OF INFLUENCE

22. The area of influence of USTH (Figure 3) will consider the Project area, cumulative and induced impacts and a buffer zone (within area of HHTP). According to the ADB SPS 2009, there are no associated facilities to USTH as no facility's viability and existence depend exclusively on the Project. The buffer zone is also not concentrated in the area of HHTP only, due to the foreseeable social impacts from the influx of construction workers during the construction phase and of students and teachers in the operation phase. Some impacts may consider further away from HHTP – the area of influence if relevant like the impact on local roads or Thang Long Highway or the pressures of the construction workers on the local infrastructures and resources during the construction period of the USTH.

C. CONTENT OF THE PROJECT

23. The Project will construct infrastructure works to serve 10,920 people (10,000 students; 400 researchers; 520 lecturers and staff). The education and training scale of about 5,000 students for the first phase and up to 15,000 students in the second phase in 2025.

24. The total construction area of the Project is 261,541m^2. The detail allocation of land-use purpose is show in the Table below:

Table 1 – Detail allocation of land-use purpose

No.	Land-use purpose	Square area (m^2)	Ratio (%)
1	Administrative area	18,536	7.09
2	Area for research and study	50,621	19.35
3	Campus - sport and recreation	45,682	17.47
4	Technical area	11,692	4.47
5	Green space - square	93,656	35.81
6	Transportation – car park	41,354	15.81
		261,541	**100%**

25. The building within USTH will be divided into 4 main blocks with the building in each block has 1 – 12 floors, including:

i. **Block A and B - Study and research:** Meeting and workshop area; the club of the university; school board's office; library; learning center; Faculties of Biotechnology, Medicine, Material Science and Nano Technology, Water, Environment and Marine, Recycle Energy, Space and Aviation, Information Technology and Communication; Study Support Center; general infrastructure to serve undergraduate and graduate education.
ii. **Block C – Campus, official residence:** Indoor and outside sport areas, official residence area, campuses…
iii. **Block D – Service and technical area:** solid waste treatment; electric station; maintenance and store area; security and safety center; technical infrastructure: road, car park, pedestrian pathway, landscape, services

26. The allocation of the blocks is show in the Figure below:

Figure 4 – Allocation of the blocks in USTH

27. **The main construction buildings**. The main gate area will be constructed with the dimension of 100m in length and 70m in width. The E road will link main gate area to the functional area, study area and the water park. Locate in the middle of the Project area is the 12-floor management office building. The height of this building is 60m, equivalent with the normal 15-floor building. Meeting and conference zone are located to the west and the north of the Project area. The buildings will be constructed as closed ring and connect to the water park. This zone is limited to the north by a large learning center and library. A large square of 150x50m next to this zone will be constructed to serve outside events and ceremonies. The ground floor of the buildings is allocated for cafeteria, convenient store and a large conference center with capacity up to 1,000 people. At least 6 general auditoriums will be constructed in the area of 1,000m^2. General study area is allocated in the southeast area. Technical design of each building will base on their functions. Laboratory system and other special rooms will be allocated in the southern buildings while other common rooms will be allocated in the eastern buildings. The building will be constructed with blue roof shades to ensure sufficient sun light filter and natural ventilation in environment friendly perspective.

28. **Administrative area**, including the following buildings: office, administrative, conference and meeting, learning center and library. These buildings are allocated in two land lots with the main criterion below. The main buildings are show in Table 2.

- Land area: 18,536 m2
- Total floor area: 40,901 m2
- Maximum height: 12-floor
- Construction ratio: 54.1%
- Land use ratio: 2.2 times

Table 2 – The main buildings of administrative area

No	Items	Code	Area	Height	Level	Fire resistance level
			(m^2)	*(floor)*		
	Administrative building		***10,021***	***2 - 12***		
1	Auditorium	A.01	*4,396*	*2-12*	I	I
2	Conference room, Club	A.02				
3	Administrative management	A.03				
4	Learning Resource Center	A.04	*5,625*	*3*	II	II

29. **Area for research and study**, including 6 specific faculties and 1 general faculty. The area is divided into 7 land lots with main buildings show in Table 3.

- Land area: 50,621 m2
- Total floor area: 100,192 m2
- Maximum height: 6-floor
- Construction ratio: 48.8%
- Land use ratio: 1.98 times

Table 3 - The main construction buildings of research and study area

No	Construction items	Code	Area	Height	Level	Fire Resistance Level
			(m^2)	*(floor)*		
	Study and research *(including 6 specific and 1 general faculties)*		**24,710**	**1 - 6**		
1	Biotechnology and Medicine Faculty	B.03	*2,990*	*6*	II	II
2	Material Science and Nano Technology Faculty	B.04	*3,285*	*1-4*	II	II
3	Water, Environment and Oceanology Faculty	B.05	*4,417*	*1-4*	II	II
4	Renewable Energy Faculty	B.06	*2,360*	*1-5*	II	II
5	Space Science and Application Faculty	B.07	*1,635*	*4*	II	II
6	Information Technology and Communication Faculty	B.08	*1,100*	*6*	II	II
7	Research Support Center	B.09	*1,123*	*4*	II	II
8	Buildings with general purpose for students	B.10	*7,800*	*5*	I	I

30. **Campus, official houses, sports and recreation area**, including campus for under graduate students, campus for graduated students, official houses for lecturer and staff. Service, sport and recreational facilities will be constructed to serve the people of the campus. All the buildings will be allocated into 3 land lots and the main buildings is listed in Table 4 below.

- Land area: 45,682 m^2
- Total floor area: 56,515 m^2
- Maximum height: 8-floor
- Construction ratio: 26.9%
- Land use ratio: 1.24 times

Table 4 – Main construction buildings of campus, official houses and sports

No	Items	Code	Area	Height	Construction level	Fire resistance level
			(m^2)	*(floor)*		
C	**Campus – Sport and gymnastic**		**12,293**	**1 - 8**		
1	Indoor gymnastic	C.01	*3,800*	*2*	II	II
2	Campus	C.31	*947*	*6*	III	III
3	Campus	C.21	*395*	5	III	III
4	Campus	C.22	*395*	5	III	III
5	Campus	C.23	*395*	5	III	III
6	Campus	C.24	*395*	5	III	III
7	Campus	C.25	*395*	5	III	III
8	Official house No.1	C.26	*395*	*6*	III	III
9	Official house No.2	C.27	*395*	*6*	III	III
10	Official house No.3	C.28	*395*	*6*	III	III

No	Items	Code	Area	Height	Construction level	Fire resistance level
11	Campus	C.32	*947*	*7*	III	III
12	Campus	C.33	*947*	*8*	III	III
13	Campus	C.34	*947*	*7*	III	III
14	Campus	C.35	*947*	*6*	III	III
15	Canteen and service	B.12	*598*	*1*	III	III

31. **Technical area**, including wastewater and solid waste treatment facilities and security center to ensure the smooth operation of USTH. All the buildings are allocated in 2 land lots with main buildings listed in Table 5.

- Land area: 11,692 m2
- Total floor area: 13,630 m2
- Maximum height: 2-floor
- Construction ratio: 63.2%
- Land use ratio: 1.17 times

Table 5 – Main construction buildings of technical area

No	Items	Code	Area	Height	Construction level	Fire resistance level
			(m^2)	*(floor)*		
D	**Technical construction**		**7,385**	**1-2**		
1	Solid waste management building	D.01	*4,730*	*2*	III	III
2	Maintenance and storage building	D.02				
3	Safety and security center	D.03	*1,515*	*2*	III	III
4	Electric station, water supply station		*1,140*	*1*	III	III

32. **Green space and square area**, including green area of tree and landscapes, park area at the entrance with the service facilities. The square will serve as area for outside activities, exhibition. This land area will be allocated into 3 main land lots (for square areas) and green tree integrated into other areas.

- Land area: 93,678 m2
- Maximum height: 2-floor
- Construction ratio: 5 - 25%

33. Transportation and car park, including the main internal road network, foot-walk with roof, carpark with roof and integrated with green space. The main construction buildings are listed in Table 6 below.

- Land area: 41,332 m2
- Total floor area: 14,424 m2
- Maximum height: 2-floor
- Construction ratio: 28.9%
- Land use ratio: 0.55 times

Table 6 – Main construction items for green space and square

No	Items	Code	Area	Height
			(m^2)	*(floor)*
CX	**Green space - Square**		**10,014**	
1	*Green trees - landscape – foot walk with roof*		*5,942*	*1*
2	*Square, landscape – levelling area*		*4,071*	*1*
P	***Internal road, carpark, carpark with roof***		***10,349***	***1***

34. **Other main construction works**

i. **Levelling** work will make the area suitable for burying drainage system, in consistence with the elevation of adjacent roads and nearby areas. The maximum and minimum elevation is +19m and +13m respectively. The detail levelling volume is show in Table 7 below.

Table 7 – Detail volume of levelling works

No	Item	Unit	Volume
1	Levelling area	m^2	45,886
2	Organic soil excavation (H=0.3m)	m^3	13,766
3	Levelling volume (including compensation of organic soil excavation)	m^3	76,225
4	Excavation area	m^2	151,148
5	Excavation volume	m^3	149,520

ii. **Internal transportation network** including internal roads, building-connection bridges and car parks which are prioritize for pedestrian, bike and electronic bike. The detail information is listed in Table 8.

Table 8 – Summarize internal transportation network volume

No.	Item	Road and bridge surface width	Length
1	Internal road No.1	7	1,820
2	Internal road No.2 and No.6	7	412
3	Internal road No.3; No.4; and No.5	3.5	629
4	Internal road No.7 and No.8	8	2,952
5	Bridge No.1	4	95
6	Bridge No.2; No.3; No.4; and No.5	4	367
7	Car parks	8,308m^2	

iii. **Water supply system** is designed as part of general water supply system of HHTP and the surrounding areas. It is also suitable with the water supply development plan of Hanoi up to the year of 2030. The water supply design for USTH is based on the calculation of 1,665.29m^3/day-night including domestic water supply, water for gardening, road cleaning and fire-fighting. The total construction works for water supply system is summarize in Table 9.

Table 9 – Total works of water supply system

TT	Item	Measure	Unit	Quantity
1	HDPE Pipe PN16	DN200	m	360
2	HDPE Pipe PN16	DN150	m	600
3	HDPE Pipe PN16	DN100	m	3,890
4	HDPE Pipe PN16	DN80	m	142
5	Steel bolt pipe to cross the road	DN200	m	100
6	Steel bolt pipe to cross the bridge PN16	DN100	m	80
7	Fire prevention pillar	DN100	Set	32
8	BB Check valve	DN150	Set	7
9	BB Check valve	DN100	Set	38
10	Water tank, pump station	2400m^3		1

iv. **Electric system** is designed in accordance with National Technical Regulation issued by Decision No. 04/2008/QD-BXD dated 3/4/2008. There are total 13 electric stations with 17 transformers and the total capacity of 14,550 KVA. The total construction works for electric system is summarize in Table 10.

Table 10 – Total works of USTH's electric system

No	Code	Item	Capacity (VA)	Transformer
1	D.03	Safety and security building	523449	TBA-04
2	A.01	Auditorium, conference building		
3	A.03	Administrative management building	787076.64	TBA-03
4	A.02	Learning center	605880	TBA-01
5	A.04			
6	B.12	Canteen – service building	1408590	TBA-02
7	B.10	General buildings for undergraduate student		
8	B.08	Information technology & communication faculty	661824	TBA-12
9	B.06	Renewable energy faculty		
10	B.04	Material science and nano technology faculty	355190.4	TBA-11
11	B.05	Water environment and ocean faculty	418348.8	TBA-09
12	B.09	Research and support center	728622	TBA-08
13	B.03	Biotechnology and food faculty		
14	B.07	Space science & application faculty	285039	TBA-13
15	D.01	Waste & wastewater management	518784	TBA-10
16	D.02	Maintenance and storage building		
17	D.03.02	Safety Center and Fire-fighting station		

No	Code	Item	Capacity (VA)	Transformer
	D.03.03			
18	C.02.01	Campus	1640250	TBA-6
19	C.01	Sport and social event	2868768	TBA-7
20	C.02.02	Campus	720900	TBA-05
Total			**11522721.8**	**13**

v. **Drainage system for rainwater** is the gravity flow system. Rainwater will be collected to the culvert system with diameter range from 150 to 400mm. Water will flow to the open canal with dimension of 300x300mm (width-height) to 1200x300mm before discharge to Tan Xa lake. The total construction works for drainage system is summarize in Table 11.

Table 11 – Total works of USTH's drainage system

No	Item	Dimension (mm)	Unit	Quantity
1	Drainage culvert	Dn600	Length (m)	288
2	Drainage culvert	Dn800	Length (m)	319
3	Drainage culvert	Dn1000	Length (m)	369
4	Drainage culvert	Dn1200	Length (m)	35
5	Drainage culvert	Dn1500	Length (m)	44
6	Box culvert	1500x1500	Length (m)	120
7	Open canal	B300	Length (m)	1,237.17
8	Open canal	B500	Length (m)	2,546.5
9	Open canal	B1200	Length (m)	1,348
10	Manhole type 1	1000x1000	manhole	17
11	Manhole type 2	1200x1200	manhole	15
12	Manhole type 3	1400x1400	manhole	15
13	Manhole type 4	2000x800	manhole	3
14	Manhole type 5	2000x1200	manhole	3
18	Manhole type 7	1800x1800	manhole	2
19	Manhole type 8	2000x2000	manhole	9
20	Manhole type 9	2200x2200	manhole	2

vi. **Wastewater treatment system** is designed with drainage system and two wastewater treatment plants (WWTP). Wastewater of the research laboratories with hazardous substances will be pretreated and sterilized with ultraviolet to remove all heavy metal and hazardous substances. If qualified by authorized people, wastewater will be discharged into the drainage system that distributed along the internal roads of USTH and be treated at two WWTPs with capacity of 800 and 1,200 cubic meter per day. After they reach the allowed standard of HHTP, they will be discharged into the general drainage system of the HHTP. WWTPs must be completed and put into operation before the operation of the USTH. The total construction works for wastewater treatment system of USTH is summarize in Table 12 below.

Table 12 – Total works of USTH's wastewater treatment system

No.	Items	Dimension/Capacity	Unit	Quantity
1	Wastewater pipe	DN300	m	2,795
2	Manhole		manhole	118
3	WWTP No.1	800m^3/day	-	1
4	WWTP No.2	1,200m^3/day	-	1

vii. **Other systems** like lighting system, communication system are designed in accordance with current National Technical Regulations and suitable with the designed capacity of the USTH.

35. **Land clearance.** Land clearance works have been completed. 26ha under the management of Tan Xa commune has been acquired and the relocation process has been completed. 1 household in Tan Xa commune and 25 households in Binh Yen commune have received new land area and have constructed their houses.

36. **Construction site arrangement**. Construction site will be allocated inside the Project area including material stockpiles, warehouse, vehicle and machine area, worker camps. During the peak period, about 200 workers will be mobilized to work at the construction site.

37. **Construction material**. The estimate volume of excavated soil is about 149,520 m^3 of which 6,271 m^3 could not be reuse as filling soil and will be disposed to the designated area. The estimate volume of filling soil is 76,225 m^3 and the Project will reuse excavation soil as environmental-friendly solution. Other construction material is depending on the detail design of each buildings/ construction items. Estimated volume of construction material for main works (not including the buildings) could be found in Appendix 4 of this report. Sand for construction will be purchased at the mine surround Red River with legal registration and transfer to the Project area. The average distance is about 70 km. Other construction material like stone, steel, cement, HDPE pipe will be purchased at the legal agent within Hanoi area.

38. **Project vehicles and machines.** The proposed type and number of Project vehicles and machines for both construction phase and operation phase are listed in Appendix 5 of the report. In general, the operation of Project vehicles and machines are low in capacity and small in number and will not generate any significant impact to environment.

39. **Solid waste disposal and wastewater treatment**. The PMU-USTH will sign a contract with authorized environmental and sanitation company to collect and transfer solid waste including construction waste and domestic waste from workers (construction phase); and from staff, students, visitors… (operation phase) to the designated landfill of HHTP. Wastewater treatment is detailed during the Technical Design Stage, after the Feasibility Study. The wastewater will be collected by drainage system to two WWTPs located inside USTH before discharge to the drainage system of the HHTP.

V. DESCRIPTION OF THE ENVIRONMENT

A. PHYSICAL ENVIRONMENT

1. Topography, Geology, and Soils

40. The Project area have a diversity landscape with waterbodies and mounds. The area is not flat and surface water occupies large part of the area. The surface water is part of the manmade Tan Xa lake. The main lake of HHTP plays provides regulating services including irrigation water storage and flood retention for the Project and HHTP in general. The water level of the lake is changing frequently and could be divided into several small lake during the dry period.

Figure 5 – Part of Tan Xa lake with view from the Project area towards FPT university

41. The soil conditions of the Project are suitable for the construction works and could be divided into 4 main layers, including: (i) Layer 1: less than 1m cover layer with organic soil, mud; (ii) Layer 2: varied from 1m to 3.5m with mixed brownish yellow soft to stiff clay; (iii) Layer 3: the depth varied from 2.5 to 5.5m with mixed grayish black loose to soft clay; (iv) Layer 4: the depth from the bottom of layer 3 downwards with grayish black fine sand.

2. Weather, natural disaster and climate change

42. The weather in Project area is typical with tropical monsoon climate, a hot summer with heavy rains and a cold winter with little rain. With the clear difference between hot and cold period, the weather in Project area could be divided into 4 seasons: spring, summer, autumn and winter. The hot period starts from mid-April to the end of September with high humidity and a lot of rain. Start of October to the end of March in the next year is cold weather with drizzle. However, due to the strong impact of monsoons, the start and end of each season is often uneven among years, and the division of seasons is only relatively.

43. The average monthly temperature in every year have been recorded at Lang weather station for the period of 2013 – 2018 as showed in Table 11 below.

44. The result shows that the Project area has high temperature and significant changes between months of the year. The average temperature is low in the winter (lowest in January with 15.4°C) and high in the summer (highest in July with 29.5°C).

Table 13 – Monthly average temperature at the Project area

Unit: °C

Temperature (°C)	Month												Average
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
2013	16	22.5	21	24.7	27.1	27.4	28.6	29.9	29.1	26.8	21.9	19.9	**22.4**
2014	18.1	20.9	21.9	23.5	28.7	30.9	30.7	28.6	28.7	25.7	23.1	19.4	**23.1**
2015	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**
2016	14.6	16.2	20.2	26.2	28.9	30.3	29.6	29.3	27.4	26.8	23.4	18.7	**24.3**
2017	15.3	19.9	24.0	25	28.9	30	28.9	29.1	27	25.6	22.8	16.3	**24.4**
2018	15.8	18.9	20.6	24.2	27.3	28.2	29.1	28.9	28.6	25.2	20.6	18.3	**23.8**
Average	**15.4**	**19.4**	**20.8**	**24.6**	**28.0**	**29.4**	**29.5**	**29.1**	**28.1**	**25.8**	**22.6**	**18.3**	**23.6**

Source: Data of Lang weather station, 2013÷ 2018

45. The air humidity of the Project area is detailed in Table 12 below. The average relatively air humidity is 78% with the highest air humidity period fall into February to September while the lowest period is October to January of the next year.

Table 14 – Air humidity of the Project area

Unit: %

Humidity	Month												Average
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
2013	72	84	82	82	81	77	79	78	76	75	66	74	**77**
2014	81	80	78	85	81	74	74	82	79	70	71	77	**78**
2015	71	83	81	80	76	80	78	81	81	79	77	68	**78**
2016	83	83	83	80	79	75	79	79	81	76	79	79	**80**
2017	82	86	80	81	78	74	82	81	82	73	73	68	**78**
2018	80	82	83	80	75	72	80	78	82	75	71	67	**77**
Average	**78**	**83**	**81**	**81**	**78**	**75**	**79**	**80**	**80**	**75**	**73**	**72**	**78**

Source: Data of Lang weather station, 2013÷ 2018

46. The annual average rainfall of the Project area is about 1643 mm with 87% annual rainfall is concentrate in the period from May to September. The month with highest rainfall is August with average of 374 mm from 2013 – 2018. The detail rainfall information from 2013 to 2018 is shown in Table 13 below.

Table 15 – Monthly and annually precipitation of the Project area

Unit: mm

Rainfall	Month												Total
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
2013	5	8	49	74	229	0	551	216	155	79	1	4	**1,371**
2014	81	8	6	56	150	175	280	274	172	25	11	12	**1,239**
2015	9	18	106	41	149	396	295	313	247	178	32	52	**1,836**
2016	20	17	17	32	388	269	388	488	79	78	35	26	**1,837**
2017	14	17	46	23	243	217	306	541	374	61	70	22	**1,934**
2018	16	21	48	45	289	223	315	412	159	56	15	32	**1,631**
Average	**24**	**15**	**45**	**45**	**241**	**213**	**356**	**374**	**198**	**80**	**27**	**25**	1,643

Source: Data of Lang weather station, 2013÷ 2018

47. There are two main wind directions: Northeast wind in the winter and Southeast wind in the summer. However, Southeast wind has the highest frequency in the year with the highest percentage over 40% in March, April and May. In April the frequency of Southeast wind makes up 48% of the month and reduce to 15% in February. Northeast wind usually has the frequent of higher than 20% in the winter time while East wind also make up 15 – 16% during April and May.

48. The weather of Hanoi is also recorded unusual changes in the recent years. On April 25, 2005, hail appeared in Cau Giay, Ba Dinh and Hoan Kiem districts. In the rainy season of 2018, the heavy rains in October causing the whole city to experience a historical flood. Unusual heat waves have also occurred in recent years, typically the heat wave in November 2015. In 2017, record heat broke out in many places of Red River Delta, especially in Hanoi with the measured temperature in June has reached 41.5^{o}C. The winter of 2017 was also the coldest winter in the 3 continuous year with the temperature sometimes dropped down to 3^{o}C.

3. Surface and groundwater

49. Part of Tan Xa lake is located in the Project area with about 11.17ha surface area. The man-made lake is part of the Tich River basin. The lake dries up partly in the dry season and fills with water in the rainy season. Tan Xa lake is the irrigation lake which serves the agricultural activities of Tan Xa, Ha Bang, Thach Hoa, Co Dong, Binh Yen communes and other communes of Thach That district. The highest water level recorded of Tan Xa lake is +12.6m and the average water level in the rainy and dry seasons is +11m and +9.5m[3] relatively.

50. Most of the water quality parameters of Tich River system, including Tan Xa lake, are within the permitted level of Column B – QCVN 08-MT:2015/BTNMT – Water for irrigation purpose. However, at certain location, the water is polluted with organic substances, showed a high TSS, BOD_5, COD, NH_4^+ and coliform concentration[4].

51. Baseline water quality monitoring has been implemented with two locations in the Project area in 3 monitoring times from September 15 to October 15, 2019. The monitoring locations are show in Figure 6 below. Table 14 showed the result of water quality in the Project area.

[3] Water level is based on mean sea level.
[4] Environmental monitoring report of Hanoi, 2018

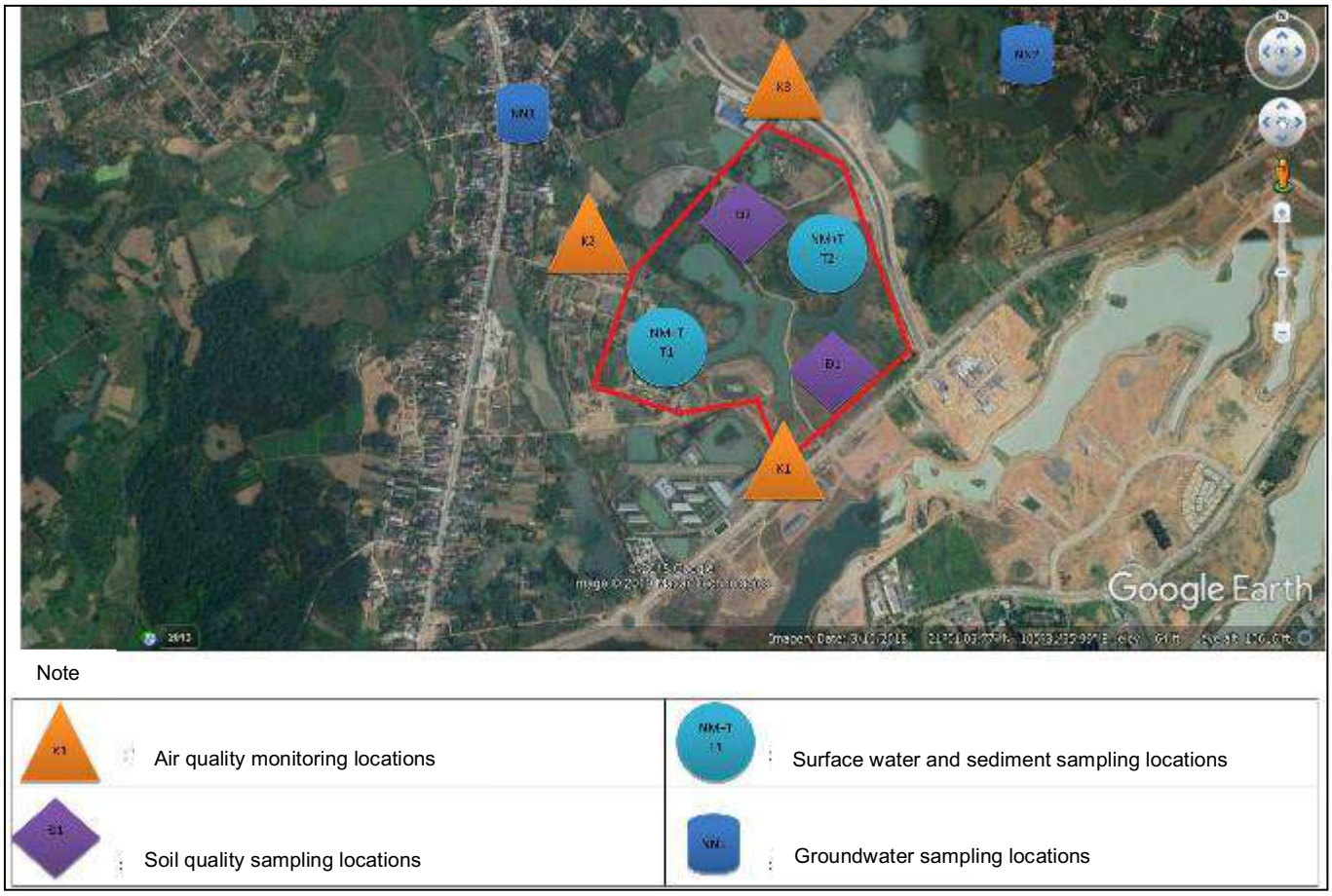

Figure 6 – Environmental baseline sampling locations

Table 16 – Surface water quality of the Project area

No	Parameter	Unit	Result*		QCVN 08-MT:2015/BTNMT Column B2
			NM1	NM2	
1	Temperature	^oC	30.1	30.3	**-**
2	pH	-	7.01	7.26	**5.5 ÷ 9**
3	DO	mg/l	5.36	5.42	**≥ 2**
4	TSS	mg/l	43	37	**100**
5	BOD_5	mg/l	14	13	**25**
6	COD	mg/l	27	25	**50**
7	Ammonia (on N)	mg/l	0.157	0.173	**0.9**
8	NO_3^- (on N)	mg/l	1.22	1.18	**15**
9	PO_4^{3-} (on P)	mg/l	0.035	0.031	**0.5**
10	Mangan (Mn)	mg/l	0.041	0.036	**1**
11	Iron (Fe)	mg/l	0.785	0.675	**2**
12	Oil and grease	mg/l	0.18	0.23	**1**
13	Coliform	MPN /100 ml	260	490	**10000**

** Average calculation from 3 monitoring times.*
Note: QCVN08-MT:2015/BTNMT – National technical standards for surface water quality.
Column B1 – For irrigation purpose or lower quality same as column B2.
Column B2 – Waterway transportation and other purpose with low water quality requirement.

52. The testing results show that all the parameters are still within the allowed level of QCVN 08-MT and there is no trace of pollution at the moment.

53. The assessment of groundwater in the adjacent areas shows that the groundwater source is abundant with exploiting capacity of 2,500 to 2,700m^3 per day. The groundwater level varies moderately by season. It ranges from -9m to -11m in the rainy season (March to September) and from -10m to -11m in the dry season. Some households close to HHTP are still using groundwater as one water supply source for daily life, but rely on a deeper aquifer at a depth of 40-50m. The groundwater quality sampling has been implemented from the drilled wells of local households near the Project area. The quality of groundwater is also within the allowed level. The result of groundwater quality is show in Table 15 below.

Table 17 – Groundwater quality of the Project area

No	Parameter	Unit	Result		QCVN 09-MT:2015 /BTNMT
			NN1	NN2	
1	Temperature	^{0}C	29.1	29.4	**-**
2	pH	-	6.85	6.65	**5.5 ÷ 8.5**
3	Total Dissolved Solids	mg/L	923	875	**1500**
4	Hardness	mg $CaCO_3$/L	263	424	**500**
5	Chlorine (Cl^-)	mg/L	210.9	262.3	**250**
6	NH_4^+ (on N)	mg/L	0.058	0.067	**1**
7	NO_3^- (on N)	mg/L	2.25	1.17	**15**
8	Lead (Pb)	mg/L	Not detected	Not detected	**0.01**
9	Cadmium (Cd)	mg/L	Not detected	Not detected	**0.005**
10	Iron (Fe)	mg/L	0.053	1.24	**5**
11	Zinc (Zn)	mg/L	0.058	0.021	**3**
12	Coliform	MPN/100mL	Not detected	Not detected	**3**

4. Air quality and noise

54. The monitoring result of air quality and noise in the Project area has showed that all the parameters are still within the permitted level for all air quality, noise and vibration. The sampling locations are show in Figure 6 above and the monitoring result could be found in Appendix 6.

B. BIOLOGICAL ENVIRONMENT

1. Flora, legally protected sites

55. The vegetation cover in the Project area is mainly composed of secondary plantation including strips of greenery along the roads for shading purpose like tropical almond, flamboyant… and the small trees live along the lakes. The nearest protected area is Ba Vi National Park – about 11 km to the west of HHTP. The project is located within the HHTP – the planned area for satellite cities of Hanoi and it will not encroach on any legally protected areas.

56. Crops in the HHTP are mainly natural grassland, small hill and garden timber plant including pine, eucalyptus and acacia as well as other fruit trees with low biodiversity value.

2. Fauna

57. HHTP is planned for high tech development and there is no endangered species under Decree 32/2006/ND-CP, Vietnam Red Book or IUCN Red List in the area. Tan Xa lake is a manmade irrigation lake, providing irrigation water for agricultural land of Tan Xa commune. Part of the Tan Xa lake that is currently located inside the project area dries up in the dry season. The lake has no aquatic ecological sensitivities. The lake and its surroundings are highly modified and disturbed habitats of low ecological significance. There is no record of aquatic species and amphibians of importance in and around the lake.

C. SOCIO-ECONOMICAL CONDITION AND INFRASTRUCTURE

1. Population and Ethnicity

58. Total population of the Project commune – Tan Xa, Thach That district - is 5,698 people in 1,295 households. The population density is 1,240 people/km^2. There are no ethnic minorities in the Project area with 100% of Kinh people.

59. Occupying 30ha of HHTP, FPT University is operating in the field of information technology with more than 4,000 students. This university is located in Education and Training zone of HHTP, next to the USTH Project area.

2. Living Standards and housing

60. In the recent years, the economical condition of the commune has growth rapidly. The average income per capita of the commune is increasing gradually after each year and has reached about VND 6,200,000/person/month in 2018. This is due to the development of traditional industries like mechanics, civil carpentry, furniture, construction material manufacturing, garments, carpet embroidery. The average poverty rate in 2018 of Tan Xa commune is only 1.2%.

3. Employment and income

61. Total area of Tan Xa commune is 789.85ha, of which agricultural land occupies 13.4% and non-agricultural land (housing, specific purpose…) including HHTP, make up 68.9%. Agricultural, aquaculture make up 69.87% current job while small industry and trade make up 30.13%. The cultivation area has been reduced gradually with the development of industrial cluster but the rice productivity is still high and remain stable thanks to the introduction of new rice varies and the application of advance technology.

62. Husbandry: In accordance to the statistic number, up to November 2019, Tan Xa commune has total 1,859 cows and buffaloes, 6,850 pigs and 56,800 poultries. The total area of fish breeding is 1 ha and the total estimated capacity is 65,9 tons with value of VND 1,850 million.

63. Small industries and trade: There are 55 registered business enterprises with total 135 labor workers. Total product value from industry and trade in 2018 is about VND 14,568 million.

64. For HHTP, there are 81 investment projects with total registered budget of VND 66,174 billion on 358ha. Recently, HHTP has issued investment certificates for 3 projects with total budget of VND 5,053 billion. One of these 3 projects, Hanwha Aero Engines Factory of Hanwa Techwin Co. Ltd from Korea has the highest investment budget of more than VND 4,530 billion.

4. Education and Public Health

65. 100% communes in Thach That district has kindergarten, primary school and secondary school. In general, all people in the district has graduated from secondary school and 98% of pupils from secondary school will continue study in the high school.

66. 100% communes in Thach That district has a medical station to serve basic medical service for people in the commune. Tan Xa commune has a medical station with total area of 1,500 m2 and a grade III house with good condition for basic medical service.

5. Infrastructure

67. The inter-commune and inter-village road system including earth road, macadam road, concrete and bitumen road provides adequate transportation condition for local people of Tan Xa commune.

68. For HHTP, the construction of 17,2 km of Thang Long Avenue to the North has been completed. To the South, 2.58 km highway has been completed and the other 1 km is now under construction. The local road system is nearly complete, and it is well-supported transportation within the Project and HHTP area.

69. The temporary water supply for the Project comes from the Water Supply Plant operated by Viwaseen Company No.6 with capacity of 3,000m^3/day. The temporary water source for this plant is drilled well and it will change to Da River water source when all the offices in HHTP are put into the operation.

70. Wastewater treatment: A wastewater treatment plant for HHTP with capacity of 6,000m^3/day has been completed and its operation has reached 70% collection ratio. The project will construct two WWTP with total capacity of 2,000 cubic meter per day to treat its wastewater. Wastewater after treated must reach the standard quality before discharge into the general drainage system of HHTP.

71. Electricity supply: Currently, HHTP uses electricity from 2 different sources: (i) 22kV from 3x240mm cable that located in the cable tunnel along local road A, B, E and C by Management Board of HHTP; (ii) 35kV and 10kV: provided by Thach That Electricity.

6. Unexploded Ordnance

72. **UXO clearance**. The UXO clearance will be implemented in all Project area in accordance with Decision No. 96/2006/QD-TTg dated May 04, 2006 on management and implementation of bomb, mine and explosive material disposal and Circular No.146/2007/TT-BQP guiding the implementation of Decision No.96. No construction activities can commence without the safety insurance from the authorized clearance company.

D. ARCHAEOLOGICAL, HISTORICAL AND CULTURAL TREASURES

73. There are no known archaeological, historical or cultural treasures in the Project area as it is located inside HHTP. The likelihood for chance-finds is very low. However, a chance find procedures will be established by contractors for the case of any archaeological items identified during the construction process.

E. KEY ENVIRONMENTAL ISSUES

74. **Physical environmental features:** Part of Tan Xa lake is located within the Project area, occupying 9.51% of the total area. It is not well-connected with other parts of the lake and dries up in the dry season. The lake primarily provides regulating services (irrigation water storage, flood retention) for the project area.

75. **Social environmental features:** FPT university with more than 4,000 students is currently studied in the university vicinity, located adjacent to the Project area.

VI. ANTICIPATED ENVIRONMENTAL IMPACT AND MITIGATION MEASURES

76. This section discusses the potential environmental impacts of the subproject and identifies mitigation measures to minimize the impacts in all design, construction and operation phases of the subproject.

77. The potential environmental impacts as well as the mitigation measures associated with the pre-construction, construction and operational phases are assessed below. The criteria for assessment are in line with ADB's Safeguard Policy Statement 2009 and the Government of Viet Nam standards based on the Environmental Protection Law (2014). Where government standards or guidelines have some kind of conflict with the ADB SPS, the ADB SPS will be applied as the policy for the subproject implementation. The EMP is presented below including mitigation measures and monitoring plan for the implementation of the Project.

A. POTENTIAL IMPACTS AND MITIGATION MEASURES IN THE PRE-CONSTRUCTION PHASE

78. The Project preparation stage will mainly consist of land acquisition, compensation and site clearance. As mentioned before, land clearance and resettlement has been completed. The main environmental impacts during this phase will therefore be the clearing, cutting, and levelling of the area (if any). Potential impacts are depending on the machinery used, and may include dust, noise, emissions, domestic waste and wastewater from workers on site, construction waste and hazardous waste from the maintenance of machinery and UXO clearance. Other impacts may be the changes in landscape, increased traffic, environmental and social impacts associated with the influx of workers that may move to the site for the works (stemming from solid and liquid waste generated in worker accommodations; and an increase in social evils such as drug use, alcoholism, prostitution and gambling) and occupational health and safety risks. As the site has been cleared, UXO clearance work has been completed during the establishment of the HHTP. Impacts are mainly anticipated from the demolition work of two warehouses with the total area of only 400 m^2. Thus, the impacts from site clearance in the pre-construction phase are minor and negligible.

B. POTENTIAL IMPACTS AND MITIGATION MEASURES IN THE CONSTRUCTION PHASE

79. The potential impacts that are directly affect the environment during construction are mainly related to construction activities and the presence of about 200 construction workers at site, who will stay in worker camps that will be built in the construction site.

1. Impact of noise, dust, vibrations and emissions on air quality from construction activities

80. **Impacts:** Dust, emissions and noise from machinery, construction equipment generated during construction and excavation will affect the surrounding environment. The affected subjects are local people living or working nearby the project area. As the campus of FPT university is the only nearby occupied block of the project area, the main receptors of this impact are the students and staff of the campus and construction workers themselves.

81. Based on the total volume of 271,828 cubic meter soil excavation in Feasibility Report, the local Environmental Impact Assessment report (EIA)[5] has calculated that the average dust amount anticipated to be generated from the construction work is about 0.793 kg/hour and the average dust concentration in all project area is 303 µg/m^3. This amount of dust is a little higher than the allowed level of 300 µg/m^3 of QCVN 05/2013/BTNMT and suitable mitigation measures are required to reduce the impact level.

[5] Local EIA has been approved by Ministry of Natural Resources and Environment on 24 March 2020 under Decision No. 734/QD-BTNMT (Appendix 7)

82. The local EIA has also calculated the average volume of SO_2, CO and NO_2 anticipated to be generated from construction machines in 1 hour during the construction phase at 188 µg/m^3; 1,217 µg/m^3; and 476 µg/m^3 respectively. Only projected $N0_2$ concentrations are higher than the allowed level of 200 µg/m^3 of QCVN 05/2013/BTNMT. However, as the emissions will distribute all over the construction area, the main affected subject will be construction workers who directly operate the machine.

83. The noise anticipated to be generated from the main construction machines of the project is summarized in Table 18 below

Table 18 – Noise level at different distance of some project construction machines

No	Machine	Level at 2m from the source	Level at 15m from the source	Level at 30m from the source	Level at 50m from the source	Level at 100m from the source
1	12-ton self-dump truck	72 ÷ 84	69 ÷ 81	63 ÷ 75	56 ÷ 69	50 ÷ 63
2	Single bucklet excavator 1.25 m^3	73 ÷ 75	70 ÷ 72	64 ÷ 66	58 ÷ 60	52 ÷ 54
3	Compaction machine	74 ÷ 77	71 ÷ 74	65 ÷ 68	59 ÷ 62	53 ÷ 56
4	Rammers 1.5 kW	72 ÷ 83	69 ÷ 80	63 ÷ 74	56 ÷ 68	50 ÷ 62
5	Steel cutting machine 5kW	62 ÷ 73	59 ÷ 70	53 ÷ 64	47 ÷ 58	41 ÷ 52
6	Vibratory Plates 25T	83 ÷ 94	80 ÷ 91	74 ÷ 85	68 ÷ 79	62 ÷ 73
7	Welding machine 23kW	61 ÷ 64	58 ÷ 61	52 ÷ 55	46 ÷ 49	40 ÷ 43
8	Wheel rollers 16T	80 ÷ 89	77 ÷ 86	71 ÷ 80	65 ÷ 74	59 ÷ 68
9	Tractor 108 CV	75 ÷ 77	72 ÷ 74	66 ÷ 68	60 ÷ 62	54 ÷ 56
10	Surface lamination machine	76 ÷ 78	73 ÷ 75	67 ÷ 69	61 ÷ 63	55 ÷ 57
11	Concrete mixer	74 ÷ 83	71 ÷ 80	65 ÷ 74	59 ÷ 68	53 ÷ 62
QCVN 26:2010/BTNMT (6h - 21h)		Special area	***55***	***55***	***55***	***55***
		Normal area	***70***	***70***	***70***	***70***
QCVN 24: 2016/BYT (Noise level at working place)			***85***	***85***	***85***	***85***
IFC General EHS Guidelines Residential, institutional; educational		Daytime	***55***			
		Nighttime	***45***			

84. From Table 18, it could be seen that in order to reach the IFC requirement on noise level for educational area, all of the project construction machines should be located at least 100m from the boundary with FPT campus and the operation of these construction machines at nighttime (22:00 – 07:00) shall not allowed. The impact of noise from these machines will mainly be on construction workers and the 2m distance as well as PPE is required to protect the workers.

85. The vibration levels anticipated to be generated from typical construction machines of the project are show in Table 19 below:

Table 19 – Vibration level at different distance of some project construction machines

Unit: dBA

No.	Construction machine	Level at 10m distance	Level at 30m distance	Level at 60m distance
1	Tractor 108CV	79	69	59
2	12-ton truck	74	64	54
3	Wheel roller 16T	81	71	61

No.	Construction machine	Level at 10m distance	Level at 30m distance	Level at 60m distance
4	Vibratory plate	77	67	57
5	Rammers	75	65	55
6	Excavators	77	67	57
8	Compaction machines 25T	85	75	65
QCVN 27: 2010/BTNMT (6h - 21h)		***75***		

86. It can be seen that the vibration level of all construction machines is projected to be under the allowed level of QCVN 27:2010 for the distance of more than 30m. To avoid adverse impact of vibration on the facilities of FPT campus, the construction machines that create significant vibration levels should not be operated at less than 30m from the boundary with FPT campus.

87. **Mitigation measures:** To minimize the potential negative impact of noise, dust, vibration and emissions, several mitigation measures should be applied by the construction contractors during the construction phase. They are specified in Table 20 below.

2. Impacts from construction vehicles and machinery regarding surface water and groundwater quality

88. **Impacts:** The wastewater from project construction come from (i) construction wastewater from machinery/vehicle washing water; (ii) domestic wastewater of workers; and (iii) rainwater overflows.

89. For (i) with about 50 machinery/vehicles washed per day and 300 liters per vehicle, local EIA has calculated total wastewater release per day from this source is about 7m^3/day. The volume is not large but this kind of wastewater could pour into part of Tan Xa lake, inside the project area and increase the total suspended substances concentration and pH of the water,

90. For (ii), in accordance with TCXDVN 03:2006, the total domestic wastewater generated by 200 workers is 20m^3/day. If it is not treated properly, the domestic wastewater will have direct negative impact on surface water quality of Tan Xa lake. However, the amount of domestic wastewater is unstable and depends on construction progress. Moreover, during construction, the amount of wastewater to be treated by the Project will reduce as the contractors will employ local workers. Local workers will use household wastewater treatment facilities to treat wastewater, so actual Project's generated wastewater volume will decrease.

91. For (iii), the local EIA has calculated the volume of rainwater runoff per day for the month with highest precipitation (374mm) is 15,468m^3/day. The accumulated dirt will follow rainwater runoff including waste soil and other suspended materials, affecting water quality of receiving bodies in Project area, mainly Tan Xa lake. Rainwater flowing through material yards, parking yards, worker camps, workshops, and casting yards will contain various impurities such as oil, organic matter, solids, heavy metals and suspended solids etc. These overflows will run through site surface into the vicinity. The Project’s construction sites are far away from present surface water sources of the area, and part of Tan Xa lake within the Project area is not connected with other part of the lake, which helps limit the impact on nearby water bodies. In order to minimize impacts from rainfall runoff, it is required to build a temporary drainage system on site and prioritize construction of technical infrastructure for rainwater and wastewater drainage.

92. Consider the size of the construction works and the depth of auger-cast piles is about 23m only, the impact on groundwater (at 40-50m depth) is minor and negligible.

93. **Mitigation measures**: The impact of construction vehicles and machinery on surface water in the project area should be minimized by applying suitable mitigation measures including regularly maintain the machines and equipment; setup temporary drainage system with large-size waste filter and separate type of wastewater. Detail information are listed in Table 20 below.

3. Impacts from transportation of construction materials and waste

94. **Impacts:** The high-density concentration of transport vehicles will put pressure on road traffic system in the region, especially NH21A, Thang Long Boulevard and local roads. Environmental impacts include:

- Increasing pressure on transport infrastructure (roads, bridges, culverts) and accompanied by risks of traffic congestion/traffic accidents;
- Affecting the lives of people along the transport routes due to movement of transport vehicles;
- Soil and sand spillage during transport can be dangerous for road users, especially when the above materials are combined with overflowing rainwater causing slippery conditions. When constructing the yards, construction vehicles may carry soil, sand attached to their wheels and scattered on the road surface; then when it rains, these will become mud, causing muddy and slippery surface. The increase in traffic of material transport vehicles combined with slippery condition on the road will pose a great risk of traffic safety on roads, especially on Thang Long and NH21A routes;

95. **Mitigation measures**: Several measures should be applied to avoid negative impacts from transportation activity to local people who live along NH21A Road, Thang Long Boulevard (section near the project area) and FPT campus including implementation of a traffic and noise/dust/vibration/emissions management plan (will be specified in the CEMP); set up and enforce speed limit, cover the fine material and waste transportation trucks with tarpaulin, raising awareness of construction workers, as detailing in Table 20 below.

4. Impact from the generation of waste

96. **Impacts:** The construction works will generate certain amount of waste including construction waste, domestic waste from workers and some types of hazardous waste. This waste, if not managed properly, will bring significant negative impact of the quality of air, surface water and soil environment in the project area.

97. In accordance to local EIA of the project, the estimated volume of domestic waste for construction workers is about 200kg/day. Domestic solid waste with the main components of packaging, plastic bags, bottles, cans, wood, paper, plastic, vegetables, fruits, leftovers etc. will be discharged during workers' daily activities. This is also a source of environmental pollution if not collected and treated in accordance with regulations. However, because the project will employ a maximum of local labor, the amount of generated solid waste will be significantly reduced. Domestic solid waste will be collected and treated to avoid affecting environment and community life.

98. In the course of construction, solid waste includes excess construction materials, scrap iron and steel, all kinds of cement bags, excess iron, scrap wood, broken bricks, etc. It is estimated that the amount of waste sand, stone and broken bricks is not much and will be collected and transported to landfills, while cement bags and scrap will be sold to collectors. Construction waste generated during construction phase is estimated at 9m^3/month. These wastes, if not thoroughly collected, will pollute the landscape as well as surface water sources affecting regional aquatic ecosystem. Because surface water source in the Project area is only Tan Xa Lake area which is located about 10 - 20m away, it should not be affected by construction solid waste. Construction solid wastes during construction phase will be mainly bricks, mortar,

stone, iron and steel etc. with the main composition of non-toxic inorganic substances. However, these types of solid waste are scattered on construction site. Therefore, it is required that the Project conducts classification and collection of these wastes to avoid spillage into surrounding areas as well as into water sources.

99. Construction activities will generate hazardous waste including waste welding rods, welding slag; waste paint, paint solvent; etc. Activities of repairing and maintaining machines and vehicles generate waste oil, grease and oil/grease contaminated materials (rags, oil sludge). Hazardous waste likely to arise in construction phase are mainly contaminated with grease, oil and oily rags. Other source of hazardous waste come from exhausted battery and damaged fluorescent lamp are hazardous wastes that are not generated often, which is difficult to estimate arising amount. However, good management is needed so as not to cause adverse impacts on the environment. In order to limit hazardous wastes, repair and maintenance of equipment will be conducted at the garage; only minor repairs shall be done on site. As a result, waste oil amount will be less than forecast.

100. **Mitigation measures:** The measures for normal construction and domestic waste management are specified in Table 20. To collect and manage the generated hazardous wastes, the Project Owner will be equipped with 200-liter containers (for waste oil) and 120-liter composite containers for other types of hazardous wastes. Arranging hazardous waste storage area before handing over to functional units for transporting and handling.

5. Impacts of occupational health and safety, including risk of disease transmission from Covid-19 virus

101. **Impacts:** The negative impacts of occupational health and safety include increasing environmental pollution, disease spread, risks of social evils as well as conflict between workers and local people if not well managed:

- *Risk of conflicts*: Conflicts may arise, as male workers have conflict with local young men; or when workers conduct and communicate in a manner that is not consistent with traditional customs, cultural traditions and especially the spiritual life of local people; or group of workers can also bring in bad living habits such as drinking alcohol, smoking, gambling and other vices affecting the normal life of local peoples; Collisions and disputes over materials, property theft of people and construction enterprises, damages to equipment, materials and crops etc. These are the causes of conflicts, resulting in loss of local security and order. In addition, considering the fact that, there is FPT University nearby with students living and studying in school dormitories, hence, illegal intrusion of construction workers in dormitories may affect learning and daily activities of students. Therefore, the contractor needs to apply measures in place to manage the workforce.
- *Labor and traffic safety*: Regarding labor safety issues, the processes of transporting, loading, unloading and installing machines and equipment, working at heights and in confined spaces, using electricity in construction etc. are all likely to cause great impacts if no safety and preventive measures are taken. Increase of traffic movement inside the project area and HHTP will also increase the risk of traffic accidents.
- *Public health issues*: The concentration of a labor force from other localities might cause disease outbreaks to occur and affect the surrounding community area, especially the cases of Covid-19 outbreaks, current global disease that cause many lives lost and heavily impact on the global economic condition.

Mitigation measures: Suitable measures including raising awareness for workers, equip them with full personal protective equipment (PPE), setup sufficient hygiene conditions for worker camps and construction site, preventive measures for Covid-19 diseases follow the Government regulation and IFC EHS General Guidelines as well as the instruction of Ministry of Health for Covid-19 virus prevention should be stated in the CEMP of each contractor and be strictly supervised during the implementation. Detail information are show in Table 20.

102. Occupational Health and Safety Impacts are foreseen specially during this phase of construction and according to IFC EHS General Guidelines, employers and supervisors are obliged to implement all reasonable precautions to protect the health and safety of workers and preventive and protective measures should be introduced for (i) eliminating the hazard by removing the activity from the work process, (ii) controlling the hazard at its source with engineering controls, (iii) minimizing the hazard with the design of safe work systems and administrative or institutional control measures (iv) providing appropriate personal protective equipment (PPE) together with training, use and maintenance of PPE. More detailed considerations on communication and training physical hazards, chemical hazards, biological hazards, PPE, special hazard environments, and monitoring should be followed according to the Vietnamese legislation and the IFC EHS General Guidelines, IFC EHS HCF and THD.

103. Moreover, all the impacts in the construction phases of the Projects are also anticipated to be temporary and separated in all 63.8-hectare area as well as 200 construction workers will not be mobilized to work at the same time.

104. All the potential impacts and the proposed mitigation measures follow IFC HSE General Guidelines could be found in Table 20 – List of potential impacts and proposed mitigation measures of USTH.

C. POTENTIAL IMPACTS AND MITIGATION MEASURES IN THE OPERATION PHASE

105. The main potential foreseeable impact during the operational phase of USTH are increased density of traffic in USTH itself and HHTP in general. Increasing traffic will also lead to issues of noise, emission of gases (containing NO_x, SO_x, CO, CO_2) and increase the risk of traffic accidents. The operation of USTH will also increase wastewater discharge and domestic waste. The impact on social side like higher pressure on the social infrastructures, increase of social unrest and dissemination of new diseases could be negligible as USTH located inside separated HHTP, more than 1km away from the nearest residential area of Tan Xa commune. On the other hand, USTH will also bring benefits as more potential job, incomes, the commerce will develop faster and on the long run, the living conditions of Thach That district will improve.

106. Measures to mitigate potential impacts during the operation of USTH including all functional buildings and campuses entail the establishment of appropriate capacity of wastewater treatment system, which will be further defined during the Technical Design Stage, after the Feasibility Study, the establishment of adequate sanitation facilities to prevent littering and dissemination of diseases (gender adapted), cleaning and watering of the paved areas to reduce dust, the collection of domestic waste, decrease of the internal road traffic speed within USTH and HHTP, assure the open spaces, especially surround Tan Xa lake will be planted and maintained accordingly (preferably with local vegetation options), and ensure the buildings and campus are safe and sufficiently lit with environmental-friendly method.

107. The operation of USTH, especially the laboratories will generate certain amount of hazardous wastes. Even they are few and only for research based of USTH local students during learning, and daily activities such as batteries from equipment, electronic boards, fluorescent bulbs, grease, paint, hazardous acid-containing waste from laboratories etc. According to the *"Planning for solid waste treatment of Hanoi capital to 2030, vision to 2050"* approved by the Prime Minister in Decision No. 609/QD-TTg of April 25, 2014, forecast indicates that out of total domestic solid waste generated from offices, there will have about 0.6% of hazardous types. Therefore, the generated hazardous waste volume of the Project is 14,196kg/day × 0.6% = 85.2kg/day. These wastes will be collected and stored so as to prevent accidental releases to air, soil and water resources in area location where (i) the waste is stored in a manner that prevents the commingling or contact between incompatible wastes, allows for inspection between containers, (ii) stored in closed containers away from direct sunlight, wind and rain, (iii) containment systems should be constructed with materials appropriate for the wastes being contained and adequate to prevent loss to the environment, (iii) provide adequate ventilation

where volatile wastes are stored. Storage activities should also be conducted by employees who have received specific training in handling and storage of hazardous wastes, the containers should be adequately labelled and delivered to waste treatment facilities collectors with the adequate authorization to manage these wastes.

D. CUMULATIVE AND INDUCED IMPACT

108. Induced impacts are adverse and/or beneficial impacts on areas and communities from unintended but predictable developments caused by a project which may occur later or at a different location. Cumulative impacts are the combination of multiple impacts from existing projects, the proposed project, and anticipated future projects that may result in significant adverse and/or beneficial impacts that would not be expected in case of a stand-alone project.[6] Some induced impacts can be predicted like (i) in-migration; (ii) traffic congestion; (iii) accidents along the local roads of HTTP owing to increases in transport activity in the Project area of influence.

109. Moreover, some minor cumulative impacts are expected, considering the development of the consequent Phases of the Project and the development of HHTP in general: (i) the effects on ambient conditions such as the incremental contribution of pollutant emissions in the airshed; (ii) the increase in pollutant concentrations in the water bodies of Tan Xa lake; (iii) the reduction of groundwater level due to multiple withdrawals; (iv) the pressure on the carrying capacity.

[6] ADB 2011. Sourcebook for Safeguard Requirement 1: Environment. ADB, Manila

Table 20 – List of potential impacts and proposed mitigation measures of USTH Project

No	Impact	Regulation/Standard	Receptors	Significance	Mitigation Measures	New significance	Residual impacts
Construction phase							
1	Impact of noise, dust, vibrations and emissions on air quality from construction activities	1. IFC General EHS Guidelines 2. QCVN 05:2013 3. QCVN 26:2010 4. QCVN 27:2010 5. QCVN 24/2016/BYT	Student/staff of FPT Campus; Construction workers	Moderate	- Ensure that emissions do not result in pollutant concentrations that reach or exceed relevant ambient quality guidelines and standards by applying the most stringent legislated standards, whether they would be national or current WHO Air Quality Guidelines, or other internationally recognized sources - Use tarpaulin to cover fine material stockpiles and increasing the moisture content to avoid erosion and dispersion of materials - Selecting equipment with lower sound power levels - Installing suitable mufflers on engine exhausts and compressor components - Relocating noise sources to less sensitive area (at least 100m far away from FPT Campus) to take advantage of distance and shielding. - After finishing a large part of a construction, the site will be cleaned immediately. - Minimizing dust from material handling sources, such as conveyors and bins, by using covers and/or control equipment (water suppression, bag house…) - Implement dust suppression techniques such as applying water to minimize dust from vehicle movements. - Managing emissions from mobile sources such as control the operation license. - No open burning of solid waste.	Minor and temporary	There will be some emissions from the clearance, levelling and construction activities that are impossible to mitigate. Thus, the impacts are considered as minor
2	Impacts from construction vehicles and machinery regarding surface water and groundwater quality	1. IFC General EHS Guidelines 2. QCVN 08-MT:2015	Part of Tan Xa Lake located inside the project area	Moderate	- The contractors should implement maintenance programs for all construction machines and vehicles regularly in accordance with current regulations and manufacturer recommended. - Drivers should be instructed and trained on safety driving practices to reduce the risk of accidents and also fuel consumption, including measured acceleration and driving within safe speed limits. - All construction machines should be regularly maintained and calibrated in order to avoid spillages to the soil or surface water of Tan Xa lake. - Setup the temporary drainage system onsite and maintain it on daily basis to maximize its drainage capacity. - Setup large-size waste filter in the temporary drainage system to remove large-size waste and treated them as solid waste. - Plan and implement the separation of liquid effluents principally along construction, utility, sanitary, and rain water categories in	Minor and temporary	There will be some emissions from construction vehicles and machinery, which are impossible to mitigate, and for which they are considered to create a minor impact

No	Impact	Regulation/Standard	Receptors	Significance	Mitigation Measures	New significance	Residual impacts
					order to minimize the volume of wastewater requiring specialized treatment.		
3	Impacts from transportation of construction materials and waste	1. IFC General EHS Guideline	Local people who live along NH21A, Thang Long Boulevard, local roads and in FPT Campus	Moderate	- Implementation of a traffic and noise/dust/vibration/emissions management plan (as part of the CEMP); role and responsibilities (including roles for the contractor site EHS Manager, contractor workers, subcontractor workers and drivers); traffic management procedures; worksite requirements; performance and monitoring. - Establish maximum speeds for all vehicles associated with the Project (make reference to the regulations of HHTP) and impose strict penalties for non-compliance. The transportation vehicles on road must run properly with a specified speed. - The transportation material vehicles must be covered to avoid material falling on the road. - Frequently clean and reinforce the road whenever necessary, especially in front of the construction site and FPT University. - Increase the awareness of workers by organizing capacity building sessions and on the job trainings. - Adoption of best transport safety practices across all aspects of project operations with the goal of preventing traffic accidents and minimizing injuries. - As the Project may contribute to an increase in traffic along existing roads, especially inside HHTP, recommended measures include: (i) collaboration with HHTP Management Board to improve signage, visibility and overall safety of roads, particularly in front of FPT University area; (ii) collaborating with FPT University Management Board on information about traffic safety; (iii) coordination with emergency responders to ensure that appropriate first aid is provided in the event of accidents.	Minor and temporary	There will be some emissions from the transportation of materials, which area impossible to mitigate, and they will create minor impact
4	Impacts from generation of hazardous and non-hazardous solid waste	1. IFC General EHS Guidelines 2. QCVN 50:2013/BTNMT on hazardous waste management	Part of Tan Xa Lake that located inside the project area; FPT Campus	Moderate	- Implement waste management plan (as part of CEMP) - The waste collection from construction works should be done at designated locations and should be prepared for different types of wastes: construction, hazardous, non-hazardous and domestic solid wastes. - Transfer waste from designated locations to the dumping site of HHTP and clean the locations on a daily basis. - Arrange an adequate ventilation system in the area. - Have procedures in place that ensure compliance with Government laws and international regulations for transport of hazardous material, like: o Equip 200-liter container for wasted oil and 120-liter container for other type of hazardous waste at the construction side.	Minor	

No	Impact	Regulation/Standard	Receptors	Significance	Mitigation Measures	New significance	Residual impacts
					○ Proper labelling of containers, including the identification and quantity of the contents, hazards, and shipper contact information. ○ Providing a shipping document that describes the contents of the load and its associated hazards in addition to the labelling of the containers. ○ Ensuring that the volume, nature, integrity and protection of packaging and containers used for transport are appropriate for the type and quantity of hazardous material and modes of transport involved. ○ Ensuring adequate transport vehicles specified for types of waste. ○ Training employees involved in the transportation of hazardous materials regarding proper shipping procedures and emergency procedures. - Providing the necessary means for emergency response on call 24 hours/day		
5	Impacts from generation of domestic/ construction wastewater	1. IFC General EHS Guidelines 2. TCVN 6705:2009	Part of Tan Xa Lake that located inside the project area; FPT Campus	Moderate	- Separation of wastewater from sources to ensure compatibility with selected treatment option, for instance septic system can only accept domestic sewage. - Separation and pre-treatment of oil and grease containing effluents (e.g. use of a grease trap) prior to discharge into sewer systems. - Construction wastewater will be directed to temporary detention and settling pits at the Project site, located away from Tan Xa lake and sized suitable with the demands. - Portable or constructed toilets must be provided on site for construction workers and must be emptied in an appropriate manned into an existing offsite septic system.	Minor	
6	Impacts from materials extraction at quarry/borrow site			Major	- Prioritize use of existing quarry sites of suitable materials with highest ratio between extractive capacity (both in terms of quality) and loss of natural state. - Procure materials only from validated quarries (with environmental licenses from Hanoi DoNRE). Ensure borrow pits are left in a tidy state with stable side slopes and proper drainage.	Minor, can be avoided	
7	Impacts of occupational health and safety	1. IFC General EHS Guidelines 2. Decision No. 3733/2002/BYT	People in FPT Campus; Construction workers	Major	- Implement an occupational health and safety management plan (as part of the CEMP) to be prepared according to Section 2 on Occupational Health and Safety from the IFC EHS General Guidelines, IFC EHS HCF Guidelines and IFC EHS THD Guidelines. - IFC EHS Guidelines indicate that Employers and supervisors are obliged to implement all reasonable precautions to protect the health and safety of workers. This section provides guidance and examples of reasonable precautions to implement in managing principal risks to occupational health and safety on:	Minor and temporary	

No	Impact	Regulation/Standard	Receptors	Significance	Mitigation Measures	New significance	Residual impacts
					○ General Facility Design and Operation: Integrity of workplace structures, severe weather and facility shutdown, workspace and exit, fire precautions, lavatories and showers, potable water supply, clean eating area, lighting, safe access, first aid, air supply, work environment temperature. ○ Communication and Training: OHS training, visitor orientation, new task employee and contractor training, basic OHS training, area signage, labelling of equipment, communicate hazard codes. ○ Physical Hazards: rotating and moving equipment, noise, vibration, electrical, eye hazards, welding/Hot work, Industrial vehicle driving and site traffic, working environment temperature, ergonomics, repetitive motion, manual handling, working at heights, illumination. ○ Chemical Hazards: air quality, fire and explosion; corrosive, oxidizing and reactive chemicals, asbestos containing materials. ○ Biological Hazards ○ Radiological Hazards ○ Personal Protective Equipment (PPE) ○ Monitoring: accidents and diseases monitoring - More in detail, some guidelines are essential: ensure the living conditions for workers like facilities for resting, clean water, food, accommodation, and others meet international standards for worker accommodations to prevent communicable, food-borne, water-borne and vector-borne illnesses. - Full PPE in order to avoid the negative effects on health, prevent diseases. - When executing works in height, transporting, handling and installing the machinery and equipment, workers should be equipped with all means of PPE such as protective helmets, masks, reflective clothing, lights and flags. - Provide a workforce health/emergency services on site.		
	Covid19 virus outbreak	1. Directive No. 16/CT-TTg 2. Directive No. 19/CT-TTg	Construction workers Student and staff of FPT Campus	Major	- Check the health certification of worker before joining the site and hold briefing at the beginning to discuss on Covid-19 virus. - Assign focal point to implement and monitor prevention measures (appoint medical staff) - Restrict entry to all visitors during the epidemic - If a worker or any other individua feels ill, they must stay home. - Take the temperature of all personnel and ensure they wash their hands before entering the construction site.	Minor	There will be some uncertain in Covid19 disease prevention, which area impossible to mitigate, and they will create minor impact

No	Impact	Regulation/Standard	Receptors	Significance	Mitigation Measures	New significance	Residual impacts
					- At the construction site, all people must: o Avoid handshakes, hugs and nay other forms of close contact o Maintain a minimum distance of 2 meters at all times o Avoid touching face without washing hands - The contractor must provide in sufficient quality liquid soap, alcohol-based gel, dry hand-wash agent, disposable towels and tissues; located stations for hand washing at various point of the site; closed containers or bags for disposable towels and tissues; masks, disposable gloves and protective glasses; remote or tape thermometers.		
Operation phase							
8	Impacts from noise, dust, emissions from vehicles going in and out of USTH and area of influence affecting the air quality and risk of traffic safety			Minor	- Install speed limitation sign board and monitor the compliance with speed limit at the university area. - Increase the awareness of staff and students by organizing capacity building sessions. - Regular maintenance of vehicles and use of manufacturer approved parts. - Install safe traffic control measures, including road signs, humps, especially in front of the USTH to warn of dangerous conditions.	Minor	
9	Impacts of solid/liquid waste, both hazardous and non-hazardous wastes			Minor	- The compulsory hazardous waste management shall comply with provisions under Circular No. 36/2015/ TT-BTNMT of MONRE, regulating on hazardous waste management. - Review of new waste sources during planning, siting, and design activities, including during equipment modifications and process alterations, to identify expected waste generation, pollution prevention opportunities, and necessary treatment, storage, and disposal infrastructure. - Hazardous waste storage location: Waste storage area D01 - Solid waste management is built with cement plaster bricks with signs of hazardous waste as prescribed in Circular No. 36/2015/TT-BTNMT to store hazardous waste. - Temporary storage of solid waste according to provisions of Circular 36/2015/TT-BTNMT: o Floors in hazardous waste storage area must be tight, not penetrated and can prevent rainwater from overflowing in from outside. o Having measures to isolate from other types or groups of hazardous wastes capable of reacting chemically with each other. o Hazardous waste storage areas must guarantee not to spill liquids outside when there is a leakage or spillage	Minor	

No	Impact	Regulation/Standard	Receptors	Significance	Mitigation Measures	New significance	Residual impacts
					incidents. Accordingly, the waste storage area is built with 20cm bricks high to avoid spillage to outside area. - Substituting raw materials or inputs with less hazardous or toxic materials, or with those where processing generates lower waste volumes. - Minimizing hazardous waste generation by implementing stringent waste separation to prevent the commingling of non-hazardous and hazardous waste to be managed. - Provide adequate ventilation where volatile wastes are stored.		

VII. INFORMATION DISCLOSURE, CONSULTATION AND PARTICIPATION

110. This section describes the process undertaken to involve the public in the Project design and recommended measures for continuing public participation; it summarizes major comments received from beneficiaries, local officials, community leaders, NGOs, and others, and explains how these comments were addressed.

111. Community participation will be one of the basic conditions to ensure the Projects' social license to operate as well as to mitigate adverse impacts and issues that the team conducting the environmental impact assessment is not aware of. In fact, if the community is involved as early as possible in the Project preparation process, the easier it is to establish a close relationship between both the community itself and the Project and to contribute with valuable proposals for the Project.

A. PUBLIC CONSULTATION

112. Regarding the Vietnamese legislation, community consultations are carried out in accordance with the provisions of Paragraphs 1 and 2, Article 21 of the Law on Environmental Protection 2014 and are described in the Circular No. 27/2015 / TT-BTNMT dated 29/05/2015 by the Ministry of Natural Resources and Environment. In addition, for Projects receiving ODA from ADB, community consultation is important and necessary as required under ADB SPS 2009.

113. The public consultation process was conducted by PMU USTH cooperating with the IEE Consultant of the project to organize public consultation meetings with representatives from FPT University, HHTP Management Board, VKIST Construction Project and local people in Tan Xa commune.

114. The public consultation meeting conducted on 24-July-2020 focused on the following key topics:

- Engineering consultant introduced the Project "University of Science and Technology of Hanoi" and the location, technical features of the construction and area of influence.
- Environmental consultant presented requirement of the ADB SPS and the environmental policy, safety regulations of Vietnam, anticipated environmental impacts and respective mitigation measures (developed in the IEE), grievance redress mechanism for environment and resettlement problems.
- During the meeting, people presented their questions and comments on environmental issues. The Project Owner and consultants answered and explained all questions of the participants.

115. The participants are in general support the implementation of the project but also required PMU USTH and the Construction Supervision Consultant (CSC) should strictly monitor the contractor to ensure they will implement the mitigation measures as indicated in the IEE. The representative of FPT University also required the close collaboration between PMU USTH and USTH Management Board in the operation phase with FPT University to ensure the traffic safety in local roads of HHTP during construction phase, minimize the vibration impacts on the existing building of FPT Campus and the development of green growth in the operation phase for both universities. For local people in Tan Xa commune, as they live outside of HHTP and separated with the construction site of the project, their requirements are concentrated on the measures to minimize the dust and noise generated during material and waste transportation along the road (QL21A). The minute of public consultation are presented in Appendix 8.

B. INFORMATION DISCLOSURE

116. The disclosure of information on the Project aims to initiate a continuous process of information exchange and facilitate the participation of stakeholders throughout the Project

implementation process starting from the pre-construction phase, through information exchange meetings.

117. Disclosure of the IEE is part of the communication strategy for the parties involved. ADB SPS 2009 requires the borrower to provide relevant environmental information, including information from IEE and environmental monitoring report in a timely manner, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders. The published documents should be accessible both in terms of content and presentation.

118. The Project information board will also be installed at the main entrance of USTH construction site to inform people and prevent them to enter the construction site. At all the specific construction sites, safety and warning signs will be installed suitable with construction types to reduce the risks of accidents.

VIII. GRIEVANCE REDRESS MECHANISM

A. PURPOSE OF THE MECHANISM

119. During the preparation of the Project and the local EIA, information was disseminated to local people on the scope of the Project; environmental, social impacts and the grievance redress mechanism. Negative impacts of an environmental or social nature, or resettlement impacts, occur during the construction and operational phases. Any comments/ suggestions of local people will be solved quickly, transparently in accordance with the Law, particularly for people affected by the subproject. This grievance redress mechanism is classified by level and responsibilities of involved parties and will concluded by displaying the IEE at the HHTP office and Tan Xa Commune People Committee during the period when the IEE is disclosed on the ADB website.

B. GRIEVANCE REDRESS PROCESS

120. A well-defined grievance redress mechanism will be established to address affected persons grievances and complaints regarding environmental issues, land acquisition, compensation and resettlement in a timely and satisfactory manner. Even the land acquisition and compensation of the Project have been completed, all affected persons will still 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 be explained local EIA, this IEE and published in ADB and Project's websites.

121. Affected persons 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. Affected persons 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 affected persons.

122. Environmental Safeguards Officer (ESO) of Project Management Unit of USTH Project (PMU-USTH) who is responsible for handling complaints shall exercise all efforts to settle affected persons issues at the commune level through appropriate community consultation. All meetings shall be recorded and copies shall be provided to affected persons. A copy of the minutes of meetings and actions undertaken shall be provided to the EA, and ADB upon request.

123. The procedures for grievance redress are defined below and summarized in Figure 7. 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 Vietnam.

a. Step 1: Complaints from affected persons 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 affected persons to seek possible solutions.

b. Step 2: If no understanding or amicable solution can be reached or if no response is received from the Contractor, the affected persons can elevate the case to ESO of PMU USTH, which is responsible to work with the Contractor and find the most adequate resolutions.

c. Step 3: If no understanding or amicable solution can be reached again, the affected persons can appeal to HHTP Management Board/Tan Xa CPC. The Board/CPC 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 affected persons.

d. Step 4: If no understanding or amicable solution can be reached or if no response is received from the Board/CPC within 15 days from the day the complaint is received, affected persons can elevate the case to Thach That DPC. The DPC is expected to respond within 15 days upon receiving the affected persons appeal.

e. Step 5: If the affected person is not satisfied with the decision of Thach That DPC, or in the absence of any response, the affected persons can appeal to the Hanoi City People's Committee (HPC). The HPC will review and issue a decision on the appeal within 30 days from the day the complaint is received.

f. Step 6: If the affected person is still not satisfied with the decision of the HPC or in the absence of any response within the stipulated time, the affected persons, 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, CPC/DPC/HPC and the affected persons. If the affected person is still not satisfied the court's decision, the case may be elevated to the Hanoi City court. If the decision of the Hanoi City court is still unsatisfactory to the affected persons, they may bring the complaints to the Higher Court.

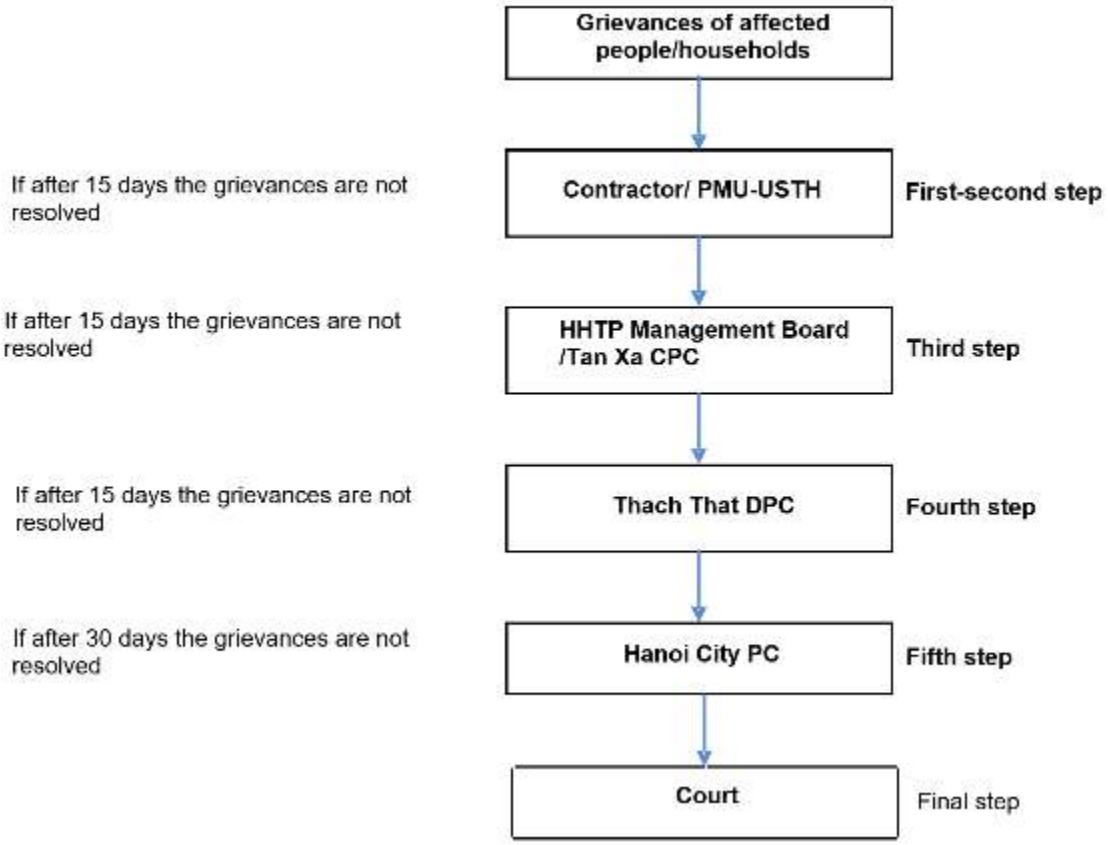

Figure 7 – Summary of GRM

124. The Executing Agency (EA), and the Implementing Agency (IA) will be responsible for checking the procedures and resolutions of grievances and complaints. Therefore, the EA must have expertise and experience in social and environmental issues associated with infrastructure developments. The IA/EA may recommend further measures to be taken to redress unresolved grievances. PMU-USTH Environmental Safeguard Officer (ESO) assisted by ESO of CSC will provide the necessary training to improve grievance procedures and strategy for the grievance committee members when required.

125. In cases where affected persons do not have the writing skills or are unable to express their grievances verbally, they are encouraged to seek assistance from the recognized local groups, NGOs, or other family members, village heads or community chiefs to have their grievances recorded in writing, and to have access to documentation, and any survey or valuation of assets, to ensure that where disputes do occur, all the details have been recorded accurately enabling all parties to be treated fairly. Throughout the grievance redress process, the responsible committee will ensure that the concerned affected persons are provided with copies of complaints and decisions or resolutions reached.

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

127. During the construction process, PMU-USTH must regularly inform the public about the construction activities and progress, measures to manage the environment and the operation of the information system.

IX. ENVIRONMENTAL MANAGEMENT PLAN

128. The purpose of the Environmental Management Plan (EMP) is to implement the identified mitigation and management measures to avoid, reduce, mitigate and compensate anticipated adverse environmental and social impacts, implement a monitoring and reporting plan and assure the compliance of the Project with Vietnamese relevant laws, ADB SPS 2009 and the International Finance Institution Environmental, Health and Safety Guidelines (IFC EHS Guidelines). The EMP includes the results of the public consultations, part of the IEE, and a clear definition of the responsibilities and budget for each task. External to the EMP is a Resettlement Plan that addresses in detail the economic displacement and necessary management efforts to minimize resettlement induced impacts.

A. IMPLEMENTATION ARRANGEMENTS

1. Executing Agency and Implementing Agency

129. Vietnam National Academy of Natural Science and Technology (VAST) through the Project Management Unit of USTH Project (PMU-USTH) is the executing agency and will have overall responsibility in project coordination and implementation of USTH Project.

2. Project Management and Implementation

130. PMU-USTH will function as project coordinating unit for the Project and has overall management, coordination, implementation, monitoring and evaluation and reporting functions of the Project. It will prepare annual work plan, budget and reports and; consolidate reports for the Project to comply with the requirements of VAST and ADB; and other reports requested by VAST management and ADB. It will be headed by a full-time project director and a deputy director appointed by the VAST Chairman. PMU-USTH will also be responsible for the management and disbursement of the project loan and government counterpart funds; coordination with ADB and other relevant government agencies and stakeholders; preparation of quarterly progress reports, semi-annual environmental monitoring report, midterm report, project completion reports, and ensure preparation and submission of annual audited project financial statements.

131. PMU-USTH will oversee the day-to-day implementation of the Project. Individual consultants will be hired to assist the PMU-USTH in managing the implementation of Project activities including: (i) preparation of detailed annual operation plan and budget; (ii) procurement and contract management of the civil works, equipment, goods and services contracts in accordance with the government and the ADB's requirements and procedures; (iii) recruitment of consulting services (firms and individual consultants) for the detailed engineering design, construction supervision consultant (CSC) including environmental safeguards officer, social safeguards, baseline and midterm studies/surveys, and financial audit; (iv) establishment and management of the advance account set-up at PMU-USTH for the ADB loan including preparation of withdrawal applications and maintenance of financial records; and (v) provide overall administrative support for finance, procurement and translation services for the project.

132. These organizations will be supported by a **construction supervision consultant (CSC)** which includes **a national environmental safeguard officer (CSC ESO)** who assists PMU-USTH in monitoring the implementation of the day-to-day EMP and supporting the contractor in preparing the monthly EMP implementation reports at the site along with the proposing improvements to the contractor for synthesis sent to PMU-USTH and maintaining contact with the local community.

133. **The contractor** will appoint an **Environment, Health and Safety Manager (EHS Manager)**. The EHS Manager will have overall responsibility for ensuring the implementation of the EMP by the contractor, development of Contractor Environmental Management Plan (CEMP) that outline the manner by which they will comply with the requirements of the IEE and EMP.

134. USTH will be the Operation Agency of the Project. Environment Department of HHTP and Department of Natural Resources and Environment of Hanoi will oversee the environmental management and take responsibility to monitor the compliance of within the HHTP and government environmental requirements during Project construction and operation phase.

135. **ADB** will conduct due diligence on environmental matters during the Project review missions. ADB will review the semi-annual environmental monitoring reports submitted by PMU-USTH and will disclose the reports on its website. If PMU-USTH fails to meet safeguards requirements described in the EMP, ADB will seek corrective measures and advise the EA on items in need of follow-up actions.

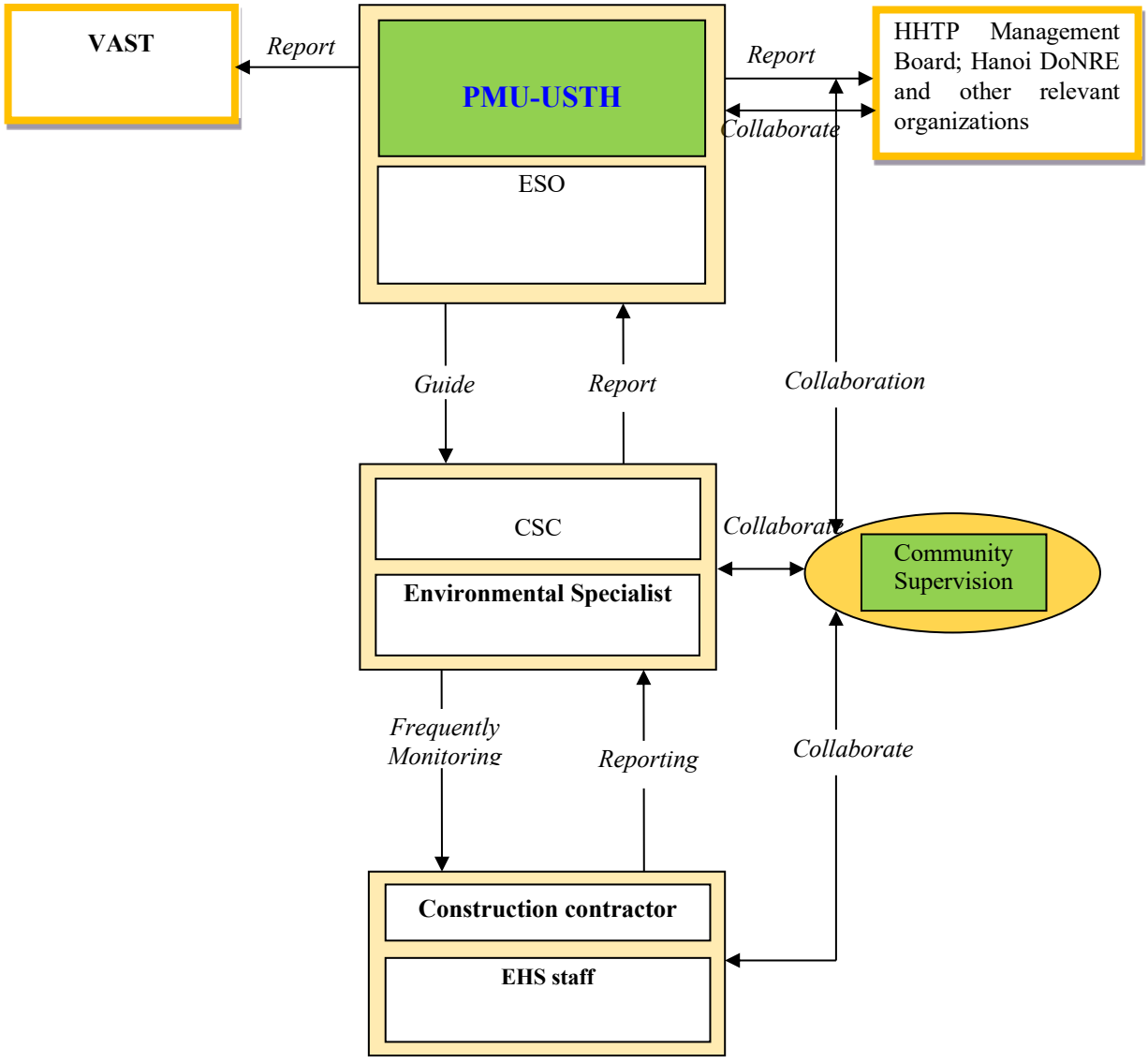

Figure 8 – Project Management Structure

Table 21 – Specific responsibilities for the implementation of the EMP

Organization	Responsibilities
PMU-USTH	- Assign a PMU-USTH ESO - Mobilize CSC and ensure the assignment of CSC ESO - Revise the IEE and EMP when needed - Obtain all necessary environmental clearances and permits for the Project, including the approval of local EIA

Organization	Responsibilities
	- Ensure that local EIA and IEE/EMP requirements are included in the bidding documents and civil works contracts - Coordinate development and delivery of the institutional capacity building program described in this EMP. - Require the contractor to develop CEMP in compliance with the EMP, and review and approve EMP. - Ensure the contractor implements the CEMP properly and in compliance with the requirements of the EMP and the relevant requirements and regulations of the GOV and ADB, and with any Project environmental or social loan covenants and assurances. - Identify any environmental issues during implementation and propose necessary corrective actions. - Undertake ongoing outreach and communications with Project stakeholders and affected persons. - Ensure implementation of the GRM such that complaints from affected persons are efficiently and effectively resolved. - Ensure implementation of the measures presented in the EMP through the CSC / contractor. - Prepare and submit semi-annual environmental monitoring reports during the construction phase and submit to ADB. - Review the annual environmental monitoring reports submitted by USTH during the operation phase and submit to ADB. - Disclose the relevant information from the semi-annual environmental monitoring reports to affected persons promptly upon the report's submission to ADB
CSC	- Assign a CSC ESO as well as Sanitary Engineer (Water Supply and Sewerage/Drainage) and Safety Engineer. - **The Safety Engineer will:** i. Coordinate with the contractor and require preparation and implementation of EHS plan; and ii. Ensure the safety of buildings, life and properties for contractor, workers and the community - **The CSC ESO will:** i. Review the updated IEE and EMP, if any; ii. Confirm that mitigation measures have been reflected in detailed engineering design; iii. Review Contractor Environmental Management Plan (CEMP) to ensure compliance with the EMP; iv. Provide technical assistance and support to PMU-USTH and contractors on mitigation measures and EMP implementation; v. Deliver the construction and operation phase capacity building programs to the staff of the PMU-USTH and contractor; vi. Ensure that environmental effect monitoring (sampling and analysis of air quality, noise level, surface/ground water quality, soil quality, etc.) according to the environmental monitoring plan of the EMP is conducted under the CSC budget during the construction phase; vii. Submit the result of the environment effect monitoring to PMU-USTH; viii. Assist main contractor to prepare monthly environmental reports on EMP implementation, including any spills, accidents, fires and grievances received, and action taken; ix. Conduct site inspections in compliance with the EMP; and x. Review and consolidate monthly reports prepared by contractor and assist PMU-USTH in preparing semi-annual environmental monitoring reports.
Main contractor	- Assign an Environment, Health and Safety (EHS) Manager - Prepare CEMP which detail the means by which the contractors will comply with EMP - Provide technical assistance and support to the contractor and PMU-USTH on mitigation measures and EMP implementation. - Conduct site inspections in compliance with EMP environmental monitoring plan.

Organization	Responsibilities
	- With the support by the CSC, prepare and submit to PMU-USTH monthly environmental reports on EMP implementation, including any spills, accidents fires and grievances received, and action taken
HHTP Management Board/ DONREs	- Implement EMP within their responsibilities and tasks - - Monitoring the compliance within their field.

3. Capacity building

136. Some strengthening programs are listed in Table 22. The calculation of costs for these programs is based on information from similar capacity building and training programs implemented in Vietnam, and in consultation with PMU-USTH and USTH.

Table 22 – Institutional strengthening and training program

Topic	Trainers	Participants	Contents	Frequency	Total budget	Fund source
Environmental Management during Construction	CSC ESO	PMU-USTH Contractors	Gov Laws and regulations ADB SPS 2009 EMP Implementation – construction phase IFC EHS Guidelines GRM	Before construction commencement and annually during construction	US$3,500	CSC Budget
Environmental Management during Operation	CSC ESO	PMU-USTH and USTH Operation staff	Gov Laws and regulations ADB SPS 2009 EMP Implementation – operation phase IFC EHS Guidelines	Prior to operation phase	US$2,500	CSC Budget

B. ENVIRONMENTAL MITIGATION

137. The potential impacts of the Project during pre-construction, construction and operation have been identified before under section 6, and are also presented in Table 20, a mitigation plan with assigned responsibilities and allocation of budget.

Table 23 - Detail Environmental Mitigation Plan

No.	Impact	Mitigation measure	Fund source	Responsibilities	
				Supervision	Implementation
Design and Pre-construction Phase					
1	Impacts of land clearance activities	- Announce the scope and duration of the works before commencement, to affected peoples and all relevant authorities. - Publicly announce the clearance and construction plans.	PMU-USTH	PMU-USTH	CSC-ESO
Construction Phase					
2	Impact of noise, dust, vibrations and emissions on air quality from construction activities	- Ensure that emissions do not result in pollutant concentrations that reach or exceed relevant ambient quality guidelines and standards by applying the most stringent legislated standards, whether they would be national or current WHO Air Quality Guidelines, or other internationally recognized sources. - Ensure that emissions do not contribute a significant portion to the attainment of relevant ambient air quality guidelines or standards. - Avoid, or when avoidance is not possible always use, whenever applicable and necessary, recommended prevention and control techniques for VOC emissions, particulate matter and ozone depleting substances. - Use tarpaulin to cover piled materials and avoid erosion and dispersion of materials. - Selecting equipment with lower sound power levels - Installing suitable mufflers on engine exhausts and compressor components. - Installing vibration isolation for mechanical equipment - Limiting the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas - Re-locating noise sources to less sensitive areas to take advantage of distance and shielding (at least 100m far from FPT University) - Siting permanent facilities away from community areas if possible - Taking advantage of the natural topography as a noise buffer during facility design - Reducing project traffic routing through community areas wherever possible - Developing a mechanism to record and respond to complaints	Included in the contract with the contractor	PMU-USTH; HHTP; Tan Xa CPC	Contractor

No.	Impact	Mitigation measure	Fund source	Responsibilities	
				Supervision	Implementation
		- After finishing a big part of a construction, the site will be cleaned immediately			
3	Impacts from construction vehicles and machinery regarding surface water and groundwater quality	- Regardless of the size or type of vehicle, machine owners / operators should implement the manufacturer recommended engine maintenance programs - Drivers should be instructed on the benefits of driving practices that reduce both the risk of accidents and fuel consumption, including measured acceleration and driving within safe speed limits. - All construction machinery is fully licensed and fully equipped with communication devices in order to avoid spillages to the soil or surface water. - Requiring the contractor to strictly use standard machines and follow the manuals - If a concrete mixer is used on site, the dry concrete mixing has to be conducted in a full covered area at least 500 m away from the FPT University. Do not place the concrete-mixer or the asphalt-mixer near the boundaries of the construction site. - The construction machinery will be checked according to the emission standards of Vietnam for CO, hydrocarbons and smoke. - Maintain a regular inspection and maintenance of all machinery to ensure good technical conditions. - Foresee that cleaning of machinery or construction vehicles is done in appropriate facilities to impede contamination from any hazardous substances to surface and groundwater. - Understand the quality, quantity, frequency and sources of liquid effluents in the Project area. This includes knowledge about the locations, routes and integrity of internal drainage systems and discharge points - Plan and implement the segregation of liquid effluents principally along industrial, utility, sanitary, and storm water categories, in order to limit the volume of water requiring specialized treatment. Characteristics of individual streams may also be used for source segregation.	Included in the contract with the contractor	PMU-USTH; HHTP; Tan Xa CPC	Contractor
4	Impacts from transportation of construction materials and waste	- Implementation of a traffic and noise/dust/vibration/emissions management plan (as part of the CEMP) that will include a purpose, scope, safe driving policy, roles and responsibilities (including roles for the contractor site EHS Manager, contractor workers, subcontractor workers and drivers); traffic management procedures; worksite requirements; community safety requirements; performance and monitoring; deliverables (site layout and traffic flow patterns and schedule; road safety rules and practices; training registries; vehicle inspection registries; records of road safety campaigns; monthly transportation performance reports; registry for accidents /incidents and major near misses.	Included in the contract with the contractor	PMU-USTH; HHTP; Tan Xa CPC	Contractor

No.	Impact	Mitigation measure	Fund source	Responsibilities	
				Supervision	Implementation
		- Establish maximum speeds for ALL vehicles associated with the Project and impose strict penalties for non-compliance (no exception). The transportation vehicles on road must run properly with a specified speed. - The transporting material vehicles must be covered to avoid dust falling on the road and impeding the circulation process of surrounding vehicles. - Frequently clean and reinforce the road if necessary. - Increase the awareness of workers by organizing capacity building sessions, in order to avoid or minimize adverse social impacts. - Regular maintenance of vehicles and use of manufacturer approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure. Employing safe traffic control measures, including road signs and flag persons to warn of dangerous conditions.			
5	Impacts from generation of hazardous and non-hazardous solid waste	- Implement waste management plan and wastewater management plan (as part of CEMP). - The waste collection from construction works should be done at designated points only. The waste collection points should be prepared for different types of wastes: construction, hazardous, non-hazardous and domestic solid wastes. - Clean the collection points every day. - Arrange an adequate ventilation system in the area. - Have procedures in place that ensure compliance with local laws and international requirements applicable to the transport of hazardous materials - The procedures for transportation of hazardous materials should include: ✓ Proper labelling of containers, including the identification and quantity of the contents, hazards, and shipper contact information ✓ Providing a shipping document (e.g. shipping manifest) that describes the contents of the load and its associated hazards in addition to the labelling of the containers. The shipping document should establish a chain-of-custody using multiple signed copies to show that the waste was properly shipped, transported and received by the recycling or treatment/disposal facility ✓ Ensuring that the volume, nature, integrity and protection of packaging and containers used for transport are appropriate for the type and quantity of hazardous material and modes of transport involved. ✓ Ensuring adequate transport vehicle specifications. ✓ Training employees involved in the transportation of hazardous materials regarding proper shipping procedures and emergency procedures. ✓ Using labelling and placarding (external signs on transport vehicles), as required - Providing the necessary means for emergency response on call 24 hours/day	Included in the contract with the contractor	PMU-USTH; HHTP; Tan Xa CPC	Contractor

No.	Impact	Mitigation measure	Fund source	Responsibilities	
				Supervision	Implementation
6	Impacts from generation of domestic/ construction wastewater	- Separation of wastewater from sources to ensure compatibility with selected treatment option, for instance septic system can only accept domestic sewage. - Separation and pre-treatment of oil and grease containing effluents (e.g. use of a grease trap) prior to discharge into sewer systems. - Construction wastewater will be directed to temporary detention and settling pits at the Project site, located away from Tan Xa lake and sized suitable with the demands. - Portable or constructed toilets must be provided on site for construction workers and must be emptied in an appropriate manned into an existing offsite septic system.	Included in the contract with the contractor	PMU-USTH; HHTP; Tan Xa CPC	Contractor
7	Impacts of occupational health and safety	- Implement an occupational health and safety management plan (as part of the CEMP) to be prepared according to Section 2 on Occupational Health and Safety from the IFC EHS General Guidelines, IFC EHS HCF Guidelines and IFC EHS THD Guidelines. - IFC EHS Guidelines indicate that Employers and supervisors are obliged to implement all reasonable precautions to protect the health and safety of workers. This section provides guidance and examples of reasonable precautions to implement in managing principal risks to occupational health and safety on: + General Facility Design and Operation: Integrity of workplace structures, severe weather and facility shutdown, workspace and exit, fire precautions, lavatories and showers, potable water supply, clean eating area, lighting, safe access, first aid, air supply, work environment temperature. + Communication and Training: OHS training, visitor orientation, new task employee and contractor training, basic OHS training, area signage, labelling of equipment, communicate hazard codes. + Physical Hazards: rotating and moving equipment, noise, vibration, electrical, eye hazards, welding/Hot work, Industrial vehicle driving and site traffic, working environment temperature, ergonomics, repetitive motion, manual handling, working at heights, illumination. + Chemical Hazards: air quality, fire and explosion; corrosive, oxidizing and reactive chemicals, asbestos containing materials. + Biological Hazards + Radiological Hazards + Personal Protective Equipment (PPE) + Monitoring: accidents and diseases monitoring - More in detail, some guidelines are essential: ensure the living conditions for workers like facilities for resting, clean water, food, accommodation, and others meet international standards for worker accommodations to prevent communicable, food-borne, water-borne and vector-borne illnesses. - Full PPE in order to avoid the negative effects on health, prevent diseases.	Included in the contract with the contractor	PMU-USTH; HHTP; Tan Xa CPC	Contractor

No.	Impact	Mitigation measure	Fund source	Responsibilities	
				Supervision	Implementation
		- When executing works in height, transporting, handling and installing the machinery and equipment, workers should be equipped with all means of PPE such as protective helmets, masks, reflective clothing, lights and flags. - Provide a workforce health/emergency services on site.			
8	Covid19 disease	- Check the health certification of worker before joining the site and hold briefing at the beginning to discuss on Covid-19 virus. - Assign focal point to implement and monitor prevention measures (appoint medical staff) - Restrict entry to all visitors during the epidemic - If a worker or any other individua feels ill, they must stay home. - Take the temperature of all personnel and ensure they wash their hands before entering the construction site. - At the construction site, all people must: + Avoid handshakes, hugs and nay other forms of close contact + Maintain a minimum distance of 2 meters at all times + Avoid touching face without washing hands - The contractor must provide in sufficient quality liquid soap, alcohol-based gel, dry hand-wash agent, disposable towels and tissues; located stations for hand washing at various point of the site; closed containers or bags for disposable towels and tissues; masks, disposable gloves and protective glasses; remote or tape thermometers.	Included in the contract with the contractor	PMU-USTH; HHTP; Tan Xa CPC	Contractor
Operation phase					
12	Impacts from noise, dust, emissions from vehicles going in and out of USTH and area of influence affecting the air quality and risk of traffic safety	- Install speed limitation sign board and monitor the compliance with speed limit at the university area. - Increase the awareness of staff and students by organizing capacity building sessions. - Regular maintenance of vehicles and use of manufacturer approved parts. - Install safe traffic control measures, including road signs, humps, especially in front of the USTH to warn of dangerous conditions.	USTH Operation Budget	USTH	USTH
13	Impacts of solid/liquid waste, both hazardous and non-hazardous wastes	- The compulsory hazardous waste management shall comply with provisions under Circular No. 36/2015/ TT-BTNMT of MONRE, regulating on hazardous waste management. - Review of new waste sources during planning, siting, and design activities, including during equipment modifications and process alterations, to identify expected waste generation, pollution prevention opportunities, and necessary treatment, storage, and disposal infrastructure. - Hazardous waste storage location: Waste storage area D01 - Solid waste management is built with cement plaster bricks with signs of hazardous waste as prescribed in Circular No. 36/2015/TT-BTNMT to store hazardous waste. - Temporary storage of solid waste according to provisions of Circular 36/2015/TT-BTNMT:	USTH Operation Budget	USTH	USTH

No.	Impact	Mitigation measure	Fund source	Responsibilities	
				Supervision	Implementation
		+ Floors in hazardous waste storage area must be tight, not penetrated and can prevent rainwater from overflowing in from outside. + Having measures to isolate from other types or groups of hazardous wastes capable of reacting chemically with each other. + Hazardous waste storage areas must guarantee not to spill liquids outside when there is a leakage or spillage incidents. Accordingly, the waste storage area is built with 20cm bricks high to avoid spillage to outside area. - Substituting raw materials or inputs with less hazardous or toxic materials, or with those where processing generates lower waste volumes. - Minimizing hazardous waste generation by implementing stringent waste separation to prevent the commingling of non-hazardous and hazardous waste to be managed. - Provide adequate ventilation where volatile wastes are stored.			

1. Environmental monitoring

138. The environmental monitoring plan for the EMP (Table 20), focuses on all three phases (pre-construction, construction, operation) of the Project and it has a purpose to determine the effectiveness of the impact mitigations, and to document any unexpected positive or negative environmental impacts of the Project.

139. The environmental monitoring plan will be carried out by the CSC / Contractor and under the responsibility of PMU-USTH during construction phase and by USTH during operation phase. PMU-USTH ESO will function to coordinate and provide logistical support as needed for construction phase and USTH for the operational phase.

140. After the pre-construction and construction works are completed, the potential impact of the operations activities will be supervised by USTH.

141. The environmental standards of Vietnam should be applied for guidance and IFC EHS Guidelines should be followed to supplement standards that are not provided by the GOV.

Table 24 - Environmental Monitoring

Performance and Impact Monitoring					
Environmental Indicators	**Location**	**Monitoring media and reporting**	**Frequency & Verification**	**Responsible to Monitor**	**Fund source**
Design and Pre-construction Phase					
Land clearance	Project site	Field work, community consultation and information and other plans	Once before construction start	PMU-USTH	PMU-USTH budget
Construction Phase					
Air quality (dust, PM_{10}, CO, NO_x, SO_x), noise level	Construction site	Field works with analysis approved by DoNRE. (Include visual observations of dust and noise from the contractor and reported by people). Environmental Monitoring	Visual inspection: Weekly. Monitoring: Quarterly during construction	CSC	CSC budget
Surface water quality (pH, TSS, DO, BOD, COD, oil and grease, E.coli and other parameters if necessary	Construction site	Field works with analysis methods approved by DoNRE	Quarterly during construction or more in case issues raised	CSC	CSC budget
Wastewater quality (pH, TSS, DO, BOD, COD, oil and grease, E.coli and other parameters if necessary	Construction site and worker camps	Field works with analysis methods approved by DoNRE Environmental Monitoring Report	Quarterly during construction	CSC	CSC budget
Soil quality (As, Cd, Pb, Cr, Cu, Zn, oil and grease, TN, TP)	Construction site	Field works with analysis methods approved by DoNRE Environmental Monitoring Report	In case of soil contamination	CSC	CSC budget
Domestic and Construction Wastes	Waste collection and disposal	Visual observation and reporting	Weekly	PMU-USTH/ CSC	PMU/ CSC budget
Occupational Health and Safety	Transportation route from and to Project site	Recurring reports of contractor	Continuously/ Daily	PMU-USTH/ CSC	PMU/ CSC budget
Mitigation of Dust	Every location with construction activities	Recurring reports of contractor	Weekly when there are construction activities	PMU-USTH/ CSC	PMU/ CSC budget
Mitigation of wastewater (detention ponds, septic systems)	Construction sites, worker camps	Recurring reports of contractor	Monthly	PMU-USTH/ CSC	PMU/ CSC budget
Operation Phase					
Impact on traffic in HHTP and from non-hazardous solid waste	USTH site and surrounding within HHTP	Ongoing, random	Frequently and randomly	USTH	USTH operation budget

142. 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.

143. Performance monitoring is essential to assess the overall performance of EMP. A performance monitoring system with performance monitoring indicators is usually built by the EA for all phases of development of USTH Project. These should be updated with the evolution of the Project, if necessary (Table 21)

Table 25 – Performance Monitoring Indicators

Concerns	Indicator	Goal
Environment	Water quality	Compliance with IFC EHS Guidelines, environmental laws and regulations and QCVN 08-MT:2015 on surface water quality. Wastewater management plan in place.
	Air quality	Compliance with IFC EHS Guidelines, environmental laws and regulations and QCVN 05:2013 on ambient air quality; QCVN 26:2010 on noise; QCVN 27:2010 on vibration. Waste avoidance, Public Transports are primarily used inside the Project area and surroundings.
	Soil quality	Compliance with environmental laws and regulations and QCVN 03-MT:2015 on soil quality. Construction and operations are done without spillages of any kind.
	EMP Compliance and Update	EMP is strictly followed by the Contractor and Stakeholders participate in IEE monitoring and updates
	Raw materials and Hazardous wastes	Implement program with procedures to dispose, collect and store all the wastes
Community Consultation, Capacity Building and Trainings	The IA training	Up to last stage of construction, the compulsory courses will be defined, implemented and have total attendance
	Community consultation and disclosure of information	Meetings with stakeholders to participate in IEE. Stakeholders are invited to continue consultations and to introduce mechanisms to resolve complaints
	Education Programs	Aiming to improve the education level in medicine related courses and teach according to international levels of expertise.
Social Impacts	Public safety occupational health	Compliance with guidelines on safety and occupational health of the Government of Vietnam and ADB SPS 2009
	Physical cultural resources	No valuable physical cultural resources, or relics unearthed have damaged value
	Traffic	Zero accidents/injuries/fatalities; minimize disruption, blockage

2. Emergency Response Plan

144. The main type of emergency cases covered by the subproject are (i) spills: transportation accident of vehicles; spills during material handling operations or transport; overflow of contaminated water; spilling contents of infectious solid wastes… (ii) fire and explosion: machines, property or waste container; (iii) personal injury: traffic accident, work accident (heart attack, serious fall, severe injury...) or contact with chemical; (iv) natural disaster: flash flood, landslide, tropical storms...

145. Emergency Control Team (ECT): In construction phase, the Contractor will establish an ECT from the worker at site. The Team will have the responsibility of providing first response actions in an emergency case. The tasks of the Team including organizing the necessary resources, communications, and evacuation of people and implement corrective actions that may be necessary to return the emergency case back to normal. All member of the team should be trained to implement suitable actions for certain emergency case. Team member should also be

physically capable; have certain leadership qualities and command authorities; have clear diction; good decision-making skills; and be able to be remaining calm under pressure.

146. With the four types of emergency case listed in paragraph 124 above, ECT will have to control and response as follow:

- In major emergency case, the role of the ECT is to ensure that the damage or danger caused by the emergency is controlled or minimized until external professional aid arrives. The Team leader will assign team member for appropriate case.

- Rescue and first aid: One member of the Team will have main response for this action called First Aid Officer. The task is render assistance in removing any injured person from the accident location and to provide effective management of injuries until the Ambulance arrives on-site.

- Communications: The task of Communication Officer is monitor communication and facilitates the effective information exchange between construction site and the suitable State Organizations (Polices, Ambulance, Fire workers…). The communication methods could be air horn or alarm gong (warning system), internal phone system (walkie-talkie…) and mobile phone.

147. The ECT Leader is response for exchange information with external sources (people in surrounding communes, media…)

- Traffic Control: The Traffic Control Officer will be responsible for ensuring the free flow of traffic at the site and adjacent area. He/she may be involved in remove block vehicle/ object.

- Fire detection: Smoke detectors are fitted in the construction and worker camps. Smoke detectors are connected as part of an early warning system. People would raise a Site alarm whenever recognized fire. Members of ECT should be trained in the use of advanced fire-fighting techniques and equipment including the use of fire hydrants, water cannons, fire extinguishers and hose reels.

- Site evacuation: The Team Leader will determine and control the evacuation of the site. When emergency grow over the manageable level, the Team leader will direct team member to evacuate people from the site. The Team Leader should have the on-site people checklist to mark names and ensure all people have been safely evacuated.

148. When an emergency case has been identified, the Site Leader/ Contractor Director shall immediately be informed. For certain case, the State services shall be contacted by calling 113 (Police), 114 (Fire worker) or 115 (Ambulance). An information checklist of the ECT and external emergency services is required to present throughout the construction site.

3. Implementation Schedule, EMP costs

149. The expected Project duration is 3 years, from Quarter III/2020 to Quarter II/2023.

150. The funds for implementation of mitigation measures during pre-construction phase, include compensation, resettlement and site clearance is a separate package and has been completed.

151. During the construction phase, funding for the implementation of mitigation measures falls under the responsibility of the contractor and is specified in the construction dossiers from construction budget. The cost of construction mitigation measures is included in the construction contract, which is estimated at 1% of the construction contract. The budget for the environmental

monitoring program during this period was estimated and will be implemented by the CSC in the CSC budget.

152. During the operation period, the funds shall be managed by the Operation Agency which is USTH. The cost of mitigation measures in operation management is included in the cost of operating the facility.

C. REPORTING

153. PMU-USTH will submit the following reports to ADB:

- *Environmental monitoring reports:* Environmental monitoring reports will cover the status of EMP implementation in terms of required mitigation measures for different phases of the subproject, results of environmental effects monitoring (air quality, noise and surface water quality), necessary remedial actions to effectively address negative environmental impacts due to subproject implementation, status of environmental capacity building activities as well as documentation of complaints received and corresponding action/resolution. The environmental monitoring reports will be submitted to ADB semi-annually during the construction phase and 1 time after completion of construction.

Table 26 - Reporting procedures

Project Phase	Type of Report	Frequency	Responsibility	Submitted to Whom
Construction	**Environmental Performance Report** indicating compliance with EMP and monitoring results at the contractor site	Monthly	Construction contractor	CSC
	EMP Compliance Report indicating compliance with subproject EMP and monitoring results	Semi-annually during pre-construction and construction phase	CSC, ESO/ PMU-USTH	ADB
	EMP Compliance Report: Operation indicating compliance with subproject EMP commitments during operation	1 time after 1 year of operation	USTH	ADB

X. CONCLUSIONS AND RECOMMENDATIONS

154. The initial inspection of the USTH preliminary design, final location and environmental conditions on site showed that the foreseeable environmental impacts are minor and temporary with main impact of pollutants generated in the process of construction. These impacts can be minimized and managed. The construction site is located inside the planned area for hi-tech development, far from any protection area. Most of the area is land for industrial planning and already be cleared.

155. IEE concluded that the description of the Project's feasibility design combined with the available information on the environmental factors affected is sufficient to determine the scope of the environmental impact of the Project.

156. No further or additional impact assessment is considered necessary at this stage and the Project can be classified as Category B for Environment under ADB SPS 2009. With measures in place, environmental impacts of the Project should be manageable and will not result in any residual impacts, which are above accepted environmental standards.

XI. LIST OF APPENDICES

Appendix 1: Photos of the Project area

Appendix 2: Source of Reference Information

Appendix 3: Environmental Mitigation Measures to Include into Bidding Documents

Appendix 4: Estimated construction material volume of the Project

Appendix 5: Proposed Project vehicles and machines

Appendix 6: Air quality monitoring result

Appendix 1: Photos of the Project area

Tree line between USTH - FPT university

Current condition of Project area

Main road in front of USTH

Under construction road adjacent to USTH

Part of Tan Xa lake, inside Project area

Duck farm in Tan Xa lake, outside of Project area

Appendix 2: Source of reference information

1. Project Feasibility Study report
2. Environmental baseline data from ASEC company (under the contract with PMU-USTH)
3. Local Environmental Impact Assessment Report – Draft version November 2019
4. Project Involuntary Resettlement Report

Appendix 3: Environmental Mitigation Measures to Include into Bidding Documents

Construction activities generate noise, dust, vibration	- Ensure that emissions do not result in pollutant concentrations that reach or exceed relevant ambient quality guidelines and standards by applying the most stringent legislated standards, whether they would be national or current WHO Air Quality Guidelines, or other internationally recognized sources. - Ensure that emissions do not contribute a significant portion to the attainment of relevant ambient air quality guidelines or standards. - Avoid, or when avoidance is not possible always use, whenever applicable and necessary, recommended prevention and control techniques for VOC emissions, particulate matter and ozone depleting substances. - Use tarpaulin to cover piled materials and avoid erosion and dispersion of materials. - Selecting equipment with lower sound power levels - Installing suitable mufflers on engine exhausts and compressor components - Installing vibration isolation for mechanical equipment - Limiting the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas - Re-locating noise sources to less sensitive areas to take advantage of distance and shielding (far from FPT University) - Siting permanent facilities away from community areas if possible - Taking advantage of the natural topography as a noise buffer during facility design - Reducing project traffic routing through community areas wherever possible - Developing a mechanism to record and respond to complaints - After finishing a big part of a construction, the site will be cleaned immediately
Construction vehicles and machinery impacts on surface water and groundwater quality	- Regardless of the size or type of vehicle, machine owners / operators should implement the manufacturer recommended engine maintenance programs - Drivers should be instructed on the benefits of driving practices that reduce both the risk of accidents and fuel consumption, including measured acceleration and driving within safe speed limits. - All construction machinery is fully licensed and fully equipped with communication devices in order to avoid spillages to the soil or surface water. - Requiring the contractor to strictly use standard machines and follow the manuals - If a concrete mixer is used on site, the dry concrete mixing has to be conducted in a full covered area at least 500 m away from the FPT University. Do not place the concrete-mixer or the asphalt-mixer near the boundaries of the construction site. - The construction machinery will be checked according to the emission standards of Vietnam for CO, hydrocarbons and smoke. - Maintain a regular inspection and maintenance of all machinery to ensure good technical conditions. - Foresee that cleaning of machinery or construction vehicles is done in appropriate facilities to impede contamination from any hazardous substances to surface and groundwater. - Understand the quality, quantity, frequency and sources of liquid effluents in the Project area. This includes knowledge about the locations, routes and integrity of internal drainage systems and discharge points - Plan and implement the segregation of liquid effluents principally along industrial, utility, sanitary, and storm water categories, in order to limit the volume of water requiring specialized treatment. Characteristics of individual streams may also be used for source segregation.
Transportation of construction materials and waste	- Implementation of a traffic and noise/dust/vibration/emissions management plan (as part of the CEMP) that will include a purpose, scope, safe driving policy, roles and responsibilities (including roles for the contractor site EHS Manager, contractor workers, subcontractor workers and drivers); traffic management procedures; worksite requirements; community safety requirements; performance and monitoring; deliverables (site layout and traffic flow patterns and schedule; road safety rules and practices; training registries; vehicle inspection registries; records of road safety campaigns; monthly transportation performance reports; registry for accidents /incidents and major near misses. - Establish maximum speeds for ALL vehicles associated with the Project and impose strict penalties for non-compliance (no exception). The transportation vehicles on road must run properly with a specified speed. - The transporting material vehicles must be covered to avoid dust falling on the road and impeding the circulation process of surrounding vehicles. - Frequently clean and reinforce the road if necessary. - Increase the awareness of workers by organizing capacity building sessions, in order to avoid or minimize adverse social impacts. - Regular maintenance of vehicles and use of manufacturer approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure. Employing safe traffic control measures, including road signs and flag persons to warn of dangerous conditions.
Generation of hazardous and non-hazardous solid waste	- Implement waste management plan and wastewater management plan (as part of CEMP). - The waste collection from construction works should be done at designated points only. The waste collection points should be prepared for different types of wastes: construction, hazardous, non-hazardous and domestic solid wastes. - Clean the collection points every day. - Arrange an adequate ventilation system in the area. - Have procedures in place that ensure compliance with local laws and international requirements applicable to the transport of hazardous materials - The procedures for transportation of hazardous materials should include: ✓ Proper labelling of containers, including the identification and quantity of the contents, hazards, and shipper contact information ✓ Providing a shipping document (e.g. shipping manifest) that describes the contents of the load and its associated hazards in addition to the labelling of the containers. The shipping document should

	establish a chain-of-custody using multiple signed copies to show that the waste was properly shipped, transported and received by the recycling or treatment/disposal facility ✓ Ensuring that the volume, nature, integrity and protection of packaging and containers used for transport are appropriate for the type and quantity of hazardous material and modes of transport involved. ✓ Ensuring adequate transport vehicle specifications. ✓ Training employees involved in the transportation of hazardous materials regarding proper shipping procedures and emergency procedures. ✓ Using labelling and placarding (external signs on transport vehicles), as required - Providing the necessary means for emergency response on call 24 hours/day
Generation of domestic/ construction wastewater	- Separation of wastewater from sources to ensure compatibility with selected treatment option, for instance septic system can only accept domestic sewage. - Separation and pre-treatment of oil and grease containing effluents (e.g. use of a grease trap) prior to discharge into sewer systems. - Construction wastewater will be directed to temporary detention and settling pits at the Project site, located away from Tan Xa lake and sized suitable with the demands. - Portable or constructed toilets must be provided on site for construction workers and must be emptied in an appropriate manned into an existing offsite septic system.
Habitat loss, disturbance by human presence and altered food availability on local environment and biota	- Reducing noise, dust, vibration and traffic from construction activities as much as possible - Preserve existing vegetation and trees as much as possible. - Update IEE and EMP if necessary, with any arising consideration on new biota or vegetation. - Do not cut down any trees or vegetation outside the construction area
Extract materials at quarry/borrow site	- Prioritize use of existing quarry sites of suitable materials with highest ratio between extractive capacity (both in terms of quality) and loss of natural state. - Procure materials only from validated quarries (with environmental licenses from Hanoi DoNRE). Ensure borrow pits are left in a tidy state with stable side slopes and proper drainage.
Occupational health and safety	- Implement an occupational health and safety management plan (as part of the CEMP) to be prepared according to Section 2 on Occupational Health and Safety from the IFC EHS General Guidelines, IFC EHS HCF Guidelines and IFC EHS THD Guidelines. - IFC EHS Guidelines indicate that Employers and supervisors are obliged to implement all reasonable precautions to protect the health and safety of workers. This section provides guidance and examples of reasonable precautions to implement in managing principal risks to occupational health and safety on: + General Facility Design and Operation: Integrity of workplace structures, severe weather and facility shutdown, workspace and exit, fire precautions, lavatories and showers, potable water supply, clean eating area, lighting, safe access, first aid, air supply, work environment temperature. + Communication and Training: OHS training, visitor orientation, new task employee and contractor training, basic OHS training, area signage, labelling of equipment, communicate hazard codes. + Physical Hazards: rotating and moving equipment, noise, vibration, electrical, eye hazards, welding/Hot work, Industrial vehicle driving and site traffic, working environment temperature, ergonomics, repetitive motion, manual handling, working at heights, illumination. + Chemical Hazards: air quality, fire and explosion; corrosive, oxidizing and reactive chemicals, asbestos containing materials. + Biological Hazards + Radiological Hazards + Personal Protective Equipment (PPE) + Monitoring: accidents and diseases monitoring - More in detail, some guidelines are essential: ensure the living conditions for workers like facilities for resting, clean water, food, accommodation, and others meet international standards for worker accommodations to prevent communicable, food-borne, water-borne and vector-borne illnesses. - Full PPE in order to avoid the negative effects on health, prevent diseases. - When executing works in height, transporting, handling and installing the machinery and equipment, workers should be equipped with all means of PPE such as protective helmets, masks, reflective clothing, lights and flags. - Provide a workforce health/emergency services on site.
Physical cultural resources	- Construction activities will be immediately suspended if any physical cultural resources are encountered and can only be resumed after assuring these resources are conserved and avoidance of destroying and damaging is assured by providing for the use of “chance find” procedures that include a pre-approved management and conservation approach for materials that may be discovered during project implementation. Construction activities can resume only after thorough investigation and with the permission of the local Cultural Heritage Bureau

Appendix 4: Estimated construction material volume of the Project

Soil volume (cubic meter)

No	Construction item	Excavation volume	Filling volume
1	Internal transportation system	65,170	28,994
2	Water supply system	13,541	12,404
3	Rainwater discharge system	59,544	30,799
4	Drainage system	25,953	34,637
5	Bridge system (from the bridge No.1 to bridge No.5)	608	178
	Total	**164,816**	**107,012**

Main construction item

No.	Item	Unit	Volume
I	**Item: Internal road construction**		
1	**Road base**		
-	Base excavation	m^3	39,873.15
-	Surplus soil excavation	m^3	6,270.73
-	Soil frame excavation	m^3	19,026.74
-	Filling up to K95 ratio	m^3	12,768.15
-	Filling up to K98 ratio	m^3	16,226.45
2	**KC1 Road surface**		*20,704.37*
-	*S route surface 1, 1a*		*13,875.00*
-	*S car park along route 1*		*1,650.00*
-	*S car park at the main gate*		*1,309.57*
-	*S main gate*		*3,869.80*
-	Bitumen concrete 12.5 - 5cm in thickness	m^2	20,704.37
-	Bitumen spray 0.5kg/m^2	m^2	20,704.37
-	Bitumen concrete 19 - 7cm in thickness	m^2	20,704.37
-	Bitumen spray 1kg/m^2	m^2	20,704.37
-	Macadam Grade I -15cm in thickness	m^3	3,213.43
-	Macadam Grade II - 15cm in thickness	m^3	3,294.27
3	**KC2 Road surface**		*4,554.39*
-	Paved stone 5-10cm	m^2	4,554.39
-	Soft cement B7.5 - 2cm in thickness	m^3	91.09
-	Nylon layer	m^2	4,554.39
-	Cement concrete B22.5 - 18cm in thickness	m^3	819.79
-	Macadam Grade I - 18cm in thickness	m^3	883.82
-	Length of heat expansion space	m	77.00
-	Length of heat shrink space	m	1,060.50

No.	Item	Unit	Volume
-	Length of vertical space	m	889.33
4	**KC3 Road surface**		*25,258.98*
-	Cement concrete B22.5 - 18cm in thickness	m^3	4,546.62
-	Nylon layer	m^2	25,258.98
-	Macadam Grade I - 18cm in thickness	m^3	4,811.90
-	Length of heat expansion space	m	423.50
-	Length of heat shrink space	m	5,890.50
-	Length of vertical space	m	3,684.56
5	**Pavement**	m^2	*3,463.00*
-	Fake stone surface concrete brick 40x40x4.5cm	m^2	3,463.00
-	Nylon layer	m^2	3,463.00
-	Cement concrete B12.5 - 8cm in thickness	m^3	277.04
-	Soft cement B7.5 - 2cm in thickness	m^3	1,038.90
-	Cement concrete curb M22.5 making at site	m^3	866.98
-	*Length of curb Grade 1*	*m*	*6,370.18*
-	*Length of curb Grade 2*	*m*	*6,370.18*
-	*Cement concrete curb Grade 1*	m^3	*562.49*
-	*Cement concrete curb Grade 2*	m^3	*304.49*
5	**Car park**		
-	Road surface area	m^2	1,309.57
-	Cement concrete curb M22.5 making at site Grade 3	m^3	120.79
-	*Length of curb Grade 3*	*m*	*1,411.05*
-	*Curb Grade 3*	m^3	*120.79*
6	**Main gate**		
-	Road surface area	m^2	3,869.80
-	Cement concrete curb M22.5 making at site Grade 3	m^3	50.33
-	*Length of curb Grade 3*	*m*	*588.00*
-	*Curb Grade 3*	m^3	*50.33*
7	**Traffic safety**		
a	Sign		
-	Triangle sign	Sign	6.00
-	Auxiliary sign (1.26x0.54) m	Sign	2.00
-	Rectangle sign (2mx1.6m)	Sign	2.00
-	Round sign	Sign	4.00
-	Excavation for traffic sign installation	m^3	11.76
-	Concreting sign foundation	m^3	2.80

No.	Item	Unit	Volume
-	Concreting base layer of sign foundation	m^3	0.49
-	Refilling sign foundation	m^3	8.47
b	Paint strip	m^2	1,944.95
II	**Item: Levelling**		
1	Excavation area	m^2	188,955.60
2	Filling area	m^2	73,163.11
3	Excavation volume	m^3	147,083.20
4	Filling volume	m^3	38,992.96
III	**Item: Rainwater discharge**		
-	Fine sand ML=0,7-1,4	m^3	103
-	Fine sand ML=1,5-2,0	m^3	187
-	Foundation sand	m^3	35.363
-	Yellow sand	m^3	2.773
-	Yellow sand for concreting (clean sand)	m^3	588
-	Manhole cover B500	m	2858
-	Open drainage B2000	m	1504
-	Culvert 1500x1500	m	131
-	Cement concrete tube D600	m	564
-	Cement concrete tube D800	m	841
-	Cement concrete tube D1000	m	463
-	Cement concrete tube D1200	m	40.9
-	Manhole Grade B500	piece	6
-	Manhole Grade D600	piece	12
-	Manhole Grade D800	piece	24
-	Manhole Grade D1000	piece	8
-	Discharge gate D600	piece	2
-	Discharge gate D800	piece	4
-	Discharge gate D1000	piece	4
-	Discharge gate D1200	piece	1
-	Discharge gate B1500	piece	3
IV	**Item: Wastewater drainage**		
-	Fine sand ML=0.7-1.4	m^3	33
-	Foundation sand	m^3	144
-	Yellow sand	m^3	237
-	Yellow sand for concreting (clean sand)	m^3	355
-	Fine sand ML=0.7-1.4	m^3	33
-	Wastewater tube HDPE (PN6) - D300	m	2,489

No.	Item	Unit	Volume
-	Manhole Grade 1	Manhole	18
-	Manhole Grade 2	Manhole	27
-	Manhole Grade 3	Manhole	55
-	Wastewater Treatment Station 1	m^3/day	400
-	Wastewater Treatment Station 2	m^3/day	1,100
V	**Item: Water supply**		
-	HDPE tube D32 PN12.5	m	110
-	HDPE tube D50 PN12.5	m	583
-	HDPE tube D80 PN12.5	m	106
-	HDPE tube D110 PN12.5	m	1840
-	HDPE tube D150 PN12.5	m	648
-	HDPE tube D200 PN12.5	m	365
-	Valve hole Grade 1	Hole	7
-	Valve hole Grade 2	Hole	11
-	Valve hole Grade 3	Hole	3
-	Valve hole Grade 4	Hole	1
-	Valve hole Grade 5	Hole	7
-	Fire-fighting Station	Station	19
-	Air depressed valve	Hole	3
-	Dust depressed valve	Hole	2
-	Meter hole	Hole	1
-	BB Valve Dn100	Piece	21
-	BB Valve Dn150	Piece	7
-	BB Valve Dn200	Piece	4
VI	**Item: Electric system**		
-	Medium voltage box RMU 3 chambers	Box	5
-	Medium voltage RMU 4 chambers	Box	8
-	24kv cable	m	9,244.80
-	HDPE pipe D300 cover	m	9,244.80
-	Connection box for medium voltage cable	Set	13
-	Auxiliary equipment	Set	13
-	Transformer	Unit	21
-	Generator	Unit	2
-	Outside lightning box	Unit	14
-	Separated lightning bulb 107w	Set	175
-	Electric pole with twin light bulbs 4.7m	Set	62
-	Lightning cable CU/XLPE/DSTA/PVC (4x10) mm	m	13500
-	Lightning cable CU/XLPE/DSTA/PVC (4x6) mm	m	20599

No.	Item	Unit	Volume
VII	**Item: Communication system**		
-	Light electric box ELV	Unit	13.00
-	Cover tube for communication cable PVC	m	4263.36

Appendix 5: Proposed Project Vehicles and Machines

No	Equipment / Machines	Unit	Quantity	Condition
1	Diesel Water Pump 30CV	Pump	02	Used, 70%
2	Wheel compaction machine 25T	Machine	04	Used, 70%
3	Bulldozer 110CV	Bulldozer	04	Used, 70%
4	Bulldozer 108CV	Bulldozer	04	Used, 70%
5	Excavator 1.0m^3	Excavator	03	Used, 80%
6	Excavator 2.0m^3	Excavator	02	Used, 80%
7	Self-dump truck 7T	Truck	10	Used, 70%
8	16-ton truck	Truck	08	Used, 80%
9	10-ton truck	Truck	06	Used, 70%
10	Chain-wheel crane 10T	Crane	02	Used, 70%
11	Wheel crane 16T	Crane	04	Used, 70%
12	Chain-wheel crane 50T	Crane	04	Used, 80%
13	Welding machine 23kW	Machine	12	Used, 80%
14	Grinder 2.7kW	Grinder	10	Used, 80%
15	Drilling machine 2,5kW	Machine	06	Used, 70%
16	Steel cutting machine 5kW	Machine	09	Used, 70%
17	Crane 5T	Crane	02	Used, 70%
18	Crane 25T	Crane	04	Used, 70%
19	Needle Vibrator 1.5kW	Vibrator	12	Used, 90%
20	Excavator 1.25m^3	Excavator	06	Used, 90%
21	Excavator 2.33 m^3	Excavator	06	Used, 90%
22	Concrete casting truck 6.0m^3	Truck	04	Used, 70%
23	Self concrete pumping machine 50m^3/h	Machine	02	Used, 70%
24	Mixing station 16m^3/h	Station	02	Used, 70%
25	Asphalt burning machine	Machine	02	Used, 70%
26	Asphalt spraying machine	Machine	02	Used, 70%
27	Diesel air compressor 600m^3/h	Machine	04	Used, 70%
28	Bitument concrete laying machine 130-140CV	Machine	03	Used, 70%
29	Rolling compaction machine 10T	Machine	02	Used, 70%
30	Wheel compaction machine	Machine	02	Used, 70%
31	Platform vibrator 1 kW	Vibrator	02	Used, 70%
32	Macadam laying machine 50-60m^3/h	Machine	03	Used, 70%
33	Rolling compaction vibrator 25T	Vibrator	02	Used, 70%
34	Water spraying truck 5m^3	Truck	04	Used, 70%
35	Concrete Mixing machine 250l	Machine	06	Used, 90%
38	Concrete mixing machine 500l	Machine	08	Used, 90%

Appendix 6: Air quality monitoring result

Air quality

No	Sample	Environmental indicator*			
		Suspended dust *($\mu g/m^3$)*	**SO_2** *($\mu g/m^3$)*	**CO** *($\mu g/m^3$)*	**NO_2** *($\mu g/m^3$)*
1	K1	24.5	66.7	3,350	89.5
2	K2	26.8	65.9	3,405	87.9
3	K3	25.6	64.6	3,258	85
QCVN 05:2013/BTNMT(1h)		**300**	**350**	**30,000**	**200**

Noise monitoring

No	Sample	Average value	Noise standard IFC General EHS Guidelines	QCVN 26:2010/BTNMT (6h-21h)
		L_{eq} (dBA)		
1	O1	65.4	**55 daytime (07:00 – 22:00) 45 nightime (22:00 – 07:00)**	**70 dBA**
2	O2	63.2		
3	O3	57.5		

Vibration monitoring

No	Sample	Average value	QCVN 27:2010/BTNMT (6h-21h) - m/s^2
		Vibrated acceleration (m/s^2)	
1	R1	0.018	**0.055 m/s^2**
2	R2	0.014	
3	R3	0.010	

Appendix 7: Approved Decision of local EIA by Ministry of Natural Resources and Environment

BỘ TÀI NGUYÊN VÀ MÔI TRƯỜNG	**CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM**
Số: /QĐ-BTNMT	**Độc lập - Tự do - Hạnh phúc**

Hà Nội, ngày tháng năm 2020

QUYẾT ĐỊNH
Phê duyệt báo cáo đánh giá tác động môi trường của
Dự án "Xây dựng Trường đại học Khoa học và Công nghệ Hà Nội"

BỘ TRƯỞNG BỘ TÀI NGUYÊN VÀ MÔI TRƯỜNG

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

Căn cứ Nghị định số 36/2017/NĐ-CP ngày 04 tháng 4 năm 2017 của Chính phủ quy định chức năng, nhiệm vụ, quyền hạn và cơ cấu tổ chức của Bộ Tài nguyên và Môi trường;

Căn cứ Nghị định số 40/2019/NĐ-CP ngày 13 tháng 5 năm 2019 của Chính phủ sửa đổi, bổ sung một số điều của các nghị định quy định chi tiết, hướng dẫn thi hành Luật Bảo vệ môi trường;

Căn cứ Nghị định số 18/2015/NĐ-CP ngày 14 tháng 02 năm 2015 của Chính phủ quy định về quy hoạch bảo vệ môi trường, đánh giá môi trường chiến lược, đánh giá tác động môi trường và kế hoạch bảo vệ môi trường;

Căn cứ Thông tư số 25/2019/TT-BTNMT ngày 31 tháng 12 năm 2019 của Bộ Tài nguyên và Môi trường quy định chi tiết thi hành một số điều của Nghị định số 40/2019/NĐ-CP ngày 13 tháng 5 năm 2019 của Chính phủ về sửa đổi, bổ sung một số điều của các nghị định quy định chi tiết, hướng dẫn thi hành Luật bảo vệ môi trường và quy định quản lý hoạt động dịch vụ quan trắc môi trường;

Theo đề nghị của Chủ tịch hội đồng thẩm định báo cáo đánh giá tác động môi trường của Dự án "Xây dựng Trường đại học Khoa học và Công nghệ Hà Nội" họp ngày 26 tháng 12 năm 2019 tại thành phố Hà Nội;

Xét nội dung báo cáo đánh giá tác động môi trường của Dự án "Xây dựng Trường đại học Khoa học và Công nghệ Hà Nội" đã được chỉnh sửa, bổ sung gửi kèm theo Công văn số 363/VHL-VP ngày 03 tháng 3 năm 2020 của Viện Hàn lâm Khoa học và Công nghệ Việt Nam;

Xét đề nghị của Tổng Cục trưởng Tổng cục Môi trường,

QUYẾT ĐỊNH:

Điều 1. Phê duyệt nội dung báo cáo đánh giá tác động môi trường của Dự án "Xây dựng Trường đại học Khoa học và Công nghệ Hà Nội" (sau đây gọi là Dự án) của Viện Hàn lâm Khoa học và Công nghệ Việt Nam (sau đây gọi là Chủ dự án) thực hiện tại Khu giáo dục đào tạo - Khu công nghệ cao Hòa Lạc, huyện Thạch Thất, Hà Nội với các nội dung chính tại phụ lục ban hành kèm theo Quyết định này.

Điều 2. Chủ dự án có trách nhiệm:

1. Niêm yết công khai quyết định phê duyệt báo cáo đánh giá tác động môi trường theo quy định của pháp luật.

2. Thực hiện nghiêm túc nội dung báo cáo đánh giá tác động môi trường đã được phê duyệt tại Điều 1 Quyết định này.

Điều 3. Quyết định phê duyệt báo cáo đánh giá tác động môi trường của Dự án là căn cứ để cơ quan nhà nước có thẩm quyền kiểm tra, thanh tra, giám sát việc thực hiện các yêu cầu về bảo vệ môi trường của Dự án.

Điều 4. Quyết định này có hiệu lực thi hành kể từ ngày ký./.

Nơi nhận:
- Viện Hàn lâm Khoa học và Công nghệ Việt Nam;
- Bộ trưởng Trần Hồng Hà (để báo cáo);
- UBND thành phố Hà Nội;
- Sở TN&MT thành phố Hà Nội;
- Ban quản lý KCNC Hòa Lạc;
- Lưu: VT, VPMC, TCMT(3), LTH.08.

KT. BỘ TRƯỞNG
THỨ TRƯỞNG

Võ Tuấn Nhân

Ký bởi: Bộ Tài nguyên và Môi trường
Cơ quan: Bộ Tài nguyên và Môi trường
Ngày ký: 24.03.2020 10:12:26 +07:00

Appendix 8: Public Consultation Minutes

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

BIÊN BẢN HỌP THAM VẤN

Dự án Xây dựng trường đại học Khoa học và Công nghệ Hà Nội, vốn vay ADB

Thời gian họp: ngày 24 tháng 07 năm 2020

Địa chỉ nơi họp: tại văn phòng Ban QLDA đầu tư xây dựng trường Đại học Khoa học và Công nghệ Hà Nội tại Hòa Lạc.

Nội dung: Tham vấn về tác động môi trường của việc triển khai và xây dựng Trường đại học Khoa học và Công nghệ Hà Nội.

1. THÀNH PHẦN THAM DỰ

1.1. Đại diện Chủ đầu tư: Ban QLDA xây dựng trường ĐH Khoa học & CN Hà Nội

Ông: Nguyễn Quốc Huy, Giám đốc Ban QLDA

1.2. Đại diện: Ban QL Khu Công nghệ cao (CNC) Hòa Lạc

Ông: Kim Giang Nam, Ban Quy hoạch, Xây dựng và Môi trường

1.3. Đại diện: Trường đại học FPT

Ông: Tạ Ngọc Cầu, Phó Hiệu trưởng

1.4. Đơn vị tư vấn: Công ty TNHH Tư vấn Quản lý và Phát triển ASEAN

Ông: Đào Duy Tùng, Giám đốc

và nhóm chuyên gia

2. NỘI DUNG VÀ DIỄN BIẾN CUỘC HỌP

2.1. Đại diện Chủ đầu tư thông báo lý do cuộc họp và giới thiệu thành phần tham dự.

2.2. Đại diện Tư vấn trình bày các nội dung:

a. Giới thiệu dự án, quy mô, phạm vi thực hiện…

b. Trình bày các tác động môi trường và biện pháp giảm thiểu của dự án sẽ thực hiện

c. …

2.3. Tham vấn ý kiến của Ban QL Khu CNC Hòa Lạc và Trường đại học FPT về:

a. Các hạng mục, quy mô của dự án;

Trang 1

b. Kế hoạch quản lý môi trường và các biện pháp giảm thiểu trong quá trình xây dựng và vận hành dự án.

c.. Cơ chế giải quyết khiếu nại của dự án liên quan đến vấn đề môi trường, an toàn lao động, giao thông, …

3. PHẦN THẢO LUẬN

3.1. Nội dung thảo luận:

a. Thời gian triển khai dự án và dự kiến thời gian thi công của Dự án.

b. Các tác động của Dự án trong quá trình thi công và vận hành.

c. Các ý kiến của đại diện Khu CNC Hòa Lạc và Đại học FPT trong quá trình thi công và vận hành của dự án: quản lý giao thông, tiếng ồn, tệ nạn xã hội,…

d. Các biện pháp giảm thiểu tác động của Chủ đầu tư đề xuất.

3.2. Ý kiến của các đơn vị tham gia cuộc họp

3.1.1. Ý kiến Ban QL Khu CNC Hòa Lạc

a. Thực hiện và tuân thủ các quy định của ADB về chính sách tái định cư và an sinh xã hội.

b. Trong quá trình thi công:

- Tuân thủ Quyết định số 203/QĐ-CNCHL ngày 18 tháng 10 năm 2016.
- Xây dựng phương án tuyên truyền về môi trường và an sinh xã hội (HIV, tuyên truyền các biện pháp môi trường, truyền thông nâng cao nhận thức,…) cho quá trình thi công.
- Cần làm thông báo khởi công cho Ban QL CNC Hòa Lạc, Ban có quy định riêng về việc an toàn giao thông, môi trường. Ban QL CNC Hòa Lạc sẽ có hướng dẫn cụ thể khi Ban QLDA gửi thông báo khởi công cho Ban QL CNC.
- Kế hoạch thi công phải được cập nhật liên tục cho Ban QL Khu CNC và các cơ quan liên quan để phối hợp và giám sát.
- Trong quá trình thi công, chủ đầu tư và nhà thầu cần lưu ý thời gian vận chuyển của xe chở nguyên vật liệu cần bố trí vào các giờ thấp điểm, hạn chế ảnh hưởng đến hoạt động của các đơn vị lân cận (FPT, VKIST,…) để tránh kẹt xe và tiềm ẩn nguy cơ tai nạn. Xe chuyên chở phải được che phủ bạt để tránh rơi vãi, phải rửa xe trước khi vào ra; đồng thời có xe tưới và rửa đường để hạn chế bụi phát sinh.
- Nước thải sinh hoạt sẽ xử lý sơ bộ sau đó sẽ chảy vào hệ thống thu gom chung của Khu CNC Hòa Lạc.

c. Trong quá trình vận hành Dự án:

- Cần có quy trình quản lý nước thải phòng thí nghiệm và xử lý đảm bảo tiêu chuẩn tiếp nhận nước thải của Khu CNC Hòa Lạc.
- Cải tạo hồ Tân Xã như thế nào để đảm bảo sinh thái và bảo vệ khu vực hồ. Chủ đầu tư có trách nhiệm bảo vệ và duy trì cảnh quan của hồ. Nước mưa cần được lắng cặn và rác trước khi đổ lại về hồ Tân Xã.
- Áp dụng tiêu chuẩn xanh, công nghệ thông minh và tiết kiệm điện theo quy định.
- FPT có hệ thống thu gom nước mặt chảy vào hồ Tân Xã và chạy qua khu đất của USTH, trong quá trình thi công cần lưu ý để tránh ngập úng cho FPT.
- Toàn bộ rác thải sinh hoạt phát sinh phải được thu gom và hợp đồng vận chuyển theo đúng quy định.

3.1.2. Ý kiến Trường Đại học FPT

- Trong quá trình xây dựng sẽ chắc chắn ảnh hưởng tới FPT về bụi, giao thông, đi lại,…
- FPT quan tâm đầu tiên về đi lại trên đường. Không biết vận chuyển các chất thải đi đường nào? Nếu đi qua đường E, trước cổng FPT đề nghị cần phải rửa xe trước và sau khi vào công trường, dọn dẹp rác thải, rửa đường nếu có rơi vãi trên đường.
- FTP có 10.000 sinh viên, và 60% sinh viên ở bên ngoài phạm vi trường FPT. Nên khi vào học và khi tan học sẽ có rất lớn lượng sinh viên tham gia giao thông. Cần phải đảm bảo về an toàn giao thông, và khói bụi.
- Nhà hiệu bộ của FPT, từ móng của tòa nhà này tới khu tiếp giáp với khu vực Dự án chỉ 18-20m. Nên quá trình thi công có rung, lắc hy vọng sẽ không bị ảnh hưởng lớn. Cần có biện pháp thi công tính toán tới việc giảm thiểu tác động tới công trình của FPT như dùng hào nước….
- Thiết kế công trình của FPT tiếp cận theo hướng xanh hóa, nên cũng đề nghị Dự án nên đầu tư nhiều cây xanh để tạo môi trường và cảnh quan cho khuôn viên chung.
- Ở Hòa Lạc hay có lốc xoáy và đặc điểm đất đai khô cằn, nên khi đầu tư hệ thống cây xanh nên tính toán tới việc trồng những loại cây chịu được lốc xoáy và dễ sống như cây bàng Đài Loan,…
- Mặt nước rất đáng quý, FPT đã phải tự đào để tạo mặt nước. Dự án cần xử lý nước thải và thải ra hệ thống thu gom, nước mặt thì chảy vào hồ và cần đảm bảo vệ sinh và sinh thái cho hồ.

- Hy vọng, FPT và USTH sẽ thành 2 trường đại học hàng đầu tại Việt Nam. Và mong muốn được giao lưu giữa 2 trường, và sẽ không có hàng rào giữa 2 trường và khu dân cư. Chỉ sử dụng hàng rào mềm và cổng kết nối.

4. KẾT LUẬN

- Đại diện Ban QLDA xin tiếp thu các ý kiến tại cuộc thảo luận và sẽ nghiêm túc thực hiện. Đảm bảo cảnh quan và môi trường tự nhiên khu đất dự án.
- Đại diện Ban QLDA mong muốn nhận được sự phối hợp của Ban QL Khu CNC Hòa Lạc và Đại học FPT trong quá trình triển khai và vận hành dự án.

Cuộc họp được kết thúc vào hồi 11h30, ngày 24 tháng 07 năm 2020.

ĐẠI DIỆN KHU CNC HÒA LẠC	ĐẠI DIỆN TRƯỜNG ĐẠI HỌC FPT	ĐẠI DIỆN CHỦ ĐẦU TƯ
Kim Giang Nam	**Tạ Ngọc Cầu**	**Nguyễn Quốc Huy**
Ban Quy hoạch Xây dựng và Môi trường	Phó Hiệu trưởng	Giám đốc

BAN QUẢN LÝ DỰ ÁN XÂY DỰNG TRƯỜNG ĐẠI HỌC KHOA HỌC VÀ CÔNG NGHỆ HÀ NỘI

ĐẠI DIỆN ĐƠN VỊ TƯ VẤN

Đào Duy Tùng
Giám đốc

(***Briefly translated)***

THE SOCIALIST REPUBLIC OF VIETNAM

Independence - Freedom - Happiness

CONSULTATION MEETING MINUTES

University of Science and Technology of Hanoi Construction Project, funded by ADB

Time: July 24, 2020

Venue: at Hoa Lac office of Construction Project Management Board of the University of Science and Technology of Hanoi (PMU-USTH)

Contents: Consultation on the environmental impacts from construction of University of Science and Technology of Hanoi

1. Participants

1.1. Investor Representative: Construction Project Management Board of the University of Science and Technology of Hanoi (PMU-USTH)

Mr. Nguyen Quoc Huy, PMU Director

1.2. Representative of: Hoa Lac Hi-Tech Park Management Board

Mr. Kim Giang Nam, Division of Planning, Construction and Environment

1.3. Representative of: FPT University

Mr. Ta Ngoc Cau, Vice Principal

1.4. Consultant unit: ASEAN Development and Management Consulting Ltd (ASEC)

Mr. Dao Duy Tung, Director

and Consultant Team

2. MEETING CONTENTS AND AGENDA

2.1. The Investor's representative announced the reason for meeting and introduced participants.

2.2. The Consultant presented following contents:

a. Introduce the project, scale, scope of implementation etc.

b. Describe the environmental impacts and mitigation measures the project will implement.

2.3. Consult with Management Board of Hoa Lac Hi-Tech Park and FPT University on:

a. Items and scale of the project;

b. Environmental management plan and mitigation measures during project construction and operation.

c. Grievance redress mechanism of the project related to environment, labor safety, traffic, etc.

3. DISCUSSION SESSION

3.1. Discussion contents:

a. Expected implementation and construction time of the Project.

b. Impacts of the Project during construction and operation.

c. Opinion from representatives of Management Board of Hoa Lac Hi-Tech Park and FPT University on the construction and operation of the Project in terms of traffic management, noise, social evils, etc.

d. Measures to minimize impacts proposed by the Investor.

3.2. Opinions of meeting participants

3.1.1. Opinions of the Management Board of Hoa Lac Hi-Tech Park

a. Implement and comply with ADB regulations on resettlement and social safeguards policies.

b. During construction

- Comply with Decision No. 203/QD-CNCHL October 18, 2016.
- Develop a communication plan on environment and social safeguards (HIV, environmental measures, and awareness raising) for the construction process.
- It is required to make a written commencement notice to the Management Board of Hoa Lac Hi-Tech Park as the PMU has distinctive regulations on traffic safety and environment. Hoa Lac Hi-Tech Park will have specific instructions when USTH PMU sends commencement notice.
- The construction schedule must be updated continuously for Hoa Lac Hi-Tech Park PMU and relevant agencies to coordinate and monitor.
- During construction process, the Investor and contractors should pay attention to material transport time at off-peak hours, limiting impacts on neighboring units (FPT, VKIST, etc.) and avoiding traffic jams as well as potential risk of accidents. Transport vehicles must be covered with canvas to prevent spillage and must be washed before entering or exiting construction sites; At the same time, there should be a water truck to water and clean transport routes to minimize dust generation.
- Domestic wastewater must be pre-treated before being discharged into the combined collection system Hoa Lac Hi-Tech Park.

c. During Project operation:

- Laboratory and wastewater management procedure is required to meet the standards of Hoa Lac Hi-Tech Park on wastewater receiving.
- How to renovate Tan Xa Lake to ensure ecology and protect the lake area? The Investor is responsible for protecting and maintaining the landscape of the lake. Rainwater needs to be sedimented and garbage removed before flowing to Tan Xa Lake.
- Apply green standards, smart technology and electricity saving as prescribed.
- FPT University has a system of collecting surface water that flows into Tan Xa Lake and runs through the land of USTH, during the construction process, it should be noted to avoid flooding for FPT.
- All generated domestic waste must be collected and contracted for transportation in accordance with regulations.

3.1.2. Opinions of FPT University

- During the construction process, it will definitely affect FPT in terms of dust and traffic, etc.
- FPT firstly cares about traveling on the road. Which route to transport waste? If passing E street, in front of FPT gate, it is recommended to wash the car before and after entering the construction site, clean up the garbage, wash the road if there is spillage on the road.
- FTP has 10,000 students, and 60% of which are outside the FPT campus. There will be a large number of students in traffic before and after class hours. Measures to ensure traffic safety must be in place.
- From FPT administrative building's foundation to the area adjacent to USTH project area is only 18-20m. So the process of construction might cause shaking, but hopefully FPT will not be greatly affected. It is necessary to have suitable construction measures to minimize impacts on FPT's works such as using moat.

- FPT's project design is oriented towards greening, so it is suggested that USTH project should invest more trees to create green environment and landscape for the common campus.
- In Hoa Lac, there are often tornadoes and arid land characteristics, so when investing in green systems, should consider planting trees that can withstand tornadoes and easy to live like Taiwan tropical almond.
- The water surface is very precious, FPT had to invest by itself to create the water surface. The project needs to treat wastewater and discharge it into the collection system, surface water flows into lake and needs to ensure hygiene and ecology for the lake.
- Hopefully, FPT and USTH will become the top 2 universities in Vietnam. And looking forward to the exchange between the two schools, and there will be no fence between the two schools and residential areas. Only use soft fences and connecting gates.

4. CONCLUSIONS

- USTH PMU's representative acknowledges receipt of the comments from the discussion and will seriously response to them. Ensuring landscape and natural environment of the project land.
- PMU representative wishes to receive cooperation of Hoa Lac High-Tech Park PMU and FPT University in the process of project implementation and operation

The meeting ended at 11:30 am, July 24, 2020.

REPRESENTATIVE OF THE MANAGEMENT BOARD OF HOA LAC HI-TECH PARK	**REPRESENTATIVE OF FPT UNIVERSITY**	**REPRESENTATIVE OF INVESTOR**
Kim Giang Nam	**Ta Ngoc Cau**	**Nguyen Quoc Huy**
Division of Construction Planning and Environment	Vice Principal	Director

REPRESENTATIVE OF CONSULTANT UNIT

Dao Duy Tung

Director