Initial Environmental Examination

July 2021

Bangladesh: Improving Computer and Software Engineering Tertiary Education Project – University of Dhaka

Prepared by the University Grants Commission of the Ministry of Education for the Asian Development Bank. This is an updated version of the draft originally posted in December 2019 available on https://www.adb.org/projects/documents/ban-50140-002-iee-4.

CURRENCY EQUIVALENTS

(as of 15 July 2021)

Currency unit	–	taka (Tk)
Tk1.00	=	$0.012
$1.00	=	Tk84.80

ABBREVIATIONS

ADB	–	Asian Development Bank
COVID-19	–	coronavirus disease
CSE/IT	–	computer science and engineering and information technology
DOE	–	Department of Environment
ECA	–	Environment Conservation Act
ECE	–	Electrical and Computer Engineering
ECC	–	environmental clearance certificate
ECR	–	Environment Conservation Rules
ECP	–	environmental code of practice
EHS	–	environmental, health, and safety
EIA	–	environmental impact assessment
EMP	–	environmental management plan
EMOP	–	environmental monitoring plan
GRC	–	grievance redress committee
GRM	–	grievance redress mechanism
IEE	–	initial environmental examination
MOE	–	Ministry of Education
MOEFCC	–	Ministry of Environment, Forest, and Climate Change
NO_2	–	nitrogen dioxide
PIU	–	project implementing unit
PMU	–	project management unit
PPE	–	personal protective equipment
SPS	–	Safeguard Policy Statement
UGC	–	University Grants Commission

WEIGHTS AND MEASURES

^oC	–	degree Celsius
dB(A)	–	A-weighted decibel
ha	–	hectare
lac	–	100,000
m	–	meter
mm	–	millimeter
mg/L	–	milligram per liter
m^2	–	square meter
$\mu g/m^3$	–	microgram per cubic meter
$PM_{2.5}$	–	particulate matter 2.5
PM_{10}	–	particulate matter 10
ppm	–	parts per million

NOTE

In this report, "$" refers to United States dollars.

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EXECUTIVE SUMMARY

Introduction

The Government of Bangladesh through the Ministry of Education (MOE) requested the Asian Development Bank (ADB) for financing of about $100 million to cover the costs of the Improving Computer and Software Engineering Tertiary Education Project, which aims to improve the relevance and quality of computer science and engineering and information technology (CSE/IT) programs in selected universities. These universities are (i) Bangladesh University of Engineering and Technology (BUET), (ii) Jashore University of Science and Technology (JUST), and (iii) University of Dhaka (DU).

The project is expected to strengthen the preparation of graduates to take on jobs, improve the connection with industries to understand their requirements for human resources, and create the required environment in developing the skills for entrepreneurships relevant to CSE/IT.

Project Description

The proposed project will help improve relevance and quality of CSE/IT programs in selected universities. It aims to increase job-ready graduates, increase research and development (R&D) capacity through industry collaboration and interdisciplinary research projects, and develop technology entrepreneurships. These objectives will be delivered through the following four outputs.

Output	Description
Output 1: Modern learning, research, and startup facilities established	The Improving Computer and Software Engineering Tertiary Education Project will support the three universities in developing classrooms, laboratories, industry collaboration, start-up or incubation space, and auxiliary facilities. The project will establish the supporting environment, which will include adopting green building features such as energy efficiency and water-saving and climate- and disaster-resilient design; accessibility for persons with disabilities; female-friendly amenities such as students' study areas and staff lounges; and safety features like access control system, increased lighting at night, and video surveillance system.
Output 2: Quality and industry-relevance of CSE/IT programs enhanced	The project will assist the universities in updating and improving their CSE/IT degree programs using new technologies, blended learning, and industry-demanded soft-skills; and in strengthening their existing digital libraries to ensure that they are aligned with international standards. JUST will set up an industry certification center for information and communication technology (ICT) professionals in the southwest region. JUST, DU, and BUET will provide undergraduate scholarships to attract more female students to CSE/IT. There will be support to enable the ICT industry to introduce flexible working hours and telecommuting to boost women participation in the ICT industry.
Output 3: R&D and technology entrepreneurship strengthened	The University Grants Commission will provide grants on the following research initiatives: (i) industry collaboration for addressing industry problems or developing new products or services, (ii) interdisciplinary work on ICT solutions that

Output	Description
	associate with other areas to develop new products or services, (iii) cutting-edge CSE/IT research, and (iv) ICT solutions to address disability issues. Research proposals can be developed together with foreign universities. There would also be support in introducing training programs on technology entrepreneurships as well as rules and incentives to encourage more university-based start-ups and spin-off firms using the facility in output 1.
Output 4: Project management capacity strengthened	The project will provide the necessary resources for effective project implementation and management—including necessary information system for planning, implementation and monitoring of grant scheme, stipend programs, and training, and strengthen the capacity of the UGC and three universities in key functions of modern higher education institutions including student services and industry relations.

BUET = Bangladesh University of Engineering and Technology, CSE/IT = computer science and engineering and information technology, DU = University of Dhaka, ICT = information and communication technology, JUST = Jashore University of Science and Technology, R&D = research and development.
Source: University Grants Commission.

From Output 1, the new building for DU will be a fully furnished and purpose-fit 13-story building with a total of around 6,500m^2 or 70,000 ft^2 to cater the Information Technology Human Resource (IT HR) Hub to produce approximately 2,500 IT/ITES professionals per year. The new building will cater to the Information Technology Human Resource Development Hub (IT HRDH) and will feature R&D centers, an idea incubator (StartDU), and a venture lab (DUVlab). IT HRDH is expected to supply approximately 2,500 information technology and information technology-enabled services (IT/ITES) professionals per year. IT HRDH will also incorporate green building features that will cover building design, construction materials, energy-efficient lighting and cooling systems, and relevant Energy Star-certified products. The new building will also incorporate green building features and be designed to be climate change resilient.

Implementation *A*rrangements

The MOE will be the executing agency acting through University Grants Commission (UGC) while the key implementing agencies (IAs) are BUET, DU, and JUST. A project management unit (PMU) will be set up at UCG and project implementation unit (PIU) at the three universities who will be responsible for the day-to-day management, monitoring, reporting, and coordination during implementation.

Environmental Requirements

The main environmental regulations in Bangladesh are Environment Conservation Act (ECA) 1995 and the Environment Conservation Rules (ECR) 1997, which provides that no project or industrial unit can be undertaken without securing an environmental clearance certificate (ECC) from the Department of Environment (DOE). However, under President's Order No. 10 of 1973, UGC has the autonomy in the university education, and among others, in examining development plans within the universities. In this case, UGC are not within the purview of ECA 1995 and ECR 1997. The universities have their own development planning, engineering and maintenance units with adequate staff that oversee the projects needed to ensure the sustained provision of education in Bangladesh.

The Safeguard Policy Statement (SPS) 2009 of ADB sets out the requirements for environmental safeguard that applies to all ADB-financed projects and grants. Under SPS 2009, projects or grants are screened and categorized based on their potential environmental impacts.

Output 1 will involve construction of three new buildings in BUET, DU, and JUST. These interventions will have potential environmental impacts, and thus, following SPS 2009, the project has been classified as category B on environment requiring the preparation of an initial environmental examination (IEE). Based on the requirements of SPS 2009, this IEE is prepared and will be publicly disclosed to ADB website. Aside from SPS 2009, disclosure of IEE is also required by the Access to Information Policy (AIP) 2019.

The IEE prepared for the project is presented in three volumes to cover the three implementing universities: (i) JUST; (ii) BUET, and (iii) DU. This Volume 3 of the IEE will discuss the due diligence of the new building for DU.

Description of the Existing Environment

The project is in Shahbagh Thana, a major neighborhood and police precinct in Metropolitan Dhaka with an area of about 3.49 square kilometer (km^2). The area belongs to Aw category based on the Köppen climate classification, which is characterized by tropical wet and dry climate (hot and humid summer and dry winter). According to Dhaka Station of the Bangladesh Meteorological Department, the maximum monthly temperature varies from 39.6°C to 30.1°C, while minimum temperature ranges from 22.5°C to 6.5°C. Annual average rainfall is 2,066 millimeters (mm), with the highest rainfall at 3,028 mm recorded in 1984.

The project site is in an urban area with no identified ecologically sensitive areas close or adjacent to the site. Dhaka falls under seismic zone II (moderate seismic risk) and is subject to normal flooding during the monsoon season (June to September).

DOE maintains three continuous air monitoring stations in Dhaka under the Clean Air and Sustainable Environment (CASE) Project funded by the World Bank in May 2009. The three stations are Sangshad Bhavan, Sher-e-Bangla Nagar; Farmgate; and Darus-salam. Based on their results from January 2019 to December 2020, inhalable particles, with diameters that are generally 10 micrometers and smaller (PM_{10}), fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller ($PM_{2.5}$), and nitrogen dioxide (NO_2) exceed the limits set by National Ambient Air Quality Standards (NAAQS) 2005.

Three sampling stations for ambient air quality were identified within the 500-m radius from the project site. Ambient air sampling was conducted on 6 April 2019 to determine the levels of PM_{10}, $PM_{2.5}$, and NO_2. Results of this one-time sampling suggest that the ambient air meets NAAQS 2005 but exceeds the International Finance Corporation–World Bank Environmental, Health, and Safety General Guidelines 2007 (IFC–WB EHS Guidelines 2007) on PM_{10} and $PM_{2.5}$.

Noise level was similarly measured on 6 April 2019 in the same stations as ambient air quality. Results suggest that the station in front of settlements near the central mosque exceed the Noise Pollution Control Rules 2006 and the IFC-WB EHS Guidelines 2007 both at daytime and nighttime. Source of drinking water at the project site was tested on 30 March 2019 for heavy metals (arsenic, cadmium, hexavalent chromium and lead), fecal coliform and pH. Results show that it meets the standards set by Schedule 3(b), Rule 12 of the ECR 1997 and WHO.

Vegetation in the project site is limited to about 25 fruit-bearing trees. The graveyard of national poet Kazi Nazrul Islam, also known as the “Rebel Poet,” is located on the northern side of DU central mosque and is on the eastern side of the project site. The operation and maintenance of the graveyard is entrusted to DU. The place is secured, and public access is controlled.

The first case of coronavirus disease (COVID-19) was identified on 8 March 2020 and the first death was reported on 18 March 2020. Following this incident, the government declared a nationwide lockdown on 26 March 2020 implementing an area-based zoning system. Prior to the nationwide lockdown, educational institutions were temporarily closed on 17 March 2020 affecting about 39 million learners from pre-primary to tertiary education. During the closure, educational institutions opted to adopt remote learning, but the lack of digital infrastructure affected most of the students.

COVID-19 testing started in May 2020 and with support from WHO and other international financial institutions like ADB, there are a total of 613 laboratories and testing centers in Bangladesh as of 11 July 2021. According to the Directorate General of Hospital Services, there are 15,043 dedicated general beds to COVID-19 treatment out of which 5,668 beds are in Dhaka City. As well, there are 1,263 beds for COVID-19 intensive care unit of which 861 beds are in Dhaka City. A total of 1,021,189 COVID-19 cases have been recorded as of 11 July 2021 with 16,419 deaths and about 10.859 million vaccines administered (i.e., 1st dose – 6,048,505 and 2nd dose – 4,810,368). According to WHO Bangladesh, Dhaka division has 649,426 cases of COVID-19 with 8,115 deaths from 8 March 2020 until 11 July 2021. Of the cases reported in Dhaka Division, 63.6% (or 413,035 cases) were from Dhaka City.

Anticipated Impacts and Mitigation Measures

The IT HRDH will incorporate green building features that aim to reduce energy and water consumption, and thus, the building is also expected to be climate change-resilient. These features are included in the budget with an estimated cost of about $4.722 million which will cover construction materials, energy-efficient lighting and cooling systems, and relevant Energy Star-certified products. With the use of energy-efficient lighting and cooling systems, the minimum contribution to carbon dioxide (CO_2) emissions reduction is estimated at 246 tCO_2 per year.

Prior to construction works, the PMU in UGC and the PIU in DU will ensure that the Contractor will include the responsibility of compensating for any temporary damage, loss, or inconvenience resulting from accident or failure to comply with regulations in implementing the project. The Contractor will be also required to prepare a health and safety plan (H&SP) based on guidance notes from WHO and other international best practices to address the risk of COVID-19 at the construction sites that may affect students and staff of DU as well as the immediate community in Dhaka City. The H&SP will be approved by the PIU and PMU prior to implementation. PMU and PIU together with the environmental safeguard consultant will conduct an orientation to the Contractor and their workers about their responsibility to comply with environmental requirements, their awareness of diseases such as HIV/AIDS, tuberculosis and COVID-19, and their adherence to best practices on occupational health and safety in construction.

Associated environmental impacts are mainly during demolition works and the construction phase such as increased noise and dust levels, occupational and community safety risks, generation of waste, movements of construction vehicles, presence of workers within the premises of DU, and similar impacts due to civil, mechanical, and electrical works for the IT HRDH. The Contractor will be required to prepare a demolition plan and construction management plan describing the commitments to implement measures in managing these temporary impacts aside from

compliance with the environmental management plan (EMP). The H&SP will be an integral part of the EMP. Waste that may be generated during project implementation will be disposed in designated disposal site approved by Dhaka South City Corporation (DSCC). After the separation of Dhaka City Corporation into north and south, DU is under the jurisdiction of DSCC. There are four secondary transfer stations (STS) in DSCC funded by ADB and it will likely be that STS 12 for DU as it is in front of Dhaka Medical College. Final disposal for garbage generated from DSCC will be the Matuail landfill site about 6.1 km from DU.

The construction site will be temporarily enclosed with clear and proper demarcation to separate access of university students, faculty, and administrative staff. The Contractor will designate security personnel to prevent unauthorized access to the construction site. The use of personal protective equipment and safety gears such as hardhats, working gloves, earmuffs, goggles, masks, and similar safety protection will be mandatory. Contractor will provide sanitary facilities, safe drinking water, first aid kits, hand washing stations with adequate soap and water, hand sanitizers with at least 60% alcohol (if soap and water are not available) to prevent the potential spread of COVID-19, and fire-fighting system. Good housekeeping at the work site and temporary space during break-time will be always enforced. Toolbox meetings will be conducted daily prior to start of work to reinforce the importance of health and safety in the workplace and compliance to the rules and regulations of the construction site. Those who fail to attend the daily toolbox meetings will not be allowed to work for the day. Contractors will be required to conduct mock drills on emergency and disaster preparedness. Strict compliance to COVID-19 containment measures such as physical distancing, handwashing, use of facial mask if needed, staggered work schedule, etc. will be enforced.

The PIU will ensure that ambient air quality limits set by the International Finance Corporation–World Bank Environmental, Health, and Safety General Guidelines 2007, or IFC–WB EHS General Guidelines 2007, the NAAQS 2005, and the Noise Pollution (Control) Rules 2006 will not be exceeded during the demolition and construction phase. The PIU and the environmental safeguard consultant will monitor compliance of the Contractor.

Analysis of Alternatives

No alternative site was considered for IT HRDH as this is the best option in terms of ownership, adequate area, and availability. The “no project” option will mean that the space where the existing staff housing structure is located will not have the best and highest usage of land. At the same time, the undergraduate and graduate students, faculty, and staff of IIT-DU will not have the opportunity to benefit from an innovative IT learning environment that the new building will provide.

The “with project” option entails that the demand by the IT industry for quality IT graduates will be met; temporary jobs for skilled and nonskilled workers during demolition and construction works will be created; and there will be more options for R&D, training, and linkage with the private sector, which are expected to improve chances of graduates for employment. At the same time, this intervention will contribute to the goals of Vision 2021.

Information Disclosure, Consultation, and Participation

A total of 23 participants joined the consultation meeting on 3 April 2019 in IIT-DU, comprising students from IIT and other departments, the *Imam* from the central mosque, the Manager of the Estate Office, representatives from the Committee of the bachelors’ staff housing that will be

demolished, representatives from the faculty of IIT, representatives from student associations on IT, and safeguards staff from the Bangladesh Resident Mission of ADB.

Issues raised include noise and dust levels during construction, assurance of accommodation to the occupants of the staff housing that will be demolished, disclosure of project information, students' interest in the green building features of IT HRDH and opportunities for R&D this project will provide, and emergency response preparedness in the new IT HRDH. These concerns will be considered in the design and construction of IT HRDH.

Consultations will continue during project implementation. The PIU together with the PMU will review the COVID-19 situation in Dhaka district and the restrictions imposed by the government to contain its transmission. While still under the threat of COVID-19, consultations with students, faculty, administrative staff, and other stakeholders will avoid face-to-face interactions and will use other means of communications such as social media, Viber, WhatsApp, Skype, etc. When stakeholders do not have access to the internet, traditional means of communication will be used for consultation such as dedicated phone lines, radio, TV, newspaper, or mail. Once the health situation improves, the approach to consultations like town hall meetings, focus group discussions, and interviews will be followed. The PIU will ensure that all means of communication with stakeholders will include a way to provide comments and suggestions. The PIU office will include an information desk.

PIU will create a project webpage in the DU website and will provide a link to project information. Only essential information such as the grievance redress mechanism (GRM) and project brief (both in English and Bangla) will be made available to stakeholders as printed materials while still under the COVID-19 pandemic. A project brief (a one-page flyer or a question-and-answer) both in English and Bangla will be made available at the PIU, construction site office, PMU, and DU administration office. The project brief will be posted on the DU website. The IEE, which provides more information, will be posted on the ADB website following SPS 2009 and AIP 2019.

Grievance Redress Mechanism

The PMU at UGC will establish a grievance redress mechanism (GRM) to deal with potential complaints that may be lodged against the project. The GRM will include the creation of a grievance redress committee (GRC), which may consist of the PMU head, local government representative, representative of the Contractor, and witness of the complainant. The environmental safeguard consultant at the PMU will act as the secretary of the GRC. Complaints can be lodged either in person to the Site Engineer, in writing, or by phone. With restrictions due to COVID-19, filing of complaints will be made online as much as possible to prevent any physical interaction. A complainant can seek redress in three tiers: (i) through the site engineer of the Contractor or PIU level, (ii) through the GRC, and (iii) or through the DOE under the Environment Court Act 2010. The complainant is not restricted to seek redress through the legal system at any point in the GRM process.

The PIU will disclose details on GRM through the project website of DU as well as on billboards at the construction site. Details will include the contact person, a hotline phone number, and a simplified flowchart on how to file a complaint. If needed, the environmental safeguard consultant will provide help to the affected person in submitting a complaint.

Environmental Management Plan

The environmental management plan (EMP) describes the measures to be implemented to ensure that the identified impacts during construction and post-construction are mitigated. The EMP includes an environmental monitoring plan (EMOP) identifying the parameters to be monitored, frequency of monitoring, location, implementing responsibility, and supervision. In response to COVID-19, an H&SP will be an integral part of the EMP. The cost of implementing the EMP and the EMOP will be part of the Contractor's budget.

As soon as the project becomes effective, the PIU through the PMU, will prepare environmental monitoring reports and will be submitted to ADB semi-annually during construction and annually post-construction. These monitoring reports will be posted in the ADB website following the requirements of SPS 2009, and AIP 2019. The PIU will designate a staff to coordinate with the environmental safeguard consultant at the PMU in submitting environmental monitoring reports and other concerns on environmental safeguard compliance.

Conclusion and Recommendation

While the project will have associated environmental impacts during the construction phase, overall, it will have significant contribution in advancing the goals of Vision 2021 by improving computer and software engineering tertiary education.

The project is environment category B based on SPS 2009 and an IEE has been prepared. Stakeholders were consulted and a grievance redress mechanism will be set up consistent with the requirements of SPS 2009. Potential environmental impacts of the project are mainly during construction, which are considered temporary, of short duration, and can be easily mitigated through the implementation of the EMP and EMOP, adherence of the Contractor to the approved building design and relevant regulations, and compliance monitoring by the PIU. Appropriate COVID-19 health and safety measures will be implemented based on the guidance of the government and WHO to ensure the wellbeing of students, staff, and the immediate local communities. Legitimate occupants of the staff housing that will be demolished will be moved to the new staff housing where construction is almost complete. An Environmental Safeguard Consultant will provide the required technical support to the PIU and the PMU in ensuring that the environmental requirements of ADB are complied with.

I. INTRODUCTION

1. To celebrate the 50th year of independence, Bangladesh launched the Vision 2021 which embodies measures to achieve the eight goals identified. The goals reflect a future Bangladesh as an economically inclusive and politically accountable society.[1] These goals are (i) to become a participatory democracy; (ii) to have an efficient, accountable, transparent and decentralised system of governance; (iii) to become a poverty-free middle-income country; (iv) to have a nation of healthy citizens; (v) to develop a skilled and creative human resource; (vi) to become a globally integrated regional economic and commercial hub; (vii) to be environmentally sustainable; and (viii) to be a more inclusive and equitable society.

2. Part of the goal to develop a skilled and creative human resource is to ensure that Bangladesh will be known as a country of educated people with skills in information technology. In addition, one of the outcomes visualized for education, training, and skills development in Vision 2021 is to have established an informed, knowledge-based, technologically oriented, and gender equitable learning system.[2]

3. To achieve these goals, the government through the Ministry of Education (MOE), requested the Asian Development Bank (ADB) for financing of about $100M to cover the costs of the Improving Computer and Software Engineering Tertiary Education Project, which is expected to improve the relevance and quality of computer science and engineering and information technology (CSE/IT) programs in selected universities. These universities are (i) Bangladesh University of Engineering and Technology (BUET), (ii) University of Dhaka (DU), and the (iii) Jashore University of Science and Technology (JUST).

4. Following the requirements of ADB's Safeguard Policy Statement (SPS) 2009, the environmental assessment for the project is presented as follows:

Volume 1 – Initial Environmental Examination (IEE) of JUST
Volume 2 – IEE of DU
Volume 3 – IEE of BUET

5. The IEE for each university is based on the environmental impact assessment (EIA) format given in Annex to Appendix 1 of SPS 2009, pages 41–43.

A. Overview of the Project

6. The Improving Computer and Software Engineering Tertiary Education Project is expected to strengthen the preparation of graduates to take on jobs, improve the connection with industries to understand their requirements for human resource, and to create the required environment in developing the skills for entrepreneurships relevant to CSE/IT. Table 1 presents the four project outputs while Figure 1.1 presents the project location.

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[1] Center for Policy Dialogue. August 2007. *Bangladesh Vision 2021*. Dhaka.

[2] Government of the People's Republic of Bangladesh, General Economics Division. June 2010. *Outline Perspective Plan of Bangladesh 2010-2021, Making Vision 2021 A Reality*. Dhaka.

Table 1.1: Project Outputs

Output	Description
Output 1: Modern learning, research, and startup facilities established	The Improving Computer and Software Engineering Tertiary Education Project will support the three universities in developing classrooms, laboratories, industry collaboration, start-up or incubation space, and auxiliary facilities. The project will establish the supporting environment, which will include adopting green building features such as energy efficiency and water-saving and climate- and disaster-resilient design; accessibility for persons with disabilities; female-friendly amenities such as students' study areas and staff lounges; and safety features like access control system, increased lighting at night, and video surveillance system.
Output 2: Quality and industry-relevance of CSE/IT programs enhanced	The project will assist the universities in updating and improving their CSE/IT degree programs using new technologies, blended learning, and industry-demanded soft-skills; and in strengthening their existing digital libraries to ensure that they are aligned with international standards. JUST will set up an industry certification center for information and communication technology (ICT) professionals in the southwest region. JUST, DU, and BUET will provide undergraduate scholarships to attract more female students to CSE/IT. There will be support to enable the ICT industry to introduce flexible working hours and telecommuting to boost women participation in the ICT industry.
Output 3: R&D and technology entrepreneurship strengthened	The University Grants Commission will provide grants on the following research initiatives: (i) industry collaboration for addressing industry problems or developing new products or services, (ii) interdisciplinary work on ICT solutions that associate with other areas to develop new products or services, (iii) cutting-edge CSE/IT research, and (iv) ICT solutions to address disability issues. Research proposals can be developed together with foreign universities. There would also be support in introducing training programs on technology entrepreneurships as well as rules and incentives to encourage more university-based start-ups and spin-off firms using the facility in output 1.
Output 4: Project management capacity strengthened	The project will provide the necessary resources for effective project implementation and management—including necessary information system for planning, implementation and monitoring of grant scheme, stipend programs, and training, and strengthen the capacity of the UGC and three universities in key functions of modern higher education institutions including student services and industry relations.

BUET = Bangladesh University of Engineering and Technology, CSE/IT = computer science and engineering and information technology, DU = University of Dhaka, JUST = Jashore University of Science and Technology, R&D = research and development.
Source: University Grants Commission.

Map 1.1: Location Map of University of Dhaka

B. Project Implementation Arrangements

7. The MOE will be the executing agency acting through University Grants Commission (UGC), while the key implementing agencies are BUET, DU, and JUST. A project management unit (PMU) will be set up at UCG and project implementation unit (PIUs) at the three universities will be responsible for the day-to-day management, monitoring, reporting, and coordination during implementation. A project steering committee will be arranged at the MOE to provide guidance and direction, monitor, and review the overall progress and outputs of project implementation. The project steering committee will be chaired by the Secretary, MOE with representatives consisting of UGC chairperson, assigned UGC member, vice chancellors of the three universities, and representatives from other agencies. The project steering committee will ensure that the project achieves the targets and outcomes, and coordinate in resolving potential issues during implementation.

8. An environmental safeguard consultant will be engaged intermittently until the completion of construction phase (about 2 years) to provide technical support to the PMU and PIUs on compliance with environmental requirements of ADB, and the building construction requirements of the government. The project is expected to be completed by June 2027. Figure 1.1 presents the project management structure.

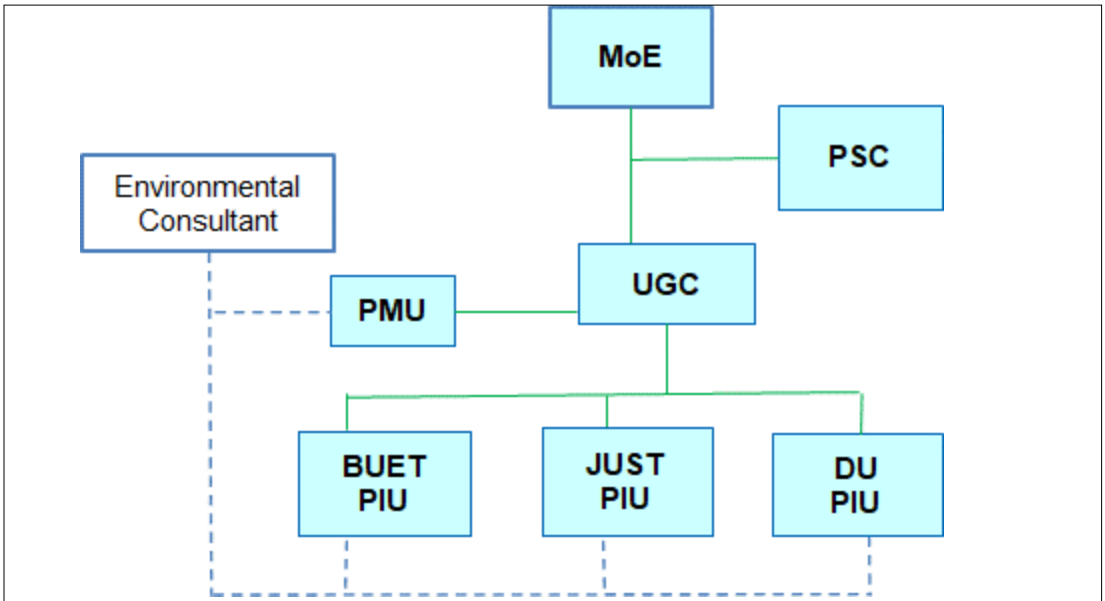


Figure 1.1: Project Management Structure

BUET = Bangladesh University of Engineering and Technology, DU = University of Dhaka, JUST = Jashore University of Science and Technology, MOE = Ministry of Education, PIU = project implementation unit, PMU = project management unit, PSC = project steering committee, UGC = University Grants Commission.

C. Need for Environmental Assessment

1. Requirements of the Government

9. The Environment Conservation Act (ECA) 1995 and the Environment Conservation Rules (ECR) 1997 are the main environmental regulations in Bangladesh, which provides that no project or industrial unit can be undertaken without securing an environmental clearance certificate (ECC) from the Department of Environment (DOE). The DOE is the government agency authorized to regulate and enforce environmental management regulations to ensure that development projects are implemented sustainably, and to conserve and manage the environment in Bangladesh.

10. However, under President's Order No. 10 of 1973, UGC has the autonomy in university education, and among others, in examining development plans within the universities. In this case, UGC is not within the purview of ECA 1995 and ECR 1997. The universities have their own development planning, engineering and maintenance units with adequate staff that oversee the projects needed to ensure the sustained provision of education in Bangladesh.

2. Requirements of ADB

11. The Safeguard Policy Statement (SPS) 2009 of ADB sets out the requirements for environmental safeguard that apply to all the projects and grants ADB finances.[3]

12. SPS 2009 requires that projects to be funded by ADB will be subject to screening and categorization based on their potential environmental impacts. The categorization determines the required environmental assessment.

13. Given the associated civil works that will be involved in the construction of the new buildings, the project is classified as category B on environment requiring an initial environmental examination (IEE). A category B project is considered likely to have adverse environmental impacts that are less adverse, site-specific, few if any of them irreversible, and in most cases mitigation measures can be more readily designed.

D. IEE Methodology

1. Objectives

14. Preparation of an IEE aims to (i) describe the existing environment; (ii) assess the potential environmental impacts of the proposed project; (iii) identify the mitigation and/or enhancement measures corresponding to the potential environmental impacts identified; (iv) describe the environmental management and monitoring plan to be implemented and complied with; and, (v) ensure that all the statutory regulatory requirements relevant to the project have been identified and considered to ensure an understanding what requires compliance.

2. Scope

15. This IEE was prepared following the requirements of SPS 2009. The scope covers the general existing environmental profile of the project site, assessment of potential environmental impacts during design and/or pre-construction, construction, and operation (or post-construction) stages; and a description of the environmental management plan (EMP) and environmental monitoring plan (EMOP). A COVID-19 health and safety plan will be part of the EMP. The following steps were considered:

(i) Undertake site visits to collect relevant secondary data to establish the baseline environmental condition;
(ii) Assess the potential impacts due to location, design, construction, and post-construction of the CSE/IT building;
(iii) Examine opportunities for environmental enhancement and identify measures;
(iv) Prepare an EMP outlining the measures to mitigate potential environmental impacts including the institutional arrangements;
(v) Identify key environmental parameters required to be monitored during project implementation and prepare an EMOP;
(vi) Carry out consultation with affected stakeholders, local administrative bodies to identify perceptions of the project and introduce project components and anticipated impacts; and

[3] ADB. 2009.*Safeguard Policy Statement 2009*. Manila.

(vii) Disclose the draft IEE in ADB website and prepare project brief and/or frequently asked questions in Bangla that can be publicly available at the offices of UGC, JUST, BUET, DU, and the construction sites.

16. Specifically, for DU, site visits were conducted in January, March, and April 2019 to collect secondary data, conduct consultations, and coordinate with relevant agencies of the government. Environmental sampling was done on 30 March 2019 and 6 April 2019.

II. POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK

A. National Environmental Requirements

17. The following presents the relevant regulatory agency, process, regulations, and international environmental agreements.

1. Environmental Agency

18. The Ministry of Environment, Forest, and Climate Change (MOEFCC) is the agency that plans, promotes, coordinates, and oversees the implementation of programs and plans on environment and forestry. MOEFCC manages all national environmental matters and is responsible for activities such as prevention and control of pollution, forestation and regeneration of degraded areas and protection of the environment, and in the framework of legislations. MOEFCC also conducts surveys, impact assessment, control of pollution, research, and collection and dissemination of environmental information and creation of environmental awareness among all sectors in Bangladesh.

19. Created in 1989, the DOE performs the regulatory functions of the MOEFCC. DOE is the main agency entrusted with regulating and enforcing environmental management regulations to ensure sustainable development and to conserve and manage the environment. DOE ensures the consistent application of environmental rules and regulations; provides guidance and training, and promotional campaigns on improving the awareness of environmental issues.

2. Environmental Regulations

20. The main environmental regulations in Bangladesh are the Environment Conservation Act (ECA) 1995 (amended 2000, 2002, 2007 and 2010) and the Environment Conservation Rules (ECR) 1997.

21. ECA 1995 provides the requirements on environmental protection, improvement of environmental standards, and control and abatement of environmental pollution. Through the ECA 1995, the DOE is mandated to undertake any activity needed to conserve and enhance the quality of environment and to control, prevent and mitigate pollution.

22. ECR 1997 provides for the declaration of ecologically critical areas, categorization of industries and projects and identification of the type of environmental assessments needed against respective categories of industries or projects. Among other things, these rules set (i) the National Environmental Quality Standards for ambient air, various types of water, industrial effluent, emission, noise, vehicular exhaust etc.; (ii) the requirement for and procedures to obtain ECC; and (iii) the requirement for the IEE based on categories of industrial and other development interventions.

23. The ECA 1995 and ECR 1997 outline the regulatory mechanism to protect the environment in Bangladesh. Aside from ECA 1995 and ECR 1997, Table 2.1 presents a summary of relevant environmental regulations.

Table 2.1: Relevant Environmental Regulations

Regulation	Brief Description
Bangladesh National Building Code 2006 (or latest version)	Sets minimum standards for design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings to safeguard, within achievable limits, life, limb, health, property, and public welfare.
Bangladesh Building Construction Rules 2008	These rules superseded the previous Building Construction rules of 1984 and seek to control development plot-by-plot and case-by-case. It controls development by imposing conditions on setbacks, site coverage, construction of garages, access to plot, provision of lift, land use of that particular plot and height of building. Restricting the height of a building in BC Rules 1996 helps to control the density of an area and manage the growth of the city in some way.
Disaster Management Act 2012	Coordinates activities on disaster management, making them object-oriented and strengthened and to formulate rules to build up infrastructure of effective disaster management to fight all types of disaster.
Environment Court Act 2000 (amended in 2002 and 2010)	This Act is under the Judiciary and Ministry of Environment and Forests to ensure the resolution of disputes on environmental and social damages resulting from any development activity. This Act also allows for the completion of environment-related legal proceedings.
Vehicle Act 1927, the Motor Vehicles Ordinance 1983, and Bengal Motor Vehicle Rules 1940	These are under the Bangladesh Road Transport Authority which regulates vehicular emissions and noise including road safety.
Bangladesh Factories Act 1995	Requires every workplace including small- or large-scale construction where women are employed to have an arrangement of childcare services. Based on this Act and Labor Laws - medical facilities, first aid and accident and emergency arrangements are to be provided by the authorities to the workers at workplaces.
Bangladesh Labour Act 2006 (amended 2013), Bangladesh Labor Rules 2015	These regulations are under the Ministry of Labor which provides for the occupational rights and safety of factory workers and the provision of a comfortable work environment and reasonable working conditions, including the prohibition of child labor and adolescent labor.
The Antiquities Act 1968 (amended 1976)	Regulation on the preservation and protection of antiquities.
The Embankment and Drainage Act, 1952	Consolidates the laws relating to embankments and drainage providing provision for the construction, maintenance, management, removal and control of embankments and water courses

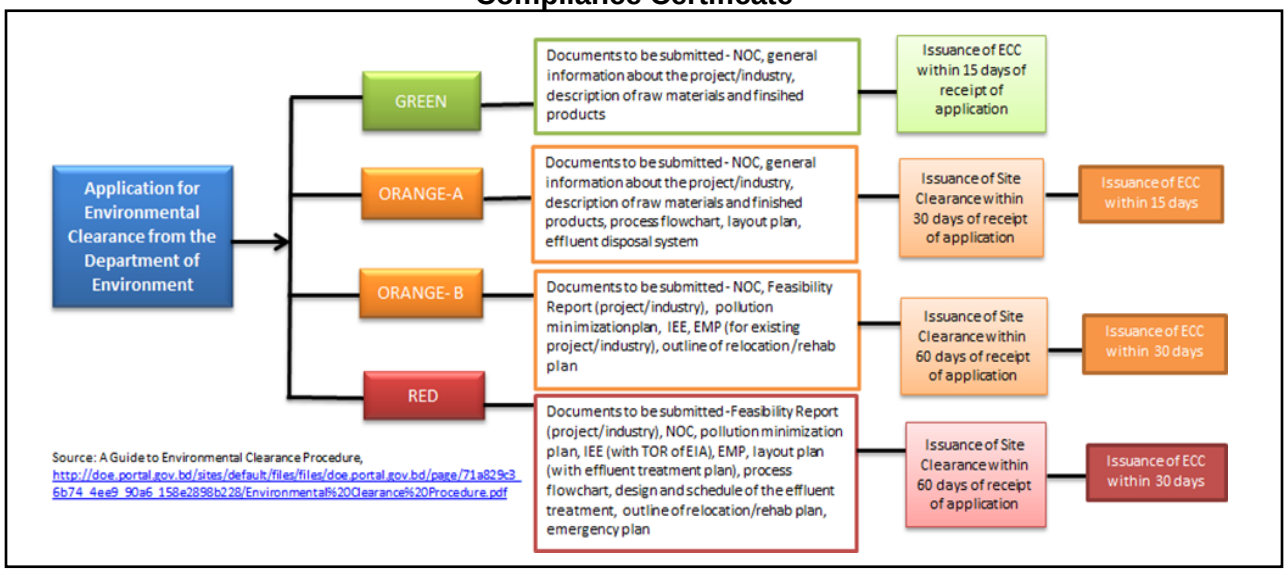
Regulation	Brief Description
	for the better drainage of lands and for their protection from floods, erosion or other damage by water.
Right to Information Act (RTI Act) 2009	Came into force on 1 July 2009 primarily to increase transparency and accountability, decrease corruption and establish good governance. • Only citizens have the right to demand and receive access to information from public bodies. • Scope - extends to the executive, legislative branch and organisations that undertake public functions; private organisations with government or foreign funding are included, which applies to NGOs, international organisations, and other private bodies.

3. Environmental Approval Process

24. Section 12 of ECA 1995 provides that no industrial unit or project can be established or undertaken without securing an ECC from the DOE. Following the requirements of ECR 1997, the DOE has classified various development interventions according to potential adverse environmental impacts for the purpose of issuing the ECC. This classification includes: (i) green; (ii) orange-A; (iii) orange-B; and (iv) red. The Green classification refers to industries or projects considered to be relatively pollution-free, thus, no environmental study will be required. The Orange-A, Orange-B, and Red category are those projects and industrial units that may have potential adverse environmental impacts and therefore requires an environmental impact assessment (EIA). Securing the ECC for these categories involves two steps: (i) issuance of site clearance certificate (SCC), and then (ii) the ECC.

25. The site clearance certificate will be issued by the DOE upon approval of the initial environmental examination (IEE) and the receipt of the “No Objection Certificate (NOC).” These documents serve as “proof of authorization” to initiate a project. The IEE includes the terms-of-reference (TOR) of the EIA which requires the approval of the DOE. Once the EIA has been reviewed and approved by the DOE, the ECC will be issued. The project proponent cannot open line of credit in favor of importable machineries and cannot start any physical activities for the project without the DOE-approved EIA. Figure 2.1 presents the overview of the approval process.

Figure 2.1: Approval Process of the Department of Environment for an Environmental Compliance Certificate



EIA = environmental impact assessment, ECC = environmental compliance certificate, EMP = environmental management plan, IEE = initial environmental examination, NOC = No Objection Certificate.

4. Applicable Environmental Standards

26. Table 2.2 lists the applicable standards to meet national regulations. SPS 2009 provides that during construction, the government will apply pollution prevention and practices that are in line with international good practice as given by international standards such as the IFC-WB EHS General Guidelines 2007. In addition, should the regulations of the government differ from the levels and measures set by the IFC-WB EHS General Guidelines 2007, the government will achieve whichever is more stringent. The relevant standards from IFC-WB EHS General Guidelines 2007 are given in Table 2.3.

Table 2.2: Relevant National Environmental Standards

AIR[a]		
Pollutant	Standards	Averaging Period
NO_x	100 µg/m³ (0.053 ppm)	Annual
PM_{10}	50 µg/m³	Annual
	150 µg/m³	24-hour
$PM_{2.5}$	15 µg/m³	1-hour
	65 µg/m³	24-hour
NOISE[b]		
	Limits in L_{eq} dB(A)	
	Daytime	Nighttime
Zone Class	(6 a.m.–9 p.m.)	(9 p.m.–6 a.m.)
(i) A sensitive area where quietness is of primary importance such as schools, hospitals, mosques etc.	50	40
(ii) Residential zone	55	45
(iii) Mixed areas, which are used as residential areas as well as for commercial and industrial purposes	60	50

AIR[a]		
Pollutant	Standards	Averaging Period
(iv) Commercial areas	70	60
(v) Industrial areas	75	70

dB(A) = A-weighted decibel, NO_x = oxides of nitrogen, ppm = parts per million, $\mu g/m^3$ = microgram per cubic meter of air.
Note: Daytime shall mean from 6:00 a.m. to 9:00 p.m. Nighttime shall mean from 10:00 p.m. to 6:00 a.m. L_{eq} means equivalent continuous sound level or the average sound pressure level over a specified time interval
[a] Ambient Air Quality Standards 2005.
[b] Noise Pollution (Control) Rules 2006

Table 2.3: Relevant Environmental Standards from the International Finance Corporation–World Bank Environmental, Health, and Safety General Guidelines 2007

WHO Ambient Air Quality Guidance		
	Averaging Period	**Guideline value in $\mu g/m^3$**
SO_2	24-hour 10 minutes	125 (Interim target 1) 50 (Interim target 2) 20 (guideline) 500 (guideline)
NO_2	1-year 1-hour	40 (guideline) 200 (guideline)
PM_{10}	1-year 24-hour	70 (Interim target 1) 50 (Interim target 2) 30 (Interim target 3) 20 (guideline) 150 (Interim target 1) 100 (Interim target 2) 75 (Interim target 3) 50 (guideline)
$PM_{2.5}$	1-year 24-hour	35 (Interim target 1) 25 (Interim target 2) 15 (Interim target 3) 10 (guideline) 75 (Interim target 1) 50 (Interim target 2) 37.5 (Interim target 3) 25 (guideline)
Ozone	8-hour daily maximum	160 (Interim Target 1) 100 (guideline)
Noise Level Guidelines		
	One Hour L_{eq} (dBA)	
Receptor	Daytime	Nighttime
	(7 a.m.-10 p.m.)	(10 p.m.-7 a.m.)
Residential; Institutional; educational	55	45
Industrial; commercial	70	70

SO_2 = sulfur dioxide, NO_2 = nitrogen dioxide, PM_{10} = particulate matter 10 micrometers, $PM_{2.5}$ = particulate matter 2.5 micrometers, L_{eq} means equivalent continuous sound level or the average sound pressure level over a specified time interval
Note: Daytime shall mean from 7:00 a.m. to 10:00 p.m. Nighttime shall mean from 10:00 p.m. to 7:00 a.m.
Sources: World Bank Group-International Finance Corporation EHS General Guidelines 2007.

5. Relevant International Environmental Agreements

27. Aside from the national environmental regulations, international environmental agreements where Bangladesh is a party will be referred to in the design and implementation of the project. Table 2.4 lists the applicable international environmental agreements that can provide guidance during project implementation.

Table 2.4: Relevant International Environmental Agreements

International Environmental Agreement	Date Ratified	Description
Convention Concerning the Protection of the World Cultural and Natural Heritage (Paris 1972)	3 November 1983	Entered into force on 23 November 1972, this convention defines and provides for the conservation of the world`s heritage by listing the natural and cultural sites whose value should be preserved.
Vienna Convention for the Protection of the Ozone Layer 22 March 1985	2 August 1990	A framework for efforts to protect the globe's ozone layer by means of systematic observations, research, and information exchange on the effects of human activities on the ozone layer and to adopt legislative or administrative measures against activities likely to have adverse effects on the ozone layer.
Montreal Protocol on Substances that Deplete the Ozone Layer (a protocol to the Vienna Convention for the Protection of the Ozone Layer)	2 August 1990	This international treaty was entered into force on 1 January 1989. It is designed to protect the ozone layer by phasing out the production of numerous substances that are responsible for ozone depletion. This treaty also requires controlling emissions of substances that deplete ozone.
Kyoto Protocol (1997)	22 October 2001	An international agreement adopted on 11 December 1997 and entered into force on 16 February 2005, which commits its Parties to set internationally binding emission reduction targets. This agreement is linked to the United Nations Framework Convention on Climate Change.
United Nations Framework Convention on Climate Change (1992)	15 April 1994	This framework came into force on 21 March 1994 and aims to achieve stabilization of greenhouse gas (GHG) concentrations in the atmosphere at a level low enough to prevent dangerous anthropogenic interference with the climate system.
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1989)	1 April 1993	This convention came into force on 5 May 1992. It aims to reduce the amount of waste produced by signatories and regulates the international traffic in hazardous wastes.
UNESCO World Heritage Convention 1972	3 August 1983 (Accession) Accession – the state accepts the offer or the opportunity to	This convention describes the concepts of nature conservation and the preservation of cultural properties. Parties agree to identify and nominate properties on their national territory to be considered for inscription on the World Heritage List, gives details of how

International Environmental Agreement	Date Ratified	Description
	become a party to a treaty already negotiated and signed by other states	a property is protected, and provides a management plan for its upkeep.

B. Environmental Requirements of Asian Development Bank

28. SPS 2009 sets the environmental requirements and review procedures that apply to all projects and grants that ADB finance. SPS 2009 comprises three key safeguard areas: environment, involuntary resettlement, and indigenous peoples. It aims to avoid adverse project impacts to both the environment and the affected people; minimize, mitigate and/or compensate for adverse project impacts; and help Borrowers to strengthen their safeguard systems and to develop their capacity in managing the environmental and social risks.

29. SPS 2009 uses a categorization system to indicate the significance of potential environmental impacts and is determined by the category of its most environmentally sensitive component, including direct, indirect, cumulative, and induced impacts within the project's area of influence. The project categorization system is described in Table 2.5.

Table 2.5: Environmental Classification According to Safeguard Policy Statement 2009

Category	Definition	Assessment Requirement
A	Likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented, and may affect an area larger than the sites or facilities subject to physical works.	Environmental impact assessment (EIA)
B	Likely to have adverse environmental impacts that are less adverse than those of Category A. Impacts are site-specific, few if any of them irreversible, and in most cases mitigation measures can be designed more readily than Category A.	Initial Environmental Examination (IEE)
C	Likely to have minimal or no adverse environmental impacts.	No environmental assessment is required but the environmental implications of the project will be reviewed.
FI	Project involves investment of ADB funds to or through a financial intermediary (FI).	FIs will be required to establish an environmental and social management commensurate with the nature and risks of the FI's likely future portfolio to be maintained as part of the FI's overall management system.

Source: ADB. 2009. Safeguard Policy Statement p. 19.

30. Disclosure Requirements. Aside from the SPS 2009 requirements, the Access to Information Policy (AIP) 2019 provides for the requirements of disclosure for project information of projects and grants funded by ADB.[4] Consistent with SPS 2009, this requires the disclosure of documents submitted by the borrower and/or client as following:

[4] The Access to Information Policy replaces Public Communication Policy 2011.

(i) a draft EIA report for category A project, at least 120 days before Board consideration;
(ii) a draft environmental assessment review framework, where applicable, before appraisal;[5]
(iii) the final EIA or IEE, upon receipt by ADB;
(iv) a new or updated EIA or IEE, and a corrective action plan, if any, prepared during project implementation, upon receipt by ADB; and,
(v) the environmental monitoring reports, upon receipt by ADB.

31. Table 2.6 presents a summary of the implications of SPS 2009 to the project.

Table 2.6: Implications of the Safeguard Policy Statement 2009 to the Project

No.	SPS 2009 Principles	Description
1	Use a screening process for each proposed project, as early as possible, to determine the appropriate extent and type of environmental assessment so that appropriate studies are undertaken commensurate with the significance of potential impacts and risks.	The components with environmental implications have been identified under Output 1 of the Project: (a) construction of three new multi-storey buildings within the university premises of Bangladesh University of Engineering and Technology, University of Dhaka, and Jashore University of Science and Technology. A rapid environmental assessment checklist was completed for these components, and the environment category based on SPS 2009, is B requiring an IEE.
2	Conduct an environmental assessment for each proposed project to identify potential direct, indirect, cumulative, and induced impacts and risks to physical, biological, socioeconomic (including impacts on livelihood through environmental media, health and safety, vulnerable groups, and gender issues), and physical cultural resources in the context of the project's area of influence. Assess potential transboundary and global impacts, including climate change. Use strategic environmental assessment where appropriate.	An IEE following the requirements of SPS 2009 was conducted for the components with environmental implications.
3	Examine alternatives to the project's location, design, technology, and components and their potential environmental and social impacts and document the rationale for selecting the particular alternative proposed. Also consider the no project alternative.	Alternative sites, where appropriate, were considered and included in the IEE.
4	Avoid, and where avoidance is not possible, minimize, mitigate, and/or offset adverse impacts and enhance positive impacts by means of environmental planning and	An EMP is included in the IEE for each of the components with environmental implications under the three universities of the MOE. The EMPs will provide guidance to the

[5] If no further mission for appraisal is required, the document will be posted before the management review meeting or the first staff review meeting for sovereign projects, or before the final investment committee meeting for nonsovereign projects, as applicable (ADB procedures).

No.	SPS 2009 Principles	Description
	management. Prepare an (EMP) that includes the proposed mitigation measures, environmental monitoring, and reporting requirements, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators. Key considerations for EMP preparation include mitigation of potential adverse impacts to the level of no significant harm to third parties, and the polluter pays principle.	construction contractor and their subcontractor (if any) who will be engaged during project implementation to ensure compliance with the relevant provisions in SPS 2009.
5	Carry out meaningful consultation with affected people and facilitate their informed participation. Ensure women's participation in consultation. Involve stakeholders, including affected people and concerned nongovernment organizations, early in the project preparation process and ensure that their views and concerns are made known to and understood by decision makers and taken into account. Continue consultations with stakeholders throughout project implementation as necessary to address issues related to environmental assessment. Establish a grievance redress mechanism to receive and facilitate resolution of the affected people's concerns and grievances regarding the project's environmental performance.	Three consultations events were undertaken during the preparation of the IEE (one per university). Consultations will continue through the PIUs in each university (as appropriate) during project implementation. A three-tiered grievance redress mechanism (GRM) is included in the IEE including the proposed composition of the grievance redress committee (GRC). The implementation of the GRM will be monitored by the PMU established under the UGC.
6	Disclose a draft environmental assessment (including the EMP) in a timely manner, before project appraisal, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders. Disclose the final environmental assessment, and its updates if any, to affected people and other stakeholders.	The IEE will be endorsed by the MOE for public disclosure through the ADB website.
7	Implement the EMP and monitor its effectiveness. Document monitoring results, including the development and implementation of corrective actions, and disclose monitoring reports.	At the construction phase, the contractor will be responsible for implementing the EMP and will be monitored by the PIU and PMU. Environmental monitoring reports and corrective actions (if needed) will be prepared by the PIUs and will be disclosed to ADB website.
8	Do not implement project activities in areas of critical habitats, unless (i) there are no measurable adverse impacts on the critical habitat that could impair its ability to function, (ii) there is no reduction in the population of any recognized endangered or critically endangered species, and (iii) any lesser impacts are mitigated. If a project is located within a legally protected area, implement additional programs to promote and enhance	All the proposed interventions with environmental implications are not located in critical habitats as defined by SPS 2009.

No.	SPS 2009 Principles	Description
	the conservation aims of the protected area. In an area of natural habitats, there must be no significant conversion or degradation, unless (i) alternatives are not available, (ii) the overall benefits from the project substantially outweigh the environmental costs, and (iii) any conversion or degradation is appropriately mitigated. Use a precautionary approach to the use, development, and management of renewable natural resources.	
9	Apply pollution prevention and control technologies and practices consistent with international good practices as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health and Safety Guidelines. Adopt cleaner production processes and good energy efficiency practices. Avoid pollution, or, when avoidance is not possible, minimize or control the intensity or load of pollutant emissions and discharges, including direct and indirect greenhouse gases emissions, waste generation, and release of hazardous materials from their production, transportation, handling, and storage. Avoid the use of hazardous materials subject to international bans or phaseouts. Purchase, use, and manage pesticides based on integrated pest management approaches and reduce reliance on synthetic chemical pesticides.	Construction activities will generate waste and may increase ambient dust and noise levels. Vegetation and land clearing will be done. No hazardous chemicals will be used in vegetation clearing. The new buildings will use Energy Star certified products and will incorporate green building features. (Refer to https://www.energystar.gov/about/energy-star-brand/energy-star-brand-book.)
10	Provide workers with safe and healthy working conditions and prevent accidents, injuries, and disease. Establish preventive and emergency preparedness and response measures to avoid, and where avoidance is not possible, to minimize, adverse impacts and risks to the health and safety of local communities.	Construction works may cause accidents or injuries to workers. Contractors will be required to comply with the EMP and implement to the extent possible the Environmental Codes of Practice. Compliance will be monitored by the PIUs and PMU. Contractors will be required to prepare a health and safety plan in response to the coronavirus disease (COVID-19) pandemic and will be an integral part of the EMP.
11	Conserve physical cultural resources and avoid destroying or damaging them by using field-based surveys that employ qualified and experienced experts during environmental assessment. Provide 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.	The sites are within the existing premises of the universities and are not known to have physical cultural resources as defined by SPS 2009.

IEE = initial environmental examination, MOE = Ministry of Education, PIU = project implementation unit, PMU = project management unit, SPS = Safeguard Policy Statement.

III. DESCRIPTION OF THE PROJECT

32. The project will have four outputs as summarized in Table 1.1. The component that will have environmental implications from Output 1 (see below) will be the construction of new IT buildings for BUET, DU, and JUST.

Output 1: An established modern learning, research and startup supporting environment	The project will support the three universities in developing classrooms, laboratories, industry collaboration and startup or incubation space, and auxiliary facilities. The project will establish of the support environment which will include adopting green building features for energy efficiency and water saving, climate and disaster resilient design, accessibility of persons with disabilities; female-friendly amenities such as students' study areas and staff lounges; and safety features like access control system, increased lighting at night, and video surveillance system.

33. Specifically for DU, the new building will be a fully furnished and purpose-fit 13-storey building (Figure 3.1) with a total floor area of around 6,500m^2 or 70,000 ft^2. The new building will cater to the Information Technology Human Resource Development Hub (IT HRDH) expected to supply approximately 2,500 information technology and information technology-enabled services (IT/ITES) professionals per year.

Figure 3.1: Perspective View of the Information Technology Human Resource Development Hub

The IT HRDH building. View from the northeast corner, which looks out to the Nazrul Mausoleum and Fine Arts Institute

34. Based on this structure, IT HRDH will have the following outcomes:

(i) **Academic Institution**. Close collaboration with industry to maintain the academic curriculum in order to contribute to the industry such as service providers to hi-tech parks throughout the country and in innovation through the R&D center

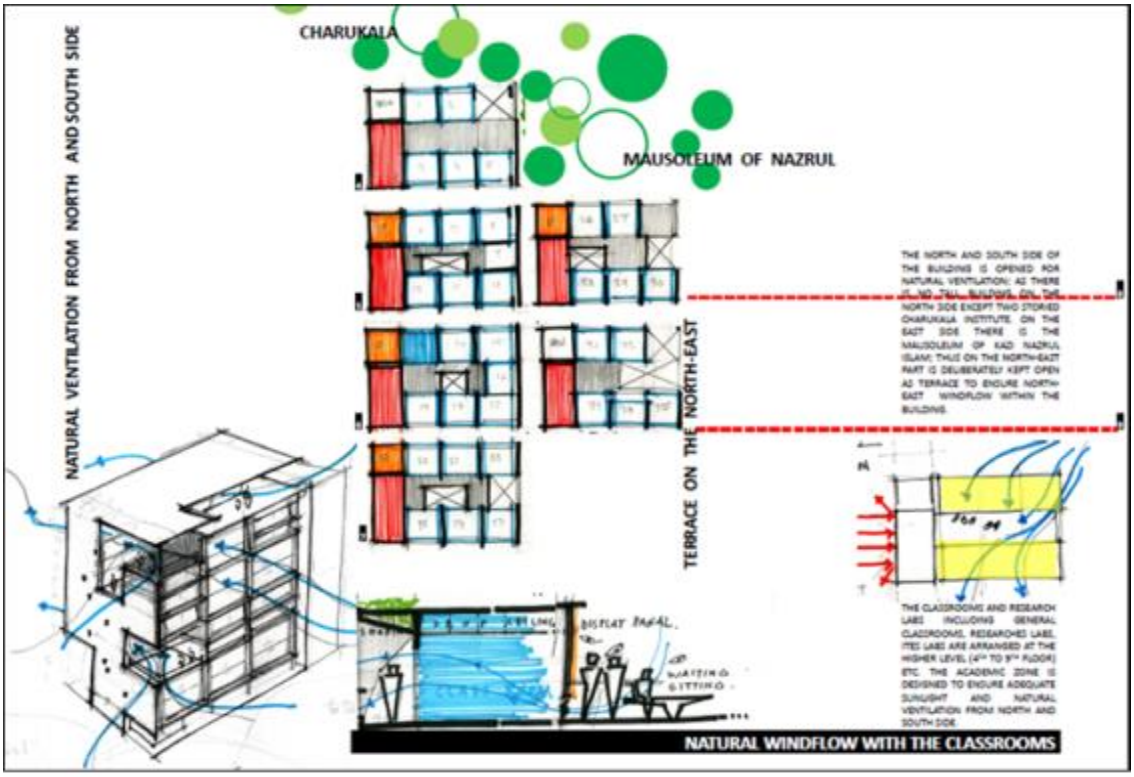
(ii) **R&D Center.** Students graduating from the academic institutions will be able to conduct research while closely collaborating with the industry. The R&D could be an industry–academia collaboration or industry problem R&D.

(iii) **Idea Incubator (StartDU).** This will have activities such as StartUp companies, organizing mentorship events, Demo Day (events where new ideas are presented to potential investors), and intellectual property licensing.

(iv) **Venture Lab (DUVlab).** The outputs will be established companies and intellectual property licensing. The Technology Licensing Office (TLO) is part of the DUVlab whose purpose is to facilitate licensing of technology inventions or innovations of DUVlab members.

35. The estimated total cost of civil works is $15.74 million. IT HRDH will also incorporate green building features to cover building design, construction materials, energy-efficient lighting and cooling systems, and relevant Energy Star-certified products. The estimated cost of incorporating these green building features is $4.722 million. Figure 3.2 shows how natural wind flow will be considered in the design of IT HRDH.

Figure 3.2: Natural Wind Flow Considered in the Design



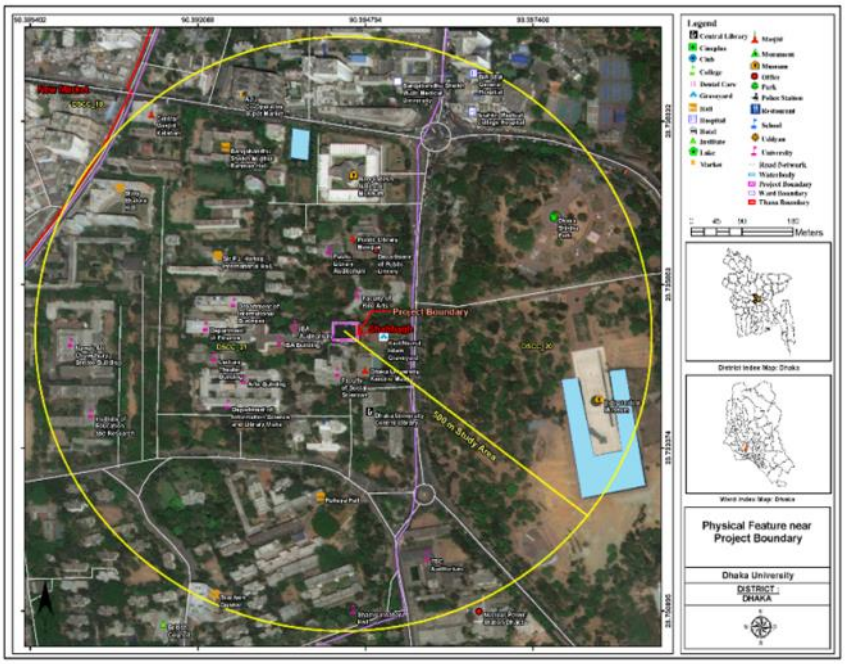
Source: Conceptual Design, IT HRDH (IIT-DU) June 2019

IV. DESCRIPTION OF THE ENVIRONMENT (BASELINE DATA)

36. This chapter describes the existing environment within the study area and is based on baseline measurement but relied heavily on secondary data from government sources, international organizations, and other research entities. Baseline measurements on ambient air quality, noise, and drinking water source in DU were conducted on 6 April 2019 and 30 March

2019, respectively by the EQMS Environmental Consulting Limited. Measurements were done within the 500-meter radius from the project site (Map 4.1).

Map 4.1: Project's Area of Influence



A. Institute of Information Technology in University of Dhaka

37. The Institute of Information Technology (IIT) at DU was established in 2001, although it existed as a computer center since 1985. The IIT-DU currently offers Bachelor of Science in Software Engineering (BSSE), Master of Science in Software Engineering (MSSE), Master of Information Technology (MIT), and Post Graduate Diploma in Information Technology (PGDIT). The main objective of IIT is to create skilled human resources in the field of information and communications technology (ICT) to ensure the digital development of the country.

38. The proposed site is about 17,257 square feet (ft^2) or 0.16 hectare at an elevation of 6.8 m above mean sea level. At present, the site has a 14-room bachelors' staff quarters, single floor, tin shed complex, some trees in the yard, and a water source (two faucets) for the occupants (Figure 4.1). The bachelors' staff quarters serve as residence for DU male staff members generally from lower-level positions (Third Grade or lower). Main access to the site is through a secured gate connected to the Sociology Building. The site is bounded to the north by the Faculty of Fine Arts, to the south by the Faculty of Social Sciences, to the east by the Mausoleum of Poet Kazi Nazrul Islam, and to the west by the Institute of Business Administration (IBA). Dhaka University Central Mosque is located southeast of the proposed site. DU is within an urban area and there are no ecologically critical areas close to the project site. Table 4.1 presents a summary of the environmental setting within the study area.

39. The existing bachelors' staff quarters will be demolished to give way to the new IT HRDH. There is no fixed number of occupants as the facility is considered as a temporary homestay. At the time of site visit in January 2019, there were 25 occupants. Occupants pay rent for the bed, which is deducted from their salary. There is no contract between DU and the occupants.

Figure 4.1: Bachelors' Staff Quarters

Table 4.1: Summary of Environmental Setting in the Study Area

Item	Details
Location	Within DU in Dhaka district under DSCC 21 Ward, Shahbagh Thana
Latitude	23.735142
Longitude	90.394410
Topography	Flat terrain, and land is relatively plain
Major physiographic unit	Madhupur Tract comprising the central part of Dhaka, the course of Brahmaputra–Jamuna Flood Plain
Major soil type	Belongs to a Pleistocene terrace consisting mainly of red and mottled clays. They are strongly acidic with low organic matter, low moisture-holding capacity, and low fertility level.
Climatic condition	Humid and subtropical climate. During the winter season, cool winds blow from the northeast. Prevailing winds are northwest, south, and northeast.
Flooding	Generally flooded by the ingress of flood water from the north, west, and south side by the Bangsi, Dhaleswari, Tongi khal, Turag, and Buriganga rivers
Seismicity	Falls under seismic zone II (medium intensity seismic effects)
Nearest water body	• Independent Museum Lake in the east side about 380 m from project area • Ramna Lake in the northeast side about 690 m from project area
Ecologically critical area	No identified ecologically critical areas within the study area
Reserve or protected forest	No reserved or protected forest
Archeologically important site	Curzon Hall is a British Raj-era building and home of the Faculty of Sciences at the University of Dhaka, about 1.15 km from the proposed site

Item	Details
Sensitive receptors	There are three mosques, three hospitals, one museum, and one mausoleum within the 500-m radius of the proposed site
Major Settlement	Shahbagh Thana

m = meter.

B. Physical Environment

1. Geology and Soil

40. Dhaka is in the central-eastern part of Bangladesh. The city is in the extreme south of the Madhupur Tract. The main area is covered by the Pleistocene Madhupur clay, a yellowish brown to oxidized reddish brown silty clay. Madhupur Clay makes up most of the surface across the elevated Madhupur Tract. This particular unit is about 45 meters in thickness (average thickness in Dhaka is 10 meters) and has a fine sandy layer at its base. The southern part of Dhaka is made of Holocene sediments. The drainage channels and shallow depressions on the Madhupur Tract are partially comprised of grey and yellow organic-rich sands and clays of the Holocene Bashabo Formation.

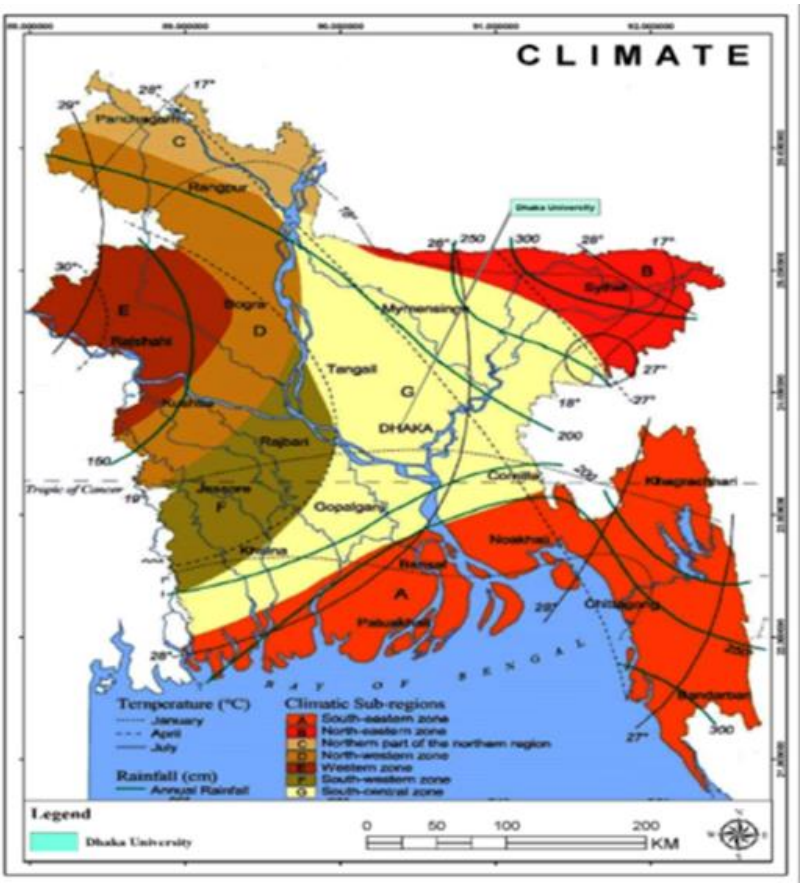
41. The major geomorphic units of the city are the high land or the Dhaka terrace, the lowlands or floodplains, depressions, and abandoned channels. Low-lying swamps and marshes located in and around the city are other major topographic features. The soil in Madhupur clay of the Pleistocene age, characterized by reddish plastic clay with silt and, very fine sand particles. The soil is noncalcareous dark grey in color in and around the project area. Moreover, dark grey floodplain soil can be found adjacent to the area of Turag and Buriganga.

2. Climate

42. According to Köppen climate classification, the project site falls under Aw category which is characterized by tropical wet and dry climate. This type of climate experiences hot and humid summer and dry winter. According to the climatic characteristics, Bangladesh is divided into 7 different climatic sub-regions. The study area of the project falls under the south-central climatic zone of the country (Map 4.2).

43. Meteorological data recorded at Dhaka station of the Bangladesh Meteorological Department (BMD) from January 1980 to December 2013 were used to describe climate within the study area. The average maximum temperature ranges from between 39.6°C to 30.1°C. The monthly variation of the average minimum temperature is 22.5°C to 6.5°C. The maximum recorded temperature in Dhaka station was 39.6°C which occurred in March 1999 and April 2009. In January 1995, the minimum temperature was recorded as 6.5°C in Dhaka. The warmest month is April while the coldest month is January.

Map 4.2: Climate Map



44. The average monthly rainfall is 332 mm while the maximum rainfall is 836 mm. The minimum monthly rainfall is 59 mm. Annual average rainfall is 2,066 mm and the highest recorded annual rainfall was 3,028 mm which occurred in 1984. The driest period of the year is winter when the average monthly rainfall varies from 21 mm to 7.21 mm. Relative humidity varies from 83.77% to 62.47%.

3. Natural Hazards

(a) Flooding

45. Dhaka city was particularly hit by severe floods in 1988 and 1998. During the 1998 flood, about 56 % of the city was inundated, including most of the eastern and 23% of the western part of the city. Over 60% of the area of Dhaka can be demarcated as flood risk zone considering its flood history. Flood in Dhaka is caused by high rainfall or by flooding from the surrounding rivers and canals. The western and most densely settled part of Dhaka is protected from river flooding by raised roads and an encircling embankment built after the 1988 flood. The eastern part of the city where most of the expansion takes place consists of low-lying floodplains that are submerged during the monsoon season. Some issues on Dhaka's flood scenario are provided below:

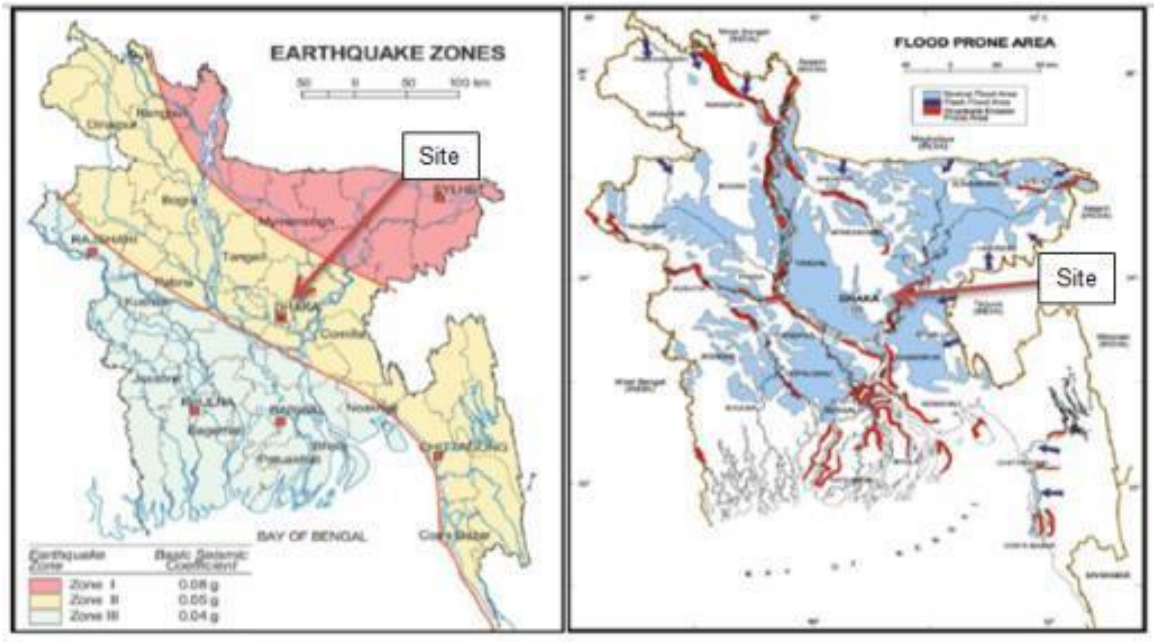
(i) All sides of Dhaka city are bounded by rivers and canals;
(ii) More than 50% of Dhaka is low-lying and inundated during monsoon season;
(iii) Filling of water retention areas and drains increases the risk of seasonal flooding;

(iv) Encroachment of rivers and canals can increase flood hazard susceptibility;
(v) Internal drainage congestion can make the flood situation more complex; and,
The poor or no enforcement of laws in protecting the low-lying areas in and around Dhaka.

(b) Seismic Effects

46. According to the National Seismic Zoning Map produced by the Geological Survey of Bangladesh, Dhaka lies at the end of the Dauki fault in an area of medium seismic risk. This means that shocks of moderate intensity are possible, with a probable maximum magnitude of 6.5-7 on the Richter scale. Seismic events in Bangladesh are relatively infrequent but historically have been severe, such as the earthquakes of 1930 and 1950 that caused widespread damage throughout the country, and the earthquake in 2004 that damaged large parts of Dhaka City. Map 4.3 shows the seismic zoning and flood prone areas in Bangladesh.

Map 4.3: Seismic Zoning and Flood-Prone Areas, Bangladesh



4. Ambient Air Quality and Noise

(a) Ambient Air Quality

47. The DOE maintains three continuous ambient air quality monitoring stations within the Dhaka district. This monitoring is under the Clean Air and Sustainable Environment (CASE) project funded by the World Bank in May 2009.[6] Table 4.2 shows the summary of monitoring results from January 2019 until December 2020 collected through the CASE project and Map 4.4 shows the location of the monitoring stations.

[6] Department of Environment. 2011. Clean Air and Sustainable Development Project. Dhaka.

Table 4.2: Summary of Monitoring Results under Clean Air and Sustainable Environment Project, January 2019 to December 2020

Parameter	National Ambient Air Quality Standards (2005)	Unit of Measure	Station		
			CAMS -1 Sangshad Bhavan, Sher-e-Bangla Nagar	CAMS -2 BARC Farmgate	CAMS -3 Darus-Salam
Average monthly air quality data (January 2019)					
SO_2 – 24 hr	140	ppb	6.32	2.64	16.8
NO_2	53 (Annual)	ppb	63.3	141	93.2
$PM_{2.5}$ – 24 hr	65	µg/m^3	131	149	205
PM_{10} – 24 hr	150	µg/m^3	DNA	212	302
Average monthly air quality data (February 2019)					
SO_2 – 24 hr	140	ppb	7.79	2.77	12.4
NO_2	53 (annual)	ppb	66.1	111	71.0
$PM_{2.5}$ – 24 hr	65	µg/m^3	124	134	144
PM_{10} – 24 hr	150	µg/m^3	DNA	235	244
Average monthly air quality data (March 2019)					
SO_2 – 24 hr	140	ppb	DNA	2.41	5.99
NO_2	53 (annual)	ppb	84.0	DNA	45.1
$PM_{2.5}$ – 24 hr	65	µg/m^3	86.3	114	123
PM_{10} – 24 hr	150	µg/m^3	164	206	225
Average monthly air quality data (April 2019)					
SO_2 – 24 hr	140	ppb	3.16	2.60	DNA
NO_2	53 (annual)	ppb	54.3	DNA	21.8
$PM_{2.5}$ – 24 hr	65	µg/m^3	57.2	67.3	71.5
PM_{10} – 24 hr	150	µg/m^3	115	149	132
Average monthly air quality data (May 2019)					
SO_2 – 24 hr	140	ppb	DNA	15.8	DNA
NO_2	53 (annual)	ppb	DNA	DNA	20.1
$PM_{2.5}$ – 24 hr	65	µg/m^3	38.2	69.6	49.7
PM_{10} – 24 hr	150	µg/m^3	98.7	129	99.8
Average monthly air quality data (June 2019)					
SO_2 – 24 hr	140	ppb	5.75	DNA	DNA
NO_2	53 (annual)	ppb	DNA	DNA	15.9
$PM_{2.5}$ – 24 hr	65	µg/m^3	18.9	58	33.2
PM_{10} – 24 hr	150	µg/m^3	43	105	58.4
Average monthly air quality data (July 2020)					
SO_2 – 24 hr	140	ppb	DNA	1.415	DNA
NO_2	53 (annual)	ppb	DNA	5.931	DNA
$PM_{2.5}$ – 24 hr	65	µg/m^3	DNA	15.913	DNA
PM_{10} – 24 hr	150	µg/m^3	DNA	25.92	DNA
Average monthly air quality data (August 2020)					
SO_2 – 24 hr	140	ppb	DNA	1.86	DNA
NO_2	53 (annual)	ppb	DNA	7.66	DNA
$PM_{2.5}$ – 24 hr	65	µg/m^3	DNA	21.27	DNA
PM_{10} – 24 hr	150	µg/m^3	DNA	33.89	DNA
Average monthly air quality data (September 2020)					
SO_2 – 24 hr	140	ppb	DNA	2.34	1.23
NO_2	53 (annual)	ppb	DNA	9.59	23.97
$PM_{2.5}$ – 24 hr	65	µg/m^3	DNA	24.82	33.82

Parameter	National Ambient Air Quality Standards (2005)	Unit of Measure	Station		
			CAMS -1 Sangshad Bhavan, Sher-e-Bangla Nagar	CAMS -2 BARC Farmgate	CAMS -3 Darus-Salam
PM_{10} – 24 hr	150	µg/m^3	DNA	50.03	54.12
Average monthly air quality data (October 2020)					
SO_2 – 24 hr	140	ppb	DNA	DNA	1.76
NO_2	53 (annual)	ppb	DNA	9.17	39,88
$PM_{2.5}$ – 24 hr	65	µg/m^3	DNA	54	59.67
PM_{10} – 24 hr	150	µg/m^3	DNA	88.67	93.45
Average monthly air quality data (November 2020)					
SO_2 – 24 hr	140	ppb	DNA	8.05	1.62
NO_2	53 (annual)	ppb	DNA	DNA	59.89
$PM_{2.5}$ – 24 hr	65	µg/m^3	DNA	119.36	114.52
PM_{10} – 24 hr	150	µg/m^3	DNA	157.35	168.57
Average monthly air quality data (December 2020)					
SO_2 – 24 hr	140	ppb	DNA	6.24	2.38
NO_2	53 (annual)	ppb	DNA	9.4	55.95
$PM_{2.5}$ – 24 hr	65	µg/m^3	DNA	168.2	182.76
PM_{10} – 24 hr	150	µg/m^3	DNA	228.89	236.36

CAMS = Continuous Air Quality Monitoring System, DNA = data not available, µg/m^3 = microgram per cubic meter, NO_2 = nitrogen dioxide, $PM_{2.5}$ = particulate matter 2.5, PM_{10} = particulate matter 10
Source: DOE. Clean Air & Sustainable Environment.
http://case.doe.gov.bd/index.php?option=com_content&view=article&id=11&Itemid=8.

Map 4.4: Monitoring Stations under the Clean Air and Sustainable Environment Project

48. Overall results from the CASE air quality monitoring (January 2019 to December 2020) suggest that NO_2, PM_{10} and $PM_{2.5}$ exceeded the limits set by the National Ambient Air Quality Standards (NAAQS) 2005. Only SO_2 meets the level set by NAAQS 2005. However, average results from July-December 2020 show that SO_2, NO_2, and PM_{10} meet limits set by NAAQS (2005) but not the limit for $PM_{2.5}$. The average results for SO_2, NO_2, and PM_{10} complying with the limits set by NAAQS (2005) may have been influenced by the significantly reduced or lack of domestic activities at the height of the COVID-19 pandemic. Existing sources of air pollution are mainly vehicular emissions, ongoing construction of large infrastructure projects, brick-kiln operations, and dust-generating activities of densely populated settlements.

49. Ambient air quality measurements were conducted by the EQMS Consulting Limited on 6 April 2019 at and around the project site. Three sampling stations were identified (Map 4.5) and results are given in Table 4.3. Results of this one-time sampling suggest that it meets NAAQS (2005) and meets IFC-WB EHS Guidelines 2007 on PM_{10} and $PM_{2.5}$ in one station (i.e., AQ1- In front of Central Mosque in DU), and NO_2 in all the three stations. Two stations (i.e., AQ2- In front of settlement near Mosque, and AQ3- In front of Bachelors' Staff Quarters) exceed the limits of the IFC-WB EHS Guidelines 2007 for PM_{10} and $PM_{2.5}$.

Map 4.5: Ambient Air Quality Stations, Project Site

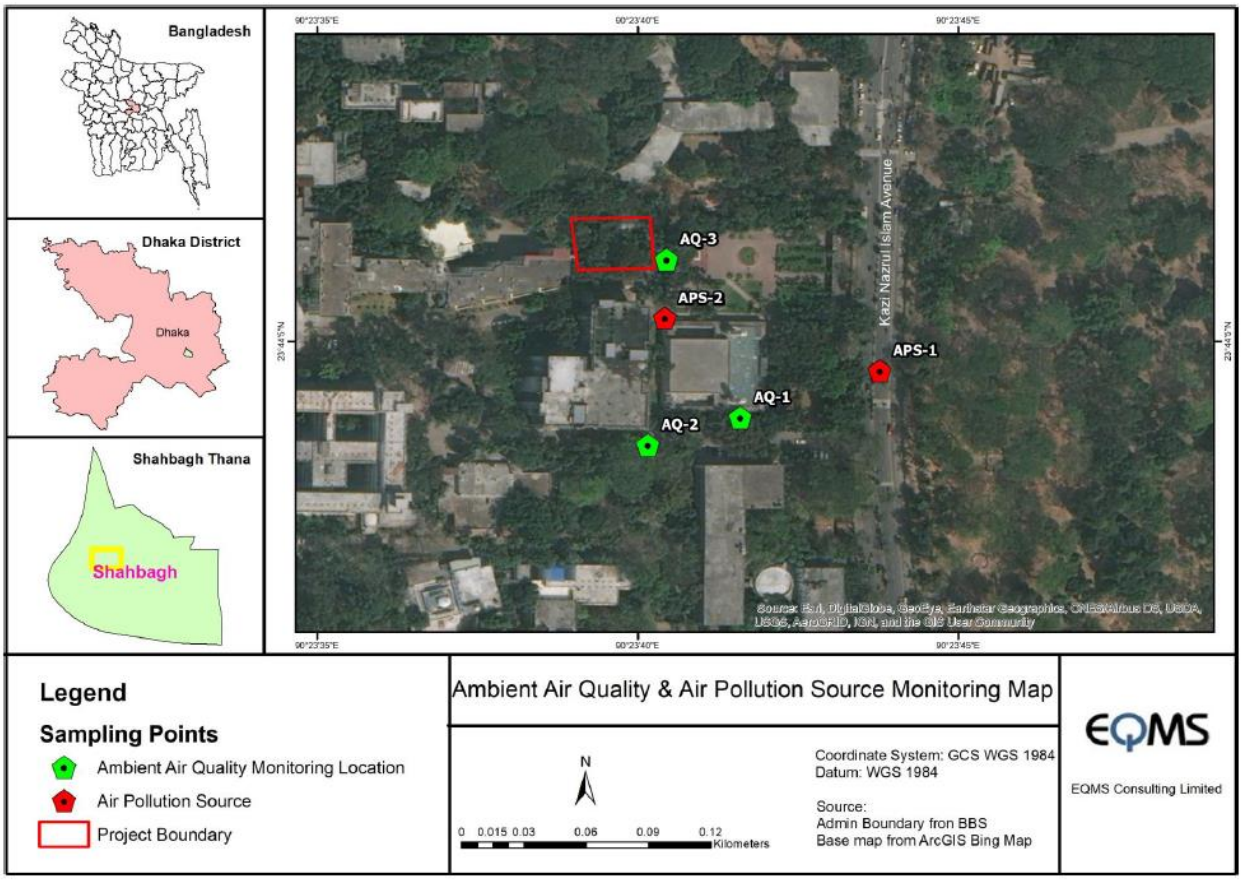


Table 4.3: Results of Ambient Air Quality Measurements, 6 April 2019

Location	Concentration (µg/m^3)		
	PM_{10}	$PM_{2.5}$	NO_x
AQ1- In front of Central Mosque in DU	17.53	13.88	72.05
AQ2- In front of settlement near Mosque	54.48	38.16	74.99
AQ3- In front of Bachelors' Staff Quarters	62.13	49.19	69.01
Duration (hour)	24	24	1
Standards ECR 1997 and amendment in 2006 Standard (Schedule 2)	150 (24-hr averaging period)	65 (24-hr averaging period)	100 (Annual averaging period)
IFC-WB EHS Guidelines 2007	50 (24-hr averaging period) guideline	25 (24-hr averaging period) guideline	200 (1-hr averaging period) guideline

AQ = air quality, DU = University of Dhaka, ECR = Environment Conservation Rules, IFC-WB EHS = International Finance Corporation-World Bank Environmental, Health, Safety, NO_x = oxides of nitrogen (as nitrogen oxide), $PM_{2.5}$ = particulate matter 2.5, PM_{10} = particulate matter 10, µg/m^3 = microgram per cubic meter.

(b) Noise

50. The main sources of increased noise level at and around the project site are due to movements of vehicles, students' activities, and the ongoing construction (vertical expansion of Sociology Building). Three noise sampling stations were identified to do measurements as baseline data (Map 4.6). Results suggest that the settlements on the central mosque exceed the limits set forth by the Noise Pollution Control Rules 2006 and the IFC-WB EHS Guidelines 2007 both in daytime and nighttime. Measurements were done on 6 April 2019 and the results are given in Table 4.4. Noise sampling stations are shown in Map 4.6.

Map 4.6: Noise Sampling Station, Project Site

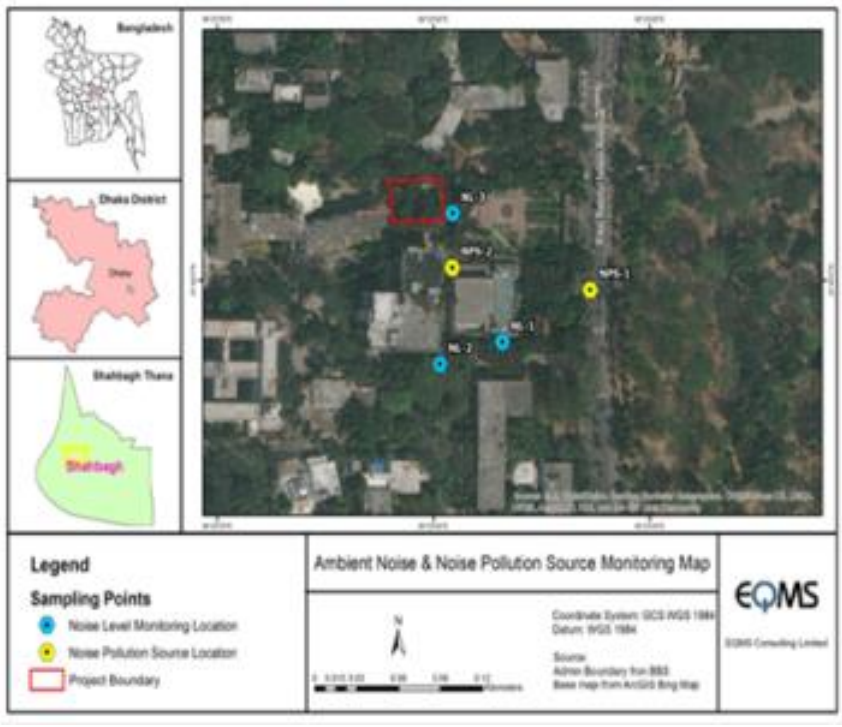


Table 4.4: Results of Ambient Noise Sampling, 6 April 2019

Location	Leq Day (dBA)	Leq Night (dBA)
NL1-In front of Central Mosque, Dhaka University	55.20	48.55
NL2- In front of settlement near Mosque	63.54	53.75
NL3- In front of Bachelor Staff Quarter	50.47	46.35
(Mixed use) Noise Pollution Control Rules 2006	60	50
(Residential, institutional, educational) International Finance Corporation–World Bank Environmental, Health, and Safety General Guidelines 2007	55	45

dB(A) = A-weighted decibel, Leq = equivalent continuous sound pressure level or the average sound pressure level over a specified time interval, NL = noise level.

5. Groundwater Quality

51. On 30 March 2019, drinking water sample was collected from the source of water supply in the project site (Figure 4.2) for laboratory analysis of fecal coliform, pH, arsenic, lead, cadmium, and chromium (hexavalent). Results show that the water sample meets the limits of WHO and ECR 1997, Schedule 3(B) Rule 12 for all the drinking water quality parameters tested. Table 4.5 shows the result of sampling.

Table 4.5: Result of Drinking Water Analysis

Parameter	Unit of Measure	Allowable Limit		Result of Analysis
		Environment Conservation Rules 1997, Schedule 3(B) Rule 12	WHO	
Fecal Coliform	n/100 ml	0	Must not be detectable in any 100 ml sample	0
pH	–	6.5–8.5	–	6.88
Arsenic (As)	mg/l	0.05	0.01	<0.010
Lead (Pb)	mg/l	0.05	0.01	0.002
Cadmium (Cd)	mg/l	0.005	0.003	BDL (below detectable limit)
Chromium^{+6}	mg/l	0.05	0.05	0.001

– = not applicable, mg/l = milligram per liter, ml = milliliter, n = number, WHO = World Health Organization.
Date of Sampling: 30 March 2019

Figure 4.2: Water Sampling at the Project Site

Testing of drinking water. Drinking water at DU meets standards of the World Health Organization and the Environment Conservation Rules 1997, Schedule 3(B) Rule 12

6. Biological Environment

52. The project site has about 25 trees commonly found in Dhaka City (Figure 4.3). Most of the trees are fruit-bearing like mango, jackfruit, banana, and coconut. Some of the major types of trees found in Dhaka university area include mahogany, rain tree, Kul or Indian Jujube (*Ziziphus mauritiana*), and Sishu or Indian Rosewood (*Dalbergia sissoo*).

53. There is no natural surface water that may be affected by the project.

Figure 4.3: Vegetation in the Project Site

7. Socioeconomic Environment

54. Dhaka is the most populated city in Bangladesh, and it is also one of the most populated cities in the world. According to the United Nations, *The World's Cities in 2018*, the population of 19.578 million makes Dhaka 9th most populous cities in the world.

55. The project site is within Shahbagh Thana, which was separated from the Ramna Thana on 29 June 2006. Based on the data from the Bangladesh Bureau Statistics (2013), the population in Shahbagh is 33,513 with 3,832 households and population density of 13,194 persons per square kilometer. The average household size is 8.74.

56. The population is predominantly Muslim (94.66%) with small community of Hindu (3.79%). Main sources of income are service, industry and agriculture.

57. The type of housing is mainly pucca (59%) followed by semi-pucca (26%), kutcha (14%) and Jhupri (1%). More than half of the population is renting (73%) and only 24% own their place and about 4% is rent-free.

58. Almost 90% of the population has access to sanitary latrine facility.

59. The population is well connected to the electricity grid (98%) and about 77% of the population use tap water as source of drinking water. The rest of the population (19%) use tube well.

60. The national poet, Kazi Nazrul Islam, also known as the 'Rebel Poet' was buried with state honor at DU on the northern side of the central mosque of DU (Figure 4.4). This landmark is secured, and public access is controlled. This is located east of the project site.

61. Poet Nazrul used his literature and songs to fight and resist against oppression and colonialism that earned him the name of "The Rebel Poet."[7] The operation and maintenance of the Poet Kazi Nazrul Islam's graveyard is entrusted to DU.

Figure 4.4: Poet Kazi Nazrul Islam's Graveyard

62. **Coronavirus disease (COVID-19) Pandemic**. On 30 January 2020, the World Health Organization (WHO) declared the coronavirus disease (COVID-19) as a Public Health Emergency of International Concern under the International Health Regulations 2005.[8] The COVID-19 is a new disease with similar symptoms as influenza but different in terms of severity and community transmission.[9] On 11 March 2020, the WHO recognized COVID-19 as a pandemic, "an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people".[10]

63. In Bangladesh, the first COVID-19 case was identified on 8 March 2020 and the first death reported on 18 March 2020. Following this incident, the government declared a nationwide lockdown on 26 March 2020 implementing an area-based zoning system. Prior to the nationwide lockdown, educational institutions were temporarily closed on 17 March 2020 affecting about 39 million learners from pre-primary to tertiary education.[11] During the closure, educational

[7] UNESCO. 2014. *A Tribute to The National Poet KAZI NAZRUL ISLAM - on his 115th Birth Anniversary*. Dhaka
[8] World Health Organization (WHO). *International Health Regulations (2005)*. 3rd Ed.
[9] WHO. *Health Topics. Coronavirus*.
[10] WHO. *Bulletin of the World Health Organization.*
[11] UNESCO. *COVID-19 Impact on Education*.

institutions opted to use remote learning, but the lack of digital infrastructure affected most of the students.

64. The following are some of the initiatives taken by the government in response to the challenges facing the education sector due to COVID-19 pandemic:[12]

- Preparation of the COVID-19 Response and Recovery Plan May 2020
- Preparation of the School Re-opening Framework for primary sub-sector
- Arrangement of distance learning through television and radio
- Introducing a television channel named Education TV, dedicated to education and educational issues during COVID-19 and even after COVID-19
- Institution level arrangement for online class through Zoom and other social media
- Evaluation of students based on school performance.

65. COVID-19 testing started in May 2020 and with support from WHO and other international financial institutions like the ADB, there are 613 laboratories and testing centres in Bangladesh as of 11 July 2021. According to the Directorate General of Hospital Services, there are 15,043 dedicated general beds to COVID-19 treatment out of which 5,668 beds are in Dhaka City. As well, there are 1,263 beds for COVID-19 intensive care unit of which 861 beds are in Dhaka City.

66. A total of 1,021,189 COVID-19 cases have been recorded in Bangladesh as of 11 July 2021 with 16,419 deaths and about 10.859 million vaccines administered (i.e., 1st dose – 6,048,505 and 2nd dose – 4,810,368).[13] According to WHO Bangladesh, Dhaka division has 649,426 cases of COVID-19 with 8,115 deaths from 8 March 2020 until 11 July 2021. Of the cases reported in Dhaka Division, 63.6% (or 413,035 cases) were from Dhaka City.

V. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

67. Associated potential environmental impacts will be mainly during the demolition of the existing staff housing at the project site, and during the construction phase of the new building, which are temporary, of short duration, localized, and can be easily mitigated through the implementation of the environmental management plan (EMP). Aside from the EMP, these impacts can be avoided and/or mitigated through compliance with relevant provisions of the Bangladesh National Building Code (BNBC) 2006 and adherence to best practices in construction engineering. The environmental monitoring plan (EMOP) will provide the key elements to be monitored to ensure compliance by the Contractor with the approved building design and relevant regulations on building construction, and environmental and occupational health and safety.

A. Pre-construction and Design Phase

68. At this stage, activities include preparation of project proposal, design of the new building, desktop and ground surveys of the proposed site, preliminary consultations, and drafting of the development project proforma or proposal. These activities are not expected to have significant environmental impacts as the activities will have minimal physical disturbances to the environment.

[12] Bangladesh, Ministry of Education. 2020. *COVID-19 Response and Recovery Plan Education Sector*. Dhaka.
[13] WHO. 2021. *Morbidity and Mortality Weekly Update (MMWU) No. 72.*

1. Demolition of Existing Bachelors' Staff Quarters

69. The Contractor will be required to prepare a demolition plan for approval of the PIU (and Office of the Chief Engineer) and will secure demolition permit (if required). The demolition plan will include information such as location of project site, height of the structure above ground level, nearest distance from the structure to the site boundary, type of building, structural support including materials for its construction, proposed method of demolition, handling and disposal of demolished materials, duration of demolition works, and safety and emergency arrangements.

70. The demolition plan will also include a survey for the presence of asbestos-containing material (ACM) in the existing structure such as roofing shingles, and cement sheeting used for walls and partitions. If presence of ACM has been identified during the survey, the following measures will be implemented:

(i) Engage a certified asbestos service provider to identify and remove ACM in the project site;
(ii) Ensure that an asbestos management plan is prepared by the Contractor prior to any works involving ACM;
(iii) Comply with relevant national regulations in identifying mitigation measures, and adopt best practices provided by mitigating measures, comply with national regulations (if available) and adopt international good practices such as those detailed in the Good Practice Note on Asbestos by the World Bank Group and the IFC EHS General Guidelines on Occupational Health and Safety,[14] the Safe Work Practices for Handling Asbestos by WorkSafe BC, or the US EPA;[15]
(iv) Provide personal protective equipment to workers with potential exposure to ACM;
(v) Provide training to workers with potential exposure to ACM; and,
(vi) Notify the relevant authorities such as the Department of Labour on the removal and disposal of ACMs; and,
(vii) Proper handling of removed ACMs and identify the designated disposal site.

71. Appropriate measures will be followed to ensure the safety of the workers who may be involved in the demolition. No demolition works will commence prior to the approval of the demolition plan and issuance of the required permit from the government.

72. Given the type and characteristics of the existing structure (i.e., single floor school-type building), manual demolition method will be employed. The Contractor will ensure the following:

- workers have been trained on safe demolition and demolition works will be supervised by a licensed and competent person(s);
- a written code of practice fit for the demolition method to be used is prepared;
- identify exclusion zones to keep unauthorized people outside of potential collapse zones; and areas considered safety risks;
- install or post warning signs indicating asbestos removal – no entry;
- provision of medical services and first aid including fire prevention and protection; and,
- provision of appropriate PPEs where use will be mandatory.

[14] World Bank Group. 2009.*Good Practice Note. Asbestos: Occupational and Community Health Issues*. Dhaka.
[15] WorkSafe BC. *Safe Work Practices in Handling Asbestos.; US EPA. Asbestos Safe Work Practices.*

73. Demolition works will generate waste, may increase dust and noise level, and may pose occupational and community safety risks. The site will be temporarily enclosed to contain dust and minimize noise. Demolition works will be done only during daytime.

74. Occupants will be notified in advance and will be given adequate time to move out to the new accommodation before the structure is demolished. Nearby building users such as the Sociology Department will be notified of the demolition works at least one week in advance. ECP 6.0 provides additional measures to manage demolition works.

Figure 5.1: Existing Staff Housing at the Project Site

2. Transfer of Occupants to Another Accommodation

75. Affected legitimate occupants of the existing bachelors' staff quarters will be moved to another accommodation within DU. The occupants are aware of the decision of DU to demolish the existing old housing to provide the needed space for IT HRDH. There are 20 ongoing constructions of new dormitories in seven locations within DU. The nearest one is about a 10-minute walk from the project site, which may be completed and ready for occupancy within 2019 (Figure 5.2) The Manager of Estate Office dealing with staff accommodations assured that legitimate occupants who will be affected by the demolition will be moved to another accommodation prior to any construction works at the project site.

Figure 5.2: Ongoing Construction of New Staff Accommodation

76. With the move, the housing condition of occupants is improved through the new housing accommodations that DU is currently doing. After DPP approval, there will be a round of formal consultations with the occupants, and 60 days prior to construction, a sign board will be posted on-site indicating the new development and the details of the contact person(s).

3. Green Building Features of Information Technology Human Resource Development Hub

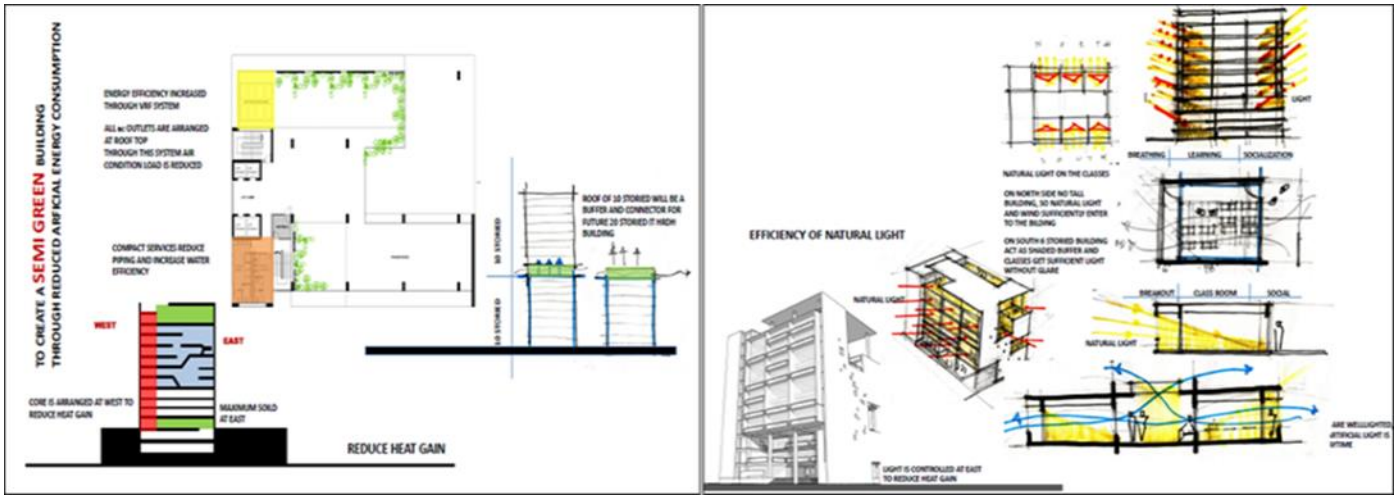
77. Green building features were incorporated in the design of IT HRDH, which aims to reduce energy and water consumption, and thus, also expected to be a climate change-resilient building. These features are included in the budget. With the use of energy-efficient lighting and cooling systems, the minimum contribution to carbon dioxide (CO_2) emissions reduction is estimated at 246 tons per year. Figure 5.3 shows the design features.

78. Aside from incorporating green building features, relevant provisions set forth in BNBC 2006 and BNBC 2015 (draft) will be adhered to in the design and construction. Should there be any changes in the design from where this IEE was based, the PIU will revise the IEE, PMU to review and submit to ADB for disclosure on ADB website and government or EA/IA website.

4. Preparedness to COVID-19

79. Contractors will be required to prepare a health and safety plan (H&SP) in response to the potential COVID-19 outbreak in the construction sites that may cause community health risks. While there is already a COVID-19 vaccination rollout, and administration of vaccine to the population continues, there is still a need to be prepared in the unfortunate event of an outbreak in the workplace that may affect the students and staff in DU. Appendix 8 presents a sample H&SP. The Contractor will prepare a site-specific H&SP to be approved by the PIU and PMU.

Figure 5.3: Design of Green Features



B. Construction Phase

80. This phase will involve the recruitment of workers and staff, mobilization of contractors, equipment and machineries, site preparation, delivery, and storage of construction materials; civil, mechanical, and electrical works; landscaping and clean-up of construction debris, and occupancy of the new building.

81. Prior to construction works, the PMU in UGC and the PIU in DU will ensure that the Contractor will include the responsibility of compensating for any temporary damage, loss, or inconvenience resulting from accident or failure to comply with regulations in implementing the project. The Contractor will be required to conduct baseline environmental quality measurements for air, noise, and source of drinking water to be provided to construction workers before the start of construction. Results of measurements will be included in the environmental monitoring report that will be submitted by the PIU semi-annually to ADB through the MOE.

82. Environmental Codes of Practice (ECP) relevant during construction phase are given in Appendix 1. ECPs are general non-site-specific guidance from best construction practices that can be implemented for this project to ensure that potential associated construction environmental impacts will be minimized. Contractors will be required to refer to these ECPs in addition to complying with the EMP.

1. Prepare Construction Management Plan

83. Before any construction works, the Contractor will be required to prepare a construction management plan to guide the implementation of earth-moving works; construction of the building; civil, mechanical, and electrical works; including restoration of the site and the existing access roads. The plan will cover work scheduling, occupational and community health and safety, temporary pedestrian and traffic management, spoils disposal and construction waste, noise and dust control, drainage and stormwater management, materials storage and management, protocol in dealing with students, occupants of staff housing and administrative staff of DU, and emergency/disaster preparedness. Critical information to know during emergency will be included in an emergency kit such as evacuation or assembly point, and what needs to be

done and should not be done. Emergency contact details will be posted on billboards clearly at the construction site.

2. Hiring of Staff and Workers

84. There will be potential job opportunities for both skilled and unskilled workers during the construction phase. These opportunities, however, may cause conflict over lack of transparency in recruitment. Hiring of local labor will be given priority. The Contractor will be required to comply with the relevant provisions in the Bangladesh Labor Act 2006 (amended 2013) and Bangladesh Labor Rules 2015 on recruitment and working conditions.

85. Due to construction works, there will be workers present within the premises of DU particularly in the construction site. The Contractor will be required to ensure that their workers will strictly observe the rules and regulations of DU including occupational health and safety rules that will be imposed on them by the Contractor.

Before arrival of workers and staff, Contractors and PIU will ensure that they have been tested negative to COVID-19 and will not pose occupational and community health risks. Contractors and PIU will keep a record of their contact details such as mobile telephone number, alternate telephone, email (if any), and the address of where they are staying. As well, the Contractors will provide the PIU with results that they have been tested negative to COVID-19.

3. Orientation of Workers and Staff

86. Before any construction works begin, the PIU and PMU together with the Environmental Safeguard Consultant will conduct an orientation for the workers and staff of the Contractors on occupational health and safety as well as the environmental requirements of the government and ADB. The orientation aims to create awareness on their responsibility in implementing and complying with the EMP, effective record keeping, and environmental reporting. The orientation will also include awareness on communicable diseases like tuberculosis, COVID-19, and HIV/AIDS to prevent potential incidence in the workplace. Workers will be given training and/or orientation on disaster and emergency procedures, occupational health, and safety (OHS); on COVID-19, its symptoms, mode of transmission, mandatory use of PPEs, and general precautionary measures that will be implemented based on the approved H&SP such as hand washing, physical distancing (2 m apart), enhanced cleaning and disinfection of surfaces and objects frequently touched in the workplace, posting of signs to create awareness of COVID-19.

87. The Contractor will be required to designate an Emergency and Disaster Coordinator who will also function as the OHS Officer to guide the workers in case of an emergency, disaster, or COVID-19 incidence, and to oversee compliance to H&SP on prevention of COVID-19 transmission in the workplace. Workers will be informed that mock drills will be conducted regularly, and participation will be mandatory. The Contractor will be required also to invite resource persons from relevant government agency or private sector to conduct training on proper emergency response at least once a year throughout construction phase.

88. All workers are expected to be fit to work. The Contractor will ensure that daily temperature checks are done to the workers before entry to the work sites. Any person that shows signs of cough and colds will not be allowed entry to the work sites and will be advised to stay at home and isolate.

4. Site Preparation and Construction Works

89. The Contractor will coordinate with respective government agencies before any site preparation to determine the connections of utilities such as natural gas pipeline, water pipes, sewers, telecommunications, and other services that may be affected.

90. If the Contractor decides to operate a quarry to meet the requirements of the construction works, the necessary permits and clearances from relevant agencies of the government will be obtained prior to start of operation. The Contractor will ensure that the quarry providing materials to the construction of IT HRDH is maintained in a stable condition, is appropriately and adequately landscaped, and when taken from the river, it should not disrupt the flow of river or damage the riverbanks as to cause erosion. The stockyard and construction site will be temporarily and properly enclosed, with designated security personnel to prevent entry of unauthorized persons. At present, the site is gated to separate student access from the existing bachelor's staff housing.

91. The project site is within the premises of DU and is not known to have sites of archeological and historical value. The graveyard of Poet Kazi Nazrul Islam, which is in the eastern side of the project site, is not expected to be affected as there will no blasting during demolition. Demolition works will be conducted manually. Nonetheless, ECP 1.0 provides measures in case of an encounter with any physical cultural resource.[16]

5. Impacts on Air Quality

92. Site preparation involves land and minimal vegetation clearing. A potential increase in dust level may be expected resulting from these activities. This impact may cause inconvenience to the students, faculty, and staff in the nearby social science building, which is in front of the project site, and the people using the central mosque located southeast of the project site. To contain the potential increase in the generation of dust, the Contractor will be required to do the following:

(i) Provide temporary fencing and enclosures of the construction site (at least 2 m-high);
(ii) Spray water to any opened area and work sites, as and when needed particularly during the summer season;
(iii) All excavated soil and stockyard will be covered with tarpaulin or other appropriate cover material during nonworking hours, and excess soil will be removed from the worksite to the designated disposal site;
(iv) Provide a space on-site to accommodate the required materials so that transport and delivery of construction materials and vehicular emissions will be minimized;
(v) Provide workers assigned to dusty areas with safety masks or goggles;
(vi) Vehicles that will deliver construction materials to the site that generate dust will be covered with suitable material to contain the dust;
(vii) Regularly maintain construction vehicles, generators (if required), and heavy equipment to avoid smoke belching;
(viii) Prohibit burning of garbage, liquid waste, and other combustible materials within the construction site; and,

[16] PCR as defined in SPS 2009 are movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Physical cultural resources may be located in urban or rural settings and may be above or below ground or under water. Their cultural interest may be at the local, provincial, national, or international level.

(ix) Follow the measures identified in ECP 2.0 on managing air quality.

93. The PIU will ensure that ambient air quality limits set by the IFC–WB EHS General Guidelines 2007 and the government will not be exceeded during the construction phase. The limits set by the NAAQS 2005 are less stringent compared to the IFC–WB EHS General Guidelines 2007. SPS 2009 requires that should host country regulations differ from the levels and measures set by the IFC–WB EHS General Guidelines 2007, the host country will achieve whichever is more stringent. In this case, the IFC–WB EHS General Guidelines 2007 will be the relevant limits that the Contractor needs to comply with.

6. Impacts on Noise

94. The major sources of noise generation are movement of construction vehicles, associated land clearing, and from the construction of IT HRDH. These activities, together with daily university activities, on some occasions, may exceed the limits provided for in the Noise (Pollution) Control Rules 2006. This intermittent increase in noise levels will be temporary, of short duration, and can be mitigated.

95. Exposure of workers to increased noise levels is an occupational as well as public health hazard. Table 5.1 presents the typical noise levels of tools and equipment. As a comparison, Table 5.2 presents the common sources of noise and decibel levels that people are generally exposed to daily. To mitigate the temporary negative impact on noise, the Contractor will be required to:

(i) orient and inform workers, prior to construction works, about noise level requirements;
(ii) provide workers assigned to high-level noise-generating activities with PPE such as earmuffs and earplugs, and will be rotated every 2 hours;
(iii) provide temporary enclosure of the work site particularly those area generating noise;
(iv) undertake activities that generate noise during the daytime only (but will be adjusted depending on the weather and season);
(v) require drivers of construction vehicles to observe low speeds, and blowing of horns or whistles will not be allowed unless absolutely necessary;
(vi) assign staff to maintain the flow of traffic to avoid inconvenience to students, faculty members, and administrative staff;
(vii) require regular tune-up of construction vehicles and proper maintenance of machinery; and,
(viii) refer to ECP 3.0 on measures to manage noise and vibration.

Table 5.1: Typical Noise Levels of Tools and Equipment

Equipment	Noise Level, dB(A)
Cranes	78–103
Backhoes	85–104
Loaders	77–106
Dozers	86–106
Scrapers	97–112
Trenchers	95–99
Pile drivers	119–125
Compactors	90–112
Grinders	106–110

Equipment	Noise Level, dB(A)
Chainsaws	100–115
Concrete saw	97–103
Sandblasting nozzle	111–117
Jackhammers	100–115
Compressors	85–104

dB(A) = A-weighted decibel.
Note: These noise levels are measured at the operator's position.
Source: Chapter 14, Table 14-4 in Infrastructure Health & Safety Association. http://www.ihsa.ca/About.aspx.

Table 5.2: Common Sources of Noise and Decibel Levels

Everyday Sounds and Noises	Average Sound Level (dBA)	Typical Response (after routine or repeated exposure)
Softest sound that can be heard	0	Sounds at these dB levels typically do not cause any hearing damage.
Normal breathing	10	
Ticking watch	20	
Soft whisper, quiet library	30	
Refrigerator hum	40	
Moderate rainfall	50	
Normal conversation, air conditioner	60	
Washing machine, dishwasher	70	You may feel annoyed by the noise
City traffic (inside the car)	80–85	You may feel very annoyed
Gas-powered lawnmowers and leaf blowers	80–85	Damage to hearing possible after 2 hours of exposure
Subway, passing motorcycle, gas mower	91	Dangerous to hearing; wear earplugs or earmuffs
Hair dryer, kitchen blender, food processor	94	Dangerous to hearing; wear earplugs or earmuffs
Motorcycle	95	Damage to hearing possible after about 50 minutes of exposure
Approaching subway train, car horn at 16 feet (5 meters), and sporting events (such as hockey playoffs and football games)	100	Hearing loss possible after 15 minutes
The maximum volume level for personal listening devices; a very loud radio, stereo, or television; and loud entertainment venues (such as nightclubs, bars, and rock concerts)	105–110	Hearing loss possible in less than 5 minutes
Shouting or barking in the ear	110	Hearing loss possible in less than 2 minutes
Standing beside or near sirens	120	Pain and ear injury
Jet plane takeoff, siren, pneumatic drill	120	Not safe for any period of time
Jackhammer	130	Not safe for any period of time
Firecrackers	140–150	Pain and ear injury

dB(A) = A-weighted decibel.
Sources: US Department of Health & Human Services, Center for Disease Control and Prevention. What Noises Cause Hearing Loss? https://www.cdc.gov/nceh/hearing_loss/what_noises_cause_hearing_loss.html; American Speech-Language-Hearing Association. Loud Noise Dangers.https://www.asha.org/public/hearing/Loud-Noise-Dangers/#signs.

7. Generation of Waste

96. Construction works are expected to generate waste such as spoils, construction materials, wood, cleared vegetation, waste food, cement container, facial masks, gloves, and other similar debris. If not managed properly, this waste will be unsightly and may pose health and safety risks to workers and the community within DU. To mitigate this impact, the Contractor will be expected to implement the following measures:

(i) implement the waste management plan, which is part of the overall Construction Management Plan submitted to PIU before the start of construction;
(ii) provide adequate garbage bins and require workers to separate waste for easier collection and management (i.e., residual oil and lubricants, paints, thinners will not be mixed with other waste);
(iii) always observe good housekeeping at the construction site and monitor compliance;
(iv) provide separate bins for collection of used facial mask and gloves worn as part of COVID-19 prevention measure;
(v) burning of solid waste at the construction site will not be allowed at any time; and,
(vi) refer to ECP 4.0 for further measures on waste management.

97. Waste that may be generated during project implementation will be disposed of in designated disposal site approved by the Dhaka South City Corporation (DSCC). After the separation of Dhaka City Corporation into north and south, DU is under the jurisdiction of DSCC. There are four secondary transfer station (STS) in DSCC funded by ADB and it will likely be STS 12 for DU which is in front of the Dhaka Medical College. Final disposal for garbage generated from DSCC will be the Matuail landfill site about 6.1 km from DU.

8. Impacts on People

98. Associated works during the site preparation and construction of the new building may pose health and safety risks to workers and community. This could be from working on heights and constrained spaces, and risk of exposure to and transmission of COVID-19. Noncompliance to the approved H&SP, relevant regulations on codes and standards on civil, mechanical, and electrical works may also trigger accidents and occupational health risks to workers. Given the site, construction camps will not be located within DU premises. To the extent possible, workers and staff to be recruited will be from within Dhaka City to avoid maintaining a construction camp on-site. To minimize the occupational and community health and safety risks, the Contractor will be required to implement the following measures:

(i) **Occupational health and safety risks.** To prevent accidents, provide workers and staff with appropriate PPEs and safety clothes such as hard hats, steel-toed boots, earmuffs or earplugs, etc.; and train and/or orient workers on safe building construction practices and other issues on safety. Wearing of safety gear will be mandatory and the statutory age requirements for employment as provided for in Bangladesh Labour Act 2013 will be strictly enforced. Consider providing group insurance to construction workers for accidents resulting to disabilities or death. The provisions on occupational health and safety in the IFC-WB EHS General Guidelines 2007 will be followed as internationally recognized standards and best practice.

Sanitary facilities and safe drinking water will be provided to the workers and appropriate scaffoldings will be installed. Clear and visible warning signs and lighting will be installed. In case of medical emergency, first aid kits will be provided at the construction sites. Fire-fighting equipment will be provided on-site. DU has a Medical

Centre that can provide medical support, if required. The Medical Centre provides round-the-clock medical services with 30 doctors working on different shifts. The Medical Centre will coordinate with the Directorate General of Health Services on the appropriate protocol for handling of persons in the construction site that show symptoms of COVID-19.

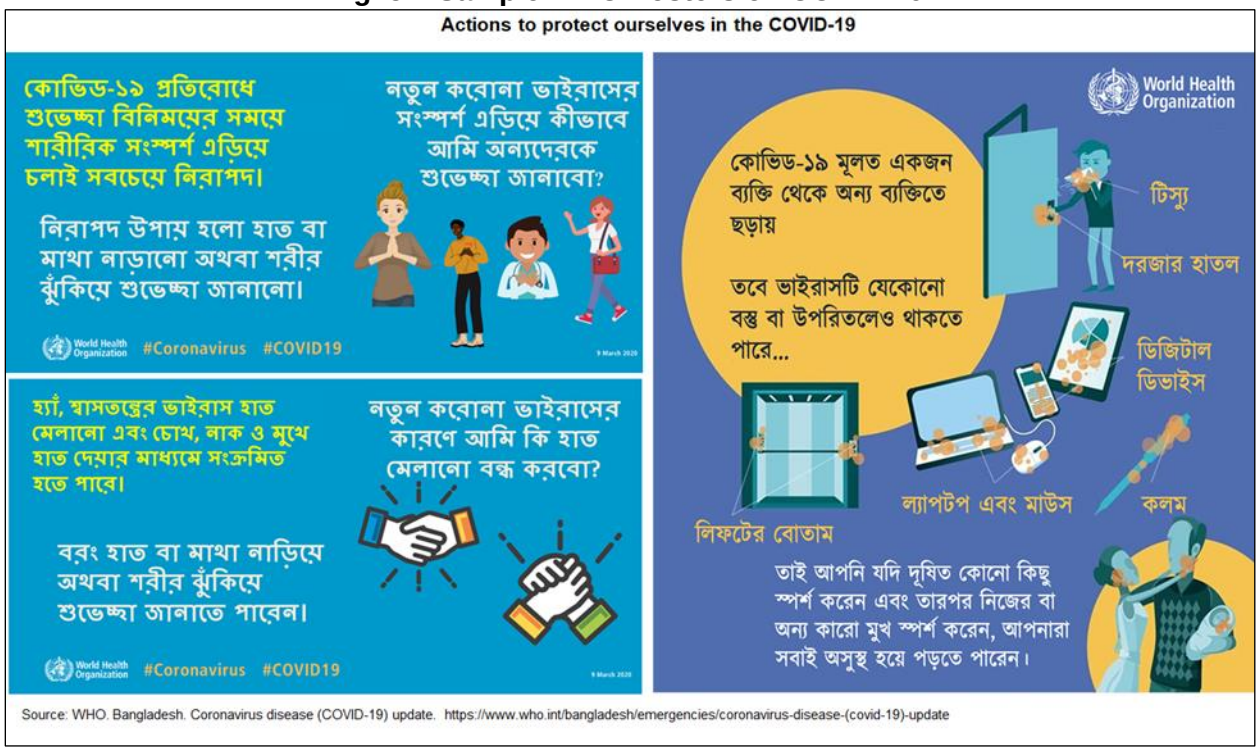
At the start of each day, toolbox meetings that last for a few minutes will be held to remind workers on the importance of compliance to the health and safety rules and procedures, and the consequences of non-compliance.

With the risk of exposure to COVID-19 in the workplace, the Contractor will comply with the approved H&SP and workers, at the minimum, will always observe enhanced cleaning procedures in the workplace and temporary rest areas, physical distancing of at least 2 meters apart from each other, use appropriate PPEs such as masks, gloves, and eye cover or goggles if physical distancing is not possible, and will practice frequent handwashing. Contractors will provide wash stations with adequate soap and water within the work sites. Use of hand sanitizers (with at least 60% alcohol) will be provided if water and soap are not available. Separate bins for disposal of PPEs used to prevent COVID-19 will be provided by the Contractor.

(ii) **Community safety risks.** Prior to start of construction works, conduct awareness orientation and/or briefing about health and safety to key stakeholders in DU (i.e., faculty staying in housing or dormitory, students, etc.). Inform PIU and key stakeholders (if required) on the schedule of construction activities that may pose risks to public safety. Proper fencing and enclosure (at least 2 meters high) will be installed at the site to prevent unauthorized access. Security personnel will be posted to discourage pilferage and vandalism. Clear and visible warning and danger signs at and around the site will be installed. Posters promoting awareness of COVID-19, its transmission, proper use of PPEs, etc. will be placed in strategic locations within the project site to create an increased awareness. Fig. 5.4 shows a sample of the posters developed by WHO Bangladesh.

Set boundary line between construction site and areas accessible to DU community. Provide proper identification of workers and staff at the construction site. The Contractor will monitor the COVID-19 situation in Dhaka City to ensure that workers report to the sites healthy and fit. ECP 5.0 gives additional measures on occupational health and community safety. Section 3 of the IFC-WB EHS General Guidelines 2007 provides guidance on community health and safety which will be observed as international best practice.

Fig. 5.4 Sample WHO Posters on COVID-19



Source: WHO. Bangladesh. Coronavirus disease (COVID-19) update. https://www.who.int/bangladesh/emergencies/coronavirus-disease-(covid-19)-update

9. Completion of Construction Works

99. Improper clean-up and disposal of construction debris may cause safety and health risks and reduced aesthetic value. To ensure clean-up and restoration of construction sites, the Contractor will be required to restore and/or reinstate all areas potentially damaged during construction works. Workers who may be assigned to clean-up and restoration works will be provided with proper safety gear and equipment.

C. Post-construction Phase

100. Upon completion of the construction phase, the potential impacts will be mainly beneficial since the students, faculty members, and academic staff of IIT-DU will now have a new, fully furnished, and state-of-the-art IT building. At this stage, they will enjoy the comfort and convenience of the new building, and new computing equipment.

1. Occupancy of Information Technology Human Resource Development Hub

101. Occupancy of the new building may give rise to improper use and lack of care, and inadequate maintenance. Absence of proper building management plan may lead to premature wear and tear and costly repairs for DU. As well, the use of the new building may result to generation of waste from occupants that if improperly managed will cause deterioration of its aesthetic value and may pose health and safety risks.

102. To mitigate these potential impacts, the PIU and the Office of Chief Engineer (OCE) will prepare a building maintenance and management plan which will include management of waste,

emergency and disaster preparedness, and response to COVID-19. The OCE will designate a waste management coordinator who can also act as the OHS officer. The OCE and IIT may consult and/or collaborate with the Faculty of Earth and Environmental Sciences in developing a building waste management program that will incorporate the principles of segregation at source as well as reduce, reuse, and recycle.

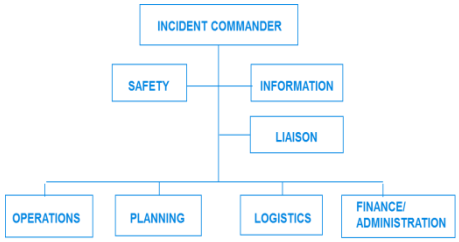
103. OCE will conduct yearly orientation and briefing to staff, students, and other building occupants on the proper management, care, and sustainable use of the new IT HRDH.

2. Emergency Response Plan

104. Fire-fighting systems will be strategically located in the new building. There is a security team to ensure safety and security of all building users. As part of emergency preparedness, a draft emergency response plan (ERP) will be finalized in consultation with students, faculty, and administrative staff. The ERP will include precautions to COVID-19. Table 5.3 presents the key elements of the draft ERP.

Table 5.3: Key Elements of Draft Emergency Response Plan

Elements	Description
Approach	The aim of this emergency response plan is to guide personnel during an accident or emergency to prevent or minimize injury, damage, and material loss; and also, to prevent or mitigate environmental impact from the accident or emergency.
Types of emergency	• Earthquakes • Cyclones • Energy or utility outages • Fire hazards • Hazardous materials releases • Terrorism • COVID-19 outbreak
Planning	• Identify hazards and assess risk • Assess capabilities and resources • Develop an emergency plan and procedures • Conduct training • Public relations • Conduct drills and exercises • Develop audit procedures
Emergency preparedness requirements	• Identify assembly points and/or evacuation points • Prepare well-defined escape routes • Install fire-fighting systems in strategic locations • Ensure that proper security arrangements are always functioning • Ensure efficient transport and communications system • Prohibit smoking within areas with flammable substances (if any) • Ensure water availability for fire-fighting • Ensure availability of sufficient number of trained staff to deal with any emergency • Supply clear and audible emergency alarms or whistles and public address system

Elements	Description
	• Conduct drills to familiarize students, faculty, and administrative staff on evacuation routes and use of the fire-fighting system • Provide emergency contact number of the medical center (and nearest hospital), ambulance, and fire service and police stations • Switch off main electrical equipment when not in use • With COVID-19, physical distancing is important but in the event of an emergency evacuation, the priority is to execute a safe and expeditious evacuation. Once safely evacuated from the building, physical distancing will be observed.
Incident command system	

3. Effects of climate change

105. Based on the climate change assessment conducted for the project, with a business-as-usual scenario, temperature will continue to rise and is expected to be around 1.8^{o}C from baseline (1986–2005) by 2050. To address this likely temperature change in the future, the building envelope and windows will be designed to consider natural light, ventilation, and wind speed.

106. Extreme rainfall events may increase in the future that may lead to flooding. Bangladesh is a flood-prone country with about 80% of its surface forming a giant floodplain. Flooding types are flash flood (due to heavy or excessive rainfall), river/sea flooding (or monsoon flooding) and waterlogging (due to poor drainage). The western part of Dhaka will have a higher exposure to riverine and monsoonal floods. In Dhaka Metropolitan Area, where DU is located, it is bounded by rivers namely, Turag River, Buriganga River, Dhaleshwari River, Balu River, and Sitalakhya River but they are far from DU. The closest river is Buriganga River, which is about 5.5 km from DU, and thus, riverine flooding risk is considered very low.

107. Dhaka is situated in a Zone 2 earthquake-prone area (moderate risk). Design of the new building will comply with the Bangladesh National Building Code (2006), Chapter 2 (Loads on Buildings and Structures). Engineering and architectural design of the new building are considered sufficient to address disaster risks and the future effects of climate change. The national building codes incorporate relevant international standards from ASME, ASTM, ASHRAE, ASCE, IEC and the like.

VI. ANALYSIS OF ALTERNATIVES

108. Given the limited space within the government-owned area in DU, there were no alternatives considered that may result to land acquisition. However, a “no project” option was considered and compared with “with project” option.

109. The “no project” option will mean that the land where the old one-floor staff housing is located will not have its best and highest usage of land. In addition, the undergraduate and graduate students, faculty, and staff of IIT-DU will not have the opportunity to benefit from an innovative IT learning environment that the new building will provide. Table 6.1 presents a comparison of “no project” option and “with project” option.

Table 6.1: Comparison of “With Project” and “No Project” Options

Description	“With Project” Option	“No Project” Option
Producing students equipped with state-of-the-art training and education fit to the requirements of the ICT industry	There will be demand for ICT graduates to meet the requirements of the ICT industry	Limited or no possibility of producing better graduates due to poor ICT facilities
Inconvenience and disruption to daily activities during construction	There will be temporary disruption to the university community	Potential traffic congestion may also occur due to increased population and vehicle owners
Demolition of existing staff housing at project site	Initial inconvenience to current occupants but they will be assured of access to better housing conditions	Existing condition of housing to lower grade DU staff will remain and may even worsen due to wear and tear
Ecological impacts	Site with some fruit-bearing trees like jackfruit will be cleared. These trees can be replaced.	Existing environmental condition will be the same
Creation of temporary employment	There will be temporary jobs for skilled and nonskilled workers during demolition works and construction of IT HRDH	No temporary jobs will be created
Opportunities for students to have more options for ICT training	There will be more options for R&D and training; links to the private sector are expected to improve chances of employability	No opportunities
Contribution to Vision 2021	Will contribute to the goals and objectives	No contribution

ICT = information and communication technology.

VII. INFORMATION DISCLOSURE, CONSULTATION, AND PARTICIPATION

A. Introduction

110. Consultations aim to engage key stakeholders throughout the project implementation and to know their concerns and perceptions, if any, about the project. These events give the opportunities for the public to share their views to DU about the proposed construction of the new multi-storied IT HRDH and also, for DU to present to the stakeholders the relevant information on the project. Consultation will not be limited during the preparation of IEE but will be carried out during project implementation.

B. Methodology

(i) **Identification of stakeholders**. Stakeholders are primary if they will be directly affected during construction and post-construction, namely, students, faculty members, administrative staff, and support services staff. Secondary stakeholders are persons, organizations, or businesses that may not be directly affected but may have interests on the project, such as relevant government agencies, nongovernment organizations, transport cooperatives, and the public. Stakeholders were invited by the DU project team focal person through phone calls, letter, and personal visits.

(ii) **Approach.** Participants were informed of the proposed project and the potential environmental impacts due to the project. After the presentations, participants were given the time for questions and answers to raise their concerns. Discussions were done in Bangla and English.

(iii) **Record of the meeting.** General information of the participants such as name, gender, occupation, and signature were collected and shown in the attendance list.

C. Results of Consultation

111. The consultations were done on 3 April 2019 at the ground floor seminar room of IIT-DU. While the room is quite full, only 23 participants registered in the attendance sheet provided by the representatives from IT student organizations who facilitated the consultations. Registration of participants in the attendance sheet is voluntary. Seven female participants registered. Participants consist of students from IIT and other departments (sociology, economics, etc.), the Manager of Estate Office (responsible for staff housing), *Imam* from the central mosque, representatives from the Committee of the bachelors' staff housing that will be demolished, representatives from the faculty of IIT, representatives from student associations on IT, and safeguard staff from the Bangladesh Resident Mission of ADB.

112. IIT-DU made a presentation about the project and the environmental consultants provided information on the need for stakeholders' consultations, environmental due diligence for the project, and public disclosure of relevant information. Table 7.1 gives a summary of the issues raised during the consultations.

Table 7.1: Summary of Consultations

Issues Raised	• Response from Project Team
Clarification on the benefits of the project aside from having a new and modern IT building, and if students from other departments can avail of the services of IT HRDH	• Will provide trainings, intellectual property licensing, R&D, and similar opportunities not only to DU but also the private sector and interested individuals • Individuals with innovative ideas on IT or R&D that may involve IT can avail of the services from the IT HRDH • As a public institution, IT HRDH will balance providing equal opportunity to disadvantaged people regardless of gender, race, or economic condition through objective merit assessment • Businesses that will be established through IT HRDH can source their staff from DU and surrounding academic institutions
Impacts of construction works such as delivery of construction materials, presence of Contractor and workers, and stockyard for construction	• Contractor will set up site camp within the project site, which is currently secured by a concrete fence about 1.5 m- high • Access to the site will be through the existing road between the Sociology building and the concrete fence of DU. Main access is gated and secured.

Issues Raised	• Response from Project Team
materials that may obstruct access to the Sociology building	• Contractor will be required to ensure that temporary impacts will be minimized, and compliance will be monitored by IIT-DU (as the PIU). • Contractor will inform users of nearby buildings (Sociology, Fine Arts, Business Administration, and central mosque) on the nature and duration of work well in advance so they can make necessary preparations (if needed). • Contractor to maintain good housekeeping to ensure no disruption to main access road connected to city main road currently being used by students and other people. • Contractor may increase workforce and use appropriate equipment to complete the work in the least time as possible and with the least impact on the DU community. • Contractor to implement measures to contain dust and noise from construction works.
Students' request to disclose more information about the new building	• Project brief will be prepared both in English and in Bangla and will be made available from IIT-DU or from their website • Once the detailed layout of the new building and architectural design are completed, all students will be invited to share their views and to see how the green building features were incorporated.
Female students' organization in IIT-DU (Software Engineering Society and other IT association) would like to be part of the project	• Target is to involve 1/3 female participation in the opportunities that the project can provide.
Demolition of the existing dormitory or housing (one-floor, old tin sheds) for lower-grade staff of DU to provide space for IT HRDH	• Occupants are aware of the decision of DU to demolish the existing old housing. • There are 20 ongoing constructions of new dormitories in seven locations within DU. The nearest one is about a 10-minute walk from the project site. • Housing condition of occupants can be improved through the new housing accommodations that DU is currently doing. • Manager of Estate Office dealing with staff accommodations assured that staff and/or legitimate occupants who will be affected by the demolition will be accommodated in the ongoing construction of the new high-rise staff housing (maybe available for occupancy before the end of 2019) • After DPP approval, there will be a round of formal consultations with the occupants, and 60 days prior to construction, a sign board will be posted on-site indicating the new development and details of the contact person(s)
Emergency preparedness in the new building, i.e., evacuation points, alarm systems, training, and awareness program	• IT HRDH will comply with design codes and regulations on safety and emergency preparedness. • An emergency response plan will be developed and finalized in consultation with key stakeholders in DU. The emergency response plan will include posting of signs (which is currently the practice), improved public address system, incident or emergency team, procedures, and regular drills or training. The Chief Engineering Office of DU will be the lead in this initiative.
Clarify incorporation of green building features in IT HRDH	• Green building features will be incorporated in the design to adapt to the natural conditions such as windspeed, temperature, natural light, resistance to earthquake, etc.

Issues Raised	• Response from Project Team
	• Will also include energy-efficient lighting and cooling systems, and use of Energy Star-certified products • Will also use construction materials like brick and concrete cement produced from energy-efficient process

D. Consultations and Information Disclosure During Implementation

113. **Consultations** The PIU together with the PMU will review the COVID-19 situation in Metro Dhaka and the restrictions imposed by the government to contain its transmission. At present, people are required to exercise social or physical distancing (at least 2 m-apart), wearing of facial masks in public, government offices, businesses, and public transport; avoiding public gatherings or events, prohibition of non-essential public gatherings, closure of schools, and tracking the public dissemination of false or erroneous information on COVID-19. After a year into the pandemic, the general public has become increasingly aware of the transmission risks, and the consequence of not behaving responsibly and in following the advise from DGHS.

114. While still the under the threat of COVID-19, consultations with students, faculty, administrative staff and other stakeholders will continue but will avoid face-to-face interactions and will use other means of communications such as social media, Viber, WhatsApp, Skype, etc. The PIU will create a dedicated online platforms or chatgroups appropriate to the type of stakeholders. When stakeholders do not have access to the internet, traditional means of communication will be used for consultation such as dedicated phone lines, radio, TV, newspaper or mail. Once the health situation improves, the usual consultations of face-to-face meetings or town hall meetings, focus groups discussions, and interviews will be followed. The PIU will ensure that all the means of communication with stakeholders will include a way to provide comments and suggestions. The PIU office will include an information desk.

115. Topics during consultations may cover GRM, construction practices, building management, emergency preparedness, information awareness on COVID-19 and the measures to be enforced to prevent outbreak in the workplace and the community, resources to be provided in case of COVID-19 incidence, and the general health and safety measures that will be and are being implemented to ensure the wellbeing of workers, students, faculty, staff, and the immediate community. The DU Medical Centre will provide technical support to the PIU during the information campaign on COVID-19 and other transmitted diseases.

116. **Information Disclosure**. To meet disclosure requirements of ADB, the PIU will create a project webpage in the IIT-DU website and will provide a link to project information (e.g., project brief both in Bangla and English, GRM flowchart or flyer, etc.). Only the essential information such as GRM flyer and project brief will be made available as printed materials (both English and Bangla) to stakeholders while still under the COVID-19 pandemic. The one-page project brief will be made available from the project site, in IIT-DU, and in UGC. The one-page flyer on questions & answers (Q&A) or a frequently ask questions (FAQ) will include information on the GRM and the contact details of the designated person. Any changes in project design will require an update or revision to the IEE which will be re-posted to ADB website. The IEE provides more information on the project. Table 7.2 presents the information disclosure program.

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Table 7.2 Information Disclosure Program

Project Phase	Information to be Disclosed	Method of Disclosure	Type of Stakeholders	Responsible Unit
Design and Pre-Construction	• Project brief and status of implementation • Q&A or FAQ flyer • IEE	• Project webpage, IIT-DU • Project office • DU and UGC	• Local population that may be affected • Other interested individuals (e.g., NGOs)	PIU, Project Environmental consultant
Construction	• Demolition plan – health and safety measures • COVID-19 health and safety measures • GRM, designated staff and contact details • Traffic management • Emergency procedures	• Posters or signboards, flyer • Project webpage • Local traffic authority • Meeting	• Workers and staff • Local population that may be affected • DU students, faculty and staff	PIU, Project Environmental consultant, contractor (and subcontractor)
Post-construction	• Emergency preparedness and procedures • COVID-19 health and safety measures • Building management	• IIT-DU website • Posters or signboards • Social media • Meeting	• Building occupants (i.e., students, faculty, and staff) • Immediate local population	PIU, Project Environmental consultant,

VIII. GRIEVANCE REDRESS MECHANISM

117. To ensure that complaint(s) will be addressed properly during project implementation the PMU, through the PIU, will establish a grievance redress mechanism (GRM) as soon as the ADB loan becomes effective. The GRM is a process of handling complaints from affected people on the environmental performance of the project, in reviewing, and in facilitating the resolution.

A. Objectives of GRM

118. The GRM ensures a process of receiving and resolving complaint(s) promptly from persons that may be affected by the new ICT building. Following the requirements of SPS 2009,

the GRM will involve a process that is understandable, transparent, gender-responsive, culturally appropriate, and easily accessible to affected persons without cost and retribution.

B. Structure

119. A grievance redress committee (GRC) will be created and may consist of: (1) PMU Head, (2) representative from the local government, (3) representative of Contractor, and (4) witness of the complainant. The environmental safeguard consultant at the PMU will act as the secretary of the GRC. Ideally, the GRC will continue to function from construction until post-construction. However, given the nature of the project, where environmental issues may be of concern during construction phase, the GRC may be inactive post-construction. MOE and UGC will ensure the representation of women in GRC.

120. The GRC will be responsible for resolving complaint(s) and will convene once a month to review the complaint(s) received, if any. GRC will resolve complaint(s) within 15 days from the date of receipt and will keep a record indicating the name of complainant and nature of complaint, status of resolving the complaint, decisions or actions undertaken, and the date the decision was effected.

121. The PMU will review the implementation of the GRM regularly to assess the effectiveness of the process and to examine their ability to address grievances. Cost of implementing the GRM will be borne by the PMU as part of the administration costs.

(i) **Information disclosure.** PIU will disclose details on GRM through the project website of DU as well as post in the billboards at the construction site. Details will include the contact person, a hotline phone number, and a simplified flowchart on how to file a complaint.

(ii) **Record-keeping.** The record will consist of all complaints received including contact details of the complainant, date the complaint was received, nature of grievance, decisions and date, and date the complainant was informed of the decision. Grievances filed and resolved will be summarized and included in the semi-annual monitoring reports submitted to ADB during construction stage and annually during post-construction/operation stage.

(iii) **Procedure.** Complaint can be lodged either by approaching the Site Engineer of the Contractor, in writing or by phone. With restrictions due to COVID-19, filing of complaints will be made online to prevent any physical interaction. A complaint form is given in Appendix 3. Transparency will be maintained on the grievances received and their resolution. The environmental safeguard consultant will provide support to the complainant in filing the complaint. Affected persons can seek redress to their complaints in three levels (see Figure 8.1): (i) through the PIU or through the Site Engineer of the Contractor, (ii) through the GRC, and (iii) the DOE under provisions set forth by the Environment Court Act 2000 (amended in 2002 and 2010) or the appropriate courts of law. The complainant is not restricted to seek redress through the legal system at any point in the GRM process. The three-tier entry points include:

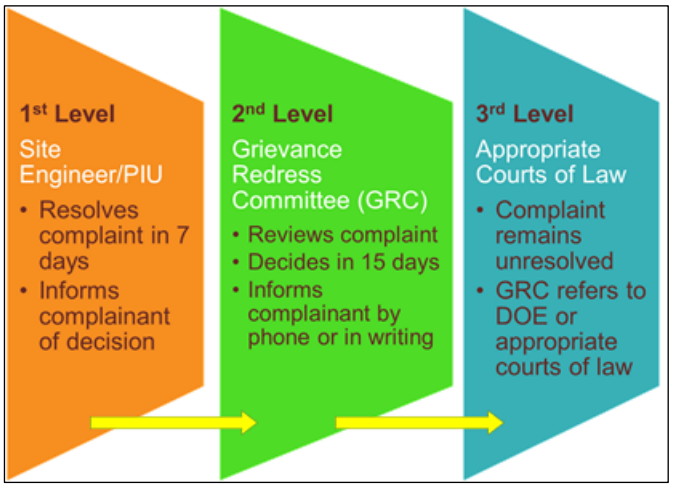
(a) First level – Contractor Site Engineer/PIU Head Complaint to be resolved at the PIU level within seven days and advise the Complainant accordingly.

(b) Second level - GRC If complaint is not resolved at the first level, the Complainant can submit the complaint to the GRC chaired by the PMU

Head. The GRC will review the submission and decide within 15 days. The Complainant will be informed of the decision in person, by mail or by phone.

(c) Third level – Appropriate Courts of Law If the complaint remains unresolved, this will be referred by the GRC to the DOE or the appropriate courts of law.

Figure 8.1: Three-Tier Grievance Redress Mechanism



IX. ENVIRONMENTAL MANAGEMENT PLAN

122. The summary of impacts and measures that will be conducted to mitigate the adverse impacts are presented in the environmental management plan (EMP). The EMP covers the H&SP, the environmental monitoring plan (EMOP), and the institutional arrangements required. Table 9.1 presents the EMP.

A. Monitoring

123. The environmental monitoring is a time-bound process to ensure that non-compliance of the Contractor will be avoided or will be immediately addressed. Environmental monitoring reports will be submitted to ADB twice a year during construction and annually post-construction. The environmental monitoring reports submitted to ADB will be publicly disclosed in their website as required by SPS 2009 and Access to Information Policy (AIP) 2019. Table 9.2 presents the EMOP.

B. Implementation Arrangements

1. Project management unit (PMU)

124. A PMU will be set-up at UGC who will be responsible for the overall management of the project. Supported by an environmental safeguard consultant, the PMU will be also responsible in ensuring that the EMP and EMOP are properly implemented and complied with by the Contractor, submission of environmental monitoring report to ADB, and in handling complaints

following the GRM. The terms-of reference of the environmental safeguard consultant for the PMU is given in Appendix 4.

2. Project implementation unit (PIU)

125. DU will set-up a PIU who will be responsible for managing the day-to-day activities of the project. The PIU will ensure that the EMP and EMOP are properly implemented, timely reporting to PMU of the environmental monitoring report required by ADB (see Appendix 5 and Appendix 6 for proposed format), public consultations and information disclosure (as appropriate), and in handling of complaints according to the GRM. Key responsibilities of PIU are as follows:

(i) Designate a staff to oversee the implementation of the EMP and EMOP;
(ii) Ensure compliance of contractor to EMP and EMOP;
(iii) Engage stakeholders, as appropriate;
(iv) Conduct onsite spot-checks to monitor compliance of Contractor (see Environmental Inspection and Monitoring Checklist in Appendix 7);
(v) In the event of non-compliance by Contractor or any unanticipated environmental impacts, coordinate with the PMU environmental safeguard consultant in preparing a corrective action plan (CAP) to address the issue with time-bound actions; CAP will be submitted to ADB for review and will be disclosed to ADB website;
(vi) Ensure that any grievance/complaint received are addressed in a timely manner;
(vii) Maintain a record of grievance/complaint received, resolution or action taken, and include the details in the environmental monitoring report;
(viii) Keep a list of relevant permits issued by the government for the project, if any; and,
(ix) Prepare the respective environmental monitoring report and submit to the PMU for consolidation and finalization by the environmental safeguard consultant.

126. In the event there will be a change in the design of the new IT HRDH building, this IEE will be updated/revised and submitted ADB prior to any construction works. The updated/revised IEE will be also disclosed to ADB website.

3. Contractor of civil works

127. The EMP which includes the H&SP and the EMOP will be an integral part of the Bid and Contract documents. This will be verified by the PIU and the PMU. The Contractor will designate their environmental staff who will be responsible in overseeing the implementation and compliance to the EMP, H&SP and EMOP during construction phase. Maintain a record of complaint/grievance submitted at the project level through the Contractor including the action taken to address the issue.

128. The designated environmental staff will submit a monthly compliance and monitoring report to the PIU-designated environmental staff. The compliance and monitoring report will cover the EMP, H&SP, EMOP, and the specific environmental clause(s) in their contract.

Table 9.1: Environmental Management Plan

Project Activity	Potential Environmental Impacts	Mitigation/Enhancement Measures	Estimated Cost	Implementing Unit	Supervising and Monitoring Unit
Design and Pre-Construction Stage					
Site survey and design of the new IT HRDH	• Failure of the building to withstand climate change and natural hazards	• Green building features were incorporated • Design will comply with the requirements of	Included in project cost	Design consultants	PIU, PMU, Environmental Safeguard Consultant

Project Activity	Potential Environmental Impacts	Mitigation/Enhancement Measures	Estimated Cost	Implementing Unit	Supervising and Monitoring Unit
	• Potential safety and health risks to students and building users due to poor building design	BNBC 2006 and relevant provisions in the BNBC 2015 (draft)			
	• Lack of technical capacity on safeguards at DU	• PIU will designate staff to coordinate with the environmental safeguard consultant in PMU • PIU team will undergo orientation training on the safeguards requirements and compliance under SPS 2009 • PIU may consider engaging intermittent consultant on safeguards instead of designating a staff with general background and experience	PIU Budget	PIU, environmental safeguard consultant	PMU and ADB
Demolition of the existing old staff housing at the project site	• Temporary inconvenience to occupants due to physical movement to another accommodation • Physical and emotional adjustments to the new accommodations • Generation, collection, and disposal of waste • Increase dust and noise levels • Transport of demolition debris • Occupational and community safety risks	• Once the DPP is approved, formal consultations will be conducted by IIT-DU to the legitimate occupants • 60 days prior to any construction work, a signboard will be posted at the project site indicating the new development and the contact person(s) • New accommodation will be much better than the current condition. Most of DU staff are in the high-rise housing also within DU. • Contractor for demolition will be required to prepare a demolition plan for approval by the PIU and PMU following BNBC 2006 (and BNBC 2015 draft), and international best practices provided by the World Bank, WorkSafe British Columbia, etc. • The demolition plan will include measures for occupational health	Included in project cost	Contractor	PIU, Environmental Safeguard Consultant

Project Activity	Potential Environmental Impacts	Mitigation/Enhancement Measures	Estimated Cost	Implementing Unit	Supervising and Monitoring Unit
		and community safety, waste management, potential traffic congestion, noise and dust level containment, emergency preparedness, and communications to would-be affected people (students, mosque management, etc.) • The demolition plan will include a survey of ACM and safety measures in the event ACMs are present in the existing Bachelors' Staff Housing • ECP 6.0 provides additional measures • PIU and the environmental safeguard consultant at PMU will monitor compliance with EMP and Demolition Plan			
Construction Stage					
Complete construction management work plan (CMP) for approval of PIU	• Avoid impacts of Contractor unplanned activities • Smooth work implementation	CMP will include: • Temporary pedestrian and traffic management plan to minimize disturbance from vehicular traffic and workers (from Dhaka City road to main access to the project site) • Spoils disposal and construction waste management • Noise and dust control • Drainage and stormwater management plan • Materials management plan • Community and safety plan • Emergency/disaster preparedness and response • Measures on COVID-19 preparedness • Provide list of contact details during emergency to workers	Included in the project cost	Contractor	PIU, Environmental Safeguard Consultant

Project Activity	Potential Environmental Impacts	Mitigation/Enhancement Measures	Estimated Cost	Implementing Unit	Supervising and Monitoring Unit
		or post in billboards at construction site • Inclusion of GRM to handle potential complaints			
Orientation of workers and staff	• Awareness to environmental requirements and their responsibility • Understanding the responsibility of Contractor in implementing the EMP, compliance with applicable rules and regulations of DU, ADB, and the government • Provide HIV/AIDS orientation and disease prevention awareness talks to the workers and staff	• Conduct briefing on EMP, records management, compliance, and reporting • Identify areas to be monitored and the required mitigation measures • Create awareness of sexually transmitted diseases such as HIV/AIDs • Explain the Health and Safety Plan (see Appendix 8) focusing on COVID-19 as a priority	Included in the Contractor cost	PIU, environmental safeguard consultant	PMU
Prepare for emergency and potential incidence of COVID-19 infection	• Create awareness of workers on emergency and COVID-19 risk of exposure and/or transmission	• Designate Disaster Coordinator to guide workers in case of an emergency • Conduct mock drills regularly • Provide information like emergency hotline, evacuation routes, etc. • Provide training or orientation on proper response during emergency and COVID-19 incidence	N/A	Contractor	PIU, Environmental Safeguard Consultant
Recruitment of project staff and workers	• Dispute over transparency in hiring	• Contractor will be required to give priority to local labour • Contractors will be required to provide negative results to COVID-19 and will ensure recruited staff and workers have been tested negative to COVID-19 as well • Contractors to keep a record of their contact details such as mobile telephone number, alternate telephone,	N/A	Contractor	PIU, Environmental Safeguard Consultant

Project Activity	Potential Environmental Impacts	Mitigation/Enhancement Measures	Estimated Cost	Implementing Unit	Supervising and Monitoring Unit
		email (if any), and address of where they are staying			
Site preparation and related works	• Disturbance and inconvenience to students, faculty, and staff of DU, and other people due to traffic, increased noise and dust levels, vehicular emissions, and disposal of waste	• CMP will be strictly implemented • Notify key persons in DU (i.e., Sociology Building, Central Mosque, etc.) on the work schedule • Provide temporary enclosures (at least 2 m high) to contain dust and minimize noise • Reference to relevant ECPs	Included in the costs of Contractor	Contractor	PIU, Environmental Safeguard Consultant
	• Potential chance find during earth moving works	• Chance find will be included in the orientation training of workers prior to construction works • Chance find procedures in ECP 1.0 will be followed			
	• Potential safety risks to community	• Provide temporary enclosures or fences, sufficient lights, clear warning signs, and danger signals, and take all precautions identified in the community and safety plan of CMP • Post visible and clear signs on COVID-19 to increase awareness on physical distancing, hand washing, and wearing of facial masks • Provide information on health and safety COVID-19 measures to be implemented during consultations • Assign security staff to prevent accidents, trespassing, and pilferage • Contractor to strictly comply with traffic management from the CMP and to direct drivers to follow road regulations • Assign staff to manage traffic particularly from			

Project Activity	Potential Environmental Impacts	Mitigation/Enhancement Measures	Estimated Cost	Implementing Unit	Supervising and Monitoring Unit
		the main access road to the site			
	• Potential occupational health and safety risks to workers	• Provide sanitary facilities and safe drinking water to workers • Consider providing temporary place onsite for workers to do their prayers • Provide workers with hard hat, safety shoes and belts and appropriate PPE • Monitor compliance of workers to safety rules • Set up first aid at construction site • Comply with relevant safety measures required by law and best engineering practices • Provide signs on COVID-19 safety measures to ensure workers are aware and understand the consequences of non-compliance • Workers to always observe physical distancing • Require workers and staff the mandatory use of non-medical masks and gloves if physical distancing is not possible • Daily temperature checks before workers enter work sites • Any worker that shows cough and cold symptoms will not be allowed entry to work sites, and will be advised to stay home and quarantine • Install handwashing and sanitation stations at designated places • Implement H&SP and monitor compliance			PIU, Environmental Safeguard Consultant
	• Construction vehicles may increase vehicular emissions	• Provision of temporary enclosures • Provide space onsite for construction materials to			

Project Activity	Potential Environmental Impacts	Mitigation/Enhancement Measures	Estimated Cost	Implementing Unit	Supervising and Monitoring Unit
	• Transport of materials to construction site may increase dust level • Earthmoving works and opened land areas increase dust levels • Increase in noise level and vibration from construction vehicles, and associated works	reduce trips of material delivery • Contractor will be required to maintain construction vehicles, equipment, and machineries regularly to reduce emissions, avoid smoke belching, and reduce noise • Spray water in opened land areas or in sources of dust generation • Transport of dust-generating materials will be covered • Observance of low speed by vehicles to reduce noise • Noise-generating works will be done between 6 a.m. and 11 p.m. only. • No blowing of horns will be allowed			
Construction of IT HRDH	• Non-compliance with relevant regulations • Potential accidents due to working on heights • Occupational and community safety risks • Generation of waste	• Monitor compliance with occupational health and safety regulations • Always observe good housekeeping onsite • Provide sanitary facilities and safe drinking water • Provide PPE to workers • Provide first aid kits and fire-fighting system • Conduct daily toolbox meeting prior to start of work • Workers absent from daily toolbox meetings will not be allowed to work • Conduct emergency mock drills • Conduct work only from 6 a.m. to 11 p.m. • Provide enclosures to noise-generating works and equipment, and areas generating dust • Implement and comply with the approved H&SP	Included in Contractor costs	Contractor	PIU, Environmental Safeguard Consultant
Clean up of construction sites after completion of	• Improper disposal of construction debris • Occupational and community safety risks	• Restore/reinstate all the areas potentially damaged during construction works	Included in Contractor costs	Contractor	PIU, Environmental Safeguard Consultant

Project Activity	Potential Environmental Impacts	Mitigation/Enhancement Measures	Estimated Cost	Implementing Unit	Supervising and Monitoring Unit
construction works	• Disruption to traffic and activities in DU	• Workers will be provided with proper safety gear and equipment • Implement COVID-19 health and safety measures • Inform relevant staff in DU on the schedule of disposal • Dispose remaining waste and debris to sites approved by Dhaka City Corporation			
Post-construction stage					
Occupy new building	Improper use and lack of care to the new building	• Conduct orientation and awareness to staff and students on proper care of the facility	Include in the operation cost	PIU, IIT-DU	PMU
	Generation of waste	• Designate waste management coordinator • Prepare waste management plan with time-bound targets • Conduct yearly orientation to building users on waste management, proper collected, and disposal • Explore measures to implement the principles of reduce, reuse, and recycle effectively including segregation at source.	Include in the operation cost	PIU, IIT-DU	PMU
	Potential incidence of emergency, natural disaster or COVID-19 case	• Prepare/finalize emergency/disaster preparedness plan and procedures • Designate a Disaster Coordinator who will also act as the OHS Officer • Conduct orientation/drills on safety and emergency awareness, and on “to do” in case of exposure or incidence of COVID-19 • Provide clear and visible emergency warning signs and posters that promote awareness of COVID-19 (e.g., refer to WHO	—		PMU

Project Activity	Potential Environmental Impacts	Mitigation/Enhancement Measures	Estimated Cost	Implementing Unit	Supervising and Monitoring Unit
		Bangladesh prepared materials)			

ADB = Asian Development Bank, BNBC = Bangladesh National Building Code, EMP = environmental management plan, N/A = not applicable, PIU = project implementation unit, PMU = project management unit.

Table 9.2: Environmental Monitoring Plan

Project Stage	Parameter	Location	Method of Measurement	Frequency	Responsibility	
					Implementation	Supervision
Pre-construction (final design and demolition)	Orientation of Contractor and workers on issues like HIV/AIDS, COVID-19, compliance with applicable DU rules and regulations, EMP and ADB requirements	Project site	Number of participants	• Once before demolition • Quarterly as a refresher to make sure knowledge is up to date	PIU, Environmental Safeguard Consultant	PMU
	Good housekeeping and COVID-19 health and safety measures	Project site	• Ocular inspection or spot checking • Bins provided • Area for temporary collection of waste • Number of working hand washing stations • Number of working hand sanitizing stations (if water and soap are not available) • Available stock of gloves and facial masks to workers and staff	Everyday	Contractor	PIU, Environmental Safeguard Consultant
	Condition of sanitary facilities and safe drinking water	Project site	Ocular inspection/spot checking	Twice a week	Contractor	PIU, Environmental Safeguard Consultant
	• Accumulation of debris from demolition • Disposal of debris	Project site	Volume of waste or number of trips for disposal	Twice a week	Contractor	PIU, Environmental Safeguard Consultant
	Use of personal protective equipment and safety gear	Project site	Ocular inspection/spot check	Daily	Contractor	PIU, Environmental Safeguard Consultant
	Clear and visible warning signs	Project site	• Ocular inspection	Weekly	Contractor	PIU, Environmental

Project Stage	Parameter	Location	Method of Measurement	Frequency	Responsibility	
					Implementation	Supervision
			• Number of signs and location • Posters specific to COVID-19 such as physical distancing, hand washing and wearing of masks			Safeguard Consultant
	Increase in noise level	Project site	Ocular inspection of mitigation measures (i.e., enclosures work schedule, etc.)	Daily	Contractor	PIU, Environmental Safeguard Consultant
	Increase in dust level	Project site	Ocular inspection of mitigation measures (i.e., enclosures, water spraying, etc.)	Daily	Contractor	PIU, Environmental Safeguard Consultant
Construction	Generation of waste and other construction debris	Construction site	Volume of waste or number of trips	Twice a week	Contractor	PIU
	Increase in dust level	Construction site	• Frequency of water spraying • Ocular inspection	Daily	Contractor	PIU, Environmental Safeguard Consultant
	Increase in noise level	Construction site	• Enclosure of noise-generating activities or machinery • Check blowing of horns	Daily	Contractor	PIU, Environmental Safeguard Consultant
	Ambient air quality	Sampling stations in Table 4.3	• PM_{10} and $PM_{2.5}$	Quarterly	Contractor	PIU, Environmental Safeguard Consultant
	Ambient noise level	Sampling stations in Table 4.4	Sound level meter (dBA)	Quarterly	Contractor	PIU, Environmental Safeguard Consultant
	Availability of project information	PIU and construction site	• One-page flyer, project brief or Project Q&A • Poster and flyer on COVID-19	Quarterly	Contractor, PIU	Environmental Safeguard Consultant, PMU
	Recruitment from local labor	PIU office	Number of local workers and staff recruited	Monthly	Contractor, PIU	PMU

Project Stage	Parameter	Location	Method of Measurement	Frequency	Responsibility	
					Implementation	Supervision
	Orientation of workers on health and safety particularly on COVID-19	Construction site	Number of participants	Monthly	environmental safeguard consultant, Contractor, PIU	PMU
	Orientation of Contractor and workers on issues like HIV/AIDS, tuberculosis; compliance with EMP and ADB requirements, etc.	Construction site	Number of participants	• Once before construction • Quarterly as refresher to make sure knowledge is up to date	environmental safeguard consultant, PIU	PMU
	Solid waste management	Construction site	• Number of appropriate bins • Temporary collection area	Twice a week	Contractor	PIU, Environmental Safeguard Consultant
	Clear and visible warning signs for safety of workers and DU community	Construction site and access roads	Ocular inspection/spot checks	Once a month	Contractor	PIU, Environmental Safeguard Consultant
	COVID-19 awareness - clear and visible posters promoting handwashing, physical distancing, use of masks, and respiratory etiquette	Construction sites, workers temporary shelter	Ocular inspection/spot checks	Weekly	Contractor	PIU, Environmental safeguard consultant
	Announcement to the public of work schedule	DU community	Work schedule log sheet	As needed	Contractor	PIU, Environmental Safeguard Consultant
	Smoke-belching construction vehicles	Construction site and access roads	Ocular inspection or spot checking	Weekly	Contractor	PIU, Environmental Safeguard Consultant
	Proper storage and management of construction materials and wastes	Construction site	• Number of trips • Ocular inspection or spot checking	Weekly	Contractor	PIU, Environmental Safeguard Consultant
	Handwashing stations with adequate soap and water, or hand sanitizers with at least 60% alcohol	Construction site and temporary workers' shelter or rest areas	• Ocular inspection/spot checks • Number of working hand washing stations • Number of working hand sanitizing stations (if water and soap are not available) • Available stock of gloves and facial	Daily	Contractor	PIU, Environmental safeguard consultant

Project Stage	Parameter	Location	Method of Measurement	Frequency	Responsibility	
					Implementation	Supervision
			masks to workers and staff			
	Use of personal protective equipment and safety gear	Construction site	Ocular inspection or spot checks	Daily	Contractor	PIU, Environmental Safeguard Consultant
	Condition of sanitary facilities and safe drinking water	Construction site	Ocular inspection or spot checks	Everyday	Contractor	PIU
	Good housekeeping	Construction site and temporary workers' shelter or rest areas	Ocular inspection or spot checks	Everyday	Contractor	PIU
Post-construction	Orientation of students, faculty, and administrative staff on care and maintenance of the building	IT HRDH	Number of trainees	Annually (or at start of each term)	Office of Chief Engineering	PIU[a]
	Good housekeeping (also garbage collection and disposal)	IT HRDH	Ocular inspection or spot checks	Monthly	Office of Chief Engineering	PIU
	Condition and maintenance of fire extinguishers, fire-fighting units and fire alarms	IT HRDH	Ocular inspection or spot checks	Annually	Office of Chief Engineering	PIU
	• Orientation on the safety, emergency, disaster manual and procedures • Orientation/awareness drive on COVID-19	IT HRDH	• Check manuals • Check logsheets	Quarterly (with COVID-19 consider monthly)	Office of Chief Engineering	PIU
	Emergency mock drills	IT HRDH	Number of trainees	Semi-annual (or every start of term)	Office of Chief Engineering	PIU
	Greening program/grounds maintenance	IT HRDH	Types of plants, area planted	Annually	Office of Chief Engineering	PIU
	Condition of safety gears and emergency equipment	IT HRDH	Ocular inspection or spot checks	Annually	Office of Chief Engineering	PIU
	Building condition • Roof • Electrical panel and wiring • Door handles, windows, hinges, and closures • Walls and ceilings • Stairways and fire exits or escapes • Storm water drains • Elevators	IT HRDH	Ocular inspection or spot checks for cracks, signs of water leaks, damage, fire hazards, etc.	Semi-annual	Office of Chief Engineering	PIU

Project Stage	Parameter	Location	Method of Measurement	Frequency	Responsibility	
					Implementation	Supervision

[a] Only until the loan is implemented.
ADB = Asian Development Bank, BNBC = Bangladesh National Building Code, EMP = environmental management plan, N/A = not applicable, PIU = project implementation unit, PMU = project management unit.

X. CONCLUSION AND RECOMMENDATION

129. Assessment of the potential environmental impacts associated with the construction of the new IT HRDH within the premises of DU shows that impacts are mainly during the construction phase. They are of short duration, temporary, reversible, and can be easily mitigated by good and best practices in engineering construction. The potential impacts can be mitigated also by adhering to the design provisions set forth in BNBC 2006. The mitigation measures are outlined in the EMP and the parameters to be monitored are listed in the EMOP. Appropriate COVID-19 preparedness measures will be incorporated both during the construction and post-construction phase to ensure the safety and wellbeing of workers, students, faculty, staff, and the community. The Contractor will be required to prepare a COVID-19 health and safety plan, which will be part of the EMP, and will be approved by the PIU and PMU.

130. Demolition of the existing bachelors' staff housing at the project site will not cause permanent physical or economic displacement to the occupants as they will be moved to better housing and will pay rent as staff according to the applicable rules and regulations of DU and the government. Occupants of the existing staff housing will not be required to move out prior to any demolition works unless an alternative accommodation will be available to them. DU is committed to ensure that the demolition will not cause undue adverse impacts to current occupants. A demolition plan will be prepared by the Contractor and will include a survey for the presence of ACMs. No demolition works will start without prior approval of the demolition plan by the PIU and PMU. Safe handling and disposal of ACMs (if any) will be guided by international best practices from IFC-WB, OSHA, WorkSafe BC, and US EPA.

131. Stakeholders were consulted and a GRM to deal with potential complaints on the project is included. Public consultations will continue in varying degrees throughout the project implementation. Due to COVID-19 pandemic, reliable information provided by the government and agencies like WHO will be incorporated during consultations. Appropriate consultation methods based on WHO guidance notes will be used while under the threat of COVID-19.

132. An environmental safeguard consultant will be engaged by PMU throughout the construction phase to ensure capacity and technical support in complying with the requirements of ADB. Environmental monitoring reports will be submitted by PMU to ADB semiannually during construction and annually post-construction. These monitoring reports will be similarly disclosed in the ADB website. Given these measures, UGC and DU are committed to comply with the requirements of ADB.

ENVIRONMENTAL CODES OF PRACTICE

Table below presents the environmental codes of practice (ECP) to provide guidance in managing potential environmental impacts during construction phase.

ECP 1.0 "Chance find" of physical cultural resources
ECP 2.0 Managing air quality
ECP 3.0 Managing noise and vibration
ECP 4.0 Waste Management
ECP 5.0 Occupational health and community safety
ECP 6.0 Demolition

Area of Concern		Project Activity	Management Measures
ECP 1.0	"Chance find" of physical cultural resources	Excavation for building foundation and other earthmoving works	The Contractor will ensure that: • Excavation works within the area of "chance find" will be stopped • Identify and mark the area with a global positioning system (GPS) unit to determine the exact location and take photographs • Secure the area discovered to avoid potential damage, loss or removal of any movable or transportable object • Inform the PIU of the "chance find" and designate a security personnel until a representative from the Ministry of Cultural Affairs arrives
ECP 2.0	Managing air quality	• Use of construction vehicles and machinery	Contractor will do the following: • Prepare air quality management plan as part of the overall construction management plan and consult PIU for concurrence • Keep construction vehicles in good working condition and limit idling time of not more than 2 minutes • Cover trucks and other vehicles transporting materials that generate dust • Implement speed limits on vehicular movement within the construction sites • Sprinkle water to crusher and orient workers to follow good practices while handling material in concrete-mix plant

Area of Concern		Project Activity	Management Measures
		• Construction activities	The Contractor will do the following: • Spray water regularly (or as needed) to unpaved and opened land areas, material stockpiles, and access roads to contain dust • Dust-generating construction activities will be enclosed to contain dust dispersion • Workers assigned to activities generating high dust level will be provided with PPE such as masks, goggles, etc. • Must ensure that there will be minimum generation of dust and waste while unloading the materials from delivery trucks or construction vehicles • Materials generating dust such as sand and gravel will be covered particularly during non-working hours. • Re-vegetate opened areas (if possible) to limit area of exposed land • Stock cement and other dust-generating materials in covered space • Provide area for mixing and loading of construction materials. • Burning of solid waste within the construction site will not be allowed. • Batching plant (if required) will be located upwind of the construction site.
ECP 3.0	Managing noise and vibration	• Vehicular traffic	The Contractor will ensure: • Regular upkeep and maintenance of construction vehicles to minimize generation of unwanted noise • Drivers of construction vehicles to comply with speed limits • Use of horns will be allowed only when necessary • Divert routes to minimize traffic, observe loading and unloading procedures, and to minimize unnecessary noise at the construction site

Area of Concern		Project Activity	Management Measures
		• Use of construction machinery and equipment	The Contractor will ensure: • Enclosure and/or isolation of noise-generating machinery and equipment to contain noise levels • Identify and organize all noise-generating activities to minimize increase in ambient noise levels • Proper and regular maintenance of equipment and machinery to avoid unwanted generation of noise • Avoid the use of alerts, horns, or sirens unless absolutely necessary like emergency • Observe prayer times at the mosque next to Nazrul Mausoleum
		• Construction works	Contractor will ensure that: • Nearby local residents are notified of noise generating activities, time, and duration • Operators of heavy equipment and machineries will be educated/oriented on construction techniques to reduce generation of noise • Temporary noise barriers or enclosures are installed, where needed • Onsite deliveries will be planned to minimize noise from delivery trucks • Noise-generating activities will be conducted only during daytime (6 a. m. to 11 p.m.) • Schedule of noise-generating activities and deliveries of materials will be coordinated with the PIU to ensure minimal disruption to students and activities in DU (Sociology Department)
ECP 4.0	Waste Management	• Generation of waste at construction sites	Contractor will do the following: • Identify the activities that will generate waste and identify location for disposal • Develop waste management plan for different waste streams prior to start of construction works • Orient workforce on disposal of waste, the location of disposal site and specific requirements for management of these sites

Area of Concern		Project Activity	Management Measures
			• Wastes that cannot be re-used will be disposed of safely at designated sites • Minimize generation of waste by implementing 3Rs (Reduce, Re-use, Recycle), and segregate waste at source • Waste will be transported in fully covered trucks to prevent spillage along the way • Provide appropriate bins/containers for waste at construction site • Conduct orientation to workforce on waste management practices • Require workers to always observe good housekeeping
		• Handling of hazardous waste	Contractor will ensure that: • Chemical wastes are stored in sealed container and properly labeled • All chemical containers such as paints are labeled properly for easy identification • Material Safety Data Sheets (MSDS) of all chemicals onsite during construction are maintained and properly recorded • Chemical and other hazardous materials are stored in bunded place or in an area lined with impervious material to prevent soil contamination and away from drainage system • Store sufficient stock of absorbent materials for used chemicals or spent lubricants, lube oil, etc.
ECP 5.0	Occupational health and community safety The Contractor will be responsible to include the protection of every person and nearby property from construction accidents. The Contractor will be responsible for	• Construction works at the new IIT building	The PIU and the Contractor shall inform the DU (Sociology Department, IBA, etc.) and adjacent buildings (Social Science students) adjacent to the project site of the following: • Schedule of construction works, routing of traffic (if needed), possible health concerns (exposure to dust, noise, and vibration) Contractor will do the following:

Area of Concern		Project Activity	Management Measures
	complying with all safety requirements of the government and any other measures necessary to avoid accidents, including the following: (i) Notice or signboards shall be properly installed at the construction site (ii) Conduct safety training or orientation to workers prior to start of work; (iii) Provide required PPE to workers and its use will be mandatory; (iv) In case of an emergency, suspend all work. To maintain good community relations, the Contractor will: (i) Inform local authorities and community about construction and work schedules, interruption of services, and rerouting of traffic. (ii) Restrict construction activities at night. If needed, ensure that night work is carefully scheduled and the community is properly informed so they can take necessary measures.		• Set-up a health and safety committee and designate a Safety Officer • Provide workers with personal safety equipment (PPE) such as footwear, gloves and eye protection devices, helmets, etc. • Prepare an emergency action plan • Maintain PPE properly by cleaning dirty ones and replace damaged sets. • Provide adequate lighting, drainage systems to prevent water stagnation, and adequate space to administer first aid • Implement appropriate standards of safety to all workers and site visitors to comply with the national requirements and the World Bank-IFC Environmental, Health and Safety Guidelines 2007 • Conduct toolbox meetings prior to start of construction works. Record names of workers present during the meetings. Worker not joining toolbox meeting will not be allowed to work. • Enforce safety procedures and provide training on PPE to workers • Designate someone to deal with community and occupational health and safety • Clear and visible danger and warning signs shall be placed as soon as construction begins and will remain until works are completed. • Keep a record of workers and place assigned
		• Child labor	Contractor will not hire workers below 15 years old
		• Training and record keeping	The Contractor will: • Keep a record of occupational accidents, diseases, and injuries • Prevent work-related accidents or injury by minimizing workplace hazards consistent with international best practice • Ensure health care facilities and first aid kits are readily available • Train construction workers about general health and safety practices,

Area of Concern		Project Activity	Management Measures
			and on specific hazards related to their work • Conduct orientation on COVID-19 and the safety measures that will be implemented to prevent incidence in the workplace
		• Security of construction site	Contractor will ensure that: • Security personnel will be deployed to prevent unauthorized entry at construction site • All the tools, equipment and construction materials at the site are accounted for, identified, clearly labeled/marked, and recorded • Maintain a record of tools' serial numbers and check inventory on a regular basis • Implement an inventory system where tools and equipment are checked in and out, securely stored when not in use to prevent theft • Provide proper fencing of construction site perimeter with secured chain and lock • Construction site will have controlled access points to allow for close monitoring of entry and exit from the site • Workers will have proper identification while within the site • Staff or workers required to have access to the site after working hours will be notified with the PIU • Job site will be adequately lighted • Pre-employment investigations are conducted to verify previous employment, references (if needed), education and criminal background
ECP 6.0	Demolition	Removal of old single-floor staff housing at the project site	Contractor will ensure that: • A demolition plan is prepared for approval by PIU and Office of Chief Engineer • The demolition plan will also include a survey for the presence of asbestos-containing material such as roofing shingles, and cement sheeting used for walls and partitions

Area of Concern		Project Activity	Management Measures
			• Appropriate permits (if required) have been secured prior to any demolition works • Nearby building users (i.e., Sociology, IBA, central mosque, etc.) should be notified at least a week before the start of demolition activities • Measures to contain dust and noise will be implemented such spraying of water and enclosures • Hauling of demolition debris will be organized/planned to avoid traffic and inconvenience to students, faculty, and staff members of DU • Materials than can be recovered, reused, and recycled need to be identified • Disposal of demolition debris will be properly carried out in areas approved by Dhaka City or Rajdhani Unnayan Kartripakkha (RAJUK) • Prior notice and adequate time will be given to the occupants before the housing is demolished • Noise and dust levels will be within national limits during demolition • Relevant utility agency will be notified in advance if the service will be affected by the demolition • Utility service retained such as electricity or gas will be adequately protected to prevent accidents • Temporary braces, scaffolds or other protection should be installed to ensure stability of the structure • Workers doing the demolition are protected and prevent unauthorized access • Demolition debris will be progressively removed to prevent piling up, constrict access given the type of entrance to the project site, and may cause health and safety hazard

LIST OF PARTICIPANTS AND PHOTOGRAPHS DURING CONSULTATION

BAN: Innovations in Tertiary Education for Competitiveness in Information Technology Project

Public Consultation Meeting
held on April 3, (Wednesday), Time: 10.00 am
Venue: Institute of Information Technology, University of Dhaka
Institute of Information Technology, Dhaka University (DU)

List of Participants

Sl No.	Name	Occupation	Male	Female	Cell No.	Signature
1.	Selim Reza	Estate office	✓		01726200692	
2.	Md. Ashraful Islam	Dire of Accounts	✓		01731913376	
3.	Asma Akter	DUITS		✓	01925706[illegible]	Asma
4.	Shihab Mahmud	DUITS	✓		01720[illegible]	Shihab
5.	[illegible]	IITSEC		✓	01521[illegible]	Emu
6.	Samsarabbi	IITSEC	✓		01784[illegible]	Samsarabbi
7.	Noshin Tahsin Saaj	IITSEC		✓	01882[illegible]	Noshin
8.	Mirza Al Mehrab	IITSEC	✓		01[illegible]	mirza
9.	Rezaun	IITSEC	✓		01[illegible]	Rezaun
10.	MD. Awwal	IITSEC	✓		01[illegible]	Awwal
11.	M.A. Razzaque	[illegible]			01[illegible]	[illegible]
12	MD. Shafiqur Rahman	[illegible]	✓		01[illegible]	[illegible]
13	Md. Rayhanul Kabir	ILET, DU	✓		01[illegible]	[illegible]
M.	ANIKA TABASSUM	IEEE		✓	01[illegible]	Anika
15	S.M. Shahnawaz	IITSEC	✓		01521[illegible]	Shahnawaz
16	Supriya Das	[illegible]			01[illegible]	[illegible]
17	Shreyasi Ganguly	Sociology		✓	01[illegible]	Shreyasi
18	Israt Sultana Nishe	Sociology		✓	01[illegible]	Nishe
19	Fahim Shahriar Tasnim	IBA, DU	✓		01[illegible]	[illegible]
20	Sheikh Tanit Ahmed	Economics	✓		01[illegible]	[illegible]
21	Fardeen Kabir	Economics	✓		01[illegible]	Fardeen
22	Shafq Tasneem	Economics		✓	01[illegible]	[illegible]
23	Obaid Ahmed	Imam	✓		01[illegible]	[illegible]

Stakeholder consultation. Consultation with project-affected people and local administrative bodies will facilitate their informed participation and ensure that their views and concerns are considered by decision makers. Consultations are to continue throughout project implementation to address issues related to environmental assessment, e.g., to identify perceptions on the project, introduce project components and anticipated impacts, and determine if there is any concern during construction.

SAMPLE COMPLAINT FORM FOR GRIEVANCE REDRESS MECHANISM

Complaint/Suggestion/Comment Form			
Loan No.: _____BAN: Improving Computer and Software Engineering Tertiary Education Project			
Please provide the following information:			
	Date of Filing:		
Name of Person/Organization:			
Contact Details:			
Address			
Telephone/Mobile Phone			
Email (if available)			
Signature of Person Filing Complaint			
Representative in filing this complaint?	Yes		
Please provide details	Name		
	Address		
	Telephone		
	No		
	Not applicable		
Complaint/Suggestion/Comment (*Please provide details as appropriate: what happened, how and why it happened, when and where, how many times it occurred*)			
Please describe any inconvenience/harm caused or may have been caused			
Please provide suggestion to resolution of your complaint (if any)			
Please let us know how you prefer to be contacted	Mail or email		
	Phone		
	Meeting		
Contractor/PIU/PMU Use only			
Recorded by (Name of designation of Contractor/PIU staff)			
Reviewed by (Name and designation of Contractor/PIU staff)			
Action(s) taken to resolve the complaint/comment/suggestion			
	No action needed		
Action/decision disclosed to Complainant	Yes	No	Not required
	Date		
Manner of disclosure	Mail		
	Phone		
	Meeting		
	Not required		

PMU Environmental Safeguard Form 1 - GRM

TERMS OF REFERENCE FOR ENVIRONMENTAL SAFEGUARD CONSULTANT

The Environmental Safeguard Consultant for the Project Management Unit (PMU) will be sourced through national selection and render 4 person-months of inputs within 24 months on an intermittent basis.

He or she should preferably have a post-graduate degree in environmental engineering, environmental sciences, or equivalent discipline, with a minimum of 7 years in environmental management and monitoring and in oversight of project implementation and compliance. A strong knowledge of the applicable environmental regulations and other construction requirements in Bangladesh as well as the environmental requirements of the Asian Development Bank (ADB) following the Safeguard Policy Statement (SPS) 2009 will be mandatory. The candidate should have good communication skills (oral and written) and be a good team player with strong organizational and problem-solving skills.

Duties and tasks of the Environmental Safeguard Consultant include but are not limited to the following:

(i) Provide technical support to the PMU to ensure that all environmental requirements of ADB including occupational health and safety requirements of the Government of Bangladesh are complied with by the project.
(ii) Ensure that the environmental management plan (EMP) and environmental monitoring plan (EMOP) are included in the bid documents and civil works contracts.
(iii) Implement a system for monitoring environmental safeguards.
(iv) In coordination with staff designated by the project implementation unit (PIU), conduct regular site visits at the construction sites to verify or check compliance with the EMP and EMOP, including adherence to occupational health and safety provisions and core labor standards.
(v) Together with the PIU-designated staff and the representative of the Contractor, conduct stakeholder consultations, as appropriate, to determine if there is any concern during construction.
(vi) Assist in obtaining associated government permits (if any) prior to start of construction works.
(vii) Take immediate action in the event of unexpected adverse impact or ineffective mitigation measures identified during implementation and in preparing the corrective action plan.
(viii) Provide technical support to the PIU-designated staff in drafting the environmental monitoring reports required by ADB, and in monitoring compliance of the Contractor with environmental, health, and safety requirements;
(ix) Address any grievances through the Grievance Redress Mechanism (GRM) in a timely manner, prepare record of such grievances for inclusion in the environmental monitoring report.
(x) Prepare the semiannual environmental monitoring reports to be submitted to ADB, and upon ADB review, address any comments raised (if any).
(xi) Assist in any relevant works that may be assigned by PMU or PIU.

Proposed Format of Environmental Monitoring Report during Construction Phase

Environmental Monitoring Report

Reporting Period {From Month, Year to Month, Year}

Date {Month, Year}

BAN: Improving Computer and Software Engineering Tertiary Education Project

Prepared by the University Grants Commission of the Ministry of Education for the Asian Development Bank

CURRENCY EQUIVALENTS

(as of)

Currency unit	–	Taka (Tk)
Tk1.00	=	$
$1.00	=	Tk

ABBREVIATIONS

WEIGHTS AND MEASURES

NOTE

(i) In this report, "$" refers to United States dollars.

TABLE OF CONTENTS

Page

List schedule and paragraph number from the Loan Agreement	Covenant	Status of Compliance	Action Required
Schedule 4, para.8			

Refer to Table 9.1 and COVID H&SP

5.0 Safeguards Monitoring Results and Unanticipated Impacts

{Refer to the Environmental Monitoring Plan and document any exceedence to environmental standards (if any), or any unanticipated impact not included in the EMP and any correction action/measures taken}

Refer to Table 9.2

6.0 Implementation of Grievance Redress Mechanism and Complaints Received from Stakeholders

{Summary of any complaint/grievance and the status of action taken}

- Provide information on the setting-up of the GRM and the capacity of the grievance redress committee to deal and resolve project-related complaints
- Identify training needs (if required)
- Provide information on the number of complaints received during the reporting period, the nature of complaints (e.g., air quality at the construction site), record of events in handling the complaints (i.e., timetable), and resolution/action taken

7.0 Conclusion and Recommendations

{Any follow-up action required to be monitored for the next submission}

Proposed Format of Environmental Monitoring Report Post-construction

Environmental Monitoring Report

Reporting Period {From Month, Year to Month, Year}

Date {Month, Year}

BAN: Improving Computer and Software Engineering Tertiary Education Project

Prepared by the University Grants Commission of the Ministry of Education for the Asian Development Bank

CURRENCY EQUIVALENTS

(as of)

Currency unit	–	Taka (Tk)
Tk1.00	=	$
$1.00	=	Tk

ABBREVIATIONS

WEIGHTS AND MEASURES

NOTE

(ii) In this report, "$" refers to United States dollars.

TABLE OF CONTENTS

Page

List schedule and paragraph number from the Loan Agreement	Covenant	Status of Compliance	Action Required
Schedule 4, para.8			

4.0 Compliance to Environmental Management Plan

{Refer to the EMP during post construction}

5.0 Results of Environmental Monitoring Plan

{Refer to the EMoP during post construction}

6.0 Implementation of Grievance Redress Mechanism and Complaints Received from Stakeholders

{Summary of any complaint/grievance and the status of action taken}

7.0 Conclusion and Recommendations

{Any follow-up action required to be monitored for the next submission}

SAMPLE ENVIRONMENTAL SITE INSPECTION AND MONITORING CHECKLIST

Loan No.:

Name of University	Location
Inspection Date	Inspection Time
Inspector	Weather at time of inspection:

Items for Inspection	Y	N	NA	Remarks (i.e. problem observed, possible cause of non-compliance and/or proposed corrective action)
Site Office				
Site office established				
Contractor appointed an EHS supervisor				
EHS supervisor or designated person on-site				
Copies of EMP, contract document, and environmental clauses on-site				
Details of construction (i.e., name of contractor, duration of construction, emergency hotline, safety, etc.) disclosed on-site				
Details of grievance redress mechanism (i.e., contact person, complaints hotline, etc.) disclosed onsite				
Complete first aid kits on-site				
Photographs of before and after completion of work on board				
Incident register book on-site				
Complaint/visitor's comment book available				
Record of regular consultation of Contractor to University management and/or nearby residents to check if there are environmental concerns				
Any complaint filed with the contractor by staff and settlements				
Disturbed areas properly re-vegetated after completion of work				
Emergency Preparedness and Response				
Fire extinguishers/fire-fighting equipment properly maintained and not expired				
Fire escapes properly marked, clear, and not obstructed				
Emergency contacts available in case of any incident				
Accidents/incidents reported, reviewed, and corrective/preventive actions recorded				
Occupational Health and Safety				

Items for Inspection	Y	N	NA	Remarks (i.e. problem observed, possible cause of non-compliance and/or proposed corrective action)
Provision of labor and equipment shed				
Provision of sanitation facilities and safe drinking water				
Provision of hand washing stations or hand sanitizing stations				
Use of personal protective equipment (PPEs)				
Installation materials and equipment storage				
Separate storage of fuel and lubricant				
Training on OHS, use of PPE, etc. done before construction works				
Clear danger and warning signs on-site for students, faculty, and community				
Posters on COVID-19 health and safety measures (e.g., physical distancing, wearing of facial masks, etc.)				
Fencing of construction site and designation of security personnel				
Good housekeeping - site kept clean and tidy				
Containers properly labelled for easy recycling or waste segregation				
Special facilities for female workers				
Bin for collecting garbage and food waste (separate bins for facial masks and gloves to contain spread of COVID-19)				
Air Quality				
Opened land and construction sites sprayed with water to minimize generation of dust				
Any evidence of excessive dust generation				
Stockpiles of dusty materials and dust-generation activities like handling of cement done in enclosed areas or sprayed with water				
Vehicles carrying dusty loads/materials covered or watered over before leaving the site				
Construction equipment well maintained (any black smoke or smoke belching observed)				
Demolition work areas watered				
Speed control measures applied (e.g. speed limit sign)				
Noise				
Evidence of excessive noise				

Items for Inspection	Y	N	NA	Remarks (i.e. problem observed, possible cause of non-compliance and/or proposed corrective action)
Any noise mitigation measure adopted (e.g. use noise barrier/enclosure)?				
Prohibition of using megaphone or whistle on-site				
Use of well-maintained equipment and vehicles				
Water Quality				
Sanitary facilities for workers equipped with on-site treatment system				
Wastewater discharged to soil				
Evidence of oil spill				
Chemicals properly stored and labelled				
Spill kits/sand /saw dust used for absorbing chemical spillage readily accessible				
Special facilities for female labor				
Construction waste/recyclable materials and general refuse removed off-site regularly				
Water pipe leakage and wastage prevented				

Reviewed by:

Name and signature _____ Date _____
Designation in PIU _____

COVID-19 Health and Safety Plan (Draft)[1]

1.0 Objective

This health and safety plan (H&SP) was prepared based on guidance notes from the WHO, the US Centers for Disease Control and Prevention (CDC), Canadian Centre for Occupational Health and Safety, and the requirements of the government and ADB. The H&SP aims to prevent incidence of COVID-19 in the workplace for the construction of the new 13-storey Information Technology Human Resource Development Hub (IT HRDH) in Dhaka University by providing information on its symptoms, modes of transmission, exposure risk assessment, and precautionary measures following the hierarchy of controls.

2.0 About COVID-19

COVID-19 is a disease not previously identified in humans caused by the new coronavirus called SARS-CoV-2 and can infect a person causing illness that can be mild to severe or even fatal. An infected person may commonly experience mild to moderate respiratory illness such as fever, cough, and shortness of breath while some people reportedly experienced other non-respiratory symptoms, and others have no symptoms at all referred to as asymptomatic cases. According to the CDC, symptoms can appear in as few as 2 days or as long as 14 days after exposure.

3.0 Symptoms

WHO identifies the most common symptoms as fever, dry cough, and fatigue while other symptoms that are less common and may affect some patients include loss of taste or smell, nasal congestion, conjunctivitis (also known as red eyes), sore throat, headache, muscle or joint pain, different types of skin rash, nausea or vomiting, diarrhea, chills, or dizziness. Severe case of COVID-19 has symptoms like shortness of breath, loss of appetite, confusion, persistent pain or pressure in the chest, high temperature (above 38 °C).

4.0 Modes of transmission

The WHO states that COVID-19 mainly spreads from an infected person to others in close contact (less than 1 metre) through respiratory droplets (e.g., coughing, sneezing, laughing, talking, singing). By touching something with the COVID-19 virus on it and then touching the face (e.g., mouth, nose, eyes) before washing hands. People infected with COVID-19 can show no symptoms but still spread the disease. According to CDC, although COVID-19 can survive for hours or days on different surfaces, infection from contact with contaminated surfaces appears to be less common.

5.0 Workplace Risk Assessment

Having known the mode of transmission of COVID-19, the risk of work-related exposure depends on the probability of coming into close (i.e., less than 1 metre) or frequent contact with people who may be infected with COVID-19, and through contact with contaminated surfaces and objects.

[1] Contractor will finalize the plan to be approved by the PIU

WHO describes the risk levels (Figure 1) that may be useful in carrying out a workplace risk assessment for exposure risk to COVID-19 and in planning for preventive measures to non-health care workplaces.[2]

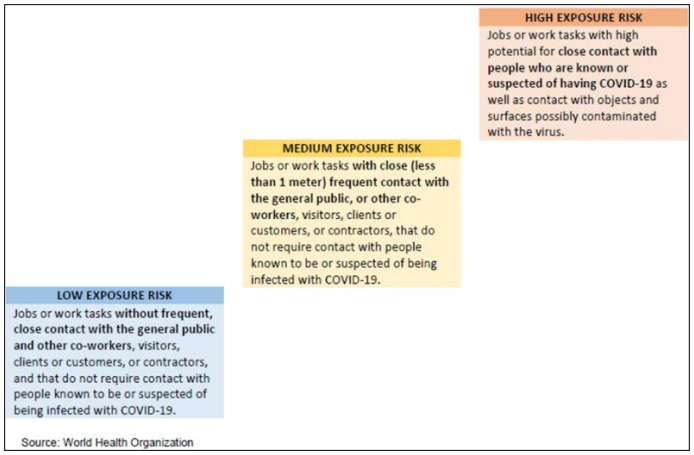


Figure 1 Levels of Risk Exposure to COVID-19

Based on this exposure risk, the design, pre-construction, and construction phases of the project can be considered as medium risk. Level of risk in the workplace is affected by several factors such as person's underlying health conditions, presence of transient workers where original community has or had an outbreak, poor condition of sanitary facilities, poor housekeeping practices, workers in and out of the local communities, and lack of reliable health care facilities to respond to any COVID-19 incidence.

The Contractors, PIU, and the PMU will coordinate with the local government unit in Dhaka District in monitoring and identifying potential positive case, and level of response will depend on the developments to contain COVID-19 such as the ongoing vaccination rollout plan by the government. Based on the Morbidity and Mortality Weekly Update (No. 58) of WHO Bangladesh, the total number of people vaccinated as of 5 April 2021 is 5,498,172 with 35.9% coverage in Dhaka Metro and 11.1% national coverage.[3]

6.0 Hierarchy of Controls to Reduce Risk

The WHO and the Canadian Centre for Occupational Health and Safety (CCOHS) provide guidance on COVID-19 preventive measures that can be implemented in the workplace. According to CCOHS, a zero risk for COVID-19 transmission is not possible in any setting, and as such, the

[2] WHO. 2020. Considerations in adjusting public health and social measures in the context of COVID-19: interim guidance. 15 April. https://www.who.int/publications/i/item/considerations-in-adjusting-public-health-and-social-measures-in-the-context-of-covid-19-interim-guidance

[3] WHO Bangladesh. COVID-19. Morbidity and Mortality Weekly Update N^{0}58. 05 April 2021. https://cdn.who.int/media/docs/default-source/searo/bangladesh/covid-19-who-bangladesh-situation-reports/who_covid-19-update_58_20210405.pdf?sfvrsn=b631fa67_13.

best approach is to always keep the risk exposure as low as possible. Figure 2 shows the hierarchy of controls to reduce risk while Table 1 presents the preventive measures that can be applied.

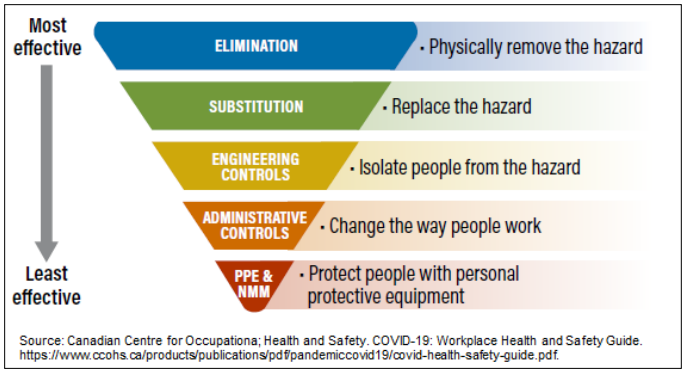


Figure 2 Hierarchy of Controls to Reduce Risk

Table 1 Preventive Measures to Reduce Risk to COVID-19 Exposure

Controls	Preventive Measures	Implementing Unit	Supervising and Monitoring Unit
Workforce profile			
Characteristics	• Prepare detailed profile of the workforce, activities and work schedule, breakdown of workers (i.e., living at home, those who stay within the local community, and onsite accommodation); identify measures to minimize movement in and out of construction site	Contractor	PIU
Information, communication, and education			
Information/awareness	• Prepare/print materials on COVID-19 (refer to WHO Bangladesh website, https://www.who.int/bangladesh/emergencies/coronavirus-disease-(covid-19)-update. • Place COVID-19 posters and signs in the construction site and office with images and text in Bengali and English (refer to website of WHO Bangladesh and DGHS) • Provide updates to workers and staff on COVID-19 risks in the workplace from sources such as WHO, CDC, and DGHS	Contractor	PIU, Environmental consultant
Education (training and orientation)	• Include safety trainings that cover issues such as safety procedures, appropriate use of PPEs, occupational health and safety, workers' code of conduct, flexible work hours, etc. to ensure compliance to COVID-19 safety requirements. • Appoint an occupational health and safety (OHS) officer onsite who will be the authority to issue directives to maintain health and safety of all workers and staff.	Contractor	PIU, Environmental consultant

Controls	Preventive Measures	Implementing Unit	Supervising and Monitoring Unit
	• Training to include topics such as: (i) signs and symptoms of COVID-19, (ii) how it is transmitted, (iii) how to protect oneself (safety protocols), (iv) what to do if one has the symptoms or others have the symptoms, (v) discrimination or prejudice in case a worker becomes positive to COVID-19, and (vi) site access control system and monitoring.		
Communication	*Workers and Staff* • Information/updates on COVID-19 risks will only come from the OHS officer (or back-up in case the OHS Officer gets sick) to avoid confusion. • Workers can report to the OHS officer or Site Engineer on work situations that are not safe or healthy. • Workers will be given opportunities to ask questions, raise their concerns, and make suggestions as they see fit. • Arrange for regular meetings with medical experts in Dhaka University (or local health office of DGHS) for medical advice in designing appropriate health and safety measures. • General hygiene requirements will be communicated and monitored by the OHS officer. This includes: (i) ensure handwashing stations are equipped with soap, disposable paper towels, and waste bins with cover in key areas at the construction site (e.g., entry/exit to work areas, toilet, canteen/food distribution, drinking water station, workers' temporary rest area, waste disposal area, etc.). If hand washing stations with soap and water are not available, alcohol-based sanitizer (at least 60% alcohol) will be used. • Communicate clearly based on information from WHO or DGHS in a manner that can be easily understood by workers such as putting of posters on handwashing, social distancing or on how to protect themselves. *Community* • Communicate clearly and regularly to community members based on information from sources like DGHS and WHO. • Consultations will use other means of communications such as posters, flyers, radio, and social media and virtual meetings (to those with access to internet) • Ensure that the community is aware of the COVID-19 health and safety measures that will be or being implemented on-site to prevent incidence and to limit or prohibit contact between workers and the community. • Procedures for entry/exit to the construction site, training of the workers and steps to follow if a worker gets sick will be communicated to the community. • Workers who interact with local community will be required to observe social distancing, wear facial mask, and follow other COVID-19 restrictions issued by DGHS or WHO.	Contractor	PIU, Environmental consultant
Site Management			

Controls	Preventive Measures	Implementing Unit	Supervising and Monitoring Unit
Access Control	• Post notices outside of construction site asking people not to enter the building if they have symptoms or may have been exposed. • Entry/exit to the construction site will be controlled and documented for easy contact tracing. Sign-in devices will be sanitized and contact during sign-in will be minimized. • Adequate and clear floor markings to keep a distance of at least 1 meter between persons will be provided and direct physical contact (e.g., shaking hands) will be avoided. • Temperature check using thermal scanner will be mandatory before entry and at the end of work shift (low-grade fever of 37.3^{o}C or more will not be allowed entry to the workplace). Anyone who leaves and re-enters within the work shift will be re-checked. • Mandatory use of color-coded entry pass given to workers indicating fitness to work will be worn visibly. Use of separate visitors' card will be required. • An area will be designated for staff to wear personal protective equipment (PPE) such as facial mask or gloves and will be disinfected twice a day. • Toolbox meetings or other site meetings will be outdoors with social distancing. If conducted indoors, number of persons will be limited to maintain social distancing or additional sessions will be done. • Any person on medication for a specific medical condition that will affect work performance will not be allowed.	Contractor	PIU
Sanitation	*Hand hygiene* • Put signs or posters to encourage frequent hand washing with soap and water for at least 20 seconds. • Provide hand washing stations (even just a spouted water container, catch bucket for water, soap, and paper towels) in prominent places within the construction site and accessible to staff and workers. If water and soap are not available, alcohol-based hand sanitizers (with at least 60% alcohol) will be used. • Regular and thorough handwashing: (i) before starting work, (ii) before eating or drinking, (iii) frequently during the work shift, especially after contact with co-workers or touching shared items/tools/equipment, (iv) after going to the washroom, (v) after handling garbage, (vi) after contact with potentially contaminated objects (gloves, clothing, masks, used tissues, waste), and (vii) immediately after removing gloves and other PPEs but before touching eyes, nose, or mouth. • Sharing phones, tools, or equipment will be discouraged unless they can be disinfected between users. • Discourage sharing of items such as phones, tablets, tools, or equipment unless they can be cleaned and disinfected between users. • If possible, assign each worker a unique set of tools for their use only. • Have workers bring their own pre-filled water bottles and food. Food and water bottles should not be shared. *Respiratory hygiene* • Post signage promoting respiratory etiquette in the workplace.	Contractor	PIU, Environmental consultant

Controls	Preventive Measures	Implementing Unit	Supervising and Monitoring Unit
	• Wear mask or face cover based on the requirements of the government and will ensure its safe and proper disposal. • Medical facial mask and paper tissues will be made available for those who may sneeze (or into the bend of the arm) or develop a runny nose at work, along with no-touch plastic lined garbage bins with lids for hygienic disposal of used tissues and mask. • A worker who is sick will not be allowed to work and if a worker feels unwell at work, a medical mask will be provided and will be allowed to get home safely. *Cleaning, disinfection, and waste disposal* • Clean offices, washrooms, lunch/break rooms and other workspaces every day focussing on commonly touched surfaces such as doorknobs, handrails, tables, chairs, tools, radios, etc., using soap or neutral detergent. Disinfect after cleaning to kill pathogens with disinfectants approved by local authorities such as DGHS. • Regularly clean shared tools, phones, and other devices with alcohol or disinfectant wipes. • Train cleaning staff on appropriate cleaning procedures and frequency of high-use areas • Monitor and restock washrooms and workspaces for soap paper towels and hand sanitizer. • No touch garbage bins will be provided for waste collection in all common access areas, manage waste as a type of medical waste, and dispose accordingly. Construction waste removed from site will be in covered bins and covered vehicles.		
Worker Management			
Physical distancing	• Maintain a distance of at least 1 meter between people and avoid direct physical contact, strict control over external access, queue management (provide markings on the floor, barriers). • Control site movement to reduce gathering at scaffolds, hoists, washrooms, and other high traffic areas and reduce density of people (no more than one person per 10 m^2), physical spacing at least 1 meter apart for workstations and common spaces like entry/exits, stairs, and other common areas. • Arrange for one-way routes and use signs and other markings to direct movement through shared spaces such as hallways, common areas, and washrooms. • Post signs outside of sanitary facilities indicating number of users at a given time to ensure distancing is followed. • Limit the number of people allowed in indoor spaces and common areas at the same time to maintain distance. • Minimize movement of workers in and out of the construction site (i.e., returning home to affected areas or returning to site from affected areas)	Contractor	PIU, Environmental consultant

Controls	Preventive Measures	Implementing Unit	Supervising and Monitoring Unit
	• Mandatory use of mask if social distancing cannot be followed. Reusable mask will be cleaned and disinfected after use and will not be shared. Single use mask will be disposed of in designated covered bins.		
Work schedule and work practices	• Identify work that can be done offsite and allow staff to work from home or remotely where and when possible. • Use technology such as Zoom, Microsoft Team, and other platforms to help workers while working from home. • Stagger work hours or workdays to reduce the number of workers at one time on-site or in common spaces like entry/exits (e.g., in safety toolbox meetings, breaks, orientation, training, etc.) • Create small groups whose members will be same people that may not always keep 2 meters apart (e.g., take breaks together, easier for contact tracing when members are known) • Arrange that work breaks are taken in outdoor areas on-site. • Workers returning from an area where there is COVID-19 transmission should monitor themselves for symptoms for 14 days and take their temperature twice a day; if they are feeling unwell, they should stay at home, self-isolate, and contact a medical professional.	Contractor	PIU, PMU
Worker who may have COVID-19 symptoms	• Any person showing signs of cough or colds will not be allowed access to the work site and will be advised to stay home and isolate. • A contingency plan/protocol will be developed, in consultation with Dhaka University Medical Centre and DGHS, to set out procedures if someone becomes ill at the worksite. • Report if there is stoppage of construction work due to incidence of sick workers and staff, or any health and safety concerns at the construction site.	Contractor	PIU, PMU

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