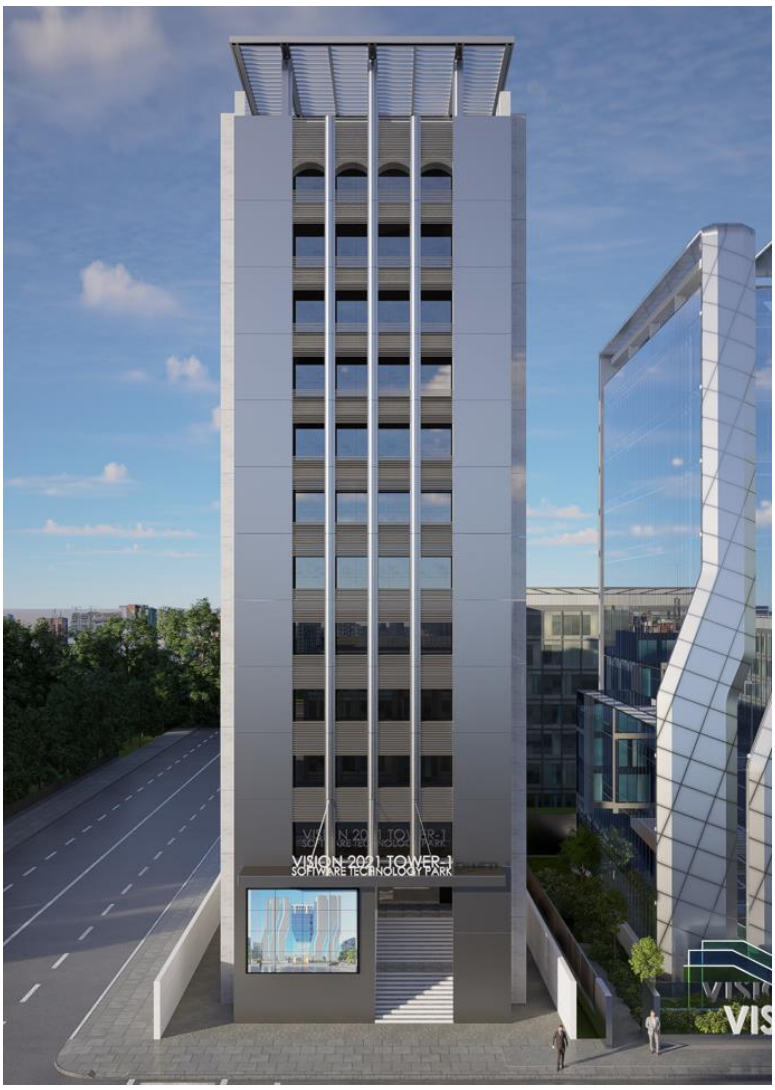
Environmental and Social Assessment (ESA)



Renovation Work of Software Technology Park -1 (STP-1)
Kawran Bazar, Dhaka, Bangladesh

Digital Entrepreneurship and Innovation Ecosystem Development Project (PRIDE)
Bangladesh Hi-Tech Park Authority, ICT Division
Agargaon, Dhaka-1207, Bangladesh

May 2024

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1. Introduction

1.1 Sub-project Background

To make Bangladesh a middle-income country Information and Communication Technology (ICT) has been performing an important role. It is contributing significantly to the goal of becoming a smart nation by 2041 by evolving into a developed nation through comprehensive development. The Bangladesh Hi-Tech Park Authority (BHTPA) was established in 2010 to accelerate the country's economic development, encourage digital entrepreneurship and generate private investment and employment in the IT and IT-enabled services (ITES) industries. BHTPA is also mandated to establish, operate and develop and expand Hi-Tech Parks (HTPs) and Software Technology Parks (STPs) at various locations within the country.

The Bangladesh Private Investment and Digital Entrepreneurship (PRIDE) project currently underway with World Bank support has four components. Under component 4.0, there are two sub-components (component 4.1 and 4.2). Sub-component 4.1: is the "Establishing Digital Entrepreneurship Hub in Dhaka" and Sub-component 4.2 is the "Digital Entrepreneurship and Innovation Support Program."

The sub-component 4.1 would finance works, goods and technical assistance to: (a) upgrade and expand Vision 2021 Tower **STP-1** by adding 100,000-125,000 ft^2 of workspace through public and private investment; and (b) assess the feasibility and develop models for private participation for the expansion and management, and then promote private tenants to the site. This STP will host approximately 100 small and medium-sized farms with 2,000 professionals plus another 100-200 micro entrepreneurs.

Previously the STP-1 building was named "Janata Tower". As per historical reference the building is constructed before 1990, it was vacant for many years and on 18th October 2015 the building was inaugurated as Software Technology Park. The ownership of the building was then transferred from Public Work Department under the ministry of Housing and Public Works to Bangladesh Hi-Tech Park Authority of ICT Division.

1.2 Purpose of ESA

To comply with the WB's Environmental and Social Standards (ESS) and national laws and regulations preparation of an ESA is required to ensure that the sub-project avoids, minimises, and/or mitigates adverse environmental and social impacts and risks identified through screening of sub-project activities and interventions. This ESA identifies environmental and social management measures to be implemented throughout the course of the sub-project and will be integrated into all contractual and responsible party agreements with partners involved in sub-project implementation.

BHTPA currently operates the Vision 2021 Tower **STP-1** in an old government building those rents out 72,000 ft^2 of workspace to IT and ITES firms including some Startup firms. The building needs upgrading and improved maintenance of some spaces. The objective of the ESA is to consider and develop adequate measures and controls to minimize potential environmental and social risks and impacts identified during sub-project implementation or renovation works as proposed in the ESMP.

2. Legal and Regulatory Framework

The following outlines key environmental and social safeguards, legal and regulatory requirements applicable to the sub-project.

Bangladesh Environmental Conservation Act, 1995 and subsequent amendments, National Environmental Policy 2018; Environment Conservation Rules, 2023; Bangladesh National Building

Code (BNBC), 2020; The Noise Pollution (Control) Rules, 2006; Solid Waste Management Rules, 2021; World Bank's Environmental and Social framework (ESSs 1-10); WBG Environmental, Health and Safety Guidelines.

2.1 World Bank's ESF standards and relevancy with the sub-project

The World Bank Environmental and Social Framework (ESF) sets out the World Bank's commitment to sustainable development, through a Bank Policy and a set of ESSs that are designed to support the projects, with the aim of ending extreme poverty and promoting shared prosperity.

As per the World Bank Environmental and Social Risk Classification (ESRC), the overall Environmental and Social risks of the sub-project rated as moderate. Of the ten ESSs comprising the ESF, five standards are relevant to the sub-project. They establish the standards that the sub-project and its implementing agency (PIU) will meet through the sub-project life cycle are summarized in the table below with a brief description and relevancy explanation:

ESS1	**Assessment and Management of Environmental and Social Risks and Impacts**	**Relevancy**	**YES**
Description: ESS 1 sets out the borrower's responsibilities for assessing, managing, and monitoring environmental and social risks and impacts associated with each stage of a project supported by the Bank through Investment project Financing in order to achieve environmental and social outcomes consistent with the ESSs.			
Explanation: The sub-project will enhance the capacity of the tenants by providing quality basic services in the STP-1 building. Considering the scope and activities, the sub-project will establish and maintain a PIU with qualified staff and resources to support the management of ESHS (environmental, social health, and safety) risks and impacts of the Sub-project. In addition, the Sub-project will prepare, consult, disclose, adopt, and implement an ESMP consistent with the relevant ESSs (ESS1, ESS2, ESS3, ESS4 and ESS10).			
ESS2	**Labour and Working Conditions**	**Relevancy**	**YES**
Description: ESS 2 recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Borrowers can promote sound worker-management relationships and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions.			
Explanation: Sub-project workers working conditions, management of workers' relationships, occupational health and safety (including personal protective equipment (PPE), and emergency preparedness and response), code of conduct (including relating to SEA and SH), grievance redress arrangements, COVID-19 infection prevention measures, and other applicable requirements.			
ESS3	**Resource Efficiency and Pollution Prevention and Management**	**Relevancy**	**YES**
Description: ESS 3 recognizes that sub-project may generate pollution to air, water, and land, and consume finite resources that may threaten people and the environment at the local level. At the same time, more efficient and effective resource use, pollution prevention and GHG emission avoidance, and mitigation technologies and practices have become more accessible and achievable. This ESS sets out the requirements to address resource efficiency and pollution prevention and management throughout the project life.			
Explanation: Sub-project activities will implement technically and financially feasible measures for improving efficient consumption of energy, water and raw materials, as well as other resources. Such measures will integrate the principles of cleaner production into product design and production processes to conserve raw materials, energy and water, as well as other resources.			
ESS4	**Community Health and Safety**	**Relevancy**	**YES**

ESS 4 recognizes that project activities, equipment, and renovation can increase community exposure to risks and impacts. Also, communities that are already affected by variety of sources may also experience acceleration or intensification of impacts due to sub-project activities.			
Explanation: Sub-project activities, without efficient risk management and mitigation measures, may raise threats of Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) and provision of security to Sub-project workers, sites and/or assets to mitigate security risks to participating local communities.			
ESS5	**Land Acquisition, Restrictions on Land Use and Involuntary Resettlement**	**Relevancy**	**NO**
ESS6	**Biodiversity Conservation and Sustainable Management of Living Natural Resources**	**Relevancy**	**NO**
ESS7	**Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities**	**Relevancy**	**NO**
ESS8	**Cultural Heritage**	**Relevancy**	**NO**
ESS9	**Financial Intermediaries**	**Relevancy**	**NO**
ESS10	**Stakeholder Engagement and Information Disclosure**	**Relevancy**	**YES**
Description: ESS 10 recognizes the importance of open and transparent engagement between the borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation.			
Explanation: The Sub-project has a diverse set of stakeholders represented by Sub-project workers, Experts of DS firms, present tenants, HTPA officials, PMU/PIU officials, World Bank, etc. Multiple consultations were held at different times at different places. Full details of stakeholder consultation are discussed in Section 5.0.			

3. Approach and Methodology

The preparation of this ESA report consists of the following sequential steps:

- Identification of all the activities to be undertaken under the component;
- Identification and screening of the environmental issues relevant to the proposed activities through a scoping process;
- Site visits to capture environmental and social information;
- Identify stakeholders and consultation with relevant parties;
- Assessment of potential risk and impacts on relevant environmental and social parameters;
- Preparation of Environmental and Social Management Plan (ESMP)
- Different times site visit has been done to the sub-project site helped to identify the environmental parameters/components (relevant to the sub-component actions) which are likely to be affected. The site visits also included a participatory approach, which involved discussions with existing tenants, bazar committee leaders, DNCC representatives, neighboring community, officials of BHTPA, DS firm, WB representatives in order to identify the perceptions and priorities of the stakeholders in and around the site. Information was also derived from secondary sources such as different reports, satellite imagery and Google maps etc.

As per the risks and impacts identified, World Bank's ESS1 (Assessment and Management of Environmental and Social Risk and Impacts), ESS2 (Labour and Working Conditions), ESS3 (Resource Efficiency and Pollution Prevention and Management), ESS4 (Community Health and Safety) and

ESS10 (Stakeholders Management and Information Disclosure) and national rules and regulations will be relevant to the Sub-project.

The ESA and ESMP includes the following management measures based on the risks and impacts identified,

- Labour Management Procedures entails an overview of the labor use of the Sub-project, assesses the potential labor risks envisaged due to the sub-project activities and suggest mitigation measures in relation to exposure of sub-project workers to COVID 19, Dengue and other infectious disease, risks to Sexual Exploitation and Abuse (SEA), Sexual Harassment (SH) and Gender Based Violence (GBV), Child Labour, Occupational Health and Safety and Grievances.
- SEA/SH Action Plan provides an overview of SEA/SH risks on the Sub-project, the screening process adopted and activities proposed in areas of interventions related to awareness raising and monitoring, mandatory training, reporting mechanisms,
- COVID-19, Dengue and other Infection diseases discusses the action plan to be adopted in terms of provisioning of adequate Personnel Protection Equipment, awareness trainings, record keeping and setting up of an anonymous process for workers to voice concerns about COVID-19 and Denguerelated hazards in view of the exposure of COVID-19 and Dengue risks to the sub-project workers and PIU due to the sub-project implementation phased.
- Safety management plans are identified based on risks and impacts. Mitigation measures with a proposed budget and responsibilities are also suggested.
- Public Consultation, Communication and Information Disclosure provides an overview of the consultative activities planned to be undertaken with the stakeholders identified for the sub-project including the information disclosure process to be adopted to ensure transparency and accountability in line with World Bank ESSs.

4.0 Environmental and Social Baseline

4.1 Introduction

Since the sub-project site is an existing old building, a full-scale ESIA was not carried out instead an ESA has been prepared. The baseline data mainly relies on secondary data that is mostly taken from the baseline of the ESIA report of Vision 2041 Smart Tower, which is adjacent to the sub-project site.

The building to be renovated is located on the north side of Kawran Bazar and the under-construction Vision 2041 Smart Tower. Kawran Bazar which is the largest wholesale market in Dhaka City. Overall, it is the distribution center for more than one-quarter (27.3%) of all the vegetables, fish, and fruits consumed in Dhaka, and represents the most important market in Bangladesh. The market provides jobs for approximately 20,000 people. Of them, around 2000 are wholesalers/retailers or arotdars (depot holders). In addition, approximately 10,000 laborers work every night to unload commodities from the trucks and carry and load them in pickups and vans. They primarily work collectively under the leadership of sardars or leaders and retailers. Approximately, 20000 small store owners come to the market every night from all over the city to buy goods from the retailers.

4.2 Climate

The climate of Bangladesh is heavily influenced by Asiatic monsoon, which results in three distinct seasons:

(a) Pre-monsoon hot season (from March to May);
(b) Monsoon season (from June to September); and
(c) Cool dry winter season (from October to February).

Although less than half of Bangladesh lies within the tropics, the presence of the Himalaya Mountain range has created a tropical macroclimate across most of the east Bengal land mass. Bangladesh can be divided into seven climatic zones. The proposed sub-project area is located in the south-central zone.

4.3 Temperature:

Long-term average monthly temperature data (1987-2022 has been collected from Dhaka weather station of Bangladesh Meteorological Department. The highest average recorded temperature in this weather station was 29.15°C in June. The lowest average recorded temperature was found in the month of January which was 18.42°C. Both of the average monthly temperature graphs show that this area faces high temperature from April to September and lowest temperature during winter remains from December to February in the year (Figure 4.1).

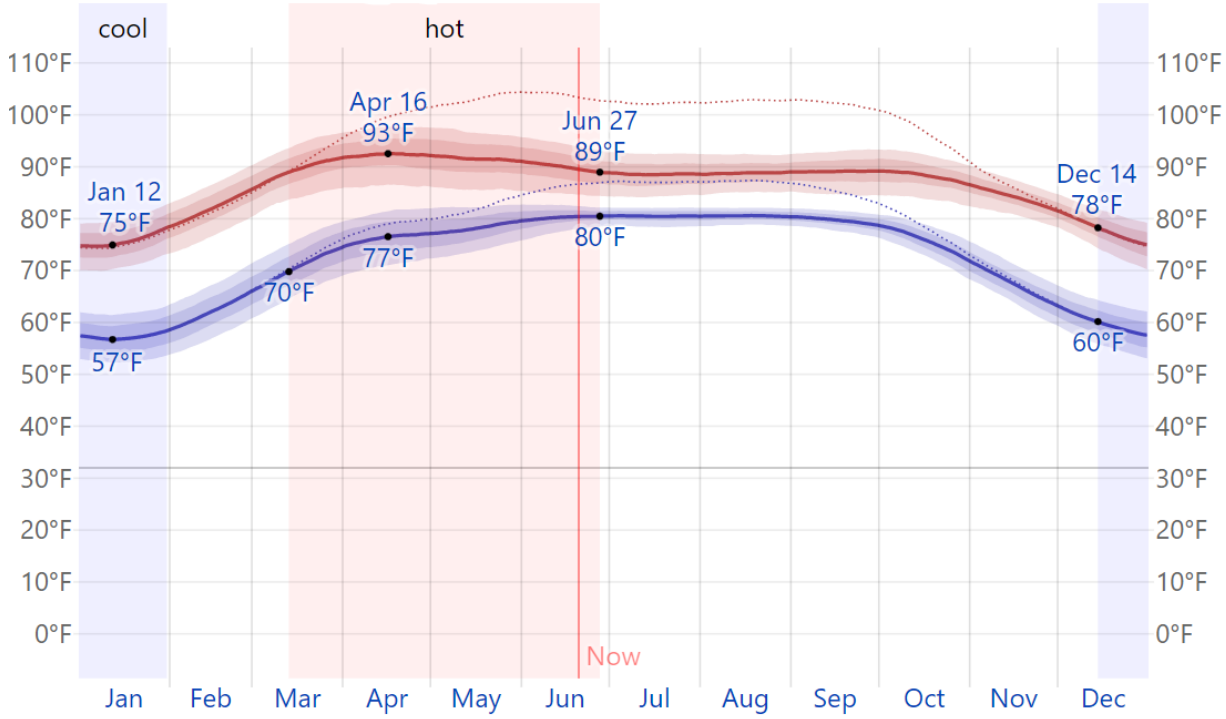

Figure 4.1: Average High and Low temperature in Dhaka (1987-2022)

Source: https://weatherspark.com/y/111858/Average-Weather-in-Dhaka-Bangladesh-Year-Round#Sections-Precipitation

4.4 Rainfall:

The average annual rainfall of Dhaka City is around 1890 mm. The rainfall data collected from the above stated station represents that maximum rainfall occurs during June to September and the lowest rainfall occurs in November to February during winter season. Statistical data from 1987 to 2022 shows that Dhaka experienced more than 300 mm rainfall during monsoon. In the months of December and January of winter season around 10 mm rainfall occurred in the region of Dhaka weather station (Figure 4.2 and 4.3).

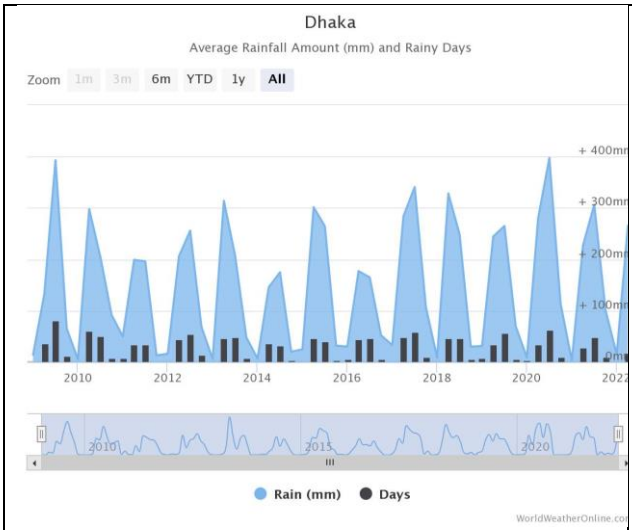

Figure 4.2: Yearly average Rainfall & Rainy days of Dhaka

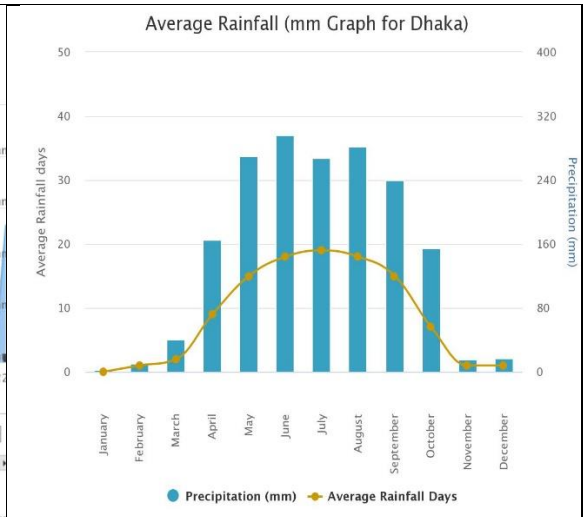

Figure 4.3: Monthly average rainfall of Dhaka

Source: https://www.worldweatheronline.com/dhaka-weather-averages/bd.aspx

4.5 Humidity:

Generally, humidity of Bangladesh is high throughout the year. The western part of Bangladesh has the least humidity (57%) during the month of March and April. The least humid months in the eastern areas are January, February and March and the humidity was 58.50%. Apart from the above areas, the relative humidity during June, July and August in elsewhere in the country is 80%. However, average relative humidity for the whole year ranges from 70.50 to 78.10%. Monthly and annual average humidity data has been obtained from the Climate Division of Bangladesh Meteorological Department, GOB. Humidity remains high in summer and comparatively low in winter season. The statistical data of humidity from 1987 to 2017 indicates that humidity in the Dhaka Station area maximum in June to September in the year which is ranges from 80% to 82%. On the other hand, humidity falls around 60% in February, March and April during the winter season in the considered station area (Figure 4.4).

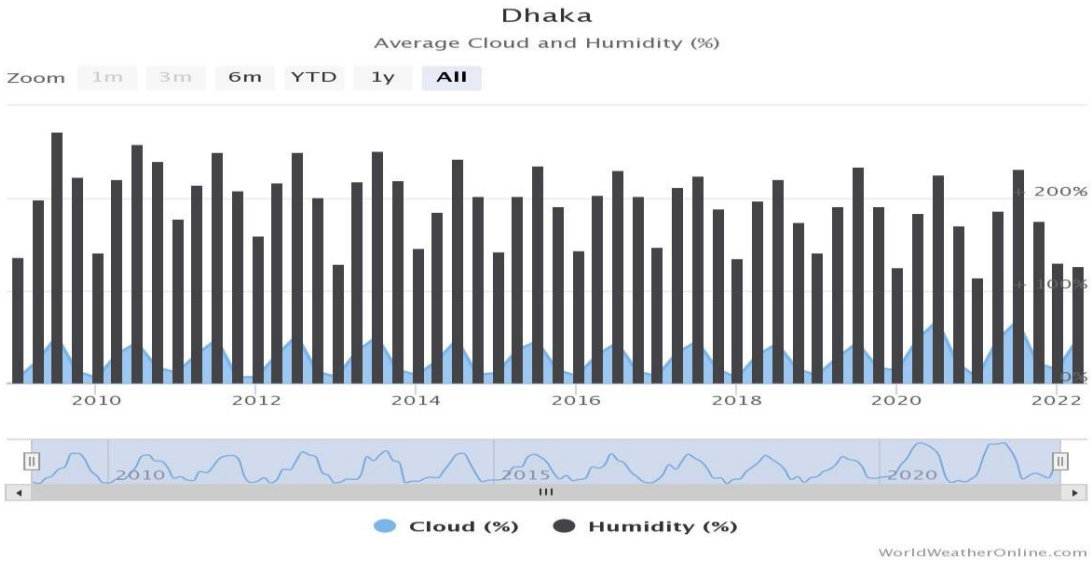

Figure 4.4: Yearly average cloud and humidity of Dhaka

4.6 Wind Speed and Direction:

The statistical wind speed data (Figure 12) shows that average maximum of wind speed value was 3.28 knots in April. The minimum wind speed value was 2.01 knots in the month of

December in the area of Dhaka station. In the project areas the predominant wind flows from the northwest (Figure 4.5 and 4.6).

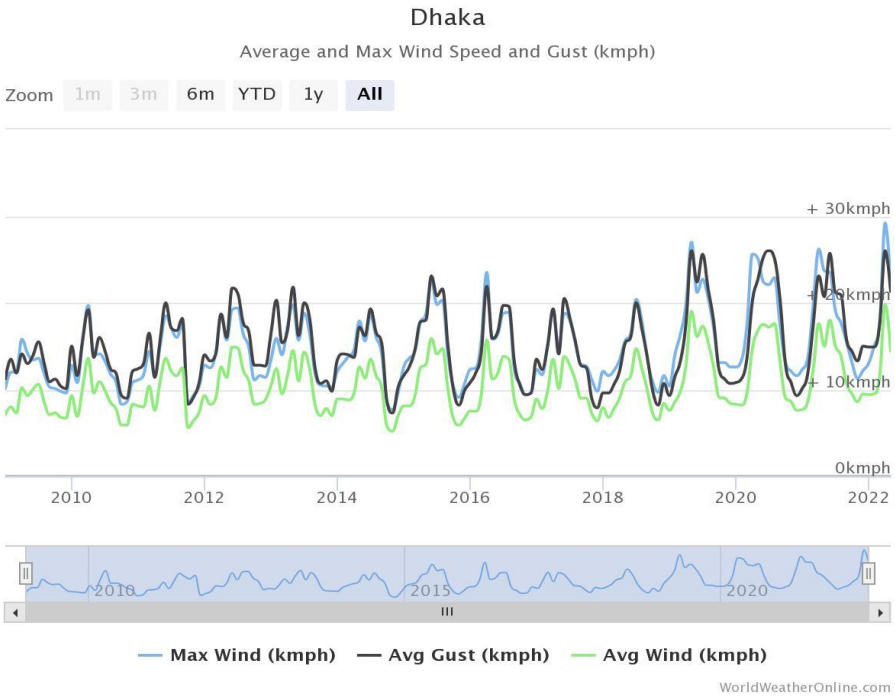

Figure 4.5: Yearly average Wind Speed (2010-2022)

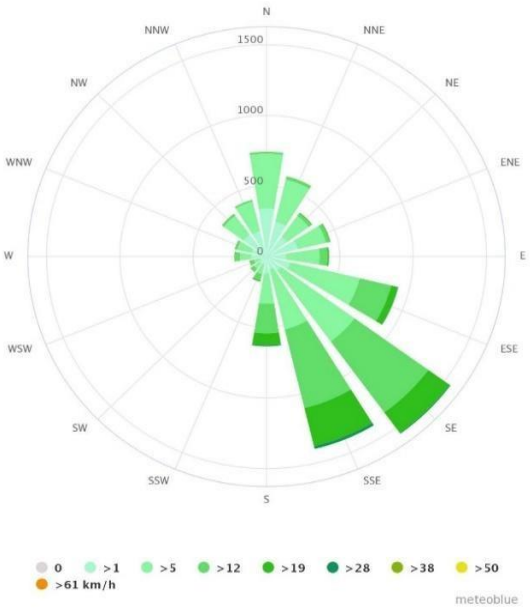

Figure 4.6: Wind Direction of Dhaka

4.7 Sunshine Hours

The sun in Bangladesh regularly shines in the dry season, while in the monsoon season, from June to September, the situation differs. Here are the average daily sunshine hours in Dhaka

(Table 4.1 and Figure 4.7). On average, January is the sunniest and August has the lowest amount of sunshine.

Table 4. 1: Monthly Average Sunshine hours in Dhaka

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sunshine Hour	9	8	7	6	5	3.9	3.4	4	5.6	7	8	7.9

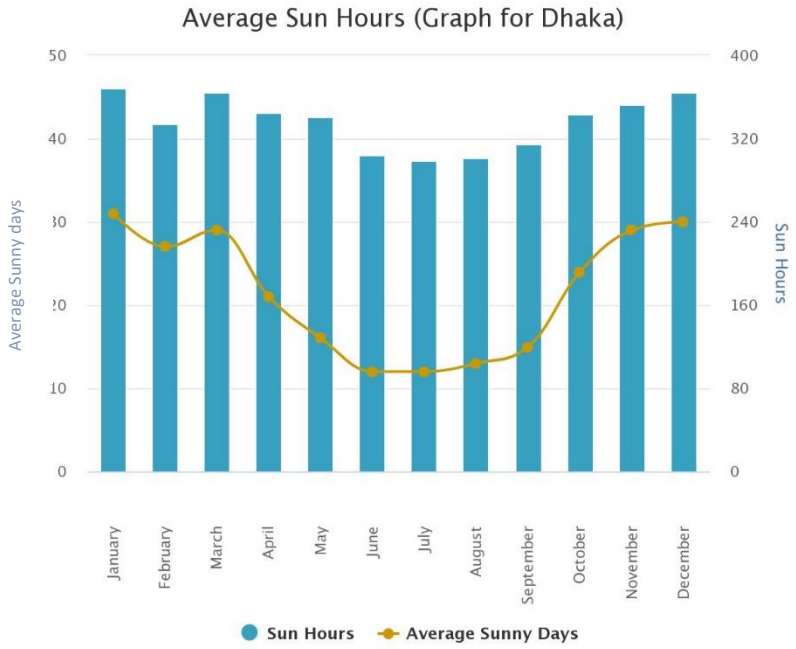

Figure 4.7: Average monthly hours of Sunshine in Dhaka, Bangladesh

Source: https://www.worldweatheronline.com/dhaka-weather-averages/bd.aspx

4.8 Hydrogeology

Stratigraphically, Dhaka is characterized by a Pleo-Pleistocene sequence of fluvio-deltaic deposits of a few hundred meters thickness composed of gravels, sands, silts and clays forming the DupiTila Formation and the Madhupur Clay Formation. The Madhupur Clay Formation, composed of characteristically red plastic clay to silty-clay and silt, forms an aquitard above fine to coarse-grained micaceous, quartzo-feldspathic sands of the DupiTila Formation, and is itself unconformably overlain by the Holocene Alluvium. The Pliocene multi-layered DupiTila Formation forms the main aquifer, effectively confined by the semi-pervious Madhupur Clay. The aquifer underlying Dhaka can locally be separated into three units, viz., the Upper DupiTila Aquifer (UDTA) (1), Upper DupiTila Aquifer (2) and the Lower DupiTila Aquifer (LDTA) (3) (DWASA & IWM, 2008), with hydraulic connection between the units facilitated by discontinuity of the intervening aquitard layers.

4.9 Air quality

The Department of Environment does not have any record on regular air quality monitoring program for ambient condition or emission for the project

area. Air quality has recently tested in STP- 2 (Vision2041 ST) site which is adjacent to STP- 1 and the Air quality values are (Table 4.2).

Table 4.2: Ambient Air Quality near STP-1

Sample	Ambient Air Pollutants' Conc. in µg/m^3						CO (ppm)
	$PM_{2.5}$	PM_{10}	CO_2	NO_2	SO_2	O_3	
AAQ-I	17	68	98	38	88	20	0
Method of Analysis	Real Time Monitoring by Particulates Sensor based analysis			Real Time Monitoring by High Sensitivity Electrochemical Sensor			
	Instrument: Henan Oceanus AQM-09 Air Quality Monitoring System						
Bangladesh Standard, Air Pollution Control Rules, 2022	65 (24 Hour)	150 (24 Hour)	-	80 (24 Hour)	80 (24 Hour)	100 (8 Hour)	5 (8 Hour)

4.10 Hydrological Conditions

Introduction:

Very adjacent to the sub-project site there are no surface water sources like ponds, canal or rivers. Therefore, there is no question polluting any surface water. Likewise, there is no point collecting ground sources water. Presently the building residents use DWASA sources of water for drinking purposes. So, there is no need to take the surface water and Ground water testing samples during renovation work.

5. Stakeholder consultations

5.1 Purpose of stakeholder consultations

Stakeholder consultation aims to involve all primary and secondary stakeholders in the sub-project's decision-making process so that their concerns can be addressed, the sub-project may have improved design, and the legitimacy of the sub-project can be attained. If the stakeholder consultation could be conducted in a participatory and objective manner, it is highly likely that the sub-project would be sustainable. Public consultation and participation can be envisaged as a continuous process where public understanding of the processes and mechanisms can be promoted, which in turn helps in investigating the developmental problems and needs. The stakeholder consultation, which is an integral part of environmental and social assessment process throughout the sub-project preparation stage minimizes the risks and unwanted hurdles against the sub-project implementation as well as bridges the gap between the community and the sub-project formulators. Such an initiative leads to successful and timely completion of the sub-project and makes the sub-project acceptable to the people.

Therefore, keeping in mind the above objective, stakeholder consultations were conducted with the people of different section of the society like existing tenants, local businessmen, community leaders, ward councilors, and other stakeholders to know the expectations, complaints and comments about the sub-project in-depth. Moreover, potential vulnerable people were also consulted with the aim to make people aware and minimize adverse impacts of the sub-project. Stakeholder consultation was therefore conducted in the sub-project area not only to satisfy the legal requirements of the ESA

process in Bangladesh but also to improve and enhance the social and environmental design of the sub-project. The details of the consultation are given in Table 5.1.

Table 5.1: Stakeholder consultations on renovation works of STP-1.

SL.	Date & Time	Meeting and Stakeholder Consultations	Summary of consultations findings/observations and followed by necessary recommendations.
1	16.04.2023	A joint team comprising officials of DEIEDP and World Bank visited the existing Software Technology Park-1 (STP-1) at Kawran Bazar, Dhaka. During the visit the team examined the upgradation proposal and challenges in the field of architectural, structural, plumbing, water supply and sewerage system, electrical, electro-mechanical, fire and other related issues. The team visited the Building from Roof top to ground floor & basement. The team also visited 2nd and 3rd Floor where concrete spalling occurred in April 2022. Same day a meeting was convened following the visit to review the findings/observations and followed by necessary recommendations.	The participants made the following comments: ▪ With a view to commencing renovation and upgradation work, the entire premises should be evacuated and an alternative relocation plan in consultation with the tenants should be prepared upfront. ▪ The fire detection, protection and alarm system should be designed as per the latest code requirement. ▪ Total electrical system should be renovated as per proposed design done by the Design and Supervision firm on a priority basis. ▪ Proper and immediate remediation work should be taken to reduce temperature at electrical cable joints, HT Bushing Terminal, LT Bushing Terminal along with transformer body. Using bus bar trunking system for electrical cable connection and load distribution. ▪ Immediate steps to be taken for renovation and retrofitting where necessary as per the design proposed by the D&S firm. ▪ The solar PV system needs to be functional. ▪ The common portion of the interior should be designed facilitating for best functionality of the building and tenants can easily escape from any kind of emergency. ▪ Plumbing, water supply, sewerage and ventilation systems should be designed properly, solving all the present problems. ▪ Construction of STP/septic tank at the basement by replacing some of the parking spaces. ▪ Provisions of dedicated toilet for Men, Women and disabled persons. ▪ Provision of ramp for disabled persons. ▪ For ensuring representative core strength more samples should be collected from all floors. ▪ All renovated floors should be without false ceiling. ▪ Identical HVAC system for all renovated floors. ▪ Causes of dampness on different floors to be identified and removed immediately. **Decision:** Based on the above observations and consultation, to commencing renovation and upgradation work, the entire premises should be

			evacuated and an alternative relocation plan in consultation with the tenants should be prepared upfront.
2	19.09.2023	Design Supervision Firm technical staffs, tenant leaders, BHTPA officials and DEIEDP Officials	Design and supervision Firm visited the whole building. Based on their observations and recommendation they have prepare a report and presented the report in the meeting. **Decision:** Design and supervision firm will prepare and present the existing situations and observation in details.
3	29.09.2023	DS Firms Technical Staff, BHTPA Official, DEIED project Staffs	The DS firm prepared a presentation on their observations and recommendations for each floor of STP-1 and presented in PPT with the cost for renovation and retrofitting works. **Decision:** BHTPA requested to reduce the cost within 10 crores BDT.
4	15.10.2023	Stakeholder Consultation meeting with all tenants, BHTPA Official, DEIED project Official, DS Firm	The Stakeholder consultation meeting was chaired by the Managing Director of BHTPA. In the meeting the DSM firm presented their observations, recommendations and cost for renovation and retrofitting works of STP-1. In the meeting Tenants' leaders have expressed some ideas and provided some alternate suggestions 1) They want to verify the observation and recommendations of DSM firms by their own experts and will submit the report within a month. 2) They suggested starting work phase wise i.e., Ground Floor to 3rd floor there are no tenants. If BHTPA starts work from ground floor to 3rd floor and completes the work. Then the 4th floor and 5th floor may be shifted down and stay until completion of the works of 4th and 5th floors. By this way they recommended starting renovation and retrofitting works. If we work by following this process, employment and their business will not be hampered. **Decision:** A joint technical committee may be formed consisting of the representatives from the tenants' groups, BHTPA, DEIED project and Design Supervision firm to review the proposed options and finalize the design option. It is to be noted here that, still, they (tenants) did not submit the report to the BHTPA or project office.

<table>
<tr>
<td>5</td>
<td>27.11.2023</td>
<td>Stakeholder Consultation meeting with all tenants, BHTPA Official, DEIED project Official, DSM Firm</td>
<td>Afterward another stakeholder consultation meeting was held on 27 November 2023 with all the Investors (Tenants Firm) at BHTPA Conference room. The consultation meeting was chaired by the Managing Director of Bangladesh Hi-tech Park Authority. A detailed discussion was held in the meeting that the renovation and retrofitting work of STP-1 will be done either completely vacating the premises or renovated by keeping investors in the park. The investors requested them to keep in the park and complete the renovation work. The Chair of the meeting agreed and directed the Project Director, Digital Entrepreneurs and Innovation Ecosystem Development to take swift action on how to work phase wise step by step in different levels, so that investment is not hindered. In this regard a technical committee has been formed consisting of the following members to provide recommendations on how to renovate the park.
<table>
<tr><td>Sl. No.</td><td>Name, Designation, Address</td></tr>
<tr><td>1</td><td>Abul Fatah Md. Baligur Rahman,
Convenor and Project Director, DEIEDP-BHTPA</td></tr>
<tr><td>2</td><td>Representative from PWD</td></tr>
<tr><td>3</td><td>Representative from BUET, Civil Engineering Department</td></tr>
<tr><td>4</td><td>Representative from Investors</td></tr>
<tr><td>5</td><td>Md. Feroz Ahmed, Asst. Engineer (Civil), BHTPA</td></tr>
</table>
Scope of Work: To give opinion/recommendation within the next seven working days on whether to keep the investors in the park or renovate the park by shifting them. The committee can co-opt another member if necessary.</td>
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<tr>
<td>6.</td>
<td>05.03.2024</td>
<td>Tenants Firms, BHTPA Officials, DEIED project Officials, DSM Firm</td>
<td>Afterward, the technical committee submitted a report, which was sent to the MD, BHTPA from the project office. Later, a meeting was held on 05 March 2024 with various stakeholders and STP-1 tenants to discuss the report of the Technical Committee and the next steps under the chairmanship of the Managing Director of BHTPA. In light of the report of the technical committee, it was decided to send a report from DS firm as well.

The DS firm (DCON-KCE JV) has submitted a report on the basis of the recommendations of the Technical Committee. The firm responded in its conclusion that the building should remain completely vacant to ensure both the safety of tenants and safe construction work.</td>
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7.	Therefore, based on the above discussion and current situation and the decision taken by the joint team consisting of DEIEDP and World Bank officials and subsequent decision of the design and supervision firm and considering the risk and impact of the work, it has been decided to renovate STP-1 without keeping tenants in the building. To do this according to the technical committee's decision “A detailed safety plan should be prepared by the Design and Supervision firm in consultation with the stakeholders before starting the renovation and retrofitting work. Safety and security will be given topmost priority during the retrofitting work".

6.0 Major Problems Identified to renovate the building

I. **Universal Accessibility Problems**: A temporary solution has been made by building a temporary ramp from the side of the ramp to the stair area from the north side of the building.
   - **Proposal**: Installation of platform Lift: Platform lifts are those which transport a wheelchair vertically between the floors of a building. These are enclosed lifts that you might commonly find in public areas such as hospitals or hotels. The way a platform lift works is that the platform itself transports within its own structure. The main differences between platform lifts and conventional lifts are that a platform lift is designed to customize to the needs of a wheelchair user. They typically travel at a slower rate and shorter distances compared to traditional commercial lifts

II. **Fire Escape Access Problems**: There are 2 or 3 independent offices of different sizes on each floor. At present, in the unplanned manner in which the provision of office space is given, the fire stairs are accessible from only one office space. And keeping it closed internally due to their lack of fire safety awareness. And the most frightening thing is that the fire stair is not usable by any other office whose office space has not opened the fire stair. This would result in the entire building failing to cope with fire safety hazards, leading to catastrophic loss of life.
   - **Fire Escape Access Proposal**: Extension of corridor up to fire stair and change of internal layout. 3 or more separate offices of different sizes can be provided on each floor in a planned manner in which fire stairs will be accessible from each office space. It cannot be closed internally. And the fire stair will ensure the usability of all offices. This will address the entire building's fire safety risks, avoiding catastrophic loss of life incidents.

III. **Fire Escape Exit Problems:** The fire stair opened to the generator room on the ground floor and reached the basement.
   - **Fire Escape Exit Proposal:** Provide ground floor exits from fire stairs, and close it so that Fire Stair do not reach the basement.

IV. **Toilet Problems:** The number of toilets is insufficient for the number of employees per floor.
   - **Toilet Proposal:** The number of toilets needs to be increased as per the demand of the stakeholders.

V. **Building Elevation & External Facade Problems:** The condition of the exterior concrete is very dilapidated. AC outdoor visible from all sides including front of building. AC outdoor water discharge does not have proper drainage system, it is damaging the building facade. Which does not suit the software technology park involved in such noble futuristic activities.
   - **Building Elevation & External Facade Proposal** Wrap the exterior concrete with Alcobond Aluminum Composite Panel or GFRC to give a futuristic look. Making AC invisible by adding louvers on all sides including the front of the building. And ensuring proper drainage system for AC water drainage so that the building facade is not damaged. Which would suit the software technology park involved in such noble futuristic activities.

VI. **Basement Problems:** The number of parking is insufficient.
- **Proposa**l: No scope for increasing the parking number

VII. **Waste disposal problem**: No septic tank in the building
- **Proposal**: New septic tank will be installed with sufficient capacity

VIII. **Waste outlet problem**: Soil, waste and Rainwater pipe to city drainage
- **Proposal**: Soil, wastewater pipe is connected to septic tank in proposed drawing and rainwater collection pipe is connected city drain.

IX. **Domestic and Fire water reservoir problem**: Domestic and Fire water reservoir is not separate and inadequate.
- **Proposal**: Existing reservoir is used only for domestic purposes and new fire water reservoir is proposed.

X. **Vent pipe riser problem**: Vent pipe riser is not used
- **Proposal**: New vent pipe riser is used

XI. No fire detection and alarm system in whole building
- **Proposal:** fire detection and alarm system are proposed

XII. Fire hose reel, pillar hydrant, 4-way fire breaching is not found
- **Proposal**: Fire hose reel, pillar hydrant, 4-way fire breaching is proposed

XIII. No sprinkler at basement and ground floor
- **Proposal**: Sprinkler at basement and ground floor is proposed

XIV. Ventilation system in basement is inadequate
- Proposal: Basement proper ventilation is proposed

XV. Existing Transformer capacity in 800 KVA and produce high temperature
- Proposal: 1250 KVA of new transformer capacity is required

XVI. Existing generator is 500 KVA
- Proposal: 700 KVA generator

XVII. Solar inverter and battery were found damage
- New solar panel is proposed

6.1 A short description of the renovation activities

6.1.1 Architectural Design

Information Technology (IT) gives fast, easy access to information that is essential for the development of a nation. Large IT companies are opening around the world, and nations are building up IT platforms, developing and promoting their IT industries. Asian countries are also becoming stakeholders in this boom by creating encouraging settings and attracting global IT companies to invest there. Considering this, the Software Technology Park Vision 2021 Tower-1 (STP-1) (formerly known as Janata Tower), became a functioning ICT office space a year after the ICT division was established in 2014. After running a successful pilot project, it was apparent this industry would see immense growth soon. The existing old building has been turned into a software technology park and it needs to be upgraded. Consultants of DS firm (Dcon-KCE Jv) have visited the building and has found some basic architectural problem which can be solved within the limit. That has been described in section 6.0. It was found that most of the floors have multiple rentable office spaces and some floor have only one office. The description of the renovation activities is outlined here:

i. **Universal Accessibility**

A temporary solution has been made by building a temporary ramp from the side of the ramp to the stair area from the north side of the building. Platform Lift I s compact size, it is rapidly becoming the modification of choice for many wheelchair users. Platform lifts are those which transport a wheelchair vertically between the floors of a building. These are enclosed lifts commonly seen in public areas such as hospitals or hotels. The way a platform lift works is that the platform itself transports within its own structure. Various platform lifts are available that can adapt to the home. Vertical platform lifts are those which sit beside a staircase and function in the same way as a commercial lift. The main differences between platform lifts and conventional lifts are that a platform lift is designed to customize to the needs of a wheelchair user. They typically travel at a slower rate and shorter distances compared to traditional commercial lifts.

ii. **Fire Escape Access**

There are 2 or 3 independent offices of different sizes on each floor. At present, in the unplanned manner in which the provision of office space is given, the fire stairs are accessible from only one office space. And keeping it closed internally due to their lack of fire safety awareness. And the most frightening thing is that the fire stair is not usable by any other office whose office space has not opened the fire stair. This would result in the entire building failing to cope with fire safety hazards, leading to catastrophic loss of life**.** Number of offices in each floor is shown in Table 6.1.

Table 6.1: Number of offices in each floor

Level	Number of Office	Area (sft)
Level 2	Office 01	352
Level 3	Office 01	6000
Level 5	Office 01	366
	Office 02	210
	Office 03	366
Level 6	Office 01	6000
Level 7	Office 01	3000
	Office 02	3000
Level 8	Office 01	3500
	Office 02	2500
Level 9	Office 01	6000
Level 10	Office 01	1747
	Office 02	2253
	Office 03	2000
Level 11	Office 01	2842
	Office 02	450
	Office 03	1738
Level 12	Office 01	2000

iii. **Fire Escape Exit**

The fire escape reached the basement instead of the ground floor. Provide ground floor exits from fire stairs, and close it from the present point so that Fire Stair do not reach the basement.

iv. **Toilet**

The number of toilets is insufficient for the number of employees per floor. The number of toilets needs to be increased as per the demand of the stakeholders.

v. **Building Elevation & External Facade**

The condition of the exterior concrete is very dilapidated. AC outdoor visible from all sides including front of building. AC outdoor water discharge is not having proper drainage system, it is damaging the building facade. Which does not suit the software technology park involved in such noble futuristic activities. Wrap the exterior concrete with Alcobond Aluminum Composite Panel or GFRC to give a futuristic look. Making AC invisible by adding louvers on all sides including the front of the building. And ensuring proper drainage system for AC water drainage so that the building facade is not damaged. Which would suit the software technology park involved in such noble futuristic activities.

vi **Basement**

The number of parking is insufficient. No scope for increasing the parking number.

6.1.2 Structural Design

The building, namely, comprises (B+G+12) storied office building. The following Table 6.2 shows the basic information of the structure.

Table-6.2: Basic information of the Structure

Item	Description
Basic Structural System	Building Frame System
Typical Floor Area	Approximately 6207 ft^2 per floor
Number of Stories	14 (B+G+12)
Floor Usage	Office Building
Foundation Type	Mat Foundation
Slab Type	Flat plate
Design Drawing	A credible structural design drawing has been prepared

The structural solutions adopted for the project are described in detail in this report, but the principal aspects are as follows:

- In foundation design mat foundation has been considered according to soil condition as per soil test report.
- The super structure is flat plate.
- Lateral stability of the structure is provided principally by the Shear wall.

The systems proposed provide the most economic structure suited for this type of development which can achieve the aesthetic ambitions and functional requirement of the authority.

-

The main purpose of this analysis and design is to determine, whether the building will sufficient capacity to support the anticipated vertical and lateral loads as per BNBC-2020. The major descriptions about this building are listed below.

- The anticipated vertical and lateral loads are considered as per BNBC-2020. The basic structural system of this building is considered Building Frame System.

- According to soil test report, this building has been designed considering mat foundation. All columns & shear wall are supported by mat foundation.
- All columns & shear wall have not sufficient size and reinforcements to carry the vertical and lateral loads as per BNBC 2020. So retrofitting is required to meet new code of BNBC 2020.
- All floor beams are adequate with respect to provided re-bar & sizes.
- Provided slab thickness and reinforcements are adequate to resist vertical floor loads. But some portion of slab in different floors, the reinforcement is rusted which are exposed to air. The exact area in different floors could not be inspected due to covering with false celling. So retrofitting is required to those area which are expose to air & rusted. False celling is required to open in all floor to investigate the slab properly.

The structure was modelled using 3-D computer program ETABS v16.2.1. Under the all loading conditions:

- The column sizes of the building are okay under all loading conditions after retrofitting as per BNBC 2020. columns are required retrofitting. See details in the retrofitting drawing.
- The shear wall of the building are okay under all loading conditions after retrofitting as per BNBC 2020 code. 4- nos. shear wall are required to retrofit up to 6^{th} floor to resist lateral force. For details, see the retrofitting drawing.
- Slabs are adequate under gravity load with respect to provided thickness & strength. Some portion of slab in different floors are required to retrofit which are expose to air & rusted. We have proposed slab retrofitting. For details, see the retrofitting drawing of slab. To find out the exact amount of portion at all floors, false celling is to be removed for proper investigation of slab.
- The building is safe against lateral deflection after retrofitting as per BNBC 2020.

6.1.3 Electrical Design

- Visual Observation & Recommendation:

The substation room is not observe clean and not free from dirt, lint, water, oil, and debris was found on the site. Remove all dirt, debris, lint, water, oil, and improperly stored materials from the substation room.
Combustible materials are stored within the substation room was found on the site. Remove all combustible materials within the substation room.
Found higher size circuit breaker with lower rated cable connected. Electrical wiring/cables sized according to capacity of circuit breakers.
Multiple and looping are found at panel board. Avoid Multiple looping connection.
Electrical wiring and conduit are not properly supported. Electrical wiring and conduit should be supported properly.
Electrical connections at equipment, fixtures etc. are not properly secured. Electrical connections at equipment, fixtures etc should be secured properly.
Improper Cables connections. In MDB/DB/SDBs attaching cables using properly
Junction boxes and other electrical devices are not provided with covers. Junction boxes and other electrical devices are provided with covers.
Phase separators are not provided between terminals on circuit breakers. Phase separators are provided between terminals on circuit breakers.
Electrical wiring/cables are not properly identified. All Phase conductors, Neutral and Earth should follow the colour code.
Indications of overheating, overloading, or signs of burning was observed at site. Wiring system components including cables and wiring accessories shall be installed or handled only at temperature within the standard limits.
Electrical insulation mats are not provided in front of substation, switchboards and distribution boards. Provide electrical insulation mats in front of distribution boards.
Transformer room and Generator room is not separated. Must be separated Transformer room and Generator.
Distribution boards are not found installed at compliant locations. Distribution boards should be installed in compliant location.

In front of switchboards and/or distribution boards have not sufficient space. There shall be a distance of 1m (19 in.) clear in front of the switchboards and switchgear.

Most of Single point of disconnect provided for each main electrical service feed are not accessible condition. Main electrical control service feed must under reachable height or easy access.
Equipment is not properly connected to the required number of earth electrodes. Provide earthing of equipment at required locations and connect to required number of electrodes. Refer to the BNBC for required number of electrodes.
Circuit is not provided with a dedicated neutral for each load. Every circuits need dedicated neutral conductor for each load. common neutral must be separated.
Cable connection without protective device. Must be use Protective Device (MCB & MCCB)

Power supply arrangement of Vision 2021 Software Technology Park (STP-1)

Equipment	Rating
Transformer	800 KVA
Generator-1	300 KVA
Generator-2	220 KVA

Installed power system components of Vision 2021 Software Technology Park (STP-1):

Equipment	No of equipment
Low Tension (LT) Panel	1
Power Factor Improver (PFI) Panel	1
Automatic Transfer Switch (ATS) Panel	2
Main Distribution Board (MDB)	1
Emergency Main Distribution Board (EMDB)	1

Transformer Inspection Report

Item Description	Observation	Recommendation
Transformer HT Busing	HT Bushing Terminal temperature found 98 degree Celsius	(1) Transformer Oil Test Required (2)Transformer Oil Centrifuged Required (3)Transformer Earthling Required. (4) Silica Gel requires to be replaced (5) Proper Room Ventilation required to be implemented (6) Room Requires to be clean form dust and vermin
Transformer LT Busing	LT Bushing Terminal temperature found 9 4.6 degree Celsius	
Transformer Body	Transformer temperature found 98.1 degree Celsius	
Transformer Silica Gel	Not good condition found	
Transformer Neutral Grounding	Not Found	
Transformer Body Grounding	Not Found	
HT, LT Grounding	Not Found	
Room Ventilation	Not Available	

Recommendation:
From the field survey, it is found 800 KVA Transformer. Considering the future load of this existing building, it is required 1250 KVA Transformer. The detail calculation is described below:

Considering the load calculation, we are recommending 1000 KVA transformer.

480KVAR PFI Panel Inspection Report

Item Description	Observation	Recommendation
480 KVAR PFI Panel	PFI Panel Found Out of Service	PFI Panel requires to be Operational

Generator Inspection Report

Item Description	Observation	Recommendation
300 KVA Generator	Body Earthing Not Found	(1) 220 KVA Generator requires to be Operational (2) New ATS requires for 220 KVA Generator (3) Both Generators Earthing Required.
220 KVA Generator	Out of Service	
220 KVA Generator ATS	Out of Service	
Body Earthing (both Generators)	Not Found	

Recommendation:
From the field survey, it is found 300 KVA one nos and 220 KVA one nos generator and the condition is described above. Total load of this existing building is divided into two categories.

1. All loads except air conditioning will be in emergency load/ generator backup
2. Air conditioning load will be continue from the transformer. Generator backup will not be applicable for air conditioning load.

Considering the above situation, the generator capacity is required 700 KVA but the existing capacity is found 520 KVA (300+220 KVA) generator. So, we are recommending another one nos 200 KVA generator.

Solar Power System Inspection Report

Item Description	Observation	Recommendation
Solar Power System	(1) Some Solar Panel missing (2) Inverter System Not Operational (3) Battery System Not Operational	Solar Power System requires to be Operational

Recommendation:

From the field survey, Solar inverter and Battery was found damage. It is recommending applying new inverter with grid type system.

Lightning Protection System Inspection Report

Item Description	**Observation**	**Recommendation**
Lightning Protection System	Not Found for the facility	Adequate LPS installation requirement as per BNBC/NFPA-780

Earthing System Inspection Report

Item Description	Observation	Recommendation
Earthing System	Adequate number of LPS is not found	Adequate earthing System installation requirement as per NBC/NFPA-780

Recommendation:

It is recommending installing the lighting protecting system as per the proposed electrical drawing.

6.1.4 Lift Inspection

Findings:

There are two lifts exist in the Vision 2021 Software Technology Park (STP-1). Company Name of Lift 1 is KLEEMAN and Lift 2 is Sunny. After Modernization for better and smooth service every lift need maintenance. Malfunctions happen due to high temperature that's why need to upgrade the Cooling System for machine room. Lift 2 is a fire lift and both lift is passenger type. Lift 2 has 1.5 ms speed and Lift 1 is 1.75 ms speed. After modernization lifts require proper maintenance and after 5 years have to make some modifications if required.

Recommendation:

LIFT No: 1

1. All Safety Switch and Door Locks must be changed and have to adjust for operation.
2. Required Total Mechanical Adjustment.
3. Machine Room Cooling System (AC) Setup.

LIFT No: 2

1. A new lift is proposed for the building.

Riser Cable distribution:

Finding:

From the field survey, it was found looping system in the riser that is the violation of BNBC 2020.

Recommendation:

All looping system risers must be removed and applied riser BBT system shown in proposed Electrical drawing for STP-1. Two nos BBT will go through the duct.

1. One BBT is for emergency backup (generator)
2. Another one BBT is from Transformer

6.1.5 <u>Fire Protection & Detection System</u>

Visual Observation:

Fire Detection and Alarm System in Full Building not Installed. Fire Detection and alarm System need to be installed as per BNBC-2020, &Fire Service Bidhimala

- Fire Standpipe System not Proper installed each Floor. Need to be installed as per BNBC-2020& Fire Service Bidhimala
- Existing Fire Pump Capacity 352 gpm is undersized. Required Fire pump Capacity 500 GPM & need to be installed as per NFPA-20

- Proposed Fire Water Reservoir Tank Needed at Basement Floor Level. Tank Size:22' ft X 20' ft X 9 ft . Fire Fighting Duration 50 Min (As Per BNBC-2020) Pump Capacity: 500 GPM. Water Demand: 25000 GAL.
- Each Floor only Fire Hose box installed . Fire Hose reel & Landing valve Need to be installed in hose box as per standard.
- Existing Fire Standpipe Riser 100mm is undersized. Fire Standpipe Riser Need to be installed 150mm
- Pillar Hydrant Not Installed at Ground Floor Level. Need to be installed as per standard
- 4-Way Fire Breaching Inlet Connection not Installed at Ground Floor Level. Need to be installed as per Standard
- Fire Sprinkler System not installed at Basement & Ground Floor Level. Need to be installed As per Fire Service Bidhimala.

6.1.6 HVAC (VRF) System

Regulate the air conditions within buildings for the comfort and safety of its occupants. HVAC systems condition and move air to desired areas of an indoor environment to create and maintain desirable temperature, humidity, ventilation and air purity. Depending on geographic location and building construction, various types of interior climate control systems help ensure that interior spaces are maintained at comfortable levels year-round. With today's energy conservation concerns, buildings are constructed to be much tighter, reducing the level of natural exchange between indoor and outdoor air. As a result, more and more buildings rely on mechanical conditioning and distribution systems for managing air. A properly operated HVAC system finds the often-delicate balance between optimizing occupant comfort while controlling operating costs. Comfort is an important issue for occupant satisfaction, which can directly affect concentration and productivity. At the same time, controlling these comforts and health parameters directly affect HVAC system operating costs in terms of energy, maintenance, and equipment life.

Air Conditioning Cooling by VRF System for Building Air conditioning VRF provides an innovative package of energy savings features.

• The compressor unit includes two or more scroll or rotary compressors, of which is an inverter-controlled variable-speed VRF compressor. The variable-speed compressor units are rated at significantly higher part-load efficiency than constant-speed systems.

• The indoor fan coil units are connected to the compressor units with refrigerant piping, similar to a conventional split system. Using refrigerant to deliver heating and cooling requires less energy because of the larger heat capacity of the refrigerant relative to air and even water. Less mass flow is needed to deliver the same amount of heating or cooling. The refrigerant still needs to be pushed through the piping, and as piping runs lengthen to serve large and taller building, increasing energy will be used at the compressor to maintain the flow of refrigerant.

• The fan static pressure for the fan coil units in or close to the conditioned space with little or no ductwork is much less than that of a central air system. Providing outside air generally requires a separate fan system with ductwork and higher static pressure than the fan coils, but with a fraction of the air flow and fan power than from conventional all-air HVAC systems. Buildings that can depend on natural ventilation can avoid this additional fan power.The elimination of most of the ductwork avoids duct air leakage and has the benefit of reducing the volume of space needed for ductwork.

• The fan coil units may operate with variable-speed control using electronically commutated motors (ECM). The ECMs may also just be used to set the speed and air flow at installation. ECMs are more efficient thanstandard split capacitor fractional horsepower motors, which might otherwise be used with small fans.

• The systems can be configured to deliver cooling only, or heating and cooling. Some systems provide cooling to some zones and heating to other zones at the same time. When the system has the capability for cooling and heating different zones at the same time, occupant comfort is improved without the use of reheat, unlike a conventional VAV system.
• Units capable of cooling and heating different zones at the same time also provide refrigerant heat recovery.
• In some cases, two outdoor units may be integrated into effectively one system. This can increase the potential for heat recovery because there may be more diversity in loads with an increase in the number of different spaces served. Some multiple compressor unit systems can reduce the impact on space conditioning that can occur in single compressor units when these units switch to defrosting their coils; one compressor unit can continue to provide conditioning when the other unit is in defrost.

In addition to providing superior comfort, VRF systems offer design flexibility, energy savings, and cost-effective installation VRF System will not use chlorofluorocarbon (CFC) or hydrochlorofluorocarbon (HCFC) refrigerants that can harm the environment. Environment Friendly Hydrofluorocarbon (HFC) refrigerants such as R134a, R410A will be used VRF System Control by individual Thermostat, centralized Controller and Controls will be via the BMS System.

The variable refrigerant flow system is considered to be one of the most promising energies saving technologies gaining momentum in recent years. A viable energy efficient technology is needed to conserve energy as well as to achieve better human comfort. So, this has been relatively new and efficient way to design HVAC system with VRF TECHNOLOGY.

6.1.7 Plumbing & Sanitary System

This document has been prepared to outline the design for the Vision-2021 Software Technology Park (STP-1), a new office building to be developed in Dhaka, Bangladesh.
All commercial areas will be documented to an open plan layout for future fit out by the tenants. Services will generally comprise the following:
Toilet Riser
Risers, which are also called riser mains, refer to the water supply lines that move from one floor to another. In other words, the vertical pipes in a building allow fresh water to rise from lower floors to upper floors. For plumbing riser commonly consist of Rain water pipe, waste water pipe, soil pipe, inter connecting vent pipe and supply line. But there is no Vent Pipe in Riser of plumbing line. Vent Pipe Riser must be used as per BNBC.

6.1.7.1 Toilet Drainage System

Supply & installation of the Plumbing & Drainage System in conformity with the standard codes cited in the technical requirements and system description etc. No Septic Tank is found in the Project. Soil, Waste & Rain Water Pipe are connected to City Drainage. Septic tanks are designed to treat and dispose of wastewater to minimize the impact on the environment. The effluent released from septic tanks is treated by the soil, which acts as a natural filter to remove pollutants and harmful bacteria. Soil pipe must be connected to the septic Tank. Septic Tank Requirement as per BNBC which is incorporated in the proposed plumbing design. Inspection Pits also should be modified as per septic tank location. Inspection Pits are constructed to connect the soil pipe from toilets with the Septic Tank. This will provide the opportunity to clear any blockage in the pipeline system. The work involves construction of masonry inspection pit with 250mm thick brick work in cement mortar (1:4), 100mm thick RCC top slab (1:2:4) with 1% reinforcement, 450mm dia water sealed R.C.C cover including necessary earthwork. All designs are specified in the proposed plumbing drawing.

6.1.7.2 Rain Water System

In the Project. Roof Top Area Approximately 5,000 SFT. There are 8 nos. Rain Water Collection Point, but 4 nos. collection point free fall which is not connected to city drain. It is recommending that all rain water collection point connection rain water down pipe to the city drainage which is incorporated in the proposed plumbing design.

Under Ground Water Tank:

Underground water tanks are used for storing the household's potable (drinkable) water supply.

- Total Occupancy: 1,000 Person.
- Domestic Water Requirement. As Per BNBC 2020 Table 8.5.1(d) Domestic Water Requirement for Various Other Occupancies and Facility Groups.
- Domestic Water Requirement: 1000 x 45= 45,000 Litter/Day.
- Under Ground Water Tank Size: 15'-3" x 27'-4" x 9'-0" (LxWxH)
- Under Ground Water Tank Capacity: 89,250 Litter.

In the existing situation, both domestic water and fire water source are from this underground water tank. There is no separate fire water tank. It is recommended underground water tank for domestic use only. There will be needed another reservoir tank for fire water.

Universal Toilet:

There is no universal toilet foundin the Vision-2021 Software Technology Park (STP-1). The Universal Toilet is a flexible toilet design useable by both individuals with disabilities and the general population that removes the social stigma of handicapped facilities. For users with disabilities, even a dedicated handicapped toilet requires maneuvering, especially when in a wheelchair.

6.1.7.3 Sump pit:

A sump is a low space that collects often undesirable liquids such as water or chemicals. There is no universal toilet found in the basement. So, it is not possible to drain out water in the basement floor. Sump pit should be provided in basement as per proposed plumbing design.

6.1.8 Design of the Activities

Based on the issues identified and recommendations made, DS Firm has suggested some important activities of the STP-1 building as part of renovation. The proposed activities are described below in following figures 6.1 – 6.14).

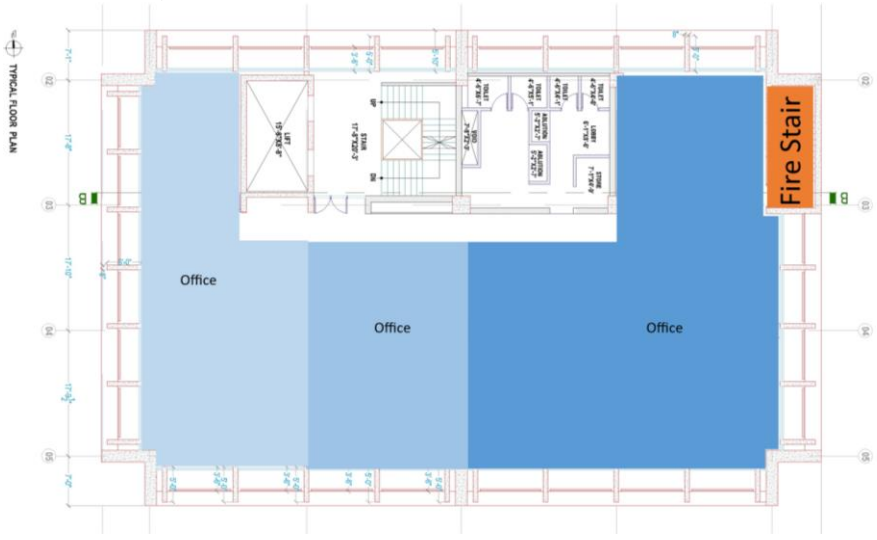

Figure 6.1: Existing Condition of fire or emergency stair

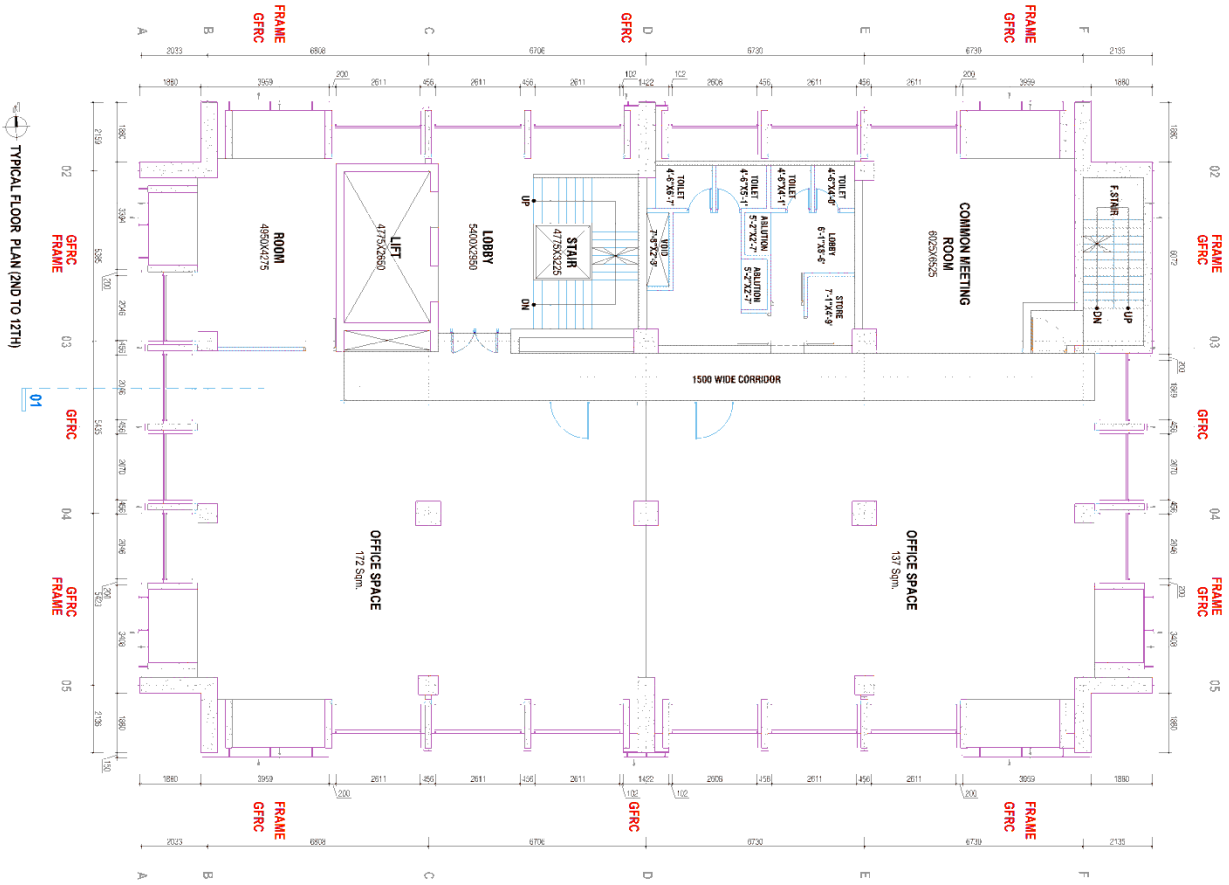

Fig. 6.2: Proposed Condition for Fire Stair

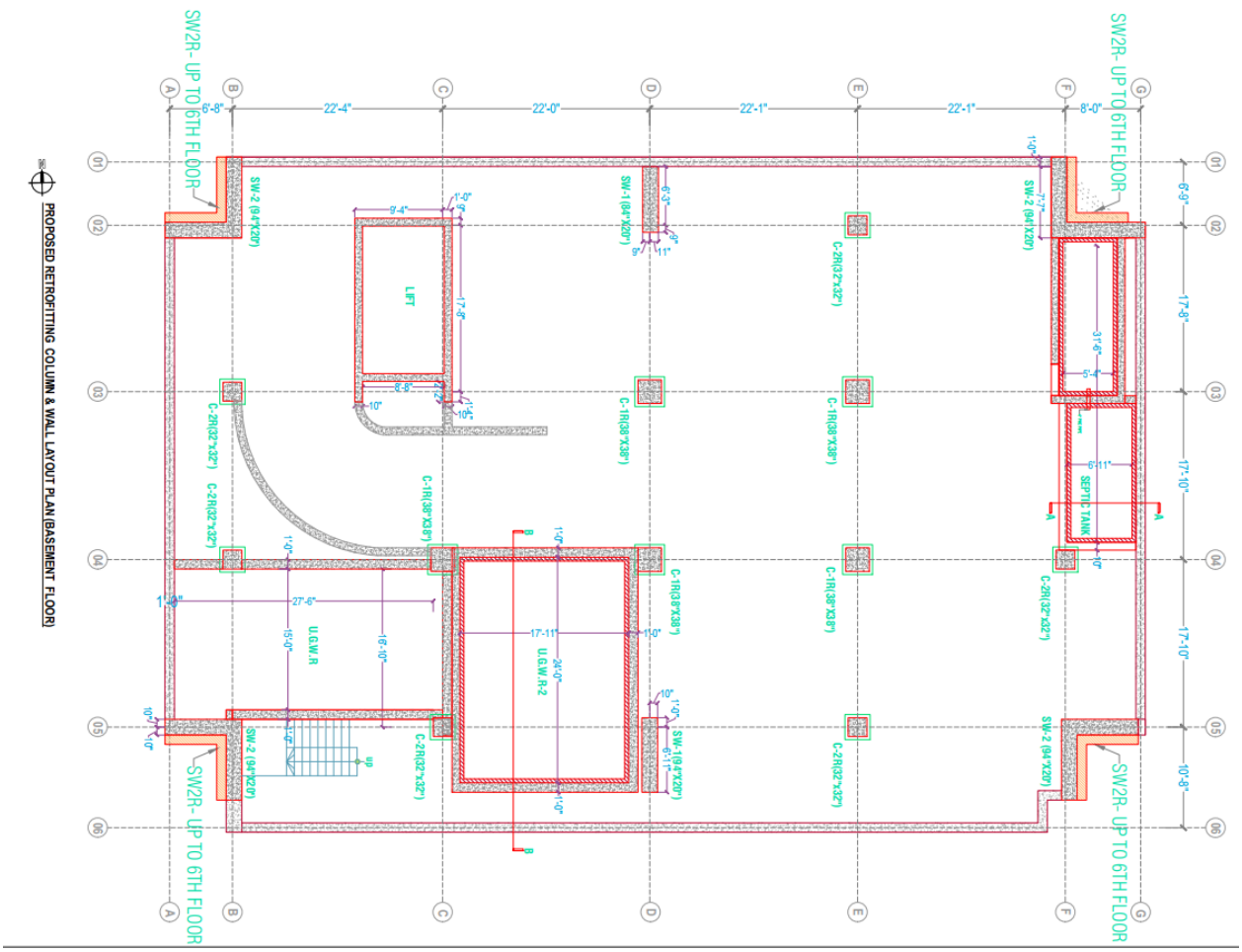

Fig 6.3: Proposed Retrofitting Drawing

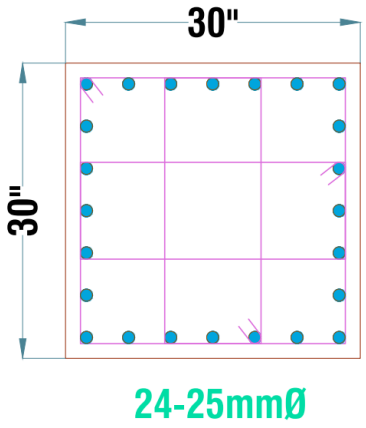

Fig 6.4: Existing Column

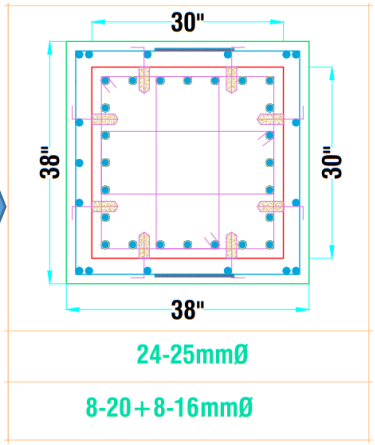

Fig 6.5: Column Jacketing

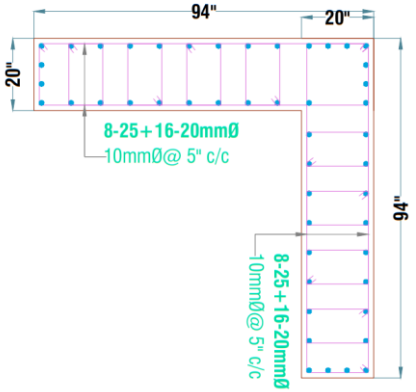

Fig 6.6: Existing Share Wall

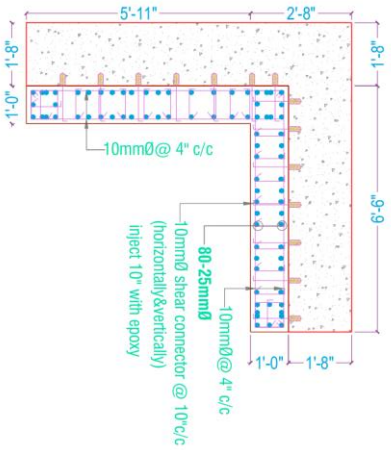

Fig 6.7: Retrofied Share Wall

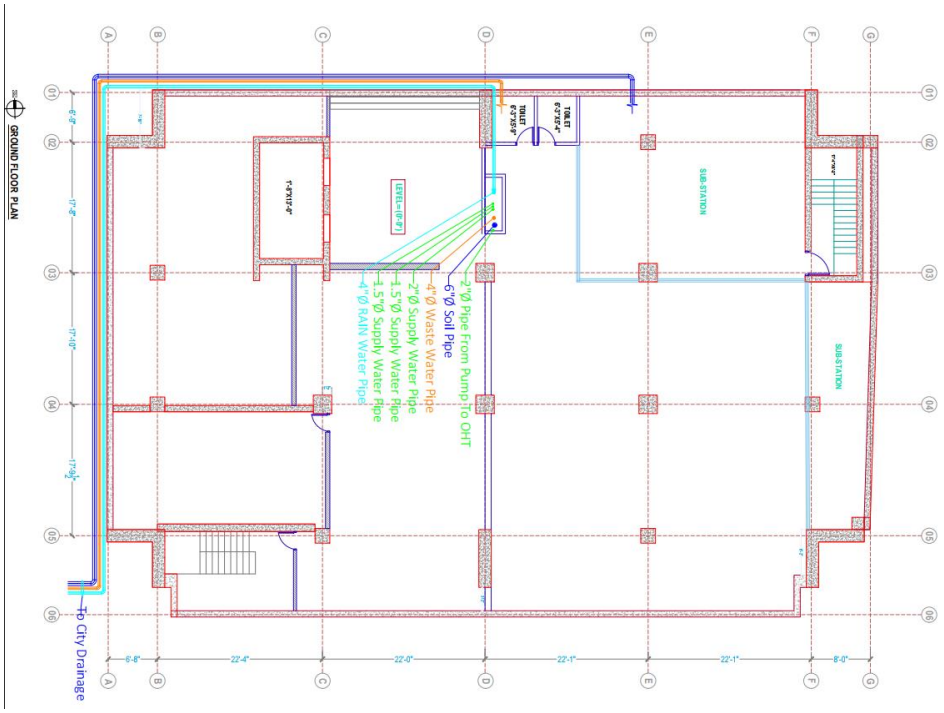

Fig 6.8: Existing Plumbing Condition

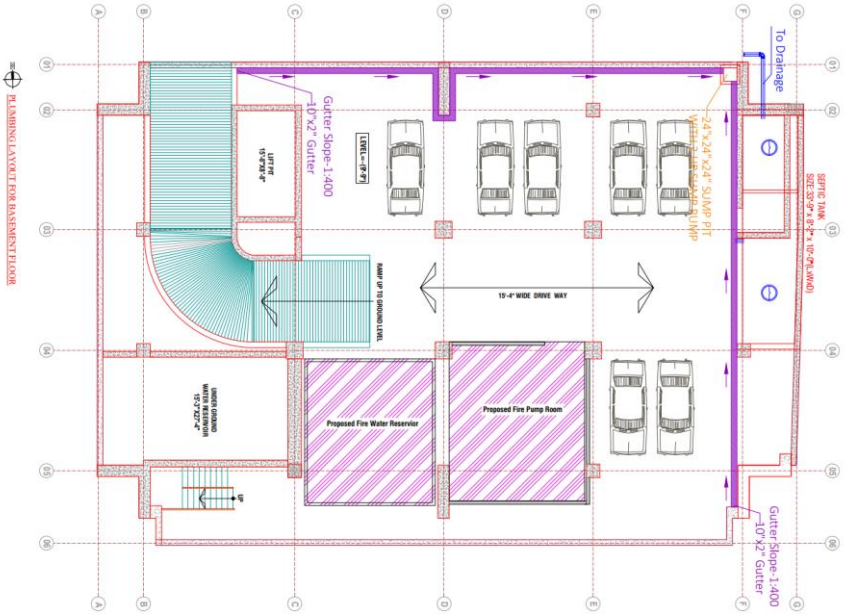

Fig 6.9: Proposed plumbing condition

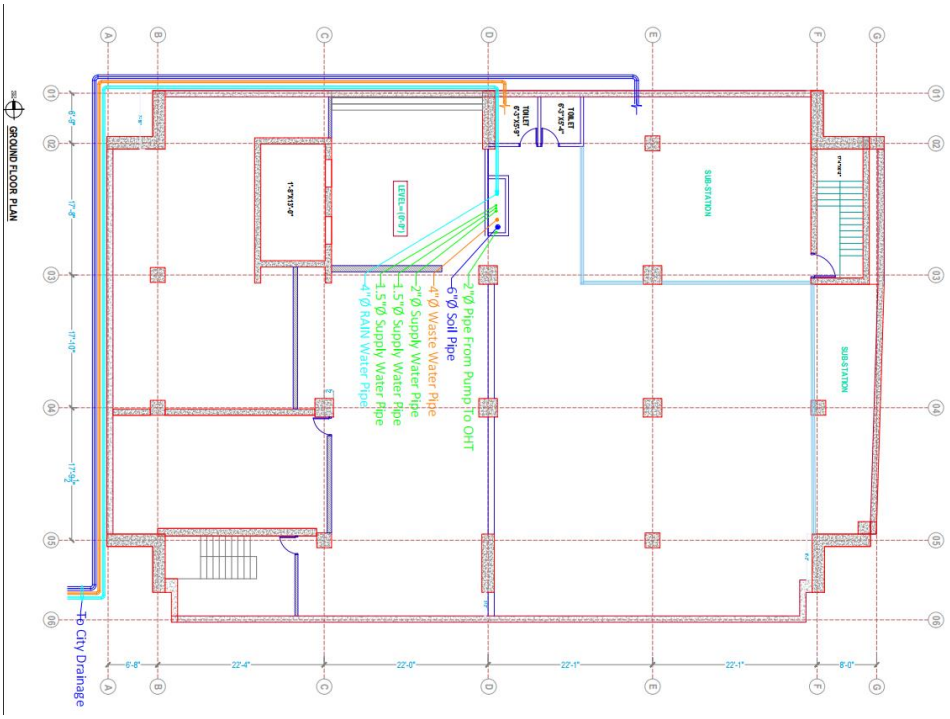

Fig 6.10: Existing Condition

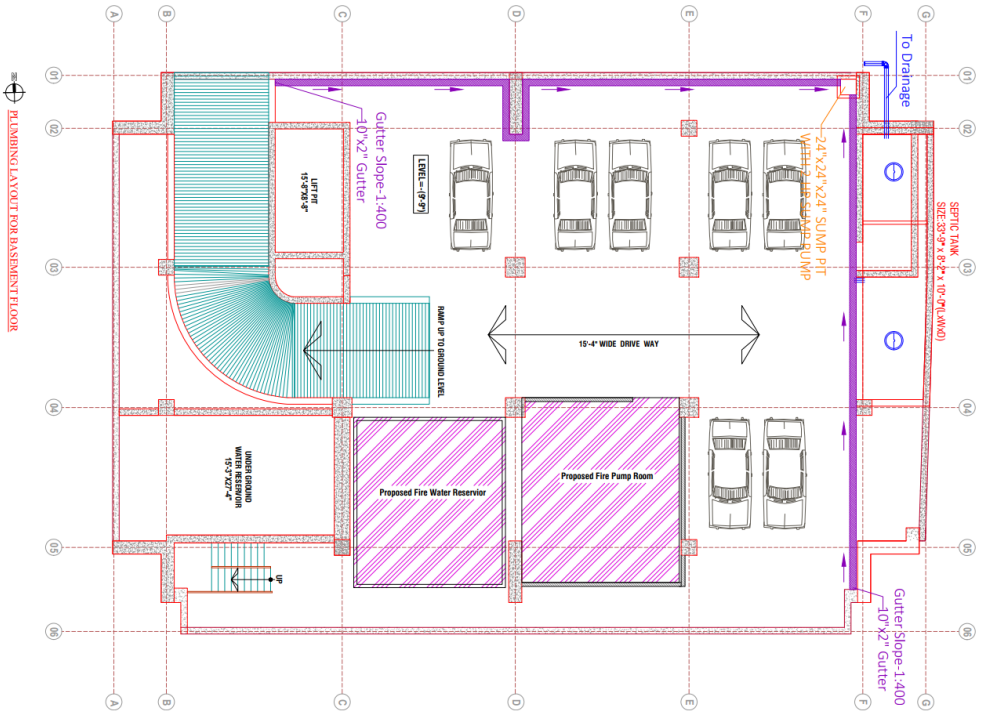

Fig 6.11: Proposed Condition

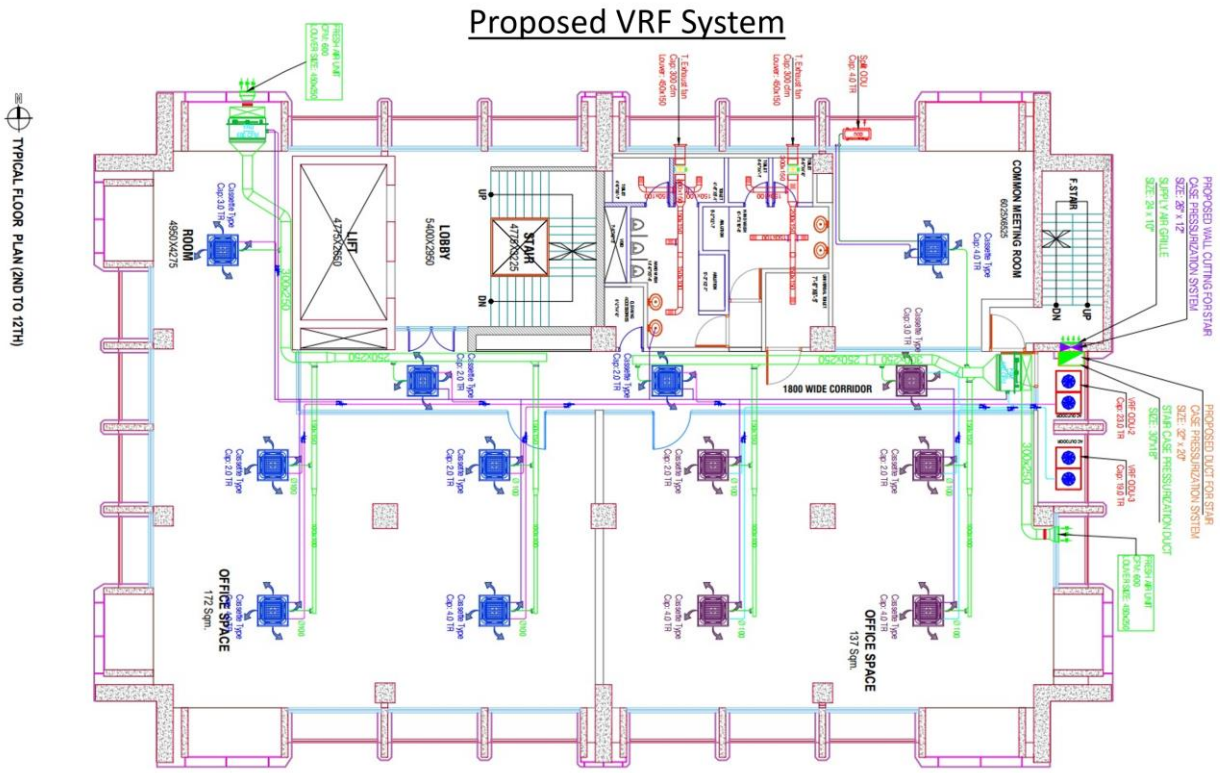

Fig 6.12: Proposed VRF system

Fig 6.13: Existing Fire System

Fig 6.14: Proposed Fire System

7.0 Anticipated Significant Impact & Analysis

7.1 Introduction

This chapter intends to identify and predict the likely environmental and social impacts in the sub-project area as well as its surrounding area of influence due to various activities of sub-project. These impacts have been evaluated to understand their nature (direct, indirect or cumulative), duration (long term or short term), and probability of occurrence. The following sections explain the relevant potential impacts during different phases of the sub-project activities (i.e., pre-construction, construction and operation) on the surrounding environment as well as on the community. These impacts on the natural environment and social environment (economic development and social and cultural resources) will be either adverse or beneficial. These impacts may be direct, indirect and cumulative impacts as follows:

- Direct Impacts - i.e., direct impacts include the impact of re-construction/renovation expenditures in the local economy.
- Indirect Impacts - i.e., those resulting from activities to be carried out by the Sub-project, but not directly attributable to it.
- Cumulative Impacts - i.e., impacts in conjunction with other activities. The cumulative or additive effect could be large impacts on environment.

Major activities of the sub-project during the different phases can be summarized as follows:

- **Pre-construction Phase:**
  a) Finalization of the design and drawing of STP-1 including facilities;
  b) Finalization and categorization of services planned to provide;
- **Construction Phase:** Renovation of the STP-1 (e.g., services and facilities, etc.);
- **Operational Phase:** Full running of the STP-1 and subsequent activities.

7.2 Impact Identification

7.2.1 Anticipated Impacts During Pre-Construction (Design and Preparation) Phase

Since no land acquisition and resettlement is required, there will be no negative impacts during pre-construction part. However, dismantling of some structures will be required. The demolition waste has to be disposed of properly. Apart from dismantling, some existing utility services may be disrupted before the renovation work. This may little hamper to the community as there will be no tenants in the building during the renovation period. Besides, there is some accumulated waste at the sub-project site, which was observed during the visits. Waste shouldn't be openly dumped at the site since it may pollute the surrounding environment. Mitigation measures are suggested in ESMP part (Table 8.1).

7.2.2 Anticipated Impacts During Re-Construction/Renovation Phase

Impacts anticipated during renovation phase of the STP-1 sub-project are as follows:

- Air pollution due to exhaust from various vehicles and various moving and stationary equipment engaged in restoring or repairing of existing facilities and dust from the activities;
- Air pollution due to dust during column jacketing
- Anticipate any untoward incident while inserting rods for column jacketing
- Any accident may occur while demolishing existing structures while preparing emergency evacuation corridors
- Construction of emergency exit endpoints on the ground floor may pose a risk to construction workers and surrounding facilities.

- Preparation of septic tank at the basement, may risk to workers and adjacent structures
- Noise caused by machines and equipment and various other construction activities;
- Contamination of water courses and drainage channels by construction materials.;
- Temporarily hampering business activities of the existing tenants and movable shopping facilities of the movable shop owners

The mitigation and management of these impacts will largely be the responsibility of the contractors and are covered in detail in the Environmental and Social Management Plan in Table 8.1.

There is no wildlife found in the area. Sub-project activities (civil works) are likely to cause no ecological impact on the floral and faunal resources.

7.2.2.1 Physio-chemical Impacts

Major physio-chemical parameters considered for assessment of environmental and social impacts due to sub-project activities include**:**

- Noise pollution
- Air pollution
- Vibration
- Possible drainage congestion
- Generation and disposal of solid wastes, and
- Water pollution due to improper sanitation for the laborers

Noise and Vibration: Noise, and vibration are of significant consideration during renovation activities. Noise pollution and vibration may result from movement of vehicles carrying materials and equipment to and from sub-project sites, operation of machines and equipment (e.g., concrete mixing machines, aggregate crushers, generators, column jacketing, placing the rod for column jacketing etc.), and other various activities related to renovation.

The principal source of noise during construction of sub-project would be from operation of equipment, machinery, vehicles, column jacketing, placing of rods during column jacketing, cutting of existing tiles, etc. The noise generated during the renovation would cause inconvenience to the population, especially adjacent to the sub-project site. During the operation period, noise might be generated from the use of generators. The mitigation and management of these impacts will largely be the responsibility of the contractors/PMU/BHTPA and are covered in detail in the Environmental and Social Management Plan (Table 8.1).

Air pollution: Localized and temporary air pollution may generate from renovation works site preparation, movement of vehicles and demolition activities. However, such air pollution is likely to be localized (affecting immediate surroundings of the sub-project sites). Such construction-related air pollution is of particular concern at locations where residences or communities are at close proximity to the site.

The baseline results of all air quality parameters (PM_{10}, $PM_{2.5}$, SO_X, NO_X and CO, O_3) are within acceptable limit as compared to the national standards (Table4.2). This can be attributed to overall good pavement condition, less volume of traffic, and absence of polluting sources in the sub-project area. Construction activities can give rise to dust emissions under particular circumstances if not effectively managed. Movement of vehicles for transporting construction materials, operation of concrete batching plant could also result in emissions of dust. The level and distribution of dust emissions will vary according to the duration and location of activity, weather conditions, and the effectiveness of suppression measures.

Gaseous emission during construction will be from the construction machinery, equipment and vehicles used for material transportation. The operation of vehicles and equipment will result in emissions of carbon monoxide, sulphur dioxide, and oxides of nitrogen. The greatest impact on air quality due to emissions from vehicles and sub-project's site will be in the areas immediately adjacent to site access. Generally, additional vehicle movements generated during the construction phase will have the potential to influence local air quality in the vicinity of the sub-project site and pollutant concentration is likely to reduce with increase distance from the sub-project location. The mitigation and management of these impacts will largely be the responsibility of the contractors and are covered in detail in the Environmental and Social Management Plan (Table 8.1).

Drainage Congestion: Drainage congestion may result from obstruction to the natural flow of drainage water during renovation activities. Such congestion will last for a very short time, though it can create a nuisance.

Generation and Disposal of Wastes: Improper or inappropriate facilities at the labor sheds may lead to problems related to solid waste management, which may arise during renovation phase of the Sub-project. During the peak re-construction period, a considerable number of workers will be involved. Apart from the re-construction activities, the workers will be involved in their daily household activities, which shall trigger the generation of municipal solid waste, both hazardous and non-hazardous. Improper or inadequate storage and disposal facilities shall pollute the surrounding environment.

Non-hazardous wastes may include building materials, municipal waste and wastewater. Hazardous wastes are mostly petroleum for re-construction machinery and generators. The handling, storage and disposal of waste on and off-site may pose a number of potential risks to human health and the environment. Faulty management and storage may lead to potential air, soil, and water contamination that may directly or indirectly affect human health. Uncontrolled waste disposal and inadequate waste management during renovation can lead to environmental pollution with organic and inorganic wastes generation. Discharge of untreated wastewater can lead to soil and water contamination and may pose adverse impact on human health (Table 8.1).

Water Pollution and Septic Tank installation:

Toilet Drainage System

No Septic Tank is found in the Sub-Project. Soil, Waste & Rain Water Pipe are connected to City Drainage. Septic tanks are designed to treat and dispose of wastewater to minimize the impact on the environment. The effluent released from septic tanks is treated by the soil, which acts as a natural filter to remove pollutants and harmful bacteria. Soil pipe must be connected to the septic Tank. Septic Tank Requirement as per BNBC, 2020 which is incorporated in the proposed plumbing design. Inspection Pits also should be modified as per septic tank location. Inspection Pits are constructed to connect the soil pipe from toilets with the Septic Tank. This will provide the opportunity to clear any blockage in the pipeline system. The work involves construction of masonry inspection pit with 250mm thick brick work in cement mortar (1:4), 100mm thick RCC top slab (1:2:4) with 1% reinforcement, 450mm dia water sealed R.C.C cover including necessary earthwork.

Sanitation Facilities: Lack of proper sanitation facilities for the sub-project personnel, including the labor/construction workers, may result in an unhealthy environment within and around the sub-project sites.

7.2.2.2 Socio-economic Impacts

Major parameters considered for assessment of socio-economic impacts of sub-project activities include:

- Temporary evacuation of the building
- Traffic congestion (in front of the sub-project site)
- Safety (Occupational Health and Safety- OHS and Community Health and Safety -CHS both), and
- Employment

Temporary movement: Some hawkers or morning time vegetable businessman need to move away for some hours temporarily during construction activities due to safety issues and other considerations (e.g., privacy/noise pollution/air pollution/vibration/vehicle movement).

As with any other construction sub-project, following are the key labor risks that have been identified:

- Employment practice by the contractors may not be compliant with either labor law or ESS 2. For example, not providing written documents of assignments, wages, not proportionate with tasks performed, excess workload without provision of adequate rests and leisure, lack of hygiene facilities, discrimination towards women, etc.
- Assignment of child and forced labor and use of unscrupulous labor practice.
- Conducting hazardous work, such as working at heights, use of heavy machinery or use of hazardous materials etc.
- Lack of Occupational Health and Safety (OHS) practice and procedures.
- Community health and safety issues, especially shifting the economic power balance, rise of communicable diseases
- Generation of solid, liquid and fecal wastes, especially around labor camps and toilet areas.
- Rise of incidence of Gender-Based Violence (GBV) emanating from the labors.

Re-construction of the existing building shall involve a range of activities that might possibly be unsafe to renovation workers and the local community if proper measures or precautions are not taken. Loading and unloading operation of the construction material may cause injury if not handled properly. Further, there is potential for slips and fall of construction material, liquid spills and uncontrolled use of electrical cords and ropes on the ground which results in injuries and time loss during re-construction. Considering the intensity of work, sub-project location and types of activities that expected to be done for the proposed facilities, it is obvious that this sub-project may carry substantial risk on the occupational health and safety without appropriate mitigation measures.

Depending on the circumstances and potential hazards present, different types of PPE may be required. Selection of such PPPEs shall be made by contractors site supervisor based on the Job nature. Following are the most common PPEs that are used in the construction and renovation sites:

- Helmet
- Boot
- Apron
- Protective gloves
- Hearing protection
- Full face shields when cutting, grinding, or chipping
- Chemical splash goggles
- Respiratory protection
- Fall protection equipment when working above 6 feet

- Specific protective clothing such as welding leathers when welding or Flame-Retardant clothing when necessary

Possible mitigation measures for the risks and impacts mentioned above are recommended in the ESMP section (Table 8.1). Mitigation measures will also be recommended in specific sections of the bidding documents.

Traffic Congestion: Temporary increase in vehicle movement due to carrying renovation material and equipment may lead to traffic congestion. Traffic congestion may be aggravated if materials (e.g., construction materials) are stored on the street and equipment/machines/vehicles (e.g., mixing machines) are kept/parked on the street during both of the day and night time.

There is a 40 feet wide road in front of the proposed site which is connected to the 100 feet wide DNCC road. This 40-feet road will act as haul road for transporting the construction materials, which may result in blocking the roads if the vehicles commute during the day time. This obstruction may cause nuisance and economic loss to the local road users. In addition, the volume of traffic will be increased, which may increase the possibility of accident.

7.2.2.3 Labour Influx

The sub-project area is located in a commercial zone inside the center of the city. Though the number of construction workers during the entire construction period might be limited to between 30 to 40 only, the sub-project's impact on the health and safety of the workers has to be considered carefully. Moreover, the contractor will be obligated to reduce the labor influx by tapping into the local workforce for unskilled labor.

7.2.2.4 Fire, Accidents, and Falling Objects

During the renovation period, the community and the construction workers may become exposed to additional risks of fire, accidents, and falling objects. Moreover, they will also face health hazards such as minor or major injuries due to lack of general safety requirements and precautions applicable for such sites, malfunctioning equipment, careless use of equipment and vehicles, etc. Poorly designed temporary camps and sanitation facilities may pose a health threat and nuisance to the workers and local populace. There might be fire hazard during the operation phase of the sub-project. Fire might be triggered by an electric short circuit or from other sources. Pedestrians can be injured from falling objects at or beside the construction site.

Possible mitigation measures for the risks and impacts mentioned above are recommended in the ESMP section (Table 8.1).

7.2.2.5 Social disturbance and Gender-Based Violence due to labor influx

During the re-construction phase, the risk of Gender Based Violence for women and girls working in Kawran Bazar may also increase. However, as the sub-project site is relatively small and there are no communities residing in the vicinity of the sub-project site, the risk is estimated to be low. Moreover, the scale of the labor influx will be low during the construction period and the absorptive capacity of the Kawran Bazar community is very high as the community is mostly made up of migrant workers and retailers, traders, and shop owners that regularly deal with such workers. As the migrant worker community of Kawran Bazar is made up of migrants from all areas of Bangladesh, there will be little cultural difference between the contracted and local workers. However, competition between local and non-local workers for local resources may create social disturbance.

7.2.3 Impacts Related to land & assets

The sub-project with its current design involves no involuntary resettlement and requires no land acquisition. No slum/squatters' houses are present in the sub-project area. The floating retailers

(vendors), who usually sit beside two sides of the boundary wall of the sub-project site, may have to use the boundary walls of the adjacent buildings/shops and may also share the spots used by other vendors.

7.2.4 Impact on Ecology and Biodiversity

Flora: In the sub-project area, there are no floral species. Therefore, no effect will fall on any flora. However, since there will be no toxic gases or dust during the work, the impact on the flora will be negligible.

Fauna: The renovation work will not emit thermal discharge to any water body. Besides, the daily wastewater generated in the building during renovation work will be very less. Care should be taken so that very less amount of construction related water goes to the DNCC drainage line. In this regard, the impact on the aquatic fauna in the area is very insignificant.

7.2.5 Safety: Occupational Health and Safety (OHS) and Community Health and Safety (CHS)

Construction activities of the building shall involve safety risks to both the sub-project personnel including construction workers and officers as well as regular users of the roads and streets over and alongside where the construction activities will take place. Safety risks comprise sudden fall of heavy construction materials, sudden fall of prefabricated structure during and after placement on the main structure, etc., could cause serious or fatal injury to passersby and construction workers. Regular safety measures, special construction methodology, etc., would have to be followed to ensure safety during construction contractors must provide an occupational health and safety plan. The ESMP part (Table 8.1) and the OHS issues in the bidding documents should also be followed appropriately.

Employment: Renovation of the proposed building will generate employment opportunities for skilled manpower (e.g., engineers) and unskilled workforce (i.e., labor). This, in turn, would induce beneficial impacts on some other parameters including commercial activities in the sub-project area.

7.3 Anticipated Impacts During Operation Phase

After the renovation of the building, the contractor will no longer be available to supervise the building. After that, BHTPA or any operator will be appointed to manage the building. In such circumstances, the BHTPA shall be solely responsible for the operation and maintenance of the building.

Operation phase of the sub-project is likely to cause the following impacts:

- Traffic congestion because of vehicle movement;
- Air pollution and noise hazard from all the incoming vehicles;
- Pollution of water from surface runoff;
- Pollution of groundwater from runoff and other contamination; etc.
- Drainage congestion due to unmanaged solid waste and construction waste

8.0 Environmental and Social Management Plan (ESMP)

8.1 Objectives of Environmental and Social Management Plan (ESMP)

The objectives of an Environmental and Social Management Plan (ESMP) for Software Technology Park- 1 (STP -1) Building are:

- To identify and assess potential environmental and social impacts associated with the proposed sub-project activities.
- To propose and implement appropriate mitigation measures to minimize or avoid adverse impacts on the environment and affected tenants.
- To establish a detailed environmental management plan that includes measures to monitor, manage, and mitigate the identified impacts throughout the sub-project lifecycle.
- To ensure compliance with ESF standards and relevant national and international environmental standards and regulations.
- To facilitate stakeholder engagement and consultation to ensure that community concerns and perspectives are considered in the development and implementation of the ESMP.
- To develop an emergency response plan and contingency measures to address potential environmental and social incidents that may occur during sub-project implementation.
- To conduct regular ES monitoring and reporting to ensure compliance with the ESMP and regulatory requirements.
- To provide training and capacity building to sub-project staff, workers and contractors personnel to ensure they understand and can implement the ESMP effectively.
- To conduct periodic reviews and updates to the ESMP to ensure that it remains relevant and effective over time.
- Provide a plan for monitoring, assessing, and controlling potential impacts on identified values.

The ESMP identifies six environmental and social elements that require assessment and management.

1. Water Management
2. Air Quality Management
3. Noise and Vibration Management
4. OHS Implementation
5. Waste Management
6. GBV, SEA, SH Management and Reporting Mechanism

8.2 Responsibilities

Some responsibilities for an Environmental and Social Management Plan (ESMP) include:

- Identifying and assessing potential environmental and social impacts associated with the proposed sub-project or activities.
- Developing and proposing mitigation measures to minimize or avoid adverse impacts on the environment and affected communities.
- Preparing a detailed environmental management plan that includes measures to monitor, manage, and mitigate the identified impacts throughout the sub-project lifecycle.
- Ensuring that the ESMP is aligned with relevant national and international environmental standards and regulations.
- Facilitating stakeholder engagement and consultation to ensure that community concerns and perspectives are considered in the development of the ESMP.
- Developing an emergency response plan and contingency measures to address potential environmental and social incidents that may occur during sub-project implementation.

- Conducting regular environmental monitoring and reporting to ensure compliance with the ESMP and regulatory requirements.
- Providing training and capacity building to sub-project staff and contractors personnels/workers to ensure that they understand and can implement the ESMP effectively.
- Conducting periodic reviews and updates to the ESMP to ensure that it remains relevant and effective over time.
- Supporting sub-project management in the implementation of the ESMP and ensuring that environmental and social considerations are integrated into sub-project decision-making processes.

Table 8.1 Environmental and Social Management Plan

Sl. No.	Activities	ES Impacts	Suggested Mitigation Measures	Time, Responsibilities including Cost
1.0 Pre-Construction				
1.1	**Preparation of ESA and ESMP**	Specific impacts are identified as per design and recommended re-construction method	Based on detailed design, ESA and ESMP have been prepared. Upon this ESMP Contractor will work to safeguard the ES requirements.	Responsibility: DS firm, PMU Supervision: PMU, BHTPA Completion of ESA preparation by May 31, 2024
1.2	**ESMP implementation**	Incorporation of cost of ESMP in the bidding documents	• BOQ and other details will be reflected based on ESMP • Training will be required to undergo ESMP implementation covering the issues like OHS, Waste Management, Labour and working condition etc.	Responsibility: Contractor, PMU Supervision: PMU, BHTPA This will be implemented throughout the life cycle of the sub-project
1.3	**Existing Utilities**	Disruption of services (Short time)	• Some utility services will be disrupted (such as, water pipes, electricity	Responsibility: Contractor Supervision: PMU, BHTPA Before renovation activities

			supply, etc.) before the renovation activities • Contractor requires to prepare a contingency plan to include actions to be done in case of unintentional interruption of services • If necessary, prior permission shall be obtained from the respective authority for use of water and other utility services	
1.4	**Preparation of Labour Shed:** (Laboure's may stay inside any room of the existing building then costing to build a labour shed will not be required. Building a separate shed outside the building will require financial cost)	Without Labour shed accommodation for the laboures will be difficult	• If separate labour shed is prepared the following issues needs to address properly: • Ventilation • Drinking water • Sanitation • Health and safety • Temperature • Toilet facilities and etc.	• If a separate labour shed is required, needs to be prepared before renovation activities • The approx. estimated cost for this activity is Tk. 90,000 (Ninety thousand only) If separate shed is not prepared a LS Tk. 30,000 (thirty thousand) will be required for the purposes as for example, drinking water, hand washing items, mosquito kits, etc. **Responsibility**: Contractor **Supervisor**: PMU/BHTPA
2.0	**Re-construction / Renovation stage**			

2.1	Generation of wastewater. As there is no wastewater treatment facility in the STP-1 tower Leakages in the existing pipeline of wastewater	• Drinking water problem • Sanitation problem • Sewerage problem • Unacceptable release of waste particles • Release of bad odor into the sub-project area	No Septic Tank is found in the Project. Soil, Waste & Rain Water Pipe are connected to City Drainage. Septic tanks are designed to treat dispose of wastewater to minimize the impact on the environment. The effluent released from septic tanks is treated by the soil, which acts as a natural filter to remove pollutants and harmful bacteria. Soil pipe must be connected to the septic Tank.	** The cost of these items will be included in the tender and BOQ documents separately **Responsibility:** Contractor **Supervision:** PIU, BHTPA **Reporting:** Quarterly reporting will be compiled by an environmental officer and shared with BHTPA
2.2	Lack of monitoring for drinking water	• Water tanks are not cleaned. • Water quality not checked.	• Water tanks should be cleaned at least twice a year. • Water quality should be checked once a year. • Compliance with national drinking water regulations and standards • Effective communication with stakeholders regarding drinking water safety • No contamination of the drinking water of the sub-project area.	The cost of these items will be included in the tender and BOQ documents separately **Implementor:** BHTPA/PMU/Contractor/ Operator **Supervisor**: BHTPA Reporting: Quarterly reporting will be compiled by an environmental officer and shared with BHTPA

			• No existence of dirt, waste, or hazardous (chemicals) particles.	
2.3	**Management of Air Quality**	• Conducting work and moving large quantity of materials may create dusts and increase in concentration of transport related pollutants. • Insufficient means of ventilation in some floors • Air quality may deteriorate during renovation and retrofitting activities	• Where inadequate, proper ventilation should be provided. Especially in the basement where ventilation is insufficient, needs to be provided properly. • Control dust by spraying water on dust emitting materials as needed during renovations • Uncovered aggregates and loose materials such as sand, construction wastes, etc. should be covered well. • Use tarpaulins to cover sand and other loose material when transported by vehicles • Care should be taken while moving construction materials/	the cost of the ventilation issues will be included in the tender and BOQ documents separately. For the dust suppression and air quality control and others related to AP: a. Water spraying at least 2 times/day and as per requirement b. Use of cover on the dust sources c. The approx. estimated cost for these activities is Tk. 50,000 (Fifty thousand) only **Responsibility**: Contractor **Implementor**: BHTPA/PMU/Contractor/ Supervisor: BHTPA Reporting: Quarterly reporting will be compiled by an environmental officer and shared with BHTPA.

			accessories to the construction site • Proper PPE should be worn to avoid injury to workers while carrying construction materials. • Care should be taken while jacketing the column to avoid dispersion of dust • Proper care should be taken while placing the rod for column jacketing	
2.4	**Management of Noise and Vibration:** • Staffs awareness in relation to reducing noise and vibration impacts from equipment operation. • Temporary increase in noise level and vibrations may be caused by renovation activities	• Noise and vibration during renovation work may cause a nuisance for the workers and adjacent communities.	• During the renovation work minimum noise should be maintained so that adjacent community does not feel disturb • Checking vibration with allowable limit and taking necessary actions • Use of noise reducer/canopy in case of the high noise producing equipment	**Implementor:** BHTPA/PMU/Contractor **Supervisor**: BHTPA The approximate estimated **cost** for these activities is Tk. 50,000 (Fifty thousand) only **Reporting:** Quarterly reporting will be compiled by an environmental officer and shared with BHTPA.

	• Noise from the generator. • Vibration from generator during operation		• Changing or overhauling non-compliance machines and generators • Taking pre-approval for the installation of Air conditioner or machine which could create noise and vibration • If generators are used, noise reduction measures should be in place. Must be covered with a canopy and use a silencer if necessary. • If there is a need to cut any tiles or others, the noise should be kept to a minimum so that it does not go beyond the national standards. • Possible measures should be taken to reduce noise from the working of tiles. • Use noise barrier and absorbing materials in case of other noise sources as for example: Welding, Drilling, tiles fitting, mixture	

			machine, woodwork, demolition etc. • Unnecessary movement of workers should be avoided during working time.	
2.5	**Traffic Congestion**	• Hauling of construction materials and operation of equipment on-site can cause traffic and pedestrian movement problems. The impacts are negative but short-term, site specific within a relatively small area and reversible by mitigation measures.	• Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites. • Maintain safe passage for vehicles and pedestrians throughout the construction period. • Schedule truck deliveries of construction materials during periods of low traffic volume after consultation with the Kawran bazar authority. • Erect and maintain barricades, including signs, markings, flags and flagmen informing diversions and	**Implementor:** **Contractor** **Supervision:** **BHTPA, PMU** **Reporting:** Quarterly reporting will be compiled by an environmental and social officer and shared with PMU/BHTPA.

			alternative routes when required. • Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites. • Notify affected sensitive receptors by providing sign boards informing nature and duration of construction activities and contact numbers for concerns/complaints. • Provide walkways and metal sheets where required to maintain access across for people and vehicles.	
2.6	**Fire Safety:** • No fire detection alarm in whole building • No smoke alarm system exists.	• There should be a firefighting system in case of an unexpected fire. Otherwise, it can lead to dangerous problems in and	• Smoke alarms should be installed • As per BNBC 2020 proper type and size of Fire extinguishers should be ensured and kept in proper locations	The cost of these items will be included in the tender and BOQ documents separately. For the fire drill and other fire renovation related activities awareness training should be conducted with the technical support of the department of fire service and civil defense.

	• Lack of fire extinguisher • Lack of fire safety equipment. • Fire hoses don't exist. • Emergency evacuation doors are closed permanently or closed for office use • Fire stair at basement • No separate Fire water Reservoir • No fire drilling is conducted in the sub-project area. • Lack of fire evacuation awareness. • Lack of fire evacuation plan	around the innovation hub floor. • Fire exit door is not working. There are many obstacles on the way out. It can create a dangerous situation in case of any disaster or incident.	• Fire hoses should be ensured • Emergency evacuation doors should be free of any obstructions • Fire drilling should be conducted regularly at least once a quarter. • Fire evacuation plan and emergency exit should be hung on the entrance of each floor • Fire exit should be marked clearly and need to keep visible from any part of the floor • Fire stair end on the ground floor instead of basement. • A separate fire water reservoir should be provided. • All fire safety equipment is placed properly • All fire extinguishers must be refilled at least 15 days before expiry	The approximate estimated cost for these activities is Tk. 50,000 (Fifty thousand) only **Implementor**: BHTPA/PMU/Contractor/Fire Department **Supervisor:** PMU, BHTPA **Reporting**: Quarterly reporting will be compiled by environmental and social safety officer and shared with PMU,BHTPA.

			• All personnel should be trained in evacuation and emergency management procedures.	
2.7	**Earthquake Safety:** No earthquake drilling was introduced to the building users.		• Conduct earthquake drills with the building users regularly. • Availability of Earthquake safe space • Emergency exists are full time operational • People has earthquake awareness	Awareness training should be conducted with the support of the department of fire service and civil defense The approximate estimated cost including these activities has been proposed in sl. No. 2.6. **Implementor**: BHTPA/PMU/Contractor/Operator **Supervisor**: BHTPA **Reporting**: Quarterly reporting will be compiled by environmental and social safety officer and shared with PMU, BHTPA
2.8	**Disaster and Emergency:** • Emergency doors are obstructed by various things and other doors. • Emergency contact numbers aren't hanging on any floor.		• Any kind of obstacle should be removed from the emergency doors. • Emergency contact numbers must be hung on every floor. • All staff should be trained in evacuation and	The cost of these items will be included in the tender and BOQ documents separately. **Implementor**: BHTPA/PMU/Contractor **Supervisor**: BHTPA **Reporting**:

	• No emergency drills are conducted at any time. • No disaster preparedness plan		emergency management procedures. • Emergency drills should be conducted at least once a year. • Emergency preparedness plan is available • Regular update of possible disaster and emergency • Proper coordination with different rescue and disaster management authorities.	Quarterly reporting will be compiled by environmental and social safety officer and shared with PMU,BHTPA.
2.9	**Utility and Others:** • Some of the electrical cables aren't in a proper manner and hanging which could create danger for people • Toilets are not properly cleaned • Some slabs are broken, and rebar are exposed to air. • Electric main switchboard room is		• Proper maintenance of electric cable should be done. • Toilets should be cleaned properly. • Structural renovation should be done (where needed) • Any kind of obstacle should be removed from the main electrical switchboard room. • Sufficient waste bins need to be provided as per Solid	The cost of these items will be included in the tender and BOQ documents separately. **Implementor:** BHTPA/PMU/Contractor **Supervisor**: BHTPA **Reporting**: Quarterly reporting will be compiled by environmental and social safety officer and shared with PMU,BHTPA.

	obstructed with different unused things. • Limited/ no waste bins are found. • Floor plans aren't given front of entrance		waste management Rules 2021. • Floor plans must be hung on every floor. • No occurrence of accidental events. • No disruption of services. • Safe and healthy work environment. • No confusion among the staffs and the visitors to find any location inside the building.	
2.10	**Occupational Health and Safety and Security during renovation time:** • Safety measures should be ensured during renovation with adequate safety equipment • Construction safety plan must be present during renovation time	• Without proper Personal Protective Equipment (PPE) it may cause fatal danger to the workers at any time which may endanger health and safety (OHS) of the workers • Due to the Covid- 19 infections without proper health and safety measures, it can cause any human health problems	• During renovation time all construction workers must wear appropriate personal protective equipment when on-site. • All key personnel should have emergency management training. • All types of construction safety should be taken care of. • All required PPE, such as boots, helmets, hand gloves, face masks, ear	At least two OHS training including Personal Health and Safety and COVID-19 kits. The approximate estimated cost for the safety kits (PPE) is Tk. 40,000 (Forty thousand) only. **Implementor**: Contractor **Supervisor:** BHTPA/PMU **Reporting:** Monthly and Quarterly and shared with BHTPA.

	• No regular renovation plan		plugs, visibility jackets, eye protectors etc. must be kept on site. Also, a certain number of PPE should be kept for the visitors. • No injury or loss of human lives during renovation time. • No occurrence of accidental events. • All safety equipment are present and safety rules are practiced	
2.11	**Waste Management:**	• Without proper management of different solid wastes may cause pollution hazards and GHG emission	• Minimized waste generation through waste reduction and recycling practices • Implementation of a waste management hierarchy (reduce, reuse, recycle, and dispose). • "Segregation of different waste at sources and keeping the waste in separate color bins (Yellow for general waste, Green for organic Waste, Red for toxic,	The approximate estimated cost for these activities is Tk. 50,000 (Fifty thousand) only **Implementor:** BHTPA/PMU/DNCC **Supervisor**: BHTPA **Reporting**: Quarterly reporting will be compiled by environmental and social safety officer and shared with PMU,BHTPA.

			hazardous, and e-waste). • Transfer the wastes to the City Corporation's designated dumping site. • Avoid stockpiling of any excess spoils • Suitably dispose of collected materials from construction site, unutilized materials and debris should be dumped at pre-designated disposable point • Incorporate waste reduction principle • Compliance with Solid waste Management Rules 2021 • Effective communication with stakeholders regarding waste management practices • No environmental contamination and hazards • Prioritize environmentally friendly practices	

			• Remove all construction and demolition wastes on a daily basis • No construction materials are kept in the sub-project area that may block the flow of water of existing drainage line • Clean the renovation site drain regularly	
2.12	**Use of Renewable Energy and Others:**		• Solar power systems should be installed properly. Since the present off-grid system has not worked well, on-grid system can be introduced. • Energy cost savings from renewable energy implementation	The cost of these items will be included in the tender and BOQ documents separately. **Implementor:** BHTPA/PMU/Operator//Contractor **Supervisor:** BHTPA **Reporting:** Quarterly reporting will be compiled and shared with BHTPA.
2.13	**First Aid Facility**:	Accidents can be severe without any onsite first aid facility	• Provide First Aid Boxes and Emergency Medical kits including sanitizer and any other COVID-19 kits (following COVID- 19 protocol).	• The approx. estimated cost for these activities is Tk. 70,000 (seventy thousand) only **Responsibility**: Contractor **Supervisor**: PMU/BHTPA

			• A stretcher should also be kept in case of any emergency	
2.14	**Safety Signage, Banners, Signboards, Banners, Alert mark:**	If there are no safety barriers or boundary lines or signal posts, may have an accident while passing through the site.	• Provide safety signage/ signboards/banners/alert mark etc. at construction points visible to all so that everybody can identify the area to avoid any accident. • This will create a safe environment for the construction site.	a. The approx. estimated cost for these activities is Tk. 40,000 (Forty thousand) only **Responsibility**: Contractor **Supervisor**: PMU, BHTPA
2.15	**Gender Based Violence (GBV), Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) Reporting:** • Proper management to prevent and response against GBV, SEA and SH • Awareness about GBV, SEA and SH among the staffs		• Regularly train management and staff on GBV, SEA and SH recognition, prevention, and response if any female worker is present in the workplace. • Develop mechanisms for reporting GBV, SEA and SH incidents to management, including anonymous reporting options. • Establish a reporting mechanism that is accessible, confidential, and effective.	**Implementor**: BHTPA/PMU/Operator/Contractor **Supervisor**: BHTPA **Reporting**: Quarterly reporting will be compiled by environmental and social safety officer and shared with PMU,BHTPA.

	• Proper guidelines about reporting mechanism.		• Ensure compliance with relevant national and international standards and regulations.	
2.16	**Grievance Redress Mechanism (GRM):**	• Absence of GRM system	• GRM system should be introduced during renovation work • Resolve any dispute at the site during renovation work	**Implementor:** PMU/Contractor **Supervisor:** PMU/BHTPA **Reporting:** Quarterly reporting will be compiled and shared with BHTPA and Bank.
2.17	**Capacity building and Awareness Training**		• Ensure that all site personnel have a basic level of environmental and social awareness training • Awareness campaign and provide training on the compliances of EHS/OHS including COVID-19 and Dengue protocol to the employees and workers of the Contractor and others. • In the training program SEA, GBV and SH issues will also be included.	• At least two trainings are needed**.** One training when all the workers in place before the main renovation work and another one is at the mid of the renovation works. The approximate estimated cost for these two activities is Tk. 100,000 (One hundred thousand) only **Responsibility:** Contractor **Supervision:** PMU, BHTPA

2.18	**Post re-construction/renovation clean up**	Post re-construction/renovation clean up	• Remove all spoil wreckage, rubbish, or temporary structures which are no longer required • All disrupted utilities restored • All affected structures rehabilitated/compensated	The approximate estimated cost for these activities is Tk. 40,000 (Forty thousand, LS) only. **Responsibility**: Contractor **Supervision:** PMU, BHTPA
3.0	**Operation stage**			
3.1	**Air Quality**	• Exhaust gas from vehicles and generators • Dust from building cleaning	• Proper ventilation facilities should be provided inside the building • Control dust by spraying water on dust emitting sources and use wet floor wipes during cleaning the floors • Provisions of BHTPA budget for operation and maintenance • Periodic monitoring	Responsibility: BHTPA Supervision: BHTPA, ICTD
3.2	**Noise**	• Noise caused by vehicles around area • Noise from generator	• Use of canopy for generator • Provisions of BHTPA budget for operation and maintenance	**Responsibility**: BHTPA **Supervision**: BHTPA, ICTD
3.3	**Waste Management**	• Create nuisance form food wastes • Create nuisance from cafeteria and kitchen wastes	• Provision of septic tank is already proposed • Incorporate waste reduction principle, source segregation of different wastes and ensure proper	**Responsibility:** BHTPA **Supervision:** BHTPA, ICTD

		• Solid and Liquid waste from the operation of the STP-1	disposal of waste according to Solid Waste Management Rules, 2021 • Provision for BHTPA budget for operation and maintenance • Periodic cleaning of septic tank sludges	
3.4	**Health and Safety**	•	• Adequate provision of firefighting equipment • Checking and replacing the old equipment regularly • Conduct fire drills with the building users regularly • Display Emergencey Exit Point(EEP) with appropriate directional sign so that tenants can leave the building easily in case of any emergency situation.	**Responsibility:** BHTPA **Supervision:** BHTPA, ICTD

9.0 Institutional capacity building and Implementation arrangement

9.1 Institutional Framework

Environmental and social management of the sub-project requires a multidisciplinary approach with consolidated and coordinated efforts from PMU/PIU, BHTPA and ICT Division. Various sections of BHTPA will be involved during implementation of the Sub-project. While the contractor is responsible for implementation of ESMP during renovation works. Construction Supervision Consultant (CSC) is primarily responsible for supervision of monitoring of the implementation of the ESMP and also reporting the progress to PMU/PIU. Under the ICT Division the BHTPA will be involved in the implementation and management of the works for which they are responsible by establishing a Sub-project Management Unit (PMU). The Key organizations and people involved in environmental and social management of the sub-project are:

9.1.1 ICT Division (ICTD)

ICTD as the Executing Agency of the sub-project will have the overall responsibility of ensuring that the environmental safeguard requirements of the sub-project are fulfilled through the BHTPA. The main responsibilities of the ICTD are to:

- Ensure that the sub-project, regardless of financing source, complies with the provisions of the ESMP and World Bank ESS Safeguard Policies;
- Ensure that sub-project implementation complies with government environmental policies and regulations;
- Ensure that sub-project environmental management is implemented and reported to the different office including CCU and WB.

9.1.2 Bangladesh Hi-Tech Park Authority (BHTPA)

- As an Implementing agency ensure that the sub-project complies with the provisions of the ESMP and World Bank ESS Safeguard Policies;
- Ensure that sub-project implementation complies with government environmental policies and regulations;
- Ensure that sub-project environmental management is implemented and reported to the different bodies including the WB.
- Ensure that PMU and PIU works as mentioned in the related documents and complies with national laws and WBs ESF guideline

9.1.3 Individual Consultants

An individual consultant team functioning under the PMU of BHTPA will be directly responsible for contract administration and day-to-day sub-project supervision including environmental and social management. The team may consist of environmental and social expert. The engineers of the PMU will advise the BHTPA on ESMP implementation and monitor the work of the contractors in the field. The Engineers will also help the PMUs prepare quarterly progress reports to be submitted to the BHTPA and WB. The engineers will, inter alia, be responsible for the following:

- Facilitate environment and social specialists to ensure proper implementation of ESMP provisions;
- Undertake regular monitoring of the contractor's environmental and social performance supported by Environmental and Social specialist, as scheduled in the ESMP;
- Supervise the site environmental and social management system of the contractors with support from Environmental and Social specialist, and provide corrective instructions;
- Monitor the implementation of the ESMP and review the environmental and social management and monitoring reports prepared by the Contractor;

- Review and report on ESMP implementation by the Contractor.

Overall, the contractor will be responsible for ensuring proper and timely implementation of all the tasks specified in the ESMP with the support of an Environmental and Social Expert.

9.1.4 Environment and Social Experts

Environmental and social experts will work together. They will guide PMU staff in developing mechanisms for effective sub-project supervision throughout the sub-project construction/renovation period. They will also assist CSC and contractors in conducting subsequent monitoring and reporting and in undertaking corrective options and establishing and implementing an environmental and social management system.

9.1.5 Sub-project Implementation Unit (PIU)

The Sub-project Implementation Unit will be established under the PMU and will include an individual consultant on the environment and an individual consultant on social aspect.

The ES consultants of PMU will be responsible for overseeing the monitoring activities conducted by the CSC on its behalf. It will also be responsible for overseeing the activities of the contractor.. The main activities of the consultants on the ES issues are:

- Implementation of ESMP
- Supervision and monitoring of the progress of activities of the consultants and contractors for implementation of different issues of ESMP
- Guide PMU, CSC and contractors in conducting subsequent monitoring and reporting and in undertaking corrective options
- Responsible for modifications or correction of the ESMP when there were adaptation/changes during implementation.
- Ensure submission of periodical environmental management and monitoring reports to the BHTPA and World Bank;
- Submit quarterly monitoring reports on ESMP implementation for BHTPA and World Bank;
- Ensure establishment and implementation of an environmental and social management system;
- Promote improved environmental and social performance through the effective use of management systems;
- External communications with other agencies or offices in the country on matters of mutual interest related to environmental and social management.

9.1.6 Construction and Supervision Consultant (CSC)

The CSCs functioning under the PMU,BHTPA will be directly responsible for contract administration and day-to-day sub-project supervision, including environmental and social management. The CSC will advise the BHTPA and the PMU on ESMP implementation and monitor the work of the contractors in the site. The CSC will also help the PMU prepare quarterly environmental and social progress reports to be submitted to the BHTPA. Overall, CSC is responsible for ensuring proper and timely implementation of all the tasks specified in the ESMP.

9.1.7 Contractors

The contractor will be primarily responsible for implementation of the ESMP. Contractor will be recommended to have one Environmental and Social Safety Officer (ESO), who will be working in close coordination with the environmental and social staff of CSC and PMU. The main functions of the contractor for environmental management and monitoring are to:

- Preparation of contract and other method statements and management plans according to the requirements of ESMP and get them approved.
- Recruit qualified environmental and social safety officers (ESO) to ensure compliance with environmental and social statutory and contractual obligations and proper implementation of ESMP;
- Provide sufficient funding and human resources for proper implementation of ESMP;
- Prepare quarterly reports on environmental and social management and monitoring for review and verification by the CSC;
- Prepare and implement an Environmental Management system according to the requirement specified in ESMP and report to PMU.

10. Environmental and Social Monitoring Plan

10.1 Introduction

Environmental and social monitoring plan is an essential tool about environmental and social management as it provides basic information for rational management decisions. The prime objectives of monitoring are:

- To check on whether mitigation and benefit enhancement measures are being adopted and are providing effective in practice
- To provide a means whereby impacts which were subject to uncertainty at the time of preparation of ESMP, or which were unforeseen, can be identified, and steps to be taken to adopt appropriate control measures.
- To provide information on the actual nature and extent of key impacts and the effectiveness of the mitigation measures which, through a feedback mechanism, can be taken into account in the planning and execution of similar sub-projects in future.
- There are two basic forms of monitoring:
    - Visual observation or checking
    - Physical measurement of selected parameters (if required)

The PMU will monitor the environmental and social performance of the sub-project in accordance with the legal tools. The extent and mode of monitoring will be proportionate to the nature of the

sub-project, the sub-project's environmental and social risks and impacts, and compliance requirements. The PMU will ensure that adequate institutional arrangements, systems, resources and personnel are in place to carry out monitoring.

Even if the sub-component activities are within an existing building, the potential for environmental and social impacts is expected to be substantial if proper mitigation measures are not taken. Therefore, physical measurement of different parameters of especially air and noise will be required. However, contractors and PMU consultants should regularly check and monitor to identify any impact. The importance of this monitoring program is also for ensuring that the sub-project/component does not create adverse environmental changes in the area and providing a database of operations and maintenance, which can be utilized if unwarranted complaints are made. The PMU/BHTPA will document monitoring results regularly.

An Environmental and Social Monitoring Plan has been prepared (Table 10.1) along with this ESA for the execution as a means to mitigate or minimize the adverse impacts associated with construction and operational activities of the sub-project/component on the natural and social environments.

10.2 Objectives

The objective of environmental and social monitoring during the renovation phases is to compare the monitored data against the baseline condition. The main objectives of the monitoring plans will be to:

i. Monitor the actual impact of the works within the sub-project corridor for indicating the adequacy of the ESA;
ii. Ensure compliance with legal and community obligations including safety on renovation sites;
iii. Evaluate the effectiveness of the mitigation measures proposed in the ESMP and recommend improvements, if necessary; and
iv. Compile periodic accident data to support analyzes that will help reduce future risks.

- Monitoring and Control of Emissions and Discharges: Emissions and discharges should be monitored to ensure they are within acceptable limits. This includes monitoring of air emissions, different wastes, among others.
- Waste Management Tracking: Waste generated from the STP-1 should be tracked, including the type and quantity of waste, and the way it is managed, whether it is recycled, reused, or disposed of.
- Occupational Health and Safety (OHS) Training: Employees, contractors, and other stakeholders should receive at least two trainings during the sub-project period. This can help to promote awareness of environmental and social issues, support compliance with regulations, and encourage the adoption of sustainable practices.
- Communication and Reporting: The results of the monitoring activities should be communicated to stakeholders, including regulators and the local community, through regular reporting. This information can help to enhance transparency and promote accountability, as well as identify areas for improvement.
- CSC will give report to the concerned authority after receiving feedback on monitoring.
- Overall, the monitoring mechanism for the ESMP during the renovation phase of a software technology park is essential for ensuring compliance with regulations, minimizing environmental impacts, and promoting sustainable practices.

Table 10. 1: Environmental and social management Plan - Monitoring Action

No.	Environmental and social Issues	Purpose of the Monitoring	Monitoring Method			Responsibility	
			Method of Collecting and Reporting Data	Location	Duration and Frequency	Implementation	Supervision
Purpose of the Monitoring							
1.1	Preparing ESA and ESMP	Ensuring the compliance with design and construction method and schedule	Preparation of report through site visit and visual checking and design. Sample testing in some applicable areas such as air and noise based on secondary information	Work site	Before renovation period	PMU/DS firm	BHTPA/PMU
1.2	Existing Utilities	Implementation of ESMP	Obtain record of implantation	In the work site	Prior to contractor mobilization	Contractor	PMU
1.3	ESMP Implementation Training	Implementation of ESMP	Obtain record of training	PMU/Site	During renovation work	Contractor	PMU
2.0 Renovation-Construction Phase							
2.1	Air quality	Assessment of the impact of mitigation measures resulting from air pollution	Visual observation or checking & consultation with local people. Testing of air quality.	In the work site	Visual monitoring on a daily basis and testing of air on quarterly basis	Contractor	CSC/PMU

2.2	Noise & Vibration	Evaluation of effect of the mitigation measure towards noise pollution	Visual observation of the activities or checking & consultation with local people. Testing of air quality in some cases.	In the work site	Visual monitoring on daily basis and monthly/quarterly checking of noise level	Contractor	CSC/PMU
2.3	Waste Management	Evaluation of effect of the mitigation measure for waste	Record of kinds and quantity of waste, and the disposal method	In the work site and Worker's camp (if any)	Continuous, during Renovation period	Contractor	CSC/PMU
2.4	Traffic Congestion	Evaluation of effect of construction schedule	Visual observation or checking & consultation with local people, record of accidents, record of numbers construction	In the work site	Continuous, during Renovation period	Contractor	CSC/PMU
2.5	Community health and safety	Evaluation of effect of the work safety plan	Visual observation or checking & consultation with local people	In the sub-project area	Continuous, during Renovation period	Contractor	CSC/PMU
2.6	Worker's health and safety	Evaluation of effect of the work safety plan	Visual observation or checking & consultation with worker	In the work site	Continuous, during renovation period	Contractor	CSC/PMU
2.7	Post- renovation clean-up	Evaluation of the implementation of ESMP	Visual observation or checking & consultation with local people Reporting	In the work site	At the end of renovation period along with the ESMP implementation	Contractor	CSC/PMU

2.8	Submission of ESMP implementation report	Evaluation of the implementation of ESMP	Record of report submission	PMU and WB	At the end of Renovation period	Contractor	CSC/PMU
3.0 Operation Phase							
3.1	Air Quality		Visual observation or checking, and consultation with stakeholders, O&M budget provision (if necessary) for periodic monitoring	STP-1 building	During operation period	BHTPA	BHTPA/ICTD
3.2	Noise Level		Visual observation or checking, and consultation with stakeholders. O&M budget (if necessary) provision for periodic monitoring	STP-1 building	During operation period	BHTPA	BHTPA/ICTD
3.3	Awareness	To resolve various safety emergency issues	Ensuring awareness training on different environmental and social safeguard issues including emergency exit. O&M budget (if necessary) provision for periodic monitoring	STP-1 building	During operation period	BHTPA	BHTPA/ICTD

3.4	Health & Safety		Visual observation or checking and consultation with local stakeholders. O&M budget (if necessary) for periodic monitoring	STP-1 building	During operation period	BHTPA	BHTPA/ICTD

11.0 Reporting Mechanism

The reporting mechanism for environment and social management procedure for environmental social impact reporting is a structured process that involves documenting and communicating information about an organization's environmental and social performance. This mechanism typically includes collecting data on various environmental and social indicators, analyzing that data to identify trends and areas for improvement, and producing reports that summarize the findings and recommendations for action. The procedure for environmental and social impact reporting may also include a review of the organization's environmental and social management system (ESMS) to ensure compliance with relevant environmental regulations and standards. The purpose of the reporting mechanism is to provide transparency and accountability to stakeholders, including regulators, customers, investors, and the public, as well as to support decision-making and continuous improvement efforts within the organization.

12.0 Grievance Mechanism

A grievance mechanism is a procedure that provides a clear and transparent framework for addressing grievances related to the sub-project activities. This typically takes the form of an internal procedure for complaints, followed by consideration and management response and feedback. Grievances in the sub-project may range from effects on society and the local community due to renovation related activities. Considering the overall need for the total sub-project period, BHTPA intends to establish a GRM to address complaints and grievances starting from sub-project Implementation level as there are not likely to be reckonable adverse effects on the community. Based on consensus, the procedure will help to resolve issues/conflicts amicably and quickly, saving the aggrieved persons from resorting to expensive, time-consuming legal actions. The purpose of the GRM is to record and address any complaints that may arise during the life cycle of the sub-project period effectively and efficiently. The structure and steps of the Grievance Mechanisms are outlined below.

12.1 Grievance Mechanism Structure

The purpose of the GRM is to record and address any complaint that may arise during the sub-project period effectively and efficiently. The GRM is designed to address concerns and complaints promptly and transparently with no impacts (cost, discrimination) for any reports made by sub-project affected people (PAPs) and the complainants. Necessary signboard/billboard would be placed at the central designated place where people gather for sharing detailed information of the sub-project. The BHTPA level Grievance Redress Committee (GRC) shall be comprised of the following members (Table 12.1).

Table 12.1: BHTA level GRC

Sl. No	Name/Designation	Organization	Position in GRC
1	Director (Admin & Finance)	BHTPA	Convener
2	Project Director, DEIEDP	BHTPA	Member
3	Environmental Specialist	DEIEDP, BHTPA	Member
4	Social Specialist	DEIEDP, BHTPA	Member
5	Representative on behalf of tenants at the STP-1	Tenant, STP-1	Member
6	Deputy Director Planning &	BHTPA	Member
7	Assistant Director, DEIEDP	DEIEDP, BHTPA	Member Secretary

The BHTPA level GRC shall do everything possible to hear and determine the issues within 15 (fifteen) days from the date the case has been transferred to it from the PIU and STP level.

7(Seven) days' time may be extended if within 15(fifteen) days the case will not be settled. To ensure impartiality and transparency, hearings on complaints will remain open to the public. The GRCs will record the details of the complaints, the reasons that led to acceptance or rejection of the particular cases, and the decision agreed with the complainants. The GRC shall communicate the outcome to the aggrieved PAP(s)/staffs in writing. The GRC shall maintain a record of all outcomes related to each case.

12.2 GRM Monitoring and Reporting

Day-to-day implementation of the GRM and reporting to the World Bank will be the responsibility of the Project Director. To ensure management oversight of grievance handling, the Internal Safeguard team will be responsible for monitoring the overall process, including verification that agreed resolutions are actually implemented.

12.2.1 GRM contact information -DEIEDP/BHTPA

Information on the sub-project will be available on the BHTPA / sub-project's website and will be posted on information boards in a suitable visible place on the sub-project site. Detailed information of GRC contact person will also be available in information boards at sub-project site. The point of contact regarding any grievances at DEIEDP/BHTPA is given below:

Description	Contact details
Company:	Bangladesh High-Tech Park Authority
To:	Project Director, DEIED Project
Address:	Bangladesh Hi-Tech Park Authority, ICT Tower (9th Floor), E-14/X, Agargaon, Dhaka-1207
E-mail:	info@bhtpa.gov.bd
Website:	www.bhtpa.gov.bd
Telephone:	Phone: +88-02- 8181736 (Ext-423)

13.0 Conclusion

BHTPA currently operates the Vision 2021 Tower (STP-1) in an old building that rents out 72,000 ft^2 of workspace to IT and ITES firms including some Startup firms. The building needs upgrading and improved maintenance of some spaces. To comply with the WB's Environmental and Social Standards (ESSs) and national laws and regulations preparation of an ESA is required to ensure that the sub-project avoids, minimises, and/or mitigates adverse environmental and social impacts and risks identified.

Thus, the goal of the ESA is to take into account and create suitable safeguards and controls to reduce possible risks and effects during the implementation of the sub-project to the employees, the surrounding community, and the environment.