Initial Environmental Examination (IEE)

Project Number: 55148-001
October 2025

BAN: Skills for Industry Competitiveness and Innovation Program (SICIP)

Construction of IBA Annex building at Institute of Business Administration (IBA) campus within Dhaka University (DU)

Prepared by the Finance Division under the Ministry of Finance for the Asian Development Bank.

Asian Development Bank

ABBREVIATIONS

ADB	-	Asian Development Bank
DoE	-	Department of Environment
DU	-	Dhaka University
EARF	-	Environmental Assessment and Review Framework
ECA	-	Environment Conservation Act
ECoP	-	Environmental Code of Practice
ECR	-	Environment Conservation Rules
EDC	-	Executive Development Centers
EMP	-	Environmental management Plan
FGD	-	Focus Group Discussions
IBA	-	Institute of Business Administration
IBA	-	Institute of Business Administration
IEE	-	Initial Environmental Examination
IT	-	Information Technology
MoF	-	Ministry of Finance
MoFCC	-	Ministry of Environment, Forest and Climate Change
MoLE	-	Ministry of Labour and Employment
MoTJ	-	Ministry of Textiles and Jute
NCS	-	National Conservation Strategy
NEMAP	-	National Environmental Management Action Plan
NEP	-	National Environmental Policy
NHRDF	-	National Human Resource Development Fund
NOC	-	No Objection certificate
NSDA	-	National Skills Development Authority
R&S	-	Research and Development
RBL	-	Result Based Lending
REA	-	Rapid Environmental Assessment
RMG	-	Ready-Made garments
SDCMU	-	Skills Development Coordination and Management Unit
SICIP	-	Skills for Industry Competitiveness and Innovation Program
SME	-	Small and Medium Enterprises
SPS	-	Safeguard Policy Statement

WEIGHTS AND MEASURES

Ha	hectares
Km	kilometers
M	meters
masl	meters above sea level
MT	metric tons

CURRENCY EQUIVALENTS

(as of 24 May 2024)

Currency unit	–	taka (Tk)
Tk1.00	=	$0.0086
$1.00	=	Tk 116

NOTE

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

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EXECUTIVE SUMMARY

INTRODUCTION

Background and Project

Aligned with the Bangladesh country partnership strategy 2021−2025 and broader Bangladesh Government Program "Human capital enhanced for sustainable economic development and inclusive growth", the proposed RBL Result Based Lending (RBL) program 'Skills for Industry Competitiveness and Innovation Program (SICIP)' will increase provision of skilled workforce for industry competitiveness and innovation. The key major outputs of the envisaged for the RBL program are: (i) Training for advanced technical skills in priority and emerging sectors improved; (ii) Managerial capabilities and green innovation capacity strengthened; (iii) Socially inclusive skilling and upskilling expanded; and (iv) Institutional capacity for skills monitoring and management enhanced.

Under Output 1 the proposed RBL program aims to cultivate higher-level technical skills and enhance institutional capacity to produce skilled workers to adept with emerging technologies including green technologies. To achieve this aim, under current scope, the RBL program will construct/establish smart textile technology living labs (STTLs) in two textile engineering colleges (Bangabandhu Textile Engineering College in Tangail and Chittagong Textile Engineering College in Chattogram), Narsingdi Auto-Tech Training Institute (NATI) at Narshingdi Polytechnic Institute (NPI) and construct one academic building (10 story) in the East West University. In addition, extension of classrooms and some renovation work will be carried out at the Institute of Business Administration (IBA), Dhaka University.

Implementation arrangement

The Finance Division in MOF will be the executing and implementing agency. The Skills Development Coordination and Management Unit (SDCMU)—established under SEIP—will continue to serve as the program management unit to facilitate, coordinate, and monitor all project activities. The key implementing partner agencies include the Technical and Madrasa Education Division in the Ministry of Education; Ministry of Expatriate Welfare and Overseas Employment; Ministry of Industries; and Ministry of Textiles and Jute. An inter-ministerial project steering committee, chaired by the Secretary of Finance Division, will provide overall policy advice and oversight, approval of annual operation plans, review of achievements against targets, and ensuring compliance with fiduciary oversight arrangements.

The Initial Environmental Examination (IEE)

This Initial Environmental Examination (IEE) has been prepared, in accordance with the environmental assessment requirements of the Asian Development Bank (ADB) and the Government of Bangladesh, as well as the guidance provided by the EARF developed for guiding the environmental safeguards principles adopted for SICIP, to help ensure that the infrastructure proposed under the Investment Project part of the Program meets a high standard for environmental and social responsibility. As proposed investments are dispersed across many locations within Bangladesh, it is considered appropriate for each location to be covered by a context-specific IEE. **This IEE report is applicable to "Construction of IBA Annex building at Institute of business Administration (IBA) campus within Dhaka University (DU)"**.

LEGAL AND POLICY FRAMEWORK

Institutional framework

The lead environmental agency in Bangladesh is the Department of Environment (DOE), under the Ministry of Environment, Forests and Climate Change (MOEFCC). DOE is charged with furthering environmental conservation, improvement of environmental standards, and control and mitigation of environmental pollution. This mandate positions DOE as a key regulator of a broad range of developments in the infrastructure, industrial and commercial sectors, including both publicly and privately funded initiatives. DOE is responsible for administering the country's central environmental law, which provides the framework for environmental impact assessment.

Other agencies with important environmental mandates include the Bangladesh Forests Department (also under MOEFCC), the Ministry of Water Resources, the Ministry of Fisheries, and the Ministry of Land. The laws and regulations administered and enforced by these other agencies do not structure the environmental assessment process directly but may often come into play in the consideration of the suitability and permissibility of proposed infrastructure developments by DOE.

Occupational health and safety are key considerations of the environmental assessment of proposed infrastructure. The Ministry of Labour and Employment (MoLE), particularly its Department of Labour and Department of Factory and Establishment Inspection, is of direct relevance to the environmental assessment process, as it administers and enforces the country's legislation, rules and standards governing industrial workplaces, including construction sites and most industrial facilities where physical labour is undertaken.

National policies, laws and rules applicable to the project

a. National Environmental policy 1992 (revised in 2018)
b. National Environmental Management Action Plan (NEMAP), 1995
c. National Bio-safety Strategy & Action Plan 1995
d. A Roadmap for Clean Fuels and Vehicles in Bangladesh, 2011
e. National Action Programme on Desertification, Land Degradation and Drought (DLDD) 2016-2024
f. Ecologically Critical Area Management Rules, 2016.
g. Medical Waste (Management and Processing) Rules, 2008
h. Bangladesh Biosafety Rules, 2012
i. Bangladesh Biological Diversity Act 2017
j. Natural Water Reservoir Conservation Act, 2000
k. National Forestry Policy 2016
l. National Conservation Strategy 1998 and Draft Update 2013
m. National 3R (Reduce, Reuse & Recycle) Strategy 2010
n. Bangladesh Climate Change Strategy & Action Plan (BCCSAP) 2009
o. Bangladesh Delta Plan 2100
p. National Disaster Management Plan 2010.
q. Nationally Determined Contributions (NDCs)
r. Five Year Plan
s. Sustainable Development Goals (SDGs)
t. National Adaptation Program (NAP) 2022
u. Other Sectoral Policies/Strategies like Industry, Agriculture, Energy, Water, Health, etc.
v. National Bio-safety Framework and Guidelines
w. Guidelines on Environmental Management, Waste Treatment and Workers' Occupational Health and Safety for Ship Breaking Yard in Bangladesh
x. Establishing National Landuse and Land Degradation Profile 2018 (proposed)

Anticipated DoE assessment category. The infrastructure development proposed for the additional building at IBA within DU campus under the project will appropriately be considered to fall into the 'Orange' assessment category. The investments do not include any components that would trigger assignment to the 'Red' category, but do encompass components (multi-storied buildings, diagnostic laboratory) included in the 'Orange' list in Schedule 1 of the Environment Conservation Rules 2023. This IEE report will be reviewed by DoE, and the anticipated categorization will be confirmed at that time.

Updated ADB categorization. Based on the findings presented in this IEE, it is confirmed that some of the infrastructure components proposed for IBA additional building will have at least some negative impacts requiring mitigation, but also unlikely that any will generate impacts of a scale, complexity or severity that would warrant detailed environmental research or development of highly novel mitigation strategies. Accordingly, the **Category B** classification, assigned to the project at the early concept stage based on ADB screening, is considered valid for this investment location. This could change if the design, scale, nature, or location of any proposed components undergoes significant modification before or after project approval.

PROJECT DESCRIPTION

Project Location

The proposed additional IBA academic building shall be located at the IBA campus, just behind the current main building. The IBA building is a part of the Dhaka University campus located by the side Kazi Nazrul Sarani (road) in Dhaka City Corporation south (Figure III-1). IBA was founded in 1966 through collaboration with Indiana University, Bloomington, USA, under the Ford Foundation Financial Assistance Program. IBA has its own premises within the campus of the University of Dhaka. The main building spans 65,000 square feet (6,000 m²) across four stories.

Proposed Infrastructures

The IBA Annexure Building at the University of Dhaka represents a comprehensive 10-story academic facility with a total built area of 23,332 square feet. The building demonstrates efficient space utilization with well-planned functional zones distributed across multiple floors (Figure III 2). The proposed site is a built-up area within the IBA campus, with highly urbanized surroundings.

Academic Space Allocation. The building prioritizes educational functions with 15.9% dedicated to classrooms (3,705 sq ft) accommodating 297 students across various learning environments. Laboratory facilities comprise 10.1% (2,351 sq ft) of the total area, including specialized IT, behavioral, and finance labs (Figure III-5). The building features a large 5,178 sq ft examination hall and a 4,607 sq ft auditorium for major academic events.

Support and Administrative Areas. Circulation spaces, including lobbies, account for significant areas with proper connectivity between floors. Administrative functions are distributed across coordinator offices, archives, and faculty rooms, ensuring efficient academic management. The building includes accommodation facilities with guest rooms and dining areas to support extended academic activities.

Building Flood Resilience Features. The IBA Annexure Building incorporates several flood management strategies: (i) Elevated design with proper drainage systems; (ii) Water management features designed for Dhaka's monsoon climate; (iii) Strategic building orientation to handle water flow; and (iv) Green infrastructure integration for stormwater management. The design addresses Dhaka's requirement for drainage systems capable of handling 30 mm of rain per hour, as current infrastructure fails with 20 mm precipitation.

BASELINE ENVIRONMENT

Location setting

Siting. The proposed additional building is located within the Dhaka University campus, IBA territory. The IBA campus is located in the north-eastern part of Dhaka University and located by the road of Kazi Nazrul sarani. Shahbagh road is located to the north of the campus while Nilkhet road is located to the south of the campus. The IBA campus is adjacent to the DU 'Kala bhaban'.
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Topographic relief. Topography of Dhaka university region of Dhaka is flat in nature, as the surface area ranges between 12 and 14 metres (calculated from topographic map[1]). In general, the surface elevation of the area Dhaka are ranges between 1 and 14m and most of the built-up areas located at elevations of 6-8m. The land area above 8 meters msl covers about 20 square kilometers. The land ranging from 6-8 meters while 170 square kilometers of Greater Dhaka is below 6 meters (FAP 1991[2]).

Seismicity. Dhaka lies within 50 to 500 km distances from the seismogenic faults and sits on the Burma Arc detachment fault. Dhaka city falls in seismic zone II of the seismic zoning map of Bangladesh.

Rivers and channels. 85. Dhaka city is surrounded by four major river systems. The south of Dhaka city is surrounded by the Buriganga River. The western part of Dhaka is bounded by the Truag River which is connected by a small Tongi Khal on the north. The eastern part of Dhaka is bounded by the Balu River which is also hydrologically connected with Tongi Khal.

Drainage system and waterlogging. The drainage condition in the Dhaka University area is severely inadequate and contributes significantly to localized waterlogging and environmental degradation. The lack of a functional drainage network has resulted in contamination of surface water, soil, and ambient air, particularly during the monsoon season.

Household-level data indicate that approximately 82.5% of residences lack any formal drainage system. Only 2.6% of households are served by pucca (lined) drains in front of their dwellings, while 14.9% rely on kutcha (earthen) drains, which are highly susceptible to blockage, erosion,

[1] Web: https://en-gb.topographic-map.com/maps/lpj4/Dhaka/, date accessed: 11 June 2021
[2] FAP. (1991). Master Plan Study for Greater Dhaka Protection Project. In Flood Action Plan. Dhaka: Japan International Cooperation Agency

and overflow. Spatial disparities are evident across adjoining neighborhoods. Dakshinkhan, although marginally better served, has only 1.1% pucca drainage coverage and the highest proportion of kutcha drains (7.4%), followed by Joarsahara (3.9%). In contrast, Uttarkhan and Mausair exhibit no pucca drainage facilities, with Mausair entirely lacking any form of drainage infrastructure. Overall, the predominance of informal or absent drainage systems exacerbates seasonal flooding, stagnation of wastewater, and public health risks, underscoring the urgent need for integrated urban drainage improvements within the project influence area.

Flooding. Over the last 25 years or so, Dhaka city and its adjoining areas are gaining the inertia of flood hazards and increasing loss of human resource damage (e.g., Gain at al., 2015[3]; Dewan et al., 2007[4]). In recent past, Dhaka city has seen severe river floods in 1950, 1955, 1970, 1974, 1980, (Huq and Alam, 2003[5]), 1987, 1988, 1998 and 2004 (Gain et al., 2015). The most memorable and devastating flood was in 1998 causing damage to approx. 262,000 houses worth BDT 2.3 billion (Islam 1998), about 1000km road surface (Siddique and Chowdhury 1998[6]), 223km of box culverts and about 510km of tank sewer and sewerage line (Siddique and Chowdhury 1998) and damage to water supply and sanitation worth USD 10 million (Faisal 1998 as reported in Faisal, Kabir and Nishat 2003[7]).

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION

Approach and Methodology

The IEE study has been conducted following the ADB SPS (2009), World Bank's Environmental and Social Framework (ESF) 2018, EIA Guidelines for Industries, prepared by the DoE in 2021 in accordance with the requirement of the Environment Conservation Rules (ECR 2023). The IEE process adopted in this study involves identification of the key impacts on natural and social environment and evaluation of the significant impacts along with recommendation of initiative measures as well as listing of unresolved environmental issues. The IEE includes collection of baseline information, setting of boundaries, impact assessment, suggestion of mitigation measures and alternative sites providing an environmental management plan.

Findings of Impact Assessment: Pre-construction phase

Climate change, drainage and waterlogging

[3] Gain, A. K., Mojtahed, V., Biscaro, C., Balbi, S., Giupponi, C. (2015): An integrated approach of flood risk assessment in the eastern part of Dhaka City. - Natural Hazards, 79, 3, pp. 1499—1530.

[4] Dewan, AM., Islam, MM., Kumamoto, T. and Nishigaki, M. (2007). Evaluating Flood Hazard for Land-Use Planning in Greater Dhaka of Bangladesh Using Remote Sensing and GIS Techniques. Water Resource Management (2007) 21:1601–1612, DOI: 10.1007/s11269-006-9116-1.

[5] Huq, S. and Alam, M. (2003) Flood Management and Vulnerability of Dhaka City, In: Chapter 9 - Building Safer Cities: The Future of Disaster Risk, Disaster Risk Management Series. Kreimer, A., Arnold, M. and Carlin, A. (eds.) The World Bank, Disaster Management Facility, 2003 Washington, D.C.

[6] Siddique, Q. I. and Chowdhury, M. H.: 1998, Flood-98: Losses and Damages, National Seminar on Flood '98 and Management of Floods in Future (December 8, 1998), Jointly organized by National Committee for Relief and Rehabilitation and Dhaka University, Dhaka.

[7] Faisal IM, Kabir MR, Nishat A (2003) The Disastrous Flood of 1998 and Long-Term Mitigation Strategies for Dhaka City, Natural Hazards 28: 85–99, 2003.

Impacts. In many infrastructure development scenarios, the siting of quarries and borrow pits is a key determinant of GHG emissions from construction. In this case, bulk materials are likely to be purchased on the open market, so siting will not be an important consideration in this regard. The targeted construction site floods rarely after heavy rains, only when the catchment area overflows, since drainage systems are already installed. Yet, considering the climate change projections in Bangladesh predicting more and more intense rainfall over shorter period of time demands the drainage system to be enabled heavy overflow in shorter time. The projected intensifying rainfall over Bangladesh under climate change scenarios, specially under scenario 8.5 (Figure VI-4)[8], drainage system will play a crucial role in future development.

Mitigation: The drainage in the proposed site is well developed. The proposed additional building at IBA campus can use the existing drainage system. However, given the possibilities of cyclone induced rainfalls, the existing drainage system can be modified and further improved. During the design of the drains, it needs to be considered that recent climate change projections suggest higher amount of rainfall in a small window of time in the future. The depth and length of the drains need to be designed accordingly. Adequate smaller drains connecting with the main drains are necessary to manage excess campus water runoff.

Site enhancement

Impacts. Development of the IBA additional building will unavoidably generate greenhouse gas emissions. Although it is not possible at this point in the design process to credibly calculate an impact in tons of CO_2 equivalent, it is nevertheless useful to consider design elements that can make the facility's contribution to climate change greater or smaller. Certain materials have much higher embodied emissions than others; concrete is a particularly carbon-intensive material. Materials that are not available locally, particularly very heavy materials, also drive up the emissions associated with building. Installed equipment that is not modern and efficient represents a missed opportunity to lower the carbon footprint of facilities, as does failure to integrate design measures that allow for natural cooling, natural light, and reduced water pumping needs.

Enhancement. Integration of GHG-mitigating design elements in the new IBA additional building facilities is an opportunity to enhance the facilities' contribution to climate change mitigation, relative to existing standards of construction for public infrastructure in Bangladesh. Key strategies for reducing emissions, and that should be considered for incorporation in the IBA additional building infrastructure are outlined in Table VI-2. A number of the general design innovations recommended can be considered for at least some of the planned infrastructure and should be reflected in the preliminary designs.

Findings of Impact Assessment: Construction phase

[8] Choi, YW., Campbell, D.J., Aldridge, J.C. et al. Near-term regional climate change over Bangladesh. Clim Dyn 57, 3055–3073 (2021). https://doi.org/10.1007/s00382-021-05856-z

Water quality

Impacts. Excavation and earthworks during the 6–8-month foundation and basement construction phase pose the highest risk through soil erosion and sedimentation, potentially increasing turbidity levels from the baseline 5-15 NTU to over 100 NTU during active excavation periods. This sediment loading directly threatens the campus drainage system and could compromise the existing water infrastructure serving the main IBA building and surrounding academic facilities. Concrete construction activities extending over 12-15 months introduce additional water quality risks through cement wash and alkaline runoff, with potential pH increases above 9.0 that could affect both surface water and the campus groundwater system currently serving the university community.

Mitigation. Drainage system protection through temporary bypass systems and protective barriers around existing infrastructure ensures 100% protection of existing drainage functionality serving the main IBA building and campus facilities during the 2–3-month integration period when new and existing systems are connected. Groundwater monitoring through strategically placed monitoring wells provides continuous surveillance with less than 24-hour response capabilities to detect and address any subsurface contamination incidents. The monitoring network must establish baseline conditions 3 months before construction begins and continue post-completion monitoring to ensure long-term water quality protection for the university community.

Air quality

Impacts: The construction of the IBA Annexure Building at the University of Dhaka is likely to affect local air quality primarily through dust (PM_{10}) and fine particulate emissions ($PM_{2.5}$) from excavation, material handling, on-site traffic, and concrete works, set against a city background where ambient PM levels are already elevated and seasonally worse in winter. Without strict controls, construction activities can significantly increase particulate loads beyond already high urban baselines, exacerbated by Dhaka's known dust and construction contributions to PM pollution, and drawing increased regulatory scrutiny under the emerging national air quality plan and penalties for construction-related pollution. These risks are highest during dry, windy periods and phases involving earthworks, demolition, transport of aggregates, and concrete batching/washout, and can be mitigated by established dust suppression, enclosure, logistics, and monitoring practices tailored to a university campus context that requires low-noise, low-dust operations during teaching hours.

Mitigation: Dust is easily minimized by implementation of a regular routine of light spraying with water. All dust-generating surfaces, including those on the construction site and the haul road for at least 200 m from the site, should be treated as frequently as is needed to avoid dust reaching nuisance levels. Structures undergoing demolition should also be misted throughout the process. All stockpiles of sand and soil should be kept tightly covered with tarpaulins whenever they are not in active use. All haul trucks should be equipped with tightly fitted tarpaulins to prevent releases of dust from dry materials during transport. Ambient air quality at the perimeters of the two construction sites should meet the standard indicated in Air Pollution (control) Rules 2022.

Traffic Congestion

Impacts. The site is characterized by industries and high traffic volume. The proposed site adjunct to internal campus roads. Given the main road's traffic volume, it is expected that during peak construction time when heavy vehicles and machineries will be transported at full scale, the extra traffic movement will disrupt the normal traffic at a moderate significance. The traffic plan needs to be devised before construction goes onboard.

Mitigation. A traffic management plan (TMP) must be devised prior to construction and approved by the environmental specialist from SDCMU and approved from local zilla parishad/police station. A sample TMP has been attached with this IEE as Appendix 4.

Noise and vibration

Impacts. Construction of the IBA Annex will elevate campus noise and ground-borne vibration due to piling, excavation, concrete works, material handling, and increased truck movements, affecting classrooms, offices, and libraries that function as "silent area" receptors under national rules for educational premises and their 100 m buffer. Typical sources include impact tools (hammers, breakers), generators, compressors, and reversing alarms, which can raise ambient levels above the recommended daytime thresholds for educational/institutional receptors of around 55 dB LAeq and significantly above at night, risking annoyance, speech interference, and concentration loss during lectures and examinations if not controlled.

Mitigation. To minimize noise and vibration impacts for residents living within earshot of the vicinity of construction site, construction activity should be strictly limited to daylight hours. To avoid adding to the traffic noise for roadside residents, all haul trucks must be kept in good repair, and fitted with functional mufflers. Proper maintenance of machinery and trucks shall be done not to cause extra vibration. Emissions of noise from the project construction sites should not be of a level sufficient to cause an exceedance of maximum ambient noise levels as specified in the Noise Pollution Control Rules 2006. Emissions from individual pieces of machinery and vehicles used in construction should not be allowed to exceed the maximum acceptable levels indicated in Noise Pollution Control Rules 2006.

Occupational health and safety

Impacts: Construction activity and construction sites carry inherent risks for workers. These risks include falls, contact with moving machinery, flying and falling objects, dust, burns, cuts, exposure to intense light from arc welding, electric shock and electrocution, and crushing from collapsing earth walls, amongst other things. Where construction is conducted in public rights-of-way, there are also dangers associated with vehicles moving past the work site.

Mitigation. Risks to worker safety on the job site can be successfully minimized though proper worker training, and by strict use of task-appropriate personal protective equipment (PPE). All

workers and site supervisors should be provided workplace safety training prior to the start of construction, and at regular intervals thereafter. Training should be repeated whenever new crews are brought on to the site, and whenever monitoring by the primary Contractor or construction supervision consultant reveals declining standards of practice on the site. The primary Contractor should ensure that all workers are provided with adequate PPE suited to any task they may be given, and also strictly enforce its use at all times.

Construction waste

Impacts. Waste generated during construction will consist mainly of packaging, from both construction materials and food products consumed by workers. The volume of waste produced is likely to be relatively small but can easily get strewn and blown across the landscape and end up in local water bodies, if not appropriately managed.

Mitigation. Suitable receptacles should be positioned at strategic locations around the work sites to facilitate containment and collection of solid waste. Construction waste should be sorted to segregate recyclables, and regular pickup of these by a local recycling business should be arranged. Non-recyclable waste should be transported to the nearest legal landfill site, and never burned, buried or dumped on the site. Waste oil and other noxious fluids and associated used containers should be recycled through a reputable business providing this service. The primary Contractor should be required to specify all waste management arrangements - including the identity of recycling enterprises and legal landfill operators able to accept expected wastes - in a site-specific Waste Management Plan embedded within the CEMP. Appropriate contents of a Waste Management Plan are specified in the sample CEMP outline provided in Appendix 9.

Cumulative Impact Assessment

Cumulative Environmental Impact Assessment (CEIA) for the IBA Annex considers combined and interactive effects from the project and concurrent campus-wide developments under Dhaka University's multi-year infrastructure overhaul, along with seasonal urban stressors (traffic, noise, drainage, waste) in central Dhaka; together these can amplify pressures on mobility, air/noise environment, drainage, utilities, waste systems, green space integrity, and campus user experience beyond the IBA site's standalone impacts. DU has embarked on a large masterplan/overhaul program approved in 2025 (Tk 2,840 crore; "Further Development of Dhaka University"), which includes new academic buildings, major hall reconstructions, library expansion, roads and drainage upgrades, and multiple demolish-and-rebuild actions across the central campus footprint; these works can overlap temporally with IBA Annex construction and early operation, raising cumulative risks if staging and access are not coordinated. Specific concurrent elements reported include expansion of the central library with two new blocks (12- and 6-storey) via partial demolition, construction of several new halls and academic buildings, administrative facility development, and near-term RCC road reconstructions and DSCC drainage upgrades around key corridors; this co-activity implies higher background construction traffic, material staging, and intermittent road closures affecting IBA approaches and sensitive periods (classes, exams). The DU Office of Planning and Development catalogues a long-running pipeline of building extensions, hall works, and service modernization (water/sewer lines, press modernization), indicating a system already under rolling works that may intersect with IBA Annex

phases; legacy and ongoing activities collectively contribute to a “construction present” condition that elevates baseline noise, dust, waste generation, and utility disruption risks. Considering DU’s strategic plan and green initiatives, the CEIA also captured beneficial cumulative effects from integrated drainage upgrades, walkability, and green space enhancement if sequencing is done well—yet it should flag that misaligned phasing could negate these benefits through prolonged disturbance and duplicated disruptions near IBA precincts.

PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

Consultation with officials of the Finance Department, MoF

Consultations with the Finance Department, Ministry of Finance took place in November 2022 at SDCMU established under SEIP. The Project Director (PD) of SEIP who is in charge of SICIP, officials from Finance Department relevant to the project and ADB project team attended the meeting and discussed various aspects of the proposed IBA Annex building and possible safeguards system. Discussions on possible ‘green building’ components and locations of establishment of the IBA Annex building were held.

Consultation with the IBA teachers. the time of field visit to IBA the technical assistance team sat with the teachers and talked to students informally. Discussion took place in various places on the IBA campus. The discussions took place on various educational issues, as well as campus environment issues. This IEE extracted the construction/repair/improvement related activities and environmental concerns from all the discussions. The summary of the discussions is presented in the following Table.

Table: Summary of the point of discussions with IBA teachers

Environment Related Discussions and Questions	Summary Points, Discussions and Decisions
Green Building Integration and Biophilic Design	**Decision**: Implement vegetation integration as shown in the IBA building design. **Discussion**: Continue green patch from existing building roof to new building facade and void areas. **Action**: Establish rooftop gardens and vertical green systems to reduce urban heat island effects.
Natural Ventilation and Indoor Air Quality	**Decision**: Adopt cross-ventilation design principles for all floors. **Discussion**: Utilize prevailing southeast winds in summer for natural cooling. **Action**: Design tilted west walls to reduce heat gain and implement louvre systems for optimal thermal comfort.
Energy Efficiency and Solar Heat Management	**Decision**: Implement passive solar design strategies. **Discussion**: Address east and west sun glare through building orientation and facade design. **Action**: Install appropriate shading devices and optimize building orientation to minimize cooling loads.
Sustainable Material Selection and Sourcing	**Decision**: Prioritize locally sourced and recycled materials. **Discussion**: High costs for green products remain a significant barrier. **Action**: Develop material procurement guidelines emphasizing environmental impact reduction.
Construction Phase	**Decision**: Establish comprehensive dust and noise control measures. **Discussion**: Water sprinkling methods to be implemented during construction. **Action**: Provide adequate PPE and implement proper waste management systems.

Environment Related Discussions and Questions	Summary Points, Discussions and Decisions
Environmental Management	
Water Management and Conservation	**Decision**: Install water-efficient systems and rainwater harvesting. **Discussion**: Implement soak wells and safety tanks to prevent groundwater contamination. **Action**: Test drinking water quality regularly and establish water recycling systems.
Biodiversity Protection and Landscape Integration	**Decision**: Preserve existing ecosystems and enhance biodiversity. **Discussion**: Protect native fruit trees, saplings, and medicinal plants on site. **Action**: Plant three saplings for each tree removed and establish native plant communities.
Waste Management and Circular Economy	**Decision**: Implement comprehensive waste reduction strategies. **Discussion**: Promote organic composting and proper solid waste management. **Action**: Establish waste segregation systems and encourage vermi-composting practices.
Community Health and Safety	**Decision**: Ensure zero harm to community health during construction. **Discussion**: No child labor, sexual harassment, or safety incidents reported. **Action**: Maintain first-aid facilities, provide safety equipment, and establish emergency protocols.
Stakeholder Engagement and Grievance Mechanism	**Decision**: Establish transparent communication channels with all stakeholders. **Discussion**: Limited awareness of grievance redress mechanisms in some areas. **Action**: Strengthen community consultation processes and improve GRM committee effectiveness.
Climate Resilience and Adaptation	**Decision**: Design for current and future climate conditions. **Discussion**: Address flood resilience and extreme weather events in building design. **Action**: Incorporate climate-adaptive features and emergency preparedness measures.
Environmental Monitoring and Compliance	**Decision**: Conduct regular environmental audits and monitoring. **Discussion**: Third-party environmental audits show compliance with air quality and noise standards. **Action**: Establish continuous monitoring systems for air, water, and soil quality.
Green Certification and Performance Standards	**Decision**: Pursue recognized green building certifications. **Discussion**: Additional costs for green certification present implementation challenges. **Action**: Develop phased approach to achieve certification requirements.
Technology Integration for Sustainability	**Decision**: Incorporate smart building technologies where feasible. **Discussion**: Advanced building automation can improve energy efficiency. **Action**: Install energy monitoring systems and smart controls for optimal performance.
Cultural Heritage and Site Context	**Decision**: Respect and preserve cultural heritage elements. **Discussion**: No cultural heritage sites affected by project activities. **Action**: Conduct heritage impact assessments and integrate contextual design elements.

GRIEVANCE REDRESS MECHANISM

A well-defined grievance redress and resolution mechanism will be established to resolve grievances and complaints in a timely and satisfactory manner. All affected persons will be made fully aware of their rights, and the detailed grievance redress procedures will be publicized through an effective public information campaign. The grievance redress process includes three levels:

First level of GRM: The first level and most accessible and immediate contact for the fastest resolve of grievances are the Contractors, with assistance from Design Supervision Consultants (DSC) on site. Prior to construction of any works, the PIU will ensure local community meetings are held to notify residents and businesses of any temporary disturbances, and to inform them of the Project and the GRM. If any complaints arise, the Contractors, with assistance from DSC can immediately resolve the complaint on site. The Contractor's and DSC's office phone number will be posted in public areas within the subproject areas and construction sites. Any person with a

grievance related to the project work can contact the project to file a complaint. The Contractor may seek the assistance of the DSC safeguards specialists (the environmental specialist or social safeguards specialist) to resolve the issue. The DSC safeguards (environment and resettlement) focal person will immediately address and resolve the issue with the Contractor within 1-2 days, if the complaint remains unresolved at the field level. The PIU safeguards focal person will fully document the following information: (i) name of the person; (ii) date complaint was received; (iii) nature of complaint; (iv) location, and (v) how the complaint was resolved.

Second level of GRM: Should the grievance remain unresolved; the Contractor with assistance from DSC will forward the complaint to the PIU safeguards focal person. The person filing the grievance will be notified by DSC safeguards focal person that the grievance was forwarded to the PIU safeguards focal person. The PIU will address the grievance. Grievances will be resolved through continuous interactions with affected persons, and the PIU will answer queries and resolve grievances regarding various issues including environmental or social impacts. Corrective measures will be undertaken at the field level by the PIU safeguards focal person within 7 days. He/she will fully document the following information: (i) name of the person; (ii) date the complaint was received; (iii) nature of complaint; (iv) location and (v) how the complaint was resolved.

Third level of GRM: Should the grievance remain unresolved, the PIU's project director will activate the third level of the GRM by referring the issue (with written documentation) to a Grievance Redress Committee (GRC), which will, based on review of the grievances, address them in consultation with the PIU, Contractor, DSC, and affected persons. The GRC will consist of TMED/IA representative as chairperson, and other relevant stakeholders. A meeting will be called with the GRC, if necessary, where the affected person can present his/her concern and issues. The process will promote conflict resolution through mediation. The GRC will meet as necessary when there are grievances to be addressed. The GRC will suggest corrective measures at the field level and assign clear responsibilities for implementing its decision within 15 days. The functions of the GRC are as follows: (i) to provide support to affected persons on problems arising from environmental or social disruption, asset acquisition (where required), and eligibility for entitlements, compensation, and assistance; (ii) to record grievances of affected persons, categorize and prioritize them, and provide solutions within 15 days; and (iii) to report to the aggrieved parties' developments regarding their grievances and decisions of the GRC. The TMED/IA safeguards focal person will be responsible for processing and placing all papers before the GRC, recording decisions, issuing minutes of the meetings, and taking follow-up action to see that formal orders are issued, and the decisions carried out.

Access to Country's legal system. An aggrieved person shall have access to the country's legal system at any stage, and accessing the country's legal system can run parallel to accessing the GRM and is not dependent on the negative outcome of the GRM

Grievance Redress Mechanism for Workers

An additional mechanism shall be set up by the SOU to accept and address complaints from workers employed in the construction works, concerning working conditions, living conditions in construction camps, safety and health issues, labor rights violations, mistreatment, or any other

matter. All laborers, skilled workers, and site engineers employed on site by the primary Contractor or by any of its sub-Contractors shall have access to the mechanism. All workers will receive an orientation to the workers' GRM during pre-construction induction training. Workers will be able to lodge grievances with on-site personnel of the CSC, who will record the complainant's name, position, employer, and contact information, as well as a description of the complaint and the time, date and place at which the complaint was reported. The CSC will inform the SOU, which will record the grievance in a grievance register. The CSC will convene a meeting of the complainant or complainants, the sub-Contractor involved, the Primary Contractor, and any labor syndicate to which the complainant(s) may belong, in an effort to decide on an appropriate resolution of the complaint.

ENVIRONMENTAL MANAGEMENT PLAN

The EMP for the project defines mitigation and monitoring measures and identifies the institutions, responsibilities and mechanisms that will ensure their implementation. Such institutions and mechanisms will seek to ensure continuous improvement of environmental protection activities during the pre-construction, construction, and operation phases of the project, in order to manage adverse impacts.

Responsibilities in EMP Implementation

Each of the entities identified above has multiple responsibilities, the fulfilment of which is required for full and effective implementation of the EMP. These responsibilities are detailed in Table below.

Table: EMP implementation responsibilities

Entity	Responsibilities in EMP Implementation
Skills Development Coordination and Management Unit (SDCMU)	• Prepare operations and maintenance procedures for facilities under construction, ensuring their compliance with the EMP • Work with the SOU to train facility personnel on EHS aspects of facility operation in advance of commissioning, to ensure effective EMP implementation during the operation period
Project Implementation Unit (PIU) at IBA	• Ensure that EMP implementation is recognized as a critical element of overall project implementation • Enable and adequately staff SOU • Oversee rigorous review of bids and prioritize selection of Contractors with strong environmental compliance track records • Coordinate with SDCMU as needed to ensure smooth implementation of EMP
Safeguards Oversight Unit (SOU) under SDCMU	• Ensure EMP provisions are fully reflected in civil works bid documents • Advise and support PIU on Contractor selection and other procurement decisions • Guide and support ESFP and EHSOs to ensure timely and competent execution of site-level oversight activity • Collect and collate progress reports and environmental monitoring reports for each location to assemble comprehensive quarterly monitoring reports for submission to ADB. • Work with CSCs and primary Contractors to develop and deliver periodic EHS training for sub-Contractors and their workers • Work with CSCs to train facility managers or their EHS personnel in advance of commissioning, to ensure effective EMP implementation during the operation period • Administer the GRM

Entity	Responsibilities in EMP Implementation
	• Support PMUs in obtaining environmental clearances and renewals
Environmental Safeguards Focal Person (ESFP) under SDCMU	• Oversee the safeguards compliance process for all Investment Project sites under the PMU's control, liaising with the PIU-appointed Project Manager and with support from SOU and EHSO • Prepare and submit quarterly progress reports for the sites owned by their home agencies to the PIU and SOU • Chair LGRC when needed to address Level 2 grievances regarding project implementation activities
Environmental coordinator/manager at IBA	• Oversee the safeguards compliance process for the investment site at IBA • Liaison with the ESFP for monthly report and day to day update • Supervise the EHSO
Environment, Health and Safety Officer (EHSO)	• Conduct regular monitoring of conditions on site, including compliance with prescribed mitigation strategies, and submit EHS monitoring reports on a monthly basis to the Environmental Coordinator at PIU • Identify worker training needs and support SOU and CSC in development and delivery of training
Construction Supervision Consultants (CSC)	• Review and approve CEMPs and quarterly environmental monitoring reports submitted by Contractors • Guide and assist PMUs, through ESFPs, in monitoring of CEMP implementation and site conditions, including preparation of quarterly progress reports for submission to SOU • Direct and supervise corrective action by Contractors as needed • Collaborate with SOU on development of safeguards training for sub-Contractors and workers
Contractors	• Prepare and implement CEMP for each site, based on EMP prescriptions and international best practices • Conduct quarterly EHS monitoring on all sites under their control and submit quarterly monitoring reports to CSC for review • Implement corrective actions as directed by CSC and/or ESFP
Department of Environment (DOE)	• Review environmental clearance applications, including IEE and EMP • Review annual environmental monitoring reports submitted by SOU during construction phase • Review applications for environmental clearance renewals
ADB	• Review and approve IEE and EMP • Publicly disclose IEE on ADB website • Review quarterly environmental monitoring reports prepared by PMU and publicly disclose them on ADB website

Environmental Impacts and Prescribed Mitigation and Enhancement Measures

The findings of the environmental impact analysis are presented in Section VI of the IEE report. The potential impacts and corresponding measures that are prescribed in order to mitigate the negative impacts or enhance positive ones are collected in Table IX 3. The measures prescribed apply to the pre-construction, construction and operations phases of the infrastructure development at the IBAsite. All measures listed in Table IX 3 are requirements, based on the infrastructure plan as proposed at the time of preparation, whose fulfillment is assigned. All

measures assigned to Contractors should be reflected in bidding documents, and serve as the basis for the CEMPs, which must be prepared to cover all sites at this investment location.

Environmental Monitoring and Reporting

Environmental monitoring consists of assessing both the degree to which Contractors and facility operators are fulfilling their responsibilities to implement measures specified in the EMP to manage impacts (compliance monitoring), and the degree to which their impact management efforts are successful in preventing harmful environmental conditions from arising (effects monitoring). Compliance monitoring typically makes use of checklists to confirm or disconfirm that prescribed measures are being properly implemented, while effects monitoring involves quantitative and/or qualitative sampling at designated locations. Both types of monitoring need to be conducted on a regular and consistent basis, to ensure comparability of results across monitoring periods. Monitoring should begin before site clearing, so an environmental baseline (i.e., pre-project conditions) can be established for key environmental parameters.

Monitoring parameters for each prescribed mitigation and enhancement measure are identified in Table IX 3. Specific monitoring responsibilities, including the monitoring and reporting timetable for each, are detailed in Table IX 4.

As will be noted from the preceding table and figures, several entities are expected to submit regular monitoring reports as a fundamental contribution to effective implementation of the EMP. These reporting processes are summarized in Table IX 5 for clarity. A sample outline of a semi-annual monitoring report as must be prepared by the SOU for submission to ADB (which can also be adapted for quarterly monitoring reports as must be prepared for DOE) is provided in Appendix 18.

Institutional strengthening and training requirements

A capacity building program for EHS units within SDCMU and IBA should be developed and delivered in the interval between the project's approval and the end of construction on the first round of investments. The capacity development program should aim to establish stable, sustainable EHS units capable of (i) proactively and professionally driving compliance with national and multilateral-mandated environmental clearance and environmental assessment requirements in relation to proposed, under-construction and operational infrastructure investments; (ii) collaborating productively with specialists hired under the auspices of major investment projects; (iii) carrying out long-term EHS monitoring for all agency facilities; and (iv) building a culture of sustainability and safety across their home agencies through awareness-raising and educational campaigns.

Capacity investments should include support for hiring and resourcing adequate staff commensurate with the needs of the agency, and staff training. The capacity building program should include the following elements: (i) needs assessment; (ii) capacity-building plan including recommendations for staffing and resources; and (iii) training program for each EA's EHS unit.

Design, development and delivery of the capacity building program is appropriately included in the mandate of the CSC engaged to oversee implementation of the project works. The CSC should be supported in this work by the SOU, and the ESPFs of SDCMU and IBA.

EMP Implementation cost

Cost estimates for mitigation measures, environmental monitoring, public consultations, and capacity building are summarized in Table IX 8. Contractors will bear the direct costs of all mitigation measures during construction, which will be included in the tender and contract documents; this includes features built into facility designs in order to prevent environmental impacts from arising. The MoF SDCMU and IBA will bear the costs related to mitigation measures during operation. Costs related to environmental supervision during construction will be borne by the SDCMU (for hiring a licensed laboratory to conduct quarterly monitoring), the PMU (for the activities of the environmental consultants) and by the contractors (for monitoring work carried out by the EHSOs). During the operation phase and monitoring costs will be borne by the SDCMU and IBA (for regular monitoring activity of their site EHSOs). The EMP cost shall be included in the BOQ as a provisional sum (non-competitive) item.

CONCLUSION AND RECOMMENDATION

Minor negative impacts of the project will be felt during the construction phases which may involve minor sand erosion, water and waste pollution. The major significant impacts can come from disrupting local hydrological system and waste pollution. The impacts of noise and increase in traffic are expected to be within the existing level experienced by the local people. The contractor will be under specific orders for providing PPE to the workers engaged in the job. Strict site and labour camp health and safety regulation will be forced as per government and ADB guidelines. The IEE is indicative of the suggestions that should guide the topographic surveys, soil testing and detail designs. Site specific EMPs will be developed after detailed design is developed and this IEE should be updated as well.

The monitoring plan, if properly implemented during the pre-construction, construction and post-construction and operation phases will ensure taking corrective measures. The proposed project will have no residual adverse impact on the environment or the eco-system if mitigation measures are properly followed. MoF and IBA are required to take clearance from the DoE for implementing the construction works and other ancillary works. The IEE report has been prepared with this end in view.

CONTENTS

APPENDICES

List of Tables

List of Figures

I. INTRODUCTION

A. Background

1. Aligned with the Bangladesh country partnership strategy 2021−2025 and broader Bangladesh Government Program "Human capital enhanced for sustainable economic development and inclusive growth", the proposed Result Based Lending (RBL) Program 'Skills for Industry Competitiveness and Innovation Program (SICIP)' will increase provision of skilled workforce for industry competitiveness and innovation. The key major outputs of the envisaged for the RBL program are: (i) Training for advanced technical skills in priority and emerging sectors improved; (ii) Managerial capabilities and green innovation capacity strengthened; (iii) Socially inclusive skilling and upskilling expanded; and (iv) Institutional capacity for skills monitoring and management enhanced. The Result Based Lending (RBL) contributes to ADB's Strategy 2030 operational priorities: (i) addressing remaining poverty and reducing inequalities; (ii) accelerating progress in gender equality; (iii) tackling climate change, and building climate and disaster resilience, and enhancing environmental sustainability; and (iv) strengthening governance and institutional capacity. The program is included in the Bangladesh indicative country pipeline and monitoring 2023−2025.

2. The country's priority industries for growth continue to center on ready-made garments (RMG), textiles, light engineering, leather goods and footwear, information technology (IT), construction, etc. as identified under the ongoing Skills for Employment Investment Program (SEIP). With rapid technological advances such as IR 4.0, skills requirements in these priority industries are evolving quickly. While major industries like RMG and textile sectors account for more than 80% of the country's exports, these industries still occupy the low-end of the global value chain. To move up the global value chain, skilled workforce equipped with technological capabilities is becoming crucial to produce value-added goods and services. The RBL program will support the Ministry of Finance (MOF) strategic framework by financing the implementation of selective interventions, in coordination with other development partners.

B. The project

1. Project aim

3. The impact of the program is aligned with increased technology-ready workforce for diversified and innovation-driven economy. The outcome will be equitable access to skills training in priority and emerging industries expanded across skill levels. The outcome will be measured by (i) the number of men and women trained from basic to advanced skill levels in priority industries; (ii) share of trainees placed in jobs within 6 months of training completion; and (iii) number of skills courses implemented specifically for women across skill levels. The program is expected to benefit at least 250,000 men and women over 5-year implementation.

2. Outputs and outcomes of SICIP

4. The indicative outputs of the proposed RBL are:

5. **Output 1: Training for advanced technical skills improved.** This output will cultivate higher-level technical skills for existing priority and newly emerging sectors, through partnerships between industries and education/training institutes. The skill requirements will be identified by leading industries, particularly for high-demand technology-related skills. Industries will be

involved in developing the curriculum and instructors as well. The Finance Division is setting up an Industry Advisory Board consisting of leading industries to advise on the program. Some polytechnics—including women polytechnics—in industrial areas will be converted into specialized polytechnics to offer customized skills courses for emerging industries (e.g., automobiles, electronics)[1]. This output will also enhance the institutional capacity to produce skilled workers adept at emerging technologies including green technologies, by establishing smart textile technology living labs (NATIs) in two textile engineering colleges[2], setting up high-demand technology-based courses in garments universities, and delivering higher-level technical courses in a renovated light engineering institute. All these technical courses will have international partnerships for transfer of knowledge and training of instructors[3].

6. **Output 2: Managerial capabilities and green innovation capacity strengthened.** Building on SEIP's introduction of Executive Development Centers (EDCs) that impart customized mid-level managerial training through university-industry partnerships, the government will further institutionalize the EDCs in partnering universities (e.g., Dhaka University, BRAC University, East West University, and Bangladesh University of Textiles)[4]. EDC courses will be updated to align with industry's technology trends and global environmental standards, including green technologies and business practices. This output will also support selected universities to promote applied R&D for industry solutions, especially small and medium enterprises (SMEs), as well as incubation opportunities. R&D activities to help SMEs develop climate resilient products or services will be prioritized. The government will bring overseas scientists and engineers of Bangladesh origin to contribute to the transfer of knowledge and skills, while connecting local industries and academies to the global network.

7. **Output 3: Socially inclusive skilling and upskilling expanded.** This output will continue to support basic- and mid-level skills training of new entrants or existing workers, following on SEIP's sector-focused skills training models. These programs will be implemented in close coordination with the National Skills Development Authority (NSDA) and the National Human Resource Development Fund (NHRDF). It will also create specially targeted skills programs for socially disadvantaged groups (e.g., people with disabilities, minorities, other marginalized groups), women garment sector workers who are at high risk of job loss due to automation, and those who may be negatively affected by transition to low-carbon economy. For women, upskilling and multi-skilling for future garment work or alternative livelihoods, community-based support for empowerment, and green entrepreneurship skills will be provided in partnership with the H&M Foundation and the Asia Foundation. The government will also expand skills courses with international certification, which enable Bangladesh migrant workers to gain better employment opportunities overseas and increase remittance flows.

8. **Output 4: Institutional capacity for skills monitoring and management enhanced.** This output will support the capacity development of core skill systems such as NSDA and NHRDF for the future sustainability of skills initiatives and partnership modalities. It will also support the functioning of a new Industry Advisory Board for output 1 activities. The output will continue

[1] A polytechnic in Narsingdi, where automobile production plant is being established, will become a specialized center of excellence for automotive technical skills. Another women's polytechnic is being planned for skills in electronics.
[2] Smart textile technology labs (NATIs) provide hands-on learning environments with technology applications, from yarn manufacturing to fabric/garments production, using global standards in testing and production. It aims to strengthen capabilities of textile industry workforce and promote R&D, especially in manmade fabrics
[3] International partnerships include Hanyang University and the Korea Institute of Textiles for NATIs; the Fashion Institute of Technology in New York for the Bangladesh University of Fashion and Technology; and the Korea University of Technology and Education for the Bangladesh Industrial Technical Assistance Center.
[4] The current EDCs focus on the following four industries: garments, textiles, knitwear, leather goods and footwear.

enhancing monitoring mechanisms, such as the trainee management system (TMS) created under SEIP to monitor training and track its outcomes. Analytic studies, such as a tracer study and industry skills trends analysis, will be undertaken to assess the effectiveness of new skills programs and to build effective training partnership models. The output will ensure effective management and governance of skills development systems overall.

9. **ADB's value addition.** ADB has been a trusted partner for nationwide skills programs with an innovative approach in public-private training partnerships. In the proposed RBL, ADB adds value in: (i) expanding training partnerships to advanced-level, technology-oriented skills, including customized training for emerging industries to support economic diversification; (ii) reorienting existing polytechnics and universities with strong industry linkages; (iii) facilitating international partnerships to develop stronger institutional capacity for skills in emerging IR4.0 and green technologies for climate resilient, green growth; (iv) strengthening gender and social inclusion dimensions with dedicated skills programs, including for those at risk of job loss due to low-carbon economy transition; (iv) strengthening the broader government program with innovative results-oriented program designs; and (v) bringing ADB's expertise with international good practices. The RBL program builds on the ongoing SEIP and complements ADB-financed TVET Teachers for the Future Program and other skills projects by the World Bank.

C. Project interventions

10. Under Output 1 the proposed RBL program aims to cultivate higher-level technical skills and enhance institutional capacity to produce skilled workers to adept with emerging technologies including green technologies. To achieve this aim, under current scope, the RBL program will construct/establish smart textile technology living labs (STTLs) in two textile engineering colleges (Bangabandhu Textile Engineering College in Tangail and Chittagong Textile Engineering College in Chattogram[5]), Narsingdi Auto-Tech Training Institute (NATI) at Narshingdi Polytechnic Institute (NPI) and construct one academic building (10 story) in the East West University. In addition, extension of classrooms and some renovation work will be carried out at the Institute of Business Administration (IBA), Dhaka University.

11. Additionally, civil work of Kumudini Nursing dormitory at Tangail, which commenced during the implementation of SEIP, will be taken over by SICIP. There are also a few scopes of civil works under SICIP under consideration but to be finalized. The scopes are following:

(i) Automotive training at Narsingdi Auto-Tech Training Institute (NATI) at Narsingdi Polytechnic Institute, Narsingdi (i.e., a. new three storied building; b. one storied vertical extension of north block; c. vertical & horizontal extension of south block)
(ii) Kumudini academic building at Tangail – site is identified but the scope of work soon to be identified (ground floor building vs. 3 story building)
(iii) At 1-2 universities or polytechnics, training centers may be established; the land yet to be identified.

12. 1-2 small upgrading works may be supported during implementation.

D. Implementation arrangement

13. The Finance Division in MOF will be the executive and implementing agency. The Skills Development Coordination and Management Unit (SDCMU)—established under SEIP—will

[5] Bangladesh Government Gazette notification to change the name of five district is effective from 10. September. 2018. The names were changed to be consistent with their original Bangla spelling. However, despite of the name changes of the 5 districts, the associated college name was not changed.

continue to serve as the program management unit to facilitate, coordinate, and monitor all project activities. The key implementing partner agencies include the Technical and Madrasa Education Division in the Ministry of Education; Ministry of Expatriate Welfare and Overseas Employment; Ministry of Industries; and Ministry of Textiles and Jute (MoTJ). An inter-ministerial project steering committee, chaired by the Secretary of Finance Division, will provide overall policy advice and oversight, approval of annual operation plans, review of achievements against targets, and ensuring compliance with fiduciary oversight arrangements.

Figure I-1 Locations of the proposed structural investments under SICIP.

E. The Initial Environmental Examination (IEE)

14. This Initial Environmental Examination (IEE) has been prepared, in accordance with the environmental assessment requirements of the Asian Development Bank (ADB) and the Government of Bangladesh, as well as the guidance provided by the EARF developed for guiding the environmental safeguards principles adopted for SICIP, to help ensure that the infrastructure proposed under the Investment Project part of the Program meets a high standard for environmental and social responsibility. As proposed investments are dispersed across many locations within Bangladesh, it is considered appropriate for each location to be covered by a context-specific IEE. **This IEE report is applicable to "Construction of IBA Annex building at Institute of business Administration (IBA) campus within Dhaka University (DU)"**.

15. The findings presented in the IEE report are based on desktop studies; discussions with IBA teachers, Detailed engineering and architectural designs, local knowledge of the consultants engaged in this project; visits to IBA and the surrounding area; and consultations with local stakeholders in August 2025.

1. Objective, purpose and limitations of this report

16. This report describes the assessment results of environmental and social impacts caused by the subprojects as described in para. 11-12 which are likely to be categorized as Orange (building construction and repairs/retrofitting) according to the Environmental Conservation Rules (ECR) 2023 adopted by the Bangladesh Government and specifies measures to address such impacts. This IEE is based on the Environmental Assessment and Review Framework (EARF) prepared during the ADB preparatory site visits in 2022/23 that focused on all subprojects. This IEE is developed based on the subproject site plans and information obtained during the field visits conducted by the environmental consultant; and secondary data, which characterize the environment and identify potential impacts. It contains the results of interviews and consultations with stakeholders in August 2025. The IEE includes an environmental management plan (EMP) outlining mitigation measures and monitoring requirements.

17. Detailed design of subprojects is still ongoing, which therefore is not reflected in the IEE. Environmental specifications will be included in procurement documents to support integration of provisions into construction.

2. Scope

18. The scope of the report covers the existing environmental condition in the project site, assessment of potential environmental impacts during design and/or pre-construction, construction, and operation stages; description of the environmental management plan (EMP) and environmental monitoring plan; stakeholders' consultation, grievance redress mechanism, and description of the legal and administrative framework. This IEE does not provide assessment for any other/future developments or activities at the location or anywhere else within the area concern reported in this IEE document. Should any further development be planned as a result of either this Project or other related works, additional planning and assessment following the requirements of the government will be carried out separately.

19. In general, this IEE intends to:

(i) Examine and describe the existing status of the various ecological, physical and human related components surrounding the project area;
(ii) Predict the potential significant impacts of the project on the surrounding environment during the pre-construction, construction, operations and maintenance stages, and recommend appropriate mitigation and abatement measures; and,
(iii) Identify residual impacts of the project and recommend appropriate short-term and long-term management plans.

3. Structure of this IEE report

20. The structure of this report follows the general guidelines of the Environmental Assessment and Review Framework (EARF) developed for SICIP. The structure of this report maintains the following sequence:

Executive Summary

Chapter 1 Introduction provides the background on the project, the project's impacts and expected outcomes, administrative structure of the project, purpose and limitation of this report.

Chapter 2 Legal and Policy Framework presents a review of relevant national laws and policies, international environmental obligations, ADB's environmental requirements, procedure of environmental clearance, environmental categorization.

Chapter 3 Description of the Proposed Infrastructures provides a brief description of the Project, the location, size and need, description of project components.

Chapter 4 Description of the Environment includes details on the baseline data of the environmental conditions in the project area (current features and conditions)

Chapter 5 Analysis of Alternatives presents the alternatives considered during the feasibility study in order to arrive at the best option.

Chapter 6 Anticipated Environmental Impacts and Mitigation Measures identifies the potential environmental, economic and social impacts from pre-construction, construction, and operation phase.

Chapter 7 Public Consultation and Information Disclosure discusses the issues raised during the consultations, proposed actions to address them, and the information needed to be disclosed to the public.

Chapter 8 Grievance Redress Mechanism describes the process of addressing complaints.

Chapter 9 Environmental Monitoring Plan outlines the environmental monitoring program, institutional responsibilities including the cost of implementing the EMP.

Chapter 10 Conclusion and Recommendation

Appendices

II. LEGAL AND POLICY FRAMEWORK

A. Introduction

21. This section of the IEE details the Administrative Framework for the Project, covering national requirements as well as applicable international treaties and conventions. The intent of this section is to lay out the regulatory and non-regulatory performance requirements for all stages of the Project. For the purposes of this report, only those regulatory elements directly relevant to the proposed Project will be discussed. The environmental assessment requirements of both the Government of Bangladesh and ADB are outlined as well.

B. Institutional framework

22. The lead environmental agency in Bangladesh is the Department of Environment (DOE), under the Ministry of Environment, Forests and Climate Change (MOEFCC). DOE is charged with furthering environmental conservation, improvement of environmental standards, and control and mitigation of environmental pollution. This mandate positions DOE as a key regulator of a broad range of developments in the infrastructure, industrial and commercial sectors, including both publicly and privately funded initiatives. DOE is responsible for administering the country's central environmental law, which provides the framework for environmental impact assessment.

23. Other agencies with important environmental mandates include the Bangladesh Forests Department (also under MOEFCC), the Ministry of Water Resources, the Ministry of Fisheries, and the Ministry of Land. The laws and regulations administered and enforced by these other agencies do not structure the environmental assessment process directly but may often come into play in the consideration of the suitability and permissibility of proposed infrastructure developments by DOE.

24. Occupational health and safety are key considerations of the environmental assessment of proposed infrastructure. The Ministry of Labour and Employment (MoLE), particularly its Department of Labour and Department of Factory and Establishment Inspection, is of direct relevance to the environmental assessment process, as it administers and enforces the country's legislation, rules and standards governing industrial workplaces, including construction sites and most industrial facilities where physical labour is undertaken.

C. National policies, laws and rules applicable to the project

1. Central policy instruments

a. National Environmental policy 1992 (revised in 2018)

25. Bangladesh adopted the National Environmental Policy (NEP) in 1992 to chart a path towards the country's sustainable development. The NEP 2018 is a revision of the NEP 1992 in the context of the new reality of climate change. The NEP 2018 also outlines a more up to date understanding of the extent and magnitude of environmental degradation that has become a fact of life in the world in general, and in Bangladesh in particular. The NEP 2018 outlines the problems of population growth, poverty, illiteracy, lack of awareness and healthcare services, limitation of arable land, unplanned development and urbanization, and industrialization as the major impediments to the conservation of the environment. The NEP sets out the basic framework for

environmental action together with a set of broad sectoral guidelines for action. Major elements of the policy are:

(i) maintaining the ecological balance for ensuring sustainable development;
(ii) protection against natural disasters;
(iii) identifying and controlling activities which are polluting and/or destroying the environment;
(iv) ensuring environment-friendly development in all sectors;
(v) promoting sustainable and sound management of natural resources; and
(vi) active collaboration with international initiatives related to the environment.

26. The NEP, amongst other aims, seeks to ensure that transport systems, including roads and inland water transport, do not pollute the environment or degrade resources. The policy states that environmental impact assessment should be conducted before projects are undertaken. The NEP 2018 includes additional elements addressing climate change mitigation and adaptation as key environmental issues facing the country and integrating a comprehensive 3R approach to the massive and growing problem of industrial and household waste that has swelled along with the country's urbanization.

27. Following are the key subject matters covered under the National Environment Policy, 2018:

(i) Ensuring sustainable development through reducing human pressure on nature and natural resources;
(ii) Considering environment protection as integral part of the development programs planned to meet the need of the present and future generation;
(iii) Making natural resources extraction, use, environmental conservation etc. to be based on science;
(iv) Considering environmental impacts and risks in extracting and using natural resources;
(v) Evaluating economic contribution of ecosystem services simultaneously to that of natural resources;
(vi) Giving priority to poor and under privileged group of people in order to ensure their participation, equity, justice, accessibility to the use of natural resources and getting ecosystem services on which, they are dependent;
(vii) Taking initiatives to prevent misuse and ensure optimum of water, land, natural gas and other natural resources in the production process as well as day-to-day purposes;
(viii) Encouraging sustainable use of new and renewable resources;
(ix) Enhancing long term poverty alleviation and food security through conserving biological diversity;
(x) Realizing compensation from persons and institutes those who are liable to environmental pollution through applying polluter pay principle;
(xi) Including environmental conservation and preservation in all national policies and ensuring implementation of the environment policy at both government and non-government level;
(xii) Giving priority to preventive measures over curative measures in environmental conservation;
(xiii) Including adaptation and mitigation program in all development projects in order to address adverse impacts of climate change;
(xiv) Ensure sustainable utilization of ecosystem goods and services;
(xv) Implementation of 3R principle in utilization of resources;
(xvi) Strengthening institutional and legal capacity of institution (Government, local, private and technical) relevant to the enforcing and implementation of rules and regulation relating to environment policy and environment conservation;

(xvii) Ensuring considerations of climate change and challenges of calamities in all kinds of infrastructure projects;
(xviii) Reducing of all SLCP (Short-Lived climate pollutants) which are harmful to health and environment;
(xix) Taking development programs considering sustainable production and consumption as integral part of environmental conservation to meet the need of present and future generation;
(xx) Allocating necessary funds to all areas of environmental conservation, preservation and control;
(xxi) Taking up programs in favor of flourishing environment friendly economy; and
(xxii) Including environmental and ecological conservation particularly to introduce the environment and ecological concept in the environmental academic curriculum and textbooks of schools and colleges.

28. During environmental categorization and environmental impact assessment process in this project, provisions of NEP 2018 have been considered, especially the clauses mentioned in para. 27.

b. National Environmental Management Action Plan (NEMAP), 1995

29. The NEMAP built on the NEP to address specific issues and management requirements during the period 1995-2005 and remains a backbone of efforts to articulate national sustainability strategies. The plan includes a framework within which the recommendations of a National Conservation Strategy (NCS) are to be implemented. The NEMAP was developed with the following objectives:

(i) Identify key environmental issues affecting Bangladesh;
(ii) Identify actions to halt or reduce the rate of environmental degradation;
(iii) Improve management of the natural environment;
(iv) Conserve and protect habitats and biodiversity;
(v) Promote sustainable development; and
(vi) Improve the quality of life.

30. To this end, the NEMAP grouped all the relevant necessary actions under four heads: institutional, sectoral, location-specific and long-term issues. The institutional aspects reflect the need for inter-sectoral cooperation to tackle environmental problems requiring new institutional mechanisms at national and local levels. The sectoral aspects reflect the way the ministries and agencies are organized and make it easier to identify the agency to carry out the recommended actions. The location-specific aspect focuses on particularly acute environmental problems at local levels. And the long-term issues include environmental degradation trends that threaten to emerge as serious threats to the country's environmental quality and well-being if not proactively addressed.

c. Other Environment-Related Plan and Policies

31. In addition to the central environmental policy instruments, a number of other national policy efforts have significant environmental content. Prominent policy documents include the following National Plans, Policies Guidelines that confirm, compliment and support the National Environmental Policy:

(i) National Bio-safety Strategy & Action Plan 1995
(ii) National Biodiversity Strategy & Action Plan of Bangladesh 2016-2021
(iii) A Roadmap for Clean Fuels and Vehicles in Bangladesh, 2011
(iv) National Action Programme on Desertification, Land Degradation and Drought (DLDD) 2016-2024
(v) Ecologically Critical Area Management Rules, 2016.
(vi) Medical Waste (Management and Processing) Rules, 2008
(vii) Hazardous Waste and Ship Breaking Waste Management Rules, 2011
(viii) Bangladesh Biosafety Rules, 2012
(ix) Bangladesh Biological Diversity Act 2017
(x) Natural Water Reservoir Conservation Act, 2000
(xi) National Forestry Policy 2016
(xii) National Conservation Strategy 1998 and Draft Update 2013
(xiii) National 3R (Reduce, Reuse & Recycle) Strategy 2010
(xiv) Bangladesh Climate Change Strategy & Action Plan (BCCSAP) 2009
(xv) Bangladesh Delta Plan 2100
(xvi) National Disaster Management Plan 2010.
(xvii) Nationally Determined Contributions (NDCs)
(xviii) Five Year Plan
(xix) Sustainable Development Goals (SDGs)
(xx) National Adaptation Program (NAP) 2022
(xxi) Other Sectoral Policies/Strategies like Industry, Agriculture, Energy, Water, Health, etc.
(xxii) National Bio-safety Framework and Guidelines
(xxiii) Guidelines on Environmental Management, Waste Treatment and Workers' Occupational Health and Safety for Ship Breaking Yard in Bangladesh
(xxiv) Establishing National Landuse and Land Degradation Profile 2018 (proposed)
(xxv) EIA Guidelines for Industry 2021
(xxvi) Bangladesh Fire Prevention and Extinction Act, 2003
(xxvii) Fire Prevention and Extinction Rules, 2014
(xxviii) National Plan for Disaster Management, 2021-2025
(xxix) National Industrial Policy, 2022
(xxx) Hazardous Waste (E-Waste) Management Rules 2021
(xxxi) Balumohal and Soil Management Act 2010

32. During environmental assessment of this project, Ecologically Critical Area Management Rules, 2016; Natural Water Reservoir Conservation Act, 2000; Bangladesh Climate Change Strategy & Action Plan (BCCSAP) 2009; Bangladesh Delta Plan 2100; National Disaster Management Plan 2010; Nationally Determined Contributions (NDCs); Five Year Plan; Sustainable Development Goals (SDGs) and National Adaptation Program (NAP) 2022 have been considered.

2. Legislations

a. Bangladesh Environment Conservation Act (BECA), 1995 (as amended in 2000, 2002 & 2010)

33. The Bangladesh Environmental Conservation Act (BECA), 1995 is the main legislation for conservation of the environment, improvement of environmental standards, and control and mitigation of environmental pollution. The enabling powers of the BECA are wide ranging. Wide-ranging powers (Section 4) are given to the Director General (DG) to take various actions or

measures to enforce the BECA (Table). The Environment Conservation Act authorizes the DOE to undertake any activity to conserve and enhance the quality of the environment and to control, prevent and mitigate pollution. The DOE is designated as the regulatory body and enforcement agency for all environment-related activities. The Act enables the following critical components of DOE's remit:

(i) declaration of Ecologically Critical Areas;
(ii) administration of the procedure for obtaining Environmental Clearance Certificates for new industrial projects;
(iii) regulation with respect to vehicles emitting smoke harmful to the environment;
(iv) environmental regulations for development activities;
(v) standards for quality of air, water, noise, and soils (including riverbed materials) for different areas and for different purposes;
(vi) acceptable limits for discharging and emitting waste; and
(vii) formulation of environmental guidelines to control and mitigate environmental pollution, conservation, and improvement of the environment.

34. Provision of BECA 1995 has been describes in Table II-1.Amendments to the ECA in 2000, 2002 and 2010 added significant substantive and procedural scope, defining the following new areas of authority:

(i) ascertaining responsibility for compensation in cases of damage to ecosystems;
(ii) increased provision of preventive measures, including fines and imprisonment, and the authority to take cognizance of offences;
(iii) restrictions on polluting automobiles;
(iv) restrictions on the production and sale of environmentally harmful items like polythene bags;
(v) obtaining assistance from law enforcement agencies for environmental actions;
(vi) definition and enforcement of punitive measures;
(vii) authority to try environmental cases;
(viii) prohibition on hill cutting except where established to be in the national interest;
(ix) authority to regulate management of hazardous waste produced by ship breaking yards;
(x) prohibition of filling or alteration of waterways except when judged to be in the national interest; and
(xi) additional powers to compel compliance with emissions standards.

Table II-1 Provisions of the BECA, 1995

Section	Provision Under Section
Section 4	Powers of the DG to enforce various provisions of the Act including setting rules and regulations for environmental conservation and protection.
Section 4A	Powers given to the DG to seek the assistance of other enforcement authority (or authorities) in its enforcement. Done indirectly by way of disconnecting power, gas, or water supply to the user.
Section 7	Allows the DG to seek compensation in cases of damage to the ecosystem or injury to person(s), whether directly or indirectly caused by a person or persons. He may also require that corrective or remedial action be taken to mitigate or ameliorate the situation.
Section 8	Allows any person affected or likely to be affected as a result of pollution or degradation of the environment to apply to the DG for remedy of the damage or apprehended damage.
Section 9	DG can require the person responsible and the person in charge of the place of occurrence of an accidental pollution take measures to control or mitigate the environmental pollution.
Section 12	Requires that an Environmental Clearance Certificate be obtained before an industrial unit or project can be established or undertaken.

Section	Provision Under Section
Section 13	Formulate and publish environmental guidelines relating to the control and mitigation of environmental pollution, conservation and improvement of the environment.
Section 14	Allows appeal against grievances to the Appellate Authority. [Note: The Appellate Authority was constituted by MoEFCC by a notification dated 03/11/1997.
Section 15	Allows the imposition of penalties for various offences.
Section 20	Power to make rules for various purposes including the setting of EIA procedures.

Source: Compiled by TA consultant

35. Section 12, requiring an Environmental Clearance Certificate, is effectively enforced by The Environmental Conservation Rules, 2023, which is made pursuant to the powers provided under Section 20 of the BECA.

b. Environmental Conservation Rules, 2023

36. The Ministry of Environment, Forest and Climate Change of Bangladesh enacted the Environmental Conservation Rules (ECR) 2023 to implement the Environmental Conservation Act 1995. The rules have been effective from March 5, 2023, by repealing the Environmental Conservation Rules 1997. ECR 2023 is the most important set of regulations giving procedural substance and tools of enforcement to the aims articulated in the BECA 1995 and its amendments. The Rules specify the categorization of projects or industrial establishments by judging the severity of the project's (or industry's) impact on environment and human health.

37. ECR 2023 replaces all the old schedules stipulated in ECR 1997 and replaces the old four environmental categories i.e., 'green', 'orange A', 'orange B' and 'red' by new four categories i.e., 'green', 'yellow', 'orange' and 'red'. The new ECR also shades more lights on the determinants of environmental categorization of projects or industrial establishments, sets guideline for environmental impact assessment process and report preparation along with the qualification of environmental consultants and subject matter experts responsible for preparing environmental impact assessment reports. There are 14 schedules in the ECR 2023 which are described in Table II-2. The most highlighted changes in the ECR 2023 from 1997 edition is the inclusion of stakeholder engagement in the EIA process, adoption of impact of human health, setting qualification of environmental consultants for EIA study, setting standards for wastewater quality, inclusion of a comprehensive indicative list of categorized project/industries according to its impact on environment and human health, guidelines for location setting of a project or industry, guideline for ToR preparation for EIA study, indicative buffer distance between project/industry and sensitive area, indicative EIA reporting guideline and guidelines for inclusion of environmental consultants within EIA study team.

Table II-2 Environmental standards specified in the Environment Conservation Rules 2023

ECR Schedule	Standard name
Schedule 1	Indicative list of projects/industrial establishment under four categories of environmental impacts
Schedule 2	Standards for water quality a. ground water, coastal waters, b. drinking water
Schedule 3	Standards for wastewater
Schedule 4	Standards for industrial wastewater
Schedule 5	Standards for category based industrial wastewater
Schedule 6	Fees for application for location clearance or environmental clearance certificates
Schedule 7	Fees for location clearance or environmental clearance certificates and renewal
Schedule 8	Fees for information collection/sample analysis from Department of Environment (DoE)
Schedule 9	Guideline for location setting of industrial establishments
Schedule 10	Guideline for ToR preparation for environmental impact assessment
Schedule 11	Guideline for environmental impact assessment report preparation

ECR Schedule	Standard name
Schedule 12	Guideline for establishment and operation of industrial effluent treatment
Schedule 13	Guideline for inclusion of environmental consultants or subject matter specialists
Schedule 14	Determinants environmental categorization of industries

c. The Environment Court Act 2010

38. The Environment Court Act 2010 was passed with a view to ensuring the expedited disposal of environmental cases. The Act, consisting of 24 sections, amends and consolidates the existing law in establishing courts and related matters to expedite the trial of environmental crimes. It establishes administrative and legal proceedings of the above-mentioned Environment Court, as well requirements to be met by said court, which may direct the investigating officer or person for further investigation into a criminal case related to a case pending against him and may determine the deadline for reporting the report. The court may impose any power environment passed by this Act or the Environment Law. A lawyer appointed by the Director General shall conduct all the cases related to the trial in the Environment Court and the prosecuted lawyer shall be deemed to be a special public prosecutor in the case of a special public prosecutor and civil nature case, in case of prosecution: Provided that empowered by the Inspector or the Director General Any officer to assist the lawyer in managing the case. Subject to the provisions of this Act, in relation to the trial and settlement of compensation cases, the provisions of the Code of Civil Procedure shall apply, and, in that case, the Court of the Environment shall be deemed to be a civil court and enforce all the powers of the Civil Court in the trial of any compensation suit under this Act.

d. Air Pollution (Control) Rules 2022

39. Aiming to protect environmental health, the government has published a new rule based on section 20 of The Bangladesh Environment Conservation Act, 1995. The main objectives of this rule are to prevent, control, and reduce air pollution. The government will appoint a director general who will be responsible for managing and maintaining the environmental issue. The Rule specified several types of pollution such as pollution caused by factories, vehicles, construction, garbage, etc. According to the new rule, there will be a committee that will impose damages and punishment for such pollution. As stated by the rule, the government will give rewards to those who will protest against pollution and do not cause any type of pollution.

e. Noise Pollution (control) Rules, 2006

40. This rule has been promulgated under the provision of clause 20 of BECA, 1995. The rules provide for standard limits of noise level of vehicles and designated areas. According to the Rules, motor honking within a 100-meter radius of a hospital, school and office is prohibited. The rules also do not allow use of brick crushers and cement mixers within 500-meter radius of a residential area. Besides, prior permission is mandatory for using loudspeakers or megaphones. The rules stipulate safety and precautionary measures in workplaces, designated authorities for allowing noise generating appliances.

f. Solid Waste Management Rules 2021

41. The Solid Waste Management Regulations 2021 were published in Bangladesh on December 23, 2021, under the Bangladesh Environmental Protection Act, 1995. The Regulations define the responsibilities of businesses involved in solid waste management and impose

collection, recycling, and disposal obligations according to Extended Producer Responsibility (EPR) on manufacturers of non-biodegradable products such as glass, plastic, and bottles. The Regulations also include provisions for the treatment of solid waste such as composting and energy recovery.

g. Environmentally Critical Areas Management Rules, 2016

42. Under the Ecologically Critical Area Rule 2016, a National Committee is to be formed which will consider the prevailing naturalness and biodiversity status of the threatened area and identify causes of deterioration and potential threat. It shall recommend to the government about alternative livelihood for the dependent population of the ECAs. This committee is also directed to supervise or provide guidance and directives to the nationally executed government development projects.

h. Other environment related rules and legislations

43. In addition to the ECA and ECR, numerous laws and supporting rules have been passed and developed to regulate the use of natural resources and protect the natural environment from deleterious activity. A summary of environment-related laws and rules, any of which may be relevant or applicable to proposed infrastructure development, is provided in Table II-3. Depending on the nature of project activities and infrastructure, No Objection Certificates (NOCs) may need to be obtained from the agencies overseeing environment-related laws and regulations as part of the environmental clearance process directed by DOE, to ensure compliance with all relevant national laws.

Table II-3 Summary of Environmental Legislations Applicable to the Proposed Project (resources protection)

No.	Environmental Legislation / Act	Objective	Relevance to the Project	Responsible Institution
1	National Forestry Policy (2016) Draft	The National Forestry Policy (NFP) provides the framework for the protection of the remaining forests in the country and the restoration of about 20% of the country's land under the afforestation programs. The priority protection areas are the habitats which encompass representative flora and fauna in the core area of national parks, wildlife sanctuaries and game reserves. Multiple-use of forest, water and fish of the Sundarbans through sustained management will be ensured, keeping the bio-environment of the area intact.	Protected areas within the forest cannot be encroached by any project construction activities. No felling, cutting within protected or reserved forest is permitted. **Not triggered by the project as the project area is outside designated forest areas declared by GoB**	Department of Forests
2	The Forest Act (1927) and Forest (Amendment) Act (2000)	An act to control trespassing, illegal resource extraction and provide a framework for the forestry revenue collection system. To accommodate social forestry, the act was amended in 2000.	Requires clearances for any project within forest areas and clearances for any felling, extraction, and transport of forest produce. **Not triggered by the project as the project area is outside designated forest areas declared by GoB**	Department of Forests

No.	Environmental Legislation / Act	Objective	Relevance to the Project	Responsible Institution
7	The Bangladesh Wildlife (Conservation & Security) Act, 2012	To conserve and protect wildlife in Bangladesh including designation of protected areas. Protection of wildlife is provided with lists of species with four schedules: first, second, third and fourth schedule. The fourth schedule species have the highest level of protection.	Consultation and necessary permits required if the project would pass through the wildlife sanctuaries and other protected areas. **Not triggered by this project. No wildlife or endangered species were found within the project boundaries.**	Department of Forests
8	Bangladesh Protected Area Management Rules 2017	The rules portray the engagement process of the government authorities and local communities on how to be engaged in protected area management declared by the government. The rules cover protective activities such as regular inspections, security maintenance, annual planning of protection, actions against illegal activities, declaration of special reservation area etc.	No activity inside a declared PA is prohibited. **Not triggered by the project. The project boundaries selected are outside the designated PAs, national parks and Sanctuaries.**	Department of Forests
9	National Safe Drinking Water Supply and Sanitation Policy of 1998	Ensures access to safe water and sanitation services at an affordable cost	Pourashavas and water sanitation authorities will take actions to prevent wastage of water. They will take necessary steps to increase public awareness to prevent misuse of water. Pourashavas shall be responsible for solid waste collection, disposal and their management. **Triggered by the project. The EMP section will layout the plan for supplying safe drinking water for the construction workers and communities.**	Ministry of Local Government, Rural Development, and Cooperatives
10	National Water Act 2013 Bangladesh Water Rules 2018	Ensures Bangladesh water sources are free from any type of pollution. Pollution from water in urban outfalls and reservoirs, e.g., lakes, canals, ponds and ditches may result in amenity losses, fisheries depletion, health problems and fish and aquatic species contamination.	Secure clearance certificate on water resource development subprojects. T**riggered by the project. The water extraction for construction purposes and operation of the building will be sustainable and clearance will be taken from adjacent pourashavas or unions.**	Ministry of Water Resources
11	Wetland Protection Act 2000	Advocates protection against degradation and resuscitation of natural waterbodies such as lakes, ponds, beels[14], khals, tanks, etc. affected by man-made	In case of diversion of water from any lake, a detailed assessment needs to be done. **Not triggered. No wetlands**	Ministry of Water Resources

[14] A beel is a billabong or a lake-like wetland with static water (as opposed to moving water in rivers and canals - typically called khals), in the Ganges - Brahmaputra flood plains of the Eastern Indian states of West Bengal, and Assam and in the country of Bangladesh.

No.	Environmental Legislation / Act	Objective	Relevance to the Project	Responsible Institution
		interventions or other causes. Prevents the filling of publicly owned water bodies and depressions in urban areas for preservation of the natural aquifers and environment. Prevents unplanned construction on riverbanks and indiscriminate clearance of vegetation on newly accreted land.	**are nearby, as per project prerequisite. The prosed site is within the college boundary.**	
13	The Pourashava Act 2009 / Ordinance issued for the amendment of local government (municipality) ordinance, 2009 and 2010; The Pourashava Ordinance, 1977; Municipal Administration Ordinance, 1960	Provides guidance for subproject integrated community and workers health and hygiene at the construction and operation and maintenance stages of the project	Coordinate with pourashava committees on disaster management measures, water and sanitation and waste management. **Triggered. During building design, construction and operation the acts were considered and applied.**	Local Authorities
14	Bangladesh Climate Change Strategy and Action Plan of 2009	Enhances the capacity of government ministries, civil society and private sector to meet the challenges of climate change	Integrate adaptation measures for buildings in consideration of extreme climatic events. **Triggered. The BCCSAP 2009 has been considered in building design and also in the entire project consideration.**	Ministry of Environment, Forests and Climate Change
15	Building Construction (Amendment) Act and Building Construction Rules, Bangladesh National Building Code	Regulates technical details of building construction and to maintain standards of building construction	Follow specifications to ensure structural integrity of buildings. **Triggered. BNBC has been considered during building design.**	Ministry of Housing and Public Works
16	Electricity Act 2018	Requires compensation for any damage, detriment or inconvenience caused by the project; Requires precautionary measures in laying down electricity supply lines near or where any metallic substance or line crosses to avoid electrocution; directs in powerline laying construction related activities to avoid public nuisance.	**Triggered. The following are ensured:** Secure permission to supply energy and lay down or place electricity supply lines for the conveyance and transmission of electricity from respective authorities prior to any works. Give full compensation for any damage, detriment or inconvenience caused by him or by anyone employed by him/her. Take precautions in laying down electricity supply lines near or where any metallic substance or line crosses in order to avoid electrocution.	Ministry of Power, Energy and Mineral Resources

No.	Environmental Legislation / Act	Objective	Relevance to the Project	Responsible Institution
17	The National Energy Policy (1996 and Updated 2004)	Ensures environmentally sound sustainable energy development programs causing minimum damage to the environment, to encourage public and private sector participation in the development and management of the energy sector and to bring the entire country under electrification.	Public and private sector participation in the development and management of energy subprojects. Provides guidelines for renewable energy subprojects. **Triggered. Renewable energy provisions are considered in the building design process.**	Ministry of Power, Energy and Mineral Resources
18	Standing Order on Disaster, 1999 (Updated 2010)	Enhances capacity at all tiers of government administrative and social structures for coping with and recovering from disasters	**Triggered. All building structures and labs are designed to cope with local disasters accordingly.**	Ministry of Disaster Management and Relief
19	National Disaster Management Act of 2012	Establishes a framework for managing disasters in a comprehensive way.	Setting-up emergency response procedures. **Triggered. The project structure is to follow the setup of the Act.**	Ministry of Disaster and Relief
20	East Bengal Protection and Conservation of Fish Act 1950 (1982)	Protection and conservation of fishes in inland water bodies of Bangladesh	No wetland or canal should be encroached or obstructed due to construction and operation of the projects. **Not triggered. No fishpond or fisheries entities are nearby. Criteria selection for project are ensured of that.**	Department of Fisheries
21	Public Procurement Rule (2008)	Applies to the procurement of goods, works or services by any government, semi-government or any statutory body established under any law; includes measures regarding the safety, security and protection of the environment in construction works; requires Contractors to take all reasonable steps to safeguard the health and safety of all workers on site, protect the environment on and off the site, and avoid damage or nuisance to persons or to property of the public or others	**Triggered.** The PPR (2008) will be followed during procurement process of the subprojects	Ministry of Public Works
22	Bangladesh Fire Prevention and Extinction Act, 2003 Fire Prevention and Extinction Rules, 2014	The Bangladesh Fire Prevention and Extinction Act, 2003 (Act No. 7 of 2003) and Rules 2014 are crucial legislation aimed at safeguarding lives, property, and valuable assets from fire hazards. The key considerations are: (i) fundamental requirements for fire safety. It covers aspects such as fire prevention, preparedness, and response; (ii) emphasizes the need for fire protection measures in buildings, public spaces, and other areas susceptible to fire incidents; (iii) adherence to safety protocols,	**Triggered.** During construction and operation, fire safety protocols that stipulated in the Act 2003 and Ruled 2014 will be followed.	Department of Fire Service and civil Defense

No.	Environmental Legislation / Act	Objective	Relevance to the Project	Responsible Institution
		regular inspections, and maintenance of fire extinguishers, alarms, and other firefighting tools		
23	National Plan for Disaster Management, 2021-2025	The National Plan for Disaster Management (NPDM) 2021-2025 outlines the strategic vision and mission of the Government of Bangladesh in collaboration with the Ministry of Disaster Management and Relief (MoDMR). This comprehensive plan aims to build a resilient nation by addressing the challenges posed by natural and man-made disasters. The plan emphasizes on: (i) Investments for building resilience against chronic disasters; (ii) Social protection; (iii) Resilient post-disaster response and recovery	**Triggered.** During construction and operation, the NPDM will be considered.	Ministry of Disaster Management and Relief (MoDMR)
24	Balumohal and Soil Management Act 2010	The Balumohal and Soil Management Act 2010 (Act No. 62 of 2010) deals with the provision of leasing Balumohal, extraction of sand and soil, soil management, and other related matters. This law specifies regulations regarding the leasing of Balumohal, exchange of money for sand or soil extraction, Balumohal management, and other relevant issues.	**Triggered.** During construction contractor will be carrying sand, silt from government approved balu mohal, as per the Act 2010	District Commissioner

i. Other environment related rules and legislations

44. During construction, the subproject will conform to the occupational and health related rules as outlined in the Table II-4 below.

Table II-4 Occupational and health safety related rules in Bangladesh

Title of Laws and Rules	Descriptions
Social Security under the Act, 1923 and an amendment in 1980	According to the Act social impact assessment includes the processes of analyzing, monitoring and managing the intended and unintended social consequences, both positive and negative of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions.
Bangladesh Labour (Amendment) Law, 2018	Compliance to the provisions on employment standards, occupational safety and health, welfare and social protection, labor relations and social dialogue, and enforcement Prohibition of employment of children and adolescent
Labour Rules 2015	The Labor Rules give substantial practical heft to the Labor Act, specifying standards for workplace dimensions and features, responsibilities of employers and facility owners, limits on working hours, special rules for young workers, and many other workplace safety and worker protection matters. The Rules provide the basis for inspections of construction sites and industrial facilities by the Department of Inspection for Factories and Establishments (DIFE) under Ministry of Labour and Employment (MoLE).

Title of Laws and Rules	Descriptions
The Employer's Liability Act, 1938	The Act declares that the doctrine of common employment and of assumed risk shall not be raised as a defense in suits for damages in respect of employment injuries. Under the Maternity Benefit Act, 1939, the Maternity Benefit Act, 1950, the Mines Maternity Benefit Act, 1941, and finally the rules framed thereunder, female employees are entitled to various benefits for maternity, but in practice they enjoy leave of 6 weeks before and 6 weeks after delivery.
Public Health (Emergency Provisions) Ordinance, 1994	The ordinance calls for special provisions with regard to public health. Whereas an emergency has arisen, it is necessary to make special provision for preventing the spread of human disease, safeguarding public health and providing them adequate medical service and other services essential to the health of respective community and workers in particular during the construction related work.
The Employees State Insurance Act, 1948	It has to be noted that health, injury and sickness benefit should be paid to people, particularly respective workers at workplace under the Act.
Bangladesh Factory Act, 1979	The Act requires every workplace including small- or large-scale construction where women are employed to have an arrangement of childcare services. Based on this Act and Labor Laws - medical facilities, first aid and accident and emergency arrangements are to be provided by the authority to the workers at workplaces.
Water Supply and Sewerage Authority Act, 1996	The Act specify WASA's responsibility to develop and manage water supply and sewerage systems for the public health and environmental conservation.

D. International commitments

45. Bangladesh has signed many international treaties, conventions and protocols that pertain to environmental conservation, pollution control, and working conditions, and these need to be considered alongside national laws and regulations in the context of infrastructure planning. A list of the most relevant international treaties and conventions to which Bangladesh is a party is presented in Table II-5.

Table II-5 Treaties and conventions joined by Bangladesh and applicable to this project

Treaty or Convention	Brief description
International Plant Protection Convention (Rome, 1951) & Plant Protection Agreement for SE Asia and Pacific (1999 Revision)	Aims to ensure that construction work and construction materials do not introduce plant pests
Conservation of Wetlands of International Importance specially as waterfowl Habitat ("Ramsar Convention": Iran, 1971)	Conservation and proper use of wetlands and their resources; protection of significant wetlands and prevention of draining or filling during construction
Convention Concerning the Protection of the World Cultural and Natural Heritage (Paris, 1972)	Prevention of damage or destruction of culturally and/or historically significant sites, monuments, etc.
CITES Convention (Convention on International Trade in Endangered Species)	Aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival
Occupational hazards due to air pollution, noise & vibration (Geneva)	Aims to protect workers against occupational hazards in the working environment
Occupational safety and health in working environment (Geneva)	Prevent accidents and injury to health by minimizing hazards in the working environment
Occupational health services (Geneva)	To promote a safe and healthy working environment
Convention on Biological Diversity, (Rio de Janeiro, 1992)	Protection of biodiversity during construction and operation; underpins the value of natural resources that provide food and livelihoods throughout the world
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1992)	Aims to protect human health and the environment against the adverse effects of hazardous wastes

Treaty or Convention	Brief description
International (United Nations Framework) Convention on Climate Change (Kyoto Protocol, 1997)	International treaty on climate change and emission of greenhouse gases, reduce greenhouse gas concentrations in the atmosphere to a level that would prevent dangerous anthropogenic interference with the climate system
Convention on Persistent Organic Pollutants, Stockholm, 2001	Restriction of use of pesticides and herbicides
Minamata Convention on Mercury, 2017	Global treaty to protect human health and the environment from the adverse effects of mercury, by addressing interim storage and disposal, sites contaminated by mercury, and mercury-related health issues

E. Environmental Assessment Process and Requirements

46. This project is subject to the environmental safeguards requirements of both the Government of Bangladesh and ADB. These requirements share some concepts and terminology and are non-contradictory. The two procedural frameworks for environmental impact assessment are described in turn below.

1. National Environmental Clearance Process

47. **Categorization schemes.** The Environment Conservation Rules 2023 stipulate a four-level color-coded typology of impact potential as the basis for determining the environmental clearance process for different types of proposed projects, and the extent of environmental assessment work that must be done in support of clearance applications submitted by proponents. The categorization framework is outlined in Table II-6.

Table II-6 Categorization scheme for determining environmental clearance requirements posed by DoE

Category	General Environmental Assessment Requirement
Green	No environmental assessment required to support application for environmental clearance
Yellow	No environmental assessment required, but detailed project information, including process flow diagrams and effluent treatment arrangement, must accompany application for environmental clearance
Orange	Initial Environmental Examination (IEE) required, and project can proceed to environmental clearance application once IEE is approved by DOE
Red	Brief IEE required to establish ToR for comprehensive Environmental Impact Assessment (EIA), and project can proceed to environmental clearance application after EIA and Environmental Management Plan (EMP) have been approved by DOE, often subject to conditions

48. The Environment Conservation Rules (Schedule I) provide indicative lists of types of projects, facilities and infrastructure that would normally fall into each of the four assessment categories. Although these lists are quite comprehensive, the listed types may in many cases not apply unambiguously to a given proposed infrastructure element or project activity. Further, the matters of scale and context, which determine so much of impact potential, are not strongly addressed by the indicative lists. Assigning an assessment category thus must be informed by

expert judgement, based on the initial specifications of the planned project infrastructure and activities, and basic details of the project environment. DoE has noticed this. Hence the ECR 2023 includes the process of engaging experts in the environmental impact assessment process. DoE reviews preliminary infrastructure plans for proposed infrastructure investments and decides regarding the categorization on a case-by-case basis.

49. **Environmental clearance process.** According to the ECR 2023, all projects/industries must apply for a Location Clearance certificate (LCC) prior to the application for Environmental Clearance certificate (ECC) (Figure II-1). The DoE is responsible for awarding both certificates. Regardless of the assessment category assigned, all applications for environmental clearance must be accompanied by a NOC obtained from local authorities (Union Parishad Chairman or Upazila Nirbahi Officer in rural polytechnic locations, and from several entities in urban locations such as Chattogram), and by an application fee. NOCs may also be required from key agencies (e.g., Water Resources Planning Organization, Forests Department, Ministry of Fisheries) if the proposed project has any potential relevance for the natural resources under their remit. The proponent is responsible for obtaining the NOCs and paying the application fee. The proponent is also responsible for renewing the clearance certificate, once obtained, on a yearly/2 yearly/5 yearly basis, paying a fee for each renewal. Fines are levied when the proponent allows the clearance certificate to lapse.

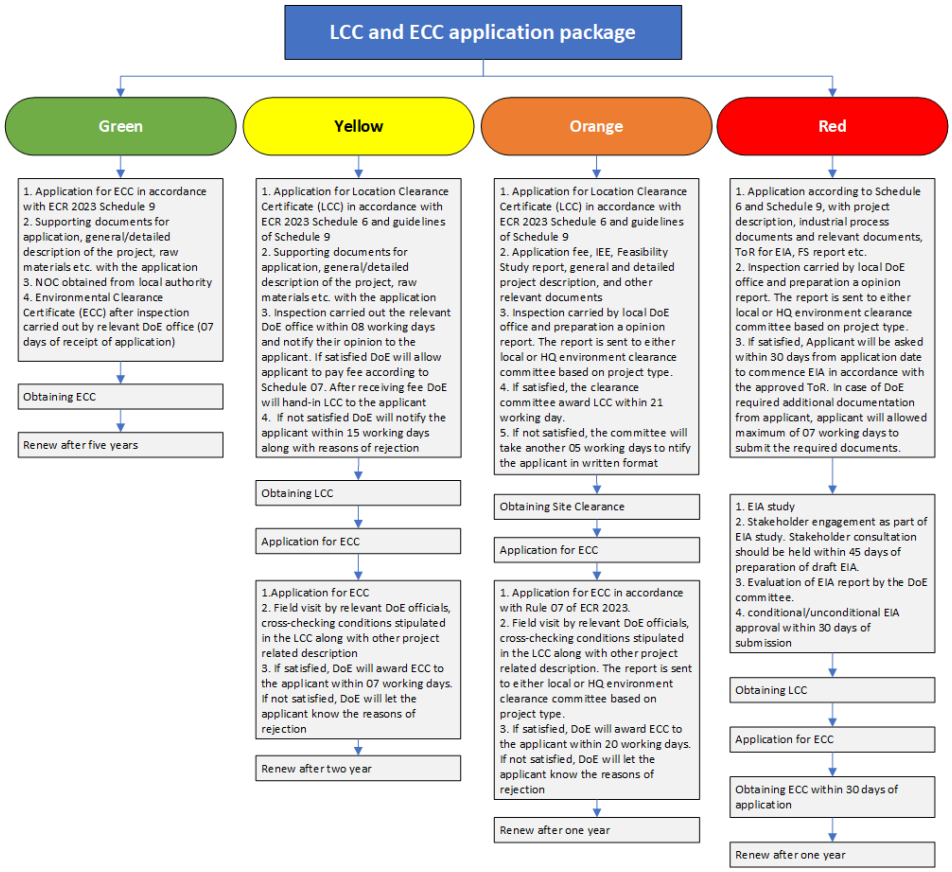


Figure II-1 Location Clearance Certificate (LCC) and Environmental Clearance certificate (ECC) application and awarding process from DoE

50. For investments that require an environmental assessment report (Orange and Red projects), DoE reviews and approves the report (either an IEE or more detailed EIA) before approving the clearance application. The approval may be subject to certain conditions, which the proponent is bound to meet to keep the clearance certificate current. Review time of clearance applications by DoE varies with project category. Environmental Review and clearance process of SICIP is shown below (Figure II-1).

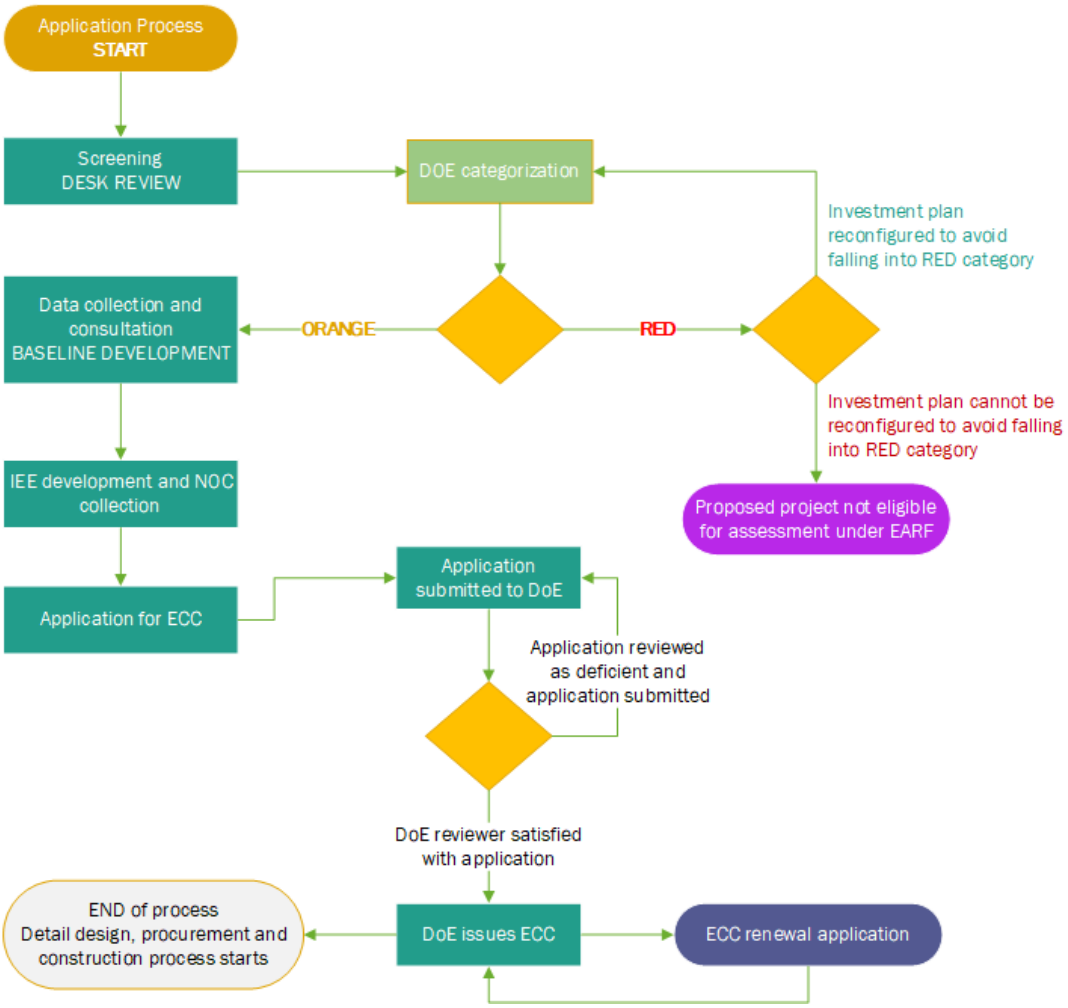


Figure II-2 Flowchart of national clearance process as applicable to SICIP

51. **Anticipated DoE assessment category.** The infrastructure development proposed for the additional building at IBA within DU campus under the project will appropriately be considered to fall into the 'Orange' assessment category. The investments do not include any components that would trigger assignment to the 'Red' category, but do encompass components (multi-storied buildings, diagnostic laboratory) included in the 'Orange' list in Schedule 1 of the Environment Conservation Rules 2023. This IEE report will be reviewed by DoE, and the anticipated categorization will be confirmed at that time.

Table II-7 Anticipated project category according to the ECR 2023

Project description	Similar category (as per ECR 2023)	Likely category	Comments
Construction, repair and retrofitting of academic and administrative multistorey buildings and labs	Item no. 25: Residential and commercial buildings (5000 – 20000 sqm built-up area)	Orange	Construction will take place within IBA campus (within Dhaka University campus)

Source: Information taken from ECR 2023 and interpreted by the consultant

2. ADB Environmental Assessment Requirements

52. Safeguard requirements for all projects funded by the ADB are defined in the ADB Safeguard Policy Statement, 2009 (ADB SPS). This document establishes an environmental review process to ensure that projects undertaken as part of programs funded through ADB loans are environmentally sound, are designed to operate in compliance with applicable regulatory requirements, and are not likely to cause significant environmental, health, or safety hazards. The SPS is one of the key Bank Policies collected in the ADB Operations Manual. The policy promotes good practice as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health and Safety Guidelines.

53. SPS 2009 provides a framework of expectations for environmental analysis, engagement with stakeholders and communities potentially affected by projects, reporting, and follow-up implementation. Key prescriptions include the following:

(i) At an early stage of project preparation, the borrower/client will identify potential direct, indirect, cumulative, and induced environmental impacts on and risks to physical, biological, socioeconomic, and cultural resources and determine their significance and scope, in consultation with stakeholders, including affected people and concerned NGOs. If potentially adverse environmental impacts and risks are identified, the borrower/client will undertake an environmental assessment as early as possible in the project cycle. For projects with potentially significant adverse impacts that are diverse, irreversible, or unprecedented, the borrower/client will examine alternatives to the project's location, design, technology, and components that would avoid, and, if avoidance is not possible, minimize adverse environmental impacts and risks.
(ii) The assessment process will be based on current information, including an accurate project description, and appropriate environmental and social baseline data;
(iii) Impacts and risks will be analyzed in the context of the project's area of influence.
(iv) Environmental impacts and risks will be analyzed for all relevant stages of the project cycle, including preconstruction, construction, operations, decommissioning, and post- closure activities such as rehabilitation or restoration.
(v) The assessment will identify potential trans-boundary effects as well as global impacts; and
(vi) Depending on the significance of project impacts and risks, the assessment may comprise a full-scale environmental impact assessment (EIA) for Category A projects, an initial environmental examination (IEE) or equivalent process for Category B projects, or a desk review.

54. Screening for potential social and environmental impacts is a critical early step in the preparation of a proposed ADB-funded project. Preliminary project conceptual designs and sites are evaluated using a standard checklist, and assigned to one of four categories, as follows:

(i) **Category A.** A proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An Environmental Impact Assessment is required.

(ii) **Category B.** A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An Initial Environmental Examination is required.

(iii) **Category C.** A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required, although environmental implications need to be reviewed.

(iv) **Category FI.** A proposed project is classified as category FI if it involves investment of ADB funds to or through a financial intermediary.

55. Based on initial screening of components proposed, the project was assigned to **Category B**, pending further study. Accordingly, IEEs were deemed the appropriate mode of assessment for subprojects, unless early analysis based on conceptual design specifications and field reconnaissance were to reveal potential for impacts that require study and mitigation planning of a scale and complexity better addressed through the more detailed and exhaustive EIA. IEEs and EIAs are similar in terms of procedural steps and the structure of reports, but an EIA typically requires (i) more detailed investigation of impact linkages; (ii) collection of more and higher quality baseline data regarding key impact areas; (iii) often a longer and multi-phased study period; and (iv) deeper engagement and consultation with potentially affected people.

56. Important tools and outputs specified by the SPS 2009 for IEEs and EIAs include the following:

(i) **Environmental Audit report on existing facilities:** When the project involves existing activities or facilities, relevant external experts will perform environmental audits to determine the existence of any areas where the project may cause or is causing environmental risks or impacts. Since the IBA building will use the existing campus facilities, as per ADB SPS 2009 an environmental audit report will be required.

(ii) **Environmental Management Plan.** The borrower/client will prepare an environmental management plan (EMP) that addresses the potential impacts and risks identified by the environmental assessment and prescribes appropriate mitigation measures to address them effectively.

(iii) **Consultation and Participation.** The borrower/client will carry out meaningful consultation with affected people and other concerned stakeholders, including civil society, and facilitate their informed participation.

(iv) **Information disclosure.** The borrower/client will submit to ADB the following documents for disclosure on ADB's website: (i) a draft full IEE (including the EMP); (ii) a new or updated IEE and corrective action plan prepared during project implementation, if any.

(v) **Grievance Redress Mechanism.** The borrower/client will establish a mechanism to receive and facilitate resolution of affected people's concerns, complaints, and grievances about the project's environmental performance.

(vi) **Monitoring reports.** Results from monitoring of the implementation of a project's EMP are reported semi-annually to the ADB, based on internal monitoring activity carried out more frequently (quarterly, monthly, weekly or daily) as appropriate to different project activities and impacts. Monitoring assesses compliance with the measures detailed in the EMP, as well as measurable effects of project activities on the environment.

(vii) **Unanticipated impact.** If unanticipated involuntary resettlement impacts are found during project implementation, the borrower/client will conduct a social impact assessment and update the resettlement plan or formulate a new resettlement plan covering all applicable requirements specified in this document.

(viii) **Occupational Health and Safety.** The borrower/client will provide workers with a safe and healthy working environment, taking into account risks inherent to the particular sector and specific classes of hazards in the borrower's/client's work areas, including physical, chemical, biological, and radiological hazards.

(ix) **Community Health and Safety.** The borrower/client will inform affected communities of significant potential hazards in a culturally appropriate manner. The borrower/client will be prepared to respond to accidental and emergency situations. This preparation will include response planning document(s) that addresses the training, resources, responsibilities, communications, procedures, and other aspects required to respond effectively to emergencies associated with project hazards.

(x) **Physical Cultural Resources.** The borrower/client is responsible for siting and designing the project to avoid significant damage to physical cultural resources.13 Such resources likely to be affected by the project will be identified, and qualified and experienced experts will assess the project's potential impacts on these resources using field-based surveys as an integral part of the environmental assessment process.

(xi) **Harmonizing with Other MFIs' Safeguard Policies.** Harmonizing ADB's safeguard policy principles and requirements with those of other MFIs is also required to enhance development impacts, reduce transaction costs, and encourage collaborative behavior. ADB believes that it should harmonize its safeguard policies with those of other MFIs, especially in relation to key policy principles, whereas procedures across MFIs need to cater to a variety of clients and situations.

(xii) **Bidding and contract documents.** To ensure that contractors appropriately implement the agreed measures, the borrower/client will include the safeguard requirements in bidding documents and civil works contracts. Where national safeguard policies and regulations differ from ADB's safeguard policy statement including Safeguard Requirements, ADB and the borrower/client will formulate and agree on specific measures to ensure that ADB's safeguard policy principles and requirements are fully complied with.

57. Each of the key elements listed above is addressed in this IEE report.

58. **Updated ADB categorization.** Based on the findings presented in this IEE, it is confirmed that some of the infrastructure components proposed for IBA additional building will have at least some negative impacts requiring mitigation, but also unlikely that any will generate impacts of a scale, complexity or severity that would warrant detailed environmental research or development of highly novel mitigation strategies. Accordingly, the **Category B** classification, assigned to the project at the early concept stage based on ADB screening, is considered valid for this investment location. This could change if the design, scale, nature, or location of any proposed components undergoes significant modification before or after project approval.

III. PROJECT DESCRITPION

A. Project Location

59. The proposed additional IBA academic building shall be located at the IBA campus, just behind the current main building. The IBA building is a part of the Dhaka University campus located by the side Kazi Nazrul Sarani (road) in Dhaka City Corporation south (Figure III-1). IBA was founded in 1966 through collaboration with Indiana University, Bloomington, USA, under the Ford Foundation Financial Assistance Program. IBA has its own premises within the campus of the University of Dhaka. The main building spans 65,000 square feet (6,000 m²) across four stories.

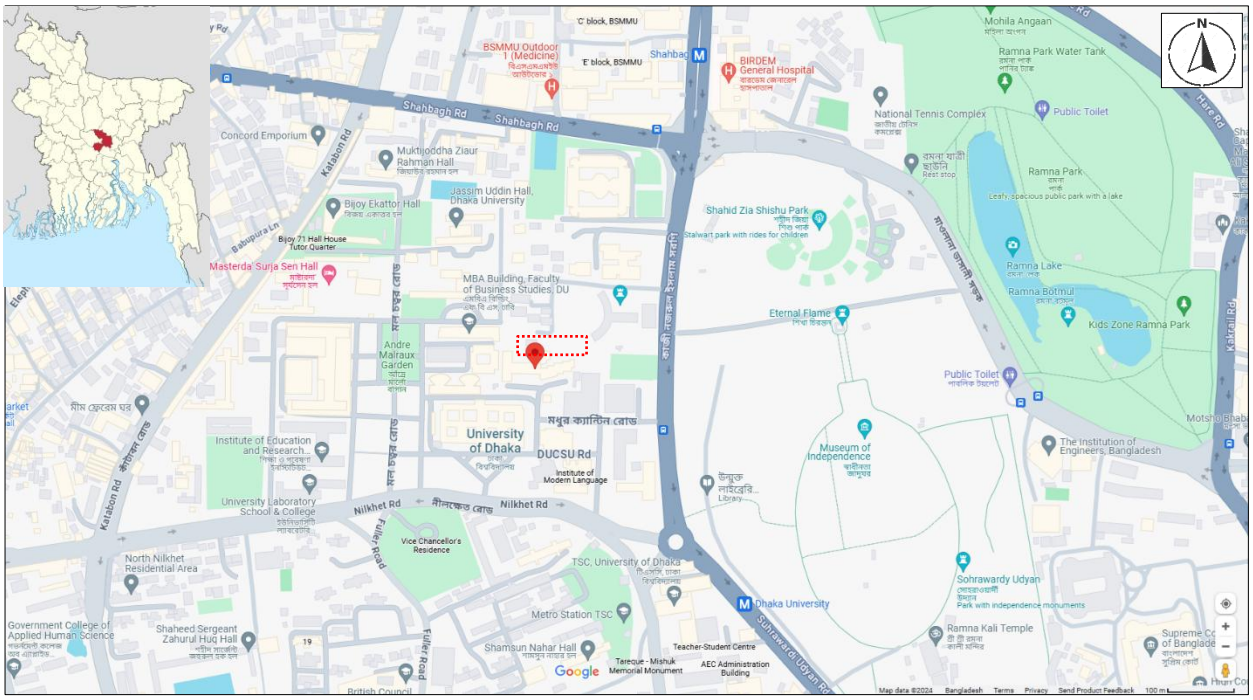


Figure III-1 Location map of the proposed infrastructure at IBA campus, Dhaka University (red marker). Red dotted rectangle indicates the proposed site. Courtesy: Google maps

Image courtesy: Google maps. Prepared by: TA consultants.

60. The IBA Annexure Building at the University of Dhaka represents a comprehensive 10-story academic facility with a total built area of 23,332 square feet. The building demonstrates efficient space utilization with well-planned functional zones distributed across multiple floors (Figure III-2). The proposed site is a built-up area within the IBA campus, with highly urbanized surroundings.

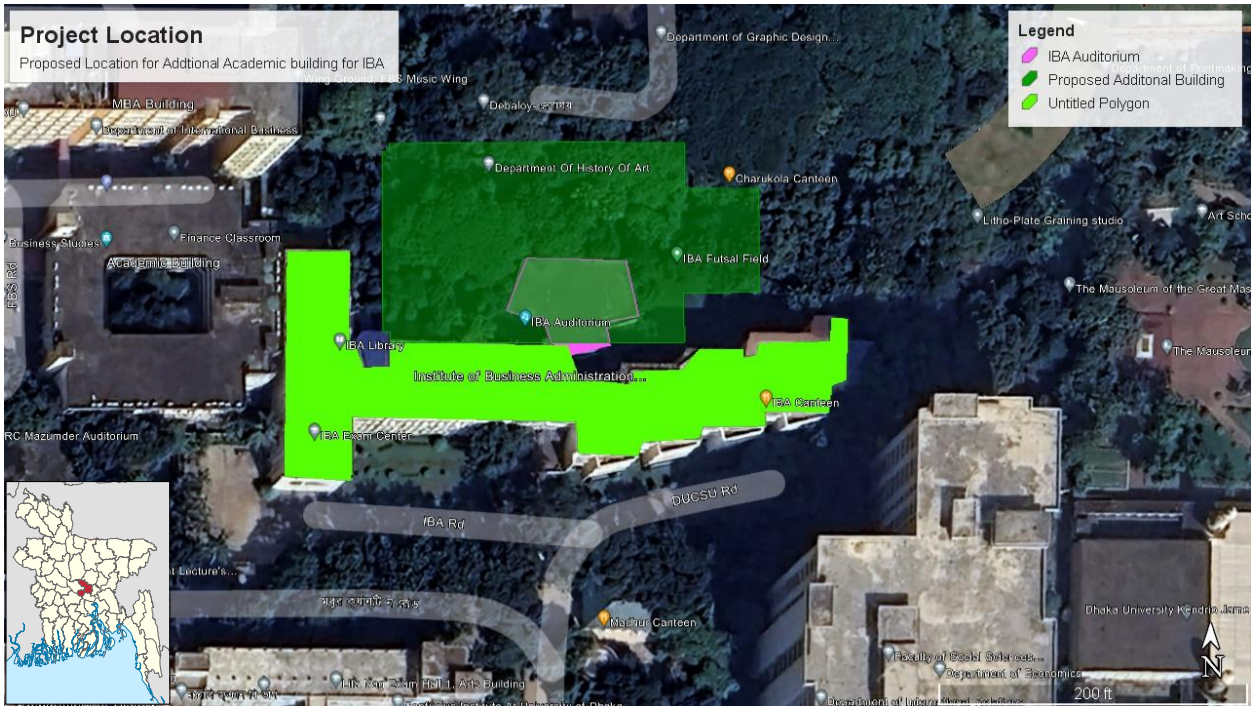


Figure III-2 Proposed location of the additional academic building and its physical surroundings. Image courtesy: Google Earth

Image courtesy: Google earth. Prepared by: TA consultants.

61. The IBA is located within the Shahbagh area of Dhaka University (DU) campus, by the side of Kazi Nazrul Islam Sarani (road). North to the IBA campus is Shabagh road and to the south is Nilkhet road. The campus is well connected with Dhaka city. The Buriganga River, lifeline of Dhaka city, is located about 2 km from Dhaka city. Apart from the river, Dhanmondi lake and Hateer jheel lake is located within 1km of the IBA campus.

B. Existing Infrastructure

62. The proposed site is IBA owned area which is currently vacant and not used by the students and teachers (Figure III-3). The proposed site has some trees, including mahagoni, acacia, jackfruit and tamarind. The footprint of the current building and the proposed additional building is small. In total 6 trees will be impacted due to proposed construction (Figure III-3) which include: 2 mahogany, 2 tamarind and 2 acacia.

Figure III-3 Natural surroundings of the proposed construction site of additional IBA building.

Image courtesy: Google earth. Prepared by: TA consultants.

63. Drainage system is developed at the site which is functional (**Error! Reference source not found.**). The proposed structures can use this drainage system; no additional drainage system will be required.

Figure III-4 Drainage system is either non-existing or non-functioning within the IBA campus.

Source: TA consultant

C. Proposed Infrastructures

64. **Academic Space Allocation.** The building prioritizes educational functions with 15.9% dedicated to classrooms (3,705 sq ft) accommodating 297 students across various learning environments. Laboratory facilities comprise 10.1% (2,351 sq ft) of the total area, including specialized IT, behavioral, and finance labs (Figure III-5). The building features a large 5,178 sq ft examination hall and a 4,607 sq ft auditorium for major academic events.

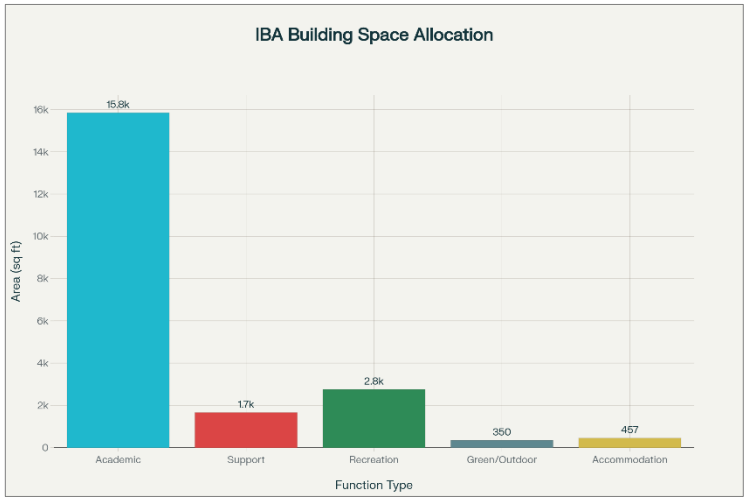


Figure III-5 Space distribution in the Annex Building under the proposal

65. **Support and Administrative Areas.** Circulation spaces, including lobbies, account for significant areas with proper connectivity between floors. Administrative functions are distributed across coordinator offices, archives, and faculty rooms, ensuring efficient academic management. The building includes accommodation facilities with guest rooms and dining areas to support extended academic activities.

Building Flood Resilience Features. The IBA Annexure Building incorporates several flood management strategies: (i) Elevated design with proper drainage systems; (ii) Water management features designed for Dhaka's monsoon climate; (iii) Strategic building orientation to handle water flow; and (iv) Green infrastructure integration for stormwater management. The design addresses Dhaka's requirement for drainage systems capable of handling 30 mm of rain per hour, as current infrastructure fails with 20 mm precipitation.

D. Green Space Integration

66. **Campus Green Space Context.** The University of Dhaka campus encompasses 275.083 acres of land in the historic Ramna area, characterized by lush green spaces and diverse ecosystems[15]. The IBA Annexure Building is designed to integrate seamlessly with this existing green infrastructure.

67. **Green Design Implementation.** The building features 184 square feet of dedicated garden spaces representing 0.8% of the total area, though this understates the comprehensive green integration strategy. Key green space features include:

- Rooftop vegetation on existing building structures for urban heat island reduction
- Green patch continuation from roof to void areas and building facades
- Biophilic design elements connecting with the surrounding campus ecosystem
- Semi-outdoor learning spaces (166 sq ft) bridging indoor and outdoor environments

[15] https://old.du.ac.bd/main_menu/the_university/du_at_a_glance

68. Environmental Performance Benefits. The green infrastructure provides multiple environmental benefits:

- Reduces urban heat island effect by 2-5°C
- Manages 100+ mm/hour rainfall through integrated stormwater management
- Improves air quality and psychological well-being through biophilic design
- Reduces mechanical cooling requirements by 30-40%

Figure III-6 Process of Green Space deign of the proposed IBA Annex building

Source: Detailed Architectural Design.

E. Climate Considerations and Passive Design

69. **Dhaka Climate Response.** The building design responds specifically to Dhaka's challenging climate conditions, including annual rainfall of 1,500-2,000 mm, temperatures ranging 20°C-35°C, and 70-85% humidity levels. The monsoon season from June to October requires particular attention to water management and natural ventilation.

70. **Passive Climate Control Systems.** Natural Ventilation Strategy: (i) 100% cross-ventilation coverage throughout the building; (ii) Southeast wind utilization aligning with Dhaka's prevailing wind patterns during summer; (iii) Thermal comfort optimization through strategic air movement. Solar Control Measures: (i) Tilted west wall design at 60° angle to reduce east-west sun glare and heat gain; (ii) Optimized louvre system with calculated angles (45°-90°) for south

and north facades; (iii) Reduces solar heat gain by approximately 50% while maintaining natural lighting. Energy Efficiency Potential - the passive design strategies collectively achieve: (i) 40-60% energy savings compared to conventional buildings; (ii) Reduced mechanical cooling load by 30-40%; (iii) Enhanced indoor environmental quality through natural systems.

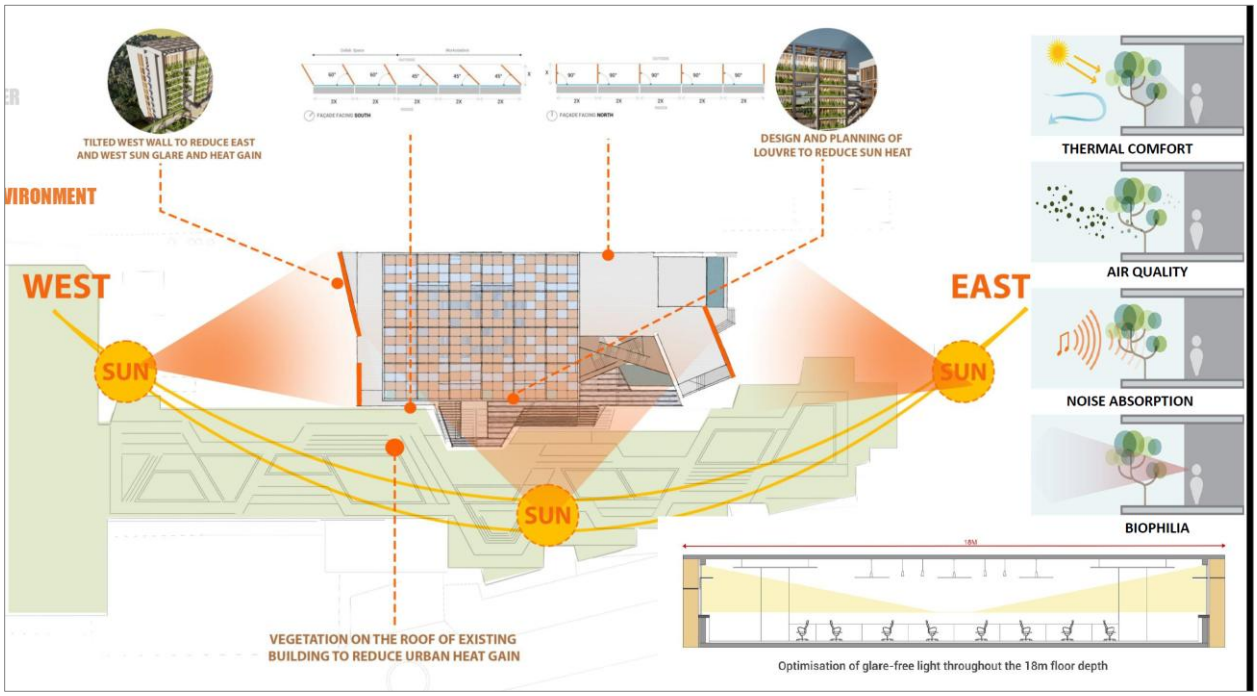


Figure III-7 Passive climate control system proposed at the IBA Annex building

Source: Detailed Architectural Design

71. **Comprehensive Natural Ventilation Strategy.** The IBA Annexure Building demonstrates an exemplary approach to natural ventilation design, specifically tailored for Bangladesh's tropical climate conditions. The ventilation system achieves 100% cross-ventilation coverage throughout all occupied spaces, representing a complete integration of passive cooling strategies.

72. **Cross Ventilation Design.** The building incorporates whole building cross ventilation with continuous air flow paths from southeast to northwest, directly aligned with Dhaka's prevailing wind patterns. During summer months, southeastern winds are captured and channeled through the building structure, while monsoon season brings southeastern airflow that the design accommodates effectively. Vertical air movement is facilitated through central cores and strategically placed voids, creating pressure differentials across multiple floor heights. This stack effect ventilation works in conjunction with horizontal crossflow to maintain consistent air circulation throughout the 10-story structure.

73. **Wind-Driven Ventilation.** The building's strategic orientation and massing are positioned to capture maximum wind exposure, utilizing 85-90% of available wind energy. This design responds specifically to Bangladesh's climate where southern wind flows predominate throughout most of the year due to climatic conditions.

74. In accordance with the Asian Development Bank’s Safeguard Policy Statement (SPS, 2009) and Good International Industry Practice (GIIP), the architectural and environmental design of the IBA Annex Building integrates a range of environmentally sustainable, climate-resilient, and

inclusive features aimed at minimizing resource consumption, enhancing climate adaptation, and improving overall environmental performance. These measures are embedded at the planning and design stage to ensure long-term operational sustainability and resilience to climate stressors such as increasing temperature, intense rainfall, and urban heat island effects.

75. The building layout and orientation have been optimized based on solar path and prevailing wind analyses to maximize natural daylight penetration and cross-ventilation, thereby reducing cooling demand and electricity consumption. The project footprint has been carefully configured to retain the maximum number of existing mature trees, preserving local microclimatic regulation, shade provision, and ecological value. In addition, vertical green façades and rooftop landscaped elements are incorporated to improve thermal insulation, mitigate heat accumulation, enhance air quality, and contribute to stormwater attenuation. These passive design interventions collectively strengthen climate resilience while lowering operational greenhouse gas emissions.

76. Inclusive design principles will be fully integrated to ensure universal access and equitable use of facilities by persons with disabilities and individuals with reduced mobility. The building will provide step-free access at entrances, accessible ramps and handrails, tactile floor guidance, adequately sized elevators, wheelchair-friendly corridors, and dedicated accessible sanitation facilities on each floor. Teaching spaces, seminar halls, and common areas will be designed to accommodate diverse user needs in line with international accessibility standards.

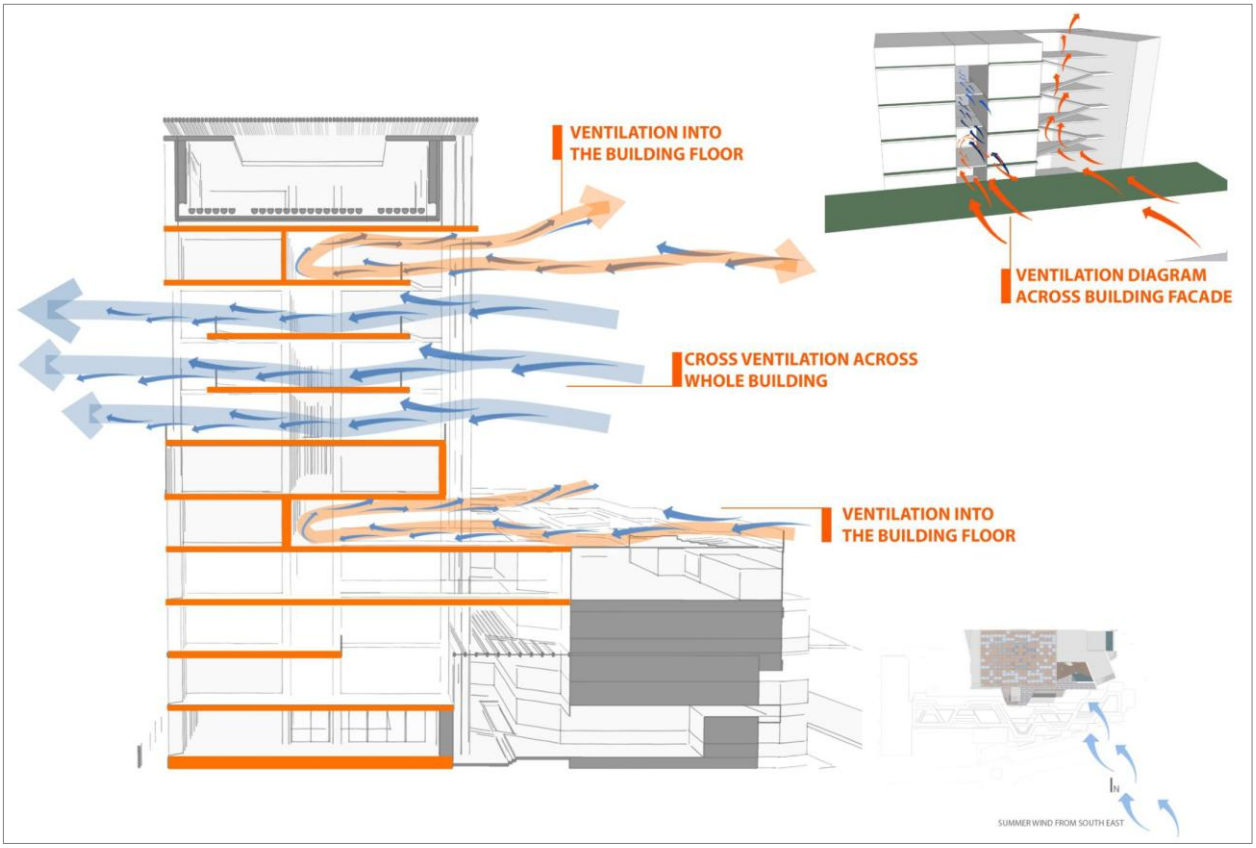


Figure III-8 Cross ventilation system proposed at the IBA Annex building

Source: Detailed Architectural Design.

F. Drainage and Water Management Infrastructure

77. **Site-Specific Drainage Considerations.** The Ramna area of Dhaka faces complex drainage challenges typical of the broader metropolitan region[16]. The building design addresses the inadequate drainage infrastructure that currently cannot handle moderate rainfall events.

78. **Integrated Water Management Strategy.** (i) Green infrastructure integration for natural stormwater absorption; (ii) Elevated design platforms protecting against 1-2 meter flood levels; (iii) Permeable surfaces where possible to reduce runoff.

G. Construction schedule

79. Estimated construction schedule has been given in .

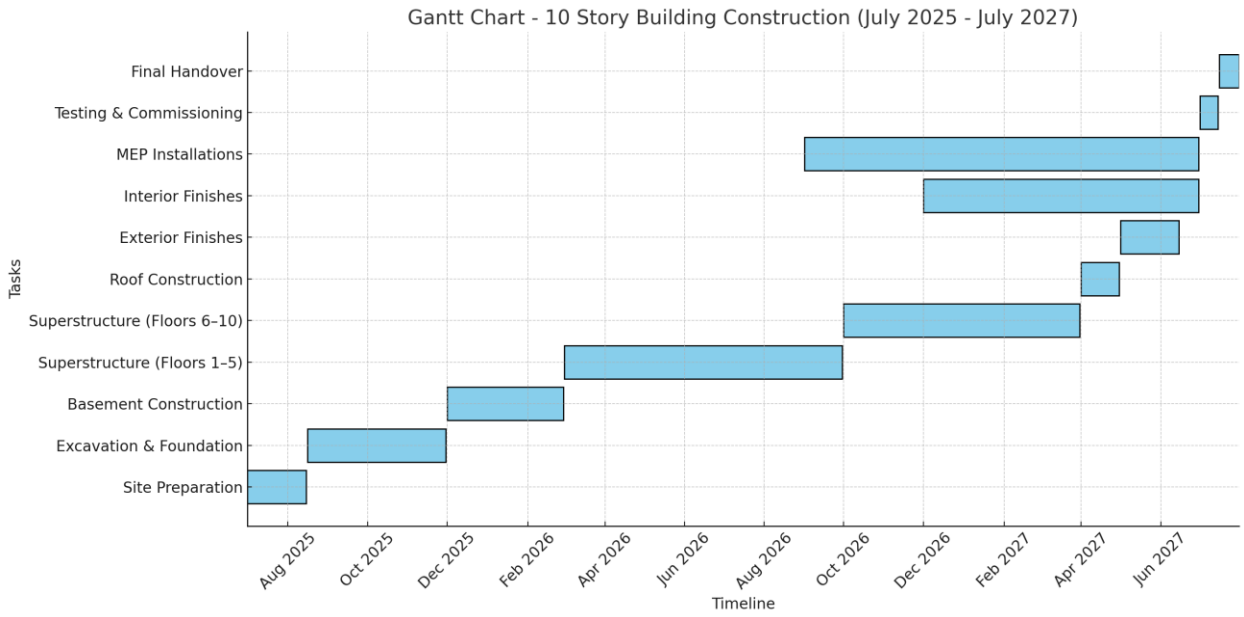


Figure III-9 Estimated construction Schedule of the construction project

Source: TA consultant

[16] Nature-based drainage system stressed to address Dhaka's waterlogging. (2023, October 3). The Business Standard. https://www.tbsnews.net/bangladesh/urbanisation/nature-based-drainage-system-stressed-address-dhakas-waterlogging-711690

Figure III-10 Layout of the proposed IBA Annex building complex

Source: Detailed Architectural Design

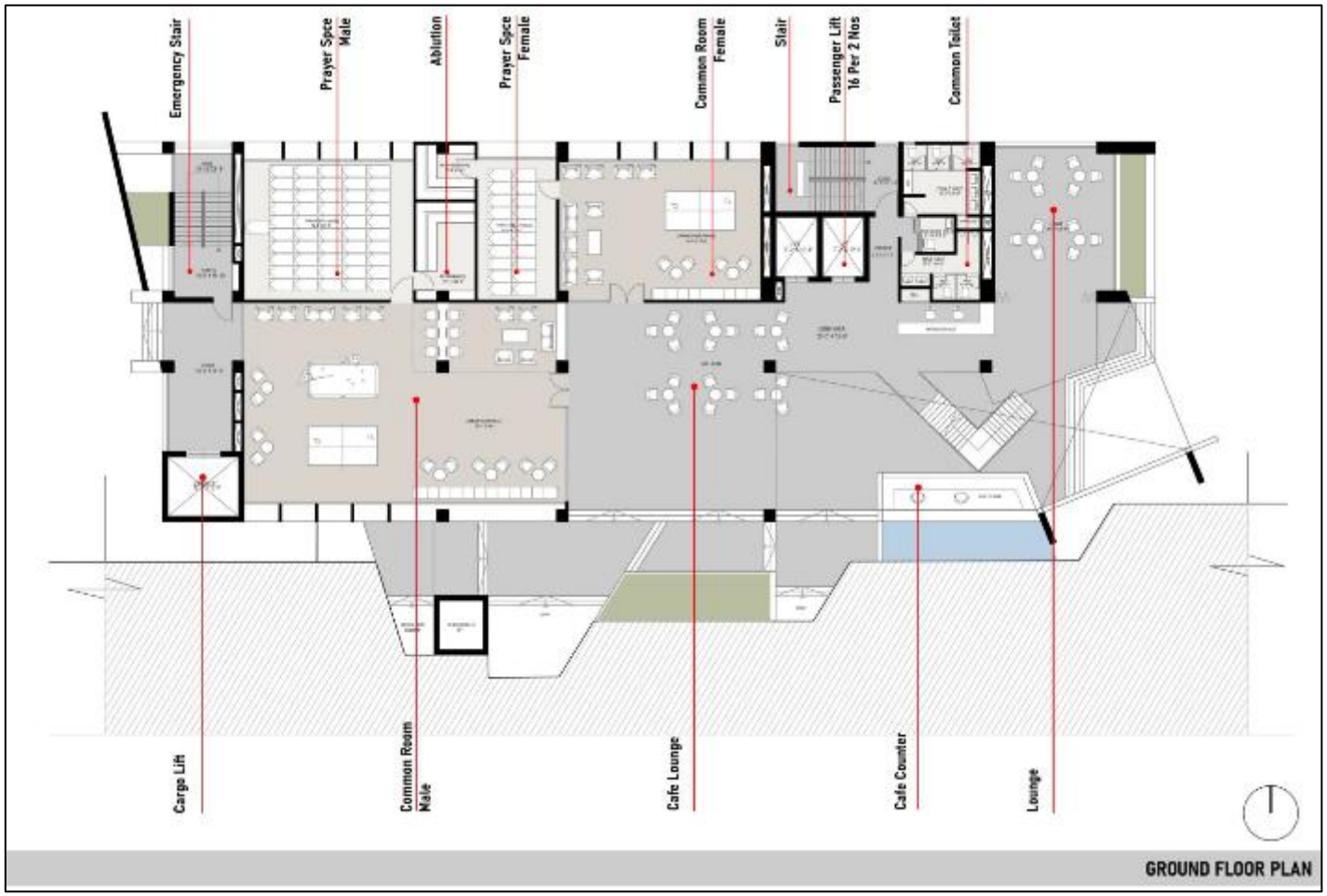


Figure III-11 Ground floor plan of the proposed additional IBA building.

Source: Detailed Architectural Design

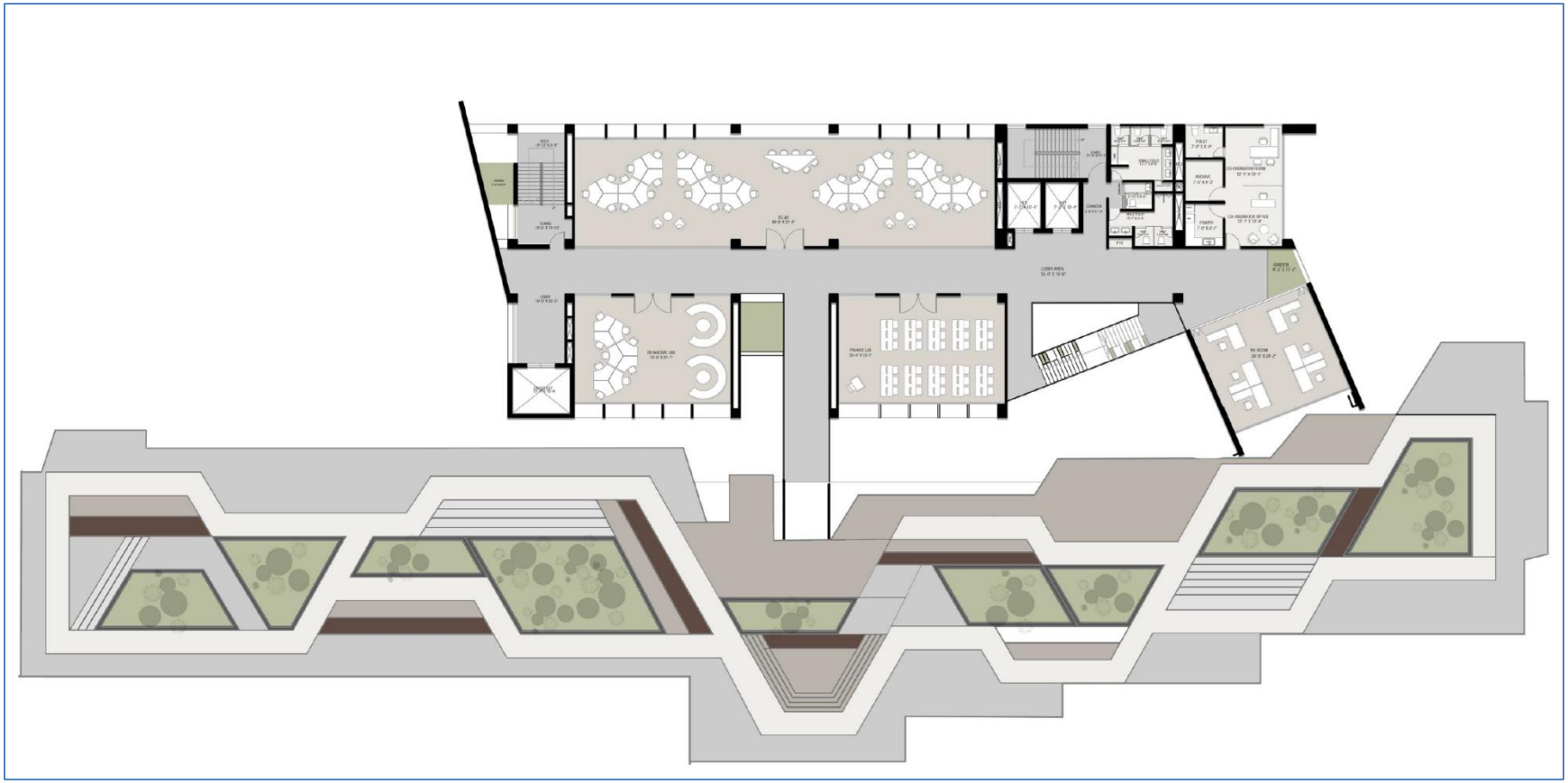


Figure III-12 Rooftop view of the proposed Annex IBA building. Green patches indicate 'green space'

Source: Detailed Architectural Design

Figure III-13 3-D view of the proposed Annex IBA building indicating green space arrangement and passive cooling system

Source: Detailed Architectural Design

IV. BASELINE ENVIRONMENT

A. Location setting

80. **Siting.** The proposed additional building is located within the Dhaka University campus, IBA territory (Figure I-1). The IBA campus is located in the north-eastern part of Dhaka University and located by the road of Kazi Nazrul sarani. Shahbagh road is located to the north of the campus while Nilkhet road is located to the south of the campus (Figure IV-1). The IBA campus is adjacent to the DU 'Kala bhaban'.

Figure IV-1 Location of the proposed additional building at IBA, Dhaka University.

Source: Map produced by TA consultants based on Google Earth Image

81. **Connectivity.** Dhaka University is well connected within Dhaka. Bus and metro-rail has stops at Dhaka University. The metro rail service connects the TSC station to the central business district of Motijheel.

B. Physical Environment

1. Landform

82. Topography of Dhaka university region of Dhaka is flat in nature, as the surface area ranges between 12 and 14 metres (calculated from topographic map[17]). In general, the surface elevation of the area Dhaka are ranges between 1 and 14m and most of the built-up areas located at elevations of 6-8m. The land area above 8 meters msl covers about 20 square kilometers. The land ranging from 6-8 meters while 170 square kilometers of Greater Dhaka is below 6 meters (FAP 1991[18]). See Figure IV-2 for topographic relief of the project region.

Figure IV-2 Topographic relief of Dhaka university region.

Source: https://en-gb.topographic-map.com/maps/lpj4/Dhaka

[17] Web: https://en-gb.topographic-map.com/maps/lpj4/Dhaka/, date accessed: 11 June 2021
[18] FAP. (1991). Master Plan Study for Greater Dhaka Protection Project. In Flood Action Plan. Dhaka: Japan International Cooperation Agency

83. The site is a developed low-lying flat land that was developed during the establishment of IBA campus (Figure IV-3). In general, the land slopes gradually lower from east to west. The proposed site is in low flooding risk according to Rajuk[19].

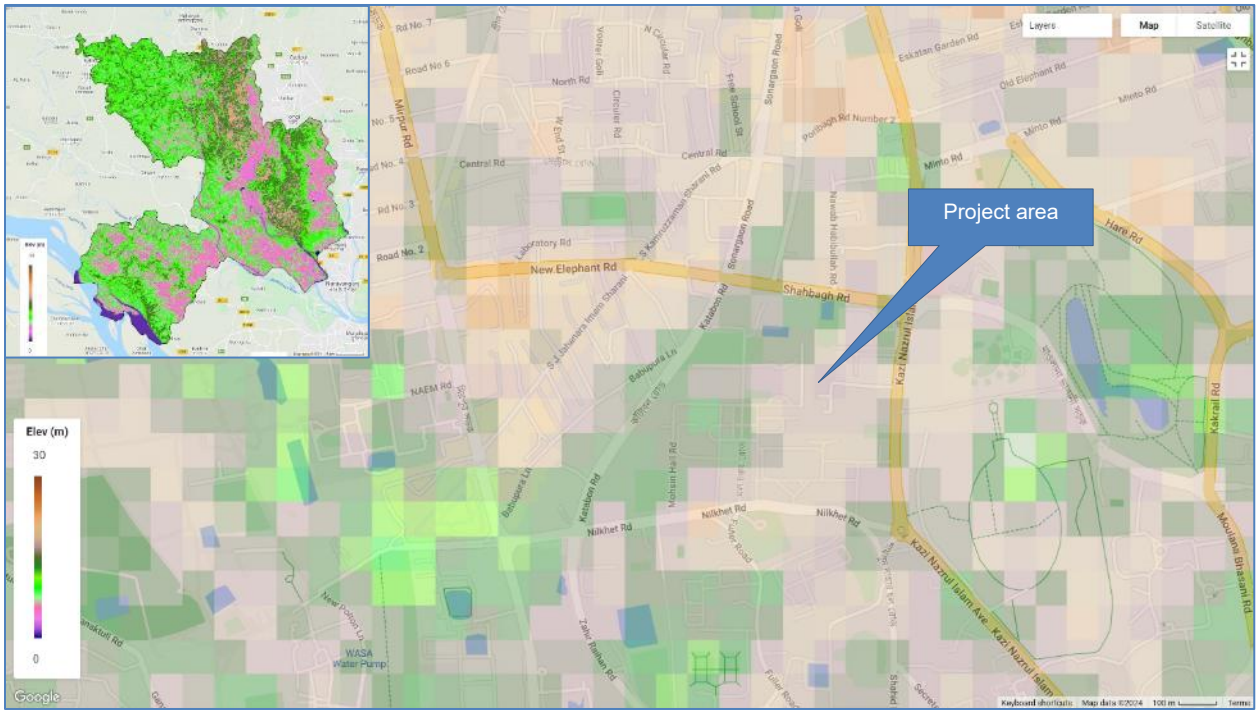


Figure IV-3 DEM map of the project area.

Source: TA consultants using GEE and CGIAR/SRTM90_V4 data

[19] Final Report. Preparation of Detailed Area Plan (DAP) for Airport-Demara Bypass Area (Location-6), RAJUK.

2. Geology and geomorphology

84. Dhaka is built on two geologic units: partly on the southern tip of the elevated Pleistocene terrace, the Madhapur tract and partly on the surrounding low-lying Holocene floodplains (Rahman, Siddique and Kamal 2017[20]). The Madhupur Clay is the oldest sediment exposed in and around the city area having characteristic topography and drainage. The major geomorphic units of the city are: the high land or the Dhaka terrace, the low lands or floodplains, depressions and abandoned channels. Low lying swamps and marshes located in and around the city are other major topographic features (Banglapedia undated).

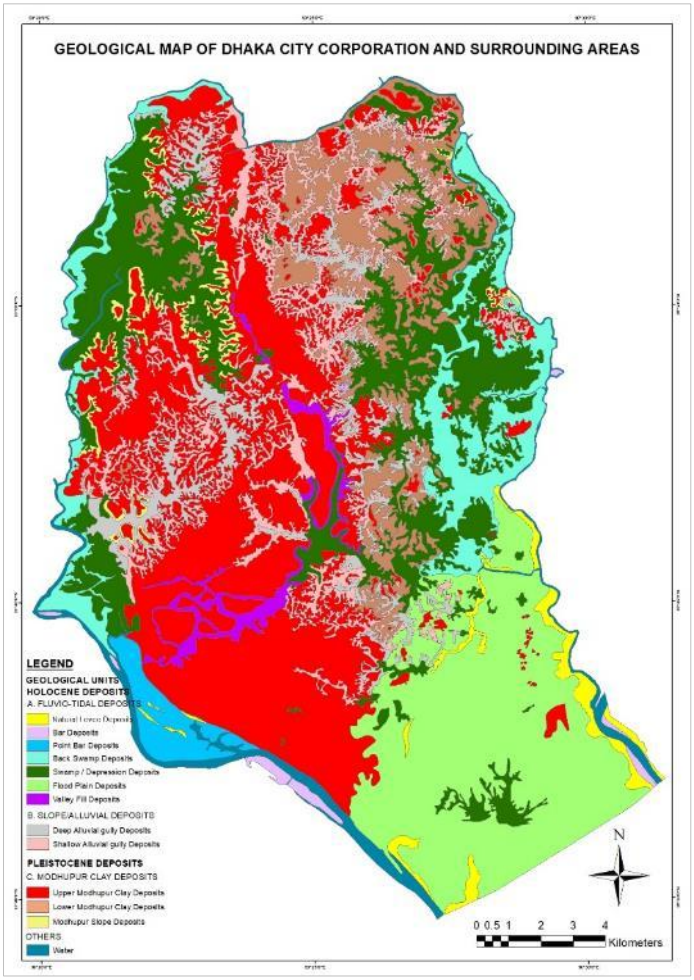


Figure IV-4 Geological map of Dhaka city and surrounding areas (Source: GSB, URL: http://www.gsb.gov.bd/)

85. The surface geology of Dhaka has been divided into six units: 1) Pleistocene terrace deposit, 2) Holocene terrace deposit, 3) Holocene alluvial valley fill deposit, 4) Holocene alluvium, 5) Holocene channel deposit, and 6) Artificial fill (Rahman, Siddique and Kamal 2017). The Pleistocene terrace sediments are the floodplain deposits of the earlier Ganges-Brahmaputra River system, which is yellowish brown, medium stiff to very stiff silty clay and medium dense to dense silty sand (Morgan and McIntire 1959). On the other hand, the Holocene floodplain deposits of the Ganges and Brahmaputra rivers are composed of gray, very soft to medium stiff silty clay and very loose to medium dense sand, silty sand, and silt (Morgan and McIntire 1959[21]; Rahman et al. 2015[22]). See Figure IV-4 for a geological map of Dhaka city and its and its surroundings.

86. At the proposed site, the moisture content and liquid limit results obtained for the Madhupur clay show that it is normally consolidated to slightly over-consolidated, perhaps due to groundwater pumping. The clay has intermediate to high plasticity and is overlain by the Dupi Tila formation of medium to coarse sand. The incised channels and depressions within the city are

[20] Rahman, MZ., Siddique, S. and Kamal, ASMM. (2017) Probabilistic seismic hazard analysis for Dhaka city, Bangladesh. In: proceedings of the 70th Canadian Geotechnical Conference and 12th Joint Canadian Geotechnical Society/IAH Canadian National Chapter Groundwater Conference, GeoOttawa 2017, October 1-4, Ottawa, Canada.

[21] Morgan JP, McIntire WG (1959) Quaternary geology of the Bengal Basin, East Pakistan and India. Bulletin of the geological society of America 70:319–342.

[22] Rahman MZ, Siddique S, Kamal ASMM (2015) Liquefaction hazard mapping by liquefaction potential index for Dhaka City, Bangladesh. Engineering Geology 188:137–147. doi: 10.1016/j.enggeo.2015.01.012.

floored by recent alluvial flood plain deposits (Hasan, Burgess and Dottridge, 1999[23]; Kamal and Midorikawa 2006[24]).

3. Seismicity

87. Bangladesh is divided into 3 seismic zones based on the vulnerability to earthquakes and possible severity of damages. In all the classifications Dhaka city and its surroundings are shown to be situated in the seismic zone 2, the medium risk/hazard zone (Figure IV-5). According to Earthquake Disaster Risk Index (EDRI) parameters Dhaka is one of the top twenty high earthquake risk cities in the world (Cardona, Davidson and Villacis 1999[25]). Dhaka is slightly elevated above the surrounding floodplains and represents mostly flat land with minor undulations. Topographically Dhaka is of low relief with many low depressions. According to Alam (1988) [26], the Madhupur Tract is structurally controlled. The Pleistocene sediments of Madhupur Tract have been affected by numerous episodes of faulting. These faults are probably the branch out surface faults from the low dipping western extension of Burma Arc detachment fault. Dhaka lies within 50 to 500 km distances from the seismogenic faults and sits on the Burma Arc detachment fault. Dhaka city falls in seismic zone II of the seismic zoning map of Bangladesh (Figure IV-5).

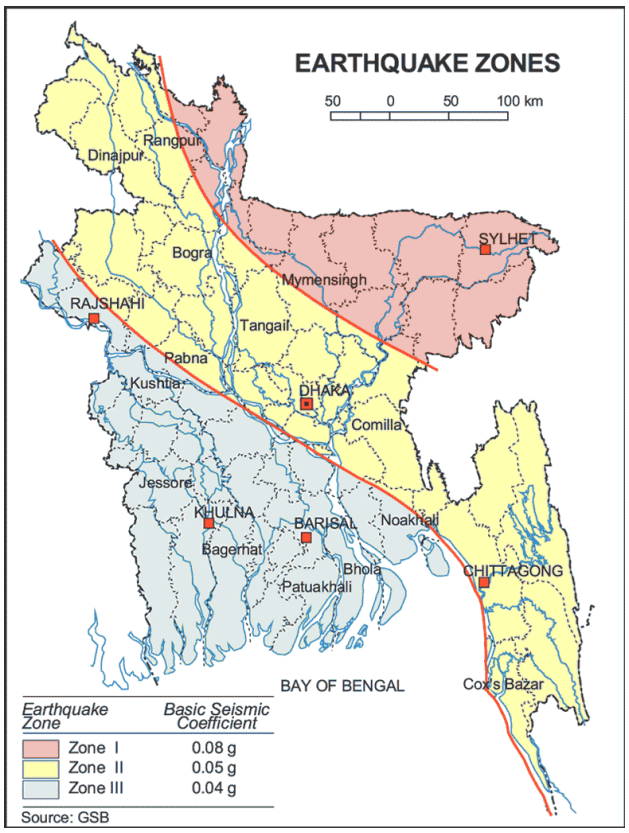


Figure IV-5 Seismic zoning map of Bangladesh (Source: GSB, URL: http://www.gsb.gov.bd/))

4. Hydrology and drainage

88. Regional hydrography and receiving waters. Dhaka is located within a low-lying deltaic floodplain and is surrounded by a peripheral river–channel network that governs its surface-water drainage. The city's principal boundary rivers/channels include the Buriganga to the south/southwest, Turag to the west, Tongi Khal to the north, and Balu to the east; these are hydraulically linked to the wider Shitalakhya–Dhaleshwari system and act as the ultimate receiving waters for urban storm runoff and (in places) mixed drainage flows. The hydraulic

[23] Hasan, MK, Burgess, W. and Dottridge, J. (1999). The Vulnerability of the Dupi Tila Aquifer of Dhaka, Bangladesh. In: Impacts of Urban Growth on Surface Water and Groundwater Quality (Proceedings of IUGG 99 Symposium HS5, Birmingham, July 1999). IAHS Publ. no. 259, 1999.

[24] Kamal, ASMM. and Midorikawa, S. (2006). Geomorphological approach for seismic microzoning within Dhaka city area, Bangladesh. IAEG2006 Paper number 457. © The Geological Society of London 2006.

[25] Cardona, C., R. Davidson and C. Villacis. (1999). Understanding urban seismic risk around the world: A final report on the comparative study. A project of the United Nations RADIUS initiative, IDNDR, Geohazard International

[26] Alam, M K. (1988). Geology of Madhupur Tract and its adjoining areas in Bangladesh. Records of the Geological Survey of Bangladesh. Vol. 5, pt. 3. p.18.

performance of Dhaka's internal drainage is therefore strongly influenced by seasonal river stages and backwater effects during monsoon periods[27].

89. Drainage and waterlogging context (citywide and local). Dhaka experiences recurrent waterlogging primarily due to (i) high-intensity monsoon rainfall, (ii) loss and encroachment of natural canals/lowlands, and (iii) capacity constraints and clogging within the stormwater network. While some local surveys in peri-urban/northern fringe areas report very limited household-level formal drains (with a high share of kutcha or absent drainage), these figures should not be generalized to all central urban areas; rather, they illustrate the spatial disparity of drainage provision and the broader vulnerability of Dhaka's drainage services where informal development is expanding. Citywide, the overriding issue remains that drainage conveyance and retention are increasingly compromised by canal narrowing, siltation, solid-waste blockage, and illegal occupation[28].

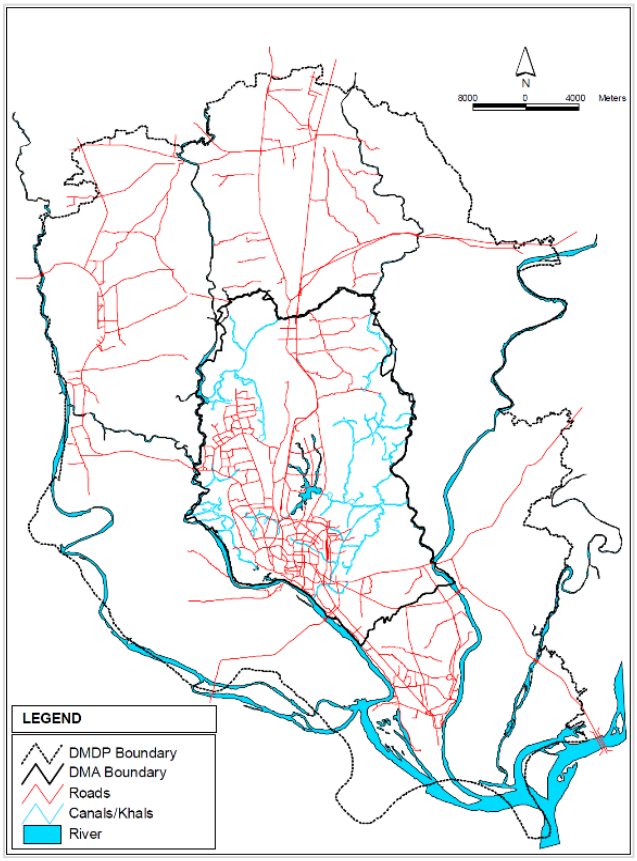


Figure IV-6 Natural drainage system of Dhaka city. Adapted from Tawhid (2004), data from DMDP, 1995

90. The Tejgaon–central Dhaka area is served by a combination of roadside drains, secondary/tertiary storm sewers, and outfalls that ultimately connect to major drainage corridors (khals) and detention/retention areas. However, despite the presence of municipal drainage infrastructure, waterlogging can still occur during peak rainfall due to limited drain capacity, backwater effects, and operational issues (blockage/sediment accumulation), which is consistent with the broader drainage challenges documented across Dhaka. For the IBA Annex Building, site drainage is expected to connect to the adjacent roadside drainage system and onward to the city's stormwater network; therefore, maintaining free-flow conditions (including routine desilting and solid-waste control) is critical to avoid localized ponding and nuisance flooding during monsoon events[29].

91. **Surface-water bodies and canal (khal) system.** Dhaka historically contained numerous canals and connected water bodies that provided conveyance and storage of stormwater. Major urban lakes and retention elements (e.g., Dhanmondi, Gulshan–Banani lake systems and linked detention areas such as Hatirjheel) function as part of the stormwater management system. Key khals that remain hydraulically important include the Begunbari system (linked with major detention/retention functions), as well as other principal canals referenced in government and development-partner environmental documentation (e.g., Abdullahpur, Diabari, Manda, Digun,

[27] https://www.banglajol.info/index.php/JLES/article/view/20126/13909
[28] https://www.bip.org.bd/admin/uploads/bip-publication/publication-11/paper/20141016154547.pdf
[29] https://iwaponline.com/jwcc/article/12/5/1944/79182/Adequacy-assessment-of-an-urban-drainage-system

Meradia–Gazaria, Kallyanpur), though many have deteriorated or been partially lost due to encroachment and culverting[30].

92. Function of khals, drainage partitioning, and dependence on river levels. Dhaka's natural and engineered drainage comprises khals, storm sewers and tertiary drains that route runoff into detention/retention areas and then discharge to surrounding rivers—often via pumping in protected zones. Studies and sector reports commonly describe the city's canal network as being split broadly between western and eastern drainage catchments, with khals historically draining a major share of the urban area (often cited at ~80%) and catchment sizes commonly reported in the range of roughly 6–40 km² for individual khal systems. The effectiveness of these pathways is sensitive to monsoon river levels and the degree to which embankments and flood protection structures have altered historical connectivity between internal canals and the peripheral rivers[31].

93. Degradation of canals and implications for waterlogging (baseline risk). Progressive loss, narrowing, and culverting of canals—frequently cited for historic systems such as Dholai Khal and for heavily stressed channels such as Begunbari—has reduced conveyance and storage capacity and contributed to increased waterlogging frequency and duration in central Dhaka. Recent reporting also indicates that a substantial portion of the canal network under responsible agencies remains identifiable but is in deteriorated condition, underscoring the ongoing institutional and operational challenges in protecting urban drainage corridors from encroachment, pollution, and solid-waste blockage. This baseline trend is directly relevant to the project area because it elevates the importance of (i) robust site drainage design, (ii) keeping municipal outfalls functional, and (iii) integrating rainwater harvesting and on-site detention/controlled discharge measures to reduce peak runoff contributions[32].

94. **Wetland loss.** If the current rate of loss of wetland continues, before the year 2031 all temporary wetlands of Dhaka will disappear (Chowdhury 1988). This is alarming for earthquake scenario; all these lands are continuously being converted into urban land through landfill and these filled lands are vulnerable to liquefaction effect. Even after the enactment of the water body conservation act 2000, the city has lost huge number of wetlands (Anisha and Hossain 2014[33]).

95. In Dhaka city and its surroundings wetland arena (e.g., canals, lakes etc.) are disappearing at a rapid rate. According to the study of Mahmud et al. (2011)[34] total 18.72 km^2 of rivers and Khals were lost during this 30-year interval from 1978 to 2009 which was about 64.55% of Dhaka Metropolitan Area (DMA). They depicted that an ever-increasing trend of wetlands loss is found in DMA between 1978 and 2009. See Figure IV-8 for a comparative analysis of wetland loss in Dhaka city.

[30] https://www.bip.org.bd/admin/uploads/bip-publication/publication-11/paper/20141016154547.pdf
[31] https://www.gfdrr.org/sites/default/files/publication/123260-REVISED-WP-PUBLIC.pdf
[32] https://www.thedailystar.net/news/bangladesh/news/dhakas-lost-canals-once-flowing-now-forgotten-3778161
[33] Anisha, NF. And Hossain, S. (2014) a case study on water logging problems in an urban area of Bangladesh and probable analytical solutions. In: 2ndInternational Conference on Advances in Civil Engineering 2014 (ICACE-2014) 26 –28 December 2014 CUET, Chittagong, Bangladesh.
[34] Mahmud, MS., Masrur, A., Ishtiaque, A., Haider, F. and Habiba, U (2011) Remote Sensing & GIS Based Spatio-Temporal Change Analysis of Wetland in Dhaka City, Bangladesh.

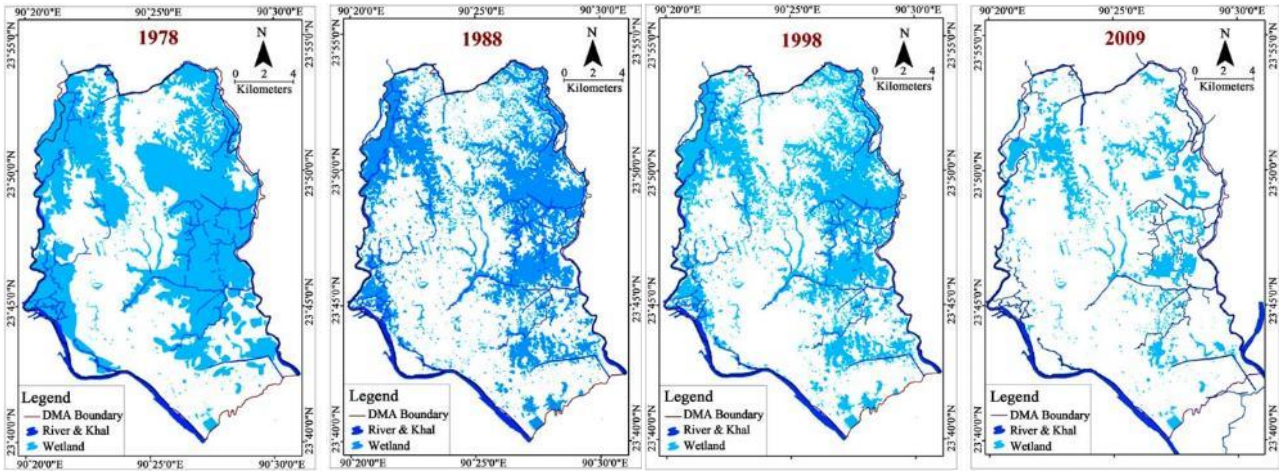


Figure IV-7 Trend of Dhaka's disappearing wetlands (Source: Mahmud et al. 2011)

5. Ground water table

96. The maximum depth to water table in the central part of the city i.e., Tejgaon and Sabujbagh areas, observed from BWDB piezometers, is about 67 to 57m below ground surface that is about 55m at Mirpur and 20-34m at Mohammadpur, Dhanmondi and Sutrapur areas close to the river periphery. The depth of the water table moves seasonally with annual recharge and discharge conditions. The amount of seasonal fluctuations varies from less than a meter to more than 10m depending on the local hydrological conditions, amount of ground water abstraction and natural discharge of ground water. In recent years, there is a declining trend in the water table due to large amount of ground water withdrawal (Bangladesh Water Development Board, 2007[35]).

97. In Dhaka City, Ground Water extraction started from a depth of 100m and in some extreme condition the well goes up to 300 meters to reach the main aquifer. The depletion rate varies from area to area as in Mirpur the ground water level dropped 53.75 meters between 1991 and 2008 at a rate of 3.2m per year. While the decline was 1.1m/y in Mohammadpur, 2.2m/y in Sabujbag, 0.5m/y in Sutrapur and 0.8 m/y in Dhaka Cantonment During the same period. The city's groundwater level has dropped about 20m over the last seven years at a rate of 2.81m per year, from the year of 2000, the rate is increasingly high.

98. Long term hydrographs from different parts of Dhaka city indicate the drop-in water level is increasing very rapidly throughout the city. For assessing hydrographs, eight groundwater monitoring stations of BWDB and BADC have been selected at different locations i.e., Gulshan, Sabujbagh, Lalbagh, Sutrapur, Mohammadpur, Dhanmondi, Tejgaon and Mirpur (BWDB 2007).

99. The maximum depth to water table in the central part of the city i.e., Tejgaon and Sabujbagh areas, observed from BWDB piezometers, is about 67 to 57m below ground surface that is about 55m at Mirpur and 20-34m at Mohammadpur, Dhanmondi and Sutrapur areas close to the river periphery. This continuous decline of water table with little or even no fluctuation is typical of over exploited aquifers (BWDB 2007).

[35] BWDB (2007). Effects of Over Withdrawal of Groundwater in Dhaka City. Dhaka: Bangladesh Water Development Board.

100. The declining rate of groundwater level is alarming as well at Tejgaon (60.42 m), Gulshan (62 m), and Sabujbagh (58.75 m). In these areas the water abstraction rate is higher than the recharge. The level of groundwater table of upper aquifer (<170 m depth) is declining about 2-3meter in every year. The overall groundwater level in the city is below 50 m (DWASA 2006[36])

101. In Dhaka City, Ground Water extraction started from a depth of 100m and in some extreme condition the well goes up to 300 meters to reach the main aquifer. The depletion rate varies from area to area as in Mirpur the ground water level dropped 53.75 meters between 1991 and 2008 at a rate of 3.2m per year. While the decline was 1.1m/y in Mohammadpur, 2.2m/y in Sabujbag, 0.5m/y in Sutrapur and 0.8 m/y in Dhaka Cantonment During the same period. (The Daily Star, 2010). The city's groundwater level has dropped about 20m over the last seven years at a rate of 2.81m per year, from the year of 2000, the rate is increasingly high.

6. Flooding and waterlogging

102. Over the last 25 years or so, Dhaka city and its adjoining areas are gaining the inertia of flood hazards and increasing loss of human resource damage (e.g., Gain at al., 2015[37]; Dewan et al., 2007[38]). In recent past, Dhaka city has seen severe river floods in 1950, 1955, 1970, 1974, 1980, (Huq and Alam, 2003[39]), 1987, 1988, 1998 and 2004 (Gain et al., 2015). The most memorable and devastating flood was in 1998 causing damage to approx. 262,000 houses worth BDT 2.3 billion (Islam 1998), about 1000km road surface (Siddique and Chowdhury 1998[40]), 223km of box culverts and about 510km of tank sewer and sewerage line (Siddique and Chowdhury 1998) and damage to water supply and sanitation worth USD 10 million (Faisal 1998 as reported in Faisal, Kabir and Nishat 2003[41]).

103. In the events of recurring floods in Dhaka city, experts attributed to these devastating occurrences as a combined effect of seasonal monsoon rainfall due to climate change (Gain et al. 2011) and upstream flow due to trans-boundary water governance (Gain and Schwab 2012). The western part of Dhaka city is heavily protected by embankment constructed after the flood of 1988. The embankment offers some protection against flooding. However, the eastern part of the city gets flooded annually. During the most recent flood of Bangladesh in 2019, the city also suffered, although not so heavily. The flooding occurred mostly in the eastern part of the city (Figure IV-9) since this low-lying floodplain area is still unprotected.

104. Apart from rainfall and upstream flow issues, flooding is also attributed to the improper and poor internal drainage system of Dhaka caused by uncontrolled urbanization (Mawla and Islam 2013). The drainage problem often leads to waterlogging in Dhaka city which are often

[36] DWASA (2006). Annual Report 2004-2005. Dhaka: Dhaka Water and Sewage Authority.
[37] Gain, A. K., Mojtahed, V., Biscaro, C., Balbi, S., Giupponi, C. (2015): An integrated approach of flood risk assessment in the eastern part of Dhaka City. - Natural Hazards, 79, 3, pp. 1499—1530.
[38] Dewan, AM., Islam, MM., Kumamoto, T. and Nishigaki, M. (2007). Evaluating Flood Hazard for Land-Use Planning in Greater Dhaka of Bangladesh Using Remote Sensing and GIS Techniques. Water Resource Management (2007) 21:1601–1612, DOI: 10.1007/s11269-006-9116-1.
[39] Huq, S. and Alam, M. (2003) Flood Management and Vulnerability of Dhaka City, In: Chapter 9 - Building Safer Cities: The Future of Disaster Risk, Disaster Risk Management Series. Kreimer, A., Arnold, M. and Carlin, A. (eds.) The World Bank, Disaster Management Facility, 2003 Washington, D.C.
[40] Siddique, Q. I. and Chowdhury, M. H.: 1998, Flood-98: Losses and Damages, National Seminar on Flood '98 and Management of Floods in Future (December 8, 1998), Jointly organized by National Committee for Relief and Rehabilitation and Dhaka University, Dhaka.
[41] Faisal IM, Kabir MR, Nishat A (2003) The Disastrous Flood of 1998 and Long-Term Mitigation Strategies for Dhaka City, Natural Hazards 28: 85–99, 2003.

reported to be frequent, persistent, and severe (e.g., Anik, 2019[42]; Hasan, 2018[43]). In fact, Dhaka city suffers from extensive water logging during the monsoon (May to October) as a regular phenomenon due to fast and uncontrolled urbanization (Mawla and Islam 2013[44]). Since many structures are being built with low plinth level in recent years, are exposed to risk of flooding and waterlogging.

105. Dewan et al. (2007) suggested, infilling of natural channels and lowlands is the primary cause for increasing flood hazard in Greater Dhaka. Although Dhaka city used to have the natural drainage canals that would carry the floodwater to the rivers, due to the increasing population pressure, those canals have lost their ability to drain floodwater during the monsoon. Further addition is the illegal occupancy of the natural canals and drains systems.

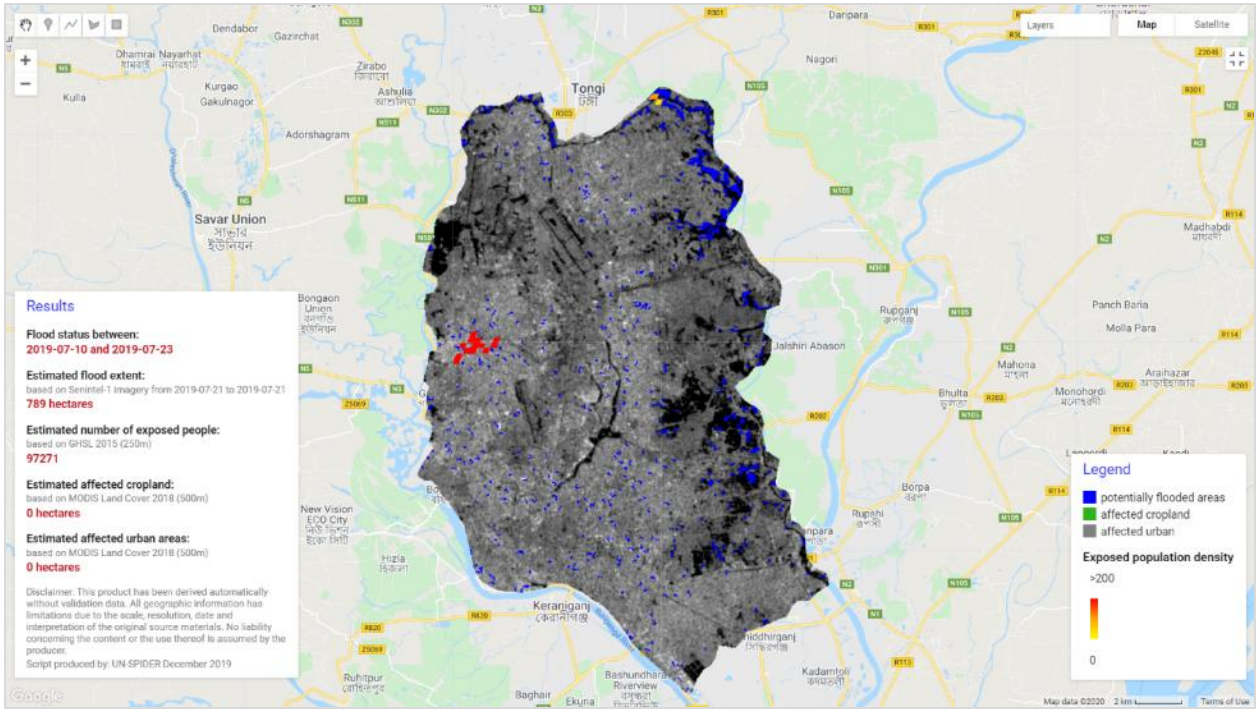


Figure IV-8 Flood of 2019 in Dhaka city analyzed using Sentinel-1 SAR data in Google Earth Engine. The Red-yellow vertical gradient scale indicates the number of people exposed per 250x250m cell. Data credit: Peckel et al. (2016) and EC-JRC and CIESIN (2015).

106. Analysis of the worldwide water occurrence dataset published by Peckel et al. (2016)[45] for the period of 1984-2015 suggest the eastern part of Dhaka metropolitan is more venerable to flooding and waterlogging than the western part, especially the banks of River Balu and River

[42] Anik, SSB. (2019) The never-ending woe of waterlogging in Dhaka, Dhaka Tribune, 13 July 2019, URL: https://www.dhakatribune.com/bangladesh/dhaka/2019/07/13/the-never-ending-woe-of-water-logging-in-dhaka Date Accessed: 11 May 2020.

[43] Hasan, J. (2018) Problem of waterlogging in Dhaka city persists: Residents suffer as investments hardly pay off, The Financial Express, July 18, 2018. URL: https://thefinancialexpress.com.bd/public/national/problem-of-waterlogging-in-dhaka-city-persists-1532750257, Date accessed: 11 May 2020.

[44] Mawla, QA, Islam MS. (2013) Natural Drainage System and Water Logging in Dhaka: Measures to address the Problems. Journal of Bangladesh Institute of Planners, Vol. 6, December 2013, pp. 23-33.

[45] Peckel, J., Cottam, N., Gorelick, N., and Belward, AS (2016) High-resolution mapping of global surface water and its long-term changes. Nature 540, 418-422 (2016) doi:10.1038/nature20584

Turag, which confirms the annual flooding in this area (Figure IV-8). These parts include Uttara ABM city, Basundhara residential area, Khilgaon and Demra. On the western part, especially Mirpur, Pallabi and Cantonment area is vulnerable to waterlogging and flooding. While Mohammadpur, Bosila, Dhaka new Market area of the western part has lost many wetlands, in the eastern part, parts of Basundhara Residential area and Khilgaon has its wetlands. This can be ascertained to the rapid land development of the residential areas over last 2 decades or so. As seen in Figure IV-10 (right), most of the areas of Dhaka city east and parts of Dhaka city west, as mentioned earlier, goes under water for 1-2 months, indicating seasonal flooding or waterlogging. The IBA Annexure Building site falls within the Nilkhet–New Market–Azimpur catchment of Dhaka South City Corporation (DSCC), an area that has long been recognized as one of the capital's most persistent waterlogging hotspots. The existing drainage network in this catchment relies on aging underground pipe drains and box culverts originally designed decades ago, several of which discharge toward the Buriganga River via channels that were partially disrupted when two 30-inch drainage lines passing through the adjacent BGB headquarters were permanently sealed after 2009, leaving only a single, frequently clogged outlet to handle stormwater from the Azimpur/New Market/Nilkhet zone. Dhaka's broader storm drainage system, managed jointly by Dhaka WASA and the city corporations, combines roughly 22 open canals, underground pipes ranging from 450 to 3,000 mm in diameter, box culverts, and a limited number of pumping stations, but this network is widely reported as under-capacity relative to current impervious surface area and rainfall intensity, particularly during the May–October monsoon. As a result, the area surrounding the Dhaka University campus, including Nilkhet, regularly experiences knee- to waist-deep inundation during heavy monsoon events, most recently during the extremely heavy rainfall event of July 2026, when 192 mm of rain over two days overwhelmed the local drainage gates and pumping infrastructure. Given this context, the subproject site's existing surface drainage is characterized by shared municipal/university channels with limited independent conveyance capacity, underscoring the importance of on-site measures, including elevated design platforms, green infrastructure for stormwater absorption, and permeable surfaces — to reduce the building's exposure to and contribution toward local waterlogging.

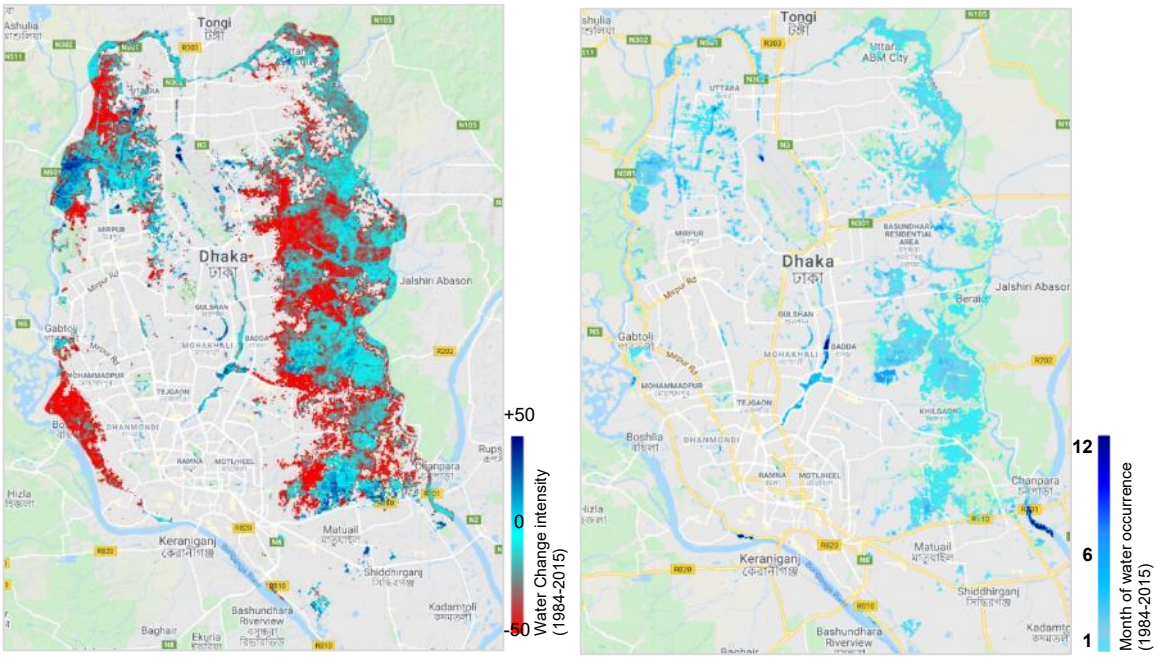


Figure IV-9 **Analysis of water change intensity (left) and monthly water occurrence (right) in Dhaka city. The figure at left shows extent waterbody has appeared and disappeared over the year of 1984-2015. The figure at right shows appearance of water over a certain period measured in month. The figures are produced using worldwide data set published by Peckel et al. (2016) coded in Google Earth Engine.**

7. Climate

107. The project site is located in Dhaka Division. According to Köppen climate classification, it falls under Aw category which is characterized by tropical wet and dry climate. Hence, it experiences hot and humid summers and dry winter. According to the climatic characteristics, Bangladesh is divided into 7 different climatic sub-regions. The study area of the project falls under the south-central climatic zone of the country.

108. Temperature data of Dhaka Station from Bangladesh Meteorological Department (BMD) for 45 years (from January 1980- December 2025) has been analyzed to see the monthly variation of the average maximum temperature which is between 39.6°C to 30.1°C. The monthly variation of the average minimum temperature is 22.5°C to 6.5°C. See Figure IV-11 for details.

109. Monsoon is a prominent season in this area. The average monthly rainfall during monsoon (June-September) season from 1980-2025 is 332 mm/month. Annual average rainfall is 2066 mm/year. The driest period of the year is winter when the average monthly rainfall varies from 21 mm/month to 7.21 mm/month. See Figure IV-10 for details.

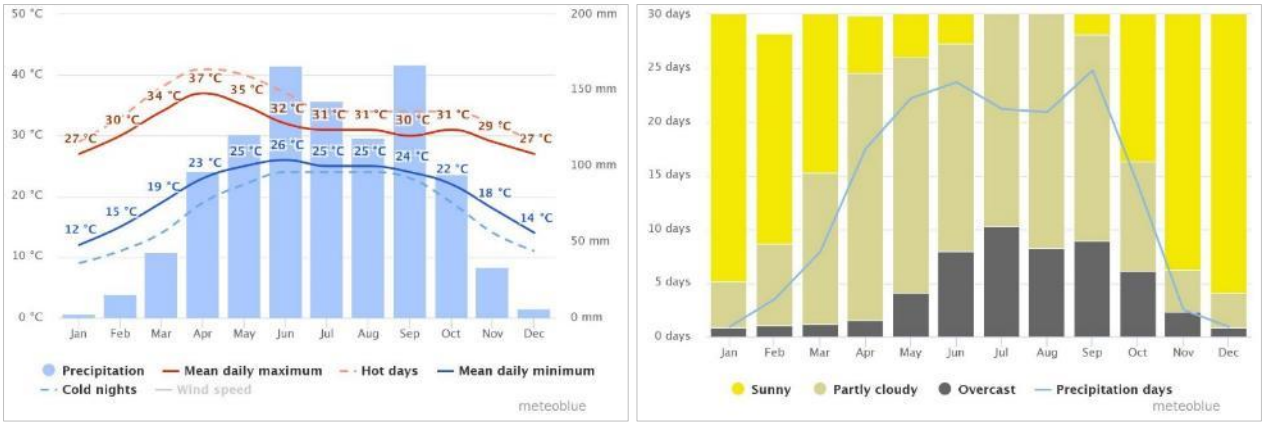


Figure IV-10 Precipitation, temperature, sunshine hours, and precipitation days record of Dhaka BMD station

Source: https://www.meteoblue.com/en/weather/forecast/modelclimate/dhaka_bangladesh_1185241, date accessed: 1 May 2024

C. Biological environment

110. **Flora and fauna.** As described earlier, the proposed site is barren with some trees are present at the edge of IBA's boundary wall (Figure IV-12). The site is currently not used by the teachers and students. Trees present in the site include Mahagony, tamarind, acacia, and jackfruit. For construction, 6 trees will be removed (2 mahogany, 2 acacia and 2 tamarind), which are located at the edge of the boundary wall. Species most commonly reported on the Dhaka University campus and in similarly urbanized parts of the city include the House Crow (Corvus splendens), Common Myna (Acridotheres tristis), House Sparrow (Passer domesticus), Jungle Babbler, Spotted Dove, Blue Rock Pigeon, and Black Drongo, all of which are urban-adapted species classified as "urban exploiters" or "urban dependent" that thrive in impervious, low-vegetation settings such as the project site and its immediate surroundings. At present, the project site itself lacks established landscaping, tree cover, or ornamental plantings, distinguishing it ecologically from the more vegetated portions of the wider Dhaka University campus (such as Curzon Hall grounds and the central campus green spaces), which serve as the primary refugia for the bird species noted above. Given the barren condition of the site, the ecological baseline is characterized by an absence of standing vegetation, nesting substrate, or water features, and any bird activity observed would be transient foraging by common urban-exploiter species from adjacent campus greenery rather than resident use of the site itself; this is expected to result in negligible direct biodiversity impact from construction, provided that opportunities for post-construction landscaping and green infrastructure (as proposed elsewhere in this IEE) are realized to restore some habitat value.

Figure IV-11 The proposed site has some trees present at the edge of the boundary wall.

Source: TA consultants

111. **Protected areas and reserve forests.** There is no protected area (PA) or reserved forest within 20 km of the project boundary. The nearest PA from the proposed subproject area is Bhawal Protected Forest, which is located roughly 25km from the project boundary (Figure IV-14).

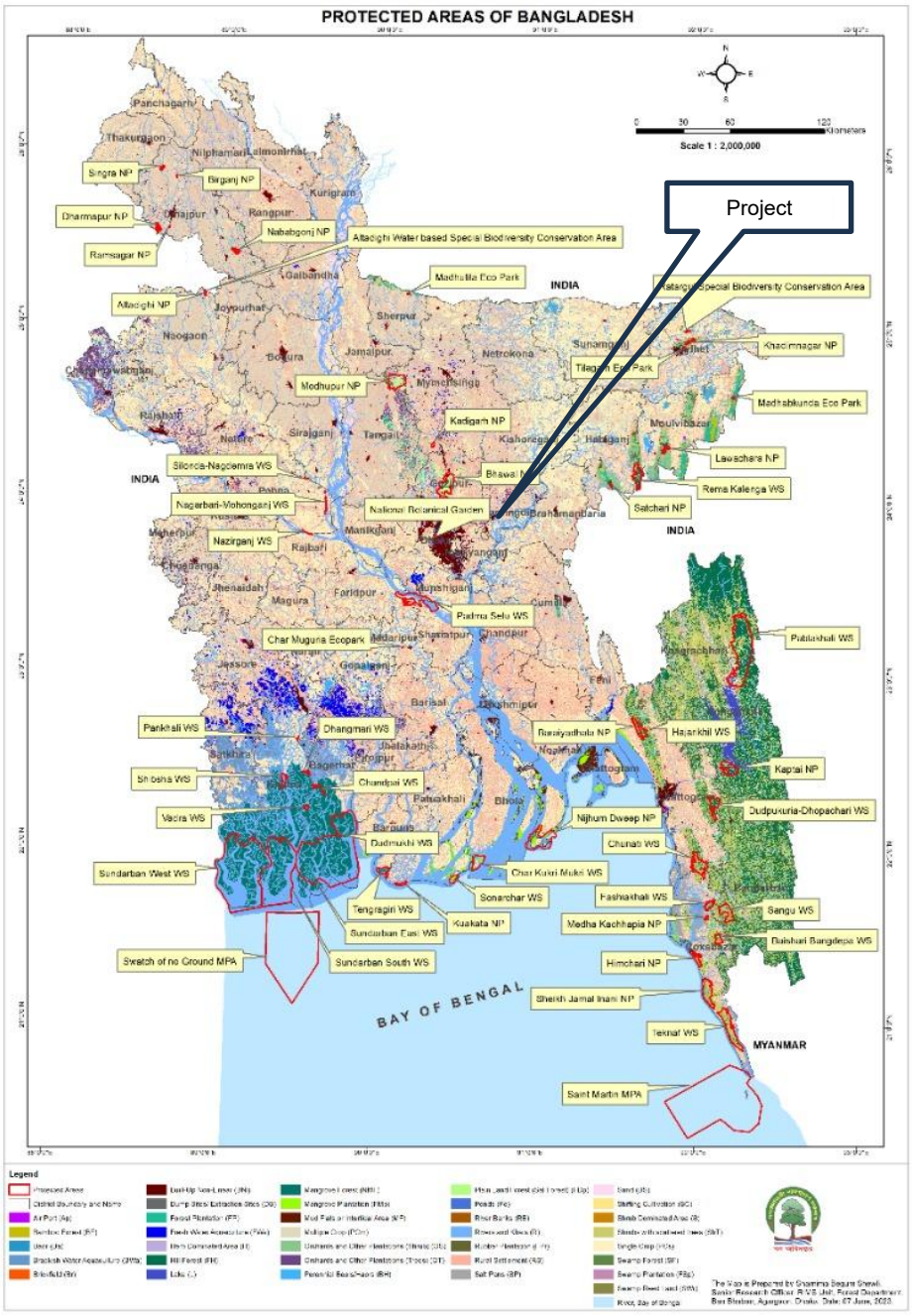


Figure IV-12 Protected areas of Bangladesh and location of the porposed project. The nearest PA is Bhawal national Park, located about 25km from the proposed site.

Source: Map collected from Forest Department website

D. Socio-Economic and cultural Environment

112. **Population and demography.** Dhaka is the most populated city in Bangladesh, and it is also one of the most populated cities in the world. According to Population and Housing Census, 2011 the city itself has a population estimated at about 8 million. According to a recent estimate of World Bank, total population of Dhaka City stands more than 20 million in 2019. Figure IV-15 shows an illustration of population growth in Dhaka City from 1960 to 2019.

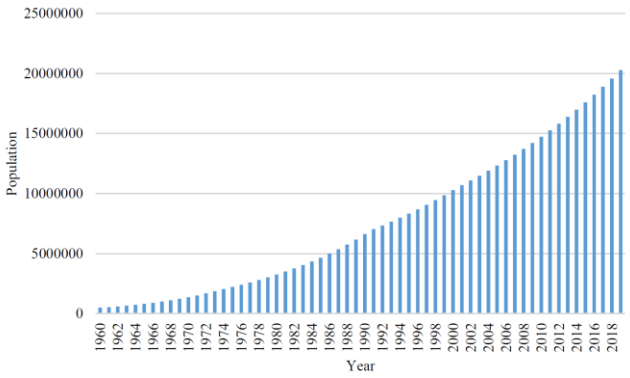


Figure IV-13 Population of Dhaka city.
Source: World Bank 2000

113. **Land Use.** According to a study conducted by Imran et al (2021) in 1993, the dominant land cover was lowland with 32.54%, followed by built-up area (26.07%), bare soil (16.95%), vegetation (15.99%) and water bodies (8.45%). Interestingly, the built-up area turned into the dominant land cover by reaching 35.74%, and lowland, bare soil, vegetation, and water bodies decreased to 28.9%, 16.39%, 12.28% and 6.69%, respectively in 2007. From 1993 to 2007, a significant increase (37.09%) in the built-up area was obtained and reached 35.74%. Vegetation, water bodies and lowland areas decreased by 23.21%, 20.77% and 11.2%, respectively, while the reduction of bare soil was negligible (0.24% per year). For the second time interval from 2007 to 2020, bare soil and built-up areas substantially increased by 118.72% (9.13% per year) and 22.12% (1.7% per year), respectively. Furthermore, lowland, vegetation and water bodies decreased by 73.04%, 46.1% and 8.82%, respectively. Finally, for the entire study period from 1993 to 2020, bare soil and the built-up area increased by 111.49% (8.58% per year) and 67.41% (5.19% per year), respectively. Lowland substantially decreased by 76.6% (5.85% per year) while vegetation and water bodies decreased at the rate of 4.51% per year (58.62%) and 2.14% per year (27.77%), respectively. Overall, the built-up area increased gradually during the study period while bare soil increased abruptly in the second stage of the study period (2007–2020).

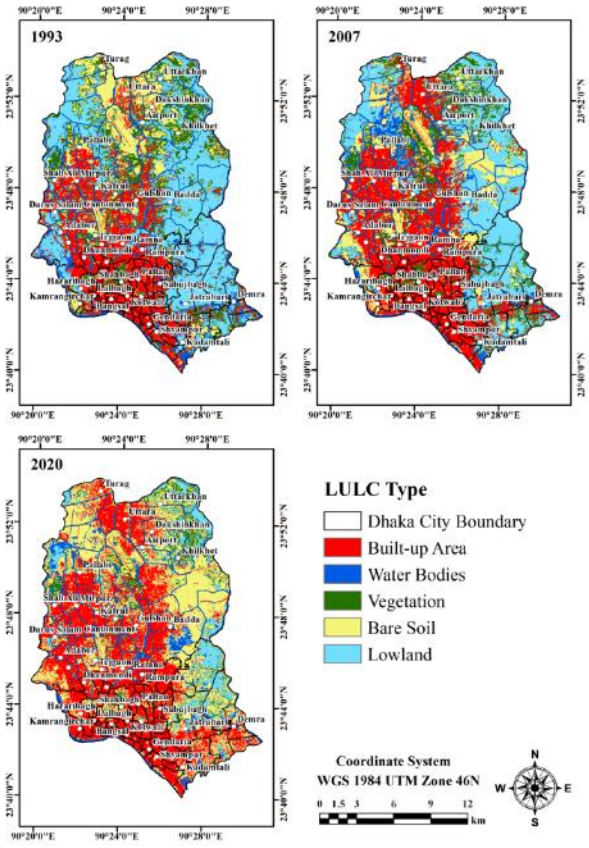


Figure IV-14 Land cover map of Dhaka City for the years (a) 1993, (b) 2007 and (c) 2020

Source: Imran et al. (2021) Impact of Land Cover Changes on Land Surface Temperature and Human Thermal Comfort in Dhaka City of Bangladesh. Earth Systems and Environment. https://doi.org/10.1007/s41748-021-00243-4

114. **Industry and commerce.** The main business districts of the city include Motijheel, Panthapath and Gulshan. Bashundhara City is a recently developed economic area that houses many high-tech industries and corporations and a shopping mall that is one of the largest in Southeast Asia, frequented daily by more than 25,000 people[46]. The Export Processing Zone in Dhaka was set up to encourage the export of garments, textiles and other goods. The EPZ is home to 80 factories, which employ mostly women[47]. The Dhaka Stock Exchange is based in the city, as are most of the large companies and banks of Bangladesh, including the Bangladesh Bank, HSBC, Citibank and the Grameen Bank. Urban developments have sparked a widespread construction boom, causing new high-rise buildings and skyscrapers to change the city landscape. Growth has been especially strong in the finance, banking, manufacturing, telecommunications and services sectors, while tourism, hotels and restaurants continue as important elements of the Dhaka economy.

115. **Infrastructure, Transport and Communications.** Dhaka, being the largest urban agglomeration in Bangladesh, faces significant challenges related to infrastructure. The presence of adequate service infrastructure is crucial for a better quality of life. Unfortunately, Dhaka City Region (GDR) suffers from a severe infrastructure deficit. Dhaka is well connected by air, water, rail, and road networks to cities within the country and surrounding countries. However, the capacity of the modes of transport, particularly for passengers, is still low. The transport infrastructure of GDR is characterized generally by poor network planning, inadequate road capacity, poor road maintenance, and poor traffic management, undisciplined traffic management, overcrowding, slow movement, congestion, and frequent accidents (Islam 2005). Slow moving cycle rickshaws, along with fast-moving motorized vehicles mix freely in the city streets, which are often chaotic, and this creates congestion for unusually long periods (on average an hour for a short trip of about two kilometers). Apart from rickshaws, there are rickshaw vans and pushcarts and a few horse carts (in older Dhaka only), which ply regularly for business in the City. However, there are buses, CNG run three-wheeler “baby taxis”, minibuses, and private cars to accommodate the limited road spaces in the City. The road transport system in Dhaka is operated by formal (public and private transport) and informal transportation systems. The most obvious negative conditions concerning the transport sector include poor transport management, using the same routes by both motorized and nonmotorized traffic and lack of provisions for parking facilities in the City. The problem further intensifies by the poor management and coordination among responsible organizations. This situation severely constrains smooth functioning of traffic and costs very high for sustainable economic development and the quality of life (Nazem and Hossain 2019).

116. **Water supply[48].** Dhaka WASA has been actively engaged in activities on the DU campus. For example, in September 2024, DWASA used its own transport to deliver bottled drinking water to a relief collection centre at the Teacher-Student Centre (TSC) of Dhaka University. This demonstrates that DWASA recognizes the campus as part of its service area and operational zone.

117. **Water supply infrastructure and access.** The IBA campus, located in the Nilkhet area of central Dhaka, falls within the historic core of Dhaka WASA's sewerage service area, which is

[46] Buerk, Roland (2 November 2004). "Shoppers flock to Dhaka mega-mall" (PHP). BBC News. Archived from the original on 3 April 2023. Retrieved 2 October 2006

[47] BBC News (2006). “Dhaka clothes factories to reopen". BBC News. 6 June 2006.

[48] Nazem, NI. and Hossain, MA. (2021) Chapter 14: Strategic Infrastructure Supporting the Quality of Life in Dhaka. In: Multidimensional Approach to Quality-of-Life Issues – A Spatial analysis. Sinha BRK (ed). Springer. ISBN 978-981-13-6957-5 https://doi.org/10.1007/978-981-13-6958-2

part of the Dhaka South (Pagla) sewerage catchment established over a century ago and progressively expanded since. Regional infrastructure records indicate the presence of an operational Nilkhet lift pumping station, which conveys collected sewage from the surrounding catchment (including the university precinct) toward the trunk sewer network for eventual treatment at the Pagla Sewage Treatment Plant, suggesting that the IBA campus is likely connected to, or in close proximity to, the piped sewerage network rather than relying solely on decentralized on-site systems. However, Dhaka WASA's sewerage coverage citywide remains partial, estimated at around 30 percent of the population, with the remaining areas depending on septic tanks and soak pits for on-site treatment and disposal, so the exact connection status and capacity adequacy for the specific IBA campus and the proposed Annex Building cannot be confirmed from available secondary sources alone.

118. **Sanitation.** Dhaka megacity region (DMR) accounted for about 95% coverage. Sanitation conditions in GDR are better than the national urban scenario. About 86% of households in GDR have access to sanitary toilets. The sanitary conditions are worst in the slums and squatter areas of GDR. More than one-third of the population living in poor settlements and some poor households also enjoy sanitary toilets, meaning that conditions in Dhaka District are better than in the other districts of GDR. More than 93% of households have access to sanitary toilets in Dhaka.

119. **Access to electricity.** Electricity supply in the Dhaka Metropolitan Area is provided primarily by the Dhaka Electric Supply Company Limited (DESCO) and the Dhaka Power Distribution Company Limited (DPDC), under the Bangladesh Power Development Board (BPDB) system. Over the past two decades, electricity access in urban Dhaka has expanded significantly, with the number of registered consumers increasing several-fold compared to the early 2000s. DESCO alone currently serves well over one million consumers across its jurisdiction, reflecting rapid urban growth, increased commercial activity, and expanded residential electrification. Electricity access coverage in Dhaka is effectively universal for formal households and institutions, with grid connectivity exceeding 98–99% in urban zones. Informal settlements are increasingly being brought under formal or semi-formal service arrangements, improving safety and reducing illegal connections. For institutional developments such as the proposed IBA Annex Building, grid electricity will be available through existing distribution infrastructure, with standard provisions for dedicated transformers, backup generators, and integration of rooftop solar photovoltaic systems to enhance energy security and reduce reliance on fossil-fuel-based grid supply.

120. **Solid waste management.** The IBA campus and the proposed Annex Building site fall under the jurisdiction of Dhaka South City Corporation (DSCC), which is the statutory authority responsible for solid waste collection, transportation, and disposal within this part of Dhaka. Under DSCC's conservancy system, waste is typically collected through a combination of primary collection (door-to-door or bin-based collection by ward-level conservancy staff or contracted private operators) and secondary collection, where waste is transferred to designated secondary transfer stations or open collection points before being transported by DSCC-operated trucks to the city's final disposal site. For institutional and commercial establishments such as university campuses, waste is generally expected to be segregated at source into general and recyclable/organic fractions, stored in on-site bins, and handed over to DSCC's conservancy department or its contracted waste collectors on a scheduled basis, though actual compliance with segregation practices on the ground varies considerably across institutions in Dhaka. Given that the current baseline in the IEE does not specify the IBA campus's actual arrangement, it is recommended that this section be revised following direct confirmation from the DSCC ward office

and the University of Dhaka estate office regarding: (i) the specific collection frequency, storage bin/container types, and responsible conservancy contractor or DSCC department currently serving the IBA campus; (ii) whether any on-site waste segregation, composting, or recycling practice is already followed; and (iii) the final disposal destination (e.g., the Matuail or Aminbazar landfill site) and its remaining capacity, to properly assess the incremental waste generation from the Annex Building's construction and operational phases (including construction debris, packaging waste, and increased organic/general waste from added students, staff, and food service facilities) and to design proportionate mitigation measures such as on-site segregation bins, contracted removal frequency increases, and construction waste management plans.

121. **Historic and archeological monuments.** Although the proposed additional IBA building will not affect any historical or archeological monuments/structures etc., it is to be noted that Dhaka University campus hosts some structures of historical and archeological interests. A list of historical and archeological structures within the campus is given in Table IV-1 below.

Table IV-1 Historical and archeological monuments and structures near to the IBA campus.

Sl. No.	Monument/structure of historical/archeological interest	Approx. distance from IBA campus (m)
1	Curzon Hall	1290
2	Raju Vashkorzo (Raju memorial sculpture)	440
3	Swaparjito Swadhinata (Independence Monument)	356
4	Swadhinata Songram Monument	717
5	Mausoleum of the Three Leaders	1000
6	Dhaka University Museum (DUCSU Museum)	182

Source: Calculated from google map by TA consultants

V. ANALYSIS OF ALTERNATIVES

A. Need of analysis of alternatives

122. The primary objective of the "analysis of alternatives" is to identify the location/technology for a particular sub-project that would generate the least adverse impact and maximize the positive impacts. The preliminary assessment of the project included an analysis of alternatives, addressing the optimal match between required technical specifications and site conditions, as well as addressing any concerns for environmental, social, and economic features in each location.

B. Current proposal

123. The current proposed building is located behind the main building which will be known as the Annex Building. Proposal for space for the potential IBA Annex building at DU campus has been already discussed in the earlier chapters. The proposed location is barren. A summary of the impacts of the current proposal is given in Table VI-1.

Table V-1 Summary of potential negative impacts of the current proposal

Sector	Negative Impact
Presence of important features within or around the land	Backyard of current IBA main building
Land (Government-owned land are to be given priority)	NO. The land is owned by IBA
Presence Agricultural/cropped land	None.
Village affected	None.
Families affected	None.
Loss of structures	None.
Impact on Common properties	None.
Trees to be chopped down	06.
Presence of sensitive ecosystem	None.
Presence of waterbody	None.
Tribal population affected	None.

Source: TA consultants

C. The preferred alternative

124. Adopting "Without option" (option in which the actions considered in the Project are not implemented (business-as-usual option) and "Zero option" (option in which the project purpose is met by methods/businesses that are not subject to environmental impact assessment) will keep hampering the training process of teachers. Since the proposed subproject will have the minimum environmental and social impact but enhance the teaching condition and reduce waterlogging, better management of solid waste during construction though enforcing of Environmental Management Plan (EMP) implementation, and during operation stage by serving better transportation services, the subprojects are preferred for implementation.

VI. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION

A. Approach and methodology

125. The IEE commenced with the review of legal requirements for the project followed by collection of technical details, and discussions with SDCMU and DTE to reconfirm the data and information.

126. Scoping of issues to be addressed in the IEE was conducted early in the assessment process (i.e., field visit) to collect the appropriate baseline information. Additional tools and methods used are described in the following:

1. Approach

127. The IEE study has been conducted following the ADB SPS (2009), World Bank's Environmental and Social Framework (ESF) 2018, EIA Guidelines for Industries, prepared by the DoE in 2021[49] in accordance with the requirement of the Environment Conservation Rules (ECR 2023). The IEE process adopted in this study involves identification of the key impacts on natural and social environment and evaluation of the significant impacts along with recommendation of initiative measures as well as listing of unresolved environmental issues. The IEE includes collection of baseline information, setting of boundaries, impact assessment, suggestion of mitigation measures and alternative sites providing an environmental management plan.

128. This IEE study adopted a scoping of environmental assessment comprising of seven dimensions that explain the direction, magnitude, spatial extent, duration of impact, timing of impact, nature of impact and cumulativity of the possible impacts, if they are not mitigated. This was done to capture the complex environmental impact pathway of construction projects. The steps of impact analysis and their methods are described in the later sections (VI-A- 2 to VI-A-3). Results of Impact assessment and possible remedies are described in Section VI-B and onwards. Finally, the summary results of the final assessment ratings have been presented in the form of matrix in later sections.

2. Methods of physical environmental assessment

129. The issues of physical environment have been investigated through professional observation of the study team members backed up by feedback from the local people during field visits. The base of the physical environmental assessment was data from secondary sources and field observation in combination with google earth images. In general, the physical environmental data collection and survey was carried out by a composite method of investigation including observation, satellite image analysis and public consultation. Every analysis was done with world standardized tools and the result presented with Geographical Information System (GIS) interface. The geological and seismic issues have been taken care of through secondary information and field observations. The general geological features and the seismicity of the project and its surrounding areas were collected from available secondary literature and Geological Survey of Bangladesh.

[49] DoE (2021) EIA Guidelines for Industries, Department of Environment (DoE), Ministry of Environment, Forest and Climate Change, Government of the People's Republic of Bangladesh. Dhaka, February 2021.

130. Meteorological data such as rainfall, evapotranspiration, temperature, sunshine hours, humidity, wind speed and wind direction have been collected and analyzed for assessing local climate that are directly related to water resources of the study area and the project area. Meteorological data for selected stations have been collected from the Bangladesh Meteorological Department (BMD). The methods of physical assessment that has been implemented in this study is presented in later sections.

a. Primary data collection

131. Primary data sources include site visit impressions and interviews of relevant stakeholders such as local communities and polytechnic teachers. The information collected includes local topography, environmental condition, flooding condition, traffic situation, local hydrological information etc.

b. Secondary data collection

132. The secondary Information sources include published literatures, statistics, maps and reports collected from various government and non-government organizations, such as the Bangladesh Meteorological Department (BMD), Bangladesh Water Development Board (BWDB), Soil Resource Development Institute (SRDI), Geological Survey of Bangladesh (GSB) and the International Union for Conservation and Nature (IUCN), Bangladesh Bureau of Statistics (BBS) Population and Housing Census 2011, Community Reports of BBS. The information collected in such ways was categorized and added to the database of the baseline condition.

c. Socio-economic Survey

133. The social and economic data collection and review involved fact-finding from field, collection of data, tabulation of data, database entry, data compilation and review and the presentation of data. Secondary information including data, maps and reports has been collected from various sources. The data analyzed as part of this process has been collected from a number of secondary sources.

- **Primary data collection:** The socio-economic data especially for the social features of the Project affected area were collected through visual observation, focus group discussion and public consultations.
- **Secondary data collection:** Key secondary sources include Information on socio-economic profiles of the Project affected educational institutes which covers demographic profiles, education, coverage of heath and sanitation facilities, use of power, agricultural land etc.
- **Public Consultations:** Focused Group discussions (FGDs) and Key Informant Interviews (KIIs) were arranged at subproject site for public consultation. The stakeholders for the project were the teachers of IBA and students, since all the interventions will be implemented within the boundary of the IBA campus. In the consultations stakeholders were made aware of the project activities and consultants as well as consultants answered their queries, questions and took note of their suggestions. In addition, several informal group discussions as well one-on-one discussions were held with local people, project affected people and community representatives at the different locations of the Project sites. The team recorded their perception of the proposed work and sought their suggestions on implementation of EMP with mitigation measures on how to reduce any potential impacts on natural and social environments and mainly centered on drainages congestion, flood,

local landscape, removal of tress, loss of agricultural lands, and community cohesion problems.

d. GIS and Remote sensing

134. Geographical Information Systems (GIS) and Remote Sensing (RS) played crucial role in development and modelling of the spatial extension of environmental problems in the target city corporations such as extension of flooding, waterlogging, topography, population etc. Further, the GIS and RS technologies were used for investigations and detailed on-ground validation of spatial information on land use by using a hand-held, non-differential GPS in this IEE study. The Project alignment maps as Keyhole Markup Language zipped, Compressed Version of KML (KMZ) and Keyhole Markup Language zipped Google Earth (KML) produced during spatial modelling analysis were studied prior to field investigations, spatial analysis of satellite imagery was also used to identify land use boundaries. Based on spatial data acquisition and validated land use, the sensitive areas for sampling locations identified for biophysical survey of the Project. In addition, the GIS based maps of existing environment are produced for this IEE report from the collected information from field and acquisition of spatial data.

3. Impact assessment methodology

a. Impact categorization

135. **Significance of Impacts:** Generation of environmental and social impacts from infrastructure development is a function of the activities that take place during construction and operation of the infrastructure, on the one hand, and the particular environmental and social attributes of the local setting on the other. The people, communities and ecosystems that may be affected by a project (receptors) are variable in terms of their proximity to the infrastructure; their sensitivity to influences such as noise, disturbance and emissions; and their ability to adapt to change. The activities involved in construction and operation of infrastructure also vary based on the nature of the project, the noisiness and dirtiness of the construction works required, and how long different activities are carried out in one place. The significance of impacts depends on the particular juxtaposition of activities and receptors in specific locations.

136. **Typology of impacts:** The impacts that arise from particular configurations of infrastructure development activities and landscape features may emerge in different forms and through various pathways. It is useful to consider the types of impacts that may come into play - some of which may be more immediately obvious than others - when assessing the potential effects of a project on people and nature in the surrounding environment.

137. Table VI-1 below explains the Impact categorization and typology adopted for this study. Figure VI-1 explains the impact assessment process that has been adopted in this study.

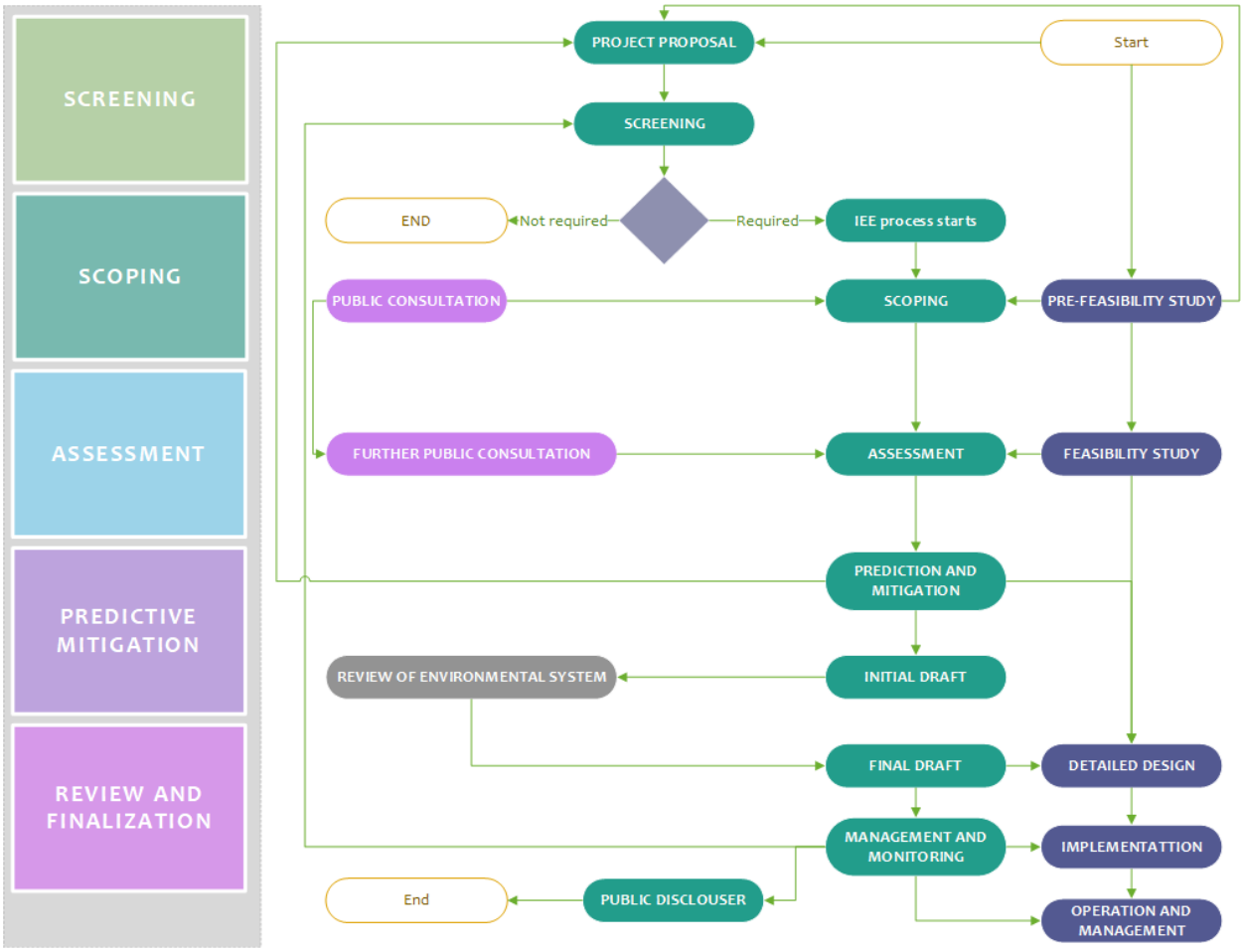


Figure VI-1 IEE process adopted for this study

Table VI-1 Impact categorization and typology adopted for this study

Impact parameter	Types of impact				Sign
Direction of change relative to baseline conditions	POSITIVE		NEGATIVE		+/-
Magnitude of impact in relation to ability of people and ecosystem to cope with change	NONE	MINOR	MAJOR	SEVERE	D/C/B/A
Spatial extent of effects	LOCALIZED		WIDESPREAD		Loc/Wid
Duration of effects experienced	TEMPORARY		PERSISTENT		Tem/Per
Timing of effects experienced	INTERMITTENT		CONTINUOUS		Int/Con
Nature of cause-and-effect linkage between project activity and impact experienced by receptors	DIRECT		INDIRECT		Dir/Ind
Relationship of project activities to impacts from other sources in landscape	ISOLATED		CUMULATIVE		Iso/Cum

b. Spatial Scope of Analysis

87. The area of influence of an infrastructure project is defined in the SPS 2009 (p. 31) as follows:

> (i) The primary project site(s) and related facilities that the borrower/client (including its Contractors) develops or controls, such as power transmission corridors, pipelines, canals, tunnels, access roads, borrow pits and disposal areas, and construction camps;
> (ii) Associated facilities that are not funded as part of the project (funding may be provided separately by the borrower/client or by third parties), and whose viability and existence depend exclusively on the project and whose goods or services are essential for successful operation of the project;
> (iii) Areas and communities potentially affected by cumulative impacts from further planned development of the project, other sources of similar impacts in the geographical area, any existing project or condition, and other project-related developments that are realistically defined at the time the assessment is undertaken; and
> (iv) Areas and communities potentially affected by impacts from unplanned but predictable developments caused by the project that may occur later or at a different location. The area of influence does not include potential impacts that might occur without the project or independently of the project.

138. The project activities at the IBA campus where physical works will take place; these include a full-fledged additional building including office, some accommodation and innovation laboratories, access roads and possibly a construction camp at site. It is expected that materials like sand and gravel will be purchased on the open market, rather than obtained from project-specific borrow pits or quarries.

139. With respect to cumulative impacts, the proposed development does need to be understood as a single piece of investment in urban structures only affecting the vicinity of the respective college.

140. The last category to consider as being part of the area of influence - areas and communities potentially affected by developments that can be expected to result from the development of the project - is certainly relevant. The proposed developments at the IBA campus are likely to facilitate and perhaps even be a significant driver of the local environmental development trajectory, especially in the field of water congestion and drainage. The infrastructure improvements can be expected to contribute to lessening the waterlogging and drainage congestion in the vicinity, thus less disrupting the local life, commerce and trade. The scale of induced development is difficult to forecast at the time of writing, but the general nature of the anticipated change in the local economy is nevertheless taken into consideration as part of impact analysis.

141. At the site level, defining the area of influence for the purposes of assessing impact potential is a subjective, context-dependent exercise. Noise and dust from construction activity, for example, are localized impacts likely to be experienced mostly within about 100 m of the construction site boundary.

c. Substantive Scope of Analysis

142. This IEE development considers the following parameters for scope of analysis:

(i) biodiversity, species of concern and critical habitat areas including forests, wetlands, and protected areas;
(ii) surface water bodies and groundwater;
(iii) air quality, including dust and emissions;
(iv) agriculture and fertile soils;
(v) tree cutting;
(vi) local acoustic environment;
(vii) drainage and waterlogging;
(viii) waste management (construction waste and operation phase waste);
(ix) climate change mitigation and adaptation;
(x) land use and livelihoods;
(xi) traffic congestion;
(xii) community life and interaction;
(xiii) private property and public utilities;
(xiv) public health and safety;
(xv) occupational health and safety, including as they relate to the COVID-19 pandemic unfolding during implementation of the Investment Project;
(xvi) physical cultural resources;
(xvii) possible transboundary impacts, including transmission of disease vectors, spread of invasive species, and harmful patterns of natural resource exploitation; and
(xviii) induced development effects and cumulative impacts.

143. The degree of emphasis placed on the key parameters identified here depends on their particular relevance, given the nature of the planned infrastructure and the characteristics of sites and receptors.

d. Temporal Scope of Analysis

144. Analysis of impacts and definition of suitable mitigation measures should be taken in all phases of the project infrastructure's development. Impacts may arise most obviously and visibly during construction, but the impacts of design and siting decisions made in the pre-construction phase, as well as the effects of intended and unintended activity at facility sites over the entire duration of the infrastructure's operating period, also need to be considered.

145. **Pre-construction phase (design impacts):** The design process offers considerable opportunities to reduce environmental impacts, through appropriate choice of materials, equipment and physical systems and features. For example, equipment and climate-control systems with the lowest associated greenhouse gas emissions (e.g., high-efficiency electric motors and lighting) shall be used during construction as much as possible so that the project inserts minimum of carbon footprint. A well-designed hydrological model set-up for 100 years may suggest the dimensions of the drainage passage to design. Incorporating such elements will help to maximize climate change mitigation as a feature of the project.

146. **Pre-construction phase (siting impacts)**: The selection of a facility site has the potential to generate environmental impacts based on:

(i) the physical characteristics of the site itself (e.g., topography, soils, drainage, exposure to natural hazards, past and present land uses);
(ii) the proximity of the site to impact receptors (e.g., water bodies, sensitive habitats, residences, schools, hospitals, public spaces);
(iii) the amount and type of work required to connect the facility to transport networks and service infrastructure; and
(iv) the distance between the facility and other facilities to which it is functionally linked.

147. **Pre-construction phase (procurement impacts):** Procurement decisions with negative impact potential during the construction and operation periods are related to both materials and service providers. Construction materials obtained from afar, especially those that are heavy and needed in very large quantities, can generally be expected to have a large carbon footprint due to increased emissions associated with their transport. Materials obtained from unsustainable sources contribute to environmental problems elsewhere. Use of construction and maintenance Contractors with a poor record of environmental and social safeguards compliance significantly increases the probability of all manner of negative impacts during the construction period, as well as the creation of problems whose effects will be felt far into the future. And hiring mainly or exclusively local workers accrues substantial project benefits to the local economy, while hiring workers from outside the project area may create social strife and requires establishment of construction camps, which typically have significant potential for negative environmental impacts.

148. **Construction phase impacts:** Impacts likely to arise during the construction phase relate to the physical activities that take place both at construction sites and at locations where related activity occurs, such as access roads, haul roads, and any borrow pits, quarries or spoil dumps established specifically to support construction of the site or sites in question. Although infrastructure construction is an inherently disruptive activity, many impacts of construction activity are well understood and amenable to minimization with appropriate construction site management.

149. **Operation phase impacts:** Impacts during use of infrastructure are generally of lesser magnitude and severity than construction impacts, and arise from regular operations and maintenance activity, but also from things that go wrong with these activities, such as accidents, fires, explosions and releases of harmful substances. Proper preparation and use of operations and maintenance manuals and protocols, as well as training of personnel and regular monitoring, are key means of preventing and minimizing operation phase impacts.

e. Impact Mitigation and Enhancement

150. **Objectives of mitigation:** The central goal of impact assessment is to determine how best to mitigate (make less serious, severe, or damaging) potential negative effects before they arise, and to identify opportunities for enhancing potential positive impacts, which may or may not be part of the project rationale. The IEE considers the specific activities that implementation will involve, from site selection through to operation, and defines the impacts that can be expected to arise in view of the particular features of the receiving environment. The analysis and discussion of impacts uses an integrated approach, in which environmental and social impacts are considered together in relation to each set of road development activities.

151. **Mitigation hierarchy:** Identification of an appropriate proactive approach for each expected impact in this IEE makes use of the standard mitigation hierarchy advocated by the ADB and other multilateral donors. In the mitigation hierarchy, top priority is given to measures that enable outright prevention or avoidance of impacts. Where prevention or avoidance is not possible, the next most preferred option is to minimize impacts to the greatest extent possible, within reasonable limits of feasibility. Finally, and only once it has been confirmed that there is no feasible way to reduce an impact below a reasonable threshold of social acceptability, it will be appropriate to consider measures to compensate for the loss or damage caused to people and nature through reimbursement, replacement or some other means.

152. **Impact enhancement:** For positive impacts, there is no hierarchy as for mitigation, only one objective: to adopt measures to enhance or reinforce positive effects whenever possible, through thoughtful adaptation during site selection, design and implementation.

153. **Environmental Management Plan (EMP):** Measures will be prescribed for mitigation or enhancement of each predicted impact. Such prescriptions do not carry any weight unless they are made part of an obligatory implementation plan. The EMP translates the measures prescribed in this section of the IEE into costed action items assigned to specific actors and makes implementation of the action items subject to regular monitoring of compliance and effectiveness. The EMP is presented in Chapter 9 of this IEE report.

B. Findings of Impact Assessment: Pre-construction phase

1. Siting related impacts

154. Impacts related to siting of the infrastructure at the IBA are partly locked in by the established location of the already existing drains and roads owned by the institute, which will be redeveloped with some expansion (i.e., widening). Some location-related impact areas are discussed below.

a. Climate change, drainage and waterlogging

155. **Impacts:** As seen from Figure VI-2, the trend of precipitation in Dhaka is steeply dropping mostly since early 2000 while temperature is steadily increasing since 2005. From Figure VI-3 it is also seen that over the course of last 30 years (1979-2023), average yearly rainfall has decreased about 105mm/annum.

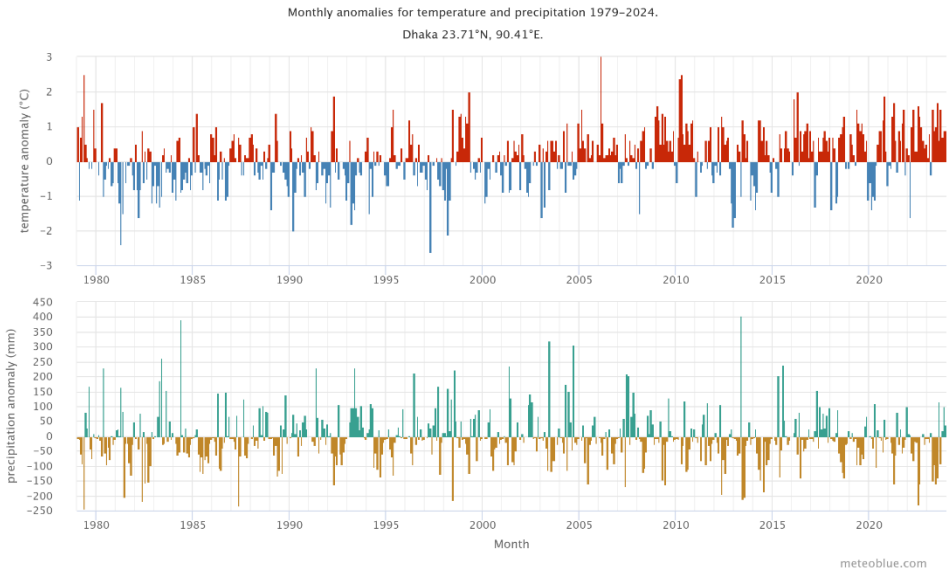


Figure VI-2 Temperature and precipitation anomalies (1979-2024 avg.) at Chattagram over the period of 1979 - 2023. data modeled by meteoblue.com.

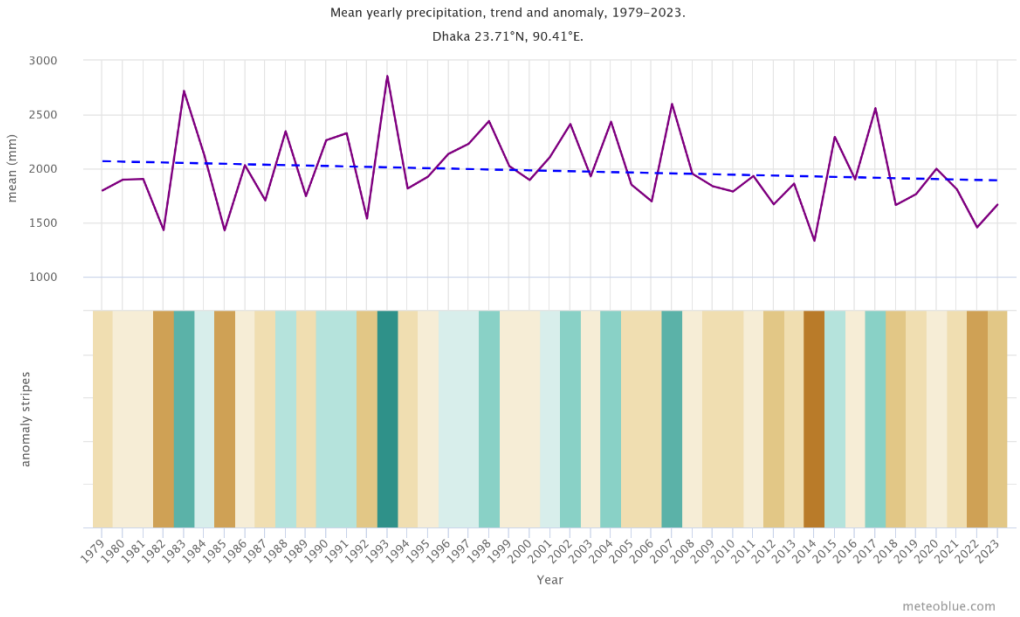


Figure VI-3 Yearly rainfall change (1979-2023 avg.) in Dhaka over the period of 1979 - 2023. data modeled by meteoblue.com

156. However, despite of annual decrease, cyclonic rainfall (rainfall derived from cyclone formation) during the months of April, May and November (usual cyclone formation time in Bangladesh) may bring excessive rainfall, up to 90 mm (for example during super cyclone 'Remal' in May 2024). In such cases, Dhaka city does not have the carrying capacity for excessive water and waterlogging becomes eminent. This scenario can also affect the proposed additional building at IBA campus.

157. In many infrastructure development scenarios, the siting of quarries and borrow pits is a key determinant of GHG emissions from construction. In this case, bulk materials are likely to be purchased on the open market, so siting will not be an important consideration in this regard. The targeted construction site floods rarely after heavy rains, only when the catchment area overflows, since drainage systems are already installed. Yet, considering the climate change projections in Bangladesh predicting more and more intense rainfall over shorter period of time demands the drainage system to be enabled heavy overflow in shorter time. The projected intensifying rainfall over Bangladesh under climate change scenarios, specially under scenario 8.5 (Figure VI-4)[50], drainage system will play a crucial role in future development.

[50] Choi, YW., Campbell, D.J., Aldridge, J.C. et al. Near-term regional climate change over Bangladesh. Clim Dyn 57, 3055–3073 (2021). https://doi.org/10.1007/s00382-021-05856-z

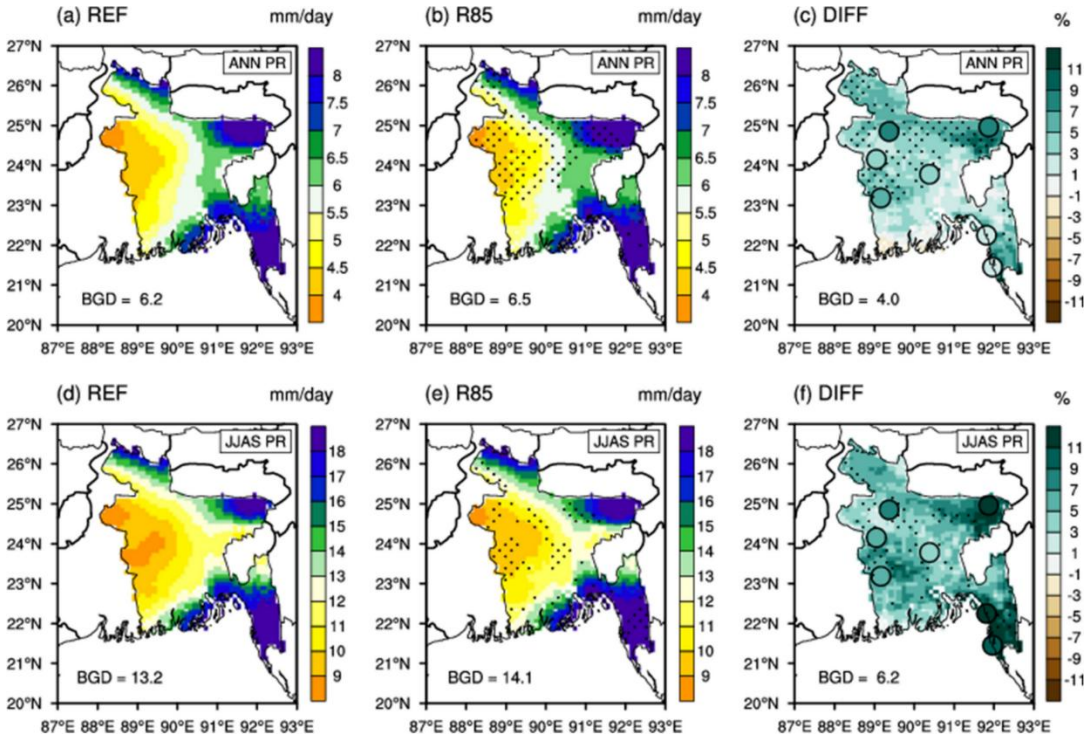


Figure VI-4 **Spatial distribution daily mean rainfall (PR; unit: mm/day) annually (a-c) and during the monsoon season (June to September; JJAS, d-f) using MRCM ensemble for the period of 2021-2050 under RCP 8.5 scenario. Area-averaged value over land is given on the bottom left corner of each plot (unit: mm/day). Source: reproduced from Choi et al., 2021**

158. **Mitigation:** The drainage in the proposed site is well developed. The proposed additional building at IBA campus can use the existing drainage system. However, given the possibilities of cyclone induced rainfalls, the existing drainage system can be modified and further improved. During the design of the drains, it needs to be considered that recent climate change projections suggest higher amount of rainfall in a small window of time in the future (Figure VI-5). The depth and length of the drains need to be designed accordingly. Adequate smaller drains connecting with the main drains are necessary to manage excess campus water runoff.

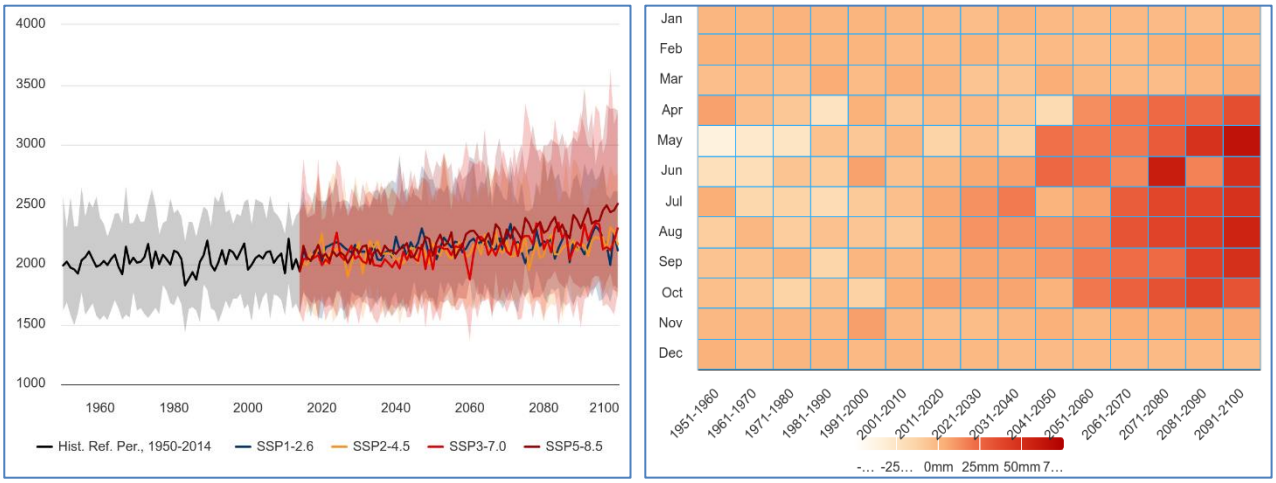


Figure VI-5 **Multimodel ensemble projected precipitation in Dhaka region under SSP 5 - 8.5 scenario. Although projected increase in precipitation is not quite high under SSP 5-8.5 by the year of 2050, the monthly distribution of precipitation project suggests, the window of high rainfall will be narrow, hence increasing the risk of flooding. Projection was taken from the World Bank's Climate Change Knowledge Portal (CCKP) available at:** https://climateknowledgeportal.worldbank.org/country/bangladesh/climate-data-projections

159. Managing energy efficiently is the most effective mitigation measure for climate change. Effective mitigation of higher average temperatures and extreme heat events—without increasing use of energy-hungry air conditioning—can be achieved using some of the measures including:

(i) According to IPCC sixth assessment report, installing solar panels for electricity is the best possible option to contribute into carbon reduction. Hence, install solar panels to reduce electricity as much as possible.
(ii) installing green roofs where feasible (recognizing that some roof space may be needed for solar panels);
(iii) maximizing use of wide-crowned shade trees in the site landscaping plan, including in parking area medians; and
(iv) maximizing cross-ventilation.

160. The proposed additional IBA building structure shall adopt a 'green building' approach to respond to climate change. The 3D architectural design of the proposed design (Figure III-13) indicated that IBA authorities are eyeing for 'green building' concept. In this case, several court yards with green spaces are proposed within the building. Natural lighting and ventilation shall be maximized to reduce energy consumption. IBA additional building design process shall use national light and ventilation as much as possible, locally available building materials area shall be used, minimizing space and materials waste to reduce carbon footprint is also proposed. Solar-powered energy use shall be designed in common and dormitory areas. Roof gardening and gardening inside floor space are proposed to increase interior air quality. Energy-efficient lighting and plumbing fixtures are proposed. Almost 30% of the buildings shall be dedicated to 'green spaces. Moreover, energy saving lighting, rainwater harvesting, and rooftop solar panels shall be designed to conserve energy.

- Refrigerant With Low Global Warming Potential (GWP) and Ozone Depletion Potential (ODP)
- Provision For Inverter-Driven VRF System
- VRF Systems Integrated with Energy Recovery Ventilation Units and Demand-Controlled Ventilation System
- Designed Ventilation System ensures that occupants have access to fresh and clean air.

b. Flora and fauna

161. **Impacts.** As pointed out in the baseline section of this report, the proposed site within the IBA campus which is in inside the campus which are barren areas. Only six trees will be removed for the site preparation, which is unavoidable. Therefore, no significant impact is expected.

162. **Mitigation.** Although no significant impact is envisaged for the proposed construction of additional building, construction of green areas within the proposed building is suggested.

Figure VI-6 Green areas suggested at the additional building site.

Source: Detail Architectural Design

Enhancement. Tropical forests help cool the average global temperature by more than reducing carbon dioxide levels alone [51] . Tropical trees pull in and store 95% of all tree-based CO_2 sequestration on the planet[52]. However, a pair of recent studies show that rising temperatures are shortening the lives of trees in tropical forests and reducing their capacity to absorb carbon dioxide². The IBA campus does not have plenty of space for afforestation. Afforestation with tropical trees can help in reducing CO_2.

[51] Forests help reduce global warming in more ways than one - Science News. https://www.sciencenews.org/article/forest-trees-reduce-global-warming-climate-cooling-carbon Accessed 4/11/2023.
[52] https://www.communitycarbontrees.org/climate-change-solutions Accessed 4/11/2022

2. Design related impacts

a. Climate change

163. **Impacts:** Development of the IBA additional building will unavoidably generate greenhouse gas emissions. Although it is not possible at this point in the design process to credibly calculate an impact in tons of CO_2 equivalent, it is nevertheless useful to consider design elements that can make the facility's contribution to climate change greater or smaller. Certain materials have much higher embodied emissions than others; concrete is a particularly carbon-intensive material. Materials that are not available locally, particularly very heavy materials, also drive up the emissions associated with building. Installed equipment that is not modern and efficient represents a missed opportunity to lower the carbon footprint of facilities, as does failure to integrate design measures that allow for natural cooling, natural light, and reduced water pumping needs.

164. **Mitigation:** Integration of GHG-mitigating design elements in the new IBA additional building facilities is an opportunity to enhance the facilities' contribution to climate change mitigation, relative to existing standards of construction for public infrastructure in Bangladesh. Key strategies for reducing emissions, and that should be considered for incorporation in the IBA additional building infrastructure are outlined in Table VI-2. A number of the general design innovations recommended can be considered for at least some of the planned infrastructure and should be reflected in the preliminary designs.

Table VI-2 Possible design phase measures for climate change mitigation

Climate change mitigation measure	Rationale
1. Substitute other materials for concrete where feasible	- Concrete is among the most carbon-intensive of building materials
2. Use low-carbon concrete as much as possible	- Using a lower proportion of cement (and longer cure time to compensate) can reduce the carbon intensity of concrete
3. Create designs that maximize use of building materials that are available locally	- Reduced transport emissions
5. Integrate photovoltaic generation into the electrical plan	- Reduce reliance on coal-generated electricity - Reduce reliance on back-up diesel generator - Possibly reduce size of generator needed
6. Specify only high-efficiency electrical and mechanical equipment	- Reduce reliance on coal-generated electricity - Reduce reliance on back-up diesel generator - Possibly reduce size of generator needed
7. Specify most fuel-efficient backup generator available	- Reduce diesel consumption
8. Maximize cross-ventilation by use of courtyards, openable windows and favorable building orientation	- Reduce demand for air conditioning
9. Prioritize shade in the landscaping plan, with plentiful wide-crowned shade trees on all parts of site	
10. Incorporate hollow wall structures	
11. Use overhangs above large windows to prevent excessive solar penetration	
12. Maximize interior natural light by use of favorable building orientation and courtyards	- Reduce use of electrical lighting during daytime
13. Specify water-saving toilets, faucets and showerheads	- Reduce need for pumping and treating water
14. Design dedicated plumbing system for drinking and cooking water	- Reduce volume of water requiring energy-intensive water treatment

Climate change mitigation measure	Rationale
15. Aim to meet all water heating needs with solar heaters	- Eliminate use of electricity for heating water
16. Specify high-intensity, full-time lighting only where strictly necessary	- Reduce consumption of energy for lighting spaces that don't need it (e.g., parking lots that are only used at peak times)
17. Specify solar-powered lighting for outdoor applications	- Reduce energy used by lighting
18. Base landscape plan around drought-tolerant perennial native species	- Reduce the need for pumping water
19. Design site layout and inspection process to minimize the length of time vehicles have their engines running during their passage on Love Road	- Reduce direct greenhouse gas emissions
20. Incorporate green roofs wherever roof area is not needed for solar panels and solar water heaters	- Reduce cooling needs
21. Incorporate lightning arrester in the structural design	- Lightning has been a critical source of infrastructure and economic recently.

b. Public health and safety

165. **Impacts:** IBA campus is located within the Dhaka University Campus. The campus is connected to the Neelkhet Road near New market area. The road is quite busy with transportation of commercial goods, especially lots of structures are being established in the region. While the building under construction, the already busy premises of the IBA site connecting Neelkhet road will be an increasingly busy commercial area with heavy traffic and pedestrians, and this will elevate the risk of collisions between vehicles and pedestrians, and between any of the several kinds of vehicles. Accidents involving pedestrians are also made more likely by a lack of sidewalks, which forces pedestrians and all vehicles, including large trucks, to share the roadway.

166. With regards to public health, the COVID-19 pandemic has highlighted vulnerabilities related to human proximity that were previously under-appreciated. To the extent that public facilities such as commercial areas cause people to be packed closely together in indoor spaces, they facilitate the spread of communicable disease. Although the COVID-19 pandemic seems likely to have abated well before the new campus comes into service, it may just be a matter of time before another viral agent causes a similar crisis.

167. **Mitigation:** A Traffic Management Plan (TMP) must be developed by the Contractor under the supervision of the Construction Supervision Consultants (CSC) and have to be approved by the Local police Authority concerned city corporation. The surroundings of the Neelkhet road were found quite busy with traffic at any given time of the day. Along with vehicles, pedestrians equally share the road footpath. Hence, the top slab/cover of the proposed drains need to be designed in a manner that pedestrians can use them as footpath. The top cover also needs to be wheelchair friendly, so that baby strollers, wheelchairs for elderly people may stroll smoothly. If the top covers are more than six inches higher than the road, putting some lower areas in the design will be required so that the wheelchairs and baby strollers can easily ascend and descend from the footpath.

c. Waste management

168. **Impacts:** Increased commercial activities around the campus are likely to pose the risk of waste being dumped into the nearby drains. There is no drainage system at the proposed site. Natural low land works as the drainage system in the area. So, there will be a tendency to through waste at these lowlands. This waste stream will grow over time, and if this is not anticipated in monitoring design (the drains should be easily accessible for complete cleaning), waste management problems such as ad-hoc dumping and on-site burning are sure to arise.

169. **Mitigation:** Waste management problems can be avoided entirely by correctly anticipating future waste streams and incorporating adequate design features to collect, sort, and dispose of each class of waste. Adequate segregated collection bins should be strategically placed at indoor and outdoor locations of the campus structures where waste generation can be expected. The design of the drainage system also should include the access points where it can be cleaned. The experience from the entrance road reveals that drainage system should have some access points when extreme rainfall events occur, or waste dumping block the entire drainage system so that cleaning can be done when needed.

d. Site enhancement

170. **Impacts.** The proposed IBA Annex building is located at the back of the IBA academic building. The proposed site for construction is a barren land which is already raised, and sand filled. The site has a very poor drainage system, (Figure VI-7). Hence the site will need a fully functioning drainage system integrated with the rest of the IBA. The site does not need raising above flood level, as the site is already located at low vulnerability of flood according to Rajuk zoning.

171. **Enhancement.** The IBA main building currently operates with traditional roof drainage connected to the municipal system, which has proven inadequate during monsoon seasons when Dhaka experiences 100-120 mm/hour rainfall events. The proposed integration with the new annexure building presents an opportunity to implement a comprehensive drainage solution that addresses both buildings' needs while contributing to campus-wide flood mitigation.

Figure VI-7 Images of the current drainage system at the prosed Annex IBA site.

3. Procurement related impacts

a. Contractor selection

172. **Impacts:** The success or failure of environmental mitigation in infrastructure development hinges to a significant degree on the primary Contractor's sense of environmental responsibility and commitment to compliance with prescribed safeguards measures. If Contractors with a poor track record of compliance are hired, it is more likely that environmental impacts that can be easily prevented or minimized will become more serious than they reasonably should. It is expected that the investments at the Annex IBA building at DU will be implemented through a contract, so the choice of primary Contractor is doubly critical.

173. Upon award of the contract, the Contractor will be required to prepare a detailed Contractor Environmental Management Plan (CEMP) to demonstrate how it will meet its obligations under the EMP in relation to the investment site at the Annex IBA. The plan will be reviewed and approved by the construction supervision consultant (CSC) and the safeguards oversight unit (SOU) within the PIU; this review process is a critical opportunity to ensure that the selected Contractor understands and is committed to full implementation of its safeguards' responsibilities. A sample outline of a CEMP is provided in Appendix 11.

174. **Mitigation:** Only Contractors with a demonstrated commitment to safeguards implementation - as can be confirmed by previous construction supervision consultants and monitoring reports from past projects - should be hired. Bidding documents should stress safeguards requirements, and the documentation provided by bidding firms should be carefully scrutinized, including by following up with references to recent works completed. All Contractors and sub-Contractors must be registered with the Ministry of Labor and Employment.

175. Contractor candidates should be required to provide details of the age and fuel efficiency of their equipment and vehicle fleets in bids, and this information should be scrutinized and weighed in the selection process as a means of helping to limit the greenhouse gas generation potential of the investments. Construction contracts should require the primary Contractor and all of its sub-Contractors to use only modern, fuel-efficient machinery, and the employer (most likely the PIU) should have the reserved right to require removal and replacement of machinery it deems unacceptable in this regard at any time during the construction phase.

b. Labour sourcing

176. **Impacts:** Procurement of labor has two main potential impacts, which can be either positive or negative, depending on where most workers come from. First, use of mostly or exclusively non-local labor means that a construction camp will be needed, and this has significant potential for environmental and social impacts, including water pollution of local surface waters with untreated sewage and grey water; social discord due to worker behavior off-site, cultural misunderstanding and resentment about jobs going to outsiders; spread of communicable diseases including sexually transmitted ones; and occupational health and safety risks due to contactor failure to provide decent facilities. Hiring all local workers, by contrast, may mean that the need for a construction camp is eliminated.

177. Second, hiring mostly non-local workers is a missed opportunity for the project to bring benefits to the local community. The people who live in nearby areas will bear the brunt of any negative impacts that arise during the construction and operation phases, and employment

opportunities will go some way in compensating for inconveniences and discomforts experienced. When all the jobs go to workers from other regions, wages do not stay in the local community. It is not uncommon in Bangladesh for progress on project works to be frustrated by deliberate actions of local factions angered by the use of non-local labor.

178. **Mitigation and enhancement:** In order to minimize and prevent construction camp impacts and maximize the project's benefits to the local community, the primary Contractor and all of its sub-Contractors should be contractually required to hire mostly or exclusively local residents for construction jobs. This should be stipulated in the bidding documents and contracts.

c. Material sourcing

179. **Impacts:** Generally speaking, materials that come from afar - especially very heavy materials - will have more significant environmental impacts associated with them, because of the extra energy used in transport. Transport often accounts for the greatest proportion of GHG emissions embedded in earthworks. Materials sourced from suppliers who obtain their wares by illegal and unsustainable means, such as hill-cutting, coercive farmland mining or riverbed mining (all notable problems in Bangladesh) effectively expand the environmental footprint of the infrastructure that is built with them.

180. **Mitigation:** Contractors should be required to prioritize proximity in sourcing materials such as gravel, sand and cement, provided that proximate sources are also not illegally or unsustainably obtained. The supplier is required under national law to furnish a Certificate of No Objection from the District Commissioner or Local Upazila Nirbahi Officer (UNO); Contractors should be contractually prohibited from purchasing materials from any supplier who is unable to show such a certificate and should be required to secure copies of the certificate for inspection by the construction supervision consultant.

C. Findings of Impact Assessment: Construction phase

1. Biophysical impacts

a. Water quality

181. **Impacts:** Excavation and earthworks during the 6–8-month foundation and basement construction phase pose the highest risk through soil erosion and sedimentation, potentially increasing turbidity levels from the baseline 5-15 NTU to over 100 NTU during active excavation periods. This sediment loading directly threatens the campus drainage system and could compromise the existing water infrastructure serving the main IBA building and surrounding academic facilities. Concrete construction activities extending over 12-15 months introduce additional water quality risks through cement wash and alkaline runoff, with potential pH increases above 9.0 that could affect both surface water and the campus groundwater system currently serving the university community.

182. Construction site runoff represents a campus-wide drainage impact extending throughout the 24-month construction period, with seasonal peaks during monsoon periods when heavy rainfall mobilizes accumulated pollutants from material storage areas, equipment washing zones, and active construction surfaces. The integrated nature of the University of Dhaka campus drainage system means that contaminated runoff from the annexure construction site could affect water quality across multiple academic buildings and residential facilities. Building material storage and chemical handling present medium-level contamination risks through potential

leaching of construction chemicals, preservatives, and fuel products that could persist in soil and groundwater long after construction completion. The proximity of construction activities to existing academic facilities requires strict containment protocols to prevent cross-contamination of water supplies serving active educational operations..

183. **Mitigation:** Siltation and sedimentation of watercourses and drainage systems can be largely prevented by careful application of erosion control measures. These include:

- Install silt fences, sediment basins, and erosion control blankets before construction begins to contain sediment around excavation areas, aiming for at least 90% effectiveness in reducing sediment reaching the campus drainage system.
- Ensure construction water management systems—such as concrete washout areas, pH neutralization units, and controlled water discharge protocols—are operational prior to starting concrete work. These should maintain 95% effectiveness in containing construction-related pollutants throughout all building phases.
- Use covered storage areas with secondary containment systems to prevent chemical releases, especially during monsoon seasons when heavy rains can mobilize materials and trigger contamination incidents.

184. Drainage system protection through temporary bypass systems and protective barriers around existing infrastructure ensures 100% protection of existing drainage functionality serving the main IBA building and campus facilities during the 2–3-month integration period when new and existing systems are connected. Groundwater monitoring through strategically placed monitoring wells provides continuous surveillance with less than 24-hour response capabilities to detect and address any subsurface contamination incidents. The monitoring network must establish baseline conditions 3 months before construction begins and continue post-completion monitoring to ensure long-term water quality protection for the university community.

185. Runoff treatment systems including settling ponds, filtration systems, and oil-water separators must achieve 80% reduction in construction site runoff pollutants, operating continuously from 30 days after construction commencement through project completion. Emergency response protocols with spill response kits, trained personnel, and immediate containment procedures ensure less than 2-hour response times for environmental emergencies, protecting both construction workers and the broader campus community from water quality incidents. Environmental monitoring programs with daily water quality monitoring, quarterly reporting, and adaptive management maintain 95% parameter compliance throughout construction, providing transparent accountability to university administration and regulatory authorities.

186. Water quality monitoring framework targeting turbidity, total suspended solids, pH levels, oil and grease, heavy metals, dissolved oxygen, biochemical oxygen demand, and coliform bacteria establishes clear performance benchmarks for construction impact assessment. Turbidity management maintaining levels below 25 NTU in campus drainage prevents aesthetic degradation and protects aquatic ecosystems in campus water features. Total suspended solids control keeping discharge water below 75 mg/L ensures compatibility with existing campus water treatment infrastructure. pH maintenance within 6.5-8.5 range for all discharge protects receiving water bodies and prevents damage to existing plumbing and infrastructure systems throughout the campus.

187. Specialized mitigation for heavy metals, dissolved oxygen, and bacterial contamination addresses the comprehensive water quality needs of an active educational campus where water systems serve multiple functions including drinking water supply, irrigation, and recreational uses.

Oil and grease control below 10 mg/L prevents long-term soil and groundwater contamination that could affect campus sustainability goals and environmental education programs. Dissolved oxygen maintenance above 4 mg/L in receiving waters protects any aquatic ecosystems within the campus environment and maintains compatibility with existing water quality standards established for the University of Dhaka.

188. An Emergency Response Plan encompassing spill response should be a required element of the Contractor Environmental Management Plan (CEMP). Appropriate contents of an Emergency Response Plan are listed on the sample outline of a CEMP provided in Appendix 9.

189. Surface water pollution from construction camps can be effectively controlled by requiring the responsible Contractor to install appropriately sized septic systems to accommodate effluent from all on-site toilets, and to maintain them properly. This should be one set of specifications in a broader Construction Camp Management Plan, which the primary Contractor should be contractually required to produce. The primary Contractor should be held responsible for ensuring the plan is effectively implemented, even if the camp is occupied exclusively by workers hired by one or more sub-contractors. A sample outline of a Construction Camp Management Plan is provided in Appendix 11.

190. Runoff from active construction sites should be of sufficient quality to prevent violation of minimum water quality standards in the receiving water body, as specified in the Environment Conservation Rules, 2023.

b. Air quality

191. **Impacts:** The construction of the IBA Annexure Building at the University of Dhaka is likely to affect local air quality primarily through dust (PM_{10}) and fine particulate emissions ($PM_{2.5}$) from excavation, material handling, on-site traffic, and concrete works, set against a city background where ambient PM levels are already elevated and seasonally worse in winter. Without strict controls, construction activities can significantly increase particulate loads beyond already high urban baselines, exacerbated by Dhaka's known dust and construction contributions to PM pollution, and drawing increased regulatory scrutiny under the emerging national air quality plan and penalties for construction-related pollution. These risks are highest during dry, windy periods and phases involving earthworks, demolition, transport of aggregates, and concrete batching/washout, and can be mitigated by established dust suppression, enclosure, logistics, and monitoring practices tailored to a university campus context that requires low-noise, low-dust operations during teaching hours.

192. Key campus-relevant risk pathways include resuspension of fine dust from exposed soils and stockpiles, off-gassing and particulate release from concrete and cutting/grinding, diesel exhaust from generators and equipment adding NO_x/$PM_{2.5}$, and secondary dust from on-site and approach-road traffic. On a green, densely used academic site, these emissions can reduce visibility, trigger respiratory symptoms, contaminate indoor environments through infiltration, and deposit on vegetation and building surfaces, undermining the intended biophilic and green-infrastructure benefits of the project. Dhaka's policy direction now explicitly targets construction dust with measures such as mandatory covering, water sprinkling, and punitive action for non-compliance, which should be operationalized within the project's contractor ESMP with continuous measurement against Bangladesh National Air Quality Management Plan 2024–2030 targets and WHO guidelines to the extent feasible.

193. **Mitigation:** Following mitigation measures should be undertaken:

- **Site enclosure and wind control:** Install continuous solid perimeter fencing (≥8 ft) and wind-permeable dust screens; stage temporary windbreaks at upwind edges during earthworks to reduce wind-driven dust propagation into academic zones and pedestrian corridors.
- **Water-based dust suppression:** Employ fixed and mobile sprinklers/misting cannons on haul roads, excavation faces, and during loading/unloading; maintain damp (not muddy) surfaces with frequency adjusted to wind and dryness; increase frequency in winter dry months when PM peaks.
- **Stockpile and material control:** Cover all fine aggregates and soil stockpiles with tarps or geotextile; limit pile heights; seal and promptly compact backfills; sheet all trucks transporting sand/aggregates and enforce wheel-washing at site exits to prevent track-out.
- **Clean construction logistics:** Establish paved, one-way internal haul routes; reduce idling to <2 minutes; schedule deliveries off-peak; use electric equipment and grid power in lieu of diesel gensets where feasible to lower $PM_{2.5}$/NOx.
- **On-tool extraction and local controls:** Use vacuum shrouds and HEPA extraction for cutting/grinding; prefabricate where possible to reduce on-site cutting; enclose high-emission activities (e.g., on-site batching) with negative-pressure tents and filtration.
- **Concrete and finishing controls:** Provide designated concrete washout with lined, covered bays; prohibit dry sweeping—use vacuum sweepers; limit solvent use and ensure low-VOC materials to reduce gaseous co-pollutants.
- **Housekeeping and road cleanliness:** Deploy vacuum road sweepers on internal routes and immediate campus approaches; maintain daily cleaning of walkways and building interfaces to minimize re-suspension and indoor carryover.
- **Green buffers and microclimate:** Maintain/augment vegetated buffers (hedges/trees) as live dust filters; protect existing canopies from deposition with protective netting during peak dust phases; irrigate green strips to enhance capture.
- **Monitoring and transparency:** Install continuous PM_{10}/$PM_{2.5}$ monitors at site boundary (downwind and upwind) with alert thresholds aligned to DoE/WHO guidance; publish weekly dashboards to campus stakeholders; trigger enhanced suppression when thresholds are exceeded.
- **Work sequencing and timing:** Sequence high-dust works outside class hours/exam periods; avoid concurrent bulk earthworks and façade grinding; pause dust-generating activities under high-wind advisories; integrate with campus timetable to protect sensitive uses.
- **Training, compliance, and penalties:** Embed dust control SOPs in contractor contracts; conduct toolbox talks; empower site EHS to halt works for non-compliance; align with the national directive to penalize polluting construction and prohibit waste burning on site.

194. Ambient air quality at the perimeters of the construction site should meet the standard indicated in Air Pollution (control) Rules 2022. Although emissions impacts are expected to be negligible, all motorized construction equipment and all haul trucks should, as a later of good practice, be maintained to a high standard, most particularly their fuel and exhaust systems. Emissions from motorized machinery used in construction should meet the standard indicated in Air Pollution (control) Rules 2022.

c. Soil quality

195. **Impacts:** Construction of the IBA Annex within the Dhaka University campus can temporarily degrade on-site soil quality through multiple pathways: site clearing and excavation expose topsoil to rainfall and wind, accelerating erosion and sediment generation that can clog nearby drains and smother vegetation patches integral to the campus green network. Heavy equipment traffic and stockpiles compact the Madhupur Tract clayey soils typical of Dhaka, reducing porosity, infiltration, and root aeration, which in turn increases runoff and downstream sediment loads during monsoon events. Accidental releases of fuel, lubricants, concrete wash water, and paint/solvent residues can alter soil pH, raise electrical conductivity, and introduce hydrocarbons and heavy metals, creating localized contamination "hotspots" near equipment yards, mixers, and maintenance areas if not contained. Improper storage of excavated spoils and fine materials can generate dust and silt-laden runoff that transports fines into landscaped zones and storm drains, degrading both soil structure and campus drainage performance. If topsoil is not salvaged and reinstated, the loss of organic matter and seedbank diminishes post-construction soil fertility and biota recovery for green roofs, courtyards, and edge plantings envisioned in the design narrative. Finally, poorly planned temporary diversions and hard standings can reroute surface flows and concentrate velocities along footpaths and edges, causing rutting, gully initiation, and longer-term maintenance burdens on the campus landscape fabric.

196. **Mitigation:** Following mitigation measures should be enforced:

- Prepare and enforce a site-specific Soil Erosion and Sediment Control Plan within the Contractor's ESMP, mapping drainage paths, DSAs (disturbed soil areas), and BMP locations; combine erosion prevention (first line) with sediment control (last line) for redundancy.
- Phase clearing and grading; limit open/disturbed areas and exposure duration, stabilizing each phase within 7–14 days using mulch, erosion control blankets, temporary turfing/sod, or hydromulch appropriate for monsoon conditions.
- Perimeter controls: install silt fences, fiber rolls, and sediment traps at downslope boundaries; add rock check dams in swales; maintain/clean after storms to preserve effectiveness.
- Run-on and runoff management: divert clean water around works with berms or lined channels; convey site runoff through non-erosive stabilized outlets and temporary sediment basins before discharge to campus drains.
- Topsoil management: strip, stockpile (≤2 m height), protect with cover and perimeter silt fence, and reuse on all landscaped and green-roof areas to restore organic matter and microbiota.
- Compaction control: define haul routes and equipment zones; place geotextile and gravel for temporary hardstands; rip/subsoil compacted areas to 300–450 mm before topsoil replacement and planting.
- Materials and spoils: store aggregates and fines on impermeable, bermed pads; cover during rain; place spoil piles away from drains with toe protection; prohibit on-site crushing to minimize fines and dust where feasible.
- Concrete and wash water: provide lined, bermed concrete washout pits; prohibit discharge to soil or drains; collect and dispose per DoE-compliant procedures.
- Fuel and chemical management: designate a bunded refueling/maintenance area with spill kits; keep MSDS on-site; train crews; implement immediate spill containment and contaminated soil removal protocols.

- Dust suppression: maintain moist surfaces with targeted watering, cover trucks, and promptly stabilize stockpiles; sweep paved areas to prevent track-out into campus.
- Protection of trees/roots: install tree protection fencing at dripline; avoid grading within root zones; use trenchless or hand-dig methods near mature trees to preserve soil structure and biota.
- Monitoring and maintenance: inspect BMPs before/after storms; keep logs; adapt measures based on performance; include soil quality checks (e.g., compaction, pH) prior to handover.
- Contractor ECoPs and training: integrate ECoPs into contracts; conduct toolbox talks on soil protection, spill response, and BMP upkeep; align with national EIA/ESMF guidance for Bangladesh.
- Post-construction stabilization: finalize grading to gentle slopes, amend soils with compost, install permanent vegetation/groundcovers, and remove temporary controls only after full stabilization.

d. Flora and fauna

197. **Impacts.** The effects of construction work on species of conservation concern - and on local wildlife and habitats in general - will be negligible, provided that the location is in within the campus setting and number of trees or vegetation cover is minimum. As described in the Alternative Analysis Section, only 2 trees will be chopped off to make way for the Annex IBA building. There is no space for additional tree plantation, but the new space created for green gardens along the building should be compensating for the trees that are chopped off.

198. **Mitigation.** No special mitigation is needed to address potential wildlife impacts. Green space consideration in the design (see project description part) shall be good enough for compensating tree cutting.

2. Socioeconomic impacts

a. Traffic Congestion

199. **Impacts.** Construction activities for the IBA Annex are likely to intensify on-campus traffic congestion by increasing the volume and frequency of construction vehicles, material delivery trucks, and worker transport during peak class hours, creating queuing at campus gates and internal intersections already operating near capacity in central Dhaka's constrained network. Temporary lane narrowing, sidewalk closures, and staging areas near the existing IBA building will reduce carriageway and pedestrian space, slow vehicular speeds, and trigger conflict points with rickshaws, pedestrians, and service vehicles typical of university settings, thereby extending delays and spillback into adjacent links. Unsynchronized access/egress by haul vehicles without a defined schedule can cause intermittent surges, blocking sightlines and crossings, while ad hoc parking of contractors' vehicles reduces effective capacity and impedes emergency and campus services. If not coordinated with Dhaka University's restrictions on external vehicles and evolving policies on regulated on-campus rickshaws, construction traffic could undermine campus circulation objectives, increase travel time variability, and heighten safety risks for students and staff near site approaches. Without a formal, site-specific Traffic/Transportation Management Plan integrating temporary traffic control, haul routes, and stakeholder communications, recurring and non-recurring congestion can propagate beyond the work zone, degrading mobility and user experience across the IBA precinct.

200. **Mitigation.** A traffic management plan (TMP) must be devised prior to construction and approved by the environmental specialist from SDCMU and approved by local police station. A sample TMP has been attached with this IEE as Appendix 4.

b. Noise and vibration

201. **Impacts.** Construction of the IBA Annex will elevate campus noise and ground-borne vibration due to piling, excavation, concrete works, material handling, and increased truck movements, affecting classrooms, offices, and libraries that function as “silent area” receptors under national rules for educational premises and their 100 m buffer. Typical sources include impact tools (hammers, breakers), generators, compressors, and reversing alarms, which can raise ambient levels above the recommended daytime thresholds for educational/institutional receptors of around 55 dB LAeq and significantly above at night, risking annoyance, speech interference, and concentration loss during lectures and examinations if not controlled. Ground-borne vibration from activities like dynamic compaction, vibratory rollers, and any driven piling can propagate through the Madhupur Tract soils to adjacent buildings, leading to perceptible vibration, potential cosmetic cracking in sensitive structures, and disturbance of users even when structural damage thresholds are not reached, especially in older buildings with unknown condition. If high-noise tasks are scheduled during peak academic hours or exam periods without mitigation, cumulative exposure can exceed the common benchmark of not more than a 3 dB increase over background at the nearest receptor, degrading the learning environment and prompting complaints under Bangladesh’s Noise Pollution (Control) Rules, 2006, which also restrict construction processing machinery at night without permission.

202. **Mitigation.** To minimize noise and vibration impacts for residents living within earshot of the vicinity of construction site, construction activity should be strictly limited to daylight hours. To avoid adding to the traffic noise for roadside residents, all haul trucks must be kept in good repair, and fitted with functional mufflers. Proper maintenance of machinery and trucks shall be done not to cause extra vibration. Emissions of noise from the project construction sites should not be of a level sufficient to cause an exceedance of maximum ambient noise levels as specified in the Noise Pollution Control Rules 2006. Emissions from individual pieces of machinery and vehicles used in construction should not be allowed to exceed the maximum acceptable levels indicated in Noise Pollution Control Rules 2006.

203. The following mitigation measures shall be taken:

- Planning and limits: prepare a Construction Noise and Vibration Management Plan setting receptor-specific criteria (e.g., 55 dB LAeq daytime, ≤3 dB above ambient at nearest classrooms), scheduling high-noise tasks outside exam/lecture peaks, and prohibiting night works unless expressly permitted by authorities.
- Quiet methods and equipment: prioritize bored/cast-in-place piling over driven piling where feasible; specify low-noise plant with compliant mufflers/silencers, acoustic enclosures for generators/compressors, and broad-band/rear-view camera systems to avoid tonal reversing alarms.
- Site layout and barriers: position stationary plant away from the existing IBA building; use site offices, stacked containers, stockpiles, and temporary acoustic barriers (2–4 m) to break line-of-sight to classrooms and libraries, optimizing barrier height, length, and proximity to source/receptor.

- Vibration control: select non-impact excavation where feasible; limit use of vibratory rollers near structures; set vibration trigger levels and implement a permit-to-work for high-vibration activities with real-time geophone monitoring.
- Hours and sequencing: confine exterior noisy operations to daytime windows consistent with campus norms and national rules; sequence multiple noisy activities to avoid overlapping peaks; reserve quiet periods during exams and critical academic events.
- Building protection: conduct pre-construction dilapidation surveys of adjacent buildings; agree on building-specific vibration limits and monitoring locations; implement contingency measures (e.g., additional shielding, method change) if thresholds are approached.
- Traffic noise management: cap truck speeds, eliminate unnecessary idling, consolidate deliveries to reduce frequency, and use designated gates/haul routes away from sensitive receptors where possible.
- Communication and grievance: issue weekly look-ahead notices for noisy works; maintain a complaint hotline and rapid response protocol; adjust methods or schedules based on monitored exceedances and stakeholder feedback.
- Monitoring and compliance: undertake baseline noise/vibration surveys; apply continuous or attended monitoring during critical tasks; compare to criteria and national “silent area” limits; document exceedances and corrective actions for regulatory compliance.

c. Occupational health and safety

204. **Impacts:** Construction activity and construction sites carry inherent risks for workers. These risks include falls, contact with moving machinery, flying and falling objects, dust, burns, cuts, exposure to intense light from arc welding, electric shock and electrocution, and crushing from collapsing earth walls, amongst other things. Where construction is conducted in public rights-of-way, there are also dangers associated with vehicles moving past the work site.

205. The ongoing COVID-19 pandemic has heightened concern about workplaces as transmission points for viral illnesses. Although much construction work is conducted in the open air and thus can be considered relatively low risk, this is not always the case, especially as the construction process advances and doors and windows are installed. Whether it is COVID-19 or the next serious viral threat to come along, construction sites are potential trouble spots.

206. Construction camps are problematic in terms of occupational health and safety because Contractors tend to invest as little as possible in their construction, operation and upkeep, partly on the assumption that camps are by nature temporary and also based on a characterization of construction workers as rough people accustomed to rough living conditions. This lack of investment in camps usually results in crowded and unsanitary living conditions, inadequate toilets and washing facilities, low-quality water supplied for drinking, cooking and bathing, and various dangers such as single exit sleeping sheds, lack of fire extinguishers, and exposed wires. The health risks for residents of construction camps are heightened dramatically when viral illnesses are circulating in the general population, as has been the case in 2020/2021 with COVID-19. In Bangladesh, it is not uncommon for construction workers to sleep in rows in poorly ventilated sheds, with less than 1 m between them and less than 2 m^2 space per person overall; workers also often gather to eat in the same sheds, for lack of dedicated mess halls or other eating space.

207. **Mitigation.** Risks to worker safety on the job site can be successfully minimized though proper worker training, and by strict use of task-appropriate personal protective equipment (PPE). All workers and site supervisors should be provided with workplace safety training prior to the start of construction, and at regular intervals thereafter. Training should be repeated whenever new crews are brought on to the site, and whenever monitoring by the primary Contractor or construction supervision consultant reveals declining standards of practice on the site. The primary Contractor should ensure that all workers are provided with adequate PPE suited to any task they may be given, and also strictly enforce its use at all times.

208. In order to limit the spread of COVID-19 or other future viral threats on the project construction sites, preventive measures must become standard practice. All workers must undergo temperature checks at least once per day. Suitable face masks must be supplied to all workers and replaced daily; use of masks should be required at all times except when using other types of masks required for particular work activities, or when eating, bathing and sleeping. Hand washing and sanitizing stations should be positioned at any site location where workers may eat or drink, including at canteens, camp kitchens and eating spaces, and also near toilets. Data on temperature checks, mask provision and re-stocking of sanitizing soaps and sprays should be collected by the Contractor and reported in monthly compliance reporting to the supervision consultant.

209. Risks to workers from poor conditions in construction camps can be greatly minimized by full implementation of a site-specific Construction Camp Management Plan for each camp that will be established. The Construction Camp Management Plan will be appended to the CEMP. The Construction Camp Management Plan should specify, at minimum,

(i) dormitories with good cross-ventilation at least 4 m^2 living space per person;
(ii) two or more working exits and at least one high-capacity fire extinguisher maintained in good working order for all residential structures;
(iii) indoor eating space separate from sleeping areas;
(iv) kitchens with off-floor food storage, raised working surfaces of a material that can be easily sanitized, and a ready supply of clean water;
(v) toilet facilities with at least one functional toilet (protected from the elements and affording full visual privacy to the user) per ten resident workers, with a ready water source for washing;
(vi) roofed and partitioned wash-up areas with floors and proper drainage;
(vii) physical separation between sleeping spaces on the one hand, and kitchens and storerooms on the other;
(viii) wiring that meets the requirements of the Bangladesh National Building Code; and
(ix) provision of unlimited drinking water that meets the standards indicated in the Environment Conservation Rules, 2023.

d. Public health and safety

210. **Impacts.** Public safety risks associated with construction activity are primarily related to proximity; works carried out in densely populated localities offer many more opportunities for members of the public to come into contact with heavy machinery, fall into holes, and get injured by unstable stockpiles of materials. All the sites will offer heightened risk in this regard, given the high density of residents nearby. During heavy hauling periods, safety risks may be slightly elevated for people using the two road corridors serving sites, although construction traffic will represent a small incremental increase relative to the steady flow of trucks heading to and from the outer IBA area.

211. Public safety - especially the safety of women and girls - can also be threatened by operation of construction camps in proximity to local settlements, especially when camps house many non-local workers who may feel unencumbered by the norms and mores of their faraway home communities. Camps may become a locus for prostitution, and the violence that often accompanies it. Sometimes, local resentment over the hiring of non-local workers, perhaps exacerbated by cultural misunderstanding or racial and religious animus, can lead to violent conflict between resident workers and local people.

212. Public health is most often affected by construction activity when dust levels are very high for long periods, and also when poorly managed construction camps are situated near existing settlements. Especially when camps house large numbers of workers from other regions, their presence near communities may lead to elevated incidence and spread of communicable diseases, particularly sexually transmitted ones, in the local population. This is especially true if the camp is allowed to become a hub for prostitution.

213. **Mitigation.** The construction sites must be adequately fenced, and security should be provided at all times to keep curious people from entering. The construction site at the IBA site should be planned in such a way that protected means of access are provided for users and staff of the existing facilities even as new ones are under construction. A low-speed limit should be imposed on haul trucks.

214. The best means of limiting construction camp-related public safety impacts is to avoid the need for camps at all, by hiring only local workers; given the high local unemployment rate and workforce accustomed to heavy work in the stone-crushing works around the area, it seems likely it will be feasible to hire mostly local workers. If a camp must be established, resident workers should be given awareness training, and subject to strict controls on off-site travel and behavior. The Contractor responsible for the camp should work proactively with local community leaders - including female leaders - to monitor interaction between the resident worker population and the local public, and promptly address emerging problems such as prostitution and bad worker behavior off-site. These measures should be included in the Construction Camp Management Plan, which will be appended to the CEMP (see Appendix 9).

215. Elevated dust levels can be effectively mitigated with regular light spraying of dust-generating surfaces with water, as noted above in relation to air quality impacts. Again, it should be emphasized that impacts from construction camps can be most effectively prevented by hiring only local workers. If this is not feasible, the Contractor in charge of the camp should provide regular sexually transmitted disease awareness training and also work with local community leaders to proactively curb development of prostitution at and around the camp. These and other measures for managing construction camp impacts should be specified in the Construction Camp Management Plan, appended to the CEMP.

e. GBV/SEA–SH Risks

216. **Impacts.** During construction of the IBA Annex Building, there is a potential risk of gender-based violence (GBV), including sexual exploitation and abuse and sexual harassment (SEA/SH), arising from the presence of a predominantly male workforce, interactions between workers and students/staff/visitors, and movement of workers in and around the Dhaka University campus. These risks may be heightened in congested public areas, near access routes, around temporary facilities, and during early morning/evening working hours. Potential impacts include harassment or intimidation of women and girls (and other vulnerable groups), reputational and psychological

harm, reduced sense of safety on campus, underreporting due to stigma/fear of retaliation, and potential conflict between workers and the university community.

217. **Mitigation.** The Contractor will implement and enforce a GBV/SEA–SH Action Plan consistent with ADB requirements and GIIP, including: a mandatory Code of Conduct for all workers (with zero-tolerance provisions and sanctions); induction and periodic refresher training on respectful behavior and SEA/SH prevention; vetted recruitment and supervision (including controls on labor influx, worker identification badges, and restrictions on access to campus areas not required for works); adequate lighting, secure fencing/hoarding, and controlled site entry/exit; separate, secure sanitation facilities for workers; and clear rules prohibiting child labor and interactions with students. A confidential, survivor-centered grievance mechanism will be established with multiple reporting channels (including options for anonymous complaints), rapid response procedures, and referral pathways to appropriate medical, psychosocial, and legal services. The CSC/PIU will monitor compliance through routine inspections, incident reporting protocols, and corrective actions, with immediate removal of any worker involved in SEA/SH allegations pending investigation and application of contractual penalties as applicable.

3. Waste management related impacts

a. Construction waste

218. **Impacts.** Waste generated during construction will consist mainly of packaging, from both construction materials and food products consumed by workers. The volume of waste produced is likely to be relatively small but can easily get strewn and blown across the landscape and end up in local water bodies, if not appropriately managed.

219. **Mitigation.** Suitable receptacles should be positioned at strategic locations around the work sites to facilitate containment and collection of solid waste. Construction waste should be sorted to segregate recyclables, and regular pickup of these by a local recycling business should be arranged. Non-recyclable waste should be transported to the nearest legal landfill site, and never burned, buried or dumped on the site. Waste oil and other noxious fluids and associated used containers should be recycled through a reputable business providing this service. The primary Contractor should be required to specify all waste management arrangements - including the identity of recycling enterprises and legal landfill operators able to accept expected wastes - in a site-specific Waste Management Plan embedded within the CEMP. Appropriate contents of a Waste Management Plan are specified in the sample CEMP outline provided in Appendix 9.

D. Findings of Impact Assessment: Operation phase

1. Socioeconomic impacts

a. Waste management related impacts

220. **Impacts.** Operation of the IBA Annex will significantly increase the generation, handling, and movement of solid and recyclable wastes on campus due to higher user density (classrooms, labs, café, gallery, auditorium, and guest rooms), creating risks of littering, odor, pest attraction, and clogged drains if segregation and collection are inadequate under Dhaka's constrained municipal system. Without systematic source separation, mixed waste streams (organics, paper, plastics, glass, metals, e-waste from IT labs) will reduce recovery rates, raise collection costs, and shift burdens to informal pickers and downstream facilities rather than aligning with 3R

priorities embedded in Dhaka's master planning and recent segregation pilots in Dhaka city corporations. Inadequate storage infrastructure (poorly sealed internal bins and external containers) and irregular collection intervals can lead to leachate generation, vector breeding, and nuisance near academic and public spaces, undermining campus environmental quality and green design intent described for landscaped roofs and courtyards. Improper handling of special streams such as laboratory packaging, toner cartridges, batteries, e-waste, and occasional hazardous residues (e.g., maintenance chemicals, spent lamps) could contaminate other recyclables, trigger non-compliance with good international industry practice, and increase occupational risks for housekeeping and waste workers. Seasonal variability (exam peaks, events in the auditorium, café demand) may create episodic overflow, while weak user awareness and insufficient signage can cause cross-contamination that negates downstream recycling value and increases landfill dependence in a system already facing capacity constraints in Dhaka.

221. **Mitigation.** The following mitigation measures need to be implemented:

- **Establish a campus-aligned 3R system with source segregation:** implement at-source wet/dry separation at every floor and use color-coded bins for organics, recyclables, and residuals, following Good International Industry Practice (GIIP) and Dhaka's recent two-stream pilots to maximize capture and minimize contamination.
- **Standardize internal collection and back-of-house staging:** define collection frequencies by zone and peak schedules; use covered, washable dollies and sealed transfer containers to prevent spills and odors en route to a ventilated, washable waste room with floor drain and hose bib.
- **Provide fit-for-purpose external storage and collection interface:** install rodent-proof, lidded containers with hardstand and drainage isolation; coordinate pick-up windows with city or contracted services to avoid overflow and scattering by animals or wind.
- **Organics management hierarchy:** minimize food waste via portion control and kitchen practices; segregate food scraps for composting or DNCC/DSCC organics programs; avoid mixing organics with dry recyclables to preserve material value.
- **Recyclables recovery:** contract authorized recyclers for paper, cardboard, PET/HDPE, metals, and glass; place clearly labeled stations in high-traffic areas and near cafés; track capture rates and contamination percentages monthly.
- **Special and hazardous streams:** set separate collection for batteries, e-waste (IT labs), toner/ink, lamps, and maintenance chemicals; store in labeled, secure cabinets; hand over only to licensed handlers per EHS guidance and campus policy.
- **Cleaning, hygiene, and pest control:** adopt daily bin cleaning schedules, spill response Standard Operating Procedure (SOPs), and integrated pest management around storage areas; maintain lids closed and surfaces dry to suppress vectors and odors.
- **Behavior changes and signage:** deploy multilingual, pictogram-based signs showing what goes where; run periodic awareness drives with student clubs and staff; provide feedback loops (dashboards of diversion rates) to sustain participation.
- **Data and continuous improvement:** maintain a waste register by stream and floor; audit composition quarterly; set Key Performance Indicator (KPIs) (e.g., diversion rate, contamination rate, complaints) and adjust bin placement, pickup frequency, and training accordingly.
- **Procurement for circularity:** favor reduced packaging, refillable consumables, durable/recyclable materials in campus procurement to cut upstream waste and

support recycling markets connected to formal systems rather than informal, unsafe practices.

E. Cumulative Impact Assessment

222. Cumulative Environmental Impact Assessment (CEIA) for the IBA Annex considers combined and interactive effects from the project and concurrent campus-wide developments under Dhaka University's multi-year infrastructure overhaul, along with seasonal urban stressors (traffic, noise, drainage, waste) in central Dhaka; together these can amplify pressures on mobility, air/noise environment, drainage, utilities, waste systems, green space integrity, and campus user experience beyond the IBA site's standalone impacts. DU has embarked on a large masterplan/overhaul program approved in 2025 (Tk 2,840 crore; "Further Development of Dhaka University"), which includes new academic buildings, major hall reconstructions, library expansion, roads and drainage upgrades, and multiple demolish-and-rebuild actions across the central campus footprint; these works can overlap temporally with IBA Annex construction and early operation, raising cumulative risks if staging and access are not coordinated. Specific concurrent elements reported include expansion of the central library with two new blocks (12- and 6-storey) via partial demolition, construction of several new halls and academic buildings, administrative facility development, and near-term RCC road reconstructions and DSCC drainage upgrades around key corridors; this co-activity implies higher background construction traffic, material staging, and intermittent road closures affecting IBA approaches and sensitive periods (classes, exams). The DU Office of Planning and Development catalogues a long-running pipeline of building extensions, hall works, and service modernization (water/sewer lines, press modernization), indicating a system already under rolling works that may intersect with IBA Annex phases; legacy and ongoing activities collectively contribute to a "construction present" condition that elevates baseline noise, dust, waste generation, and utility disruption risks. Considering DU's strategic plan and green initiatives, the CEIA also captured beneficial cumulative effects from integrated drainage upgrades, walkability, and green space enhancement if sequencing is done well—yet it should flag that misaligned phasing could negate these benefits through prolonged disturbance and duplicated disruptions near IBA precincts.

223. **Impacts.** Key cumulative impact pathways and considerations:

(i) Traffic and access: Aggregated construction fleets for IBA plus masterplan sites may saturate gates and internal roads, increasing queue lengths, pedestrian conflict risks, and variability in travel time to/from IBA; route-level TTMP across projects is needed to avoid stepwise degradation in mobility.
(ii) Noise and vibration: Multiple simultaneous sites elevate baseline ambient noise, making even compliant IBA activities feel intrusive; sensitive periods (exams) require campus-wide quiet windows and coordinated scheduling to prevent additive exceedances at classrooms and libraries.
(iii) Air quality and dust: Concurrent demolition, excavation, and material handling can produce cumulative particulate loads; shared street canyons near academic blocks require synchronized dust suppression and track-out control to protect receptors and archives.
(iv) Stormwater and drainage: Construction-phase earthworks and surface sealing across several sites increase runoff and silt risks; although DSCC upgrades may alleviate waterlogging, mis-timed tie-ins could temporarily worsen localized flooding around IBA.

(v) Utilities and services: Overlapping utility relocations and load growth (power, water, sewer) can cause outages or brownouts; commissioning of IBA should be sequenced with network upgrades to avoid cumulative service instability.
(vi) Waste management: Increased construction and operational waste streams (from new halls and facilities) burden campus staging areas and municipal interfaces; contamination and overflow risks rise without standardized segregation and collection coordination.
(vii) Green space and amenity: Long-duration staging and pathway closures across multiple sites can fragment green corridors and reduce campus amenity; cumulative loss of shade and quiet zones during works may affect well-being and biodiversity if not offset by phased restoration.

224. **Mitigation measures.** Cumulative mitigation directions for IBA within campus context:

(i) Campus-level coordination: Establish a joint coordination cell with DU Planning and Development, masterplan contractors, and DSCC to align schedules, haul routes, quiet hours, and utility tie-ins, minimizing overlap in peak-impact periods near IBA.
(ii) Integrated TTMP and quiet windows: Implement a campus-wide traffic and noise scheduling matrix that blocks simultaneous high-impact activities along shared corridors and sets exam-period moratoria across projects affecting IBA receptors.
(iii) Shared environmental controls: Standardize dust suppression, track-out control, and sediment controls across sites; conduct joint inspections and rapid corrective actions for hotspots influencing IBA approaches.
(iv) Phased restoration and wayfinding: Commit to rapid reinstatement of pedestrian routes and green patches in phases; provide consistent wayfinding and safety communication across projects to reduce confusion and exposure near IBA.
(v) Utilities and commissioning plan: Sequence IBA commissioning with network upgrades, maintaining temporary redundancy to avoid cumulative service interruptions during overlapping energization or tie-in works

F. Summary of Impact Assessment

225. The project's main construction-phase impacts within the IBA campus include elevated dust and particulate emissions from excavation and materials handling, intermittent noise and vibration from heavy equipment, temporary traffic congestion at gates and internal roads due to delivery trucks and worker transport, soil erosion/compaction and siltation risks around landscaped areas, and increased construction waste requiring controlled storage and off-site disposal; these effects can be magnified in a busy academic precinct unless phased and actively managed under recognized standards such as World Bank/IFC EHS Guidelines and national EIA practices. During operation, the Annex will increase footfall and service demands, which can raise solid waste generation and utility loads but can also deliver environmental gains if green operations (segregation, low-impact cleaning, efficient HVAC/water use) are embedded in facility management consistent with DU sustainability initiatives and EHS good practice. Cumulatively, campus-wide works and seasonal monsoon conditions can intensify baseline dust, noise, and mobility constraints; therefore, campus-level coordination and scheduling are essential to avoid overlapping peak impacts near academic spaces.

226. Mitigation focuses on prevention-first controls supported by monitoring and adaptive management. For air/dust and soil: phase clearing and grading; stabilize exposed areas quickly; enforce wheel-wash/track-out control; cover stockpiles; and deploy silt fences, check dams, and sediment traps to protect drains and landscaped soils, following EHS construction guidance and local EIA practice. For noise/vibration and traffic: schedule high-noise tasks away from lecture/exam peaks; use quieter equipment and temporary barriers; implement a site-specific traffic/transport management plan with off-peak deliveries, signed haul routes, flagging, and

protected pedestrian paths within the campus circulation system. For waste and hazardous materials: segregate construction and operational wastes at source; store on hardstand covers; contract licensed handlers; train workers in SOPs and spill control; and align facility operations with DU sustainability programs for ongoing performance improvement and compliance with EHS expectations.

227. Governance and performance assurance should combine a concise Environmental and Social Management Plan with clear roles, KPIs, and campus coordination. Required elements include baseline and periodic monitoring of dust, noise, vibration, and runoff quality; weekly look-ahead notices to departments; incident and grievance response protocols; and corrective actions tied to triggers (e.g., queue length, dB or PM thresholds) to maintain learning conditions and safety during construction. Commissioning should verify environmental systems and O&M readiness, while handover should include as-built environmental controls, training, and data routines so the Annex operates in line with DU's sustainability trajectory and international GIIP benchmarks for institutional buildings. Taking into the account all the foregoing, it is considered that the impacts expected from this component of the Investment Project do not rise to a level of magnitude, severity or complexity that would justify further detailed study and development of novel or specialized mitigation strategies. The investments at this location are appropriately assigned to Category B for the Environment.

G. Summary Impact Matrix

Given the assessed level of impacts for the IBA Annex Building construction project discussed in the earlier sections, the following Tables give a summary assessment based on the method explained in Table VI-3.

Table VI-3 Summary Impact assessment matrix of IBA Annex building construction project

KEY: +/-: positive/negative impact; D/C/B/A: none/minor/major/severe; Loc/Wid: localized/widespread; Tem/Per: temporary/persistent; Int/con: intermittent/continuous; Dir/Ind: direct/indirect; Iso/Cum: isolated/cumulative. Please refer to Table VI-1 for detail methodology.

Item	Impact		Ratings (when not mitigated)												Discussions
			Construction phase						Operation phase						
			Magnitude	Spatial extent	Duration	Timing	Nature	Relationship	Magnitude	Spatial extent	Duration	Timing	Nature	Relationship	
Pollution	1	Air Quality	B-	Loc	Tem	Con	Dir	Iso	D	-	-	-	-	-	**Construction phase**: Construction phase air quality will be affected by fugitive dust from excavation, demolition, material handling, and unpaved haul routes, elevating particulate matter (PM10/PM2.5) near classrooms and walkways if controls are weak; emissions from diesel equipment and idling trucks add NOx/CO and ultrafine particles, with short-term peaks during deliveries and concrete works typical of urban campus sites in Dhaka. Good practice requires prevention-first controls such as phased works, frequent wet suppression, covering stockpiles, wheel-wash/track-out control, speed limits on-site, low-sulfur fuels, maintaining equipment, and monitoring against EHS benchmarks to keep ambient contributions within acceptable ranges for sensitive receptors. Construction indoor air risks also arise if HVAC is run before handover; protecting and filtering any temporary HVAC, sealing ducts, using low-VOC materials, and replacing filters before occupancy are critical to avoid residual contaminants in finished spaces. **Operation phase**: Ambient air quality may improve when construction is done.
	2	Water Quality	B-	Loc	Tem	Con	Dir	Iso	D	-	-	-	-	-	**Construction phase:** Exposed soils, stockpiles, and haul roads can generate sediment-laden runoff during storms that elevates turbidity and total suspended solids in campus drains if not contained, while accidental releases from fuels, oils, paints, and particularly high-pH concrete wash water can spike alkalinity and introduce pollutants to the storm system without lined, bermed washout areas and spill control. Common construction site pollutants also include sanitary waste from temporary restrooms and debris from materials handling, which can leach nutrients and pathogens into runoff unless BMPs are in place to capture and properly dispose of wastes before they reach drains or adjacent landscaped swales within the IBA precinct. Effective erosion and sediment controls—phased stabilization, silt fences, inlet protection, sediment traps/basins, and settlement structures—are the primary defenses to keep sediment and contaminants on-site and protect campus water quality through the monsoon period.. **Operation phase:** Increased impervious area and on-site activities (café, events, routine maintenance) can raise runoff volumes and carry urban pollutants such as sediments, nutrients, hydrocarbons, and litter into campus drainage unless post-construction stormwater controls and good housekeeping are embedded in operations. Low Impact Development measures—bioretention planters, permeable pavements, green roofs, and detention to reduce peak flows—improve infiltration and filtration, lowering pollutant loads and mitigating waterlogging typical of dense Dhaka campuses when coordinated with site design and maintenance programs.

Item	Impact		Ratings (when not mitigated)												Discussions
			Construction phase						Operation phase						
			Magnitude	Spatial extent	Duration	Timing	Nature	Relationship	Magnitude	Spatial extent	Duration	Timing	Nature	Relationship	
	3	Soil Quality	C-	Loc	Tem	Con	Dir	Iso	D	-	-	-	-	-	**Construction phase:** Site clearing, excavation, and heavy equipment traffic can cause topsoil loss, erosion, and compaction, which reduce soil porosity and infiltration and increase sediment-laden runoff into campus drains during rains, especially if disturbed areas and stockpiles are left exposed. Fuel, oil, cement wash water, paints, and solvent spills from plant yards and concrete works can alter soil pH and contaminate localized areas, while poor stockpile management increases dust and fine sediment deposition on landscaped soils around the IBA precinct. Without topsoil salvage and proper reinstatement, post-construction soil fertility and microbiological activity decline, slowing vegetation recovery on green areas and affecting the project's intended landscape performance.. **Operation phase:** Routine building use poses lower direct soil risks, but poorly managed outdoor housekeeping, pesticide/fertilizer use, and leakage from waste storage areas can lead to gradual nutrient imbalance, salinization, or localized contamination of planting beds and pervious zones around the Annex. Inadequate drainage upkeep around paved-pervious interfaces may concentrate flows and cause minor scouring or silt deposition at landscaped edges, while maintenance activities (e.g., occasional exterior works) can compact soils unless access routes and protective measures are defined..
	4	Noise and vibration	A-	Loc	Tem	Con	Dir	Cum	C-	Loc	Per	Con	Dir	Cum	**Construction phase**: Noise and vibration will be increased and their impact level will become significant due to the operation of heavy machinery, trucks and vehicles. Given the target site is beside a urban busy road, the noise pollution is anticipated to be severe. **Operation phase**: Noise and vibration will be decreased if the subprojects achieve improvement in traffic flow and traffic congestions around the road intersections. However, due to drainage improvement, traffic is expected to be faster with less honking, thus producing less noise but more vibration. Given that the target sites are already urbanized with elevated noise level, the impact, therefore, is anticipated to be minor.
	5	Offensive odors	D	-	-	-	-	-	D	-	-	-	-	-	**Construction phase:** There is no specific negative impact anticipated as the construction of drainage will not likely generate odors. **Operation phase:** There is no occurrence of odor from domestic waste anticipated.

Item		Impact	Ratings (when not mitigated)												Discussions
			Construction phase						Operation phase						
			Magnitude	Spatial extent	Duration	Timing	Nature	Relationship	Magnitude	Spatial extent	Duration	Timing	Nature	Relationship	
	6	Waste	B-	Loc	Tem	Int	Dir	Iso	C-	Loc	Tem	Int	Ind	Cum	**Construction phase:** Construction of the IBA Annex will generate mixed construction and demolition waste such as concrete, brick, mortar, metals, packaging, wood, and plastics from excavation, formwork, finishing, and equipment maintenance, with risks of on-site litter, clogged drains, dust from debris handling, and improper disposal if not segregated and staged on hardstand with covers; good practice requires a site-specific waste plan emphasizing source separation, secure storage, licensed hauling, and record-keeping to minimize environmental nuisance and off-site impacts in the dense DU setting. **Operation phase:** During routine operation, the Annex's classrooms, labs, café, gallery, auditorium, and guest rooms will increase daily solid waste streams—organics from food services, paper/cardboard, plastics, metals, glass, and periodic e-waste/consumables from IT and office use—which require source-segregated bins on each floor, clean internal transfer to a ventilated washable waste room, and scheduled collections to prevent odor, leachate, and pests near academic spaces. DU's sustainability reports and city practices support campus segregation and circularity efforts; without consistent segregation and contracts with authorized recyclers, contamination will reduce recovery rates and shift burdens to municipal systems, whereas a 3R program with feedback on diversion can materially cut waste hauling, costs, and environmental footprint. Operational SOPs should cover daily bin hygiene, spill response, pest management, and safe handling of special streams (batteries, lamps, toner, e-waste) under EHS guidance, ensuring compliance and continuous improvement aligned with DU's sustainability
Natural Environment	7	Protected Area	D	-	-	-	-	-	D	-	-	-	-	-	There is no any protected area designated by Bangladesh's laws or international treaties and conventions around the subproject sites, so that no specific negative impact is anticipated.
	8	Cultural heritage	D	-	-	-	-	-	D	-	-	-	-	-	There is no cultural heritage within 5km of the proposed sites. So, impact is expected.
	9	Ecosystem	C-	Loc	Tem	Con	Dir	Iso	D	-	-	-	-	-	**Construction phase:** non anticipated. **Operation phase:** There is no specific negative impact anticipated.
	10	Surface hydrology	A-	Loc	Tem	Int	Dir	Iso	C-	Loc	Tem	Int	Ind	Cum	**Construction phase:** Construction of the IBA Annex will generate mixed construction and demolition waste such as concrete, brick, mortar, metals, packaging, wood, and plastics from excavation, formwork, finishing, and equipment maintenance, with risks of on-site litter, clogged drains, dust from debris handling, and improper disposal if not segregated and staged on hardstand with covers; good practice requires a site-specific waste plan emphasizing source separation, secure storage, licensed hauling, and record-keeping to minimize environmental nuisance and off-site impacts in the dense DU setting. **Operation phase:** During routine operation, the Annex's classrooms, labs, café, gallery, auditorium, and guest rooms will increase daily solid waste streams—organics from food services, paper/cardboard, plastics, metals, glass, and periodic e-waste/consumables from IT and office use—which require source-segregated bins on each floor, clean internal transfer to a ventilated washable waste room, and scheduled collections to prevent odor, leachate, and pests near academic spaces.
	11	Topography and Geology	C-	Loc	Tem	Con	Dir	Iso	D	-	-	-	-	-	**Construction phase:** None expected. **Operation phase:** Slope failures or landslides are not expected as the subprojects are planned in the flat area.

Item	Impact		Ratings (when not mitigated)												Discussions
			Construction phase						Operation phase						
			Magnitude	Spatial extent	Duration	Timing	Nature	Relationship	Magnitude	Spatial extent	Duration	Timing	Nature	Relationship	
Social Environment	12	Land acquisition	D	-	-	-	-	-	D	-	-	-	-	-	Since the Annex IBA will be constructed within its own land no land acquisition is needed
	13	Disturbance to livelihoods	C-	Loc	Tem	Con	Dir	Iso	D	-	-	-	-	-	**Construction phase:** There are some subprojects which require relocation / setbacks of structures. Their profiles shall be identified in the detailed survey. **Operation phase:** No major impact is anticipated since no land acquisition or resettlement will likely occur.
	14	Disturbance to Ethnic Minority Groups and Indigenous People	D	-	-	-	-	-	D	-	-	-	-	-	There are no ethnic minorities and indigenous peoples living around the project sites, so that no specific negative impact is anticipated.
	15	Deterioration of Local Economy	C-	Loc	Tem	Con	Dir	Iso	D	Loc	Per	Con	Dir	Cum	**Construction phases:** None expected **Operation phase:** none expected.
	16	Land Use and Utilization of Local Resources	C-	Loc	Tem	Con	Dir	Iso	D	Loc	Per	Con	Dir	Cum	**Construction phase:** During construction the local playground might be blocked for few months during piling operation. **Operation phase:** Once construction is done, playground will be open with much improved grass plantation (as per deign).
	17	Disturbance to Water Usage, Water Rights, etc.	D	-	-	-	-	-	D	-	-	-	-	-	**Construction phase:** No major impact is anticipated since the subproject does not affect water usage or water rights. **Operation phase:** No major impact is anticipated as the subprojects are nothing to do with water use.
	18	Disturbance to the Existing Social Infrastructure and Services	B-	Loc	Tem	Con	Dir	Iso	D	-	-	-	-	-	**Construction phase:** Traffic increase may occur mainly due to road blockages, but it remains temporary and insignificant. **Operation phase:** During operation, the IBA is not expected to generate a significant traffic volume.
	19	Traffic congestion	B-	Loc	Tem	Con	Dir	Iso	D	-	-	-	-	-	**Construction phase:** Construction traffic will add heavy vehicles, worker shuttles, and frequent deliveries to already constrained campus approaches, creating queues at controlled gates and internal intersections during academic peaks; temporary lane narrowing and checkpoints around DU's vehicle-restricted entries can further slow movements and cause spillbacks on periphery roads when surges of haul trucks coincide with restricted hours. Unscheduled arrivals and ad hoc curbside parking by contractors near the IBA frontage can block sightlines and pedestrian crossings, elevating conflict risk with rickshaws and walkers typical of the campus, while security screening at multiple entry points may intermittently throttle access, amplifying delays beyond the immediate work zone. **Operation phase:** Once the construction is over, no project related traffic increase is expected.
	20	Misdistribution of Benefits and Losses	D	-	-	-	-	-	D	-	-	-	-	-	No specific impacts to the local communities are anticipated both in construction period and operation period.
	21	Local Conflicts of Interest	D	-	-	-	-	-	D	-	-	-	-	-	No specific impacts to the local communities are anticipated both in construction period and operation period.

Item		Impact	Ratings (when not mitigated)												Discussions
			Construction phase						Operation phase						
			Magnitude	Spatial extent	Duration	Timing	Nature	Relationship	Magnitude	Spatial extent	Duration	Timing	Nature	Relationship	
	22	Cultural Heritage	D	-	-	-	-	-	D	-	-	-	-	-	**Construction phase:** The subprojects are planned at the existing sites away from heritage sites so that possibilities that the subprojects damage local archeological, historical, cultural, or religious heritage sites are not anticipated. **Operation period:** No major impact is anticipated as the projects are away from heritage sites.
	23	Landscape	D	-	-	-	-	-	D	-	-	-	-	-	Almost all subprojects are planned at the existing site so that no specific impact on the surrounding landscape is anticipated.
	24	Gender	B-	Loc	Tem	Con	Dir	Iso	D	-	-	-	-	-	**Construction phase:** Construction camps often seen as a potential disturbance to the local culture. This also affects local men and women, mostly when workers are hired from outside of the locality. Sometimes, uncontrolled workers can introduce local prostitution, conflicts with communities, etc. Since all these potential offenses to local community, especially to women can me manageable by enforcing strict regulation at workers camp, the impact is assessed as moderate. **Operation phase:** IBA will facilitate equal opportunity to male-female teachers to access highest level of training and modern equipment.
	25	Children's Rights	D	-	-	-	-	-	D	-	-	-	-	-	**Construction phase:** No specific impacts are anticipated both in construction period and operation period. **Operation phase:** None.
	26	Infectious Diseases	B-	Loc	Tem	Int	Dir	Iso	D	-	-	-	-	-	**Construction phase:** Infectious diseases among construction workers may occur, although the subprojects are small-scale and construction works would take only a short time if proper prevention measures are not taken. **Operation phase:** No major impact is anticipated.
	27	Work Environment (Including Work Safety)	B-	Loc	Tem	Con	Dir	Iso	C-	Loc	Tem	Int	Ind	Iso	**Construction phase:** Occupational safety and health may not be well maintained, and accidents may occur through the construction work if 1) Contractors do not abide the law, and 2) no proper prevention measures are taken. **Operation phase:** Accidents may occur during maintenance work.
Other	28	Accidents	B-	Loc	Tem	int	Dir	Iso	C-	Loc	Tem	Int	Ind	Iso	**Construction phase:** Accidents may occur due to the construction work, and traffic accidents may occur due to the increase of traffic volume. **Operation phase:** Accidents can occur and increase during maintenance work.
	29	Cross-boundary Impact and Climate Change	D	-	-	-	-	-	D	-	-	-	-	-	Deterioration of traffic congestion will increase CO_2 emission. However, no major impacts are anticipated as subprojects remain small-scale

VII. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

A. Rationale and Requirements for Disclosure and Consultation

228. It is considered necessary and useful for the interests and concerns of the people and institutions who will be affected by infrastructure projects (stakeholders) to be taken into account in planning and design from the earliest stages. Effective communication between the proponents of a project and the people whose lives will be affected by it (i) helps to ensure that positive impacts of the infrastructure are maximized while negative ones are prevented or minimized; (ii) honors basic democratic principles; and (iii) aids in forestalling development of social and political conflict surrounding allocation of public resources.

229. Consultation and information disclosure require that stakeholders of all kinds both have an opportunity to learn about infrastructure proposals and are given an effective means of providing their knowledge and voicing their concerns as inputs to project planning and implementation. SPS 2009 mandates timely disclosure of project information and consultation with people and institutions that stand to be affected by their implementation throughout the project cycle.

230. **Disclosure.** The SPS requires that project information is made publicly available at key stages of project development and implementation. At a minimum, basic details of the project rationale, objectives, preliminary infrastructure proposals and operation-phase activity need to be disseminated as part of consultations during the project preparatory phase, and the IEE needs to be disclosed on ADB's website.

231. **Consultation.** The SPS mandates that consultations should be carried out, at a depth commensurate with the significance of the expected impacts of the infrastructure, as an integral part of the environmental and social assessment process. The particular form that consultation may take is appropriately tailored to the cultural and social context, as well as the types of infrastructure and project activities that are proposed. Consultations often involve some combination of interviews with key informants, public meetings, and focus group discussions.

B. Stakeholder Identification

232. Given the nature of the project that the IBA Annex building is going to be constructed within the existing campus areas, the stakeholders identified for the proposed infrastructure development include officials from Finance Ministry and relevant Engineering college teachers and students whose lives may be affected—positively or negatively—by implementation of the investments. Project stakeholders were initially identified on a theoretical level through a series of scoping discussions amongst the multi-disciplinary Technical Assistance study team, encompassing such matters as physical proximity, land use, resource flows, traffic composition, local employment, and business. The understanding of stakeholder groups was further refined in cooperation with the IBA director who understands the project very well and are aware of the local socio-economic and environmental setting.

C. Stakeholder consultation history

1. Consultation with officials of the Finance Department, MoF

233. Consultations with the Finance Department, Ministry of Finance took place in November 2022 at SDCMU established under SEIP. The Project Director (PD) of SEIP who is in charge of SICIP, officials from Finance Department relevant to the project and ADB project team attended the meeting and discussed various aspects of the proposed IBA Annex building and possible safeguards system. Discussions on possible 'green building' components and locations of establishment of the IBA Annex building were held.

2. Consultation with the IBA teachers

234. During the time of field visit to IBA (September 2025) the technical assistance team sat with the teachers and talked to them informally. Discussions took place in various places on the IBA campus. The discussions took place on various educational issues, as well as campus environmental issues.

3. Consultation with the students, campus staff, and nearby community

235. To ensure adequate community coverage, a structured consultation session was conducted with (i) students (female/male), (ii) campus staff (administration, security, cleaners, maintenance), and (iii) nearby residents and businesses surrounding the campus perimeter potentially affected by construction-related nuisance. The consultation will cover: (a) construction schedule and working hours, (b) dust/noise and vibration management, (c) traffic/access and pedestrian safety, (d) waste management and drainage protection, (e) SEA/SH risk awareness and worker code of conduct expectations, and (f) functioning of the project GRM with confidential reporting options.

Table VII-1 Consultations Conducted

Date	Type of consultation	Place	Male	Female	Total	Key issues raised	Response / action taken
Nov 2022	Meeting with Finance Division (MoF), SEIP/SICIP, ADB	SDCMU (SEIP)	03	01		Safeguards integration; siting; need for green building features	Commit to incorporate SPS/EMP requirements in design and bid docs; include sustainability measures (energy/water efficiency)
Sep 2025	Informal consultation with IBA teachers	IBA campus	04	01		Dust/noise, academic continuity, site safety, traffic/access	Include strict CEMP, work-hour controls, barriers/hoarding, traffic plan, communication plan and GRM
Sep 2025	Structured consultation with students, campus staff, nearby residents/businesses	DU/IBA campus venue	08	04		Nuisance impacts, pedestrian safety, waste/drainage, SEA/SH concerns	Update EMP/CEMP; define communication channels; strengthen GRM and SEA/SH measures; finalize

Date	Type of consultation	Place	Male	Female	Total	Key issues raised	Response / action taken
							design enhancements
TOTAL			15	06			

Figure VII-1 Consultation at IBA in September 2025. Photo: TA consultants

D. Outcomes of stakeholder consultation

236. **Meetings with Finance department, IBA staff and students**. The technical assistance (TA) team met the MoF and IBA several times during project preparation. Apart from the possibilities and process of implementation of the whole project, the points of discussion also included the need assessment of construction of IBA Annex Building facilities within the IBA campus. The technical assessment team was comprised of an architect, TVET specialist, economist, environment specialist, gender specialist, social specialist and an education reform and implementation expert. Hence the discussions took on many dimensions. This IEE extracted the construction/repair/improvement related activities and environmental concerns from all the discussions. The summary of the discussions is presented in the following Table.

Table VII-2 Summary of the point of discussions with stakeholders

Environment Related Discussions and Questions	Summary Points, Discussions and Decisions
Green Building Integration and Biophilic Design	**Decision**: Implement vegetation integration as shown in the IBA building design. **Discussion**: Continue green patch from existing building roof to new building facade and void areas. **Action**: Establish rooftop gardens and vertical green systems to reduce urban heat island effects.
Natural Ventilation and Indoor Air Quality	**Decision**: Adopt cross-ventilation design principles for all floors. **Discussion**: Utilize prevailing southeast winds in summer for natural cooling. **Action**: Design tilted west walls to reduce heat gain and implement louvre systems for optimal thermal comfort.
Energy Efficiency and Solar Heat Management	**Decision**: Implement passive solar design strategies. **Discussion**: Address east and west sun glare through building orientation and facade design. **Action**: Install appropriate shading devices and optimize building orientation to minimize cooling loads.
Sustainable Material Selection and Sourcing	**Decision**: Prioritize locally sourced and recycled materials. **Discussion**: High costs for green products remain a significant barrier. **Action**: Develop material procurement guidelines emphasizing environmental impact reduction.
Construction Phase Environmental Management	**Decision**: Establish comprehensive dust and noise control measures. **Discussion**: Water sprinkling methods to be implemented during construction. **Action**: Provide adequate PPE and implement proper waste management systems.
Water Management and Conservation	**Decision**: Install water-efficient systems and rainwater harvesting. **Discussion**: Implement soak wells and safety tanks to prevent groundwater contamination. **Action**: Test drinking water quality regularly and establish water recycling systems.
Biodiversity Protection and Landscape Integration	**Decision**: Preserve existing ecosystems and enhance biodiversity. **Discussion**: Protect native fruit trees, saplings, and medicinal plants on site. **Action**: Plant three saplings for each tree removed and establish native plant communities.
Waste Management and Circular Economy	**Decision**: Implement comprehensive waste reduction strategies. **Discussion**: Promote organic composting and proper solid waste management. **Action**: Establish waste segregation systems and encourage vermi-composting practices.
Community Health and Safety	**Decision**: Ensure zero harm to community health during construction. **Discussion**: No child labor, sexual harassment, or safety incidents reported. **Action**: Maintain first-aid facilities, provide safety equipment, and establish emergency protocols.
Stakeholder Engagement and Grievance Mechanism	**Decision**: Establish transparent communication channels with all stakeholders. **Discussion**: Limited awareness of grievance redress mechanisms in some areas. **Action**: Strengthen community consultation processes and improve GRM committee effectiveness.
Climate Resilience and Adaptation	**Decision**: Design for current and future climate conditions. **Discussion**: Address flood resilience and extreme weather events in building design. **Action**: Incorporate climate-adaptive features and emergency preparedness measures.
Environmental Monitoring and Compliance	**Decision**: Conduct regular environmental audits and monitoring. **Discussion**: Third-party environmental audits show compliance with air quality and noise standards. **Action**: Establish continuous monitoring systems for air, water, and soil quality.
Green Certification and Performance Standards	**Decision**: Pursue recognized green building certifications. **Discussion**: Additional costs for green certification present implementation challenges. **Action**: Develop phased approach to achieve certification requirements.
Technology Integration for Sustainability	**Decision**: Incorporate smart building technologies where feasible. **Discussion**: Advanced building automation can improve energy efficiency. **Action**: Install energy monitoring systems and smart controls for optimal performance.

Environment Related Discussions and Questions	Summary Points, Discussions and Decisions
Cultural Heritage and Site Context	**Decision**: Respect and preserve cultural heritage elements. **Discussion**: No cultural heritage sites affected by project activities. **Action**: Conduct heritage impact assessments and integrate contextual design elements.

E. Future Stakeholder Engagement and disclosure

237. **Disclosure.** Once the IEE has been approved, ADB will, in accordance with its Public Information Policy, disclose the document on its website, from where it can be accessed and downloaded by any interested person at no cost. This should be repeated in the event that significant site or design changes require the formal updating of the IEE and EMP. As the approved project's implementation proceeds, details of key implementation stages, most notably the start of construction, should be publicly disclosed in advance by the proponent. Monitoring reports submitted by the proponent on a twice-yearly basis to ADB will be disclosed on the ADB website.

238. **Consultations.** The SPS indicates that consultation should be understood as an ongoing and iterative process that takes place throughout the project cycle. Consultations are considered especially necessary and appropriate at key inflection points after the project preparatory phase, including (i) following any major design changes, up-scaling or site changes introduced during the detailed design phase, especially ones that may change the nature, scale or severity of potential environmental and social impacts; (ii) prior to the start of construction, with a special focus on safety and quality of life impacts during the construction phase; (iii) prior to the start of facility operations; and (iv) following any significant emergency or accident involving construction sites. Additional rounds of consultations in all of the contexts mentioned above should be organized and conducted by IBA, with the support and guidance of the Safeguards Oversight Unit (SOU) within the Project Implementation Unit (PMU).

239. As pointed out by the teachers during discussions, local residents are close by the proposed site and there is a gate beside the residential area which can be used by the IBA users. But to be able to use the gate, a high priority should be placed on engaging a local stakeholder who are currently using the area and project-affected people in the next rounds of stakeholder engagement. Depending on the public health circumstances surrounding the next rounds, this could fruitfully incorporate both (i) larger-format events to capture the participation of people from more sectors (e.g., truck drivers, residents, laborers, local traders etc.); and (ii) targeted outreach tools (e.g., community walks, door-to-door surveys, in-community focus group discussions).

240. The EAs/IAs will send a written endorsement to ADB for disclosing these documents on the ADB website. The PIU will provide relevant safeguards information in a timely manner, in an accessible place and in a form and language understandable to affected people and other stakeholders. For illiterate people, other suitable communication methods will be used. Disclosure will follow ADB's Public Communication Policy, 2011[53].

[53] https://www.adb.org/sites/default/files/institutional-document/32904/files/pcp-2011.pdf

VIII. GRIEVANCE REDRESS MECHANISM

A. Grievance Redress Mechanism

241. The objective of the grievance redress mechanism (GRM) is to resolve complaints as quickly as possible and at the local level through a process of conciliation; and, if that is not possible, to provide clear and transparent procedures for appeal. A well-defined grievance redress and resolution mechanism will be established to resolve grievances and complaints in a timely and satisfactory manner. All affected persons will be made fully aware of their rights, and the detailed grievance redress procedures will be publicized through an effective public information campaign. The grievance redress process includes three levels:

242. **First level of GRM:** The first level and most accessible and immediate contact for the fastest resolve of grievances are the Contractors, with assistance from Design Supervision Consultants (DSC) on site. Prior to construction of any works, the PIU will ensure local community meetings are held to notify residents and businesses of any temporary disturbances, and to inform them of the Project and the GRM. If any complaints arise, the Contractors, with assistance from DSC can immediately resolve the complaint on site. The Contractor's and DSC's office phone number will be posted in public areas within the subproject areas and construction sites. Any person with a grievance related to the project work can contact the project to file a complaint. The Contractor may seek the assistance of the DSC safeguards specialists (the environmental specialist or social safeguards specialist) to resolve the issue. The DSC safeguards (environment and resettlement) focal person will immediately address and resolve the issue with the Contractor within 1-2 days, if the complaint remains unresolved at the field level. The PIU safeguards focal person will fully document the following information: (i) name of the person; (ii) date complaint was received; (iii) nature of complaint; (iv) location, and (v) how the complaint was resolved.

243. **Second level of GRM:** Should the grievance remain unresolved; the Contractor with assistance from DSC will forward the complaint to the PIU safeguards focal person. The person filing the grievance will be notified by DSC safeguards focal person that the grievance was forwarded to the PIU safeguards focal person. The PIU will address the grievance. Grievances will be resolved through continuous interactions with affected persons, and the PIU will answer queries and resolve grievances regarding various issues including environmental or social impacts. Corrective measures will be undertaken at the field level by the PIU safeguards focal person within 7 days. He/she will fully document the following information: (i) name of the person; (ii) date the complaint was received; (iii) nature of complaint; (iv) location and (v) how the complaint was resolved.

244. **Third level of GRM:** Should the grievance remain unresolved, the PIU's project director will activate the third level of the GRM by referring the issue (with written documentation) to a Grievance Redress Committee (GRC), which will, based on review of the grievances, address them in consultation with the PIU, Contractor, DSC, and affected persons. The GRC will consist of TMED/IA representative as chairperson, and other relevant stakeholders. A meeting will be called with the GRC, if necessary, where the affected person can present his/her concern and issues. The process will promote conflict resolution through mediation. The GRC will meet as necessary when there are grievances to be addressed. The GRC will suggest corrective measures at the field level and assign clear responsibilities for implementing its decision within 15 days. The functions of the GRC are as follows: (i) to provide support to affected persons on problems arising from environmental or social disruption, asset acquisition (where required), and

eligibility for entitlements, compensation, and assistance; (ii) to record grievances of affected persons, categorize and prioritize them, and provide solutions within 15 days; and (iii) to report to the aggrieved parties' developments regarding their grievances and decisions of the GRC. The TMED/IA safeguards focal person will be responsible for processing and placing all papers before the GRC, recording decisions, issuing minutes of the meetings, and taking follow-up action to see that formal orders are issued, and the decisions carried out.

245. Safeguard monitoring reports will include the following aspects pertaining to progress on grievances: (i) number of cases registered with the GRC, level of jurisdiction (first, second, and third levels), number of hearings held, decisions made, and the status of pending cases; and (ii) lists of cases in process and already decided upon may be prepared with details such as affected person, date of notice, date of application, date of hearing, decisions, remarks, actions taken to resolve issues, and status of grievance (i.e. open, closed, pending). All costs involved in resolving the complaints (meetings, consultations, communication and reporting / information dissemination) will be borne by the TMED/IA.

246. Where an affected person is not satisfied with the outcomes of the 3 levels of the Project GRM, the affected person should make good faith efforts to resolve issues working with the South Asia Regional Department through ADB's Bangladesh Resident Mission. As a last resort, the affected person can access ADB's Accountability Mechanism (ADB's Office of Special Project Facility or Office of Compliance Review). ADB's Accountability Mechanism, including information on how to file a complaint, will also be explained to affected households.

247. The grievance redress mechanism and procedure are depicted in Figure VIII-1.

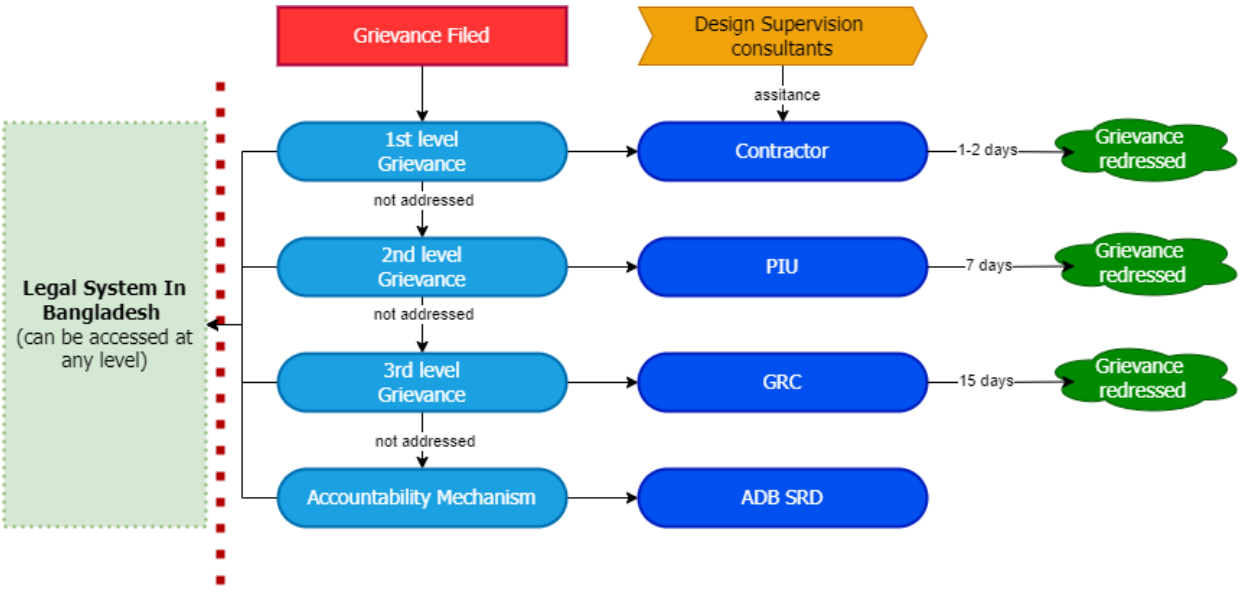


Figure VIII-1 Grievance Redress Mechanism (GRM) adopted for SICIP

248. **Access to Country's legal system.** An aggrieved person shall have access to the country's legal system at any stage, and accessing the country's legal system can run parallel to accessing the GRM and is not dependent on the negative outcome of the GRM.

B. Administration of Grievance Redress Mechanism

249. The SOU shall be responsible for making the public aware of the GRM in all project locations, explaining how it works and how to use it, and maintaining its accessibility and operability for the full duration of the construction phase and the defects period. Public awareness campaigns should be carried out at the local level in advance of the start of civil works. Contact information, including for written, telephone and in-person filing of grievances, shall be firmly established at the GRM's inception, and kept up to date and publicly available through the end of the defects period.

250. Records of grievances received, corrective actions taken, and their outcomes will be properly maintained by the SOU in a central grievance redress database. Grievances and resolutions will be included in the EAs' quarterly progress reports and the semi-annual environmental monitoring reports submitted to ADB. Any fatal accidents involving the project's implementation or project sites should be reported to the GRC and ADB immediately. The costs of operating the GRM will be very modest, and will be covered by the operating budget of the SOU.

C. Grievance Redress Mechanism for Workers

251. An additional mechanism shall be set up by the SOU to accept and address complaints from workers employed in the construction works, concerning working conditions, living conditions in construction camps, safety and health issues, labor rights violations, mistreatment, or any other matter. All laborers, skilled workers, and site engineers employed on site by the primary Contractor or by any of its sub-Contractors shall have access to the mechanism. All workers will receive an orientation to the workers' GRM during pre-construction induction training. Workers will be able to lodge grievances with on-site personnel of the CSC, who will record the complainant's name, position, employer, and contact information, as well as a description of the complaint and the time, date and place at which the complaint was reported. The CSC will inform the SOU, which will record the grievance in a grievance register. The CSC will convene a meeting of the complainant or complainants, the sub-Contractor involved, the Primary Contractor, and any labor syndicate to which the complainant(s) may belong, in an effort to decide on an appropriate resolution of the complaint. The CSC will work with the relevant Ministry, Environmental Safeguards Focal Person at SDCMU and on-site Environment, Health and Safety Officer to monitor implementation of the proposed resolution and confirm absence of retaliation on the part of the Contractor involved. If the complaint cannot be resolved to the satisfaction of the complainant(s), the CSC will provide the complainant(s) with the necessary contact information to file a complaint with MOLE. The CSC will compile a complete record of grievance, including measures taken for resolution and follow-up checks by the ESFP and EHSO, as well as any referral to MOLE and subsequent evolution of the case, and provide the record to the SOU for preservation in its grievance register.

IX. ENVIRONMENTAL MANAGEMENT PLAN

A. Objectives of The Environmental Management Plan

252. This environmental management plan (EMP) has been prepared for the ADB supported SICIP in accordance with the ADB SPS (2009). Specific measures are developed in relation to the design, construction and operation of each project component, to address the physical, biological, cultural and socio-economic impacts identified and discussed in the chapter on Anticipated Impacts and Mitigation Measures of the Initial Environment Examination (IEE) report.

253. The EMP for the project defines mitigation and monitoring measures and identifies the institutions, responsibilities and mechanisms that will ensure their implementation. Such institutions and mechanisms will seek to ensure continuous improvement of environmental protection activities during the pre-construction, construction, and operation phases of the project, in order to manage adverse impacts.

254. The EMP's purpose is served by fulfilment of several key objectives:

(i) To present a comprehensive and systematic list of measures for mitigating and enhancing anticipated environmental and social impacts, as discussed and prescribed in Chapter 6 of the IEE;
(ii) To define and specify institutional arrangements to support implementation of the prescribed measures;
(iii) To clearly assign responsibility for implementation of each prescribed measure;
(iv) To clearly assign responsibility for systematic monitoring of implementation of the prescribed measures and overseeing corrective action as needed;
(v) To establish a system for regular reporting on EMP implementation;
(vi) To identify training and capacity-building needed to enable effective implementation of the EMP; and
(vii) To provide sound estimates of the costs that will have to be budgeted by various entities to enable full and effective implementation of all prescribed measures to address likely impacts.

B. Roles and Responsibilities in EMP Implementation

255. Effective implementation of the EMP relies on inputs from multiple entities, spanning the pre-construction, construction and operation phases of the project. Specific tasks are identified and assigned in the next section of the EMP, but the roles and responsibilities are explained in general terms below, beginning with an outline of the entities that are to be involved.

1. Key Institutional Entities

a. Skills Development Coordination and Management Unit (SDCMU)

256. The Skills Development Coordination and Management Unit (SDCMU) established under SEIP will act as the Project Management Unit (PMU) for the Ministry of Finance. The SDCMU will host the Safeguards Oversight Unit (SOU) in charge of implementing the EMP. The SDCMU will consist of the Project Director (PD) as overall coordinator, Assistant Project Direction (APD) heading the SOU, an Environmental Specialist, A gender Specialist and a Social Specialist.

b. Project Implementation Unit (PIU) at IBA

257. A PIU will be established at IBA to enable coordinated management of the Investment Project, including implementation of the EMP. The PIU is a vital mechanism for ensuring coordination and cooperation between the SDCMU and the Implementing Partner agencies participating in infrastructure development at each investment location. The PIU will appoint a Project Manager to drive successful implementation of the work, including meeting all safeguards' requirements. The PIU can be established under SDCMU.

c. Safeguards Oversight Unit (SOU) at SDCMU

258. A central safeguards implementation function is considered critical to effective implementation of the EMP, including monitoring compliance with all safeguard's requirements of the ADB and national government at multiple locations, most of which will see infrastructure development activities carried out by the SDCMU at Ministry of Finance (MoF). The central SOU will be established under the SDCMU, and the location specific SOU will be established at IBA. While the central SDCMU should be staffed by at least one senior environmental professional known as the Environmental Safeguards Focal Person (ESFP), the PIU at IBA should be staffed with at least 2 environmental professionals, one for overall coordination at site, one specially dedicated to day-to-days site supervision known as the Environment, Health and Safety Officer (EHSO).

d. Environmental Safeguards Focal Person (ESFP)

259. The SDCMU will have a designated Environmental Safeguards Focal Person (ESFP), whose role will be to oversee the safeguards compliance process for all Investment Project sites under the SDCMU's control, heading the central SOU and liaising with the other SOUs at all investment sites while supported by Environment, Health and Safety Officers (EHSOs) working in the field. The ESFP may appropriately be a Deputy Project Director (DPD) or other senior managers or engineers within the SDCMU and will answer directly to the SDCMU's Project Director (PD). The ESFP will work closely with the SDCMU, DOE and ADB Safeguards team to ensure that safeguards requirements are included and effectively addressed as part of Project implementation at this location.

e. Environment, Health and Safety Officer (EHSO)

260. The PIU at IBA will designate an EHSO, answering and supporting the ESFP as well as the designated coordinator from the ETEC itself, to oversee EMP implementation at the proposed IBA site. The EHSO may appropriately be assistant engineers with other duties in the case of PIU with only small investments under the Investment Project, but where this is the case, it is critical that adequate time and resource allocations for its EHS responsibilities are firmly established in their job descriptions. In most cases it will be preferable for the EHSO to be a dedicated staff position or consultant. A proposed Terms of Reference (ToR) for the EHSO position is presented in Appendix 17. The EHSO may be appointed to cover more than one location, where this is deemed feasible in view of proximity and the scale of works in each location.

f. Construction Supervision Consultants (CSCs)

261. One or more Construction Supervision Consultants (CSCs) will be engaged by the PMU to monitor, guide and support the work of construction Contractors carrying out the works under

the Investment Project. The CSC(s) will have environmental specialists on staff to assist SDCMU with environmental matters and ensure strong environmental compliance. The CSC should be required to maintain a site office at each investment location, to enable its inspectors and site engineers to maintain a daily presence at each active construction site.

g. Contractors

262. The planned work is to be packaged and tendered as contracts. As the planned infrastructure components are each of relatively limited scale, work at multiple locations may be grouped under single contracts. Primary Contractors will be required to develop a Contractor Environmental Management Plan (CEMP) covering the construction works under their control, including work carried out by their sub-Contractors. Each primary civil works Contractor will designate an EHS Representative, who will oversee the implementation of the CEMP at all sites under the Contractor's control, including regular monitoring of site conditions and effective implementation of prescribed mitigation measures by both the primary Contractor and all sub-Contractors.

h. Department of Environment

263. As a key regulator of industry, the DOE is mandated to review and approve infrastructure proposals based on consideration of possible environmental effects. The agency remains involved throughout a project's life cycle, during which environmental clearances must be annually renewed, with environmental monitoring results being a key reference point in renewal decisions.

i. ADB

264. As the financing institution, ADB will exercise its due diligence and oversight functions, and maintain strong interaction with the PSC, SDCMU and SOU.

2. Responsibilities in EMP Implementation

265. Each of the entities identified above has multiple responsibilities, the fulfilment of which is required for full and effective implementation of the EMP. These responsibilities are detailed in Table IX-1 below.

Table IX-1 EMP implementation responsibilities

Entity	Responsibilities in EMP Implementation
Skills Development Coordination and Management Unit (SDCMU)	• Prepare operations and maintenance procedures for facilities under construction, ensuring their compliance with the EMP • Work with the SOU to train facility personnel on EHS aspects of facility operation in advance of commissioning, to ensure effective EMP implementation during the operation period
Project Implementation Unit (PIU) at IBA	• Ensure that EMP implementation is recognized as a critical element of overall project implementation • Enable and adequately staff SOU • Oversee rigorous review of bids and prioritize selection of Contractors with strong environmental compliance track records • Coordinate with SDCMU as needed to ensure smooth implementation of EMP

Entity	Responsibilities in EMP Implementation
Safeguards Oversight Unit (SOU) under SDCMU	• Ensure EMP provisions are fully reflected in civil works bid documents • Advise and support PIU on Contractor selection and other procurement decisions • Guide and support ESFP and EHSOs to ensure timely and competent execution of site-level oversight activity • Collect and collate progress reports and environmental monitoring reports for each location to assemble comprehensive quarterly monitoring reports for submission to ADB. • Work with CSCs and primary Contractors to develop and deliver periodic EHS training for sub-Contractors and their workers • Work with CSCs to train facility managers or their EHS personnel in advance of commissioning, to ensure effective EMP implementation during the operation period • Administer the GRM • Support PMUs in obtaining environmental clearances and renewals
Environmental Safeguards Focal Person (ESFP) under SDCMU	• Oversee the safeguards compliance process for all Investment Project sites under the PMU's control, liaising with the PIU-appointed Project Manager and with support from SOU and EHSO • Prepare and submit quarterly progress reports for the sites owned by their home agencies to the PIU and SOU • Chair LGRC when needed to address Level 2 grievances regarding project implementation activities
Environmental coordinator/manager at IBA	• Oversee the safeguards compliance process for the investment site at IBA • Liaison with the ESFP for monthly report and day to day update • Supervise the EHSO
Environment, Health and Safety Officer (EHSO)	• Conduct regular monitoring of conditions on site, including compliance with prescribed mitigation strategies, and submit EHS monitoring reports on a monthly basis to the Environmental Coordinator at PIU • Identify worker training needs and support SOU and CSC in development and delivery of training
Construction Supervision Consultants (CSC)	• Review and approve CEMPs and quarterly environmental monitoring reports submitted by Contractors • Guide and assist PMUs, through ESFPs, in monitoring of CEMP implementation and site conditions, including preparation of quarterly progress reports for submission to SOU • Direct and supervise corrective action by Contractors as needed • Collaborate with SOU on development of safeguards training for sub-Contractors and workers
Contractors	• Prepare and implement CEMP for each site, based on EMP prescriptions and international best practices • Conduct quarterly EHS monitoring on all sites under their control and submit quarterly monitoring reports to CSC for review • Implement corrective actions as directed by CSC and/or ESFP
Department of Environment (DOE)	• Review environmental clearance applications, including IEE and EMP • Review annual environmental monitoring reports submitted by SOU during construction phase • Review applications for environmental clearance renewals
ADB	• Review and approve IEE and EMP • Publicly disclose IEE on ADB website • Review quarterly environmental monitoring reports prepared by PMU and publicly disclose them on ADB website

266. The intersecting roles and responsibilities in EMP implementation during the construction phase - including monitoring of implementation - are further illuminated in Figure IX-1 below. During the operation phase, EMP implementation is simplified considerably, as the temporary entities formed or engaged to carry out and oversee the construction process are wound down or move on to other projects, and permanent entities assume responsibility for ensuring that the

EMP continues to guide infrastructure operations and maintenance. Responsibilities for EMP implementation in the operation phase are also shown in Figure IX-1.

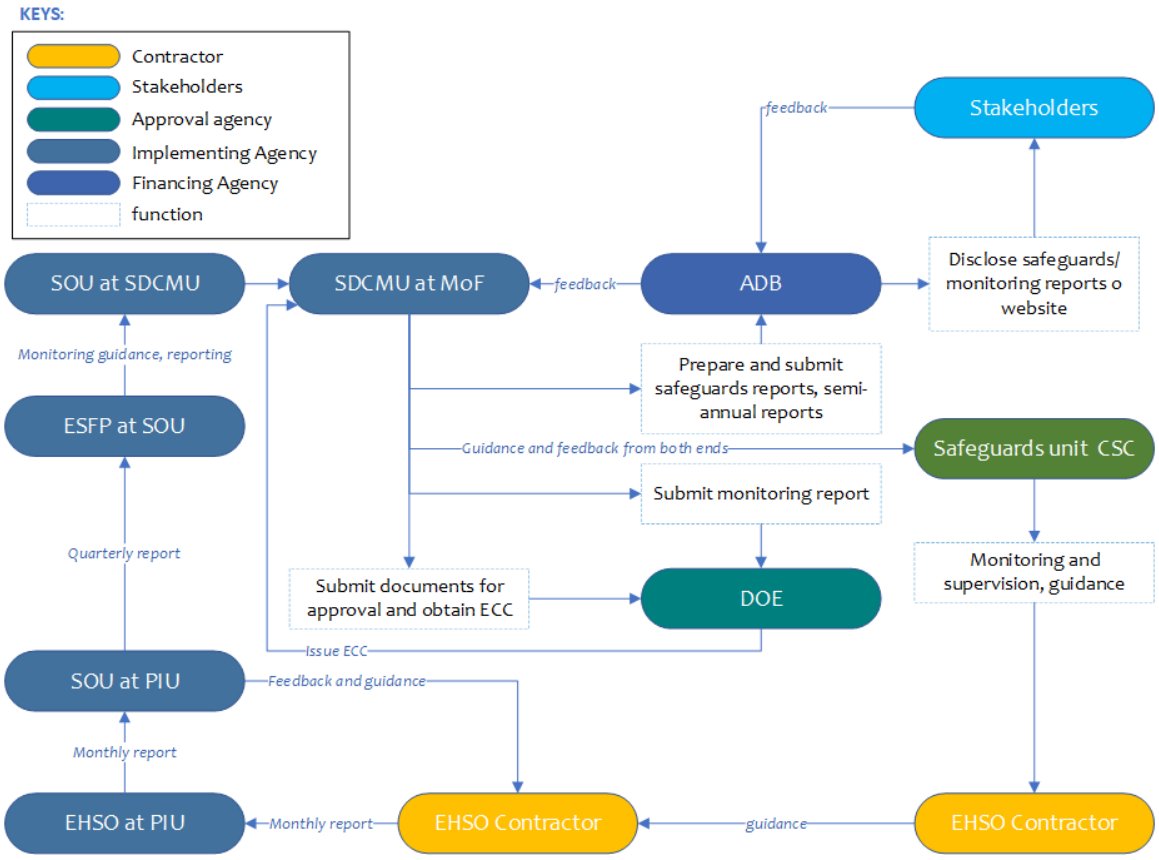


Figure IX-1 EMP implementation responsibilities during construction and operation phase adopted for SICIP

3. Assessment of Project Readiness

267. Before construction, the ESFP will assess the project's readiness in terms of environmental management based on a set of indicators (Table IX-2) and report it to the ADB and the SDCMU. This assessment will verify that environmental commitments are being carried out and environmental management systems are in place before construction starts, or if this is not the case, propose corrective actions to ensure that all requirements are met.

Table IX-2 Indicators of project readiness in relation to environmental management

Indicator	Criteria	Assessment	
DoE approval	• DoE approves the IEE and ECC is being obtained	Yes	No
EMP update	• The EMP is updated after detailed designs are approved, and approved by ADB and DoE	Yes	No
Compliance with loan covenants	• The borrower complies with loan covenants related to project design and environmental management planning	Yes	No

Indicator	Criteria	Assessment	
Public involvement effectiveness	• Meaningful consultation completed • GRM established at entry point	Yes	No
Environmental supervision in place	• PIU supervision in place	Yes	No
Bidding documents and contracts with environmental safeguards	• Bidding documents and contracts incorporating the environmental activities and safeguards listed as loan assurances • Bidding documents and contracts incorporating the impact mitigation and environmental management provisions of the EMP	Yes	No
Contractor readiness	• Contractor EMPs (CEMPs) have been prepared and approved by PIU and PMU • Environmental, Health and Safety Management Plans (EHSMP) established for construction sites • Environment, Health and Safety Officers appointed • Assessment of potential disruption to utilities services conducted • Stakeholder interviews conducted to confirm issues if services are disrupted	Yes	No
EMP financial support	• Required funds have been set aside to support the EMP implementation according to the financial plan	Yes	No

C. Environmental Impacts and Prescribed Mitigation and Enhancement Measures

268. The findings of the environmental impact analysis are presented in Section VI of the IEE report. The potential impacts and corresponding measures that are prescribed in order to mitigate the negative impacts or enhance positive ones are collected in Table IX-3 below. The measures prescribed apply to the pre-construction, construction and operations phases of the infrastructure development at the IBA DU site. All measures listed in Table IX-3 are requirements, based on the infrastructure plan as proposed at the time of preparation, whose fulfillment is assigned. All measures assigned to Contractors should be reflected in bidding documents, and serve as the basis for the CEMPs, which must be prepared to cover all sites at this investment location.

Table IX-3 Prescribed environmental mitigation and enhancement measures

KEYS: ADB: Asian Development Bank; CSC: Construction Supervision Consultant; Con: Contractor; DOE: Department of Environment; EAs: Executing Agencies; EHSO: Environment, Health and Safety Officer; ESFP: Environmental Safeguards Focal Person; NQC: No Quantifiable Cost; PIU: Project Implementation Unit; SOU: Safeguards Oversight Unit; TMED: Technical and Madrasa Education Division; IBA: Institute of Business Administration, EMP: Environmental Management Plan, EMoP: Environmental Monitoring Plan.

Parameter	Potential impacts and/or issues	Mitigation/enhancement measures	Implementing entities	Supervision responsibility	Performance indicators	Estimated cost in BDT
A. PRE-CONSTRUCTION PHASE						
(i) IMPLEMENTATION READINESS						
1. IEE and EMP update	Impacts not accounted for due to post-approval modifications in alignment, design or local conditions	- Review IEE and EMP to ensure any post-approval changes are properly accounted for and addressed, by addition of mitigation measures if necessary - EMP copied in the bid document and part of legal contract of the contractor	SDC MU	SDC MU/P IU	- IEE and EMP confirmed still fully applicable - New measures added to EMP if needed to cover any changes in alignment, design or local conditions	NQC (Included in SDCMU budget)
2. Confirmation of NOCs from local agencies and authorities	Project works will not be granted clearances by DOE if NOCs are not obtained from relevant national and local authorities	- Confirm NOC has been obtained from IBA itself - Declare site clearance from IBA itself so that no conflict occurs in future, and DOE has legal documents that the site is owned by IBA	SDC MU	SDC MU/P IU	- NOCs granted by local municipal authorities - Self-declaration of ownership of land by the IBA	NQC (Included in SDCMU budget)
3. Verification of environmental clearances	Project work will not be in compliance with national environmental laws if clearances are not obtained prior to site clearing	- Confirm Site Clearance Certificate (SCC) and Environmental Clearance Certificate (ECC) have been granted, and that any conditions imposed by DOE on approval have been reflected in EMP and EMoP, as well as CEMP as applicable	SDC MU	SDC MU/P IU	- SCC and ECC granted - New measures added to EMP, EMoP and CEMP if needed to meet any conditions of approval specified by DOE	NQC (Included in SDCMU budget)
4. CEMP verification	Mitigation will be inadequate if the CEMP is not fully specified	- Prior to construction commencement, conduct a thorough review and validation of the CEMP to ensure all primary Contractor environmental responsibilities are comprehensively defined and aligned with the specific requirements of the IBA Annexure Building project	SDC MU/ CSC	SDC MU/P IU	- Any necessary changes requested, and made by Contractor - CEMP confirmed adequate by reviewers	NQC (Included in SDCMU budget and CSC amount)

Parameter	Potential impacts and/or issues	Mitigation/enhancement measures	Implementing entities	Supervision responsibility	Performance indicators	Estimated cost in BDT
5. Specialized plans verification	Mitigation will be inadequate if specialized plans have not been formulated to manage key impacts	Confirm that the following specialized plans have been prepared by the Contractor: - site-specific Construction Camp Management Plan(s) - site-specific Waste Management Plans (embedded within CEMP) - site-specific Emergency Response Plans (embedded within CEMP) - Compensatory Tree Planting Plan - Construction Traffic Management Plan - Soil Erosion Prevention Plan - Site Reinstatement Plan - Occupational Health and Safety Plan (including COVID-19 measures stipulated by ADB and Government of Bangladesh Guidance for Social and Institutional Containment and Prevention) - Waste Management Plan	SDC MU/ CSC	SDC MU/P IU	- All required specialized plans prepared to adequate standard and approved by relevant authority (as required in some cases)	NQC (Included in SDCMU budget and CSC amount)
6. Grievance Redress Mechanisms	Members of the public and workers require a fair and transparent means of getting resolution to complaints about some aspect of the project's implementation	- Confirm that a central GRM and workers' GRM have been established and publicized	SDC MU/ CSC	SDC MU/P IU	- Central GRM established and publicized - Workers' GRM established and explained to workers before the start of construction	NQC (Included in SDCMU budget)
7. EMP training	Without proper EMP implementation training, EMP monitoring might be delayed or hampered	- Confirm that EMP implantation training has been arranged before commencement of construction. - Involve contractor's high officials/management part, EHS specialist, construction project managers and workforce overseer in the EMP training - Quarterly Refreshers training on EMP implementation	SDC MU/ CSC	SDC MU/P IU	- The EMP implementation training being conducted before the construction starts - Record of quarterly refresher's training	EMP training included in the EMP as contractor's cost. See Table IX-8. Refresher's training shall be within contractor's cost
(ii) DESIGN						
8. Climate change mitigation	Generation of GHG from construction and operations contributes to	- Building orientation and solar heat gain: Optimize massing and tilt west-facing walls to reduce east–west glare and heat gain; design facades with fixed and	CSC Con	MoF, SDC MU-ESF	- Simulated cooling load reduction ≥15% versus baseline; west/east facade solar heat gain coefficient	NQC

Parameter	Potential impacts and/or issues	Mitigation/enhancement measures	Implementing entities	Supervision responsibility	Performance indicators	Estimated cost in BDT
	global climate change problem	operable shading/louvre systems sized for Dhaka sun angles - Envelope thermal performance: Specify high-performance glazing and insulated wall assemblies coordinated with louvre strategy to maintain thermal comfort across 18 m floor depths - Urban heat island contribution: Integrate extensive green roofs on existing and new structures and continue vegetation patches from roof to facade/voids to provide shading and evapotranspirative cooling - Landscape carbon sequestration: Use native tree and shrub palette with high canopy cover and soil volumes; prioritize on-site planting to merge new and existing greens - Daylight and electric lighting load: Orient teaching spaces and use light-shelves/shading to achieve glare-free daylight across the 18 m floor depth, limiting artificial lighting demand - Embodied carbon of materials: Favor locally sourced, durable, and recycled-content materials; standardize structural and envelope modules to reduce waste		P	(SHGC) ≤ 0.35 with shading effectiveness documented in daylight/thermal models - Whole-building modeled EUI ≤ target benchmark for higher-education buildings in Dhaka; operative temperature within comfort band for ≥90% occupied hours without additional active cooling in shoulder seasons - Verified cross-ventilation in CFD/analytical calculations achieving ≥6 ACH in naturally ventilated modes; percent hours in mixed-mode operation ≥40% of occupied hours in transition seasons - Vegetated roof/facade area ratio ≥30% of total roof/facade surface; modeled roof surface temperature reduction ≥10 °C on design summer day vs. dark roof baseline - Net new on-site canopy coverage ≥25% of site hardscape; estimated annual CO_2e sequestration quantified for planting plan and recorded in the EMP - Spatial Daylight Autonomy sDA300/50% ≥55% and Annual Sunlight Exposure ASE1000/250 ≤10% for primary learning spaces; lighting power density ≤ local best-practice benchmark - Whole-building life-cycle assessment shows ≥15% reduction in embodied CO_2e vs. baseline reference design;	

Parameter	Potential impacts and/or issues	Mitigation/enhancement measures	Implementing entities	Supervision responsibility	Performance indicators	Estimated cost in BDT
					construction waste factor ≤5% by mass for major materials	
9. Climate change adaptation	Infrastructure use limitations, damage, and environmental hazards due to changing conditions	- Integrate lightning arrester in building design - Design facilities so that critical components (including laboratory, backup generator and fuel tanks) are well above maximum flood level foreseen under climate change projections specified in Climate Risk and Adaptation Assessment (CRA) report and detailed hydrological study - Incorporate temperature-moderating features in IBA facility designs, including: - Green roofs where feasible - maximize use of wide-crowned shade trees in site landscaping plans, including around buildings and parking area medians - maximize cross-ventilation by using courtyards, openable windows and favorable building orientation	CSC Con	MoF, SDC MU-ESF P	- All critical facility components above maximum expected flood level - All feasible temperature-moderating features incorporated in facility designs	NQC (included in CSC + Con costs)
10. Flora and fauna	Unnecessary loss of trees during site development	- Incorporate existing trees into site designs to the greatest extent possible, including them in design drawings so they are protected during clearing and construction - When trees must be removed, specify planting of compensatory trees elsewhere on site, including these in drawings and in the Bill of Quantities, in accordance with the approved Compensatory Tree Planting Plan	CSC Con	MoF, SDC MU-ESF P	- Existing trees incorporated in designs to extent possible - Compensatory trees specified in design drawings and Bill of Quantities, in accordance with the approved Compensatory Tree Planting Plan	NQC (included in CSC + Con costs)
11. Groundwater resources	Lack of effective water conservation contributes to local groundwater issues	- Maximize opportunities to limit water consumption and increase groundwater recharge, including adoption of: (i) rain capture on all roofs and use of stored water for non-potable uses in and around facilities (ii) high-efficiency faucets and toilets throughout the facilities (iii) plant species with low water needs in site landscaping plans (iv) stormwater infiltration swales for all runoff from paved and impervious surfaces (objective: zero site runoff)	CSC Con	MoF, SDC MU-ESF P	- All feasible and applicable water conservation measures incorporated in detailed designs for IBA facilities	NQC (included in CSC + Con costs)
12. Surface water quality	Siltation, sedimentation and contamination of water bodies	- Slightly raise surface of chemical storage area above level of rest of site to prevent runoff from other site areas from washing through stockpiles	CSC Con	MoF, SDC MU-ESF	- Surface of sand storage area designed to be slightly higher than rest of site	NQC (included in CSC + Con costs)

Parameter	Potential impacts and/or issues	Mitigation/enhancement measures	Implementing entities	Supervision responsibility	Performance indicators	Estimated cost in BDT
	receiving runoff from the IBA	- Ensure temporary sediment control around construction areas, prevent runoff of silt or debris into campus drains, and maintain clean drainage pathways		P	- Adequately sized sediment traps and porous drainage channels included in detailed design for chemical storage area	
13. Air quality	Elevated dust in minerals storage area	- Include water supply to chemical storage area, with hose spigots in several locations around the perimeter to enable use of mobile misting apparatus	CSC Con	MoF, SDC MU-ESF P	- Detailed design includes water supply to minerals storage area, with multiple hose spigots spaced around perimeter	NQC (included in CSC + Con costs)
14. Public health and safety	Elevated risk of viral infection in IBA area	- Design internal layout of the IBA building to maximize space between users and prevent the formation of long lines in indoor spaces - Design IBA building ventilation system for maximum feasible turnover of indoor air	CSC Con	MoF, SDC MU-ESF P	- IBA building designed to maximize space between users and prevent formation of long indoor lines - IBA building ventilation system designed for maximum feasible turnover of indoor air	NQC (included in CSC + Con costs)
15. Occupational health and safety	Chronic exposure of facility staff to elevated engine emissions	- Design canopies over areas used by vehicles with extra headroom and good cross ventilation or fans to evacuate emissions efficiently	CSC Con	MoF, SDC MU-ESF P	- Canopy designs enable efficient exhaust removal - site check booths designed with remote air intake and positive pressure ventilation	NQC (included in CSC + Con costs)
16. Occupational health and safety	Elevated staff exposure to viral threats	- Design interior layout of the IBA building to maximize space between users and prevent the formation of long lines in indoor spaces - Design IBA building ventilation system for maximum feasible turnover of indoor air	CSC Con	MoF, SDC MU-ESF P	- IBA building internal layout designed to maximize space between users and prevent formation of long indoor lines - IBA building ventilation system designed for maximum feasible turnover of indoor air	NQC (included in CSC + Con costs)
17. Waste management	Pollution from inadequately managed wastes	- Anticipate waste streams and incorporate design features to collect, sort and safely dispose of each class of waste - Specify segregated collection bins in strategic indoor and outdoor locations where waste is generated - Include waste storage and sorting areas in facility designs - Incorporate easy access for waste and recyclables collection vehicles	CSC Con	MoF, SDC MU-ESF P	- Facility designs include spaces and features for waste management, including collection, sorting, composting, storage and out-shipment - Laboratory design provides for at-source segregation of hazardous liquid and solid wastes	NQC (included in CSC + Con costs)

Parameter	Potential impacts and/or issues	Mitigation/enhancement measures	Implementing entities	Supervision responsibility	Performance indicators	Estimated cost in BDT
		- Designate outdoor space for thermophilic composting of organic waste from kitchens and canteens - Design laboratory for appropriate segregation of hazardous and non-hazardous waste streams				
(iii) PROCUREMENT						
18. Selection of CSC and Contractor, EMP training	Contractors with low commitment to safeguards compliance limit success of EMP implementation	- Prioritize selection of Contractor with strong compliance track record, as verified by references from previous CSCs - Select only Contractors registered with MOLE - Conduct EMP training with the contractor and implementing staff/officers	SDC MU	MoF	- Selected CSC and Contractor has verified track record of good performance on safeguards compliance - EMP training arranged	NQC (Included in SDCMU costs) EMP training cost is included in the EMP implementation cost
19. Labor	Use of non-local labor reduces positive impact of project on local livelihoods and triggers social conflict	- Hire exclusively or mostly local workers	Con	MoF, SDC MU-ESF P, PIU	- Workers from outside the project site region represent less than 10% of total workforce	NQC (Included in Con costs)
20. Materials sourcing	Gravel and sand obtained from environmentally damaging riverbed mining, hill cutting or farmland strip-mining	- Obtain valid Certificate of BSTI from suppliers of bulk materials	Con	MoF, SDC MU-ESF P, PIU	- Certificate of BSTI obtained and filed for each purchase of bulk materials	NQC (Included in Con costs)
21. Materials sourcing	Undue GHG emissions from transport of materials sourced far from point of use	- Prioritize bulk materials suppliers using less distant sources	Con	MoF, SDC MU-ESF P, PIU	- Materials sourced from within reasonable distance	NQC (Included in Con costs)
22. Materials Sourcing	Knock-on environmental effects of sourcing from unsustainable suppliers	- Select suppliers with strong green credentials (verified by review of certifications received)	Con	MoF, SDC MU-ESF P, PIU	- International suppliers of materials have favorable environmental certifications	NQC (Included in Con costs)
B. CONSTRUCTION PHASE						
(i) BIOPHYSICAL ENVIRONMENT						

Parameter	Potential impacts and/or issues	Mitigation/enhancement measures	Implementing entities	Supervision responsibility	Performance indicators	Estimated cost in BDT
23. Surface water	Increased stormwater runoff from new roof and hardscape; Insufficient on-site retention leading to campus drain overload; Localized ponding at building interfaces and connectors; Poor water quality (sediment, debris, organics) in roof and plaza runoff; Erosion and scour at downspout and outlet discharge points; Inadequate separation between clean and potentially contaminated waters	- Integrate green roofs and vegetated terraces to increase interception/storage; size roof drains and scuppers per peak intensity with ≥20% safety factor; use permeable pavements in courtyards and connectors; - Provide rainwater harvesting tanks sized for first 15–25 mm events; design detention with controlled orifice to match pre-development peak flow for 2–5-year storms; include overflow to campus drains with backflow prevention; - Set finished floor levels with ≥300 mm freeboard above adjacent grade; incorporate graded swales and slot drains along bridges/courtyards; provide redundant drainage in sunken gardens; - Install primary roof leaf-guards and sump boxes; specify hydrodynamic separator or silt trap before connection to campus drain; use biofiltration planters with native species for first-flush treatment; - Use energy dissipation (rip-rap pads or chamber diffusers) at outfalls; line swales with turf reinforcement; limit outlet velocities to ≤1.5 m/s for vegetated channels; - Separate roof runoff (clean) to harvesting/biofilters and service areas to oil/grit separators; provide dedicated drainage for café/service zones with grease/oil treatment	Con	MoF, SDC MU-ESFP, PIU, CSC	- Percent roof area vegetated (target ≥40% of eligible roof); roof drain hydraulic capacity ≥ design peak +20%; impervious-to-pervious ratio improvement ≥15% over baseline; - Storage volume per 100 m² roof (target ≥1.5–2.5 m³); post-development peak flow ≤ pre-development for design storm; functional backflow device specified at each outfall; - Freeboard achieved at all entries; no modeled ponding (>50 mm) in 1-in-5-year event; secondary drain in all depressed planters; - Pre-treatment device provided on each roof leader connection; TSS removal device sized to design flow; biofilter media and planting schedule in drawings; - Outlet protection detail included at every discharge; computed velocity at outlets ≤1.5 m/s; no bare soil specified at outlets; - Separate drainage schematics for clean vs. service areas; treatment units sized and scheduled; no cross-connections on plans	BDT 30,000 for tarpaulins; BDT 200,000 for bulk organic material for temporary soil protection (Included in Con costs)
24. Surface water, groundwater and soils	Overflows during extreme events affecting public areas	- Provide emergency overflow weirs from green roofs/planters to protected routes; route exceedance flows along designated overland pathways away from entries and egress routes	Con	MoF, SDC MU-ESFP, PIU,	- Overflow paths shown on grading plan; exceedance routing modeled for 1-in-25 year event; no exceedance flow through primary entrances	(Included in Con costs)

Parameter	Potential impacts and/or issues	Mitigation/enhancement measures	Implementing entities	Supervision responsibility	Performance indicators	Estimated cost in BDT
				CSC		
25. Surface water	Insufficient maintenance access to water assets	- Include safe access (guarded ladders, walkways) to green roofs, planters, and tanks; provide isolation valves and cleanouts at sumps and separators; include O&M notes in drawings	Con	MoF, SDC MU-ESF P, PIU, CSC	- Access details provided for each asset; cleanouts/valves scheduled; O&M notes and inspection frequencies listed	(Included in Con costs)
26. Air quality	Dust from construction works create nuisance and health hazard for residents near work sites and roads	- Implement a regimen of misting all dust-generating surfaces throughout the workday during dry weather - Tightly cover stockpiles of fine materials with tarpaulins whenever they are not in active use to prevent wind erosion - Equip all haul trucks with tightly fitting tarpaulins and enforce their use	Con	MoF, SDC MU-ESF P, PIU, CSC	- Levels of airborne dust are below nuisance level in roadside communities - No significant dust accumulation observed on roadside crops and structures - No complaints from public registered - Ambient air quality at perimeter of work sites and on main road near the IBA site meet the standard indicated in the Air Pollution (control) Rules 2022.	BDT 200,000 for sprayer unit (Included in Con cost)
27. Air quality	Emissions from equipment and vehicles used in construction degrade local air quality	- Maintain all motorized equipment used in construction to a high standard - Use only fuel-efficient equipment	Con	MoF, SDC MU-ESF P, PIU, CSC	- Absence of black smoke in construction equipment exhaust - No complaints from public - Ambient air quality at perimeter of work sites near IBA site meet the standard indicated in the Air Pollution (control) Rules 2022. - Emissions from motorized machinery used in construction should meet the standard indicated in the Air Pollution (control) Rules 2022.	NQC (Included in Con cost)
28. Soil	Loss of topsoil to erosion	- Implement approved Soil Erosion Prevention Plan, including (inter alia): - Protect disturbed soil from rain by keeping exposed areas covered with mulches, fiber mats and other temporary coverings	Con	MoF, SDC MU-ESF P,	- Prescribed soil protection measures effectively implemented at all work sites - Lack of evidence of soil erosion	NQC (Included in Con costs specified in relation

Parameter	Potential impacts and/or issues	Mitigation/enhancement measures	Implementing entities	Supervision responsibility	Performance indicators	Estimated cost in BDT
		- Arrange work site drainage to prevent concentration of surface runoff in the vicinity of exposed soils - Promptly establish vegetative cover on soil surfaces in locations where construction activity has been completed - Implement approved Site Reinstatement Plan, including (inter alia): - Reserve topsoil and store separately for later use - Promptly prepare soil surfaces for plantings once construction work has been completed in each part of site - Establish vegetative cover in accordance with landscaping plan in detailed site design, Bill of Quantities and Compensatory Tree Planting Plan - Implement a watering and tending regimen to help ensure success of plantings - Monitor progress of vegetation establishment until end of defects period, and implement infill planting as necessary to achieve full coverage		PIU, CSC	- Vegetative cover promptly established when construction activity complete on each part of work sites	surface water protection above)
29. Flora and fauna	Damage to trees	- Clearly mark trees that are to be preserved prior to clearing - Establish a fenced buffer around trees that are to be preserved to protect them from damage by equipment, excavation and materials stockpiles	Con	MoF, SDC MU-ESF P, PIU, CSC	- Trees clearly marked prior to site clearing - Fenced buffers established, maintained and observed around preserved trees for duration of works	BDT 50,000 for fencing (Included in Con costs)
30. Flora and fauna	Aquatic habitat in on-site watercourses degraded	- Establish a 10-m buffer with temporary fencing along any permanent or seasonal watercourses found on site, and enforce a prohibition on any construction-related activity within the buffer for the duration of the works - Deploy silt curtains and temporary sediment traps where runoff from active work areas is directed to creeks	Con	MoF, SDC MU-ESF P, PIU, CSC	- 10-m buffer established with temporary fencing along any permanent or seasonal watercourses on site - Prohibition on construction-related activities within the buffer enforced - Silt curtains and sediment traps deployed as appropriate to limit silt delivery to on-site watercourses	BDT 30,000 (Included in Con costs)
31. Flora and fauna	Loss of existing vegetation and habitat connectivity; Bird–glass collisions	- Map and retain priority trees/shrubs; design building and circulation to avoid high-value vegetation; provide compensatory planting at a minimum 3:1 ratio using native species; maintain continuous green corridors	Con	MoF, SDC MU-ESF	- Percent priority trees retained (target ≥80%); compensatory planting ratio achieved (≥3:1); continuous green corridor	BDT 10,000 (Included in Con costs)

Parameter	Potential impacts and/or issues	Mitigation/enhancement measures	Implementing entities	Supervision responsibility	Performance indicators	Estimated cost in BDT
	on facades and bridges	linking existing roof and new facade/void landscapes. The tree planation plan is already stipulated within the design. - Use bird-safe glazing treatments (fritted/etched patterns meeting 2×4 rule), external shading, and visual markers near vegetated facades; avoid mirror-like glass adjacent to planting		P, PIU, CSC	shown on plans from existing roof to new building green systems; - Bird-friendly glazing specified for all greening-adjacent facades; shading/louvre details included; collision risk assessment completed at design	
(ii) SOCIOECONOMIC AND CULTURAL ENVIRONMENT						
32. Acoustic environment	Noise and vibration from earthworks, pile-driving and materials hauling degrade quality of life for local residents	- Conduct work only during daylight hours - Impose and enforce low speed limits on haul trucks through the DU campus roads - Maintain all motorized equipment and haul trucks to a high standard, and inspect exhaust systems regularly	Con	MoF, SDC MU-ESF P, PIU, CSC	- Noise and vibration are below nuisance level for closest educational buildings - No construction work or hauling is conducted between dusk and dawn - No complaints from the public registered - Ambient noise levels outside the work sites meet the standard indicated in the Noise Pollution (control) Rules 2006. - Noise emissions from individual pieces of machinery and vehicles meet the standard indicated in the Noise Pollution (control) Rules 2006.	NQC (Included in Con costs)
33. Public safety	Elevated risks to pedestrians on approach road and in the site	- Ensure that the construction sites are adequately fenced and security is provided to prevent members of the public from entering the sites - Establish safe, marked routes for staff and facility users to continue to use the IBA facilities without having to cross active construction zones - Implement approved Construction Traffic Management Plan during hauling periods, including (inter alia): - Impose and enforce low speed limits on haul trucks through the campus roads	Con	MoF, SDC MU-ESF P, PIU, CSC	- Adequate fencing and security maintained at construction sites - Construction zone is configured to maintain safe access for IBA staff during construction works - Construction Traffic Management Plan prepared and observed to be implemented as appropriate - Haul trucks not observed or reported to speed through IBA	NQC (Included in Con costs)

Parameter	Potential impacts and/or issues	Mitigation/enhancement measures	Implementing entities	Supervision responsibility	Performance indicators	Estimated cost in BDT
					site or elsewhere along the internal campus roads near the work site	
34. Public safety	Construction camps are locus of violence against women and girls	- Give preference to local laborers to avoid the need for, or limit the size of, a construction camp - Implement approved Construction Camp Management Plan, including (inter alia): - Conduct proactive outreach with leaders of nearby communities to educate women and girls about the risks posed by an all-male camp in the neighborhood. - Give resident workers regular training on appropriate behavior in and around the camp - Adopt a zero-tolerance policy around aggression or violence against local women and girls - When women must enter the camp for employment or selling produce, limit their entry to times when resident workers are out at the work site - Prohibit prostitution on the site, and monitor activity in this regard and work with community leaders to address the problem as needed	Con	MoF, SDC MU-ESFP, PIU, CSC	- Lack of reports of worker-involved abuse or harassment - Lack of complaints from public about violence or prostitution at camp - Female access to camp for employment allowed only when workers are out at work sites	NQC (Included in each entity's costs)
35. Public safety	Construction camps serve as source of social conflict, possibly leading to violence	- Implement approved Construction Camp Management Plan, including (inter alia): - Provide regular training and enforcement to minimize bad worker behavior off site, including public drunkenness, sexual harassment, and theft of crops/foods	Con	MoF, SDC MU-ESFP, PIU, CSC	- Lack of complaints from public about behavior of resident workers	NQC (Included in Con costs)
36. Public health	Construction camps act as vectors for spread of pathogens and disease	- Implement approved Construction Camp Management Plan, including (inter alia): - Install and maintain adequate toilet and septic systems to prevent discharge of raw sewage from camps to local water bodies or fields - Educating resident workers about sexually transmitted diseases and responsible sexual behavior - Work with local community leaders to prohibit prostitution in and around construction camps	Con	MoF, SDC MU-ESFP, PIU, CSC	- At least one working toilet per 10 resident workers installed, with septic treatment - Absence of visual evidence of raw sewage discharge - Lack of reports of prostitution around camp - Lack of concerns expressed by local community leaders about workers' off-site behavior	BDT 200,000 for toilets and septic systems (Included in Con costs)
37. Worker health and safety	Risks to worker health and safety from improper work	- Implement approved Occupational Health and Safety Plan, including (inter alia): - Provide regular safety training for all workers	Con	MoF, SDC MU-	- Low incidence of workplace injuries	NQC (Included in Con costs)

Parameter	Potential impacts and/or issues	Mitigation/enhancement measures	Implementing entities	Supervision responsibility	Performance indicators	Estimated cost in BDT
	site practices	- Provide task-appropriate PPE to all workers and enforce its use - Closely monitor works at all times to ensure strong worker compliance with safety practices		ESF P, PIU, CSC	- Workers observed using appropriate PPE	
38. Worker health	Risks to workers from viral illness	- Implement approved Occupational Health and Safety Plan, including (inter alia): - Institute temperature checks (at least daily) for all workers and supervisory personnel on site - Provide each worker with appropriate face mask daily or as needed, and require mask use at all times - Position hand washing and sanitizing stations at canteens and other eating areas, kitchens, and near toilets	Con	MoF, SDC MU-ESF P, PIU, CSC	- Temperature check regimen implemented consistently - Workers supplied with facemasks - Workers consistently use facemasks - Hand washing and sanitizing stations provided in appropriate locations and kept stocked at all times	NQC (Included in Con costs)
39. Worker health and safety	Risks to worker health and safety from poor conditions in construction camps	- Implement approved Occupational Health and Safety Plan, including (inter alia): - Conduct monthly safety audit of camp to identify fire risks, electrocution hazards and other unsafe conditions, and assess adequacy of fire extinguishers and first aid provisions - Institute a regular cleaning and disinfection regimen for camp kitchens, latrines, wash-up areas, eating areas and sleeping sheds - Provide adequate sleeping space for the number of workers to avoid overcrowding and consequent spread of communicable illnesses and infestations - Provide each worker with a raised sleeping platform with mattress or mat, bedding and mosquito netting - Test drinking water supplied to workers on a quarterly basis to ensure safety - Ensure adequate ventilation and light in all camp structures	Con	MoF, SDC MU-ESF P, PIU, CSC	- Safety audit results included in monthly progress reports and quarterly monitoring reports - Lack of outbreaks of infectious illnesses (e.g., influenza, pneumonia, tuberculosis) and ailments associated with unsanitary conditions (e.g., dysentery, lice, scabies) - Living conditions meet standards specified in Construction Camp Management Plan - Drinking water test results meet standards indicated in the Environment Conservation Rules, 2023	BDT 100,000 for drinking water procurement or treatment (Included in Con costs)
40. Livelihoods	Damage to property and livelihoods	- Fence perimeter of each work site prior to the start of construction and ensure maintenance of fencing for the duration of works - Prohibit all construction-related activity outside the site fences - Promptly remedy any property damage caused in consultation with the affected landowner(s), even if not formal grievance files	Con	MoF, SDC MU-ESF P, PIU, CSC	- Perimeter of each work site properly fenced prior to the start of construction, and fence maintained for duration of works	NQC (Included in Con cost)

Parameter	Potential impacts and/or issues	Mitigation/enhancement measures	Implementing entities	Supervision responsibility	Performance indicators	Estimated cost in BDT
41. Livelihoods	Employment for local people	- Hire mostly or exclusively local workers on construction sites	Con	MoF, SDC MU-ESFP, PIU, CSC	- Workers from outside project region represent less than 10% of total workforce on site	NQC (Included in Con cost)
42. Physical cultural resources	Damage to cultural heritage due to inappropriate treatment of unearthed artifacts	- Train all workers and site managers in the use of the chance find procedure specified in the CEMP	Con	MoF, SDC MU-ESFP, PIU, CSC	- Workers are aware of the chance find procedure	NQC (Included in Con cost)
(iii) WASTE MANAGEMENT						
43. Construction waste	Pollution from improper management of solid waste generated at work sites and construction camp	- Implement all provisions in the Waste Management Plan embedded in CEMP, including (inter alia): - Provide waste receptacles on the work sites and collect their contents daily or weekly as needed - Recycle all recyclables through local providers of this service - Compost organic waste generated by construction camp kitchens - Dispose of non-recyclable and non-organic waste based on locally available and approved disposal options	Con	MoF, SDC MU-ESFP, PIU, CSC	- All classes of waste managed in accordance with Waste Management Plan	NQC (included in Con costs)
44. Waste oils	Water pollution from waste oils and other fluids generated in maintenance yards	- Recycle waste oils through a reputable business providing this service, as identified in the Waste Management Plan embedded in the CEMP	Con	MoF, SDC MU-ESFP, PIU, CSC	- No evidence of waste oil dumping or burning - Documentation of transfers to identified service provider available	NQC (Included in Con costs)
C. OPERATION PHASE						
(i) BIOPHYSICAL ENVIRONMENT						
45. Drinking water quality	Microbiological contamination in potable water	- Maintain multi-barrier treatment at point of entry: cartridge filtration and UV or chlorination; implement monthly microbial testing (E. coli, total coliforms) and immediate corrective actions; maintain positive residual where chlorination is used	IBA authority	IBA authority	- Microbial tests compliant 100% of months; corrective action closed within 7 days; disinfectant residual within target range at distal taps	IBA operation cost

Parameter	Potential impacts and/or issues	Mitigation/enhancement measures	Implementing entities	Supervision responsibility	Performance indicators	Estimated cost in BDT
(ii) SOCIOECONOMIC AND CULTURAL ENVIRONMENT						
46. Community Health and safety	Access to safe drinking water on all occupied floors	- Provide clearly labeled potable fountains and bottle fillers near lobbies, classrooms, labs, café, auditorium, and rooftop learning areas; ensure universal accessibility and hygienic design	SOU at IBA	SDC MU at MoF	- Functional, labeled stations on every occupied floor; accessibility compliance; station uptime ≥ 98% per quarter	NQC (Included in SDCMU and IBA operating costs)
47. GBV/SEA-SH Risk	Increased risk of sexual harassment and inappropriate behavior in classrooms, corridors, stairwells, elevators, and common areas due to high student density, extended operating hours, and mixed-gender academic interactions. Potential incidents of harassment or exploitation involving students, visitors, service staff, or security personnel within academic spaces, parking areas, and poorly lit zones if access control and monitoring are weak.	- Code of Conduct & policy enforcement: Adopt/implement a written anti-harassment & SEA/SH code of conduct for all IBA staff, security, cleaners, and service providers; include zero-tolerance, prohibited behaviors, and sanctions; ensure signed acknowledgment and induction for new staff/contracted personnel. - Safe reporting & GRM linkage: Operate a confidential reporting system (multiple channels: hotline/phone, email, complaint box, online form) with female focal point(s); link to DU/IBA disciplinary mechanisms and referral pathways (medical, psychosocial, legal) as appropriate; ensure survivor-centered handling (privacy, non-retaliation). - Safe design & security measures: Ensure adequate lighting in entrances, corridors, stairwells, toilets, lifts, and parking; maintain functional CCTV in public/common areas (not inside toilets/changing rooms); controlled access (ID/visitor log, security presence) especially after hours; periodic patrols and rapid response protocol. - Awareness & capacity building: Regular orientation/awareness sessions for students and staff on respectful conduct, harassment prevention, bystander action, and reporting options; display visible signage (helpline numbers, reporting steps) at key locations; periodic refresher training for security and front-desk staff on safe handling of complaints.	SOU at IBA	SDC MU at MoF	- CoC/Policy coverage: Anti-harassment/SEA-SH policy and code of conduct adopted and publicly available; ≥90% of staff/security/service personnel trained and signed CoC (with records) annually. - GRM functionality: Confidential reporting channels active and advertised (signage posted in key areas); complaints logged with anonymized records; response initiated within a defined timeframe (e.g., 48–72 hours) while maintaining confidentiality; documented referral actions where needed. - Physical safety upkeep: Lighting and CCTV operational in identified risk areas (monthly checks documented); access control measures implemented (visitor log/ID checks) and patrol frequency recorded (especially evenings). - Awareness outreach: At least 2 awareness sessions/year (or per semester) with attendance records; periodic communication materials (posters, notices) maintained and updated.	NQC (Included in SDCMU and IBA operating costs)

Parameter	Potential impacts and/or issues	Mitigation/enhancement measures	Implementing entities	Supervision responsibility	Performance indicators	Estimated cost in BDT
(iii) WASTE MANAGEMENT						
48. Solid waste	Mixed waste and high contamination in recyclables	- Establish three/four-stream stations (recyclables, organics, landfill, e-waste where applicable) with paired bins, standardized color-coding, and pictorial signage at all floors, cafeterias, and lobbies	SOU at IBA	SDC MU at MoF	- Diversion rate ≥50–60% by weight; contamination in recycling ≤10%; bins and signage present at all designated locations	NQC (Included in IBA operating costs)
49. E-waste management (obsolete IT/electrical equipment, printer cartridges, used batteries)	Improper disposal of obsolete computers, printers, UPS units, lighting fixtures, printer cartridges, and used batteries generated during construction (from site offices) and operation (from classrooms, labs, and administrative areas) may lead to soil and groundwater contamination from heavy metals (lead, mercury, cadmium) and toxic chemicals; informal scavenging/recycling of E-waste also poses occupational health risks to waste handlers	- (i) Segregate E-waste from general solid waste at source and store temporarily in a dedicated, secured, roofed storage area with impermeable flooring to prevent leachate contamination; (ii) label and store used batteries and printer cartridges separately in leak-proof containers pending collection; (iii) engage only licensed/registered E-waste recyclers or take-back programs (e.g., through Department of Environment-authorized recyclers) for periodic collection and environmentally sound disposal/recycling; (iv) maintain an E-waste inventory and disposal log/manifest for record-keeping and reporting; (v) prohibit open burning, dumping, or sale to informal/unregistered scrap collectors; (vi) provide basic training/awareness to facility staff on E-waste handling procedures	SOU at IBA	SDC MU at MoF	- Dedicated E-waste storage area established and functional; E-waste disposal/collection log maintained and available for review; percentage of E-waste diverted to licensed recyclers (target: 100%); zero incidents of open burning or informal disposal recorded	NQC (Included in IBA operating costs)

D. Environmental Monitoring and Reporting

269. The purpose of environmental monitoring is to ensure that the EMP is fully and competently implemented across all phases of the project's development, and to provide a basis for appropriate and timely corrective action when it is found not to be. The environmental monitoring process should be understood not only as a means of supervision and enforcement, but also as a vehicle for organizational learning and progress towards mainstream international best practice in construction site and facility management. Effective monitoring can also be a vital tool in forestalling conflict with the communities most likely to suffer the consequences of negative environmental impacts, as problems can be identified and corrected in a timely manner, before they grow to nuisance or dangerous levels.

270. Environmental monitoring consists of assessing both the degree to which Contractors and facility operators are fulfilling their responsibilities to implement measures specified in the EMP to manage impacts (compliance monitoring), and the degree to which their impact management efforts are successful in preventing harmful environmental conditions from arising (effects monitoring). Compliance monitoring typically makes use of checklists to confirm or disconfirm that prescribed measures are being properly implemented, while effects monitoring involves quantitative and/or qualitative sampling at designated locations. Both types of monitoring need to be conducted on a regular and consistent basis, to ensure comparability of results across monitoring periods. Monitoring should begin before site clearing, so an environmental baseline (i.e., pre-project conditions) can be established for key environmental parameters.

271. Monitoring parameters for each prescribed mitigation and enhancement measure are identified in Table IX-3 above. Specific monitoring responsibilities, including the monitoring and reporting timetable for each, are detailed in Table IX-4.

Table IX-4 Environmental Monitoring Plan

KEYS: ADB: Asian Development Bank; CSC: Construction Supervision Consultant; Con: Contractor; DOE: Department of Environment; EAs: Executing Agencies; EHSO: Environment, Health and Safety Officer; ESFP: Environmental Safeguards Focal Person; NQC: No Quantifiable Cost; PIU: Project Implementation Unit; SOU: Safeguards Oversight Unit; MoF: Ministry of Finance; IBA: Institute of Business Administration

Parameter type	Prescribed measures	Monitoring entity	Monitoring parameters	When to monitor	Estimated monitoring cost in BDT
A. PRE-CONSTRUCTION PHASE					
(i) IMPLEMENTATION READINESS					
1. Environmental baseline	- Collect and analyze samples for key environmental parameters to establish a pre-project environmental baseline for development site	ESFP SDCMU ESFP IBA	- Ambient air quality ($PM_{2.5}$, PM_{10}, SO_2, CO, NO_2); compare to the Air Pollution (control) Rules 2022 (minimum 8 hr sampling period) - Adjacent surface waters (pH, BOD_5, COD, DO, SS, total coliform, Total P, Total N, turbidity); compare to the Environment Conservation Rules, 2023 - Groundwater in wells on site or nearby (pH, TDS, EC, DO, BOD_5, COD, Chloride, SS, As, Fe, Total-N, Total-P, Total coliform, turbidity, temperature); compare to the Environment Conservation Rules, 2023 - Ambient noise (dBa daytime, dBa night); compare to the Noise Pollution (control) Rules 2006	One sample prior to start of site clearing Sampling locations: to be set by the environmental specialist employed by CSC and TMED SOU	BDT 95,000 for sampling and laboratory analysis. See Table IX-8 for details.
2. IEE and EMP update	- Review IEE and EMP to ensure any post-approval changes are properly accounted for and addressed, by addition of mitigation measures if necessary	ESFP SDCMU	- IEE and EMP confirmed still fully applicable - New measures added to EMP if needed to cover any changes in alignment, design or local conditions	Once before start of procurement	NQC (Included in SDCMU budget)
3. Verification of environmental clearances	- Confirm Site Clearance Certificate (SCC) and Environmental Clearance Certificate (ECC) have been granted, and that any conditions imposed by DOE on approval have been reflected in EMP and EMoP, as well as CEMP as applicable	ESFP SDCMU	- SCC and ECC granted. - New measures added to EMP, EMoP and CEMP if needed to meet any condition of approval specified by DOE	Once before start of procurement	NQC (Included in SDCMU budget)
4. CEMP verification	- Review CEMP to ensure all primary Contractor responsibilities are fully reflected, including monitoring and reporting	CSC	- Any necessary changes requested and made by Contractor. - CEMP confirmed adequate by reviewers	Once before start of construction	NQC (Included in CSC amount)
5.Specialized plans verification	- Confirm that the following specialized plans have been prepared by the Contractor: - site-specific Construction Camp Management Plan(s)	CSC	- All required specialized plans prepared to adequate standard and approved by relevant authority (as required in some cases)	Once before start of construction	NQC (Included in CSC amount)

Parameter type	Prescribed measures	Monitoring entity	Monitoring parameters	When to monitor	Estimated monitoring cost in BDT
	- site-specific Waste Management Plans (embedded within CEMP) - site-specific Emergency Response Plans (embedded within CEMP) - Compensatory Tree Planting Plan - Construction Traffic Management Plan - Asbestos-Containing Materials Removal and Disposal Plan - Soil Erosion Prevention Plan - Site Reinstatement Plan - Occupational Health and Safety Plan (including COVID-19 measures stipulated by ADB and Government of Bangladesh Guidance for Social and Institutional Containment and Prevention) - Laboratory Waste Management Plan				
6. Grievance Redress Mechanisms	- Confirm that a central GRM and workers' GRM have been established and publicized	ESFP SDCMU	- Central GRM established and publicized - Workers' GRM established and explained to workers before the start of construction	Once before start of construction	NQC (Included in PIU budget)
7. Acoustic environment	- Convene a workshop with participation of people living and operating businesses along polytechnic Road, local ward Council representatives, RHD/LGED, police and other government agencies to discuss feasibility of limiting vehicle horn use in the IBA zone and formulate action as appropriate	ESFP SDCMU	- Workshop convened and action plan formulated if consensus for action found	Once before end of design phase, quarterly thereafter until action confirmed	NQC (Included in PIU budget)
8. Induced development and cumulative impacts	- Arrange multi-stakeholder workshop near IBA site with participation of local, upazila and district governments, all relevant government agencies, and concerned business interests (from gravel, trading, agricultural and tourism sectors, at a minimum) to initiate a broad-based public dialogue regarding the livelihoods of the local people and the people living near the site.	ESFP SDCMU	- Multi-stakeholder workshop with suitable broad participation convened by MoF through SDCMU	Once before end of design phase, quarterly thereafter until action confirmed	NQC (Included in PIU budget)
9. EMP training	- Without proper EMP implementation training, EMP monitoring might be delayed or hampered	- Confirm that EMP implantation training has been arranged before commencement of construction. - Involve contractor's high	- SDCMU/CSC	EMP training report	NQC (Included in PIU budget)

Parameter type	Prescribed measures	Monitoring entity	Monitoring parameters	When to monitor	Estimated monitoring cost in BDT
		officials/management part, EHS specialist, construction project managers and workforce overseer in the EMP training ; Quarterly Refreshers training on EMP implementation			
(ii) DESIGN					
10. Climate change mitigation	- Integrate GHG-limiting measures into facility designs, including: - substitute other materials for concrete where feasible - use low-carbon concrete as much as possible - maximize use of building materials available locally - integrate photovoltaic generation into the electrical plan - specify only high-efficiency electrical and mechanical equipment - specify most fuel-efficient backup generator available - maximize cross-ventilation by use of courtyards, openable windows and favorable building orientation - incorporate hollow wall structures where feasible - Use overhangs above large windows to prevent excessive solar penetration - Prioritize shade in the landscaping plan, with plentiful wide-crowned shade trees on all parts of site - Maximize interior natural light by using favorable building orientation and courtyards - Specify water-saving toilets, faucets and showerheads - Design dedicated plumbing system for drinking and cooking water - Aim to meet all water heating needs with solar heaters - Specify high-intensity, full-time lighting only where strictly necessary - Specify solar-powered lighting for outdoor applications	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- All feasible GHG-reduction design measures incorporated in facility designs - Soft landscaping plan (covering all site areas not occupied by structures, roadways or walkways, and including ample shade trees and dense ground cover) included in detailed site design, with plantings specified in Bill of Quantities	Once before approval of detailed designs	NQC (included in SDCMU budget)

Parameter type	Prescribed measures	Monitoring entity	Monitoring parameters	When to monitor	Estimated monitoring cost in BDT
	- Base landscape plan around drought-tolerant perennial native species - Design site layout and inspection process to minimize the length of time vehicles have their engines running during the border-crossing process - Incorporate green roofs wherever roof area is not needed for solar panels and solar water heaters - Maximize carbon sequestration potential, micro-climatic cooling and runoff retention by specifying a landscaping plan covering all site areas not occupied by structures, roadways or walkways, including ample shade trees (especially near buildings) and dense ground cover in open areas				
11. Climate change adaptation	- Design facilities so that critical components (including laboratory, backup generator and fuel tanks) are well above maximum flood level foreseen under climate change projections specified in Climate Risk and Adaptation Assessment (CRA) report and detailed hydrological study - Incorporate temperature-moderating features in IBA facility designs, including: - green roofs where feasible - maximize use of wide-crowned shade trees in site landscaping plans, including around buildings and parking area medians - maximize cross-ventilation by use of courtyards, openable windows and favorable building orientation	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- All critical facility components above maximum expected flood level - All feasible temperature-moderating features incorporated in facility designs	Once before approval of detailed designs	NQC (included in SDCMU budget)
12. Flora and fauna	- Avoid removal of trees to the greatest extent possible - Incorporate existing trees as site features whenever possible, and include them in site designs - When trees must be removed, compensatory trees should be planned elsewhere on site and marked in the design drawings, and included in the Bill of Quantities, in accordance with approved Compensatory Tree Planting Plan	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Existing trees preserved in site designs to the greatest extent feasible - Compensatory trees included in design drawings and Bill of Quantities, in accordance with Compensatory Tree Planting Plan	Once before approval of detailed designs	NQC (included in SDCMU budget)

Parameter type	Prescribed measures	Monitoring entity	Monitoring parameters	When to monitor	Estimated monitoring cost in BDT
13. Groundwater resources	- Maximize opportunities to limit water consumption and increase groundwater recharge, including adoption of: - rain capture on all roofs and use of stored water for non-potable uses in and around facilities - high-efficiency faucets and toilets throughout the facilities - plant species with low water needs in site landscaping plans - stormwater infiltration swales for all runoff from paved and impervious surfaces (objective: zero site runoff)	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- All feasible and applicable water conservation measures incorporated in detailed designs for IBA facilities	Once before approval of detailed designs	NQC (included in SDCMU budget)
14. Public health	- Design IBA building internal layout to maintain adequate space between individual users and prevent formation of long lines in indoor spaces - Design IBA building ventilation system to maximize turnover of indoor air	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- IBA building design enables social distancing - IBA building ventilation system designed to maximize turnover of indoor air	Once before approval of detailed designs	NQC (included in SDCMU budget)
15. Water quality	- Include designated storage with secondary containment for noxious substances (fuels, lubricants, paints, etc.) used in IBA operations in detailed design - Slightly raise surface of site minerals storage area above level of rest of site to prevent runoff from other site areas from washing through stockpiles - Include sediment traps and porous drainage channels in final drainage design for minerals storage area, to limit discharge of sediments	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Storage spaces with secondary containment for noxious substances included in detailed designs for IBA - Surface of IBA site's minerals storage area slightly raised above rest of site in detailed design - Sediment traps and porous drainage channels included in detailed design of site minerals storage area	Once before approval of detailed designs	NQC (included in SDCMU budget)
16. Air quality	- Include water supply to minerals storage area, with hose spigots in several locations around the perimeter to enable use of mobile misting apparatus	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Detailed design includes water supply to minerals storage area, with multiple hose spigots spaced around perimeter	Once before approval of detailed designs	NQC (included in SDCMU budget)
17. Occupational health and safety	- Design canopies over areas used by heavy laboratory machineries designed with extra headroom and good cross ventilation or fans to evacuate emissions efficiently	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Canopies over areas used by heavy laboratory machineries designed with extra headroom and good cross ventilation or fans to evacuate emissions efficiently	Once before approval of detailed designs	NQC (included in SDCMU budget)
18. Occupational health and safety	- Design interior layout of the IBA building to maximize space between users and prevent the formation of long lines in indoor spaces.	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Internal layout of the IBA building is designed to maximize space between users and prevent the formation of long lines in indoor spaces - IBA building ventilation system is designed for maximum feasible turnover of indoor air		

Parameter type	Prescribed measures	Monitoring entity	Monitoring parameters	When to monitor	Estimated monitoring cost in BDT
	- Design IBA building ventilation system for maximum feasible turnover of indoor air				
19. Occupational health and safety	- Engage qualified laboratory specialist to contribute to design of laboratory and associated structures, as well as preparation of operation protocols including waste management plans, to adhere to international laboratory design standards and best practices	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Suitable laboratory design specialist engaged to ensure design and operations of laboratory adhere to international laboratory design and operation standards and best practice	At beginning of detailed design work	NQC (included in SDCMU budget)
20. Waste management	- Anticipate waste streams and incorporate design features to collect, sort and safely dispose of each class of waste - Specify segregated collection bins in strategic indoor and outdoor locations where wastes are generated - Include waste storage and sorting areas in facility designs - Incorporate easy access for waste and recyclables collection vehicles - Designate outdoor space for thermophilic composting of organic waste from kitchens and canteens	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Facility designs include spaces and features for waste management, including collection, sorting, composting, storage and out-shipment - Suitable laboratory design specialist engaged to ensure design and operations of laboratory adhere to international laboratory design and operation standards and best practice laboratory	Once before approval of detailed designs	NQC (included in SDCMU budget)
(ii) PROCUREMENT					
21. Selection of Contractor	- Prioritize selection of Contractor with strong compliance track record, as verified by references from previous CSCs - Select only Contractors registered with MOLE	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Selected Contractor has verified track record of good performance on safeguards compliance	Once during procurement	NQC (included in SDCMU budget)
22. Selection of Contractor	- Require prospective Contractors to provide information on the age, condition and fuel-efficiency of their machinery and vehicle fleets in their bids, and consider this in the selection process - Include provision in contract giving the employer the right to require removal of equipment and vehicles it deems to be unacceptably polluting from work sites at any time during construction, even if these are the property of sub-Contractors	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Detailed machinery and fleet information required in bids - Emissions potential of fleets considered in Contractor selection - Provision included in contract giving the employer the right to require removal of equipment and vehicles it deems to be unacceptably polluting from work sites at any time during construction, even if these are the property of sub-Contractors	Once during procurement	NQC (included in SDCMU budget)
23. Labor	- Hire exclusively or mostly local workers	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Workers from Chattagram and around Chattagram given first priority in hiring for construction jobs	Once prior to start of construction	NQC (included in SDCMU budget)

Parameter type	Prescribed measures	Monitoring entity	Monitoring parameters	When to monitor	Estimated monitoring cost in BDT
24. Materials sourcing	- Obtain valid Certificate of BSTI from suppliers of bulk materials	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Certificate of BSTI obtained and filed for each purchase of bulk materials	Prior to approval of each purchase order	NQC (included in SDCMU budget)
25. Materials sourcing	- Prioritize bulk materials suppliers using less distant sources	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Materials sourced from within reasonable distance	Prior to approval of each purchase order	NQC (included in SDCMU budget)
26. Materials Sourcing	- Select suppliers with strong green credentials (verified by review of certifications received)	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- International suppliers of materials have favorable environmental certifications	Prior to approval of each purchase order	NQC (included in SDCMU budget)
B. CONSTRUCTION PHASE					
(i) BIOPHYSICAL ENVIRONMENT					
27. Surface water	- Implement approved Soil Erosion Prevention Plan, including (inter alia): - Protect disturbed soil from rain by keeping exposed areas covered with mulches, fiber mats and other temporary coverings - Keep all stockpiles of erodible materials covered with tarpaulins whenever they are not in active use - Arrange work site drainage to prevent concentration of surface runoff in the vicinity of exposed soils and materials stockpiles - Install and regularly maintain sediment traps in site runoff channels - Promptly reinstate disturbed ground surfaces and establish vegetative cover in locations where construction activity has been completed - Deploy silt curtains and sediment traps when earthworks are carried out near ponds and other standing water - During construction wastewater and sediment laden water from construction site may clog the existing drainage which are already malfunctioning.	EHSO CSC Contractor	- Prescribed soil protection measures effectively implemented at all work sites in accordance with approved Soil Erosion Prevention Plan - Daily inspection of the existing drainage system at IBA and other drainage channels constructed during construction and take cleaning actions when necessary. - Sediment traps installed in appropriate places, and maintained properly - Lack of evidence of elevated turbidity in water draining to adjacent water bodies - Vegetative cover promptly established when construction activity complete on each part of work sites - Silt curtains properly deployed where appropriate - Adjacent surface water quality (pH, BOD_5, COD, DO, SS, total coliform, Total P, Total N, turbidity) meets standard in the Environment Conservation Rules, 2023	Monthly (soil protection measures) for duration of construction Daily inspections for drainage congestion Quarterly surface water quality monitoring by EHSO at locations dictated by work activity	NQC (included in SDCMU budget) For Surface water quality: BDT 30,000 per sample, Total 8 samples over two years = 8 x BDT 30,000 = BDT 240,000
28. Surface water, groundwater and soils	- Keep all motorized equipment in good repair - Maintain a regiment of systematic daily checks to detect leaks, following up with prompt repair as needed	EHSO CSC Contractor	- Fuels, lubricants and other noxious fluids stored in appropriate structure - Lack of evidence of leaks from construction equipment - Lack of oil patches on soil surface - Lack of oily sheen on site runoff water	Monthly for duration of construction	NQC (included in SDCMU budget)

Parameter type	Prescribed measures	Monitoring entity	Monitoring parameters	When to monitor	Estimated monitoring cost in BDT
	- Strictly require use of drip mats and pans during refueling and servicing to catch spills and drips - Store fuels and other noxious fluids within roofed, rain-exclusive containment structures with capacity at least 115% of the volume of the largest container stored, constructed only in locations with zero probability of flooding during heavy rains - Provide training in spill prevention and spill response to all workers involved in refueling or equipment servicing				
29. Surface water	- Install an adequate number of toilets to accommodate all workers, and septic systems of sufficient capacity for the expected effluent volume, in accordance with Construction Camp Management Plan	EHSO CSC Contractor	- At least one working toilet per 10 resident workers installed - Absence of visual evidence of enrichment	Once at beginning of construction, and monthly for duration of construction	NQC (included in SDCMU budget + Contractor costs)
30. Air quality	- Implement a regimen of misting all dust-generating surfaces throughout the work day during dry weather - Tightly cover stockpiles of fine materials with tarpaulins whenever they are not in active use to prevent wind erosion - Equip all haul trucks with tightly-fitting tarpaulins and enforce their use	EHSO CSC Contractor	- Levels of airborne dust are below nuisance level in roadside communities - No significant dust accumulation observed on roadside crops and structures - No complaints from public registered - Ambient air quality ($PM_{2.5}$, PM_{10}, SO_2, CO, NO_2) meets standards indicated in the Air Pollution (control) Rules 2022.	Weekly for duration of construction (observation) (Quantitative measurement quarterly by EHSO at locations dictated by work activity	NQC (EMP cost stipulated in Table IX-8)
31. Air quality	- Maintain all motorized equipment used in construction to a high standard - Use only fuel-efficient equipment	EHSO CSC Contractor	- Absence of black smoke in construction equipment exhaust - No complaints from public	Weekly for duration of construction (Quantitative measurement quarterly by EHSO)	NQC (observation)
32. Soil	- Implement approved Soil Erosion Prevention Plan, including (inter alia): - Protect disturbed soil from rain by keeping exposed areas covered with mulches, fiber mats and other temporary coverings	EHSO CSC Contractor	- Prescribed soil protection measures effectively implemented at all work sites, in accordance with Soil erosion Prevention Plan - Lack of evidence of soil erosion - Vegetative cover promptly established when construction activity complete on each part of work sites	Weekly for duration of construction	NQC (Method: visual inspection)

Parameter type	Prescribed measures	Monitoring entity	Monitoring parameters	When to monitor	Estimated monitoring cost in BDT
	- Arrange work site drainage to prevent concentration of surface runoff in the vicinity of exposed soils - Promptly establish vegetative cover on soil surfaces in locations where construction activity has been completed - Implement approved Site Reinstatement Plan, including (inter alia): - Reserve topsoil and store separately for later use - Promptly prepare soil surfaces for plantings once construction work has been completed in each part of site - Establish vegetative cover in accordance with landscaping plan in detailed site design, Bill of Quantities and Compensatory Tree Planting Plan - Implement a watering and tending regimen to help ensure success of plantings - Monitor progress of vegetation establishment until end of defects period, and implement infill planting as necessary to achieve full coverage				
33. Flora and fauna	- Clearly mark trees that are to be preserved prior to clearing - Establish a fenced buffer around trees that are to be preserved to protect them from damage by equipment, excavation and materials stockpiles	EHSO CSC Contractor	- Trees clearly marked prior to site clearing - Fenced buffers established, maintained and observed around preserved trees for duration of works	Once before site clearing, and monthly for duration of construction	NQC (included in SDCMU, CSC, and Contractor costs)
34. Flora and fauna	- Establish a 10-m buffer with temporary fencing along any permanent or seasonal watercourses found on site, and enforce a prohibition on any construction-related activity within the buffer for the duration of the works - Deploy silt curtains and temporary sediment traps where runoff from active work areas is directed to creeks	EHSO CSC Contractor	- 10-m buffer established with temporary fencing along any permanent or seasonal watercourses on site - Prohibition on construction-related activities within the buffer enforced - Silt curtains and sediment traps deployed as appropriate to limit silt delivery to on-site watercourses	Weekly for duration of construction	NQC (included in SDCMU, CSC, and Contractor costs)
35. Flora and fauna	- Implement approved Compensatory Tree Planting Plan as soon as schedule of works permits	EHSO CSC Contractor	- Compensatory trees planted and tended in conformance with the approved Compensatory Tree Planting Plan - Planted trees healthy and seem assured of long-term survival	Twice during final 3 months of construction phase	NQC (included in SDCMU budget)
(ii) SOCIOECONOMIC AND CULTURAL ENVIRONMENT					
36. Acoustic environment	- Conduct work only during daylight hours	EHSO CSC	- Noise and vibration are below nuisance level for local residents and roadside small businesses	Weekly for duration of	NQC (observation)

Parameter type	Prescribed measures	Monitoring entity	Monitoring parameters	When to monitor	Estimated monitoring cost in BDT
	- Impose and enforce low speed limits on haul trucks through the roads nearby the site - Maintain all motorized equipment and haul trucks to a high standard, and inspect exhaust systems regularly	Contractor	- No construction work or hauling is conducted between dusk and dawn - No complaints from the public registered - Noise levels at roadside around the site meets standard indicated in the Noise Pollution (control) Rules 2006 (during heavy haul periods)	construction (observation) (Quantitative measurement by EHSO only during heavy haul periods)	For quantitative sampling: Included in Contractor cost as EMP cost provided in Table IX-8
37. Public safety	- Ensure that the construction sites are adequately fenced and security is provided to prevent members of the public from entering the sites - Establish safe, marked routes for staff and facility users to continue to use the IBA facilities without having to cross active construction zones - Impose and enforce low speed limits on haul trucks through roads near the site area - Prepare Construction Traffic Management Plan, and implement as appropriate during hauling periods (Contractor)	EHSO CSC Contractor	- Adequate fencing and security maintained at construction site. - Construction zone is configured to maintain safe access for IBA staff. - Construction Traffic Management Plan prepared and observed to be implemented as appropriate. - Haul trucks not observed or reported to speed through the nearby roads of the site	Weekly for duration of construction	NQC (included in SDCMU, CSC, Contractor costs)
38. Public safety	- Give preference to local laborers to avoid the need for, or limit the size of, a construction camp - Conduct proactive outreach with leaders of nearby communities to educate women and girls about the risks posed by an all-male camp in the neighborhood - Give resident workers regular training on appropriate behavior in and around the camp - Adopt a zero-tolerance policy around aggression or violence against local women and girls - When women must enter the camp for employment or selling produce, limit their entry to times when resident workers are out at the work site - Prohibit prostitution on the site, and monitor activity in this regard and work with community leaders to address the problem as needed	EHSO CSC Contractor	- Lack of reports of worker-involved abuse or harassment - Lack of complaints from public about violence or prostitution at camp - Female access to camp for employment allowed only when workers are out at work sites - Construction Camp Management Plan implemented as approved	Monthly for duration of construction	NQC (included in SDCMU, CSC, Contractor costs)

Parameter type	Prescribed measures	Monitoring entity	Monitoring parameters	When to monitor	Estimated monitoring cost in BDT
39. Public safety	- Provide regular training and enforcement to minimize bad worker behavior off site, including public drunkenness, sexual harassment, and theft of crops	EHSO CSC Contractor	- Construction Camp Management Plan implemented as approved - Lack of complaints from public about behavior of resident workers	Monthly for duration of construction	NQC (included in SDCMU, CSC, Contractor costs)
40. Public health	- Install and maintain adequate toilet and septic systems to prevent discharge of raw sewage from camps to local water bodies or fields - Educate resident workers about sexually transmitted diseases and responsible sexual behavior - Work with local community leaders to prohibit prostitution in and around construction camps	EHSO CSC Contractor	- Construction Camp Management Plan implemented as approved - At least one working toilet per 10 resident workers installed, with septic treatment - Absence of visual evidence of raw sewage discharge - Lack of reports of prostitution around camp - Lack of concerns expressed by local community leaders about workers' off-site behavior	Once at start of construction (toilets) Monthly for duration of construction (other items)	NQC (included in SDCMU, CSC, Contractor costs)
41. Worker health and safety	- Implement approved Occupational Health and Safety Plan - Provide regular safety training for all workers - Provide task-appropriate PPE to all workers and enforce its use - Closely monitor works at all times to ensure strong worker compliance with safety practices	EHSO CSC Contractor	- Low incidence of workplace injuries - Workers observed using appropriate PPE - All aspects of Occupational Health and Safety Plan implemented as approved	Weekly for duration of construction	NQC (included in SDCMU, CSC, Contractor costs)
42. Worker health	- Implement approved Occupational Health and Safety Plan - Institute temperature checks (at least daily) for all workers and supervisory personnel on site - Provide each worker with an appropriate face mask daily or as needed and require mask use at all times. - Position hand washing and sanitizing stations at canteens and other eating areas, kitchens, and near toilets	EHSO CSC Contractor	- Temperature check regimen implemented consistently. - Workers supplied facemasks. - Workers consistently use facemasks. - Hand washing and sanitizing stations provided in appropriate locations and kept stocked at all times. - All aspects of Occupational Health and Safety Plan implemented as approved	Weekly for duration of construction	NQC (included in SDCMU, CSC, Contractor costs)
43. Worker health and safety	- Implement approved Construction Camp Management Plan - Conduct monthly safety audit of camp to identify fire risks, electrocution hazards and other unsafe conditions, and assess adequacy of fire extinguishers and first aid provisions - Institute a regular cleaning and disinfection regimen for camp kitchens, latrines, wash-up areas, eating areas and sleeping sheds	EHSO CSC Contractor	- Safety audit results included in monthly progress reports and quarterly monitoring reports - Lack of outbreaks of infectious illnesses (e.g., influenza, pneumonia, tuberculosis) and ailments associated with unsanitary conditions (e.g., dysentery, lice, scabies) - Living conditions meet standards specified in Construction Camp Management Plan - Drinking water quality (pH, TDS, EC, DO, BOD_5, COD, Chloride, SS, As, Fe, Total-N, Total-P,	Monthly for duration of construction (observation) Quantitative measurement quarterly by Contractor at source well	NQC (observation) Quantifiable costs: Temporary disposal facilities BDT 100,000; Medical supplies:

Parameter type	Prescribed measures	Monitoring entity	Monitoring parameters	When to monitor	Estimated monitoring cost in BDT
	- Provide adequate sleeping space with good cross-ventilation to avoid overcrowding and consequent spread of communicable illnesses and infestations (at least 4m^2 per worker) - Provide each worker with a raised sleeping platform with mattress or mat, bedding and mosquito netting - Ensure that each sleeping space has at least two working exits that remain functional at all times - Provide unlimited drinking water that meets the standards indicated in the Environment Conservation Rules, 2023 - Provide indoor eating space separate from sleeping areas; - Provide kitchens with off-floor food storage, raised working surfaces of a material that can be easily sanitized, and a ready supply of clean water; - Provide toilet facilities with at least one functional toilet (protected from the elements and affording full visual privacy to the user) per ten resident workers, with a ready water source for washing; - Provide roofed and partitioned wash-up areas with floors and proper drainage		Total coliform, turbidity, temperature) meets standards indicated in the Environment Conservation Rules, 2023		BDT 100,000; Drinking Water Quality: BDT 30,000 per sample = 8 times over construction period = BDT 30,000 x 8 = 240,000
44. Livelihoods	- Hire mostly or exclusively local workers on construction sites	EHSO CSC Contractor	- Workers from nearby area given priority in hiring for construction jobs	In advance of any new crews or subcontractors being brought on site	NQC (included in SDCMU, CSC, Contractor costs)
45. Physical cultural resources	- Establish a chance find procedure and provide training to all workers regarding its triggering conditions, and to site engineers on its implementation	CSC	- Chance finds procedure included in CEMP and training provided to workers and site engineers	Once before start of construction	NQC (included in SDCMU costs)
(iii) WASTE MANAGEMENT					
47. Construction waste	- Implement all provisions in the Waste Management Plan embedded in CEMP, including: - Provide waste receptacles on the work sites and collect their contents daily or weekly as needed - Recycle all recyclables through local providers of this service	EHSO CSC Contractor	- All classes of waste managed in accordance with Waste Management Plan embedded in CEMP	Monthly for duration of construction	NQC (included in SDCMU, CSC, Contractor costs)

Parameter type	Prescribed measures	Monitoring entity	Monitoring parameters	When to monitor	Estimated monitoring cost in BDT
	- Compost organic wastes generated by construction camp kitchens - Dispose of non-recyclable and non-organic wastes as directed in the Waste Management Plan embedded within the CEMP, as based on locally available and approved disposal options				
48. Waste oils	- Recycle waste oils through a reputable business providing this service, as identified in the Waste Management Plan	EHSO CSC Contractor	- No evidence of waste oil dumping or burning - Documentation of transfers to identified service provider available	Monthly for duration of construction	NQC (included in SDCMU, CSC, Contractor costs)
C. OPERATION PHASE					
(i) BIOPHYSICAL ENVIRONMENT					
49. Water quality	- Store fluids only within dedicated indoor storage spaces with secondary containment capacity equaling or exceeding 115% of the volume of the largest container stored - Routinely inspect storage spaces and tanks for leakage, and take immediate corrective action as needed - Remove sludge at least once per year from all septic tanks installed, and work into the soil around on-site tree plantations for fertilization	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Proper storage observed - Absence of evidence of spills and leaks - Sludge removed from all septic tanks at least annually, and appropriately used to fertilize on-site tree plantations	Quarterly (fluid storage) Routine inspection - Once prior to start of operations (Spill Prevention and Response Plan), then once per year	NQC (Included in SDCMU and IBA budgets)
50. Drinking Water quality	- Install purification system for drinking water supply for the students and teachers	IBA	- Water quality tests of pH, DO, NO_3^-, PO_4^- and E.Coli and compare to the ECR 2023 - Observe for colour and odor	Water quality test annually Observation and record keeping every month	NQC (Included in SDCMU and IBA budgets)
51. Water quality	- Prepare and implement Spill Prevention and Response Plan for the site. - Provide personnel training necessary for effective implementation of the plan prior to start of operations and annually thereafter	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Spill Prevention and Response Plan prepared for the site prior to the start of operations. - Personnel training necessary for effective implementation of the Spill Prevention and Response Plan delivered before start of operations and repeated annually during operation phase	Once before start of operations, annually thereafter	NQC (Included in SDCMU and IBA budgets)
52. Water quality	- Purchase sufficient tarpaulins based on expected stockpiling activity, and make budgetary provision for regular replacement as needed - Strictly require the use of tarpaulins on all piles of mineral materials at all times, except during active handling of materials	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Thorough, competent use of tarpaulins on all materials stockpiles in minerals storage area observed to be standard procedure - Sediment traps in minerals storage area well maintained and functional - Runoff from minerals storage area is of sufficient quality not to cause violation of surface water standard (pH, BOD_5, COD, DO, SS, total	Quarterly	(Proportion of IBA EHS Unit costs for sampling/ equipment over 20 years)

Parameter type	Prescribed measures	Monitoring entity	Monitoring parameters	When to monitor	Estimated monitoring cost in BDT
	- Train personnel assigned to the minerals storage area in competent tarpaulin use - Regularly monitor tarpaulin condition and use - Regularly check and clean out sediment traps in chemical storage are		coliform, Total P, Total N, turbidity) in receiving water body; compare to the Environment Conservation Rules, 2023		
53. Air quality	- Ensure adequate staffing at peak times to help ensure that incoming trucks are processed efficiently and lines do not form - Enforce a strict no-idling policy	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Ambient air quality ($PM_{2.5}$, PM_{10}, SO_2, CO, NO2) meets standards indicated in the Air Pollution (control) Rules 2022.	Quarterly	(Proportion of IBA EHS Unit costs for sampling/ equipment over 20 years)
54. Air quality	- - Include water supply to chemical storage area, with hose spigots in several locations around the perimeter to enable use of mobile misting apparatus	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Thorough, competent use of tarpaulins on all materials stockpiles in minerals storage area observed to be standard procedure - Ambient air quality ($PM_{2.5}$, PM_{10}, SO_2, CO, NO_2) meets standards indicated in the Air Pollution (control) Rules 2022.	Quarterly	NQC (air sampling cost accounted for in previous line)
55. Air quality	- Strictly require all trucks entering the site to be equipped with tightly fitting tarpaulins - Sweep and spray roadways within the site as needed to limit dust	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- All trucks entering site observed to be appropriately covered - Roadways within the site swept and sprayed as needed to suppress dust - Ambient air quality ($PM_{2.5}$, PM_{10}, SO_2, CO, NO_2) meets standards indicated in the Air Pollution (control) Rules 2022	Quarterly	NQC (air sampling cost accounted for in previous line)
56. Soils	- Protect soils exposed by maintenance works with mulches and other protective coverings during works, and promptly re-establish vegetative cover when works have been completed - Regularly inspect site vegetation for loss of coverage and evidence of emerging gully erosion	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Lack of evidence of gully erosion	Quarterly	NQC (Included in SDCMU and IBA budgets)
(ii) SOCIOECONOMIC AND CULTURAL ENVIRONMENT					
57. Public safety	- Regularly monitor facility operations for emerging public safety issues, and devise appropriate corrective action, as needed - Proactively coordinate with RHD/LGED to ensure that safety features including sidewalks, pullout and turn lanes, road markings, signage and other safety features are planned for and implemented in future approach road upgrades	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Safety features implemented - Accident risk low	Quarterly	NQC (Included in SDCMU and IBA budget)

Parameter type	Prescribed measures	Monitoring entity	Monitoring parameters	When to monitor	Estimated monitoring cost in BDT
58. Public safety	- Pursue collaboration with RHD/LGED and local community leaders regarding durable solutions to safety risks from on-road and road-adjacent commerce, such as provision of alternative spaces outside the RoW for commercial and community activity	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Low incidence of encroachment - Smooth traffic flow through settled areas - Low incidence of vehicle-pedestrian collisions	Quarterly	NQC (Included in SDCMU and IBA budget)
59. Worker health and safety	- Enforce a strict policy against engine idling	SOU-SDCMU, ESFP-SDCMU, ESFP-NIBA	- Low incidence of staff complaints about emissions exposure	Quarterly	NQC (Included in SDCMU and IBA budget)
60. Worker health and safety	- Integrate pandemic response measures in operations and maintenance manuals and operating protocols for the IBA site, to ensure prompt implementation when emerging threats are identified	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Pandemic response measures integrated in operations and maintenance manuals	Once prior to start of operations	NQC (Included in SDCMU and IBA budget)
61. Worker health and safety	- Incorporate Emergency Response Plan in laboratory operating protocols, and provide regular training for technicians and support staff on its activation	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Emergency Response Plan included in laboratory operating protocols - Regular training provided on activation of Emergency Response Plan	Once prior to start of operations (protocols) Annually (training)	NQC (Included in SDCMU and IBA budget)
62. GBV/SEA-SH	- Code of Conduct & policy enforcement: Adopt/implement a written anti-harassment & SEA/SH code of conduct for all IBA staff, security, cleaners, and service providers; include zero-tolerance, prohibited behaviors, and sanctions; ensure signed acknowledgment and induction for new staff/contracted personnel. - Safe reporting & GRM linkage: Operate a confidential reporting system (multiple channels: hotline/phone, email, complaint box, online form) with female focal point(s); link to DU/IBA disciplinary mechanisms and referral pathways (medical, psychosocial, legal) as appropriate; ensure survivor-centered handling (privacy, non-retaliation). - Safe design & security measures: Ensure adequate lighting in entrances, corridors, stairwells, toilets, lifts, and parking; maintain functional CCTV in public/common areas (not inside toilets/changing rooms); controlled access (ID/visitor log, security presence)	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- CoC/Policy coverage: Anti-harassment/SEA-SH policy and code of conduct adopted and publicly available; ≥90% of staff/security/service personnel trained and signed CoC (with records) annually. - GRM functionality: Confidential reporting channels active and advertised (signage posted in key areas); complaints logged with anonymized records; response initiated within a defined timeframe (e.g., 48–72 hours) while maintaining confidentiality; documented referral actions where needed. - Physical safety upkeep: Lighting and CCTV operational in identified risk areas (monthly checks documented); access control measures implemented (visitor log/ID checks) and patrol frequency recorded (especially evenings). - Awareness outreach: At least 2 awareness sessions/year (or per semester) with attendance records; periodic communication materials (posters, notices) maintained and updated.	Annually	NQC (Included in SDCMU and IBA budget)

Parameter type	Prescribed measures	Monitoring entity	Monitoring parameters	When to monitor	Estimated monitoring cost in BDT
	especially after hours; periodic patrols and rapid response protocol. - Awareness & capacity building: Regular orientation/awareness sessions for students and staff on respectful conduct, harassment prevention, bystander action, and reporting options; display visible signage (helpline numbers, reporting steps) at key locations; periodic refresher training for security and front-desk staff on safe handling of complaints.				
(iii) WASTE MANAGEMENT					
64. Solid waste	- Ensure that appropriate waste management procedures for all components of the solid waste stream are specified in each facility's operations and maintenance manual	SOU-SDCMU, ESFP-SDCMU, ESFP-IBA	- Recyclable solid waste is consistently segregated and picked up by a reputable recycling business - Non-recyclable solid waste is consistently taken to a legal landfill for disposal - Lack of evidence of waste dumping or burning on site	Quarterly	NQC (Included in IBA O&M budget)

272. As will be noted from the preceding table and figures, several entities are expected to submit regular monitoring reports as a fundamental contribution to effective implementation of the EMP. These reporting processes are summarized in Table IX-5 for clarity. A sample outline of a semi-annual monitoring report as must be prepared by the SOU for submission to ADB (which can also be adapted for quarterly monitoring reports as must be prepared for DOE) is provided in Appendix 18.

Table IX-5 Monitoring reporting requirements

Report type	Prepared by	Submitted to	Frequency
Construction phase			
Contractor EHS monitoring reports	Contractor	ESFP	Monthly
Site EHS monitoring reports	EHSO	ESFP	Monthly
Progress reports (safeguards sections)	ESFP	PIU/SOU	Quarterly
Environmental monitoring reports	SOU	DOE	Quarterly
Environmental monitoring reports	SOU	ADB	Semi-annually
Operation phase			
Environmental monitoring reports	IBA units and SDCMU	DOE	Quarterly

E. Institutional strengthening and training requirements

273. Implementation of environmental safeguards on infrastructure projects in Bangladesh has tended to be weak, as is often evident even to the casual observer passing by poorly fenced construction sites where few workers can be seen using appropriate personal protective equipment. Incomplete EMP compliance is largely a function of two factors: (i) inadequate capacity in institutions charged with oversight; and (ii) a low level of awareness and knowledge on the part of local subcontractors and their workers.

1. Institutional capacity

274. **Project-specific oversight entities.** Oversight of EMP implementation rests in large part on the PIU (at IBA) and its SOU. SOU should, as a matter of course, be staffed by environmental professionals with strong prior knowledge of safeguards requirements and solid understanding of environmental and social impact analysis in relation to infrastructure and be supported with resources adequate to carry out its duties. Site-level oversight is to be provided by the SDCMU and IBA and their EHSOs during the construction period. The EHSOs should have prior environmental training and be adequately supported by SDCMU and IBA [54]. Assuming professionals with appropriate qualifications and experience are engaged for environmental positions within the SOU, institutional capacity for implementing the EMP should be sufficient.

275. **EA EHS units.** Neither SDCMU nor IBA has a functioning permanent internal unit with capacity sufficient to oversee implementation of environment, health and safety safeguards at agency-owned sites and facilities. This means that implementation of the EMP during the operation phase—including monitoring of compliance and effects—have almost no likelihood of being properly carried out. This applies not only to the investments at IBA, but to all infrastructure owned and operated by these agencies. The capacity to carry out the operation phase elements of the EMP needs to be established in both agencies. It bears emphasis that SDCMU and IBA should have this kind of in-house capacity to carry out operation-phase EMP implementation tasks

[54] As has been discussed above, it will be acceptable for there to be just one EHSO for the works at the IBA, given the limited scale of works and proximity of sites. SDCMU and IBA will decide how to share cost and supervision responsibility for the EHSO.

for all of their infrastructure development projects, not just this one. The proposed capacity building program should be seen as an opportunity to develop capacity with wider application; capacity building efforts mandated under future projects can build upon the foundation established under this project.

276. A capacity building program for EHS units within SDCMU and IBA should be developed and delivered in the interval between the project's approval and the end of construction on the first round of investments. The capacity development program should aim to establish stable, sustainable EHS units capable of (i) proactively and professionally driving compliance with national and multilateral-mandated environmental clearance and environmental assessment requirements in relation to proposed, under-construction and operational infrastructure investments; (ii) collaborating productively with specialists hired under the auspices of major investment projects; (iii) carrying out long-term EHS monitoring for all agency facilities; and (iv) building a culture of sustainability and safety across their home agencies through awareness-raising and educational campaigns.

277. Capacity investments should include support for hiring and resourcing adequate staff commensurate with the needs of the agency, and staff training. The capacity building program should include the following elements: (i) needs assessment; (ii) capacity-building plan including recommendations for staffing and resources; and (iii) training program for each EA's EHS unit. Design, development and delivery of the capacity building program is appropriately included in the mandate of the CSC engaged to oversee implementation of the project works. The CSC should be supported in this work by the SOU, and the ESPFs of SDCMU and IBA.

2. Training needs

278. **Contractors.** International construction contractors working in Bangladesh are well aware of safeguards requirements, and knowledgeable on global best practices in impact mitigation and site management. Effective oversight and enforcement, not training, is needed to ensure strong EMP performance from these firms. However, the local firms acting as contractors or sub-contractors, which will undertake most of the physical work of infrastructure development, can in most cases be expected to be less aware and less experienced regarding safeguards requirements, and minimally concerned with international standards of practice. Local firms will benefit from training to strengthen their knowledge and awareness and help ensure strong compliance on this project and other projects in the future.

279. Training for contractors/sub-contractors should be developed by the SOU in collaboration with the CSCs and be delivered by the CSC prior to the start of construction, and whenever weak compliance warrants refresher training. Training for contractors/sub-contractors should cover the following topics:

(i) rationale for safeguards requirements in infrastructure development;
(ii) ADB safeguards requirements;
(iii) national safeguards requirements;
(iv) primary contractors' legal and contractual responsibilities with respect to compliance with national environmental and labor rules;
(v) sub-contractors' legal and contractual responsibilities with respect to compliance with national environmental and labor rules;
(vi) environmental monitoring processes and enforcement;
(vii) best practices in construction site management and environmental mitigation; and
(viii) emergency response plans and their implementation.

280. **Workers.** Primary contractors and their sub-contractors should provide adequate training to workers in their employ to ensure safe and sanitary workplaces and full compliance with all prescriptions of the EMP but often fall short in this regard. It is therefore usually necessary and appropriate for the PIU to implement supplemental worker training. Such training should be designed by the SOU in collaboration with the CSC and implemented by the SOU through the site-level EHSOs. Worker training should be provided prior to the start of construction, and whenever new sub-contractors and crews of workers are brought onstream; refresher training should be given any time site monitoring reveals recurrent patterns of non-compliance that can be attributed to lack of worker knowledge or awareness.

281. Training for workers should encompass the following topics:

(i) rationale for EHS requirements on construction sites;
(ii) workplace safety practices, including, but not limited to, proper use of task-appropriate personal protective equipment;
(iii) safe handling of noxious substances used in construction;
(iv) proper procedure for avoiding spills during refueling and equipment maintenance;
(v) fire safety, including fire prevention and use of fire extinguishers;
(vi) reporting observed spills, leaks, physical hazards and other potentially urgent matters to site managers;
(vii) proper solid waste management practices;
(viii) sanitation and personal cleanliness in toilets, cooking and eating areas, wash-up facilities and employer-provided accommodations; and
(ix) existence and use of the Grievance Redress Mechanism.

282. **Facility managers.** During the operation phase, ongoing mitigation of potential impacts is subsumed within regular facility operations, guided by operations and maintenance manuals, as well as protocols for workplace safety, emergency response and routine monitoring of buildings and equipment. Work carried out at operational facilities by external maintenance contractors also needs to be monitored for compliance with the EMP by the facilities' regular personnel. Accordingly, it is appropriate for facility managers, their designated EHS personnel, and other staff to receive training to allow them to undertake such work with confidence.

283. Training for facility operators should address the following:

(i) the EMP and its relevance to operations;
(ii) linkages between the EMP and operations and maintenance manuals;
(iii) best EHS practices in facility management;
(iv) emergency response plans and their implementation;
(v) monitoring maintenance contractors; and
(vi) EMP reporting requirements.

284. Facility personnel should be given training prior to the end of construction, as soon as operations and maintenance manuals and emergency response plans have been finalized and approved by the SOU and CSC. Training should be designed by the CSC and organized and delivered by the new SDCMU and IBA EHS units. Periodic refresher training may be appropriate throughout the operation phase, especially following turnover of key personnel positions or if monitoring carried out by the SDCMU and IBA EHS units indicates recurrent compliance issues.

285. **Institutional strengthening.** The PMU will lead the implementation of the EMP assisted by the consultants, with responsibility for such key tasks as ensuring project readiness; reviewing and approving designs and plans; ensuring that environmental information in bid documents and environmental clauses in construction contracts are on target; providing training on environmental

mitigation measures; supervising and directing environmental monitoring; and providing guidance on environmental matters whenever needed. The work and leadership of the environmental consultants will strengthen environmental management and supervision capacity of the EA, IAs, PMU and contractors, and ensure the project's full compliance with the ADB's SPS.

286. In addition to the activity of the environmental consultants, the project's environmental management and supervision will be enhanced by engagement of a licensed laboratory to undertake quarterly site monitoring, including quantitative measurement of air quality and noise levels at all active construction sites; this importation of technical monitoring expertise will ensure adherence to DoE standards. Finally, all contractors will be required to hire an Environment, Health and Safety Officer (EHSO) for each site under their control and empower that officer to manage the implementation of an Environment, Health and Safety Management Plan (EHSMP) for the site. With the guidance, support and supervision of the environmental consultants, the EHSOs will play a key role in ensuring sound implementation of environmental mitigation measures prescribed by the EMP. It is believed that these institutional strengthening measures will enable competent and efficient environmental management of the project. The institutional strengthening plan is summarized in Table IX-6.

Table IX-6 Institutional Strengthening Measures

Target Agencies	Institutional strengthening measures	Timing
MoF	Define institutional arrangements for environmental management, monitoring and supervision Define positions and responsibilities	During project preparation
SDCMU	Recruit and contract one national environmental consultant for environmental management, environmental training, EMP compliance review, and reporting	At start of pre-construction phase
CSC / IBA	Recruit and contract licensed laboratory for quarterly environmental monitoring before and during construction phase	Prior to start of construction
Contractors	Hire Environment, Health and Safety Officers for each construction site	Prior to start of construction
Contractor / Workers	Work Health and Safety training on periodic basis	Before start of the construction and quarterly until end of construction

287. **Training.** Selected personnel of the MoF, IBA, SDCMU and contractors will receive training in environmental management, environmental monitoring and supervision, mitigation planning, emergency response, public consultation and use of GRM, occupational and community health and safety, and other environmental management topics. The topics, methods, and estimated costs of the training are outlined in Table IX-7. Training sessions will use a workshop format. Training will be developed and provided by the environmental consultants with the support of other experts engaged in the grant implementation of consultant services.

Table IX-7 Training requirements and estimated cost

Training target	Developed by	Delivered by	Timing	Estimated cost for this location
Contractor	SOU/CSC	SOU/EHSO	Once before start of construction, periodically during construction on quarterly basis	BDT 30,000 per session 9 sessions over 2 years = BDT 30,000*9 = 2,70,000
Workers	SOU/CSC	SOU/EHSO	Once before start of construction, weekly toolbox meeting at site	BDT 50,000 for first session, arrange toolbox meeting on site at Contractor cost
Facility managers	SOU	TMED EHS Unit	Before start of operations	BDT 100,000
Training Topics. EMP Implementation: Roles and Responsibilities, Monitoring, Supervision and Reporting Procedures Grievance Redress Mechanism: Roles and Responsibilities, Procedures, Occupational and Community Health and Safety, Emergency Preparedness and Response, Pollution Control and Environmental Monitoring, Inspection and Reporting, Public Consultation, Contractor Engagement and Management, including EMP Enforcement, Operation-Phase Environmental Management and Monitoring				

F. EMP Implementation cost

288. Cost estimates for mitigation measures, environmental monitoring, public consultations, and capacity building are summarized in Table IX-8. Contractors will bear the direct costs of all mitigation measures during construction, which will be included in the tender and contract documents; this includes features built into facility designs in order to prevent environmental impacts from arising. The MoF SDCMU and IBA will bear the costs related to mitigation measures during operation. Costs related to environmental supervision during construction will be borne by the SDCMU (for hiring a licensed laboratory to conduct quarterly monitoring), the PMU (for the activities of the environmental consultants) and by the contractors (for monitoring work carried out by the EHSOs). During the operation phase and monitoring costs will be borne by the SDCMU and IBA (for regular monitoring activity of their site EHSOs). The Table IX-9 reflects incremental EMP-related O&M costs for operation (GRM, GBV/SEA-SH actions, waste management and safeguards reporting), consistent with the IEE statement that operation-phase EMP costs are borne by SDCMU and IBA.

Table IX-8 EMP implementation cost at construction phase

Note: The EMP cost will be included in the BOQ as a provisional sum (non-competitive) item				
Sl. No	**Description of activity**	**Unit cost (BDT)**	**Calculation**	**Cost (BDT)**
1	Recruit and appoint EHSO as site for 24 months by the contractor (verified by IBA ESHO)		Refer to tender data sheet (personnel cost)	-
2	Tree plantation at site and maintenance for 2 years as required and as per direction of the E.I.C. Plantation should be following the suggestion in the EMP table. The payment is to be made only when trees are fully grown)	BDT 500 per sapling (sapling, fencing, mulching, watering etc)	10 trees x BDT 500	5,000
3	Debris disposal and waste management on camp sites.	lump sum	BDT 100,000	100,000

Note: The EMP cost will be included in the BOQ as a provisional sum (non-competitive) item				
Sl. No	**Description of activity**	**Unit cost (BDT)**	**Calculation**	**Cost (BDT)**
	Temporary camp site waste disposal facility improvement 2 nos (1 no of organic waste and 1 no of inorganic waste disposal facility) Site cleaning, Removal and disposal activities			
4	Traffic management during construction, equipment for traffic management (traffic controller employment)	lump sum	BDT 50,000	50,000
6	Medical supplies (First Aid box), other medical requirements, note, equipment, kits, dress etc.	lump sum	BDT 100,000	100,000
7	Waste collection facilities with collection bins, scheduled disposal, carry to designated places, waste separation process etc	lump sum	BDT 100,000	100,000
8	Health safety warning signs and log maintenance, COVID-19 response as identified in the EMP	lump sum	BDT 50,000	50,000
9	Personal Protection equipment, EMP implementation briefings (monthly)	lump sum	BDT 100,000	100,000
10	Conduct environmental baseline: - Ambient air quality ($PM_{2.5}$, PM_{10}, SO_2, CO, NO_2); compare to the Air Pollution Control Rules 2022 (minimum 8 hr sampling period) - Adjacent surface waters (pH, BOD_5, COD, DO, SS, total coliform, Total P, Total N, turbidity); compare to the Environment Conservation Rules, 2023 - Groundwater in wells on site or nearby (pH, TDS, EC, DO, BOD_5, COD, Chloride, SS, As, Fe, Total-N, Total-P, Total coliform, turbidity, temperature); compare to the Environment Conservation Rules, 2023 - Ambient noise (dBa daytime, dBa night); compare to Noise Pollution Control Rules 2006	Air quality: BDT 25000; Water quality: BDT 30000; Groundwater quality: BDT 30000; noise measurement: BDT 10000 per sampling time	BDT 95,000	95,000
11	Monitoring: - Ambient air quality ($PM_{2.5}$, PM_{10}, SO_2, CO, NO2) - Adjacent surface waters (pH, BOD_5, COD, DO, SS, total coliform, Total P, Total N, turbidity) - Groundwater in wells on site or nearby (pH, TDS, EC, DO, BOD_5, COD, Chloride, SS, As, Fe, Total-N, Total-P, Total coliform, turbidity, temperature) - Ambient noise (dBa daytime, dBa night)	Air quality: BDT 25000; Water quality: BDT 30000; Groundwater quality: BDT 30000; noise measurement: BDT 10,000 per sampling time	Over 2 years of construction period total 8 samples = BDT 95000 x 8 =	760,000
12	Construction of male female toilets (adequate quantities as per satisfaction of the ESFP	Lump sum		200,000
13	Worker shed	Lump sum		200,000
14	Training cost (as described in Table IX-7)	Lump sum		420,000
15	Dust suppression, drainage management, community health & safety management etc.	Contractor cost		-
Total cost				2,180,000

Table IX-9 EMP implementation cost at operational phase

Sl. No.	Description of activity (operation phase)	Responsibility (lead)	Unit cost (BDT)	Basis / frequency	Annual cost (BDT)
1	GRM operations (general + SEA/SH-sensitive intake): maintain hotline/phone credit, grievance register/database,	IBA PIU / Environmental coordinator + SOU support	5,000 / month	12 months	60,000

Sl. No.	Description of activity (operation phase)	Responsibility (lead)	Unit cost (BDT)	Basis / frequency	Annual cost (BDT)
	printing of forms, complaint box upkeep, basic stationery				
2	GRM meetings & resolution logistics: convene GRC meetings (as needed), communication with complainants, minor admin costs	IBA PIU + SOU/ESFP	10,000 / quarter	4 quarters	40,000
3	GBV/SEA-SH awareness materials: posters/signage (reporting steps, helplines), periodic refresh of notices	IBA admin + Proctorial/Security	40,000 / year	1 time/year	40,000
4	GBV/SEA-SH training (refresher): security/front desk + key staff (survivor-centered response, confidentiality, referral)	SOU/ESFP + IBA	60,000 / session	2 sessions/year	120,000
5	Safety walk-throughs for “hotspots” (lighting, access control points, common areas) + minor repairs follow-up (EMP-linked portion only)	IBA facilities + Security	10,000 / quarter	4 quarters	40,000
6	Operational waste segregation supplies: color-coded bin labels, liners, floor-wise signage, cleaning/disinfection for waste room (incremental EMP items)	IBA facilities	7,500 / month	12 months	90,000
7	Authorized recycler / safe disposal support: periodic pickup coordination and recordkeeping for recyclables + special waste streams (batteries, lamps, toner, small e-waste)	IBA facilities + EHS focal	5,000 / month	12 months	60,000
8	Post-construction safeguards check & reporting: simple quarterly internal EMP compliance note (GRM stats, SEA/SH actions, waste records)	IBA environmental coordinator	10,000 / quarter	4 quarters	40,000

X. CONCLUSION AND RECOMMENDATION

A. Conclusion

289. This IEE report on investments planned for IBA annex building within the DU campus has been prepared based on desktop study, field reconnaissance of the planned building site and surrounding areas, and consultations with institutional stakeholders and members of the public in the projected area of influence. The report comprises a comprehensive consideration of the environmental, health and safety impacts that can be anticipated to arise from the project. The EMP has been prepared in line with the ADB's Safeguards Policy Statement (SPS) and DoE environmental assessment requirements, and the mitigation strategies prescribed within it reflect current international best practices, as exemplified by the World Bank Group's Environment, Health and Safety Guidelines.

290. The proposed IBA Annexure Building at University of Dhaka represents a well-conceived educational facility that demonstrates strong integration of environmental considerations within its architectural design. The project's innovative approach to building connectivity, inclusive design principles, and environmental character integration positions it as a model for sustainable campus development.

291. The environmental assessment reveals that the project's potential impacts are largely manageable through proper implementation of mitigation measures and adherence to established environmental safeguards. The building's design features, including natural ventilation systems, green roof integration, vegetation connectivity between structures, and solar heat management through strategic orientation and louvre systems, demonstrate proactive environmental stewardship.

292. Key environmental benefits of the project include enhanced biodiversity through continuous green corridors, improved campus drainage through integrated landscape features, reduced energy consumption via passive design strategies, and strengthened community connectivity through inclusive public interaction zones. The multi-level outdoor learning spaces and garden integration will contribute positively to the campus microclimate and educational environment.

293. The environmental risks identified during the assessment—including construction-phase dust and noise impacts, temporary vegetation disturbance, waste management challenges, and surface water management—are typical of educational building projects and can be effectively mitigated through standard construction environmental management practices and the proposed Environmental Management Plan (EMP).

294. Given the project's location within an existing university campus with established infrastructure and environmental management systems, and considering the building's thoughtful environmental design features, the environmental impacts are assessed as minor to moderate and manageable with appropriate safeguards implementation.

B. Recommendations

295. While residual negative impacts have been identified, it is also acknowledged that investments are expected to have significant positive economic impacts for local communities, and these are to be weighed against the residual negative impacts. Generally, very positive perceptions and expectations were expressed about the planned investments during

consultations carried out as part of IEE preparation, and while the local communities are clearly concerned about noise and dust from the construction project, they except that some minor problems can be faced by the local communities for the greater good.

296. The major recommendations made in the IEE are as follows:

(i) Some medium negative impacts like increased noise level, air and water pollution at the pre-construction and construction phases should be taken care of by taking proper mitigation measures as suggested in the EMP section of this IEE. (a) Fully implement the proposed Environmental Management Plan (EMP) covering design, construction, and operational phases; (b) Establish clear roles and responsibilities for environmental safeguards implementation; (c) Conduct regular EMP compliance monitoring and reporting throughout project lifecycle

(ii) Develop and implement a comprehensive Construction Environmental Management Plan (CEMP) addressing: (a) Dust suppression and air quality management; (b) Noise control measures during construction activities; (c) Vegetation protection and landscape integration protocols; (d) Waste management and material handling procedures; (e) Surface water management and erosion control

(iii) The EMP and EMP cost must be included in the bid documents prepared by SDCMU.

(iv) The contractor needs to prepare the site-specific CEMP prior construction works start. The CEMP must be approved by SDCMU and ADB.

(v) MoF and IBA should get clearance from DoE before the start of the construction. This IEE is prepared in the view that this document belongs to MoF and IBA and should be used for obtaining ECC from DoE. Any further instruction conveyed from DoE prior obtaining the ECC, MoF is responsible for updating this IEE accordingly. An Environmental Specialist should be appointed by MoF at SDCMU prior construction works to develop and update the EMP.

APPENDICES

Appendix 1 – Relevant National Environmental Standards

Bangladesh Ambient Air Quality Standard as adopted in 2022.

Pollutant	Objective	Average
CO	05 mg/m^3	8 hours[a]
	20 mg/m^3	1 hour[a]
Pb	0.25 µg/m^3	Annual[b]
	0.50 µg/m^3	24 hours[a]
NOx	40 µg/m^3	Annual[b]
	80 µg/m^3	24 hours[a]
PM_{10}	50 µg/m^3	Annual[b]
	150 µg/m^3	24 hours[a]
$PM_{2.5}$	35 µg/m^3	Annual[b]
	65 µg/m^3	24 hours[a]
O_3	180 µg/m^3	1 hour[a]
	100 µg/m^3	8 hours[a]
SO_2	250 µg/m^3	1 hour[a]
	80 µg/m^3	24 hours[a]
NH_3	100 µg/m^3	Annual[b]
	400 µg/m^3	24 hours[a]

Notes:
(a) Not to be exceeded more than once per year
(b) The objective is attained when the annual arithmetic mean is within the standard

Standard for Water
Environmental Conservation Rules 2023

(A) Standard for inland surface water

Best Practice based classification	Parameter					
	pH	BOD mg/l	DO Mg/l	Total Coliform CFU/100	TDS (mg/l)	COD (mg/l)
a. Source of drinking water for supply only after disinfecting:	6.5-8.5	≤2	≥6	≤100	1000	10
b. Water usable for recreational activity:	6.5-8.5	≤3	≥5	≤50	1000	10
c. Source of drinking water for supply after conventional treatment:	6.0-9.0	≤3	≥5	≤5000	1000	25
d. Water usable for fish culture	6.0-9.0	≤6	≥5	≤5000	1000	50
e. Water usable by various process and cooling industries:	6.5-8.5	12	≥1	-	1000	100
g. Water used for irrigation	6.5-8.5	≤12	-	≤50,000	1000	100

Notes:

1. Electrical conductivity for irrigation water -2250 µmhoms/cm (at a temperature of 25^0C); Sodium less than 26%; boron less than 0.2%.

(B) Standard for drinking water

Sl. No.	Parameter	Unit	Standards
1	2	3	4
1	Fecal Coliform	CFU/100ml	0
2	Total Coliform	CFU/100ml	0
3	NO_3^-	Mg/l	45
4	As	Mg/l	0.05
5	Turbidity	NTU	5
6	NH_3	Mg/l	1.5
7	Chloride	Mg/l	250
8	pH		6.5-8.5
9	K	Mg/l	12
10	Mg	Mg/l	30-35
11	Hg	Mg/l	0.001
12	NO_2	Mg/l	1.0
13	Na	Mg/l	200
14	SO_4^{-2}	Mg/l	250
15	TDS	Mg/l	1000

SCHEDULE - 4
Standard for Sound
(as adopted 2006)

Sl. No.	Category of areas	Standards determined at dBa unit	
		Day	Night
a.	Silent zone	50	40
b.	Residential area	55	45
c.	Mixed area (mainly residential area, and also simultaneously used for commercial and industrial purposes)	60	50
d.	Commercial area	70	60
e.	Industrial area	75	70

Notes:
The time from 6 a.m. to 9 p.m. is counted as daytime.
The time from 9 p.m. to 6 a.m. is counted as nighttime.
Area up to a radius of 100 meters around hospitals or educational institutions or special institutions/ establishments identified / to be identified by the Government is designated as Silent Zones where use of horns of vehicles or other audio signals, and loudspeakers are prohibited.

Standards for Sound originating from Motor Vehicles or Mechanized Vessels

Category of Vehicles	Unit	Standards	Remarks
* Motor Vehicles (all types)	dBa	85	As measured at a distance of 7.5 meters from exhaust pipe.
		100	As measured at a distance of 0.5 meter from exhaust pipe.
Mechanized Vehicles	dBa	85	As measured at a distance of 7.5 meters from the vessel which is not in motion, not loaded and is at two thirds of its maximum rotating speed.
		100	As measured at a distance of 0.5 meter from the vessel which is in the same condition as above.

* All the time of taking measurement, the motor vehicle shall not be in motion and its engine conditions shall be as follows: -

(a) Diesel engine – maximum rotating speed

(b) Gasoline engine – at two thirds of its maximum rotating speed and without any load.

(c) Motorcycle – If maximum rotating speed is above 5000 rpm'; two-thirds of the speed, and if maximum rotating speed is less than 5000 rpm, three-fourth of the speed.

Standard for Emission from Motor Vehicles

Parameter	Unit	Standard Unit
Black Smoke	Hartridge Smoke Unit (HSU)	65
Carbon Monoxide	gm/km Percent area	24 04
Hydrocarbon	gm/km ppm	02 180
Oxides of Nitrogen	gm/km ppm	02 600

* As measured at two thirds of maximum rotating speed.

Appendix 2 – ENVIRONMENTAL AUDIT REPORT for IBA Annex

Date of Audit: 25 September 2025
Auditor: Kushal Roy, Environmental Specialist

A. INTRODUCTION

ADB SPS, 2009 requires an environmental audit, if a project involves facilities and/or activities that already exist or are under construction, including an on-site assessment to identify past or present concerns related to impact on the environment. As per the subprojects' proposal, The investment proposed for the IBA Annex building will be located at the Dhaka University (DU), at Dhaka University campus in Dhaka District, utilizing existing infrastructures such as land, drainage, roads etc. Consequently, an environmental audit has been conducted to find out the safeguards concern within the subproject boundary.

B. SUBPROJECT SETTING

The IBA Annexure Building at the University of Dhaka represents a comprehensive 10-story academic facility with a total built area of 23,332 square feet. The building demonstrates efficient space utilization with well-planned functional zones distributed across multiple floors. The proposed site is a built-up area within the IBA campus, with highly urbanized surroundings.

Proposed Infrastructure

Academic Space Allocation. The building prioritizes educational functions with 15.9% dedicated to classrooms (3,705 sq ft) accommodating 297 students across various learning environments. Laboratory facilities comprise 10.1% (2,351 sq ft) of the total area, including specialized IT, behavioral, and finance labs (Figure III 5). The building features a large 5,178 sq ft examination hall and a 4,607 sq ft auditorium for major academic events.

Support and Administrative Areas. Circulation spaces, including lobbies, account for significant areas with proper connectivity between floors. Administrative functions are distributed across coordinator offices, archives, and faculty rooms, ensuring efficient academic management. The building includes accommodation facilities with guest rooms and dining areas to support extended academic activities.

Building Flood Resilience Features. The IBA Annexure Building incorporates several flood management strategies: (i) Elevated design with proper drainage systems; (ii) Water management features designed for Dhaka's monsoon climate; (iii) Strategic building orientation to handle water flow; and (iv) Green infrastructure integration for stormwater management. The design addresses Dhaka's requirement for drainage systems capable of handling 30 mm of rain per hour, as current infrastructure fails with 20 mm precipitation.

Figure 1: Proposed construction site for IBA Annex building

C. ENVIRONMENTAL ISSUES

Construction Phase Issues
Air Quality and Dust Management: Construction activities will generate dust and particulate matter that could affect campus air quality and neighboring buildings. Noise Impacts: Heavy machinery and construction activities may disrupt academic activities in adjacent buildings and campus operations. Vegetation and Habitat Disturbance: Temporary loss of existing vegetation and disruption to campus green spaces during construction. Surface Water Management: Increased stormwater runoff from new impervious surfaces and potential for erosion during construction. Waste Generation: Construction and demolition waste requiring proper handling and disposal.

Design and Operational Issues
Green Infrastructure Integration: Ensuring successful implementation of rooftop vegetation, green corridors, and landscape connectivity between buildings. Water Systems Management: Maintaining drinking water quality, preventing cross-contamination between potable and non-potable systems, and managing rainwater harvesting integration. Biodiversity Conservation: Protecting existing campus ecosystems while enhancing habitat connectivity through multi-level green spaces. Energy Performance: Optimizing natural ventilation systems and passive solar design features for thermal comfort. Solid Waste Management: Managing waste streams from academic activities, cafeterias, and maintenance of green roof systems.

Major Recommendations Summary
Immediate Implementation Requirements. Environmental Management Plan (EMP): Develop and implement comprehensive EMP covering all project phases with clear monitoring protocols and performance indicators. Construction Environmental Management Plan (CEMP): Establish detailed construction-phase environmental controls including: (a) Water sprinkling for dust suppression; (b) Noise control measures during academic hours; (c) Vegetation protection protocols; (d) Erosion and sediment control measures

Design Optimization Recommendations. Green Building Enhancement: (a) Maximize rooftop vegetation coverage (target ≥40% of eligible roof area); (b) Ensure continuous green corridors connecting existing and new building landscapes; (c) Implement proper soil depths and irrigation systems for sustainable vegetation. Water Management Integration: (a) Install rainwater harvesting systems sized for 15-25mm storm events; (b) Maintain strict separation between potable and non-potable water systems; (c) Implement biofiltration systems for stormwater quality treatment. Energy Efficiency Optimization: (a) Utilize natural ventilation through building orientation and louvre systems; (b) Minimize solar heat gain through strategic facade design; (c) Target 20% energy reduction compared to baseline building performance.

Operational Management Recommendations. Monitoring and Compliance: (a) Quarterly environmental monitoring during construction; (b) Annual environmental performance reviews post-occupancy; (c) Continuous monitoring of green building feature performance. Stakeholder Engagement: (a) Regular community consultation throughout implementation; (b) Grievance mechanism establishment for environmental concerns; (c) Student and faculty involvement in environmental stewardship. Adaptive Management: (a) Flexible EMP implementation allowing for corrective measures; (b) Regular review and updating of environmental management procedures; (c) Integration with existing campus environmental management systems.

Energy and Green House gas emission
Certain materials have much higher embodied emissions than others; concrete is a particularly carbon-intensive material. Materials that are not available locally—particularly very heavy materials—also drive up the emissions associated with building. Installed equipment that is not modern and efficient represents a missed opportunity to lower the carbon footprint of facilities, as does failure to integrate design measures that allow for natural cooling, natural light, and reduced water pumping needs.

Recommendations: (i) Key strategies for reducing emissions, and that should be considered for incorporation in the IBA infrastructure are outlined in the Table below.

Table: Possible design phase measures for climate change mitigation

Climate change mitigation measure	Rationale
1. Substitute other materials for concrete where feasible	- Concrete is among the most carbon-intensive of building materials
2. Use low-carbon concrete as much as possible	- Using a lower proportion of cement (and longer cure time to compensate) can reduce the carbon intensity of concrete
3. Create designs that maximize use of building materials that are available locally	- Reduced transport emissions
5. Integrate photovoltaic generation into the electrical plan	- Reduce reliance on coal-generated electricity - Reduce reliance on back-up diesel generator - Possibly reduce size of generator needed
6. Specify only high-efficiency electrical and mechanical equipment	- Reduce reliance on coal-generated electricity - Reduce reliance on back-up diesel generator - Possibly reduce size of generator needed
7. Specify most fuel-efficient backup generator available	- Reduce diesel consumption
8. Maximize cross-ventilation by use of courtyards, openable windows and favorable building orientation	- Reduce demand for air conditioning
9. Prioritize shade in the landscaping plan, with plentiful wide-crowned shade trees on all parts of site	
10. Incorporate hollow wall structures	
11. Use overhangs above large windows to prevent excessive solar penetration	
12. Maximize interior natural light by use of favorable building orientation and courtyards	- Reduce use of electrical lighting during daytime
13. Specify water-saving toilets, faucets and showerheads	- Reduce need for pumping and treating water
14. Design dedicated plumbing system for drinking and cooking water	- Reduce volume of water requiring energy-intensive water treatment
15. Aim to meet all water heating needs with solar heaters	- Eliminate use of electricity for heating water
16. Specify high-intensity, full-time lighting only where strictly necessary	- Reduce consumption of energy for lighting spaces that don't need it (e.g., parking lots that are only used at peak times)

Climate change mitigation measure	Rationale
17. Specify solar-powered lighting for outdoor applications	- Reduce energy used by lighting
18. Base landscape plan around drought-tolerant perennial native species	- Reduce the need for pumping water
19. Design site layout and inspection process to minimize the length of time vehicles have their engines running during their passage on Love Road	- Reduce direct greenhouse gas emissions
20. Incorporate green roofs wherever roof area is not needed for solar panels and solar water heaters	- Reduce cooling needs
21. Incorporate lightning arrester in the structural design	- Lightning has been a critical source of infrastructure and economic recently.

D. ACTION PLAN

Time frame	Action
Design stage	- Complete detailed Environmental Management Plan (EMP) preparation and finalize environmental safeguard specifications - Finalize green building design elements: rooftop vegetation systems, natural ventilation specifications, and green corridor connectivity details - Complete surface water management design including rainwater harvesting tanks, biofilters, and stormwater detention systems - Finalize flora and fauna protection measures including native species selection, habitat linkages, and bird-safe glazing specifications - Complete drinking water system design with potable/non-potable segregation, backflow prevention, and treatment specifications - Obtain environmental permits and approvals; submit EMP to regulatory authorities - Conduct final design review incorporating all environmental safeguards and stakeholder feedback
Construction phase	- Develop and approve Construction Environmental Management Plan (CEMP); train construction staff on environmental protocols - Establish construction site environmental controls: dust suppression systems, noise barriers, erosion control measures - Implement vegetation protection measures; relocate priority plants; establish temporary nursery for campus flora - Execute foundation and structural work with continuous dust and noise monitoring; maintain air quality standards - Install building envelope with solar heat management systems and natural ventilation features as designed - Implement green infrastructure: install rooftop vegetation systems, landscape connectivity elements, and irrigation systems - Complete plumbing installation ensuring potable/non-potable segregation; install rainwater harvesting and treatment systems
Operation phase	- Implement operational Environmental Management System; train facility management staff on environmental protocols - Establish green building maintenance protocols: vegetation care, natural ventilation system optimization, energy monitoring - Implement drinking water quality monitoring program with monthly microbial testing and quarterly chemical analysis - Establish solid waste management operations: waste segregation, recycling programs, organic waste composting systems - Conduct first annual environmental performance review; assess green building feature effectiveness and user satisfaction

Appendix 3 – Environmental and Social Screening Checklist

Results Based Lending Environmental and Social Screening Checklist for Bangladesh: Skills for Industry Competitiveness and Innovation Program (SICIP)

Screening for eligible activities: *This checklist will be used for screening activities that would be eligible for RBL financing. The RBL program will be categorized according to the Safeguard Policy Statement and the relevant operation manual definitions. At the concept stage, program team is required to submit the environment, involuntary resettlement and indigenous peoples categorization form to SDSS (standard template) for review and CCO's concurrence. The project team shall complete this screening checklist and include as a supplementary document to the Categorization form to be submitted to SDSS for confirmation of eligible activities under the RBL program. During preparation of the PSSA, program team is encouraged to update SDSS on the type of activities likely to be considered for funding under the RBL program.*

	Risk	Assessment
1.	**Likely Environment and Social Impacts**	
Describe the potential environmental and social benefits, impacts and risks that are likely to be associated with the Program component activities?		
Type, sensitivity of location, scale and magnitude of potential adverse impacts and risks; - Describe the RBL program scope, the nature and type of activities, benefits and risks associated with the program - What will be the scale, severity/significance of adverse environmental and social impacts (past present and future, direct, indirect, cumulative, site specific characteristics, impact on critical habitat, potential loss or conversion of natural habitats, changes in land use, nature and scale of involuntary resettlement, changes in access to resources). - What will be the impact on indigenous peoples/ communities? - Where are the activities sited? Whether they are in an environmentally or socially sensitive location? - Whether there will be damages to cultural heritage, indigenous knowledge and livelihood systems? - What would be the extent of impact on vulnerable groups? - Will there be issues related to community safety and workers occupational health and safety?	Program intent/benefits: SICIP will strengthen skills, green innovation, and inclusive skilling; under Output 1 it includes campus-based civil works (including IBA) that can deliver more climate-friendly and resilient academic infrastructure. Type/scale: predominantly in-campus construction/renovation (IBA extension/renovation within DU campus; plus other campus sites under SICIP). Impacts are site-specific, temporary, and manageable with standard mitigation (dust, noise, traffic, waste, OHS). Under Output 1, SICIP includes civil works in campuses; IBA activity is within an existing university campus (built-up context). This limits footprint and avoids sensitive habitats; key risks are construction-phase nuisance/OHS and operational waste and safety management. For IBA: no critical habitat conversion expected (urban campus setting), limited land-use change within campus. Potential cumulative impacts may occur if multiple DU works happen simultaneously (traffic/dust/noise), but still manageable through scheduling and TMP/CEMP. IBA subproject is within Dhaka University campus (non-SEC/IP area) and does not target or restrict IP lands/resources. No adverse impacts anticipated; program design can still ensure inclusive access for SEC/IP beneficiaries elsewhere.

	IBA works are sited inside DU/IBA campus within dense urban Dhaka; generally not an environmentally sensitive area (not a protected area/ECA). Main sensitivity is institutional receptors (students/staff; "silent area" type sensitivity to noise). For IBA site: no known impacts anticipated on cultural heritage systems from the campus-based building footprint; apply standard chance finds procedure if excavation reveals items. Potential exposure risks during construction (dust/noise/traffic) for students, staff, nearby pedestrians, and women students/visitors (safety/harassment risk). Manageable through access control, lighting, CCTV, codes of conduct, and functional GRM. Primary risks are worker OHS (falls, equipment, electrical, lifting) and community safety (campus access, vehicle movement), requires structured GRM (incl. workers GRM) and standard construction EHS management
2. Likely programmatic risks	
This section identifies the factors that may impede successful program management and sustainability.	
Program management and sustainability - Are program activities likely to interact with other planned activities that may further increase adverse impacts? - Are there risk factors that may impede successful achievement of program outcomes overtime or whose outcomes are not known (disaster risk, climate change, social conflict/fragility) - Does the borrower have adequate trained staff and capacity to manage the E&S implementation of overall govt program (not just the ADB financed portion)? - Are there governance, corruption issues and political risks associated with the proposed sector or program? - Are there any other potential roadblocks to ensuring the environmental and social sustainability of the Program?	Possible interaction where multiple campus projects run concurrently (e.g., DU upgrades), increasing cumulative nuisance (traffic, dust, noise). Manage via coordination, work scheduling, TMP, and communications through GRM channels. Climate/disaster: Dhaka flooding/waterlogging and extreme rainfall can affect construction/operations; building design incorporates flood management considerations (elevated design, drainage). Executing/implementing arrangement involves Finance Division/MoF and SDCMU; capacity depends on dedicated safeguards staffing and supervision arrangements. Not a primary environmental screening determinant for this subproject; manage through standard RBL fiduciary systems + transparent GRM and disclosure. GRM is defined and requires documentation of complaints and resolutions. Main roadblocks: weak contractor compliance, inconsistent monitoring, inadequate O&M budgeting for post-construction safeguards (waste management, GRM functioning, safety systems). IEE confirms impacts are manageable under Cat B with mitigation.
3. Likely institutional Risks	
This section describes the institutional complexity and capacity with regard to environment and social impact/risk assessment, planning, implementation and management.	

Institutional complexity and capacity - Describe borrowers organizational, administrative and regulatory structures related to environmental and social safeguards. - Whether borrower has the capacity to assess, plan and manage E&S safeguards/risks. - Whether the borrower has commitment and implementation experience with regard to assessment, planning and management of environment and social safeguards/risks. - Are there factors (for example complex institutional set up, involvement of multiple agencies at national, sub-national and local level agencies) that might impede borrower's capacity to effectively implement E&S safeguards/risks. - Are there other institutional barriers that might prevent the borrower from implementation of the RBL program. - Does the borrower have a system or proven track record of managing complaints related to E&S and others?	Governance: Finance Division (EA/IA) with SDCMU as PMU; multiple partners. Requires safeguards staff and consistent field supervision (contractor/DSC/PIU linkages). GRM responsibilities and documentation are specified. MoF confirmed structured systems (EMP, GRM, workers GRM) are part of project approach; practical effectiveness depends on implementation and monitoring. Multi-agency involvement is inherent (Finance Division/SDCMU/partners + DU/IBA site coordination). Risk is coordination gaps; mitigate via clear roles and escalation through GRM levels. Typical barriers: procurement/contract management, weak enforcement of code of conduct and EHS, insufficient reporting. Worker GRM is explicitly required, which helps reduce hidden labor issues. MoF has an official a 3-tier GRM with timebound resolution and documentation + a separate workers GRM.
4. Likely contextual risks	
This section refers to environment and social conditions in the program area that might influence the performance of the RBL program.	
E&S conditions in the program area - Is the program working in sensitive E&S settings that may intensify the likely impacts? - Are there legacy issues or unresolved issues that might affect the commitment and the performance of the program? - Are there recent or ongoing social conflict or social fragility in the program area? - Are there factors that may cause ADB to be exposed to significant reputational risks? - Are there any known complaints by individuals or advocacy groups with regard to the components of the program or the performance of the EA/IA with regard to E&S implementation?	IBA is in dense urban Dhaka within a university campus. Sensitivity is mainly receptor sensitivity (teaching/exams; pedestrian safety), not ecological sensitivity None Not anticipated for IBA campus works; manage nuisance impacts to avoid stakeholder grievances via information disclosure and GRM. Main reputational drivers: poor construction management in a high-visibility campus, accidents, GBV/SEA-SH allegations, unmanaged waste. Risk reduced by code of conduct + reporting + functional GRM (including worker GRM). None
5. Overall Assessment	

This section describes the overall risk profile of the program. Environmental and social risks should be summarized separately.

- Overall environment risk assessment:

  The overall environmental risk is *moderate.*

  The potential environmental risks under the program are moderate, as the activities may result in site-specific and reversible adverse impacts, primarily associated with in-campus construction and renovation works and operational aspects of academic buildings and laboratories. Likely impacts during construction include temporary dust, noise, traffic disturbance, construction waste generation, drainage obstruction, and occupational health and safety risks. These impacts are expected to be localized within existing campus premises and temporary in nature. During the operation phase, potential risks relate mainly to solid waste generation, sanitation, energy and water use, and health and safety management, which can be effectively controlled through appropriate standard operating procedures and facility management practices. There is also a moderate risk of noncompliance arising from limited institutional capacity, monitoring gaps, or inadequate human resources, which may affect consistent implementation of environmental and social management measures. Strengthening institutional arrangements, safeguards staffing, and monitoring systems will be important to ensure sustainable risk management. Based on the scale, nature, and reversibility of anticipated impacts, the program is categorized as Category B for environment, as impacts are generally manageable through standard mitigation and good construction and operational practices..

- Overall involuntary resettlement risk assessment:

  The program is classified as Category C for involuntary resettlement, as no land acquisition or physical or economic displacement is anticipated. Civil works are expected to take place within existing campus premises where land ownership and use are already secured by the implementing institutions.

- Overall indigenous peoples risk assessment:

  The program is categorized as Category B for Indigenous Peoples (SEC/IP), as activities are not expected to cause adverse impacts on SEC/IP communities. The program is designed to be socially inclusive, with SEC/IP groups anticipated to benefit from expanded access to skills development and training opportunities. The program will exclude any activities that may adversely affect the dignity, human rights, livelihood systems, cultural identity, or natural and cultural resources of SEC/IP communities. Safeguards focal points will be designated to support monitoring, coordination, and reporting on inclusion and social safeguards performance.

  The program will ensure safeguards focal to ensure monitoring and coordination for safeguards monitoring and reporting as agreed with the EA.

6.	**Is the RBL suitable for proposed program?**	
	Yes ×	
	No	
7.	**Program Teams' Comments**	

The overall safeguard risk is *moderate* because (i) there is a moderate likelihood of program activities leading to some adverse impacts on environment although they are reversible by environmental measures; (ii) the adverse impacts tend not to be in environmentally or socially sensitive areas; (iii) the program operation is unlikely to have significant adverse impacts on GHG (although the construction activities will pose large carbon footprint) and would not be at risk of natural disasters; (iv) program activities are small scale, well known and manageable with existing processes/procedures; (v) the

institutional, contextual and programmatic risks are well understood and limited in impact; (vi) Finance Division under the ministry of Finance have some experience in managing risks (not perfect) and capacity building/training measures may be needed; and (vii) Risk management measures are more predictable and readily available. The program activities are unlikely to result in significant impacts or risks for environment. The Program Safeguards System Assessment (PSSA) will assess any existing gaps between the current program safeguard system and GoB safeguards policies, likely impact, institutional risks, programmatic risks, and contextual risks and identify any areas for further improvement. Environmental impacts during construction and operations phase will be managed through the IEEs that are prepared for this program. EMPs stipulated within the IEEs will guide the environmental management and monitoring procedure. Civil works will be limited within the existing engineering college premises. The institutional, contextual, and programmatic risks are well understood and are limited in manageable impacts.
8. SDSS Comments

(see next page for guidance on risk rating)

Risk Rating

The descriptions below provide guidance on the risk rating for safeguards in RBL. The program team will provide an overall risk rating for the proposed RBL program. This approach provides an opportunity to the program team, borrower and relevant stakeholders to identify the potential risks and allocate adequate resources for elements that need in depth analysis and stronger risk management measures.

High	- There is a strong likelihood of program activities leading to significant adverse impacts on environment and affected people. - The significant adverse impacts, cumulative impacts and/or synergistic effects with other initiatives needs complex mitigation and management plans that are not readily available or unproven. - The program operation might have significant adverse impacts on emissions resulting from changes in the intensity or efficiency of emissions generation and controls. - There is large scale land acquisition, physical and economic displacement of APs. - There are significant adverse social impacts on gender, IPs, the poor and other vulnerable groups with potential to contribute directly to increased social fragility or conflict. - The program area has large geographical footprint with different implementation agencies/jurisdictions and varying implementation capacities. - The program design and institutional arrangements are complex. - The program needs direct management intervention to deal with programmatic, contextual and institutional risks which are diverse and complex. - Borrower may have the demonstrated capacity to manage E&S impacts but its performance is not consistent and some E&S risks are beyond its direct control and needs a dedicated capacity building measures. - There is a likelihood that program activities might lead to huge number of grievances - There are ongoing national or international advocacy and complaints in the program area with regard to the government program or the borrower/implementing agency.
Substantial	- There is still a strong likelihood of program activities leading to significant adverse impacts on environment and affected people. - The program operation might have adverse impacts on emissions resulting from changes in the intensity or efficiency of emissions generation and controls. - The significant adverse impacts are less severe and site specific and there are less chances of strong cumulative impacts - There is still large scale land acquisition, physical and economic displacement of APs - There is a potential for adverse social impacts on gender, IPs, the poor and other vulnerable groups and may contribute to existing social fragility or conflict - The program area has a smaller geographical footprint; institutional, contextual and programmatic risks are less complex and diverse - Risk management measures are more predictable and readily available. - Borrower may have the demonstrated capacity to manage E&S impacts, but its performance is not consistent and some E&S risks are beyond its direct control and still needs some dedicated capacity building measures. - The program is less subject to national or international advocacy and complaints, but poor performance may lead to large number of grievances
Moderate	- There is a moderate likelihood of program activities leading to some adverse impacts on environment and affected people. - The adverse impacts tend not to be in environmentally or socially sensitive areas - The program operation is unlikely to have significant adverse impacts on GHG and would not be at risk of natural disasters - Program activities are small scale, well known and manageable with existing processes/procedures. - There is limited likelihood of adverse social impacts on IPs, gender, the poor and other vulnerable groups.

	- The institutional, contextual and programmatic risks are well understood and limited in impact. - The borrower/implementing agencies have a proven track record in managing risks (not perfect) and limited capacity building/training measures are needed. - Risk management measures are more predictable and readily available.
Low	- There is low likelihood of program activities leading to any adverse impacts on environment and affected people. - The program operation is unlikely to have significant adverse impacts on GHG and would not be at risk of natural disasters - The borrower/implementing agencies have a proven track record in managing safeguard risks.

Appendix 4 – Sample Traffic Management Plan (TMP)

A. Principles

One of the prime objectives of the Contractor's **TMP** is to ensure the safety of all the road users along the work zone, and to address the following issues:

(i) the safety of pedestrians, bicyclists, and motorists travelling through the construction zone;
(ii) protection of work crews from hazards associated with moving traffic;
(iii) mitigation of the adverse impact on road capacity and delays to the road users;
(iv) maintenance of access to adjoining properties; and
(v) Addressing issues that may delay the project.

B. Operating Policies for TMP

The following principles will help promote safe and efficient movement for all road users (motorists, bicyclists, and pedestrians, including persons with disabilities) through and around work zones while reasonably protecting workers and equipment.

1) Make traffic safety and temporary traffic control an integral and high-priority element of every project from planning through design, construction, and maintenance.
2) Inhibit traffic movement as little as possible.
3) Provide clear and positive guidance to drivers, bicyclists, and pedestrians as they approach and travel through the temporary traffic control zone.
4) Inspect traffic control elements routinely, both day and night, and make modifications when necessary.
5) Pay increased attention to roadside safety in the vicinity of temporary traffic control zones.
6) Train all persons that select, place, and maintain temporary traffic control devices.
7) Keep the public well informed.
8) Make appropriate accommodation for abutting property owners, residents, businesses, emergency services, railroads, commercial vehicles, and transit operations.

Figure A1 to Figure A6 illustrates the operating policy for TMP for the construction of water pipes and the sewers along various types of roads.

C. Analyze the Impact Due to Street Closure

Apart from the capacity analysis, a final decision to close a particular street and divert the traffic should involve the following steps:

a) Approval from the ULB/CMC/Public Works Department (PWD) to use the local streets as detours;
b) consultation with businesses, community members, traffic police, PWD, etc, regarding the mitigation measures necessary at the detours where the road is diverted during the construction;
c) Determining of the maximum number of days allowed for road closure, and incorporation of such provisions into the contract documents;
d) Determining if additional traffic control or temporary improvements are needed along the detour route;
e) Considering how access will be provided to the worksite;
f) Contacting emergency service, school officials, and transit authorities to determine if there are impacts to their operations; and
g) Developing a notification program to the public so that the closure is not a surprise. As part of this program, the public should be advised of alternate routes that commuters can take or will have to take as result of the traffic diversion.

If full road-closure of certain roads within the area is not possible, due to inadequate capacity of the detour arrangements, the full closure can be restricted to weekends with the construction commencing on Thursday night and ending on Sunday morning prior to the morning peak period. The traffic management guidelines are as follows:

- Review construction schedule and methods;
- Identify initial traffic recirculation and control policy;
- Identify routes for traffic diversions;
- Analyze adverse impact & mitigation at the detours;
- Begin community consultation for consensus;
- Finalize or determine alternate detours;
- Identify temporary parking (on and off -street);
- Discuss with CMC, owner, community for use;
- Coordinate with the Traffic Police to enforce traffic and diversions;
- Install traffic control devices (traffic cones, signs, lightings, etc);
- Conduct campaigns, publicity, and notify public about street closure; and
- Develop a mechanism to address public grievances regarding disruptors of traffic, utilities, etc.

D. Public Awareness and Notifications

As per discussions in the previous sections, there will be travel delays during the constructions, as is the case with most construction projects, albeit on a reduced scale if utilities and traffic management are properly coordinated. There are additional grounds for travel delays in the area, as most of the streets lack sufficient capacity to accommodate additional traffic from diverted traffic as a result of street closures to accommodate the works.

The awareness campaign and the prior notification for the public will be a continuous activity which the project will carry out to compensate for the above delays and minimize public claims as result of these problems. These activities will take place sufficiently in advance of the time when the roadblocks or traffic diversions take place at the particular streets. The reason for this is to allow sufficient time for the public and residents to understand the changes to their travel plans. The project will notify the public about the roadblocks and traffic diversion through public notices, ward level meetings and city level meeting with the elected representatives.

The PIU will also conduct an awareness campaign to educate the public about the following issues:

a) Traffic control devices in place at the work zones (signs, traffic cones, barriers, etc.);
b) defensive driving behavior along the work zones; and
c) Reduced speeds enforced at the work zones and traffic diversions.

It may be necessary to conduct the awareness programs/campaigns on road safety during construction. The campaign will cater to all types of target groups i.e. children, adults, and drivers. Therefore, these campaigns will be conducted in schools and community centers. In addition, the project will publish a brochure for public information. These brochures will be widely circulated around the area and will also be available at the PIU, and the contractor's site office. The text of the brochure should be concise to be effective, with a lot of graphics. It will serve the following purpose:

a) Explain why the brochure was prepared, along with a brief description of the project;
b) Advise the public to expect the unexpected;
c) Educate the public about the various traffic control devices and safety measures adopted at the work zones;

d) Educate the public about the safe road user behavior to emulate at the work zones;
e) Tell the public how to stay informed or where to inquire about road safety issues at the work zones (name, telephone, mobile number of the contact person; and
f) Indicate the office hours of relevant offices.

E. Install Traffic Control Devices at the Work Zones and Traffic Diversion Routes

The purpose of installing traffic control devices at the work zones is to delineate these areas to warn, inform, and direct the road users about a hazard ahead, and to protect them as well as the workers. As proper delineation is a key to achieve the above objective, it is important to install good traffic signs at the work zones. The following traffic control devices are used in work zones:

- Signs
- Pavement Markings
- Channelizing Devices
- Arrow Panels
- Warning Lights

Procedures for installing traffic control devices at any work zone vary, depending on road configuration, location of the work, construction activity, duration, traffic speed and volume, and pedestrian traffic. Work will take place along major roads, and the minor internal roads. As such, the traffic volume and road geometry vary. The main roads carry considerable traffic; internal roads in the new city areas are wide but in old city roads very narrow and carry considerable traffic. However, regardless of where the construction takes place, all the work zones should be cordoned off, and traffic shifted away at least with traffic cones, barricades, and temporary signs (temporary “STOP” and “GO”).

The Contractor would need to consider such Traffic Management situations for these typical arrangements and others that may occur during road construction works. The Contractor would need to coordinate closely with the road management and road police authorities and submit their Traffic Management proposals, with not less than a month’s prior notice, to the PIU for obtaining prior approval, before any closure of roads are considered.

- Work on Shoulder or Parking Area;
- Work with Land Closure: Low Traffic;
- Work on Lane Closure With Yield Sign on Two Lane: Low Volume;
- Work on Lane Closure With Single Flag Operator on Two Lane : Low Volume;
- Lane Closure: Two Flag Operators on Two Lane Road; and
- Street Closure with Detour.

The work zone should take into consideration the space required for a buffer zone between the workers and the traffic (lateral and longitudinal) and the transition space required for delineation, as applicable. For the works, a 30 cm clearance between the traffic and the temporary STOP and GO signs should be provided. In addition, at least 60 cm is necessary to install the temporary traffic signs and cones.

Traffic police should regulate traffic away from the work zone and enforce the traffic diversion result from full street closure in certain areas during construction. Flaggers/ personnel should be equipped with reflective jackets at all times and have traffic control batons (preferably the LED type) for regulating the traffic during night time.

In addition to the delineation devices, all the construction workers should wear fluorescent safety vests and helmets in order to be visible to the motorists at all times. There should be provision for lighting beacons and illumination for night constructions.

Appendix 5 – COVID-19 Health and Safety Guidance for the Construction Workforce

COVID-19 Health and Safety Guidance for the Construction Workforce

INSTRUCTIONS

Contractors are required to ensure health and safety of the workers and employees in accordance with environmental health and safety (EHS) provisions of the contract which is in line with ADB SPS 2009 and Bangladesh Labor Law 2006 (Chapter VIII). A supplementary EHS guidelines was prepared to ensure that workers and employees are safe from Pandemic COVID-19 infection while working at the constriction sites. This guideline should be used as a supplement to the project's Environmental Health and Safety (EHS) guidelines for the workers. Contractors are encouraged to prepare a site-specific Environmental Health and Safety (EHS) guidelines for reopening the sites and mobilizing labor and resources and get it approved by Executing Agency. The EHS guidelines and COVID-19 EHS guidelines should be available at worksite all the time with no exception.

Prerequisites for Reopening Worksite

1. Consider reopening at limited scale by identifying and engaging essential labor force
2. Avoid worker intensive works as much as possible; encourage use of equipment
3. Engage fulltime EHS professional to oversee the implementation of EHS guidelines
4. Engage a medical professional to prepare health record of the workers and daily health checkup
5. Ensure coverall Personal Protective Equipment (PPE) for medical professional
6. Prepare a list of equipment and vehicles to be used frequently and ensure routine disinfection
7. Make available thermometer, soap, hand sanitizer, disinfectant, and PPE (mask, gloves, boot) at worksite and camp
8. Place adequate number of washbasins, disinfectant tub, dispenser for sanitizer
9. Establish electronic payment system (e.g., BKash, Nagad, Rocket) to pay the daily wage
10. Follow the guidance as provided below.

Locate the closest medical facility equipped with COVID -19 and contact them.

Place washbasins and disinfectant tub for shoes.

Engage EHS professional. Engage Medical professional (fulltime/ part-time).

Place a few COVID-19 signed covered trash bin for disposal of used PPEs.

Supply soap and sanitizer to labor and staff for after office for disinfection.

Worksite Entrance Protocol

Everyone entering the worksite must wear a mask and gloves.

During worksite entry que, maintain physical distance of minimum 1m (3ft).

Every personnel should wash their hands with soap for 20 seconds. Display hand washing protocol at entrance.

Spray bottom of shoes of every personnel entering worksite/ campsite with disinfectant. Disinfect all vehicles entering site.

use thermometer gun to check temperature. If body temperature found > 37°C send to the designated medical facility.

Worksite Management

Frequently clean and disinfect highly used tools, machineries and surfaces (e.g. tables, toilets) by workers.

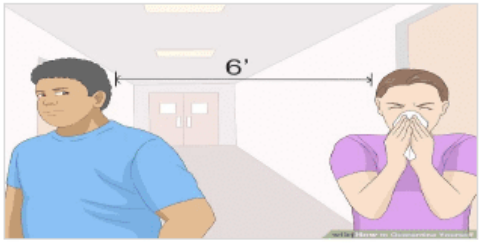
Mandatory morning briefing on COVID awareness at site maintaining physical distance.

Use alcohol-based wipe to clean tools, equipment, vehicle before and after use.

Discourage gathering at site. Discourage unnecessary entrance and exit at site.

Camp Management

1. Provide soap, sanitizer, washing facility and safe water at the workers' dwelling. Encourage frequent hand washing.
2. Ensure separate covered bin for disposal of used PPEs.
3. Protect against heat, cold, damp, noise, fire, and disease-carrying animals.
4. Maintain good housekeeping and social distancing in kitchens, meal rooms, canteens.
5. Ensure personal distance at least 1 meter (3 feet), preferably 2m (6ft) during lunch, dinner and prayer.
6. Ensure ample ventilation at the camp.



Place covered waste bins at worksite
Do not forget to dispose your used PPEs in the bins!!

Work at Site Awareness

Inform the designated ESH/Medical personnel immediately if any person starts showing the symptoms of COVID-19.

Encourage respiratory etiquette, including covering coughs and sneezes. Don't touch nose/eye/ mouth if not washed recently, do not spit.

Encourage the workers at camp to go out for supplies not more than once a week.

Shorten toolbox meetings. Initiate remote meeting protocol to avoid physical contact.

Stay informed. Get news from WHO and Government news outlets. Ask your EAs. Ask ADB.

Appendix 6 – Emergency response team

EMERGENCY/CRISIS RESPOSE TEAM
(Roles and Responsibilities)

A. Overview

An integrated approach to emergency response involves a range of stakeholders, including the primary responder (i.e. the contractor), supervision consultants, the secondary responder (i.e. EA/IAs) and the tertiary responder (i.e. Donor agencies (e.g. ADB)) along with the local authorities, regulatory agencies and the general public. Such a system therefore requires robust processes regarding information dissemination, training, and designation of responsibility, management actions, monitoring, control, and corrective actions. The Emergency/Crisis Response Team therefore needs to be fully equipped and well communicated.

B. Organization chart of crisis response team

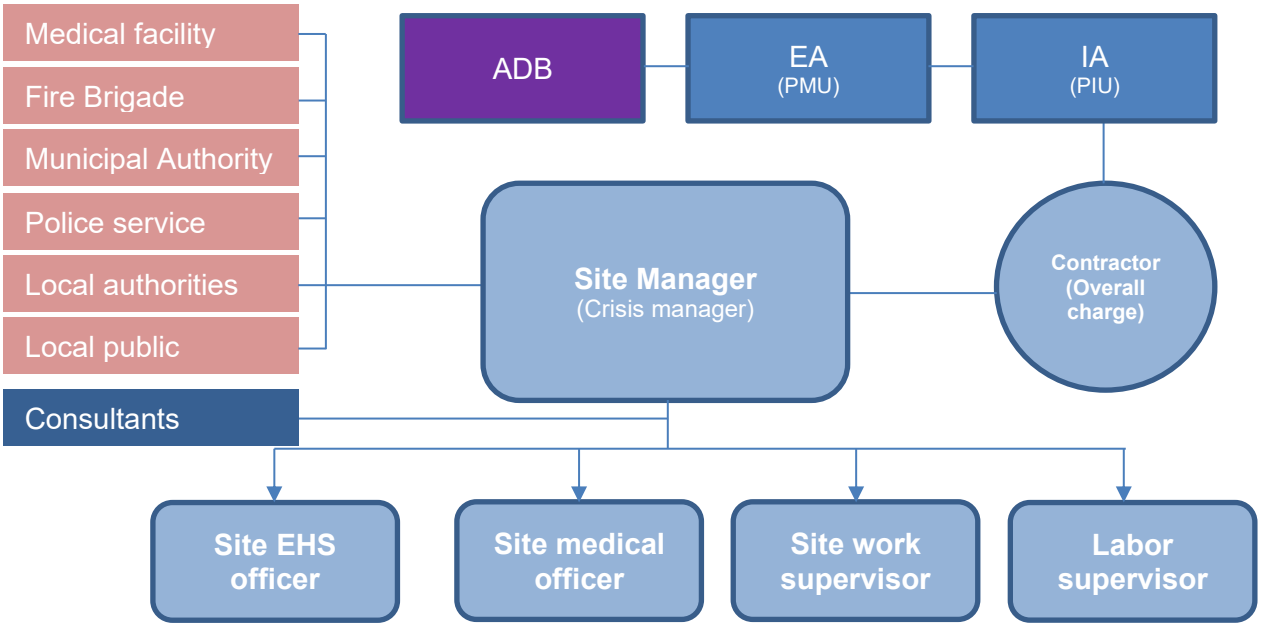


Figure: Organization chart of the crisis management team

Explanation of color code:

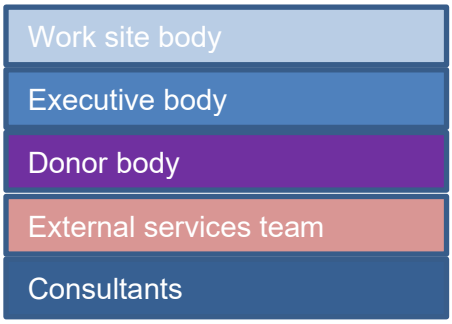


Table: Crisis response team

No.	Name	Designation	Mobile no.
1		Site Manager	
2		EHS officer	
3		Medical officer	
4		Worksite supervisor	
5		Labor supervisor	
6		Contractor	
7		Local hospital	
8		Local police station	
9		Local fire brigade	
..			

Appendix 7 – Sample EHS Monitoring and reporting template

Monitoring and Reporting Template

Environmental Health and Safety Monitoring

A. Environmental Health and Safety Checklist

Sl no.	Item	Exist in the worksite?		Recommendation And/ or Remarks	Time frame to comply
		Yes □	No □		
1	Site readiness (e.g. is worksite fenced and can be distinguished from general establishment? Is the an EHS professional at site? Has he/she been fulltime professional? Has he/she been present at site every day?)				
2	Site access (e.g., is site access road wide and easily accessible?)				
3	Signboard with safety warnings (e.g. with general EHS safety signboards, are COVID 19 response signboards visible at every corner of worksite?)				
4	Lighting (e.g. is every corner of the worksite is well lit?)				
5	Appropriate PPEs (Helmet, Safety Shoe, Vest, Ear plug, Musk etc.) e.g. Is every person in site is wearing appropriate PPEs?				
6	Fall protection measures (e.g. is the fall protection measures at worksite appropriate and adequate?				
7	Fire extinguishers (e.g. are they at site? How many? Are they placed at vulnerable/most accessible places?)				
8	House keeping (e.g. are all workers health records kept? Is the EMP and EHS manual at site? Has the morning briefing on EHS conducted? Is there any vehicle record/material register/attendance register/complain register kept?)				
9	Garbage bins (e.g. are there garbage bins at site? Are the numbers adequate? Is waste thrown to bins? Are the bins well places?				
10	Drinking water supply (e.g. safe drinking water for worksite been supplied? Is drinking water adequate?				
11	Sanitation facilities (e.g. is there separate male and female toilets established? Are they adequate? Hand wash materials and water being provided at toilets? Are those toilets sanitary?				
12	Dust protection measures (e.g. is mask provided for worksite personnel? Is water sprayed frequently as needed to suppress dust? Are sand class materials covered with plastic sheets?				
13	Noise barrier and reduction equipment (e.g. how much noise is generated by site? Does it exceed maximum human exposure limit? Are workers provided with noise reduction gears such as ear mufflers?)				
14	Shelter (e.g. is there a site office or shelter good enough to take shelter during rain or storm event?)				
15	First aid box (e.g. is there a first aid box at site? Are the contents of the first aid box adequate for primary treatment? Is the first aid box handled by at EHS/medical professional				

Sl no.	Item	Exist in the worksite?		Recommendation And/ or Remarks	Time frame to comply
		Yes □	No □		
16	Toolbox meetings (e.g. are toolbox meeting regularly arranged? Are records kept?)				
17	Others (many other checklists can be formulated by the EHS professional on board)				
COVID -19 protocols on top of usual EHS checklist (this applied to campsite also)					
18	COVID-19 posters/signboards (e.g. are COVID-19 awareness/protocol posters are showing all visible corners of the site?)				
19	Entrance protocol (e.g. Is the COVID-19 worksite entrance protocol been followed as stipulated in the COVID -19 response guidance? Are adequate soaps, water has been kept at site entry? Are workers at entrance que using mask, hand gloves and hard shoes? Are disinfectant spray kept at site entry to disinfect underneath the boots of entering persons?)				
20	Vehicle entry protocol (e.g. has the vehicle disinfection protocol has been initiated?)				
21	Social distancing (e.g. are the workers maintaining social distancing all the time?)				
22	Sharing tools/machineries (e.g. are the tools and machineries are wiped to disinfect before sharing/working?				
23	Disinfecting work area (e.g. is the worksite/ common surfaces, toilets etc. are disinfected before worksite opened in the morning? Has record being kept? Has the worksite been disinfected yesterday after closing for the day?)				
24	Restriction on worksite entry and exit (e.g. has workers being discouraged to travel frequently out of worksite or entering? Has records being kept?)				
25	Stock of disinfectant (e.g. is the stock of disinfectants, soap, PPEs are adequate at worksite?)				

*Attach photos

**Enter additional criteria as required for site specific measures

Reported by (ESC)	Checked by (TL)	Approved by (EA/IA)
Name Designation Signature Date	Name Designation Signature Date	Name Designation Signature Date
Received and agreed to comply by the representative of the contractor	**Name** **Designation** **Signature** **Date**	

B. Accident/ Incident Investigation Report

Class of Incident		Reported	
☐ Injure ☐ Property/ Plant Damage ☐ Near Miss ☐ Environmental		Yes ☐ No ☐ Details:	
		Further Action Required	
		☐ Report to Authorities ☐ Other	
Details of Incident			
Date of Incident		Time of Incident	am ☐ pm ☐
Witness Name		Witness Contact	
Nature of Incident			
Location of Incident			
Description of Incident			
Details of damage to equipment/property			
Injured Person/s (if applicable)			
Name			
Address			
Date of Birth			
Occupation		Employer	
Referred/transferred to			
Recommended Preventive Action			
Details			
Completed by			
Name		Position	
Signature		Date	

C. Safety patrol/inspection report form

SITE SAFETY PATROL REPORT AND INSTRUCTION						
Date						
Inspector						
No	**Location**	**Comment/instruction**	**Photo**	**Corrective action**	**Deadline**	**Responsible person**

Reported by (ESC)	**Checked by (TL)**	**Approved by (EA/IA)**
Name Designation Signature Date	Name Designation Signature Date	Name Designation Signature Date
Received and agreed to comply by the representative of the contractor	**Name** **Designation** **Signature** **Date**	

Appendix 8 – Sample Outline of Compensatory Tree Planting Plan

COMPENSATORY TREE PLANTING PLAN

Note: The purpose of the planting plan is to fully assess the existing tree resources on the development site and specify an implementable strategy for ensuring that the net medium-term effect of the site's development on local arboreal resources is at least neutral relative to existing conditions. The planting plan is to be developed by the design-build contractor and approved by the Forest Department and local Union Parishad authorities prior to issuance of the Site Clearance Certificate.

1. Plan Rationale and Requirements

- Objective of plan
- Brief description of planned development producing need for plan
- Forest Department requirements for compensatory planting plans
- Roles and responsibilities for plan development and implementation
- Required approvals

2. Baseline Profile of Tree Resources on the Development Site

A. General description of tree cover

- Proportion of site covered
- Historical trends of tree cover and surrounding areas
- Hydrological, soil and site use factors influencing distribution of tree cover on site
- Notable species assemblages
- Ecological functions of existing trees and groups of trees
- Micro-climatic functions of existing trees and groups of trees
- Existing uses of on-site trees
- Values associated with on-site trees by local people

B. Inventory of existing trees on site

- Full inventory of all trees over 2 m height, tabulated by species and size (height, crown width) and native/introduced status
- List of identified significant specimens (trees that are highly valued for any reason, e.g., religious or spiritual; very large size; serve as a social meeting place; historically high yield of fruits, nuts or other products; medicinal importance; use by popular wildlife)

3. Trees Designated for Preservation, Removal and Planting

A. Inventory of trees to be preserved, based on site master plan

- List of trees by species and location
- Map of preserved trees
- Planned method of protecting trees during site clearing and construction

B. Inventory of trees to be removed, based on site master plan

- List of trees by species and location
- Map of clearance areas
- Planned method of removing trees and disbursing timber

C. Inventory of spaces for compensatory planting

- Number of trees to be planted, based on anticipated removals
- List and description of suitable on-site areas, including soil and moisture constraints
- List and description of possibly suitable off-site areas, including soil, moisture and land use constraints
- Map of potentially suitable on-site and off-site planting areas

4. Report on Consultation with Local Stakeholders

A. Stakeholders

- List of institutional stakeholders

- List of existing users of trees on site
- List of residents in the vicinity of the site

B. Summary of consultation events and formats

C. Findings of consultations

- Non-monetary values attached to site trees by stakeholders
- Monetary values of existing tree uses
- Location preferences for compensatory planting
- Species preferences for compensatory planting

5. Compensatory Planting Plan

A. Constraints and opportunities

- Survey of suitable sapling sources (saplings at least 2 m tall, in sufficient number to have at least two trees planted for each tree removed)
- Estimation of sapling costs by species
- Seasonal factors affecting planting
- Minimum and optimal spacing requirements for different species

B. Selected species and locations

- Identification of priority species based on site conditions and consultation findings
- Identification of priority planting locations based on site conditions and consultation findings
- Master planting plan map

C. Planting strategy

- Timing of planting activity
- Procurement of saplings, soil amendments and mulches
- Procurement of labor for planting
- Stakeholder participation in planting

D. Plantation maintenance strategy

- Identification of maintenance needs by species and location (watering, mulching, fertilization, trimming, weeding)
- Maintenance schedule
- Arrangement of labor and responsibility for on-site plantation maintenance
- Arrangement of labor and responsibility for off-site plantation maintenance
- Procurement of tools for plantation maintenance

6. Cost Estimates

- Estimated initial costs for planting
- Estimated recurring costs for plantation maintenance

7. Monitoring of Implementation

- monitoring parameters (e.g., tree survival rate, maintenance performance)
- method and frequency of monitoring
- public participation in monitoring plantations
- definition of feasible corrective actions in the case of poor performance

Appendix 9 – Sample Outline of Contractor Environmental Management Plan

CONTRACTOR ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

1. Purpose of the Plan
- Objectives
- Relationship to subproject/component EMP
- Relationship to specialized mitigation plans
- Performance indicators

2. Roles and Responsibilities in Plan Implementation
- Contractor's Environment, Health and Safety Representative
- Site engineers
- Emergency response focal persons
- Skilled workers
- Laborers

3. Legal Requirements
- Laws and regulations pertinent to the works
- Licenses and permits required

4. Special Contextual Issues
- Environmental (if any)
- Social (if any)
- Cultural (if any)

5. Scope of Works
- Description of infrastructure plan
- List of work locations and sites
- Applicable standards

6. Work Plan
- Resources (facilities, equipment, human resources)
- Coordination and phasing
- Timetable

7. Environmental Method Statements
- Boundary establishment and site clearing
- Soil protection and erosion prevention
- Runoff management
- Sediment control
- Dust prevention and suppression
- Noise and vibration impact management
- Storage of fuels, lubricants, coolants and other fluids
    - maintenance yard
    - construction sites
- Refueling and servicing equipment at the job site
- Monitoring of equipment condition
- Construction site safety management
- Materials stockpiles at the job site
- Chance Find Procedure for physical cultural resources

8. Waste Management
- Classes of waste produced by type of site

  - work sites
  - maintenance yards
  - construction camp
- Solid waste collection
  - collection methodology
  - collection frequency
  - responsibility for collection
- Solid waste recycling
  - recyclable materials
  - entities capable of accepting recyclable materials
  - recycling plan
- Solid waste disposal
  - composition of non-recyclable waste stream
  - legal and available disposal options in local area
  - disposal plan
- Waste oil and other hazardous wastes
  - types of hazardous liquids
  - methods of storage
  - collection methodology
  - collection frequency
  - legal and feasible treatment and disposal options
  - entities capable of accepting waste oil and other hazardous fluids and their containers
  - waste oil disposal plan

9. Emergency Response Plan

- Characterization of possible emergency situations for sites
  - spills and accidental releases
  - fires and explosions
  - serious accidents
  - other foreseeable situations
- Key actors (including names and contact information, to be updated regularly)
- Chain of command and process steps in emergency situations
- Documentation and reporting of incidents

10. Monitoring and Reporting Framework

- Purpose of monitoring
- Compliance monitoring parameters and methods
- Effects monitoring parameters and methods
- Responsibilities in monitoring
- Mechanism for corrective actions
- Monitoring schedule
- Reporting requirements

11. Training Needs and Plans

- Training needs assessment
- Training targets and content
- Training plan

Appendix 10 – Outline of Soil Erosion Prevention Plan

SOIL EROSION PREVENTION PLAN

1. Plan Rationale and Requirements

- Objective of plan
- Description of work sites and earthworks
- Roles and responsibilities for plan development, approval, implementation and supervision

2. Identification of Erosion Risks Specific to Site and Materials

- Erodibility of natural site soils
- Erodibility of fill materials
- Erodibility of stockpiled building materials
- Erosion by rainfall
- Erosion by running water (site runoff, flash floods, fluvial flooding)
- Erosion by wind
- Types of erosion (e.g., sheet, rill, gully, mass)

3. Method Statements

- Timing of earthworks to limit erosion risk (seasonal and weather-related)
- Mulching
- Temporary ground covers (e.g., jute mats)
- Permanent slope protection measures (e.g., terracing, geocells)
- Temporary drainage arrangements to avoid concentration of flow
- Check dams and sediment traps
- Temporary armored runoff channels
- Runoff infiltration swales
- Stockpile covers (tarpaulins)
- Stockpile containment dams

4. Monitoring and Correction

- Method of site monitoring for active erosion and erosion risk
- Frequency of site monitoring for active erosion and erosion risk
- Practices for correcting different types of erosion

Follow-up to corrective actions

Appendix 11 – Sample Outline of Construction Camp Management Plan

CONSTRUCTION CAMP MANAGEMENT PLAN

1. Purpose of the Plan
- Objectives
- Relationship to subproject EMP
- Performance indicators

2. Environmental and Social Context of Construction Camp
- Location
- Road access and distance to road sites
- Service infrastructure
- Local topography
- Prevailing wind
- Drainage
- Nearby water bodies
- Surrounding land use
- Local communities
    - proximity
    - population
    - ethnic makeup
    - employment and livelihoods

3. Camp Capacity and Resident Profile
- Projected number of resident workers during different phases of work
- Expected number of accompanying family members
- Expected number of support staff living on site
- Expected ethnic makeup of camp residents

4. Camp Infrastructure
- Kitchens
- Eating facilities
- Toilets and septic system(s)
- Wash-up facilities
- Accommodations
- Storage
- Water supply and water heating
- Electricity
- Cooking fuel
- Backup generators
- Firefighting equipment
- Parking
- Fencing
- Site layout
- Camp construction schedule

5. Cleaning and Maintenance Plan

- Cleaning and sanitation
  - responsibilities
  - methods
  - schedule
- Facility inspection and maintenance
  - responsibilities
  - inspection methodology
  - inspection schedule
  - maintenance schedule

6. Wastes and Waste Management

- Solid waste
  - expected composition of solid waste stream
  - collection and management of recyclables
  - collection and management of non-recyclables
  - collection and composting of organic waste
- Liquid waste
  - expected composition of liquid waste stream
  - management of gray water
  - management of sewage

7. Rules Governing Resident Behavior

- Rules for conduct when in camp
- Rules for conduct outside camp
- Family members policy
- Visitor policy
- Rules regarding alcohol and illegal drugs
- Procedure for adjudicating disputes among residents

8. Training

- good practices for disease prevention
- camp safety and fire suppression

9. Monitoring and Reporting

- Purpose of monitoring
- Monitoring responsibilities
- Monitoring methodology
- Monitoring frequency
- Reporting schedule

10. Camp decommissioning

- Responsibility for decommissioning
- Procedure for decommissioning
- Timing of decommissioning

Appendix 12 – Sample Outline of Site Reinstatement Plan

SITE REINSTATEMENT PLAN

1. Plan Rationale and Requirements

- Objective of plan
- Description of work sites and earthworks
- Roles and responsibilities for plan development, approval, implementation and supervision

2. Schedule of works

- Construction schedule by building and area
- 'Reinstatement-ready' schedule by site area
- Seasonal constraints on vegetation establishment
- Reinstatement and planting schedule by site area
- Post-planting monitoring and maintenance schedule (through end of defects period)

3. Vegetation specifications

- New tree plantings indicated in detailed design (landscaping plan)
  - number
  - preferred species
  - planting locations
- New tree plantings required under Compensatory Tree Planting Plan
  - number
  - preferred species
  - planting locations
- Ground cover specified for infiltration areas
  - total planting area
  - locations of infiltration areas
  - preferred species
- Ground cover specified for recreational use areas
  - total planting area
  - locations of recreational use areas
  - preferred species
- Ground cover specified for ornamental displays
  - total planting area
  - locations of ornamental displays
  - preferred species

4. Sourcing of key materials

- Saplings
- Root stock
- Seed
- Soil amendments
- Mulches and other protective materials (e.g., jute mats)

5. Method statements

- Removal, storage and replacement of topsoil
- Slopes (maximum slope and stabilizing measures)
- Pre-planting soil suitability assessment and soil amendment
- Tree planting
- Bare root planting
- Seeding
- Use of mulches and other protective materials
- Watering (by vegetation type)
- Fertilization (by vegetation type)
- Weeding, thinning and trimming (by vegetation type)

6. Monitoring and Follow-up

- Metrics and methods for measurement of vegetation establishment success (e.g., vigor, survival rate by time period, density, coverage)
- Frequency of site monitoring
- Documentation and reporting of vegetation monitoring results
- Criteria for replanting and infill planting

Appendix 13 – Sample Outline of Occupational Health and Safety Plan

OCCUPATIONAL HEALTH AND SAFETY PLAN

1. Plan Rationale and Requirements

- Objective of plan
- Description of work sites and major work activities
- Roles and responsibilities for plan development, approval, implementation and supervision

2. Identification of Health and Safety Risks Specific to Site and Activities

- Inventory of hazards inherent to work site
- Inventory of dangerous activities
- Inventory of hazardous materials used and stored on site
- Inventory of health risks for workers

3. Method Statements for Risk Reduction Practices

- Task-appropriate PPE and its proper use
- Operating heavy machinery
- Working in proximity to mobile heavy machinery
- Working at height
- Working in trenches and holes
- Working in underground enclosed spaces
- Electrical work
- Handling hazardous materials
- Handling and storing explosive and flammable materials
- Use of cranes
- Lifting
- Arc welding
- Power cutting and grinding
- Dust suppression
- Spill prevention and response
- Fire suppression
- Personal hygiene on the work site

4. Work Site Setup and Maintenance Specifications

- Provision and placement of fire suppression equipment
- Provision and placement of spill containment and cleanup supplies
- Safe storage spaces for hazardous, flammable and explosive materials
- Barriers and fencing
- Provision of adequate toilets based on worker population
- Provision of adequate wash-up facilities based on worker population
- Provision of unlimited drinking water meeting national standard for drinking water
- Provision of shaded break areas
- Food preparation and eating facilities

5. COVID-19 Containment and Prevention

- Practices as specified in ADB and GOB's Technical Guidance for Social and Institutional Containment and Prevention

6. Emergency Response Plan

- Designation of focal persons and 24/7 contact details
- Definition of chain of command
- Flowchart of response actions
- Identification, placement, labeling and upkeep of emergency response equipment
- Materials for use in training
- Emergency drill procedure and schedule

7. Training

- Induction training (content and timing)
- Refresher training (content and timing)
- Health and safety meetings
- Specialized tasks training (e.g., for heavy equipment operators and at-height workers)
- Emergency response training

8. Monitoring

- Site health and safety audits (methods, parameters, frequency, documentation)
- Spot check system
- Framework for follow-up and corrective action

Appendix 14 – Sample Outline of Asbestos-Containing Materials Removal and Disposal Plan

ASBESTOS-CONTAINING MATERIALS (ACM) REMOVAL AND DISPOSAL PLAN (Note: ACM removal and disposal plan may not the applicable for IBA Annex building construction, however a sample plan is presented here in case of hint of existence of ACMs during construction)

1. Plan Rationale and Requirements

- Objective of plan
- Description of demolition needs at site and reasons for suspecting presence of ACMs
- Bangladesh National Building Code specifications for ACM handling
- Roles and responsibilities for plan development, approval, implementation and supervision

2. Assessment of ACM Presence

- Inventory of suspected ACMs by structure
- Inventory of suspected ACMs by material type
- Engagement of accredited testing firm for sampling and analysis
- Estimated volume of non-friable ACMs
- Estimated volume of friable ACMs

3. ACM Removal Methodology

- Risk-reduction training for workers involved in removal and handling
- PPE provision (P100 respirators, full hazmat suits including hoods)
- Exclusion of non-essential workers from removal site
- Wetting and constant misting system for removal site
- Complete containment system for transportation
- Low-breakage removal and handling methods
- Temporary on-site containment and storage methods
- Post-removal inspection method

4. ACM Disposal Option Selection

- Assessment of on-site deep burial options (including identification of locations likely never to be disturbed by people or natural processes, either during construction or afterwards)
- Survey of locally available and legally sanctioned off-site disposal options (e.g., landfill equipped and accredited for ACM disposal)
- Rationale for chosen disposal solution

5. ACM Transport and Disposal Methodology

- Risk-reduction training for workers involved in handling and transport
- Complete containment system for transportation
- Deep burial specifications (on-site disposal)
- Low-breakage placement methods (on-site disposal)
- Misting system for disposal site (on-site disposal)

Appendix 15 – Sample Outline of Spill Prevention and Response Plan
SPILL PREVENTION AND RESPONSE PLAN

1. Plan Rationale and Requirements
- Objective of plan
- Description of storage spaces and transshipment activity
- Roles and responsibilities for plan development, approval, implementation and supervision

2. Characterization of Hazardous and Noxious Cargo Risks
- Fuels
- Oils
- Bagged chemical substances
- Containerized dry chemicals
- Containerized liquid chemicals
- Bulk dry chemicals
- Bulk liquid chemicals
- Flammable materials
- Explosive materials
- Non-compatibility between classes of substances

3. Scoping of Spill Scenarios
- Truck rollovers and collisions on site
- Leaks from cargo on trucks
- Leaks from stored materials (in warehouses)
- Leaks from stored materials (outside)
- Spills during transshipment handling
- Explosions
- Fires
- Penetration of storage arrangements by flash flood

3. Method Statements for Spill Prevention
- System for identification of potentially hazardous and noxious incoming cargos
- Characterization of spill risk at time of entry
- Hazardous and noxious cargos registry
- Safe handling and transfer procedures (for each class of hazardous and noxious materials)
- Safe indoor storage requirements (for each class of material, taking account of non-compatibilities)
- Raised platforms for outdoor storage
- Temporary canopies for outdoor storage
- Collision and rollover prevention

4. Spill Response and Cleanup Plan
- Designation of point persons for response, including 24/7 contact details
- Definition of chain of command for response
- Flowchart of spill response actions
- Method statement: containment
- Method statement: cleanup
- Method statement: treatment and disposal
- Placement and upkeep of spill response and cleanup equipment and supplies
- Materials for use in training
- Notification protocols (people on site, authorities and public)
- Protocol for when to seek guidance from DOE or other agencies

5. Training
- Training for spill response leaders (content, frequency, outside expertise needed)
- Training for other site personnel (content, frequency)
- Training for laborers involved in transshipment activity (content, frequency)

Appendix 16 – Consultation Records

Skills for Industry Competitiveness and Innovation Program (SICIP)

List of Participants for FGD

FGD. No. _____

Address: _____

Date: 25/9/2025 Time: _____

SL. No.	Name	Occupation	Phone	Signature
01	Dr. Bakul Hafiz.	Professor	+88-02-9675814	
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05.	DR. RIDWANUL HAQ	Professor	- do -	
06	Kushal Roy	Consultant	01713264524	

Skills for Industry Competitiveness and Innovation Program (SICIP)

List of Participants for FGD

FGD. No. _____

Address: _____

Date: 25/9/2015 Time: _____

SL. No.	Name	Occupation	Phone	Signature
1	Rony Talukdar	Student	01712217115	Rony
2.	[illegible]	Student	01576686489	[illegible]
3	Mst. Molly Begum	Student		
4	Mst. Farzana Akter	Student	01558902509	Farzana
5	[illegible]	[illegible]	01558912114	[illegible]
6	Feroja Akter	Student		Akter
7	Debbas Roy	Executive Manager	01718264524	[illegible]
8	JOY CHANDRA ROY	STUDENT	01914656198	JOY
9	Kazi Khaled Pasha	Student	01917282521	[illegible]
10	Mst. Fatema Akter	Student	01718246421	Fatema.
11	Abdur Chowdhury	Student	01782645171	Abdur
12	N.M.A. Hasan	Student		[illegible]

Appendix 17 – Proposed Terms of Reference for Environment, Health and Safety Officers

The Environment, Health and Safety Officers (EHSOs) are critical to the timely and effective implementation of the EMP/EMoP, as they will be responsible for executing all compliance activities pertaining to the works and operations of the EA. The EHSOs will answer the Environmental Safeguards Focal Person (ESFP). The responsibilities of each EHSO are as follows:

(i) Prepare site-specific monitoring checklists for assigned investment sites under the control of the EA, based on the contents of the EMP/EMoP, to assess site-level compliance with prescribed mitigation measures and effectiveness in meeting relevant national standards for key environmental parameters;

(ii) Conduct compliance and effects monitoring on at least a monthly basis (including both regular inspections and spot checks) at all assigned investment sites under the control of the EA, and compile monitoring results in quarterly monitoring reports to the EA's ESFP;

(iii) Support and collaborate with any outside entities contracted to conduct sampling, testing and analysis of environmental parameters, as identified in the EMP/EMoP, and incorporate their results into quarterly monitoring reports;

(iv) Engage directly with site engineers to propose and ensure effective implementation of corrective actions needed to address emerging and recurrent problems, including both compliance issues and environmental effects that violate relevant national standards;

(v) Design and orchestrate training for workers and site engineers as may be needed to forestall, correct or lessen emerging and recurrent problems with compliance and deleterious environmental effects derived from site activity;

(vi) Facilitate and participate in any site visits conducted by officials of DOE, DIFE or other relevant regulatory agencies;

(vii) Assist the ESFP with preparation of the EA's environmental reporting, including but not limited to its submissions to the PIU and/or SOU; and

(viii) Prepare a Notification of Environmental Harm for immediate submission to DOE in the event of any serious release or other deleterious event occurring on any site under the EA's control, ensure rapid appropriate action by the Contractor, and coordinate follow-up with DOE as needed.

Appendix 18 – Outline of Semi-Annual Environmental Monitoring Report

The Program Steering Committee is required to submit semi-annual environmental monitoring reports to ADB, for review and public disclosure on the ADB website. The semi-annual reports will be produced by the Safeguards Oversight Unit. A sample report outline, which can be adapted as necessary, is provided below.

1. Introduction

- Report purpose
- Overview of subproject components and sites subject to monitoring
- Summary of project implementation progress

2. Review and Verification of Clearance History

- Clearances required and obtained
- Clearances due for renewal in upcoming monitoring period
- Clearance lapses and plans for reinstatement

3. Review of Contractor Environmental Monitoring Reports (CEMRs)

- Reports submitted/outstanding
- Quality of reports received and comments issued
- Issues of note from CEMRs, and contractor follow-up

4. Summary of Works and Prescribed Mitigation

- Major work activities by site
- Mitigation measures prescribed
- Ongoing corrective actions from previous monitoring period

5. Summary of Monitoring Activity

- number and dates of site visits
- monitoring methodology used

6. Monitoring Results

- instances of non-compliance
- violations of standards and observed negative environmental effects
- on-site communication with contractor personnel
- photographs

7. Corrective Action Required

- description and explanation of non-compliance or concerns noted
- required actions with timeframe and responsibility
- corrective actions undertaken in the current period
- corrective actions to continue into the next period

8. Attachments

- Notices of Non-Compliance issued
- Additional photographs

Appendix 19 – Sample Grievance Registration form

(Bangla translation to be available)

The **SICIP** welcomes complaints, suggestions, queries and comments regarding project implementation. We encourage persons with grievance to provide their name and contact information to enable us to get in touch with you for clarification and feedback.

Should you choose to include your personal details but want the information to remain confidential, please inform us by writing/typing *(**CONFIDENTIAL**)* above your name.

Date	**Place of Registration**				
Contact Information/Personal Details					
Name		**Gender**	* Male * Female	**Age**	
Home Address					
Place					
Phone no.					
E-mail					
Complaint/Suggestion/Comment/Question Please provide the details (who, what, where, and how) of your grievance below: If included as attachment/note/letter, please tick here:					
How do you want us to reach you for feedback or update on your comment/grievance?					

FOR OFFICIAL USE ONLY

Registered by: (Name of Official Registering Grievance)	
Mode of Communication: Note/Letter E-mail Verbal/Telephonic	
Reviewed by: (Names/Positions of Officials Reviewing Grievance)	
Action Taken:	
Whether Action Taken Disclosed:	Yes No
Means of Disclosure:	

Appendix 20 – Outline of chance finds protocols

Scope of the chance find procedure

This procedure is applicable to all activities conducted by the personnel, including contractors, that have the potential to uncover a heritage item/site. The procedure details the actions to be taken when a previously unidentified and potential heritage item/site is found during construction activities. Procedure outlines the roles and responsibilities and the response times required from both project staff, and any relevant heritage authority.

Induction/Training

All personnel, especially those working on earth movements and excavations, are to be inducted on the identification of potential heritage items/sites and the relevant actions for them with regards to this procedure during the Project induction and regular toolbox talks.

Chance find procedure

If any person discovers a physical cultural resource, such as (but not limited to) archaeological sites, historical sites, remains and objects, or a cemetery and/or individual graves during excavation or construction, the following steps shall be taken:

1. Stop all works in the vicinity of the find, until a solution is found for the preservation of these artefacts, or advice from the relevant authorities is obtained;
2. Immediately notify a foreman. The foreman will then notify the Construction Manager and the Environment Officer (EO)/Environmental Manager (EM);
3. Record details in Incident Report and take photos of the find;
4. Delineate the discovered site or area; secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities take over;
5. Preliminary evaluation of the findings by archaeologists. The archaeologist must make a rapid assessment of the site or find to determine its importance. Based on this assessment the appropriate strategy can be implemented. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage such as aesthetic, historic, scientific or research, social and economic values of the find;
6. Sites of minor significance (such as isolated or unclear features, and isolated finds) should be recorded immediately by the archaeologist, thus causing a minimum disruption to the work schedule of the Contractor. The results of all archaeological work must be reported to the Ministry/Agency, once completed.
7. In case of significant find the Agency/Ministry should be informed immediately and in writing within 7 days from the find;
8. The onsite archaeologist provides the Heritage team with photos and other information as relevant for identification and assessment of the significance of heritage items.
9. The Ministry must investigate the fact within 2 weeks from the date of notification and provide response in writing.
10. Decisions on how to handle the finding shall be taken by the responsible authorities. This could include changes in the layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage;
11. Construction works could resume only after permission is granted from the responsible authorities.
12. In case no response received within the 2 weeks period mentioned above, this is considered as authorization to proceed with suspended construction works.

One of the main requirements of the procedure is record keeping. All finds must be registered. Photolog, copies of communication with decision making authorities, conclusions and recommendations/guidance, implementation reports kept.

Appendix 21 – Sample Gender-Based Violence (GBV) and Sexual Exploitation, Abuse and Sexual Harassment (SEA-SH) Action Plan

1. Objectives

The GBV/SEA-SH Action Plan aims to:

- Prevent incidents of sexual exploitation, abuse, and harassment associated with construction and operation of academic facilities
- Establish clear standards of behavior for workers, staff, and service providers
- Ensure safe, confidential, and survivor-centered grievance handling
- Promote a respectful and secure learning and working environment

2. Key Risks Identified

Risk Area	Typical Risk
Construction workforce	Harassment of students, staff, visitors; abuse of authority
Campus public areas	Inappropriate behavior in corridors, stairwells, parking, toilets
Power imbalance	SEA risks involving workers/security/service staff
Weak reporting	Underreporting due to fear, stigma, lack of confidentiality

3. Prevention Measures
3.1 Code of Conduct (Mandatory)

All contractors, subcontractors, security staff, cleaners, and facility staff shall:

- Sign a GBV/SEA-SH Code of Conduct prohibiting:
- Sexual harassment
- Exploitation or coercion
- Any sexual activity with minors
- Verbal/physical abuse

Receive induction training before starting work

- Sanctions: warning, suspension, termination, referral to authorities (as applicable)

3.2 Awareness & Training

Target Group	Frequency	Key Topics
Construction workers	At mobilization + quarterly	CoC, respectful conduct, sanctions
Security & facility staff	Twice yearly	Complaint handling, survivor sensitivity
Students & staff	Orientation + annual session	Rights, reporting channels, zero tolerance

4. Safe Campus Measures

- Adequate lighting in corridors, stairwells, entrances, parking areas
- CCTV in public/common areas (not private spaces)
- Controlled access during construction and after hours
- Regular security patrols

5. Grievance Redress for GBV/SEA-SH
5.1 Reporting Channels

- Dedicated phone number / hotline
- Email or online form
- Complaint box
- Direct contact with trained female focal person

5.2 Handling Principles

- Confidentiality
- No retaliation
- Informed consent
- Respect and dignity
- Rapid response

5.3 Response Steps

- Receive complaint safely
- Immediate protection if needed
- Referral to medical/legal/psychosocial services (if requested)
- Investigation & disciplinary action
- Documentation (anonymous coding)

6. Institutional Responsibilities

Role	**Responsibility**
Project/Institution Head	Overall enforcement
Environmental/Social Focal Person	Monitoring & reporting
Contractor	CoC enforcement & worker training
Security Unit	Safe access & response
GRM Committee	Case handling

7. Monitoring Indicators

- % of workers trained on CoC
- Number of awareness sessions held
- GRM functional with SEA-SH channel established
- Number of complaints addressed within timeframe
- Lighting/CCTV operational records