

ENVIRONMENT AND SOCIAL IMPACT ASSESSMENT (ESIA)
& ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN
(ESMP) OF ASIAN UNIVERSITY FOR WOMEN (AUW) AT
CHATTOGRAM



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The information of this document is and shall remain the property of Asian University for Women.

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Abbreviations and Acronyms

AOI	Area of Influence
AP	Affected Persons
AR	Analytical Reagent
AUW	Asian University for Women
BBS	Bangladesh Bureau of Statistics
BCCSAP	Bangladesh Climate Change Strategy and Action Plan
BMD	Bangladesh Meteorological Department
BNBC	Bangladesh National Building Code
BOD	Biochemical Oxygen Demand
BWDB	Bangladesh Water Development Board
CCC	Chattogram City Corporation
CDA	Chattogram Development Authority
CE	Chief Engineer
CGS	Centimeter, Gram, Second
CHTs	Chattogram Hill Tracts
CMP	Chattogram Metropolitan Police
COD	Chemical Oxygen Demand
COVID-19	Coronavirus Disease 2019
DC	Deputy Commissioner
DG	Director General
DIZ	Directly Impacted Zone
DMT	Disaster Management Team
DOE	Department of Environment
ECA	Environmental Conservation Act
ECC	Environmental Clearance Certificate
ECR	Environment Conservation Rules
EGL	Existing Ground Level
EHS	Environmental Health and Safety
EHSGs	Environmental Health and Safety Guidelines
EMP	Environmental Management Plan
ERDMP	Emergency Response Disaster Management Plan
ESIA	Environment and Social Impact Assessment
ESMF	Environment and Social Management Framework
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standard
FGD	Fire & Gas Detection
FIs	Financial Intermediaries
FPIC	Free, Prior and Informed Consent
FS	Feasibility study
GHG	Green House Gas
GIIP	Good International Industry Practice
GIS	Geographic Information Systems

GoB	Government of Bangladesh
GPS	Global Positioning System
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
HEAT	Higher Education Acceleration and Transformation (Project of the World Bank)
HHs	Households
ICT	Information and Communication Technology
ICTPs	International Conventions, Treaties and Protocols
IECs	Important Environmental Components
IEE	Initial Environmental Examination
ILO	International Labor Organization
IUCN	International Union for Conservation of Nature
IVM	Integrated Vector Management
JGT	Jute Geo-Textile
MoEFCC	Ministry of Environment, Forest and Climate Change
NEMAP	National Environmental Management Action Plan
NEQS	National Environmental Quality Standards
O3	Ozone
OMS	Operation Management System
PH	Potential of Hydrogen
PIA	Project Implementation Authority
PMU	Project Management Unit
PPE	Personal Protective Equipment
PPM	Parts Per Million
PSCP	Pollutant Spill Contingency Plan
RA	Risk Assessment
RAP	Resettlement Action Plan
SCC	Site Clearance Certificate
SRDI	Soil Resources Development Institute
STP	Sewage Treatment Plant
TDS	Total Dissolved Solids
TIB	Transparency International Bangladesh
TSS	Total Suspended Solids
UGC	University Grants Commission
UN	United Nations
WB	World Bank
WHO	World Health Organization
WMP	Waste Management Plan

Glossary of Terms

Accessibility:

Accessibility refers to the identification and elimination of obstacles and barriers to providing access to the physical environment, to transportation, to information and communications and other facilities and services.

Assimilative capacity:

Assimilative capacity refers to the capacity of the environment for absorbing an incremental load of pollutants while remaining below a threshold of unacceptable risk to human health and the environment

Associated Facilities:

Associated Facilities means facilities or activities that are not funded as part of the project and, in the judgment of the Bank, are: (a) directly and significantly related to the project; (b) carried out, or planned to be carried out, contemporaneously with the project; and (c) necessary for the project to be viable and would not have been constructed, expanded or conducted if the project did not exist. For facilities or activities to be Associated Facilities, they must meet all three criteria.

Biodiversity:

Biodiversity is the variability among living organisms from all sources including, among other things, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species, and of ecosystems.

Chance find (procedure):

A chance find is an archaeological material encountered unexpectedly during project construction or operation. A chance find the procedure is a project-specific procedure that will be followed if previously unknown cultural heritage is encountered during project activities. The chance finds procedure will set out how chance finds associated with the project will be managed. The procedure will include a requirement to notify relevant authorities of found objects or sites by cultural heritage experts; to fence off the area of finds or sites to avoid further disturbance; to conduct an assessment of found objects or sites by cultural heritage experts; to identify and implement actions consistent with the requirements of ESS8 and national law and to train project personnel and project workers on chance find procedures.

Collective attachment:

The collective attachment means that for generations, there has been a physical presence in and economic ties to land and territories traditionally owned, or customarily used or occupied, by the group concerned, including areas that hold special significance for it, such as sacred sites.

Core functions:

Core functions of a project constitute those production and service processes essential for a specific project activity, without which the project cannot continue.

Critical habitat:

Critical habitat is defined as areas with high biodiversity importance or value, including (a) habitat of significant importance to Critically Endangered or Endangered species, as listed on the International Union for the Conservation of Nature (IUCN) Red List of threatened species or equivalent national approaches; (b) habitat of significant importance to endemic or restricted-range species; (c) habitat supporting globally or nationally significant concentrations of migratory or congregatory species; (d) highly threatened or unique system; and (e) ecological functions or characteristics that are needed to maintain the viability of the biodiversity values described above in (a) to (d).

Cultural heritage:

Cultural heritage is defined as resources with which people identify as a reflection and expression of their constantly evolving values, beliefs, knowledge, and traditions.

Disadvantaged or vulnerable:

Disadvantaged or vulnerable refers to people who may be more likely to be adversely affected by the project impacts and/or more limited than others in their ability to take advantage of a project's benefits. Such an individual/group is also more likely to be excluded from/unable to participate fully in the mainstream consultation process and, as such, may require specific measures and/or assistance to do so. This will take into account considerations relating to age, including the elderly and minors, and including in circumstances where they may be separated from their family, the community or other individuals upon which they depend.

Ecosystem services:

Ecosystem services are the benefits that people derive from ecosystems. Ecosystem services are organized into four types: (i) provisioning services, which are the products people obtain from ecosystems and which may include food, freshwater, timbers, fibers, medicinal plants; (ii) regulating services, which are the benefits people obtain from the regulation of ecosystem processes and which may include surface water purification, carbon storage and sequestration, climate regulation, protection from natural hazards; (iii) cultural services, which are the nonmaterial benefits people obtain from ecosystems and which may include natural areas that are sacred sites and areas of importance for recreations and aesthetic enjoyment; and (iv) supporting services, which are the natural processes that maintain the other services and which may include soil formation, nutrient cycling, and primary production.

Environmental, Health, and Safety Guidelines (EHSGs):

Environmental, Health, and Safety Guidelines (EHSGs) are technical reference documents with general and industry-specific statements of Good International Industry Practice (GIIP). The EHSGs contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at a reasonable cost.

Financial feasibility:

Financial feasibility is based on relevant financial considerations, including the relative magnitude of the incremental cost of adopting such measures and actions compared to the project's investment, operating, and maintenance costs, and on whether this incremental cost could make the project nonviable for the Borrower.

Forced eviction:

Forced eviction is defined as the permanent or temporary removal against the will of individuals, families, and communities from the homes and/or land which they occupy without the provision of, and access to, appropriate forms of legal and other protection, including all applicable procedures and principles in ESS5. The exercise of eminent domain, compulsory acquisition or similar powers by a Borrower will not be considered to be forced eviction providing it complies with the requirements of national law and the provisions of ESS5, and is conducted in a manner consistent with basic principles of due process (including provision of adequate advance notice, meaningful opportunities to lodge grievances and appeals, and avoidance of the use of unnecessary, disproportionate or excessive force).

Good International Industry Practice (GIIP):

Good International Industry Practice (GIIP) is defined as the exercise of professional skill, diligence, prudence, and foresight that would reasonably be expected from skilled and experienced professionals engaged in the same type of undertaking under the same or similar circumstances globally or regionally. The outcome of such exercise should be that the project employs the most appropriate technologies in the project-specific circumstances.

Grievance:

The processes established under law, local regulations, or decision to enable property owners and other displaced persons to redress issues related to acquisition, compensation, or other aspects of resettlement and gender-based violence. Grievance may create from environmental disturbance like pedestrians and traffic congested and movement, air and noise pollution, community health and safety.

Habitat:

Habitat is defined as a terrestrial, freshwater, or marine geographical unit or airway that supports assemblages of living organisms and their interactions with the nonliving environment. Habitats vary in their sensitivity to impacts and in the various values society attributes to them.

Historical pollution:

Historical pollution is defined as pollution from past activities affecting land and water resources for which no party has assumed or been assigned responsibility to address and carry out the required remediation.

Household:

A household includes all persons living and eating together (sharing the same kitchen and cooking food together as a single-family unit).

Indirectly Affected:

Those likely to lose subsistence or income due to project intervention without loss of any physical assets. A precise definition of indirectly affected people must be based on a careful review and assessment of indirect impacts of the project as well as economic displacement due to loss of land, access to land as well as forest resources, commercial establishments and any other impacts such as severance that adversely affects lives and livelihood sources.

Involuntary resettlement:

Project-related land acquisition or restrictions on land use that may cause physical displacement (relocation, loss of residential land or loss of shelter), economic displacement (loss of land, assets or access to assets, including those that lead to loss of income sources or other means of livelihood), or both. The term “involuntary resettlement” refers to these impacts. Resettlement is considered involuntary when affected persons or communities do not have the right to refuse land acquisition or restrictions on land use that result in displacement.

Land acquisition:

Land acquisition refers to all methods of obtaining land for project purposes, which may include outright purchase, expropriation of property and acquisition of access rights, such as easements or rights of way. Land acquisition may also include: (a) acquisition of unoccupied or unutilized land whether or not the landholder relies upon such land for income or livelihood purposes; (b) possession of public land that is used or occupied by individuals or households; and (c) project impacts that result in land being submerged or otherwise rendered unusable or inaccessible. “Land” includes anything growing on or permanently affixed to lands, such as crops, buildings and other improvements, and appurtenant water bodies.

Livelihood:

Livelihood refers to the full range of means that individuals, families, and communities utilize to make a living, such as wage-based income, agriculture, fishing, foraging, other natural resource-based livelihoods, petty trade, and bartering.

Modified habitats:

Modified habitats are areas that may contain a large proportion of plant and/or animal species of nonnative origin, and/or where human activity has substantially modified an area’s primary ecological

functions and species composition. Modified habitats may include, for example, areas managed for agriculture, forest plantations, reclaimed coastal zones, and reclaimed wetlands.

Natural habitats:

Natural habitats are areas composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition.

Pollution:

Pollution refers to both hazardous and nonhazardous chemical pollutants in the solid, liquid, or gaseous phases, and includes other components such as thermal discharge to water, emissions of short- and long-lived climate pollutants, nuisance odors, noise, vibration, radiation, electromagnetic energy, and the creation of potential visual impacts including light.

Pollution management:

Pollution management includes measures designed to avoid or minimize emissions of pollutants, including short- and long-lived climate pollutants, given that measures which tend to encourage reduction in energy and raw material use, as well as emissions of local pollutants, also generally result in encouraging a reduction of emissions of short- and long-lived climate pollutants.

Primary suppliers:

Primary suppliers are those suppliers who, on an ongoing basis, provide direction to the project goods or materials essential for the core functions of the project.

Project:

Project refers to the activities for which Bank support through Investment Project Financing is sought by the Borrower and as defined in the project's legal agreement between the Borrower and the Bank.

Project worker:

Project worker refers to (a) people employed or engaged directly by the Borrower (including the project proponent and the project implementing agencies) to work specifically in relation to the project (*direct workers*); (b) people employed or engaged through third parties to perform work related to core functions of the project, regardless of the location (*contracted workers*); (c) people employed or engaged by the Borrower's primary suppliers (*primary supply workers*); and (d) people employed or engaged in providing community labor (*community workers*). This includes full-time, part-time, temporary, seasonal, and migrant workers. Migrant workers are workers who have migrated from one country to another or from one part of the country to another for purposes of employment.

Replacement cost:

Replacement cost is defined as a method of valuation yielding compensation sufficient to replace assets, plus necessary transaction costs associated with asset replacement. Where functioning markets exist, replacement cost is the market value as established through independent and competent real estate valuation, plus transaction costs. Where functioning markets do not exist, replacement cost may be determined through alternative means, such as calculation of output value for land or productive assets, or the undepreciated value of replacement material and labor for the construction of structures or other fixed assets, plus transaction costs. In all instances where physical displacement results in loss of shelter, replacement cost must at least be sufficient to enable purchase or construction of housing that meets acceptable minimum community standards of quality and safety.

Restrictions on land use:

Restrictions on land use refer to limitations or prohibitions on the use of agricultural, residential, commercial or another land that is directly introduced and put into effect as part of the project. These may include restrictions on access to legally designated parks and protected areas, restrictions on access to other common property resources, restrictions on land use within utility easements or safety zones.

Security of tenure:

Security of tenure means that resettled individuals or communities are resettled to a site that they can legally occupy, where they are protected from the risk of eviction and where the tenure rights provided to them are socially and culturally appropriate. In no event will resettled persons be provided tenure rights that are in effect weaker than the rights they had to the land or assets from which they have been displaced.

Structures:

Refers to all buildings including primary and secondary structures including houses and ancillary buildings, commercial enterprises, living quarters, community facilities and infrastructures, shops, businesses, fences, and walls, tube wells, latrines, etc.

Technical feasibility:

Technical feasibility is based on whether the proposed measures and actions can be implemented with commercially available skills, equipment, and materials, taking into consideration prevailing local factors such as climate, geography, demography, infrastructure, security, governance, capacity, and operational reliability.

Vulnerable Group:

This means households that are (i) headed by a single woman or woman with dependents and low incomes; (ii) headed by elderly/ disabled people without means of support; (iii) households that fall on or below the poverty line (iv) losing the last parcel of land (v) households of the indigenous population or ethnic minority; and (vi) households of low social group or caste.

Universal access:

Universal access means unimpeded access for people of all ages and abilities in different situations and under various circumstances.

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Executive Summary

The original Environmental Impact Assessment was approved by DoE (Annex 7) and the Environmental Clearance Certificate has been renewed (Annex 6). This report is an update of the previous EIA report taking into account changes in the Master Plan and to satisfy the World Bank Environmental and Social Framework (ESF) requirements for the activities supported by the HEAT project. This Environmental and Social Impact Assessment (ESIA) is prepared for sub-component 1.2(2): Building of the A UW Academic Complex of the Higher Education Acceleration and Transformation (HEAT) project in Bangladesh by Asian University for Women (AUW) in accordance with Government of Bangladesh's (GoB) legal policy and World Bank's Environmental and Social Framework. The Secondary and Higher Education Division (SHED) under Ministry of Education (MoE) is the implementing agency in Bangladesh. AUW will be responsible to implement this ESIA while University Grant Commission (UGC) of Bangladesh will conduct the day to day monitoring.

The HEAT project has four components and this ESIA is prepared for Sub-component 1.2 (2) Building of the AUW Academic Complex in Bangladesh. The Academic Complex will house critical infrastructure needed for the university to transact its core business and hence meet the stated development objectives of the project. As part of the permanent campus development, the World Bank finance may support the following physical infrastructures: academic buildings (with air conditioning, generator support, etc.), research center/lab, internal roads (with culverts, retaining walls, etc.), internal drainage system, water supply and sewage treatment systems, communication facilities, recreation center (e.g., Theatre), lecture halls and faculty offices. The proposed buildings will be as per "Green building" principles. Currently, the university operates from a temporary, rented property. The university will pursue alternative sources of financing to gradually expand the university's infrastructure in a phased manner. Alternative funding options for fully financing AUW campus through Maximizing Finance for Development (MFD) approach are being explored with the aim of supporting innovative partnerships with other potential financiers such as the International Finance Corporation (IFC) and the private sector. An infrastructure gap estimated at US\$ 70 million consisting of a university state of the art auditorium, a sports field, gymnasium and swimming pool, a complete set of student, staff and faculty housing, etc. will be established in a phased manner.

The construction of AUW main academic complex will increase the university's capacity to deliver the services for regional collaboration. This will help to promote women leadership and support the university in its goal of financial sustainability. The campus development would include the building of the main seminar rooms, lecture halls, theaters, and faculty offices. The whole infrastructure including all the facilities will be built in a climate-conscious manner. This campus will increase the enrollment capacity of AUW from 700 to 3,000 students.

The overall project risk is categorized as 'Substantial' as per an internal Environment and Social Risk Classification of the World Bank. The purpose of the ESIA is to use it as tool for decision-making on the sub-project so that there is sustainable development of AUW academic complex construction. The purpose was to: i) identify, evaluate and manage the environment and social risks and impacts of the project in a manner consistent with the ESSs; ii) adopt a mitigation hierarchy approach to the project's E&S risks; c) help identify differentiated impacts on the disadvantaged or vulnerable and identify differentiated measures to mitigate such impacts, wherever applicable; d) assess the relevance and applicability of environmental and social institutions, systems, laws, regulations and procedures in the

assessment, development and implementation of projects, identify gaps, and to assess borrower's existing capacity for management of E&S risks.

The scope of the ESIA is to: i) assess the existing baseline status of the environment within the Project Influence Area; ii) identify the probable adverse and positive E&S risks and impacts due to the planned project during its entire cycle i.e. from preconstruction to construction to operation & maintenance; iii) consider all ES frameworks prepared for the HEAT project; iv) identification of appropriate mitigation measures; v) identify capacity constraint of AUW in respect of E&S management and propose commensurate capacity enhancement measures, etc.

According to the Environment Conservation Act, 1995 and Environment Conservation Rules 1997 of Bangladesh, the said project is categorized as the 'Red Category' project, due to the extent of hill cuttings and size of the project. Red Category projects require Initial Environmental Examination (IEE) for Site Clearance and ESIA Terms of Reference and Environmental Impact Assessment (ESIA) for Environmental Clearance. AUW secured Site Clearance along with ESIA TOR from the Department of Environment on 03 November 2011. The Project also needs to comply with World Bank Environmental and Social Standards (ESSs).

AUW academic complex will be constructed on land owned by AUW. So, this sub-project will not require any land acquisition. This site is under the possession of AUW authority and there is no presence of any residential or commercial households within the AUW premises. However, due to movement of heavy vehicles during construction, sub-project may cause construction induced impacts. Thus, some squatters and encroachers may be affected. During the census and socio-economic survey presence of 5/6 squatter's business (small scale) are identified just outside of the AUW proposed site. They might not be affected during construction period. If affected, mitigation measures will be taken as guided with project's RPF.

AUW shall contract agencies to undertake civil works, agencies/firms to support core-functions; primary suppliers of material/equipment and other implementation support partners. All categories of project workers: Direct workers, Contracted workers (including Migrant Workers) Primary supplier workers (those providing goods and materials e.g. IT services, security services outsourced through by the contractor); and Community Workers would be involved. At this stage, it is estimated that for construction of entire campus will require to engage 1.4 million man-days over the period of 5 years (including project managers, supervisors, labor, etc.). However, World Bank will finance for construction of academic complex only which will require to engage only 1,27,039 man-days over the project period. Risks include: employment of child labour, non-payment of wages by employer; Non-payment of benefits (compensation, bonus, maternity benefits, etc.) by employer; discrimination in employment (e.g. abrupt termination of the employment, working conditions, wages or benefits etc.); possibility of gender based violence as the road shall traverse through sensitive locations such as hospitals, schools, etc. that are near to habitations; Health risks of labour relating to COVID-19 virus spreading, HIV/AIDS and other sexually transmitted diseases.

The local people, local government and interested groups consulted in different ways and they were found very much supportive. They assume that the establishment of the AUW campus will help access to quality education, create employment opportunities, diversify the local culture, benefit and add social values from international students, enhance interest in education which in turn would boost the economic development and change their lifestyle. They also intend to be part of its implementation process so that this work finishes timely without interruption. Impacts from the Project will be medium to large. During construction, the air could be polluted due to the dust created from construction

activities. The smoke from machinery and vehicles can also pollute the air. Mitigation measures would be taken to reduce air pollution such as water spraying on the storage areas of the construction materials and pavements to reduce fugitive dust, etc.

Impacts of noise would be different in different sections of the project area. Highly intensive noise may arise from the equipment and machinery used for drilling rigs, excavating earth and welding, which can impact nearby human population and wildlife (common local animal species such as dogs, birds, etc.). To reduce the noise pollution, appropriate measures need to be taken to limit the sound pollution e.g., using muffler as engine cover, using earplugs by the workers, limiting the working hours from 07 am to 06 pm, using low noise-producing equipment in the project site, etc.

Local surface water and groundwater may face potential impacts in different phases of the project, which include impacts from construction wastes, sewerage water discharge, excessive use of groundwater and surface runoff caused by heavy rain events. The rainwater runoff from the hill slopes will discharge into the valleys of the site as well as the ditches/local streams near the site and the ultimate discharge point will be the Karnafuli River.

The project is connected to the existing road network with a 4-lane CDA road that has been constructed and opened for vehicles recently. This East-West road connects Shershab Circle in the East and Fouzderhat in the West. The location of the campus is in the middle of this connector road. Three-wheelers and rickshaws constitute the majority of vehicular traffic on this road (CDA road). During construction, this road would be used to supply construction materials. From the campus gate, there is a two-lane road that enters the campus. At present, this road is paved with brick and in good condition and open for use. Construction vehicles will not face any difficulty in using this internal road.

The CDA road has already been built, which has a RoW (Right of Way) of 30 meters. A 2x2 lane urban motorway is able to carry more than 30,000 vehicles per day. Existing traffic volume is significantly lower compared to the capacity. So, this road would be able to accommodate the traffic-induced from construction work very efficiently.

Due to the clearing of vegetation and shrub from the hills (as well as cutting and profiling of hills), there will be effects on natural habitat during the construction period. Furthermore, land use patterns will be altered from its present condition. After the end of the construction period, tree plantation programs will be initiated to address the change within the project area. Within two years of the operation phase, the ecology and biodiversity of the project area is expected to become balanced again.

One of the main impacts is related to cutting of hills and disposal of excess soil materials. To this end, 1.873 million cubic meters of hill will be cut or profiled as per the revised Master Plan, out of which 0.749 million cubic meters will be used to fill low-lying areas at the project site and the remaining (1.124 million cubic meters) will be sold and disposed of in appropriate sites. The disposal points are not yet selected but will be finalized in consultation with Chattogram Development Authority (CDA). No hill trimming will be carried out until the disposal points have been identified and cleared with CDA and the Supervision Engineer

Project influence area will not cross any protected areas, or protected forests or sensitive areas (within 10 km). There are no squatters/encroachers on the project land and there is no one living in the project site. So, there is no issue of displacement of people, rehabilitation of settlement, or impacts on private property.

Moreover, there is no chance of affecting the cultural heritage of the city for the project. The project will also provide temporary and permanent employment opportunities for the local people.

The potential environmental and social risks and impacts during the construction phase include:

- Related to ESS2
 - Poor labor and working conditions
 - Occupational Health and Safety Hazards
 - Gender Based Violence (GBV)
 - Social Conflicts
 - Risk of COVID-19 virus spreading
 - Job opportunities for the vulnerable people during construction
- Related to ESS3
 - Land Resources (Soil stability)
 - Water Resource (Surface and Groundwater) Quality
 - Handling of excess soil
 - Disposal of construction waste materials (solid and liquid)
 - Air Quality
 - Noise Quality
- Related to ESS4
 - Community Health and Safety
 - Traffic and Transport Accessibility
 - Hazardous and non-hazardous waste
 - Employment Generation
- Related to ESS5
 - Possible impacts on business squatters near project site
 - Construction induced impacts in project influence area
- Related to ESS6
 - Short term impacts on biodiversity and natural resources
- Related to ESS7
 - No negative impacts are expected during construction period.
- Related to ESS8
 - Damage to physical cultural resources that may be found by chance

The potential environmental and social risks and impacts during operation phase include:

- Related to ESS2
 - Occupational Health and Safety
- Related to ESS3
 - Changes in land resources and soil quality
 - Air quality deterioration
 - Noise impacts
 - Risks from hazardous materials and wastes in case of mismanagement
 - Surface and groundwater quality changes
 - Impacts due to Operation of Campus STP
- Related to ESS4
 - Traffic and road safety issues
 - Security personnel issues
 - Risks from hazardous materials and wastes
 - Impacts on vulnerable people
- Related to ESS5
 - Changes to local land uses- due to clearing of vegetation, hill profiling, filling and levelling the site, the local land use will be changed and altered from its original conditions.
- Related to ESS6

- Restoring of local biodiversity and ecosystems
- Risks from hazardous materials and wastes
- Impacts due to Operation of Campus STP
- Related to ESS7
 - Indigenous teachers and students will be benefitted.
- Related to ESS8
 - Positive Impacts on local and regional Cultural Heritage due to student exchange programs

Solid and liquid wastes generated during the construction and operating periods may contaminate ground and surface water unless properly handled and treated. Liquid wastes e.g., sewage waste, generated from the toilets during the operation period, will have a substantial effect on the physical and biological environment. Proposed campus Sewerage Treatment Plant (STP) can play a vital mitigating role in reducing this impact. The STP should be designed properly considering the nature of the campus of hilly terrain and volume of wastes and its operation monitored during the operation phase.

The construction of the AUW campus in the hilly area will include hill profiling, filling and levelling. The civil construction work may be environmentally challenging and there are risks for environmental degradation. The work has a major cost component for slope protection works as mitigation measures, which would also carry a high priority for ensuring sustainability.

It is recommended that labor should be hired locally and provided with transport facilities e.g., transport to and from the site. In case of any necessity, a portion of local labor would be accommodated in a Labor Camp at the project site, ensuring security and required facilities during construction work. For any workers living onsite, the contractors will be responsible for providing onsite accommodation, adequate water supply, sanitation services, etc.

The authority has a plan to make the campus self-sustaining with respect to water consumption through rainwater harvesting, reuse and recycling of treated wastewater from the STP. The project authority intends to improve the existing drainage network within the campus to make it environmentally sustainable. The authority has also prepared for tree planting for scientific study and for scenic beauty. These trees will balance the warm temperature, be carbon sinks and prevent soil erosion at the same time.

Few gaps exist in the provisions in policies between government acts/policies and World Bank's ESS requirements that have been addressed by the ESMF, Resettlement Policy Framework and various frameworks prepared¹. Institutional arrangement to address E&S aspects are currently relatively weak and need significant strengthening. GRM is decentralized and ad-hoc and requires systematic recording of grievances and redressal.

Action needs to be taken during implementation to: i) to obtain clearances, licenses/approvals and permits under existing legal framework that are applicable to the project from relevant national and/or local authorities; ii) develop mechanisms to foster greater participation of more passive members of the community, including disadvantaged persons, women and vulnerable groups; iv) develop clear procedures for disseminating information about the project to all affected communities and provide a feedback mechanism for these communities to voice their concerns and address these concerns during

¹ Web links to be provided after disclosure of documents.

project implementation. Trainings on Environment and Social aspects including reporting requirements need to be prepared and administered to build capacity of the project staff.

Key measures and time frames required for the project to meet the requirements of the ESSs includes the following (before appraisal completion), complete preparation and disclosure of:

- i. Environmental and Social Impact Assessment Report
- ii. Environmental and Social Management Plan
- iii. Stakeholder Engagement Plan for the overall project
- iv. Labor Management Plan considering the COVID-19 situation

AUW will establish and maintain an E&S organizational structure in AUW with qualified staffs to support management of E&S risks including at least one Environmental Expert, one Social Expert, one Labour and OHS Specialist. The Environment Department of AUW will be responsible for environmental and social compliance of construction works. There will also be an AUW Environment Officer and a Gender Focal Person.

A Grievance Redressal Mechanism (GRM) would be established at the starting of the Project. There will be a separate GRM for the labors as guided by the Labor Management Procedures. The GRM will be linked to the established complaints system already functioning in AUW and will handle complaints regarding social and environmental matters. Detailed GRM is explained with Chapter 9.

AUW has already set up a Project Implementation Authority (PIA) to implement the project. The PIA would be responsible for the overall implementation of the ESMP and the monitoring plan. The proposed Environmental and Social Management Plan (ESMP) should be integrated into the project design for sustainable development of the project.

Costing for environmental mitigation measures and monitoring are provided in Chapter 10. The estimated budget for mitigation measures in the construction phase for the 4.5 yrs is USD 3,960,824. The estimated budget for mitigation measures in the operation phase is USD 15,882/yr. The costs will be finalized during detailed design stage.

Hiring of necessary E&S professionals during the construction period (4.5 years) is estimated to cost USD 400,000. Monitoring of environmental and social risk management issues will cost around USD 25,000/yr during the construction phase. The monitoring cost during operation and maintenance phase is estimated to be about USD 12,000/yr.

Given the scale of the proposed project activities, special attention should be paid to Occupational Health & Safety (OHS) issues. This includes labour and staff during construction phase as well as students/staffs/visitors during operation and maintenance phase. Throughout the pre-construction, construction and operation & maintenance phases of the project, special attention must be provided by AUW management for minimizing COVID-19 infection risks. Protocols and standard operating procedures accompanied with regular training, testing and monitoring measures must be imbedded in the site/facility activities.

This ESIA report is considered a living document. It is to be updated by AUW as and when required due to changes in project design, baseline conditions or identification of potential new impacts.

Chapter 1: Introduction

1.1 Background

In recent years, the World Bank has supported capacity building in higher education in South Asian countries, which creates a good platform to launch regional collaboration in this aspect. The Higher Education Acceleration and Transformation (HEAT) Project focuses on improving the employability of university graduates and improving governance of higher education. The Project also aims to establish a regional network of higher education institutions in South Asia. The Project takes an approach that builds on and utilizes the synergies of national and regional support to higher education. First, the project will leverage digital connectivity, established through different World Bank national projects, among the participating countries (Bangladesh and Afghanistan). Second, the project would focus on employability and leadership, particularly for women, which is one of the major development concerns in the region. Third, the project would look into promoting collaborative research among academics across different institutions in the region. Fourth, the region faces some common issues of governance and management of the higher education sector and would benefit the exchange of knowledge on quality assurance, performance-based financing, and teacher management systems. Finally, South Asia lags in the internationalization of higher education, providing potential scope for the project to initiate efforts in this aspect.

The HEAT project has 4 components and this Environmental and Social Impact Assessment (ESIA) is prepared for Sub-component 1.2 (2) Building of the AUW Academic Complex in Bangladesh. The ESIA preparation led to identification of potential adverse environmental and social impacts and their remedial measures, based on which the environmental and social mitigation measures have been prepared following the guidelines of World Bank ESS1-8 and ESS10, and associated national and international environmental, social laws and regulations.

This ESIA presents a detailed process, which starts from the conception of the project and continues till the operation phase. The steps for environmental and social assessment are therefore different at different phases. The present ESIA details the environmental setting of the project zone, collects the baseline data and then identifies the anticipated environmental impact and finally suggests appropriate mitigation measures and mechanism for ensuring effective implementation of the environmental safeguard measures at different stages of the project.

1.2 Overview of AUW in Bangladesh

The Asian University for Women (AUW) provides an example of effectively promoting female higher education and employability, especially for those from an underserved community, serving as a model of Center of Excellence for the region. AUW was established in 2008 to educate the next generation of female leaders in the region. This university mostly enrolls underprivileged women (e.g., from the garment sector, and minorities) and prepares them through high quality and rigorous undergraduate programs as highly skilled professionals for the job market. In addition to subject-specific specialization, AUW emphasizes on confidence-building and higher-order cognitive and soft skills development, including problem-solving, teamwork, communication and negotiation skills. It manages to provide internships to all its students, leading to high graduate employment in top employers, while many graduates continue to pursue postgraduate degrees in top-ranked global universities. AUW has also managed to maintain academic continuity during the COVID-19 quarantine period through online

programming. The institute has identified a need to strengthen its crisis response mechanisms to ensure their ability to support academic continuity during future emergencies.

The University is currently operating in a leased facility. Under this project, AUW will develop a new campus at Pahartali, Chattogram, with financial support from World Bank. In 2006, the Government of Bangladesh (GoB) passed an act in Parliament allocating 140 acres of land for the establishment of AUW permanent campus at Pahartali, Chattogram. Since 2008, the AUW began their voyage in Chattogram, Bangladesh. The idea for the university originated by the World Bank/UN task force for higher education and society². AUW now has more than 700 students from 15 different countries.

The Asian University for Women (AUW) strives to be an international center of excellence, focused on women's education and empowerment. The university, attracting students from across the region, will put together highly talented women from diverse economic, cultural, and religious backgrounds to study together to fulfill intellectual and personal potential in a collaborative effort.

The strategic objectives of AUW is to create an unprecedented platform to educate women from many countries of the most marginalized and disadvantage communities and prepare the next generation of leaders for Asia and the Middle East which includes Afghanistan, Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Malaysia, Myanmar, Nepal, Palestine, Pakistan, Vietnam, Sri Lanka, and Syria, and having future graduate women leaders equipped with critical thinking skills, compassion, empathy, and confidence.

1.3 Purpose of the ESIA Study

The overall project risk is categorized as 'Substantial' as per an internal Environment and Social Risk Classification of the World Bank. The purpose of the ESIA is to use it as tool for decision-making on the sub-project so that there is sustainable development of AUW academic complex construction. Specifically, the objectives of the study are as follows:

- i. To identify, evaluate and manage the environment and social risks and impacts of the project in a manner consistent with the ESSs;
- ii. To adopt a mitigation hierarchy approach to the project's E&S risks i.e. a) anticipate and avoid risks and impacts; b) minimize or reduce risks and impacts to acceptable levels, if not avoidable; c) once risks and impacts have been minimized or reduced, mitigate; and (d) where significant residual impacts remain, compensate for or offset them, where technically and financially feasible;
- iii. To help identify different impacts on the disadvantaged or vulnerable and to identify appropriate measures to mitigate such impacts, wherever applicable;
- iv. To assess the relevance and applicability of environmental and social institutions, systems, laws, regulations and procedures in the assessment, development and implementation of projects and where appropriate, identify gaps, if any, and
- v. To assess AUW's existing capacity and identify areas to enhance capacity towards management of E&S risks

² <https://asian-university.org/who-we-are/history/>

1.4 Scope of the ESIA

The ESIA requires conforming to the applicable environment and social legal and regulatory framework of Government of Bangladesh as well as World Bank's Environmental and Social Framework Policy and relevant Standards. The scope of the ESIA is to:

- i. assess the existing baseline status of the social and environment within Corridor of Impact and Project Influence Area;
- ii. identify the probable adverse and positive E&S risks and impacts due to the planned project during its entire cycle i.e. from preconstruction to construction to operation & maintenance and decommissioning;
- iii. identify stakeholders and various groups/institutions who are either affected or have an interest or a stake in the project, with emphasis on disadvantaged and vulnerable groups and carry out consultations with stakeholders to help elicit their concerns, suggestions and support;
- iv. consider all Environmental and social standards likely relevant in the project for further usage towards preparation of requisite mitigation plans, as may be required.
- v. conduct additional studies, if any, for the enhancement of the benefit to the local community.
- vi. identify capacity constraint of A UW in respect of E&S management and propose commensurate capacity enhancement measures;
- vii. Preparation of Environmental and Social Management Plan (ESMP) including Monitoring Plan and budget;
- viii. Assess A UW institutional setup for managing proposed project activities and propose additional resources (hiring of specialists, training, etc.); and
- ix. Finally use inputs from the above to prepare appropriate mitigation measures and plans and their inclusion in cost estimates (including rate analysis), Drawings, Bill of Quantities, Technical specifications and other inputs that would be integrated with the bid documents.

1.5 Approach and Methodology of the ESIA

Project design and description: The Project description has been prepared by collecting relevant information from different documents like the Master Plan³, previous DoE approved EIA report⁴, etc. The project entails the development of a permanent campus with necessary facilities such as: academic, residential and administrative buildings; water supply and sewer systems; internal roads; etc. The World Bank financing (of US\$ 30 million) is for the academic complex, which would include the building of the main seminar rooms, lecture halls, theaters, and faculty offices. Further campus construction (beyond the WB contribution for the academic complex) is costed at another US\$70 million, consisting of a university state of the art auditorium, a sports field, gymnasium and swimming pool, a complete set of student, staff and faculty housing, which will be established in a phased manner using alternative financing sources.

³ Vitti Sthapati Brindo (2019)

⁴ Vitti Sthapati Brindo (2010)

Environmental and Social Baseline Information: The environmental and social baseline information has been collected from both primary and secondary sources. For collecting such primary data, a structured checklist has been used. The influence area of 1 km is considered for the study to analysis the developments at the macro level and is represented with the secondary and primary data, Stakeholder consultations and during the social surveys. A socio-economic profile for the project areas was prepared based on the information collected from secondary and primary sources to provide an overview, levels of socio-economic development etc. of the sub-project. Secondary information from different government sources like Census of Bangladesh were collected. The secondary information helped to understand macro level socio-economic profile of the population by gender, ethnicity, vulnerability, poverty, working population and available infrastructure facilities for services in the project influence area

Selection of Important Environmental Components (IECs): Important environmental components have been identified through scoping sessions with the local stakeholders, including local AUW officials.

Impact Assessment: The impacts have been assessed in the ESIA study. Local stakeholder's views in this regard have taken painstakingly. Study team has conducted several consultation meetings locally and regionally.

Mitigation Measure: Site-specific and project component-specific mitigation measures have been prescribed. Consultations have been made with the local stakeholders in this regard.

Environmental and Social Management Plan (ESMP): ESMP has been delineated by discussing it with the relevant experts and the Proponent. Based on the nature of activities, a monitoring plan has been prepared, and sampling sites have been shown on the map.

In order to attain the study objectives, the study is conducted based on the primary and secondary physical, biological and social information. For monitoring air quality and noise level, the sensitive receiver points or residential area near the project sites have been considered. For testing water quality, adjacent waterbodies and deep tube-well have been considered.

1.5.1 Ambient Air Quality

The air quality samplings (PM_{2.5}, PM₁₀, CO, SO₂, NO₂, O₃,) have been conducted at the project sites and road intersections close to the project. Details of sampling locations, methodology of sampling, and methodology of testing are given below:

The major sources of air pollution identified in the study area include the nearby road with heavy vehicle movement.

For the collection of samples, the nearest sensitive receiver points (i.e., project sites, road intersection etc.) were selected for collecting the samples as the nearest area could be influenced by the construction activities.

The ECOTECH AAS 271 air sampler was designed to meet international standards (including US EPA Quality Assurance) for the continuous sampling of ambient air. 'A' grade volumetric glassware has been used for the wet analysis. All the chemicals used were Analytical Reagent (AR) grade. De-ionized water was used for the preparation of all the solutions. Weights were made using an electronic analytical balance, measuring up to four decimal places in CGS units. The balance was calibrated with the standard weights provided by its manufacturer.

The height of the ambient air quality sampler was about one meter. All the samples and data were collected from about 1-1.5 meters in height. The impinge or other pipes were pre-cleaned and dried

before they are used for sampling. For the sampling of PM₁₀ and PM_{2.5}, SO_x, NO_x, and CO, all the pipes connections were checked to prevent leaking. The liquid samples (absorbing reagents) were collected in pre-cleaned plastic bottles and stored in a cooler box and transported to the ECL analytical laboratory. All samples were stored below 4°C in the laboratory. The chain of custody was maintained for all samples to the ECL laboratory for testing and results.

The sampling locations are as follows:

Sl.	Location	GPS Coordinates
1.	Near the main gate	22°23'08.9"N; 91°47'52.91"E
2.	Site Office	22°23'9.23"N; 91°47'35.80"E

1.5.2 Ambient Noise Level Measurements

The main purpose of ambient noise level measurement was to determine sound intensity at the monitoring locations. These locations were chosen in such a way that a representative data could be recorded for all over the study area. For ambient noise level, details of sampling locations, methodology of sampling, and methodology of testing is given below:

Ambient noise levels were recorded at two locations in the study area. For selecting points, nearest sensitive receiver points (e.g., Near Main gate and Site Office) have been considered to collect the samples as the points could be affected by the construction activities. The location for sampling of the ambient noise level is as follows.

Sl.	Location	GPS Coordinates
1	Near the main gate	22°23'08.21"N, 91°47'52.27"E
2	Near Site Office	22°23'09.20"N, 91°47'35.33"E

Noise level data were collected from the project area. An appropriate sound level monitoring device (Model SL- 4033 SD Manufacturer-Lutron, Taiwan) was used to collect noise data. The data were taken at Day and Nighttime. Data were stored in SD Card during monitoring. Later, these data were sent to the lab for analysis.

Noise level data were collected in the nearest locations as air samples. Noise level monitoring performed at day (6 am to 9 pm) and nighttime (9 pm to 6 am).

Noise levels (Sound level Meter. Model-SL-4033SD) (t-Weighted) were measured using a precision sound level meter for the one-hour duration, and Leq (t) was calculated. Leq (60 min) was used as the monitoring parameter for the period between 0600-2100 hours (peak hours) on normal weekdays. The measurements were carried out according to the equivalent method of USEPA approved methods. The collected noise level data were analyzed and used in the preparation of the report.

1.5.3 Surface Water Quality Sampling

Water sampling and analysis have been undertaken to understand the baseline conditions of water quality (pH, TDS, EC, DO, BOD, COD, TSS) characteristics of the surface water in the study area. Surface water samples were collected from selected surface water sources representing different parts of the study area.

Surface water sampling locations were selected to obtain a representative water sample from various points within the study area. Two samples of surface water were collected from the adjacent water body (e.g., canal and ditch) that could possibly be affected by the construction activity.

Sl.	Location	GPS Coordinates
1	Near ditch	22°23'15.08"N, 91°47'29.99"E
2	Near canal	22°23'08.95"N, 91°47'42.77"E

The samples were analyzed for the aforementioned parameters covering physico-chemical characteristics that include certain heavy metals and trace elements. Water samples were collected as grab water samples in pre-washed 2-litre sterilized clean PET bottle and Amber bottle for complete physico-chemical analysis. The samples were collected from the site and preserved for laboratory analysis. The samples were analyzed as per standard procedures/methods of the respective laboratories. Testing method of surface water quality is as follows:

Parameter	Unit	Testing Methods
BOD ₅	mg/L	5 days Incubation
COD	mg/L	Close Reflex Method
DO	mg/L	Multimeter
pH	-	pH meter
TDS	ppt	TDS meter
EC	μS/cm	Conductivity is measured electrometrically with (or without) temperature compensation and is calibrated against a standard solution of potassium chloride. Measurement of Conductivity Method 2510 (APHA, 1998).
TSS	mg/L	Total suspended solids dried at 105°C 2540-D. (APHA, 1998) Method also in accordance with AS 3550.4:1990 Sample is filtered through a glass fibre (GF/C) filter of nominal pore size (WIN has nominated a pore size of 0.45 μm). The Gooch crucible, filter and the retained material is dried at 105°C. TSS is determined as the weight of the retained material.

1.5.4 Groundwater Quality Sampling

The groundwater sampling and analysis was undertaken to understand the overall baseline water quality (pH, Total Dissolved Solids, Dissolved Oxygen, As, Fe, EC and COD) of the groundwater in the study area. Groundwater samples were taken from representative selected groundwater sources representing different parts of the study area. Details of sampling location and methodology is given below.

The groundwater sampling locations were selected to obtain a representative water sample from various zones within the study area. The samples were collected from existing tube wells (hand-tube wells being used by the local people. A total of two groundwater samples were collected from two different locations of the project sites.

The sampling locations are provided below.

Sl.	Location	GPS Coordinates
1	Near Main Gate	22°23'6.83"N, 91°47'51.92"E
2	Near Site Office	22°23'8.91"N, 91°47'36.19"E

The samples were analyzed for the aforementioned parameters covering physico-chemical characteristics. Water samples were collected as grab water samples in pre-washed 2-litre sterilized clean PET bottle for complete physico-chemical analysis. The samples were collected from the site and preserved for laboratory analysis. The samples were analyzed as per the government standard. Details of the analysis method and protocol are presented as follows:

Parameters	Unit	Testing Methods
Arsenic (As)	mg/L	Atomic Absorption Spectrophotometer
DO	mg/L	Multimeter
Iron (Fe)	mg/L	Atomic Absorption Spectrophotometer
COD	mg/L	Close Reflex Method
pH	-	pH meter
TDS	ppt	Multimeter
EC	µS/cm	Conductivity is measured electrometrically with (or without) temperature compensation and is calibrated against a standard solution of potassium chloride. Measurement of Conductivity Method 2510 (APHA, 1998).

1.5.5 Public Consultation

Based on an identification of stakeholder towards the preparation of a Stakeholder Engagement Plan, stakeholders were identified through systematic consultation with project beneficiaries, project affected people, students, teachers, local government, community people, women, vulnerable and poor members of the community, and other stakeholders who may have an influence over the project. Hence consultations were undertaken with primary stakeholders: beneficiaries, disadvantaged, poor and vulnerable groups, people who may potentially be impacted by the project. Consultations were also carried out with secondary stakeholders: local community-based organizations (CBOs) and community representatives as well as government departments etc.

Focus group discussions were conducted with a cross-section of men and women in the community. The objective of these discussions was to gain in-depth understanding of project issues and concerns from a broad group of discussants, including people who may be affected from construction of the AUW academic complex. The consultations focused on: inclusiveness in participation of community members, perceptions and concerns about the positive and negative social impacts of the project, including impacts on land and structures.

Separate individual interviews were held with disadvantaged and vulnerable members of the community to disseminate information about the project and to understand their views about the project. Women at select locations were also consulted on their interest to engage themselves as labor during construction period. A separate questionnaire was administered to females on questions relating to Gender Based Violence (GBV) particularly at locations where labor camps and socially sensitive receptors such as Schools and hospitals are located.

All the feedback and suggestions are received, and responses are well documented with chapter 8 and Annex 2 and annex 3 of this ESIA. Feedback and suggestions are incorporated to the project design and Masterplan of the AUW academic complex construction. The ESIA will be disclosed to AUW and UGC's websites once approved by the MoE and World bank, Hard copies of the ESIA and relevant E&S documents will be kept at AUW, UGC, project and relevant government offices. The ESIA will be translated in local languages and will be disclosed with all stakeholders including interested groups.

1.5.6 Limitations

The major limitations of the study are: (i) implementation work will require prolonged time; thus the base condition of reference period will differ from the time of real implementation; (ii) short duration of the study; and (iii) unavailability of relevant information timely (iv) uneven terrain, absence of available travel modes and the difference in language. In order to overcome these limitations, this ESIA

document is considered a living document by AUW. It will be updated as and when required to reflect the changing circumstance of the project and its influence area.

It has been reported that all the survey works (e.g. primary & secondary data collection) were completed before the outbreak of COVID-19 in Bangladesh. If the COVID-19 outbreak persists, the implementation process will be delayed or may face particular difficulties.

1.5.7 ESIA Team

The Consultant formed a multidisciplinary team of professionals having experience in conducting Environmental and Social Impact Assessment in this type of project.

Table 1: ESIA Study Team

Sl. No	Name of the Expert	Qualification	Position
1	Md. Khalid Hasan	Assistant Professor, Institute of Disaster Management and Vulnerability Studies University of Dhaka, Dhaka	ESIA Consultant
2	Dr. Jagadish Chandra Saha	PhD in Social Sciences	ESIA Consultant
3	Kamrul Hasan Bhuiyan	Master of Geological Sciences, Jahangirnagar University, 2002 Bachelor of Geological Sciences, Jahangirnagar University, 2001	ESIA Consultant
4	Md. Asaduzzaman	Master of Governance and Development, Master of Urban and Regional Planning, Bachelor of Urban and Regional Planning, Jahangirnagar University.	ESIA Consultant
5	Md. Mehedi Hasan	Master in Architecture Bachelor in Architecture	GIS specialist and Architect.

A group of multidisciplinary Junior Specialists and field workers has assisted the study team in collecting data from the field.

1.6 Structure of the Report

The report has been structured as follows.

Chapter 1: Introduction: The introduction chapter presents a brief overview of the assignment along with its background, objectives, scope of works, methodology etc.

Chapter 2: Policy, Legal, and Legislative Framework: Chapter Two outlines the Policy and Legislation on environmental issues.

Chapter 3: Project Description: Chapter Three describes proposed interventions of the project, background, project category, project facilities, need of the project, project activities, technology and implementation schedule etc.

Chapter 4: Environmental and Socio-economic baseline: Chapter Four presents the description of the environmental baseline (Socio-economic, physical, and biological) of the project area.

Chapter 5: Environmental and Social Risks and Impacts: Chapter Five identified key environmental and social issues and analysis of its impact and significance due to construction and operation period.

Chapter 6: Cultural Heritage Assessment: This Chapter deals with the cultural heritage with potential impacts.

Chapter 7: Analysis of Alternatives: The chapter describes on site selection, an alternative method of construction, approach road to the site etc.

Chapter 8: Information Disclosure, Consultation and Participation: This chapter presents the approach and methodology for the public consultation conducted and tabulated their views, suggestions, and comments in favor of the project including grievance redress mechanism.

Chapter 9: Grievance Redress Mechanism: This chapter discusses on procedure of grievances and redressal mechanism to avoid any conflict from the vested quarters.

Chapter 10: Environmental and Social Management Plan: This Chapter deals with the Environmental and Social Impacts of the proposed project and possible mitigation measures and the monitoring program of the project.

Chapter 11: Conclusions and Recommendations: This chapter gives the finding, conclusions, and recommendations of the project.

Chapter 2: Policy, Legal and Administrative Framework

2.1 Introduction

A review of the existing environmental and social legal and regulatory framework is discussed here in terms of their relevance and applicability to the AUW academic complex construction is presented in this chapter.

The procedures and requirements for ESIA are dictated by the Environment Conservation Act (ECA), 1995, which introduced a requirement for any proposed "industrial unit or project" to obtain prior approval from the DoE.

The ECA has classified projects to be assessed (by the DoE) in four categories (green, Orange A, Orange B, and red). Large construction/ development projects and ancillaries are allocated to the red category, which triggers an automatic requirement for a full ESIA. Subject to a satisfactory review of the environmental assessment, the DoE issues an authorization for the project to proceed. The authorization consists of two parts: a "site clearance", which gives approval to the site proposed for the project and "Environmental Clearance", which approves the content of the project.

The AUW, as project proponent, is responsible for carrying out an ESIA study of the proposed project. AUW has the responsibility to administer the environmental assessment process through its Project Implementation Authority (PIA).

A key requirement of the ESIA for projects classified in the Orange-B and Red categories is an ESMP. The function of the ESMP is to enable the project proponent (AUW) to demonstrate the DoE how it will deliver the environmental performance assessed in the ESIA (for which DoE approval is sought).

The ESMP must describe in detail organization and management responsibilities, provide details of how mitigation measures identified in the ESIA will be implemented and explain how monitoring will be carried out. Possession of a "clearance" from the DoE does not relieve the developer of a project from the requirement to comply with other environmental regulations.

The **National Education Policy, 2010**, is the basis for the education system providing people- friendly, accessible, uniform, universal, well-planned, science-oriented and high standard education in accordance with the constitutional directives.

The key features of Education Policy, 2010, depicted below

Sl. No.	Key features-Education Policy, 2010
1	Introduction of pre-primary education
2	Universal primary education up to class 8
3	Introduction of new compulsory subjects
4	Reforming Madrassa education and setting up commission on Qawmi Madrassas
5	Restructuring the evaluation and examination system
6	Quality improvement in tertiary education
7	Training facility for the university teachers
8	Banning of corporal punishment

Moreover, there are many other praiseworthy steps toward increasing scholarships, ensuring gender parity in the institutions and strategies to increase literacy, vocational education, and non-formal education.

2.2 Environment Related Policies in Bangladesh

2.2.1 National Environmental Policy (NEP), 2018

The National Environmental Policy (NEP) has been updated in 2018. The environmental policy is a comprehensive framework of environmental action, together with a set of broad sectoral action guidelines.

The objectives of the updated environmental policy are as follows:

- Natural equilibrium provision and overall development of the country through environmental protection and sustainable management;
- Spreading of adaptation programs to reduce the adverse effects of climate change in the country;
- Encouraging collection and promotion of low carbon emission technology in the country;
- Identifying and controlling all types of environmental pollution and degradation causing activities;
- Ensuring environmental improvement in all fields;
- Ensuring sustainable, long-term and environmentally friendly use of all-natural resources;
- Exploring and expanding the areas of mutual cooperation in the regional and international arena for the development of the global environment;
- Building the environmental education, capacity building, public awareness and public opinion to protect the environment;
- Considering public-private partnership for the development of the environment;
- Maintaining and streamlining the environmental policies and strategies among other policy strategies for the interest of sustainable development;
- Developing human resources capable of dealing with all kinds of environmental and environmental issues, including climate change;
- Ensuring Environmental Impact Assessment and Strategic Environmental Assessment in all necessary sectors;
- Discouraging the introduction of foreign and invasive species of animals and plants, if necessary, make decisions through adequate research;
- Getting involved with all international environmental initiatives and to take necessary actions at local and national levels;
- Taking action to reduce poverty through environmental protection; and
- strengthening observations on proper compliance with environmental rules and regulations.

The updated environmental policy includes twenty-four sectors and areas. They are:

- Land Resources Management
- Water Resources Management
- Air Pollution Control
- Safe Food and Water
- Agriculture
- Public Health and Health Services
- Accommodation, Housing and Urbanization
- Education and Mass Awareness
- Forest and Wildlife
- Biodiversity, Ecosystem Conservation and Biosafety
- Hill Ecosystem,
- Fisheries and Livestock
- Coastal and marine ecosystem
- Ecotourism
- Industrial Development

- Energy and Mineral Resources
- Communication and Transportation
- Human Resources Management
- Climate Change Preparedness and Adaptation
- Disaster Management
- Science, Research, Information and Communication Technologies
- Management of Chemical Substances
- Other Pollution Control
- Environment Friendly Economic Development, Sustainable Production and Consumption.

It also provides implementation plan/activities for these sectors. The policy includes an outline of organizational set-up and national environmental policy compliance for different sectors.

2.2.2 Other Relevant Policies

Other relevant policies in Bangladesh and their key features and applicability to the Project are detailed in **Table 2**.

Table 2: Other relevant policies and key features

Policy	Key Features
National Conservation Strategy, 1992	All industries shall be subject to an ESIA; <ul style="list-style-type: none"> • Adoption of pollution shall be implemented through the application of prevention/control technologies; • Hazardous or toxic substances/ wastes shall not be imported as raw materials; • Import of appropriate and environmentally-sound technology; • Dependence on imported technology and machinery gradually be reduced in favor of sustainable local skills and resources
The National Forest Policy, 1994	National Forestry Policy, 1994 targets to conserve the existing forest areas and bring about 20% of the country's land area under the Forestation Program and increase the reserve forest land by 10% by the year 2015, through coordinated efforts of GO-NGOs and active participation of the people.
National Environmental Management Action Plan, 1995	National Environmental Management Action Plan (NEMAP), 1995 is a wide-ranging and multi-faceted plan, which builds on and extends the statement set out in the National Environmental Policy. NEMAP has broad objectives of: <ul style="list-style-type: none"> • Identification of key environmental issues affecting Bangladesh; • Identification of actions necessary to halt or reduce the rate of environmental degradation; • Improvement of the natural and built environment; iv) Conservation of habitats and biodiversity; • Promotion of sustainable development, and • Improvement in the quality of life of the people.
The National Water Policy, 1999	National Water Policy, 1999 (approved) was adopted to ensure efficient and equitable management of water resources, proper harnessing and development of surface and groundwater, availability of water to all concerned and institutional capacity building for water resource management. It has also addressed issues like river basin management, water rights and allocation, public and private investment, water supply and sanitation, and water needs for agriculture, industry, fisheries, wildlife, navigation, recreation, environment, preservation of wetlands, etc.

The Summary of Applicable Environmental Regulations of GoB relating to the project are presented in table-3.

Table 3: Applicable Environmental Regulations of GoB

Sl No.	Applicable Environmental Regulations	Key Features	Applicability to the Project A UW
1	Environment Conservation Act, 1995 (amendment in 2000, 2002 and 2010)	<p>Environment Conservation Act, 1995 (amendment in 2010) The national environmental legislation is known as the Environmental Conservation Act (ECA), 1995 (with subsequent amendments). It is currently the main legislative document relating to environmental protection in Bangladesh, which repealed the earlier environment pollution control ordinance and was promulgated in 1995. The main objectives of the ECA 1995 are:</p> <ul style="list-style-type: none"> • Conservation and improvement of the environment, and • Control and mitigation of pollution of the environment. <p>The main strategies of the act can be summarized as follows:</p> <ul style="list-style-type: none"> • Declaration of ecologically critical areas, and restriction on the operation and processes which can be carried out or cannot be initiated in the ecologically critical areas. • Regulation in respect of vehicles emitting smoke harmful to the environment. • Environmental clearance. • Regulation of the industries and other development activities – discharge permits. • Promulgation of standards for the quality of air, water, noise and soil for different areas for different purposes. • Promulgation of standard limits for discharging and emitting waste. • Formulation and declaration of environmental guidelines. 	<p>The project is categorized as Red.</p> <p>All requisite clearances (LCC and ECC) from the DOE shall be obtained prior to the commencement of civil work.</p> <p>A UW project will proceed with the application for clearance in due course and obtain required clearance before any construction activities are initiated.</p> <p>A UW has already obtained Site Clearance Certificate (ECC) in 2011 and subsequently it has been renewed.</p>
2	Environment Conservation Rules (ECR), 1997; (amendment in 2002, 2003 and 2017)	<p>This is a set of relevant rules promulgated to implement the ECA 1995. There have been four amendments to the Rules, in February 2002, in August 2002, in April 2003 and December 2017, respectively. The Rules mainly consist of:</p> <ul style="list-style-type: none"> • According to ECR, 1997, Amendment in December, 2017, an IEE is sufficient for Orange B category projects. • After getting a site clearance certificate upon approval of IEE, only the EMP report is submitted to DoE for Environmental Clearance Certificate (ECC). • Categorization of industries, development projects and other activities on the basis of pollution activities of the existing or proposed industries/development projects/activities. <p>Procedure for obtaining environmental clearance.</p>	<p>The project is categorized as Red.</p> <p>All requisite clearances (LCC and ECC) from the DOE shall be obtained prior to commencement of civil work.</p> <p>A UW will proceed with the application for clearance in due course and obtain required clearance before any construction activities are carried out.</p>

Sl No.	Applicable Environmental Regulations	Key Features	Applicability to the Project A UW
		<ul style="list-style-type: none"> Requirement for undertaking IEE and ESIA as well as formulating an EMP according to categories of industries/development projects/activities. Procedure for damage-claim by persons affected or likely to be affected due to polluting activities or activities causing hindrance to normal civic life. 	A UW has already obtained Site Clearance Certificate (ECC) in 2011 and subsequently it has been renewed.
3	Environment Court Act, 2000; subsequent amendments in 2002 and 2010.	The Environment Court Act, 2010 provides for the establishment of environment courts and matters incidental thereto. This Act also provides the jurisdictions of environment court, the penalty for violating court's order, trial procedure in special magistrate's court, the power of entry and search, the procedure for investigation, procedure and power of environment court, the authority of environment court to inspect, appeal procedure and formation of the environment appeal court.	The Environmental Court has been established in Dhaka to look after the allegations, enforcement drive etc. The Project shall follow this Act accordingly during construction and operation and to prevent or reduce pollutions and managed it environmentally-friendly.
4	Chattogram Port Authority (CPA) Ordinance, 1976:	<p>It is mentioned in s.10 (1) Subject to the provisions of this Ordinance; the Authority may take such measures and exercise such powers as may be necessary for carrying out the purposes of this Ordinance. (2) Without prejudice to the generality of the powers conferred by subsection (1), the Authority shall, in particular, have power</p> <ul style="list-style-type: none"> To construct, maintain and operate docks, moorings, piers and bridges within the Port, with all necessary and convenient drains, arches, culverts, roads, railways, fences and approaches; To undertake any work of or in connection with the loading, unloading and storing of goods in the port; To construct, maintain and operate ferry vessels to carry passengers, vehicles and goods within the port; To construct, maintain and operate railways, warehouses, sheds, engines, cranes, scales and other appliances for conveying, receiving, handling and storing goods to be landed or shipped or otherwise dealt with by the Authority; To reclaim, excavate, enclose or raise any part of the bank or bed of the river. 	The project should comply with this act accordingly.
5	Relevant Hill Cutting Regulation	The Building Construction Act, 1952, Hill Cutting Ordinance, 1986, Environmental Conservation Act, 1995 (amended in October 2010) specifies that no one shall without prior approval from the Government cut or raze any hill or hillocks in Bangladesh. The approval shall be granted from the Government of Bangladesh or the relevant authority.	Approval for hill cutting, profiling or dressing is required from the appropriate authority.

Sl No.	Applicable Environmental Regulations	Key Features	Applicability to the Project A UW
		The Act specifies that cutting or razing of the hill can be approved for the benefit of public interest.	The government has allocated 140 acres of land to A UW for establishment of A UW permanent campus. Approval and no objection certificate regarding hill cutting/profiling has already been obtained from the concerned authority in accordance with the appropriate rules and regulations.
6	The Groundwater Management Ordinance, 1985	Groundwater Management Ordinance, 1985 states to manage the groundwater resources for agricultural production and for matters connected therewith.	A substantial amount of groundwater would be used by A UW during construction period. If necessary, approval would be taken from CWASA for installation of deep tube-wells.
7	Bangladesh National Building Code (BNBC) 2014	The Bangladesh National Building Code (BNBC) was first published in 1993 and revised in 2006; this is the code of practice for the construction sector in Bangladesh. The provisions of this Code are applicable to the design, construction, use or occupancy, alteration, moving, demolition and repair of any building or structure and to any appurtenances installed therein or connected or attached with the building/structure. The code also sets out the constructional responsibilities according to which the relevant authority of a particular construction site shall adopt some precautionary measures to ensure the safety of the workmen during construction. In relation to this, the Code sets out the details about the different safety tools with specified standards. The general duties of the employer to the public, as well as workers, are also stipulated in the BNBC.	A UW will follow the BNBC code during construction of structures of A UW Campus.
8	UNESCO Heritage Convention, 1972.	UNESCO Heritage Convention, 1972 defines and conserves the world's heritage by drawing up a list of natural and cultural sites whose outstanding values should be preserved for all humanity.	The proposed project intervention should be carried out in such a manner that the provisions of the multilateral environmental agreements are not violated and may not cause an adverse impact on natural resources.
9	Acquisition and Requisition of Immovable	The Acquisition and Requisition of Immovable Property Act 2017 (ARIPA) is the principal legislation governing eminent domain for land acquisition and requisition in Bangladesh. ARIPA 2017, detailed the land acquisition process from section 4 to section 19 and land	Though construction of A UW campus may not require to acquire any land but during construction if requisition of land required

Sl No.	Applicable Environmental Regulations	Key Features	Applicability to the Project A UW
	Properties Act 2017.	requisition process from section 20 to section 28. According to ARIPA 2017, compensation to be paid for affected land, structures, trees, crops and any other damages caused by such acquisition. The Act defines that, in case of acquisition of private immovable property by the government the affected persons will get compensation of three times the market price of the affected property. If the government acquires land or other property for private organizations on the ground of public interest, the affected persons will get compensation of four times the market price of the land. The Law also specified the term “Public interest” There is a provision in the Act that, for acquiring land of worships like mosques, temples, graveyards, for ‘indispensable public interest’ on condition of relocate relocating in a suitable place by the government. The requiring body (the organizations concerned willing to acquire land) will get 120 days’ timeframe instead of 60 days to the concerned DC Office for paying compensation amount assessed by the DC Office. However, ARIPA 2017 recognize title owners only; informal settlers are not covered. DC declare cut-off date only for title-holders only. No voluntary land donation procedures are discussed in the ARIPA 2017.	outside of the campus, this act will be applicable.
10	Bangladesh Labor Act, 2006 and Rules, 2015	<p>The Bangladesh Labor Act was promulgated in 2006. The legislation pertains to the occupational rights and safety of factory workers and the provision of a comfortable work environment and reasonable working conditions. The amendment of the said in 2013, incorporated a good number of amendments like workers’ welfare, rights and safety and industrial safety and expansion of the industry (particularly relevant for this project).</p> <p>This Act applies to the proposed project as it will involve a major construction and erection of structures. The occupational health and safety of the workers is covered under this Act. It is mandatory for every establishment to keep its workers abreast of work risk(s) through by providing all workers with personal protection equipment.</p> <p>The Labour Law 2006 does not permit any children under the age of 14 years to work.</p> <p>The Bangladesh Labor Act 2006 consolidated and repealed 25 previous labor-related laws, including the Dock Laborers Act, 1934, the Factories Act, 1965, among others.</p>	The project will comply with the requirements of Labour Act 2006 and Rules 2015 accordingly.
11	The Building Construction Act, 1952:	To provide for the prevention of haphazard construction of buildings and excavation of tanks and cutting of hills, which are likely to interfere with the planning of certain areas in Bangladesh.	This shall be the obligation of the contractor which will be monitored by A UW PMU.

SI No.	Applicable Environmental Regulations	Key Features	Applicability to the Project A UW
12	Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2008 and revised in 2009	<p>This action plan addresses the following strategies</p> <ul style="list-style-type: none"> ● Food security, social protection and health to ensure that the poorest and most vulnerable in society, including women and children, are protected from climate change. All programs focus on the needs of this group for food security, safe housing, employment and access to basic services, including health. ● Comprehensive disaster management plan to further strengthen the country's already proven disaster management systems to deal with increasingly frequent and severe natural calamities. ● Research and Knowledge management to predict the likely scale and timing of climate change impacts on different sectors of the economy and socioeconomic groups; to underpin future investment strategies, and to ensure that Bangladesh is networked into the latest global thinking on climate change. ● Mitigation and low carbon development to evolve low carbon development options and implement these as the country's economy grows over the coming decades. ● Capacity building and Institutional strengthening to enhance the capacity government ministries, civil society and private sector to meet the challenge of climate change. 	The A UW will strictly consider the climate change issues during the construction and operation period.
13	Bangladesh Standard Specification for Drinking Water, 1990	Formulation and revision of national standards. Now it is incorporated into the schedule of ECR 1997	The project will follow the national standard of drinking water quality during construction and operation periods.
14	National Biodiversity Strategy and Action Plan (2004)	Conserve, and restore the biodiversity for well-being of the present and future generations through environmental stability for ecosystems; guarantees the safe passage and conservation of globally endangered migratory species, especially birds and mammals in the country; stops the introduction of invasive alien species, genetically modified organisms and living modified organisms.	No endangered or rare species (flora and fauna) are found in the project area but the project will strictly emphasize on local biodiversity and act accordingly.
15	Water Supply and Sewerage Authority Act, 1996	Water Supply and Sewerage Authority Act, 1996 assigned the responsibility of providing water, sewerage, and storm water drainage services.	The project will follow this act accordingly.

Sl No.	Applicable Environmental Regulations	Key Features	Applicability to the Project A UW
16	Water Supply and Sanitation Act, 1998	Water Supply and Sanitation Act, 1998 to establish the National Water Supply and Sanitation Council and define its functions; to provide for the establishment, by local authorities, of water supply and sanitation utilities; to provide for the efficient and sustainable supply of water and sanitation services under the general regulation of the National Water Supply and Sanitation Council; and to provide for matters connected with or incidental to the foregoing.	The project will ensure access to sustainable water supply and hygienic sanitations during construction and operation periods.
17	The Energy Policy (1996)	<p>The National Energy Policy (NEP) of Bangladesh was formulated in 1996 by the Ministry of Power, Energy and Mineral Resources to ensure proper exploration, production, distribution and rational use of energy resources to meet the growing energy demands of different zones, consuming sectors and consumer groups on a sustainable basis. With a rapid change of the global, as well as domestic, situation, the policy was updated in 2005. The objectives of the updated National Energy Policy (NEP) are outlined as follows.</p> <ul style="list-style-type: none"> • To provide energy for sustainable economic growth so that the economic development activities of different sectors are not constrained due to shortage of energy. • To ensure optimum development of all the indigenous energy sources. • To meet the energy needs of different zones of the country and socio-economic groups. • To ensure sustainable operation of the energy utilities. • To ensure rational use of total energy sources • To ensure environmentally sound sustainable energy development programs, with due importance to renewable energy, causing minimum damage to the environment. • To encourage public and private sector participation in the development and management of the energy sector. • To integrate energy with rural development to boost the rural economy. • To bring the entire country under electrification by the year 2020. • To ensure a reliable supply of energy to the people at reasonable and affordable prices. • To develop a regional energy market for a rational exchange of commercial energy to ensure energy security. 	The project will follow this Policy accordingly.
18	National Land use Policy (2001)	Deals with land use for agriculture, industrialization, railways and roads, tea and rubber and identifies land use constraints in these sectors. It may be noted that there are additional policies for these sectors.	The project will follow this Policy accordingly.

Sl No.	Applicable Environmental Regulations	Key Features	Applicability to the Project A UW
19	Motor Vehicles Act, 1939	It provides in detail the legislative provisions regarding licensing of drivers/conductors, registration of motor vehicles, control of motor vehicles through permits, special provisions relating to state transport undertakings, traffic regulation, insurance, liability, offenses and penalties, etc.	The project will follow this act accordingly during carrying out materials at the project site.
20	Ozone Depleting Substances Rules (2004)	Addresses issues related to Green House Gas (GHG) emission by phasing out the use of Ozone-depleting substances and ultimately banning the use of Ozone-depleting substances.	Use alternate material for CFC
21	Noise Control Rules, 2006	Noise Control Act, 2006 act gives authority to all Paurasabhas (municipalities), City Corporations, Capital development authority (RAJUK), Khulna Development Authority (KDA), Chattogram Development Authority (CDA), and Rajshahi Development Authority (RDA) to mark off the areas under their jurisdiction as silent, residential, mixed, commercial or industrial, to implement this law as the noise level has increased sharply in recent years due to the use of microphones, loudspeakers, vehicles, horns, generators etc. The adverse impact on the mental and health condition of the exposed population could be noticed.	Noise Control Rules, 2006 will be strictly followed during construction and operation period.
22	The Right to Information Act, 2005	It provides the right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, the constitution of a Central Information Commission and State Information Commissions and for matters connected therewith or incidental thereto.	Applicable to the project as a whole.

2.3 World Bank ESF Policy, Directives and Standards- Extent of Relevance

The following section discusses the relevance of ESF Policy, each of the ten standards (ESS1 to 10) and associated directive; their requirements are tabulated in Table 4. Additionally, it also discusses the relevance and requirements relating to other guidance notes of the World Bank.

Table 4: World Bank ESS Policy, 2016 and World Bank Groups' EHSs, IFC, 2007

World Bank ESS Policy, Standards, Directive	Objectives	Requirements	Relevance & Extent of Relevance to the Project
World Bank Environment and Social Policy for Investment Project Financing	It sets out the mandatory requirements of the Bank in relation to the projects it supports through Investment Project Financing.	The types of E&S risk and impacts that should be considered in the environmental and social assessment. The use and strengthening of the Borrower's environmental and social	Applicable to this project

World Bank ESS Policy, Standards, Directive	Objectives	Requirements	Relevance & Extent of Relevance to the Project
		framework for the assessment, development, and implementation of World Bank financed projects where appropriate.	
ESS-1 Assessment and Management of Environmental and Social Risks and Impacts	Identify, assess, evaluate, and manage environmental and social risks and impacts in a manner consistent with the ESF. Adopt differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable, and they are not disadvantaged in sharing development benefits and opportunities	The types of E&S risk and impacts that should be considered in the environmental and social assessment. The use and strengthening of the Borrower’s environmental and social framework for the assessment, development and implementation of World Bank financed projects where appropriate.	E&S risks and Impacts have been identified based on baseline data (e.g., surveys) and consultations with stakeholders (e.g., communities and implementing agency) have been conducted and reflected in the report.
ESS-2 Labor-and-Working-Conditions	Promote safety and health at work. Promote the fair treatment, non-discrimination, and equal opportunity of project workers Given the complexity and the concentrated number of workers, the potential for the spread of infectious disease, like COVID-19, in projects involving construction is severe, which need to be prevented following an appropriate guideline. Prevent the use of all forms of forced labor and child labor. Support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law. Provide project workers with	Requirements for the Borrower to prepare and adopt labor management procedures. Provisions on the treatment of direct, contracted, community, and primary supply workers, and government civil servants. Requirements on terms and conditions of work, non-discrimination and equal opportunity and workers organizations. Provisions on child labor and forced labor. Requirements on occupational health and safety, preventive measures of spreading infectious diseases in the community, in keeping with the World Bank Group’s Environmental, Health, and Safety Guidelines (EHSG).	Project will require following types of workers: <ul style="list-style-type: none"> • Direct workers will include the project managers and supervisors, who are employees of AUW. Teachers may also be engaged in monitoring the project implementation as majority of the construction will be conducted within the university campus. • All the work force deployed by the Contractors and the Project Management Consultant (for all packages) under the AUW will be deemed to be contracted workers. The Contractor(s) might further engage multiple subcontractors. For construction of AUW campus, the

World Bank ESS Policy, Standards, Directive	Objectives	Requirements	Relevance & Extent of Relevance to the Project
	accessible means to raise workplace concerns.		<p>requirement is estimated at 1,445,400 skilled and unskilled man days.</p> <ul style="list-style-type: none"> • Influx of migrant labor from other areas for construction works has been a norm in case of civil works. During construction of AUW academic complex, unskilled labors will be hired locally. However, contractors may engage skilled migrant labors from other districts due to nature of large-scale construction which may raise many complex issues, particularly regarding potential transmission risks for COVID-19. The migrant workers will be mainly the skilled workers, engineers, architect etc. • Workers from the community may be employed by the contractor.
<p>ESS-3</p> <p>Resource-Efficiency-and-Pollution-Prevention-and-Management</p>	<p>Promote the sustainable use of resources, including energy, water, and raw materials. Avoid or minimize adverse impacts on human health and the environment caused by pollution from project activities. Avoid or minimize project-related emissions of short and long-lived climate pollutants. Avoid or minimize generation of hazardous and non-hazardous waste. Minimize and manage the risks and impacts associated with pesticide use. Requires technically and financially feasible measures to improve</p>	<p>Requires an estimate of gross greenhouse gas emissions resulting from project (unless minor), where technically and financially feasible.</p> <p>Requirements on management of wastes, chemical and hazardous materials, and contains provisions to address historical pollution. ESS-3 refers to national law and Good International Industry Practice, in the first instance the World Bank Groups' EHSGs.</p>	<p>With respect to Resource Efficiency, the project preparation and the ESIA process will identify feasible measures for efficient usage of the following:</p> <ul style="list-style-type: none"> • energy use to reduce the carbon emission; • water usage and management to minimize water usage during construction; conservation measures to offset total construction water demand and maintain balance for demand of water resources; and • exploratory use of raw materials e.g., local materials, recycled aggregates etc., and use of innovative technology that

World Bank ESS Policy, Standards, Directive	Objectives	Requirements	Relevance & Extent of Relevance to the Project
	efficient consumption of energy, water, and raw materials, and introduces specific requirements for water efficiency where a project has high water demand.		can lead to minimize project’s foot prints on natural resources.
ESS-4 Community-Health-and-Safety	Anticipate or avoid adverse impacts on the health and safety of project-affected communities during project life-cycle from routine and non-routine circumstances. Promote quality, safety, and climate change considerations in infrastructure design and construction, including dams. Avoid or minimize community exposure to project-related traffic and road safety risks, diseases and hazardous materials. Have in place effective measures to address emergency events. Ensure that safeguarding of personnel and property is carried out in a manner that avoids or minimizes risks to the project-affected communities.	<p>Requirements on infrastructure, taking into account safety and climate change, and applying the concept of universal access, where technically and financially feasible.</p> <p>Requirements on traffic and road safety, including road safety assessments and monitoring.</p> <p>Addresses risks arising from impacts on provisioning and regulating ecosystem service. Measures to avoid or minimize the risk of water-related, communicable, and non-communicable diseases, Requirement of preventive measures in transmitting the infectious disease (including COVID-19).</p> <p>Requirements to assess risks associated with security personnel, and review and report unlawful and abusive acts to relevant authorities.</p>	<p>In the project there is likely to be -</p> <ul style="list-style-type: none"> • earth excavation, hill profiling, hill dressing, use of vibratory equipment, construction debris handling and disposal etc. during construction; • high likelihood of direct exposure to increased construction related traffic and equipment especially at road sections traversing settlement area with limited carriageway/roadway width, and sensitive receptors such as schools, religious place, health center/hospitals; • high dust levels from earthworks/hill cutting, high noise and emission level from traffic congestion and idling of vehicles; and influx of migrant workers could potentially cause local discomfort or potential conflicts with local people or create potential risk of community transmission of COVID-19. <p>The key potential OHS risk associated with construction and operation stages are listed below.</p> <ul style="list-style-type: none"> • Hazardous work and process: risk due to working at heights or in confined spaces,

World Bank ESS Policy, Standards, Directive	Objectives	Requirements	Relevance & Extent of Relevance to the Project
			<p>use of heavy machinery, or use of hazardous materials.</p> <ul style="list-style-type: none"> • Accidents or emergencies: exposure to unsafe machineries, flammable chemicals/fuel, construction materials, landslide at workplace. • General understanding and implementation of occupational health and safety requirements. Work related diseases (e.g. Allergies, Respiratory problems, Muscular-skeletal disorder, Eye problem), communicable diseases including Sexually Transmitted Infections (STIs). • Projects may experience large numbers of the workforce becoming ill, which will strain the project’s health facilities, have implications for local emergency and health services
<p>ESS-5 Land-Acquisition-Restrictions-on-Land-Use-and-Involuntary-Resettlement</p>	<p>Avoid or minimize involuntary resettlement by exploring project design alternatives. Avoid forced eviction. Mitigate unavoidable adverse impacts from land acquisition or restrictions on land use by providing compensation at replacement cost and assisting displaced persons in their efforts to improve, or at least restore, livelihoods and living standards to pre-displacement levels or to levels prevailing prior to the beginning of</p>	<p>Applies to permanent or temporary physical and economic displacement resulting from different types of land acquisition and restrictions on access. Does not apply to voluntary market transactions, except where these affects third parties. Provides criteria for “voluntary” land donations, sale of community land, and parties obtaining income from illegal rentals.</p> <p>Prohibits forced eviction (removal against the will of affected people, without legal and other</p>	<p>140 acres of Land has already donated by the Government of Bangladesh further land would not be required under this project but during hill profiling, the vegetation on the hill needs to be cleared.</p>

World Bank ESS Policy, Standards, Directive	Objectives	Requirements	Relevance & Extent of Relevance to the Project
	<p>project implementation, whichever is higher. Improve living conditions of poor or vulnerable persons who are physically displaced, through provision of adequate housing, access to services and facilities, and security of tenure. Conceive and execute resettlement activities as sustainable development programs.</p>	<p>protection including all applicable procedures and principles in ESS5).</p> <p>Requires that acquisition of land and assets happens only after payment of compensation and resettlement has occurred.</p> <p>Requires community engagement and consultation, disclosure of information and a grievance mechanism.</p>	
<p>ESS-6 Biodiversity-Conservation</p>	<p>Protect and conserve biodiversity and habitats. Apply the mitigation hierarchy and the precautionary approach in the design and implementation of projects that could have an impact on biodiversity. To promote the sustainable management of living natural resources.</p>	<p>Requirements for projects affecting areas that are legally protected designated for protection or regionally/internationally recognized to be of high biodiversity value.</p> <p>Requirements on sustainable management of living natural resources, including primary production and harvesting, distinguishing between small-scale and commercial activities.</p> <p>Requirements relating to primary suppliers, where a project is purchasing natural resource commodities, including food, timber and fibre.</p>	<p>Due to site clearance or hill profiling, vegetation on the hills needs to be cleared. The losses of trees will be listed and replanted with other species during operation period.</p> <p>The study on biodiversity has indicated that there will be some loss to the local biodiversity due to construction of AUW campus but it would be restored after certain period, (two years after construction period) because, the site is free from invasive species and endangered species. So, the loss will be recoverable.</p> <p>AUW has a beautification plan to be implemented after construction of the permanent campus that will help to restore the losses of biodiversity.</p>
<p>ESS-7 Indigenous-Peoples</p>	<p>Ensure that the development process fosters full respect for affected parties' human rights, dignity,</p>	<p>Applies when the Indigenous Peoples are present or have a collective attachment to the land, whether they are affected positively or</p>	<p>There are no issues regarding indigenous people, directly involved with this project. Moreover, during operation period, the</p>

World Bank ESS Policy, Standards, Directive	Objectives	Requirements	Relevance & Extent of Relevance to the Project
	<p>aspirations, identity, culture, and natural resource-based livelihoods. Promote sustainable development benefits and opportunities in a manner that is accessible, culturally appropriate and inclusive. Improve project design and promote local support by establishing and maintaining an ongoing relationship based on meaningful consultation with affected parties. Obtain the Free, Prior, and Informed Consent (FPIC) of affected parties in three circumstances. Recognize, respect and preserve the culture, knowledge, and practices of Indigenous Peoples, and to provide them with an opportunity to adapt to changing conditions in a manner and in a timeframe acceptable to them.</p>	<p>negatively and regardless of economic, political or social vulnerability. The option to use different terminologies for groups that meet the criteria set out in the Standard. The use of national screening processes, providing these meet World Bank criteria and requirements. Coverage of forest dwellers, hunter gatherers, and pastoralists and other nomadic groups.</p> <p>Requirements for meaningful consultation tailored to affected parties and a grievance mechanism. Requirements for a process of free, prior and informed consent in those circumstances.</p>	<p>indigenous student will get preference to study in this university due to concurring the policy of cultural diversification.</p>
<p>ESS-8 Cultural-Heritage</p>	<p>Protect cultural heritage from the adverse impacts of project activities and support its preservation. Address cultural heritage as an integral aspect of sustainable development. Promote meaningful consultation with stakeholders regarding cultural heritage. Promote the equitable sharing of benefits from the use of cultural heritage.</p>	<p>Requires a “chance find” procedure to be established. Recognition of the need to ensure peoples’ continued access to culturally important sites, as well as the need for confidentiality when revealing information about cultural heritage assets that would compromise or jeopardize their safety or integrity.</p> <p>Requirement for fair and equitable sharing of benefits from commercial use of cultural resources. Provisions of archaeological sites</p>	<p>In the case of finding anything having cultural value as a result of excavation of hills “Chance find procedures” will be followed (Annex 16).</p>

World Bank ESS Policy, Standards, Directive	Objectives	Requirements	Relevance & Extent of Relevance to the Project
ESS-10 Stakeholder-Engagement-and-Information-Disclosure	Establish a systematic approach to stakeholder engagement that helps Borrowers identify stakeholders and maintain a constructive relationship with them. Assess stakeholder interest and support for the project and enable stakeholders' views to be taken into account in project design. Promote and provide means for effective and inclusive engagement with project-affected parties throughout the project life-cycle. Ensure that appropriate project information is disclosed to stakeholders in a timely, understandable, accessible and appropriate manner.	<p>and material, built heritage, natural features with cultural significance, and moveable cultural heritage.</p> <p>Requires stakeholder engagement throughout the project life cycle, and preparation and implementation of a Stakeholder Engagement Plan (SEP).</p> <p>Requires early identification of stakeholders, both project-affected parties and other interested parties, and clarification on how effective engagement takes place. Stakeholder engagement to be conducted in a manner proportionate to the nature, scale, risks and impacts of the project, and appropriate to stakeholders' interests. Specifies what is required for information disclosure and to achieve meaningful consultation.</p>	The project will engage 'stakeholders' and follow the information disclosure policy accordingly.
Environmental and Social Directive for Investment Project Financing	This Directive applies to the Bank and sets out the mandatory requirements for the implementation of the Environmental and Social Policy for Investment Project Financing (IPF).	<p>It lays down the following responsibilities of the Bank to manage ES risks and impacts as below:</p> <p>Undertake its own due diligence of the ES risks and impacts related to the Project;</p> <p>Support the Borrower to engage in meaningful consultation with stakeholders, in particular affected communities, and in providing Project-based grievance mechanisms;</p>	Environmental and Social Policy will be implemented properly and risks mitigation measures and monitoring progress and status of grievances will be shared with WB for further development.

World Bank ESS Policy, Standards, Directive	Objectives	Requirements	Relevance & Extent of Relevance to the Project
		<p>Assist the Borrower in identifying appropriate methods and tools to assess and manage the potential ES risks and impacts of the Project;</p> <p>Agree with the Borrower on the conditions under which the Bank is prepared to provide support to the Project, as set out in the ESCP; and</p> <p>Monitor the ES performance of a Project in accordance with the ESCP and the ESSs.</p>	
Bank Directive Addressing Risks and Impacts on Disadvantaged or Vulnerable Individuals or Groups	This Directive establishes directions for Bank staff regarding due diligence obligations relating to the identification of, and mitigation of risks and impacts on, individuals or groups who, because of their particular circumstances, may be disadvantaged or vulnerable	<p>It requires the Bank task team to support the borrower in establishing arrangements for the undertaking and preparation of the environmental and social assessment of the project as required by ESS1.</p> <p>It reviews the terms of reference for the environmental and social assessment to verify that</p> <p>(a) identifies (or requires the identification of) groups or individuals affected by the project that may be disadvantaged or vulnerable; and</p> <p>(b) requires an assessment of project risks and impacts, and identification of differentiated mitigation measures, as they pertain to the disadvantaged or vulnerable individuals or groups that are identified.</p>	Applies to Bank Directive in addressing E&S risks and impacts on disadvantaged and vulnerable persons or groups that are identified in this project.
World Bank's Guidance note on managing the risks of adverse impacts on communities from temporary	The document provides guidelines to address issues and risks arising from influx of migrant labor leading to	Requires contractor to prepare a labor influx management and GBV risk mitigation plan	Labour Management Plan has been developed in this ESIA report in Chapter-10 of 10.8 sub-section.

World Bank ESS Policy, Standards, Directive	Objectives	Requirements	Relevance & Extent of Relevance to the Project
project induced labor influx, 2016	gender-based violence, forced labor etc.		
Good Practice Note on Building Safety	<p>Building Safety - To identify, evaluate and monitor the potential construction safety risks to workers, affected communities and road users throughout the project life-cycle and, where appropriate, will develop measures and plans to address them.</p> <p>The Borrower will incorporate technically and financially feasible building construction safety measures into the project design to prevent and mitigate potential adjacent road safety risks to road users and affected communities”.</p>	Requirements on project adjacent traffic and road safety, including road safety assessments and monitoring.	The project will follow “Good Practice Note on Building Safety” properly as the project is involved with carrying out materials to the site and from the site.
World Bank Groups’ EHSs, IFC, 2007			
General EHS Guidelines, April, 2007, IFC	The General EHS Guidelines contain information on cross-cutting environmental, health, and safety issues potentially applicable to all industry sectors	Requirements on environmental, health, and safety issues during construction of project road.	EHS guidelines will be strictly maintained by this project as this project requires large number of civil works during construction period.
EHS Guidelines for Construction Materials Extraction, April, 2007, IFC	The EHS Guidelines contain the performance levels and measures that are considered to construction materials extraction activities such as aggregates, limestone, slates, sand, gravel, clay, gypsum, feldspar, silica sands, and quartzite	Requirements on the resource management of construction materials extraction activities such as aggregates, limestone, slates, sand, gravel, clay, gypsum, feldspar, silica sands, and quartzite	EHS guidelines will be strictly followed on resource management during construction period.

2.4 Comparison of GoB Legislations and ESF of WB, 2018

The GoB legislations and ESF, 2018 of World Bank have been compared and summarized in Table 5.

Table 5: Comparison of National Environmental Policy and Regulations and ESF, 2018

S.No	ESS	Equivalent National Environmental Policy and Regulations	Policy Gaps and its redressal
1	ESS-1: Assessment and Management of Environmental and Social Risks and Impacts	Environmental Impact Assessment (ESIA); ECA 1995 (amendment in 2000, 2002 & 2010 and Environmental Conservation Rule 1997 (amendment of in 2002 and 2003)	The ESS-1 requires EA for AUW campus building irrespective of its type. While, ESIA is required as per ECA 95.
2	ESS-2: Labor-and-Working-Conditions	<ul style="list-style-type: none"> Bangladesh Labor Act, 2006 (amended in 2013, 2015 and 2018) The Building Construction Act (1952) 	<p>The National legal provisions cover almost all requirements in ESS-2 except relating to community workers and a functional GRM for different types of workers. The Labor Act does not specifically require that development be assessed and reviewed in terms of labor and working conditions before approval. The Labor Act does not require development projects to prepare Labor Management Plans/Procedure. The Labor Act does not specifically require that development be assessed and reviewed in terms of OHS requirements before approval. The Labor Act does not require development projects to prepare OHS Plan.</p> <p>Hence, under this project, a project's labor management procedure has been prepared to regulate working conditions and management of worker relations including workers specific GRM, terms and conditions of employment, non-discriminations and equal opportunity, protection of work force, prohibition of child/force Labor and provision of OHS.</p>
3	ESS-3: Resource-Efficiency and Pollution Prevention and Management	<ul style="list-style-type: none"> Environmental Conservation Act (ECA) 1995 Noise Pollution Rules (2006) 	The majority of ESS-3 requirements are addressed by existing regulations and indirectly for resource efficiency and climate change aspects. There is no law and policy regarding resource efficiency.
4	ESS-4: Community-Health-and-Safety	<ul style="list-style-type: none"> Noise Pollution Rules (2006) Environmental Conservation Rule 1997 	<p>While other acts cover for all of ESS-4 requirements, gaps exist for Community- community exposure to health issues</p> <p>The gaps are addressed through suitable provisions in ESMP and contractor obligation as part of C-ESMP for Community health and safety include need for OHS plan, influx management plan, workers camp management plan, traffic and road safety management Plan</p>

5	ESS-5: Land-Acquisition-Restrictions-on-Land-Use-and-Involuntary-Resettlement	<ul style="list-style-type: none"> • The Land Acquisition/Requisition of Immovable Property ARIPA 2017 	<p>ARIPA 2017 does not require the preparation of resettlement action plan (RAP);</p> <ul style="list-style-type: none"> • ARIPA 2017 recognize title owners only; informal settlers are not covered • Consultation with affected communities not legally required under ARIPA 2017 • There is no provision for voluntary land donation • ARIPA 2017 does not have any provision to give special attention to the vulnerable groups like women, disables, ultra-poor or disadvantaged group <p>Gaps will be filled following the guidelines provided with RPF of HEAT project</p>
6	ESS-6: Biodiversity-Conservation	<ul style="list-style-type: none"> • National Environmental Management Action Plan, 1995 • National Adaptation Program of Action (NAPA), November 2005 	Provisions from the acts meets the ESS-6 requirements.
7	ESS-7: Indigenous-Peoples	<ul style="list-style-type: none"> • Applicable 	<p>Although the project will not work specifically in areas where concentrations of IPs are located, the AUW education program will induct and encourage enrollment of IP students and those from marginalized areas and backgrounds. Students with disabilities will be included and encouraged to enroll. There are no interventions that may have any adverse impact on small ethnic communities and minorities. If there are any such students or teachers in the selected public universities and/or government/non-government persons/s who opt to undertake the training and utilize the facilities provided by the project, they will be free to do so with equal access and opportunity as all other users. An Indigenous Peoples Planning Framework has been developed based on stakeholder consultations and assessment of baseline scenarios to ensure the inclusion by way of enrollment of IP community members. All the public universities and colleges have practices to secure student's enrollment Quota for the indigenous people. Some private and international universities in Bangladesh also follow the same.</p>
8	ESS-8: Cultural-Heritage	<ul style="list-style-type: none"> • Not applicable 	
9	ESS-9: Financial-Intermediaries	<ul style="list-style-type: none"> • Not applicable 	
10	ESS-10: Stakeholder-Engagement-and-Information-Disclosure	<ul style="list-style-type: none"> • Environmental Conservation Act (ECA) 1995 • Noise Pollution Rules (2006) • Right to information Act 2005 	The Project has prepared a Stakeholder Engagement Plan (SEP) to engage with all stakeholders relevant to the different components of the project.

2.5 Implication of National Policies and Legislations on this Project

Administrative Procedures for Obtaining Location/Environmental Clearance: The legislative basis for environmental assessment of the proposed project intervention are the Environmental Conservation Act 1995 and the Environmental Conservation Rules 1997. According to the ECA 1995, the proponent needs to obtain an Environmental Clearance Certificate from the Department of Environment (DoE) in the manner prescribed by the rules.

Environmental clearance has to be obtained in two steps: first, a location clearance and thereafter an environmental clearance. The Environmental Clearance Certificate is issued to all existing and proposed industrial units and projects falling in the Green category, however it is mandatory to obtain a Location Clearance Certificate for industrial units and projects falling in the Orange – A, Orange – B and Red categories, following which, the Environmental Clearance Certificate will be issued. The rules incorporate "inclusion lists" of projects requiring varying degrees of environmental investigation. Projects are screened as Green, Orange-A, Orange-B and Red based on their location and expected environmental burden. A list of industries is given in the rules under each of the categories which aid the proponent on choosing the correct administrative procedures. An overview of each category is given below:

- Green List projects are those with positive environmental impacts or negligible negative impacts such as a plantation and or nursery. Clearance for these is obtained on the basis of project description, initial screening and No Objection Certificate (NOC) by the local authority.
- Orange List projects fall into two categories. Orange A projects are those with minor and mostly temporary environmental impacts for which there are standard mitigation measures, such as the installation of tube wells, pond sand filter (PSF), tank/reservoir, sanitary latrines, etc. Application for DOE's environmental clearance requires general information, a feasibility report, a process flow diagram and schematic diagrams of facilities, environmental screening form, and a NOC from the local authority.
- Orange B projects are those with moderately significant environmental impacts for which mitigation measures are easily identified, such as construction/re-construction of earthen roads, culverts, community centers, office building for general services, re-excavation of canals, repairing embankments, and school field, etc. These require an Environmental Clearance Certificate from DOE, for which an Initial Environmental Examination (IEE) report, and Environmental Management Plan, along with the information and papers specified for Category B projects are to be provided.
- Red List projects are those which may cause 'significant adverse' environmental impacts such as the construction of bridges, industrial factories, flood shelter, embankment, water control structure, etc. These require an IEE report to obtain the Site Clearance Certificate, and subsequently a full ESIA report for an ECC along with the information required for other Categories. A good number of sectoral ESIA guidelines have been prepared to assist the ESIA process.

Environmental Quality Standards in operation in Bangladesh have also been promulgated under the Environment Conservation Rules 1997. There are standards prescribed for varying water sources, ambient air, noise, odor, industrial effluent and emission discharges, and vehicular emissions, etc.

The Bangladesh standards intend to impose restrictions on the volume and concentrations of wastewater/solid waste/gaseous emissions discharged into the environment. In addition, a number of surrogate pollution parameters like Biochemical Oxygen Demand, Chemical Oxygen Demand and Total Suspended Solids, etc. are specified in terms of concentration and/or total allowable quality discharged in case of waste water/solid waste. Additionally, specific parameters, depending on the

manufacturing process, are specified, such as phenol, cyanide, copper, zinc, chromium, etc. Air emission quality standards refer mostly to concentration of mass emissions of various types of particulates, Sulphur dioxide, and oxides of nitrogen, and in some cases volatile organic compounds and other substances.

The Bangladesh standards, in general, are less stringent compared to those of the developed countries, in view to promote and encourage industrialization in the country. The Bangladesh standards are not set for any specific period of time and there is no provision for partial compliance.

Public participation or consultation is not a condition in the ECR 1997 and/or ESIA Guidelines; however, DoE prefers the proponent to do public consultation during the assessment and puts condition for it while providing site clearance or during the approval of the ESIA TORs.

Steps to be followed for obtaining Environmental Clearance Certificate (ECC) in connection with AUW campus development from DoE are outlined in Figure 1.



Figure 1: Basic Process and Timeline Obtaining Environmental Clearance for Red Category

Procedure of Environmental Clearance: The Environmental Conservation Act’s (ECA) Environmental Conservation Rule (ECR), 1997 provides a basic framework for environmental evaluation of the Project, and establishes procedures for attaining the clearance. Accordingly, the project proponent should first obtain a location clearance and conduct the appropriate study to obtain environmental clearance of the project. Any project constructed in Bangladesh must obtain an Environmental Clearance Certificate (ECC) before construction can begin.

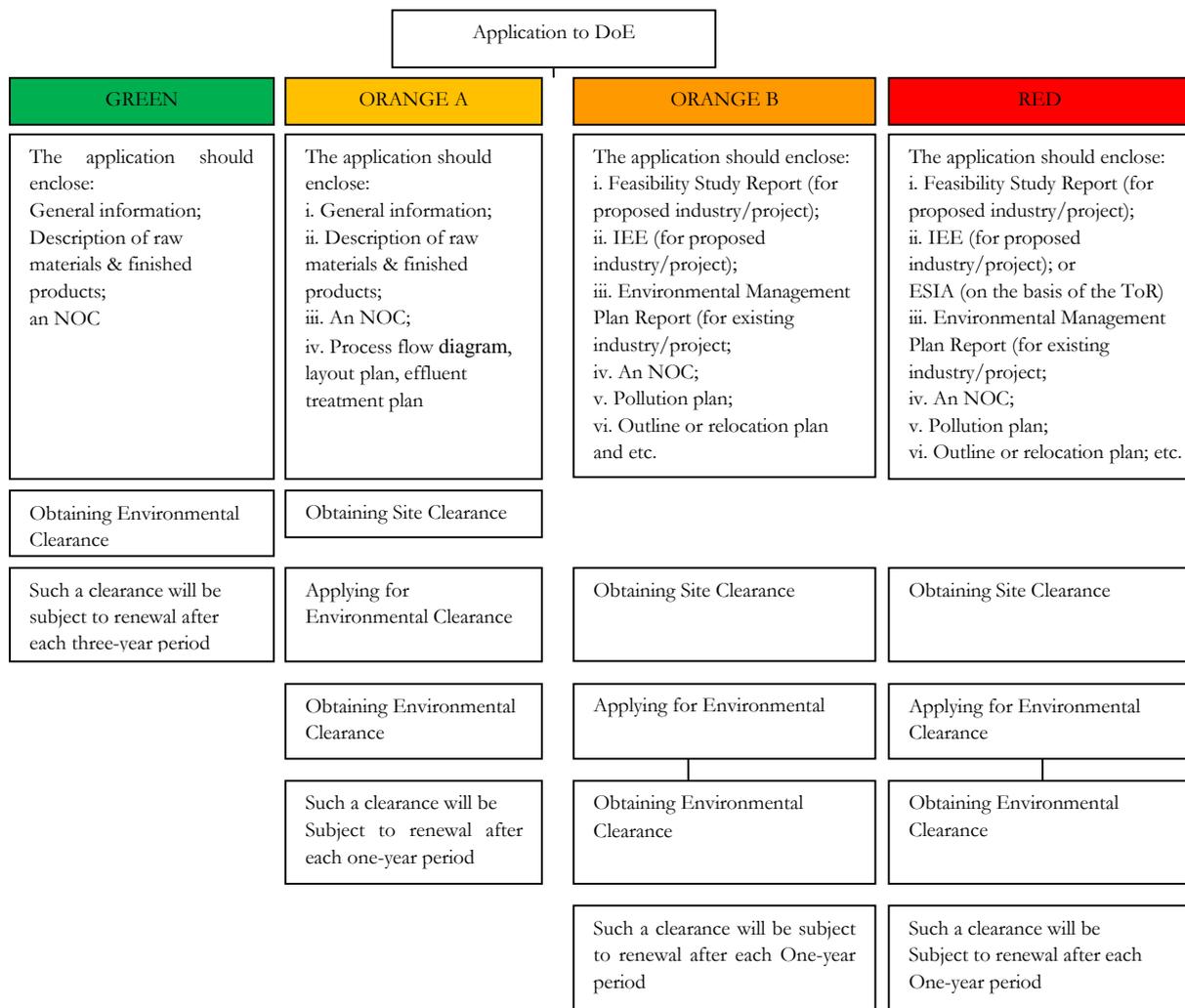
Rule 7 of the ECR provides a list classifying many types of projects into the following four categories based on the site conditions and the environmental impacts recorded for past and similar projects. The categories are: Green, Orange A, Orange B and Red. Various industries/projects falling under each category have been listed in Schedule-1 of the ECR. According to the rules all existing and proposed industrial units and projects falling in the green category are exempted from ESIA. However, for category Orange A, Orange B and Red, projects require location clearances referred to No Objection Certificate, followed by issuing of ECC upon the satisfactory submission of the required documents to DoE.

For getting location and environmental clearances, AUW must submit Form - 3 to DoE as per the rules given in the ECR. The form must be accompanied with the following documents:

- Application through prescribed form-3 under ECR 1997
- Fee under the schedule of ECR 1997 (Amended in 2002)
- Feasibility Study for the Project
- ESIA as per the Terms of Reference Provided by the DoE
- EMP for the Project (included as part of the ESIA)
- No Objection Certificates (NOC) from the Local Authorities.
- Emergency plan relating adverse environmental impact and plan for mitigation of the effect of pollution
- Outline of relocation and rehabilitation plan (from LAP document)
- Other necessary information (based on the type of the Project)

The ECC is valid for one year for Red category projects according to the environmental clearance process as per the DoE, Ministry of Environment, Forests and Climate Change (MoEFCC), Government of Bangladesh. The document is the detailed ESIA and includes the ESMP, as defined above.

Under the ECR 1997, once the ESIA has been filed DoE has 60 days to respond with its review comment, and approval. Submission of any further materials would be carried out, as per requirement of DoE in order to obtain the ECC. Steps to be followed for obtaining the ECC for this proposed project and an additional, flow diagram detailing the steps for obtaining an ECC is shown in Figure 2.



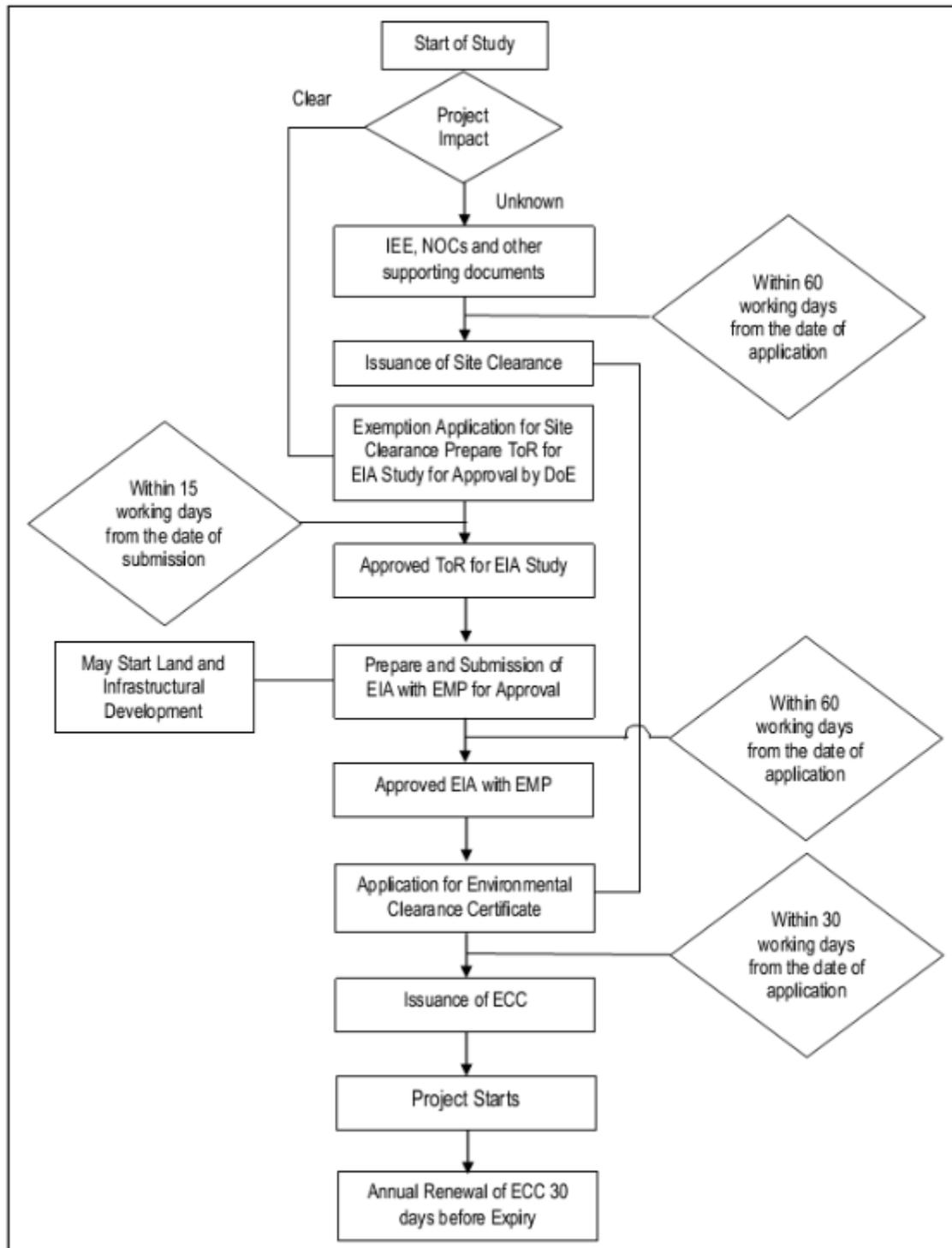


Figure 2: Process for Obtaining an Environmental Clearance Certificate of Red Category Project (Department of Environment, 1997)

Key Legislative Approval

Different permits and clearances are required to be obtained by the project proponent from different government and legislative agencies at various stages of development of the project. A preliminary list of the required legislative approval (in relation to the environment, social and safety issues) is provided in Table 6 below:

Table 6: Permission Required for Developing the Project under Bangladesh Legislation

Legislation	Permission	Purpose	Permission Provide By
Environment Conservation Act, 1995 and all amendments Environment Conservation Rules, 1997 and all amendments	Site Clearance Certificate (SCC) and Environment Clearance Certificate (ECC)	DoE will issue SCC to allow for a detailed ESIA as per Section 12 (ECA 1995), Rule-7 and Form-3 of the ECR, 1997	Director General of DoE
Explosives Act, 1884, Explosive Substances Act, 1908, Explosive Rules, 2003	Licenses for explosive import, transport and possession	License for explosive related activities will be required, including import, transport and possession.	Chief Controller of Import and Export. Chief Inspector of Department of Explosives.
Water Rules 2018	Remission required	Use of both surface and groundwater	Water Resources Planning Organization (WARPO)

Source: (Ministry of Environment, 2019)

Applicable Environmental Standards

Environmental standards applicable in Bangladesh are described in the Environmental Conservation Rules (ECR). Regulated areas cover all industries, and regulated items are air quality, water quality (surface water, drinking water), noise (boundary, source), emissions from motor vehicles or ships, odor, sewage discharge, waste from industrial units and industrial effluents or emissions. Tables and annotations of environmental regulations are described as textual descriptions of ECR.

Air quality

To maintain the quality of ambient environment the Department of Environment, Bangladesh has standardized the ambient air quality standard in ECR, 1997 in Schedule-2. The standard values are precisely changed in the subsequent amendment of ECR in 2005. Table-7 shows the air quality standards as per ECR, 2005.

Table 7: Standards for Air Quality in Bangladesh (ECR 2005)

Air Pollutants	Concentration ECR, 2005	Average Time
CO	10mg/m ³	8 hr
	40mg/m ³	1 hr
Pb	0.5µg/m ³	Annual
NO _x	100 µg/m ³	Annual
SPM	200 µg/m ³	8 hr
PM10	50µg/m ³	Annual
	150 µg/m ³	24 hr
PM 2.5	15 µg/m ³	Annual

Air Pollutants	Concentration ECR, 2005	Average Time
	65 µg/m ³	24 hr
O ₃	235 µg/m ³	1 hr
	157 µg/m ³	8 hr
SO ₂	80 µg/m ³	Annual
	365µg/m ³	24 hr

(Source: The Environmental Conservation Rules, 1997, Schedule-4)

Water quality

Table-8 shows environmental water quality standards (drinking water) (ECR 1997).

Table 8: Environmental Water Quality Standards (Drinking Water)

No.	Parameter	Unit	Standard Limit	WHO Guidelines
1	Aluminium	mg/l	0.2	0.2
2	Ammonia (NH ₃)	mg/l	0.5	-
3	Arsenic	mg/l	0.05	0.01
4	Barium	mg/l	0.01	0.7
5	Benzene	mg/l	0.01	0.01
6	BOD ₅ 20°C	mg/l	0.2	-
7	Boron	mg/l	1.0	0.5
8	Cadmium	mg/l	0.005	0.003
9	Calcium	mg/l	75	-
10	Chloride	mg/l	150-600	-
11	Chlorinated Alkanes			-
	Carbon Tetrachloride	mg/l	0.01	-
	1.1 Trichloroethylene	mg/l	0.001	-
	1.2 Trichloroethylene	mg/l	0.03	-
	Tetrachloroethylene	mg/l	0.03	-
	Trichloroethylene	mg/l	0.09	-
12	Chlorinated Phenols			-
	Pentachlorophenol	mg/l	0.03	-
	2.4.6 Trichlorophenol	mg/l	0.03	-
13	Chlorine (residual)	mg/l	0.2	-
14	Chloroform	mg/l	0.09	0.3
15	Chromium (hexavalent)	mg/l	0.05	-
16	Chromium (total)	mg/l	0.05	0.05
17	COD	mg/l	4	-
18	Coliform (faecal)	n/100 ml	0	-
19	Coliform (total)	n/100 ml	0	-
20	Colour	Huygens unit	15	-
21	Copper	mg/l	1	-
22	Cyanide	mg/l	0.1	-
23	Detergents	mg/l	0.2	-
24	DO	mg/l	6	-
25	Fluoride	mg/l	1	1.5
26	Hardness (as CaCO ₃)	mg/l	200-500	-
27	Iron	mg/l	0.3-1.0	-
28	Nitrogen (Total)	mg/l	1	-

No.	Parameter	Unit	Standard Limit	WHO Guidelines
29	Lead	mg/l	0.05	0.01
30	Magnesium	mg/l	30-35	-
31	Manganese	mg/l	0.1	-
32	Mercury	mg/l	0.001	0.006
33	Nickel	mg/l	0.1	0.07
34	Nitrate	mg/l	10	3
35	Nitrite	mg/l	Less than 1	-
36	Odor		Odorless	-
37	Oil & Grease	mg/l	0.01	-
38	pH		6.5-8.5	-
39	Phenolic compounds	mg/l	0.002	-
40	Phosphate	mg/l	6	-
41	Phosphorus	mg/l	0	-
42	Potassium	mg/l	12	-
44	Radioactive Materials (gross beta)	mg/l	0.1	-
45	Selenium	mg/l	0.01	-
46	Silver	mg/l	0.02	-
47	Sodium	mg/l	200	-
48	Suspended particulate matters	mg/l	10	-
49	Sulfide	mg/l	0	-
50	Sulfate	mg/l	400	-
53	Tin	mg/l	2	-
54	Turbidity	JTU	10	-
55	Zinc	mg/l	5	-

(Source: The ECR, 1997, Guidelines for Drinking-water Quality WHO 2008)

Noise and Odor

In regards to noise, the standard limit is set for every category of zone class. The table below shows the noise standards in Bangladesh (ECR 2006, SRO- 212-law/2006). The IFC noise level standard is also shown in Table 10.

Table 9: Noise Level Standard (ECR, 2006)

Sl. No.	Zone Categorization	Standard dB(A) Leq	
		Day (6:00 am – 9:00 pm)	Night (9:00 pm – 6:00 am)
1	Silent Zone	50	40
2	Residential Zone	55	45
3	Mixed Zone	60	50
4	Commercial Zone	70	60
5	Industrial Zone	75	70

(Source: The Environmental Conservation Rules, Sept 2006, Schedule-1, Rule-5 (2))

Table 10: Noise Level Guideline (IFC, 2007)

Receptor	One Hour Leq (dBA)	
	Daytime (7:00-22:00)	Night-time (22:00-7:00)
Residential, Institutional, Educational	55	45
Industrial, Commercial	70	70

(Source: IFC Environmental Health and Safety Guidelines 2007)

2.6 Organization related to Enforcement of Environmental Standards

The roles and responsibilities of various ministries and departments involved in the enforcement of environmental requirements are described below:

Ministry of Environment, Forest, and Climate Change (MoEFCC)

The Ministry of Environment, Forest, and Climate Change (MoEFCC) is the key government institution in Bangladesh for all matters relating to national environmental policy and regulatory issues. Realizing the ever-increasing importance of environmental issues, the MoEFCC was created by replacing the Ministry of Agriculture and Forest in 1989 and is at present a permanent member of the Executive Committee of the National Economic Council. This group is the major decision-making body for economic policy issues and is also responsible for approving all public investment projects. The MoEFCC oversees the activities of the following technical/implementing agencies:

Department of Environment (DoE)

The DoE technical arm of the Ministry of Environment, Forest, and Climate Change (MoEFCC), is the regulatory body and the enforcement agency for all environmental related activities. It is the responsible body for reviewing and approving the ESIA reports in Bangladesh.

The DoE is headed by a Director General (DG). The DG has complete control over the DoE. The power of the DG, as given in the Act, may be outlined as follows:

The DG has the power to close down the activities considered harmful to human life or the environment. The operator has the right to appeal and procedures are in place for this. However, if the incident is considered an emergency, there is no opportunity for appeal.

The DG has the power to declare an area affected by pollution as an ecologically critical area. The DoE governs the type of work or process, which can take place in such an area.

Before undertaking any new development project, the project proponent must take an Environmental Clearance from the DoE. The procedures to take such clearance are in place.

Failure to comply with any part of ECA 1995 may result in punishment by a maximum of 10 years imprisonment or a maximum fine of Tk. 1,000,000.00 or both.

Forest Department (FD)

This Department under the MOEFCC is responsible for the protection and management of all reserve forests in the country. Department personnel extend down to the union level in areas where there are reserve forests. The Department has recently started some agro- forestry programs and its officers are also responsible for the protection of wildlife in the forests.

2.7 Environment, Health & Safety Guidelines

The Environmental Health and Safety Guidelines (also known as “EHS Guidelines”)⁵ are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). This GIIP is considered to be achievable in new facilities at reasonable costs by using existing technology. For existing facilities, achieving these may involve the establishment of site-specific targets with an appropriate timetable to achieve these.

⁵ http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/our+approach/risk+management/ehsguidelines. In 2013, IFC launched a consultative process to revise the EHS Guidelines. This process is still ongoing as of the date of this document.

When host country regulations differ from the levels and measures presented in the EHS Guidelines, projects will be required to achieve whatever is more stringent. If less stringent levels or measures than those provided in the EHS Guidelines are appropriate given specific project circumstances, a full and detailed justification must be provided for any proposed alternatives through the environmental and social risk and impact identification and assessment process.

The EHS Guidelines consist of guidelines for various industrial sectors as well as General Environmental, Health & Safety Guidelines which cover a wide range of issues and applies to all industrial and also the sector-specific guidelines. The General EHS Guidelines contain information on cross-cutting environmental, health and safety issues potentially applicable to all industry sectors. They are designed to be used together with the relevant industry sector guideline(s).

- Environmental (air emissions and ambient air quality, energy conservation, wastewater, and ambient water quality, water conservation, hazardous materials management, waste management, noise, and contaminated land);
- Occupational Health and Safety (general facility design & operation, communications & training, physical hazards, chemical hazards, biological hazards, radiological hazards, personal protective equipment, special hazard environments, and monitoring, etc.);
- Community Health and Safety (water quality and availability, structural safety of project's infrastructure, life and fire safety, traffic safety, transport of hazardous materials, disease prevention, emergency preparedness & response, etc.); and
- Construction and Decommissioning (environment, occupational health & safety, community health & safety).

It should be noted that in these Industry Sectors' EHS Guidelines and the General EHS Guideline are intended to identify recognized good practice, particularly in the absence of comparable national or local legislation. Moreover, they are designed to cover a wide range of topics, especially in case of the General EHS Guideline, some or many of specific topics may not be relevant or applicable to the project enterprise seeking a loan. The EHS Guidelines will be used by the financial institutions as useful tools in the screening and reviewing process to determine whether environmental and social risks associated with the project enterprise have been appropriately identified and managed.

The GoB and the World Bank have their policies and guidelines which are triggered by the environmental and social issues of projects.

Chapter 3: Description of the Proposed Project

3.1 Project Description

The HEAT project has four components that represent 09 sub-components and will be implemented over a five-year period from 2021 to 2025/26. The AUW campus construction is aligned with sub-component 1.4 of the HEAT project.

This AUW campus construction project will involve a wide range of civil works including hill cutting/profiling, leveling and land development. Works will also include construction of academic buildings, hostels and dormitories, auditorium, water supply and sewer systems, sewage treatment plant, drainage facilities, retaining walls and internal roads along the campus. The proposed facilities are shown in the Master Plan provided in Figure 6.

In September 2006, the Government of Bangladesh allotted 140 acres of land for the construction of AUW's permanent campus. Currently, there is no structure in the project site and hilly in nature. The site is linked to the existing road network of the city by a 4-lane motorway built by the Chattogram Development Authority (CDA) in 2018. There are settlements around the project site, particularly on the east side of the project. Other sides of project are free from any kind of settlement. A detailed map showing roads around the AUW campus, the location of the settlements, the drainage channels, etc. have been provided in **Annex 1**.

Table 11: Basic Information of the proposed project

Items	Descriptions
Proponent	Asian University for Women (AUW)
Name of the Project	Subproject 1.2.2- AUW campus development under HEAT project.
Project construction period	2021 to 2025/2026
District covers	Chattogram
Materials Requirements	Brick, stone, cement, reinforcement, sand, earth, rod, glass etc.
Project Interventions	Preparing Project site (Hill profiling, levelling, land filling etc.)
	World Bank supported main seminar rooms, lecture halls, theatres, and faculty offices. Beyond the WB contribution for the academic complex, the structures to be built are an auditorium, a sports field, gymnasium and swimming pool, a complete set of student, staff and faculty housing sources.
	World Bank supported construction of internal roads & retaining walls because of the hilly location Construction of utility facilities at AUW like mini sewage treatment plant (STP), chiller plant for air-conditioning, central fire detection and fire fighting systems
	Maintenance
Estimated workers	880 persons per day

Source: AUW

3.2 Project Category

Under the criteria of the DoE, the Project falls under the ‘Red’ category. As per the ESIA Guidelines of the DoE, it is mandatory to conduct a more detailed ESIA. AUW received the site clearance from Department of Environment in favour of this Project on 03 November 2011 (Annex 5). The original EIA was approved by DoE (Annex 7) and the Environmental Clearance Certificate has been renewed (Annex 6). This report is an update of the previous EIA report taking into account of changes in the Master Plan and also to satisfy World Bank safeguards requirements.

3.3 Project Location

The Asian University for Women will be located in Pahartoli, Chattogram, Bangladesh, a coastal city of Bangladesh that has a heritage of Muslim, Hindu and Buddhist traditions. Geographically the subject site is located at 22°23’02” N and 91°47’29” E to 22°22’43” N and 91°47’30”. Chattogram is the second largest city in Bangladesh with a population of approximately four million. It is 264 kilometers away from the capital city of Dhaka and well connected by air, road, and rail network. The project location is shown in the location map (Fig. 3).

The choice of Chattogram as the site for the AUW campus offers many advantages and at the same time, certain challenges. It is a city of international port, and historically served as a center of excellence for cultural, social, and commercial values.

The AUW campus is located within the city limits, nearby golf course, a cantonment and the Foy’s Lake to the south, a renowned recreation center of the country. The site lies 6 km north of the city commercial center, approximately 8 km from Chattogram University, and 10 km from the international airport.

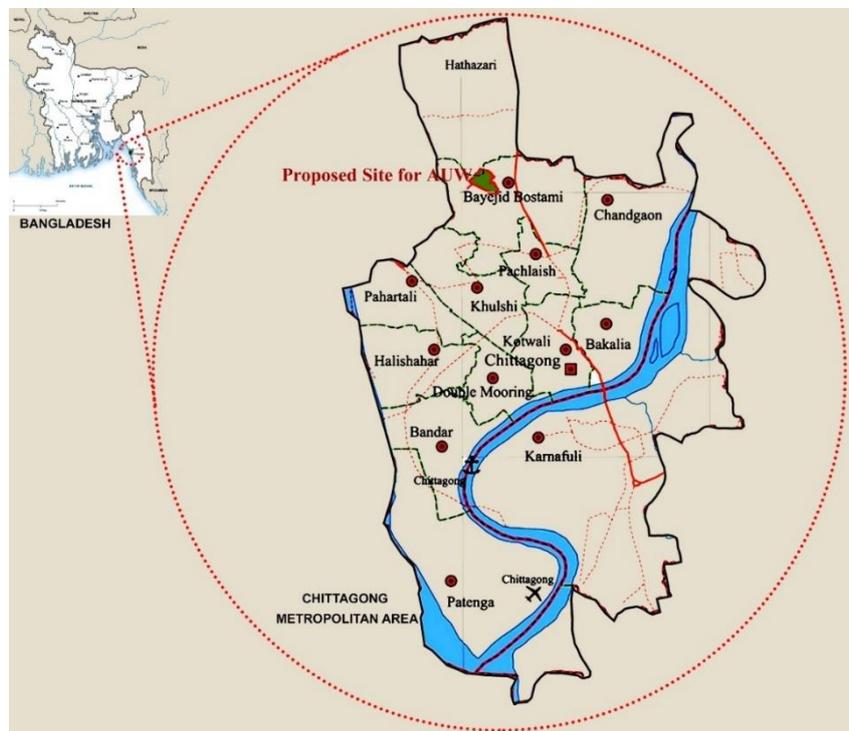


Figure 3: Location of AUW Project Area.



Figure 4: Project Site at Chattogram

3.4 Facilities

The following list of facilities are proposed for the fully developed permanent campus:

Facilities to be provided by the AUW (but not limited to)	
Academic complex ^	Co-curriculum activities
State-art of Research centre ^	Internal road, retaining wall and drainage network ^
Hostels facilities & dormitories	Sewerage Treatment Plant (STP) ^
Communication facilities ^	Cultural event
Recreation centre (e.g., Theatre) ^	Support to religious event
Convention centre	Leadership development facilities (e.g., debating club, science club)
Air Cooling Facilities ^	
Fire Fighting system in the infrastructure ^	
Day-care centre ^	Sports facilities: Swimming Pool and Playing field
Student ex-change programs	Cross visit to the other university both in Bangladesh and other countries.

^ Physical works expected to be funded under HEAT Project. All buildings to follow “Green Building” design principles.

3.4.1 Drainage System

An extensive storm-water drainage system would be designed and constructed to collect and manage the rainwater runoff from the hill slopes, regulating the discharge into the valleys of the site, the ultimate discharge point will be the ditches/local stream near the site, which drain to the Karnafuli River. The arrangement and cross sections shall divert water away from building structures, roads and pavements. The proposed drainage system is shown in Figure 5.

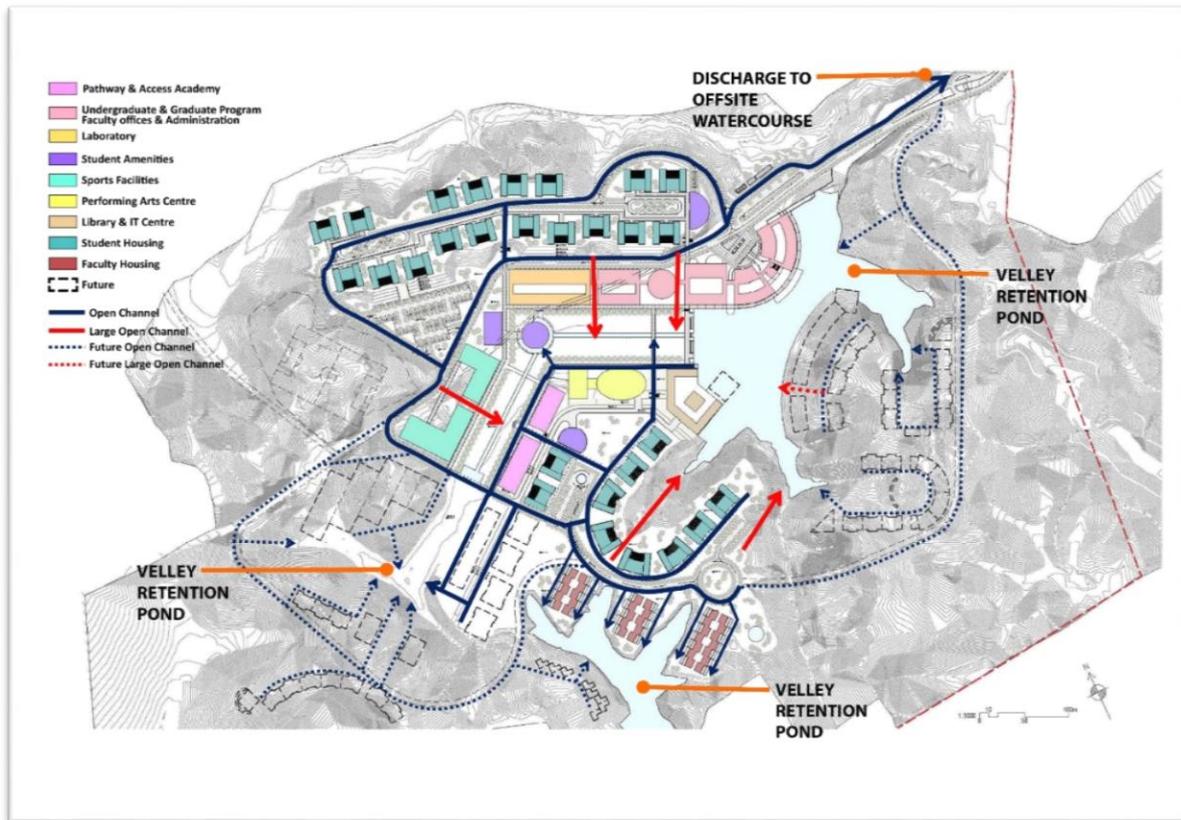


Figure 5: Drainage Network of the Project area.

3.4.2 Electricity Connection

The project will be connected by 11 kV overhead distribution line from the east side. The line will be extended by concrete poles. The power lines will terminate at the HT panel in the electrical sub-station, which will be located in the utility building near the east boundary of the campus side. The project will have internal power distribution facilities to each building. The mode of distribution line in the project site will be either by an overhead line along internal roads, or underground cables, depending upon the topography.

Primarily, 600 MW electricity would be required per month at the project. When the University would be operational, 2100 MW electricity would be required per month. The source of electricity will be Bangladesh Power Development Board (BPDB) and the university's own generator.

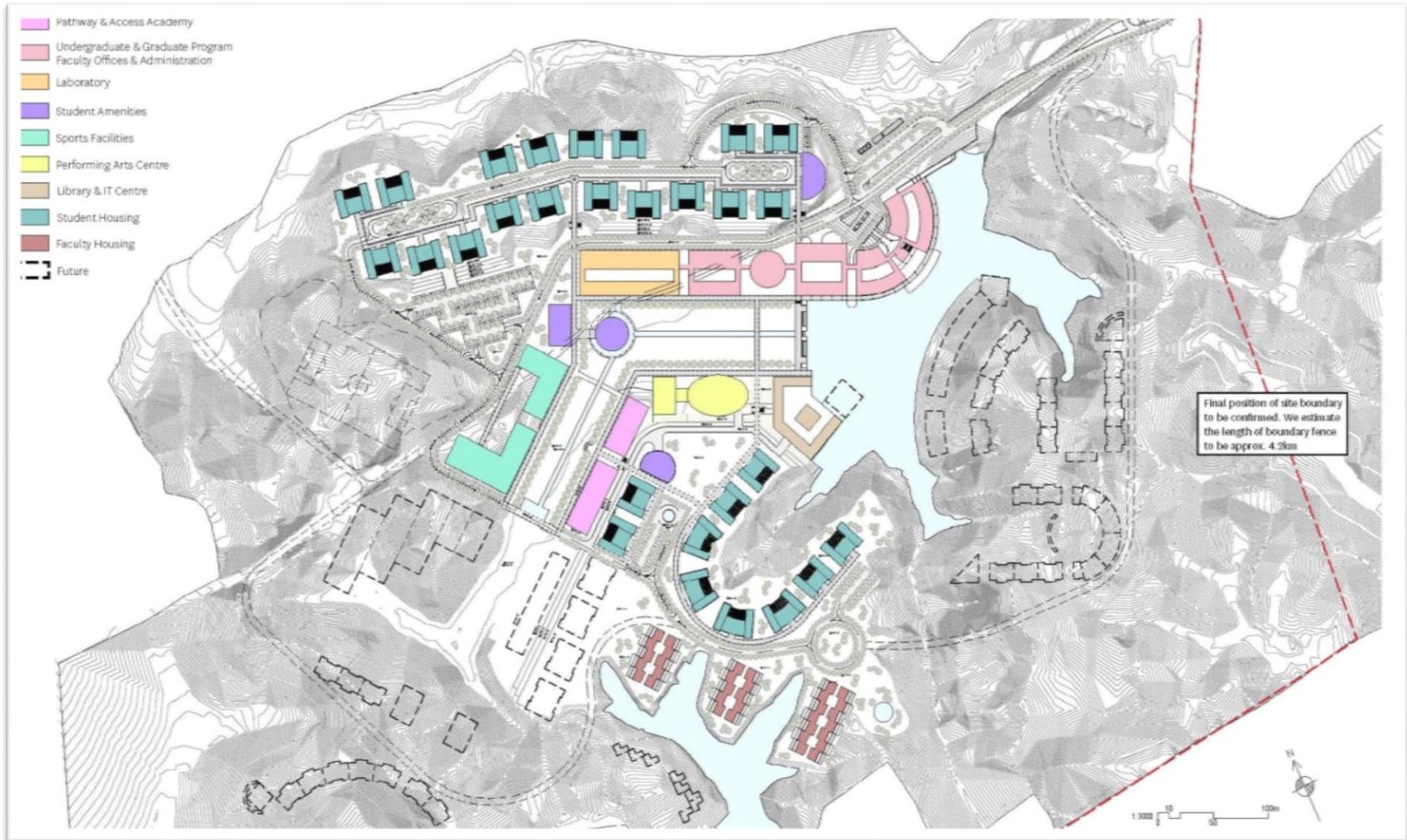


Figure 6: Master Plan of Proposed A UW Permanent Campus

3.4.3 Access Roads

The main access of the campus would be the existing road situated at the east-side of the project. Several internal roads would be developed for internal traffic, most of whom would be pedestrian in nature. A newly constructed CDA road has been completed and is open for use. It has a RoW (Right of Way) of 30 meters and this 2x2 lane urban motorway is able to carry more than 30,000 vehicles per day.

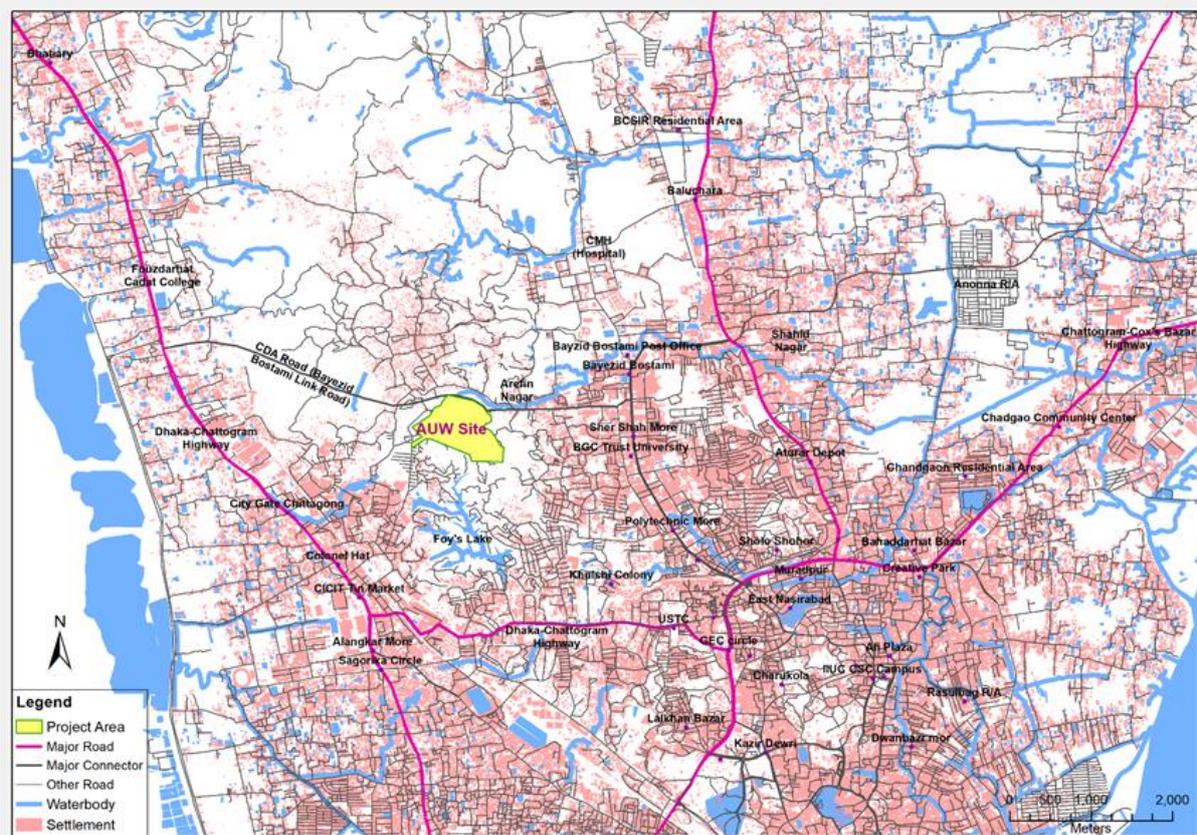


Figure 7: Existing Road Network Surrounding the Project Area

3.4.4 Boundary Wall and Fencing

A boundary wall or fencing would be constructed around the project area, covering 4.6-kilometer perimeter of the campus site. A sturdy masonry boundary wall of 8-feet height will be constructed wherever possible. Barbed wire fencing will be installed along certain lengths of the perimeter where the hill slope gradient is too steep. A walking trail constructed of herringbone brickwork will be built along the inner side of the perimeter wall for maintenance and security access.

3.4.5 Landslide and Flash Flood Protection Measures

Landslide protection will be ensured by erosion measures following the engineered slope stabilization of all areas adjacent to buildings, roads and student activity areas. This stabilization will include compacted slopes to the stable angle of repose, geotextiles, deep-rooted vegetation and drainage canals.

A comprehensive hydrological study was completed, modeling the entire campus site and adjacent catchment areas for a rainfall intensity of 100-year return. All major canals, drains, retention ponds, culverts are to be designed based on the flood level predictions of the hydrological study⁶. Additionally,

⁶ IWFM BUET (2010)

all canals around the site must be engineered (aligned, lined and maintained) to contain and safely discharge water accumulation due to occasional flooding.

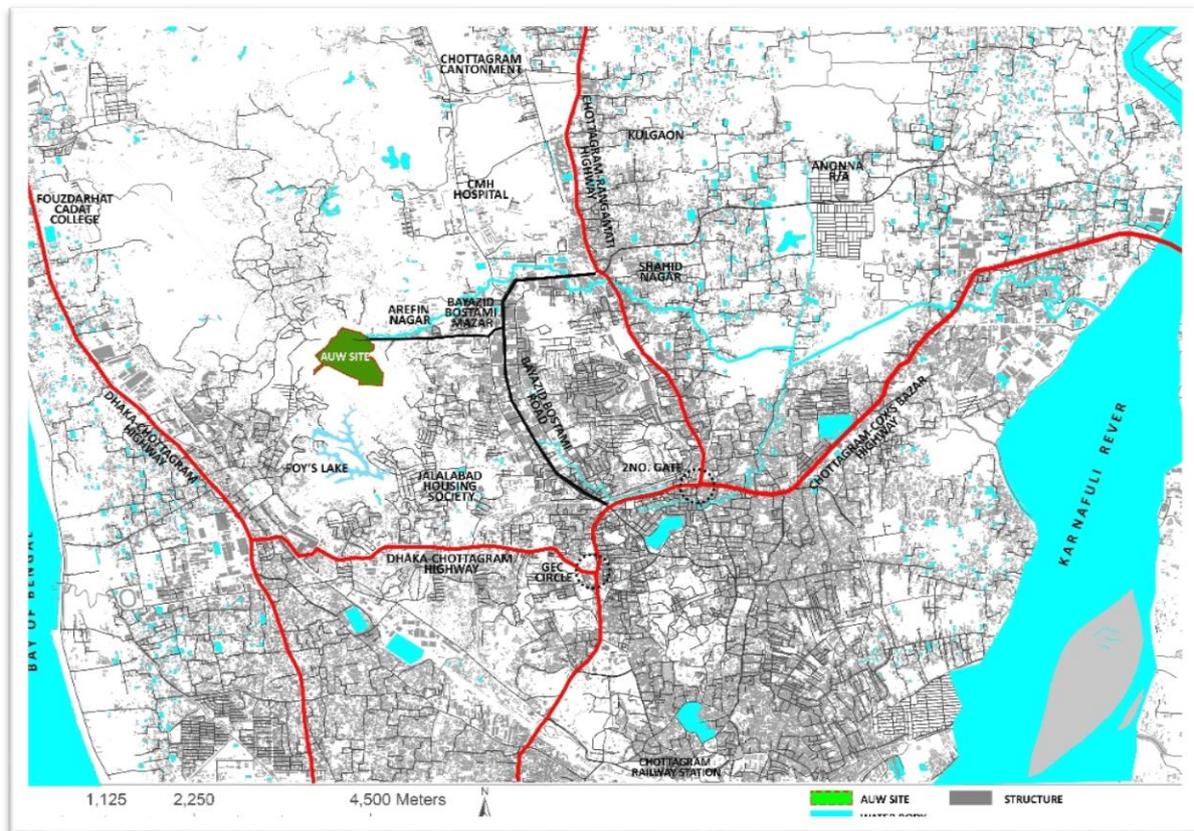


Figure 8: Water Resources around the Project Area

3.4.6 Additional Project Infrastructure

Additional project infrastructures that may be required, based on the final master plan are as follows:

- Bridges and culverts of various spans required to complete the road network allowing the flow of rainwater into the existing valleys.
- Retaining walls must be constructed along roads and adjacent to buildings where the required angle of hill slopes cannot be maintained.
- Water spillways in the proposed retention ponds and lakes to regulate the water elevation.
- These will be finalized during the detailed design stage.

3.5 Resources and Utility Demand

As the proposed project is situated in a naturally developed hilly area enriched by different types of natural resources and in order to construct the project in such an area, the land features need to be cut and filled in a planned way. The updated project master plan⁷ has been developed to avoid any sorts of environmental hazards. Accordingly, AUW master plan identified infrastructural, communication, drainage channel, sewerage treatment plant, disposal of waste, provision of different utilities (water, gas, and electricity), etc.

⁷ VITTI Sthapati Brindo (2019)

3.5.1 Land Requirement

In September, 2006, Government of Bangladesh has allocated 140 acres of land at Pahartali (current location of the project) for access academic multistoried facilities. It is expected that no land acquisition is required for construction of the AUW campus. No additional land is also required for the construction yard or labor camp as proposed campus area is completely empty to accommodate labor shed and construction yard.

3.5.2 Water Requirement

A large volume of water would be required for the project. Estimated water requirement (gallons) over the project period is detailed below.

Table 12: Water requirements of the project during construction period

Average Quantity (gallons/day)	Purpose	Total gallons (considering the project period-4.5 years)	Source
2,000	Construction purpose	3,285,000	Groundwater and rainwater harvesting
26,133	Domestic purpose	42,923,229	CWASA connection
968	Drinking purpose	1,589,749	CWASA connection
Total		47,797,988	

3.5.3 Raw Materials

Estimated amount of required Raw Materials over the project period is given in the following table. The detailed calculation has been provided in the Annex 11.

Table 13: Raw materials requirement of the project during construction period

Types of materials	Quantity
Cement	9,98,513 bags
Sand	25,97,829 cum
Stone	4,79,0248 cum
Reinforcement	12,996.27 MT
Brick (first class)	35,65,060 Nos
Facing Bricks	59,20,890 Nos

3.5.4 Fuel Requirement

Estimated amount of required fuel over the project period is given in the following table. The detailed calculation has been provided in the Annex 13.

Table 14: Fuel requirement of the project during construction period

Types of fuel	Quantity (liter)/day	Quantity (liter) over the project period
Construction period (4.5 years)		
Diesel	1900	3,120,750
Operation period		
Natural Gas	238,680 cum-yearly	

3.5.5 Power Requirement

Primarily, 600 MW electricity would be required per month at the project. When the University would be operational, 2100 MW electricity would be required per month. The source of electricity is PDB and the university's own generator.

3.5.6 Manpower Requirement

During construction period, Contractor's labor force will consist mostly of subcontractors and small crews retained to conduct minimal clearing activities, construct temporary way-leave access roads, conduct survey work and geotechnical investigations. The contracted labor will be hired and recruited from surrounding local communities and they should be transported to and from work.

A portion of local labor would be provided with a Labor Camp inside the project area. They should be provided security and required facilities during construction work. Necessary steps are needed to be taken during operation period like wastewater treatment, solid waste management etc.

For construction of the entire AUW campus will require ten (10) contractors, having an average of 68 workers would work into the site. Ten (10) Suppliers having an average of 8 workers and 10 Management groups having an average of 12 workers would be there. In total, around 880 person per day would be working at the site. However, construction of academic complex may require around 200 workers per day at the site. Detailed calculation of required labor force for the project has been outlined in Annex 12.

Among the 200 workers, 35 percent would live within the site and provided necessary water supply, sanitation and cooking facilities. The remaining 65 percent would commute using the transport provided by the contractor. A site management protocol against Covid-19 for the workers working within the area is detailed in Annex 14.

3.6 Project Activities

Three types of activities are there involved in this project. They are pre-project activities, Project activities during construction and project activities during operation

Table 15: List of project activities

Project Activities (not limited to)	
Pre-project activities	<ul style="list-style-type: none"> ▪ Formulation of the academic and administrative master plan of the university. ▪ Environmental & Social Impact Assessment (ESIA) ▪ Topographic survey of the proposed construction area. ▪ Revision of existing design of the Campus Centre Building. ▪ Revise the existing Master Plan to accommodate 3,000 students. ▪ Geotechnical investigation in relation to the revised Master Plan. ▪ Design of civil works about the revised Master Plan. ▪ Architectural-Engineering design of additional academic buildings, library, student & faculty & staff housing. ▪ Landscape design as per the revised Master Plan. ▪ Planning and building permits from Chattogram Development Authority (CDA).
Project activities (Construction)	<ul style="list-style-type: none"> ▪ Site Development ^ ▪ Construction of Campus Centre Building ^ ▪ Site Development of Central Valley ^ ▪ Construction of Student Housing- 1 ^ ▪ Construction of Student Centre ^ ▪ Construction of Academic Building ^ ▪ Construction of Library Building ^ ▪ Construction of Utilities including electrical power, water supply & treatment, and gas supply. ^ ▪ Construction of Chiller Plant for air-conditioning, Sewage Treatment Plant (STP), Fire detection and Fire Fighting ^ ▪ Construction of Senior Faculty Housing ^

Project Activities (not limited to)	
	<ul style="list-style-type: none"> ▪ Site Development of West Valley ▪ Construction of Sports and Recreation Center ^ ▪ Construction of Faculty Tower ▪ Construction of Student Housing ▪ Construction of Staff Housing ▪ Site Development of East Valley ▪ Construction of Graduate Academic Building ▪ Construction of Graduate Student Housing
Project activities (Operation)	<ul style="list-style-type: none"> ▪ Utilities including electrical power, water supply & treatment, and gas supply. ▪ Chiller Plant for air-conditioning, Sewage Treatment Plant (STP), Fire detection and Fire Fighting. ▪ IT Network ▪ Elevators & Escalators ▪ Electrical distribution and lighting ▪ Plumbing and sanitary system. ▪ Access Control and Surveillance System

^ To be supported by WB HEAT Project.

The Faculty

AUW will provide a highly talented and professional faculty body that is broad based, balanced, and committed as a whole to the educational values adopted by the University. Top faculty will be selected as of open sources method. The faculty members will be selected without any bias to color, religion, racism and nationalism. Marginalized and less advanced groups will get preference. Faculty will have the opportunity to work in small classes with a diverse group of students. AUW’s target student-faculty ratio is 13:1 with the goal of recruiting approximately 200 faculty members over time.

The Programs

The Asian University for Women will offer undergraduate/graduate degree that incorporates the greatest strengths of an education steeped in critical inquiry with the perspectives and concerns of women living in Asian and Middle Eastern nations. Through this five-year program, AUW will equip its students with necessary skills and resources to become capable, dynamic, and innovative leaders in future that can help to ensure sustainable development in this region.

Considering the dis-advancement situation of communities where women may not have had access to quality secondary school, but possess the potential for success, AUW is committed to develop a bridge program titled “Access Academy for bringing out the dis-advanced women group”. The Access Academy is a one-year residential, a pre-collegiate preparatory program focused on preparing students with the foundation skills for success in the AUW’s undergraduate and graduate programs. As such, the Access Academy’s curriculum focuses primarily on English language skills, computer literacy, and mathematics. Students who complete the Access Academy program will be automatically accepted into the University’s undergraduate program.

AUW academic programs	The Access Academy Undergraduate Program Graduate Program
The Access Academy	One-year pre-collegiate preparatory program.
Undergraduate Program	Liberal Arts and Sciences Literature and Women’s Studies Politics, Philosophy, and Economics Biological Sciences Computer Science and Information Technology

AUW academic programs	The Access Academy Undergraduate Program Graduate Program
Graduate Program	Environmental Engineering/Sustainable Development Information Technology Education Business Management and Public Policy

However, additional programs will be needed considering the demand and availability of resources. AUW is currently working to establish partnerships with international universities for the development of the AUW’s graduate programs, and has already made an agreement with Aalborg University, Denmark, for Information Technology program.

The Students

The University will have the capacity to enroll of 2,500 students yearly (250 per program) and 250 access academy students. While AUW will remain open to students from anywhere, initial target countries are Afghanistan, Bangladesh, Bhutan, Cambodia, India, Laos, Maldives, Myanmar, Nepal, Pakistan, Sri Lanka, and Vietnam. Among them, 25% student will be from Bangladesh. AUW will also welcome exchange students from around the world.

The AUW student will represent the cultural, religious, and economic diversity of the region. AUW, will target, students with great leadership potential who are committed to advance the imperatives of socio-economic development across Asia. AUW will strictly maintain ‘merit-based’ selection. While the admission to the AUW will be competitive, the criteria will be based solely on the potential of each student, not their family background or status. Full scholarships including tuition and living expenses will be awarded for students coming from economically underprivileged backgrounds.

3.7 Decommissioning

The AUW university campus is expected to function in perpetuity. However, with the completion of construction, decommissioning of construction site offices, construction equipment, and other site facilities for workers will be required. This decommissioning activity is included as line-item in the Bill of Quantities (BOQ) as part of contracts to ensure smooth transition and handover the site.

3.8 Implementation Schedule

Site development for this project has been started at third quarter of 2019. The construction work started at 1st quarter of 2020. This project is scheduled to be completed by 2025/26. Detailed Implementation Schedule is presented in Figure 6.

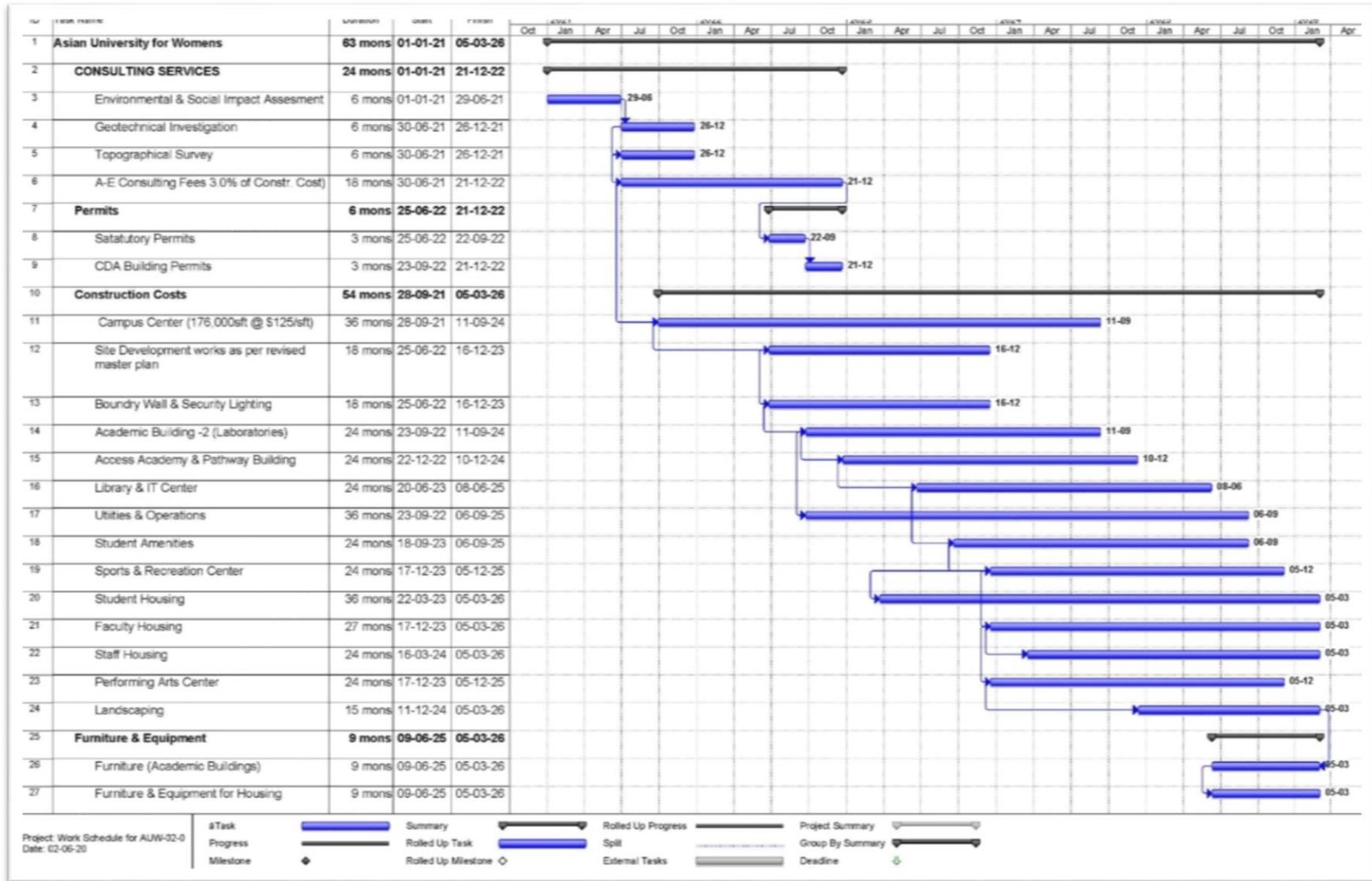


Figure 9: Implementation Schedule of the Master Plan

Chapter 4: Environmental and Socio-Economic Baseline

4.1 Introduction

The baseline condition has been delineated considering the environmental perspective where the environmental sector has been differentiated into three types and these are: Physical Environment, Biological Environment and Social Environment. The Physical environment consists of meteorological, hydrological, topological, geological components and processes, hazards, land use and land cover pattern, water resources and land resources. The Biological environment includes agricultural resources and ecosystems with aquatic and terrestrial flora and fauna. The social environment includes demography, social amenities, utilities, cultural activities, economic status, livelihoods, and etc. of the people residing in the study area. Both primary and secondary data were used to delineate the baseline condition.

The baseline conditions define the physical, biological, cultural and human conditions that prevail in the Project Study Area. It includes information on all receptors and resources as having the potential to be affected by the Project, as well as have an impact on the sustainability of the Project.

The primary objective of the environmental and social baseline study is to provide a baseline against which potential impacts from the construction and operational phases of the proposed Project can be assessed.

The methodology adopted for collecting the baseline data is as follows:

- Nearest proposed project location was selected for the baseline studies considering the location of project components, associated components and nature of project activities;
- Primary environmental data collection was through monitoring and field survey for water, air, and noise; and
- Social baseline of the study area was captured through field consultations (PCM), interviews, meeting with stakeholders, discussions with government departments and secondary data review etc.

The Environmental and Social Impact Assessment (ESIA) study has been conducted following the steps shown in Figure 10.

4.2 Project Boundary

The figure below shows the Bounding step in the overall ESIA process. Various types of environmental issues were considered in the 'study area' during primary data collection. The boundaries of the study area include watersheds, access to areas such as parks/ forests, local habitants, natural resource exploitation and commercial development.

The probable impacted zones have been classified based on the proposed project location of 0.5 km radius area considering directly impacted zone (DIZ). The area of Influence (AOI) covered more than the DIZ. These zones were finalized based on the particular location, specific watershed, parks and lake, forest and socio-economic considerations.

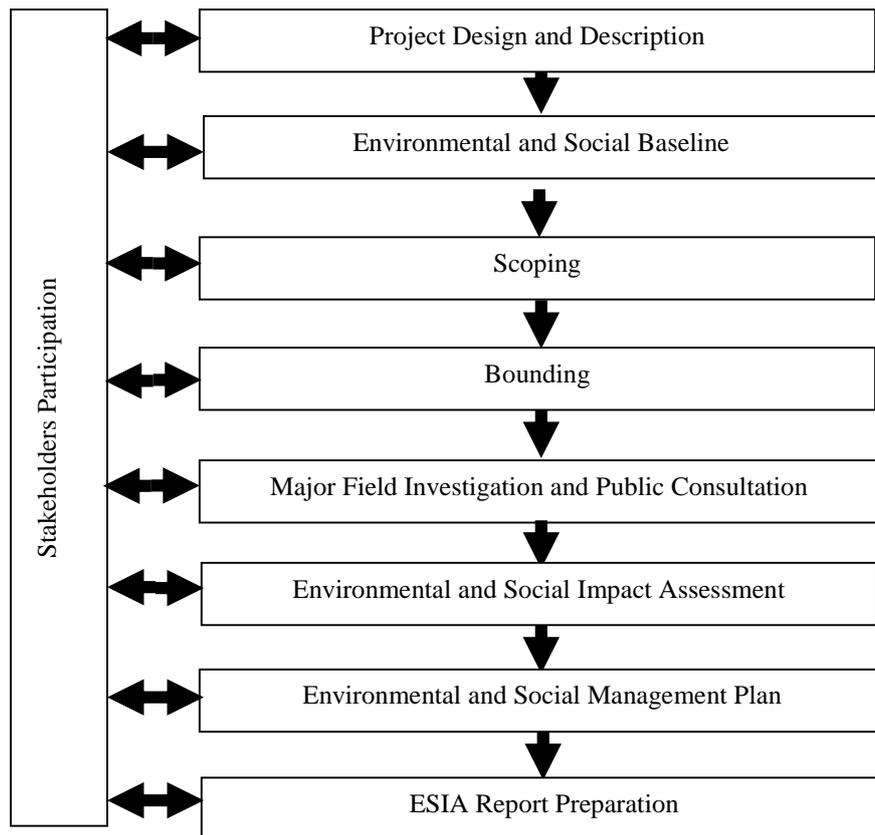


Figure 10: Steps of Environmental and Social Impact Assessment (ESIA)

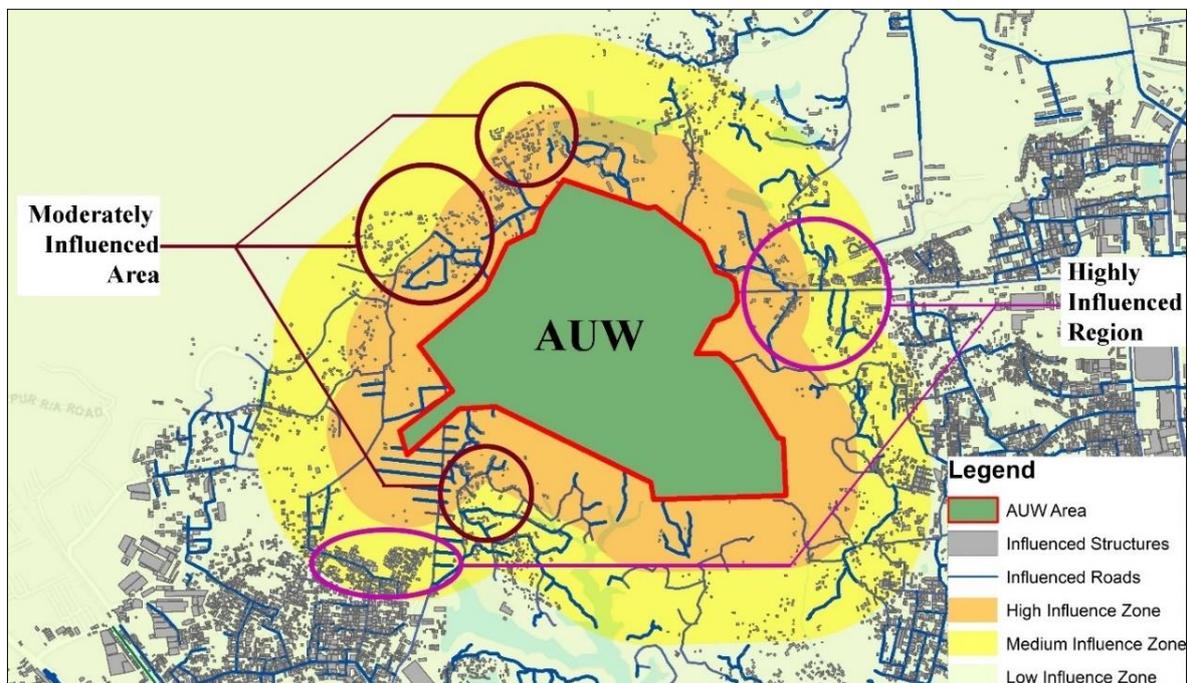


Figure 11: Influence Zones of the Project

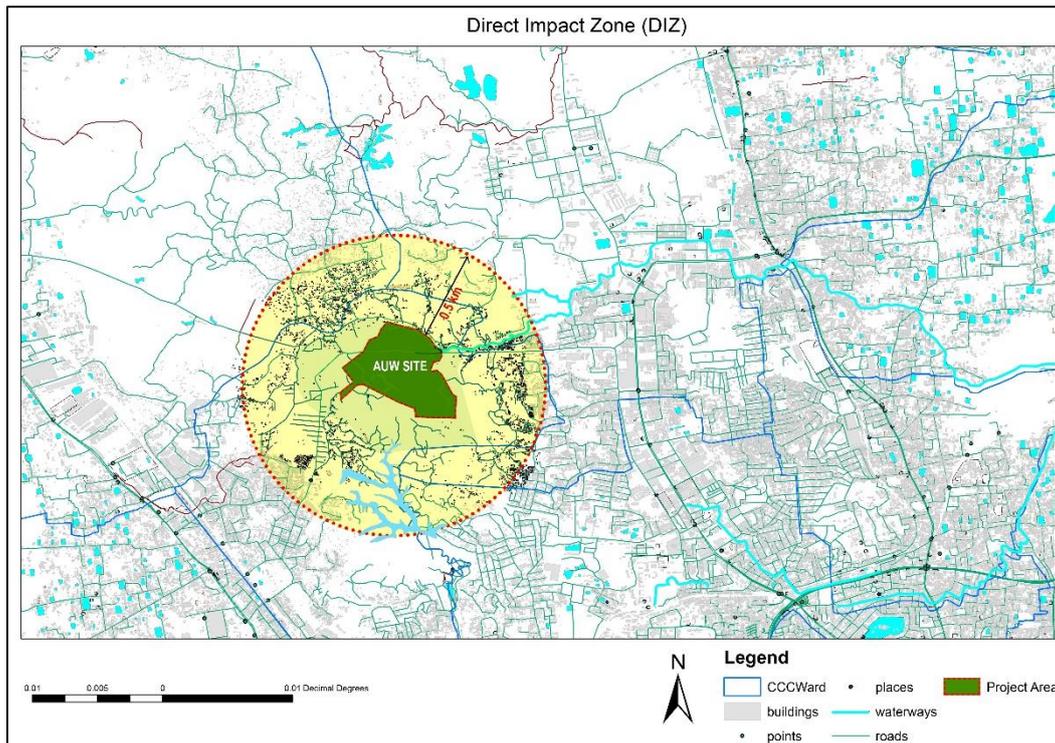


Figure 12: Direct Impact Zone (DIZ) of the Project

4.3 Physical Environment

4.3.1 Land use

Most of the sides of the project (west, north and south) are surrounded by hilly terrain except eastern part. In the three sides (west/north/south) of the project area, there are no inhabitants. However, some local inhabitants and commercial activities are present on the east side. The project area is not used for cultivation. It is mostly covered by some small trees, grasses and low bushes.

4.3.2 Topography

The hills of the site extend from north-south parallel to the coast and ends with Batalli hills (280 feet above mean sea level) and the Railway Cantonment. The hills are formed of consolidated silt to silty shale, elevated by an active geological fault. These are steep-sided and have potential for erosion if the top vegetation cover is disturbed. The vegetation consists primarily of grassy ground cover and shrubs (in the western portion), and the site is largely devoid of tall trees.

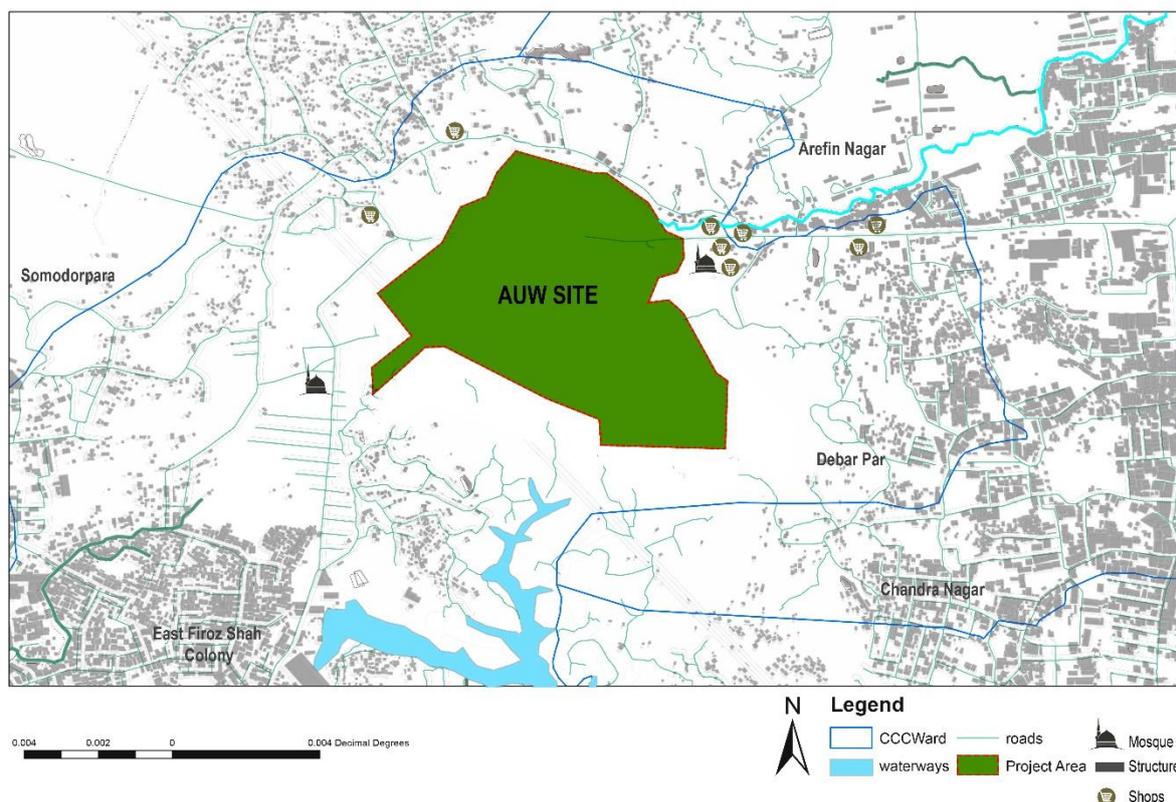


Figure 13: Project Site and Surroundings

4.3.3 Geology

As per Tectonic framework Bangladesh is divided into two major tectonic units: (i) Stable Precambrian Platform in the northwest and (ii) Geosynclinal basin in the southeast. A third unit, a narrow northeast-southwest trending zone called the Hinge Zone separates the above two units almost through the middle of the country. The project is located within the alluvial silt zone.

The project is located within the Calcareous and non-calcareous brown floodplain soil. Calcareous Brown Floodplain soils have Cambrian B-horizon that is predominantly oxidized, containing lime in the profiles. They comprise pale brown to olive brown, friable, loamy and clay soils occurring on the upper parts of ridges on the Ganges river floodplain and the river bank of the Ganges tidal floodplain. Most of these soils belong to Calcaric Gleysols.

Non-calcareous Brown Floodplain soils occur largely on the Old Himalayan Piedmont Plain, mostly on the ridges. They also occupy minor areas in the Tista, Karatoya - Bangali, Jamuna and Old Brahmaputra floodplains, and some western parts of the Ganges floodplain. These soils are non-calcareous and having Cambic B-horizon which is fully or predominantly oxidized. There are two kinds of soils in this group. One class belongs to deep soils with dark-colored topsoil, occurring extensively on the Old Himalayan Piedmont Plains. Another class is mainly shallow soils, lacking thick dark-colored topsoil occurring mainly outside the Old Himalayan Piedmont Plain. Most of these soils are Dystric/Eutric Gleysols or Cambisols. Geology of the project area and its surrounding is shown in the following Map.

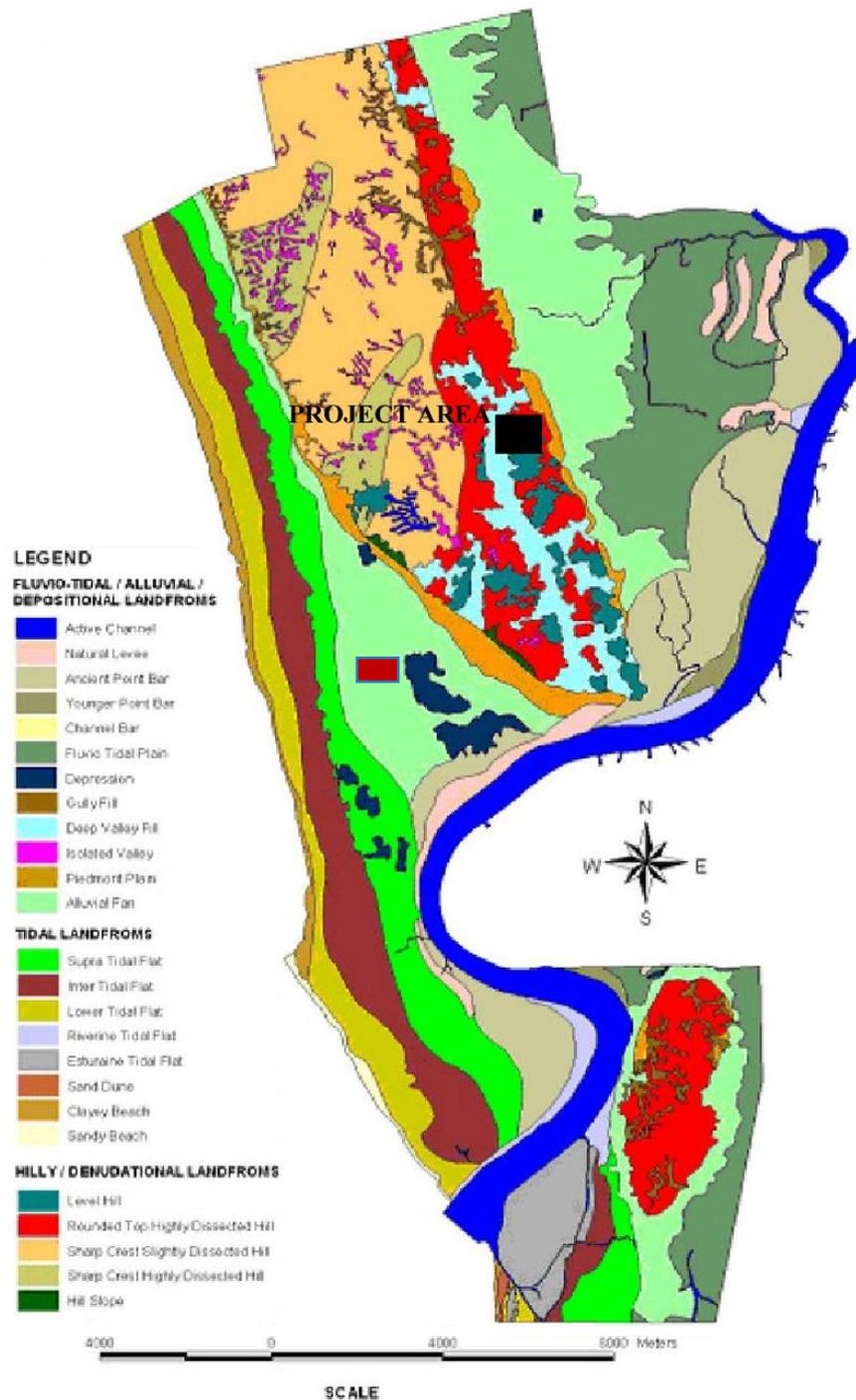


Figure 14: Geomorphological Situation of Project Area and its Surroundings

4.3.4 Soil

The soils at the proposed AUV site were deposited as layered sediments a few million years ago. The area then experienced uplift caused by folding of the layers into long broad ridges generally running in a north-south direction. The folds caused tilting to varying degrees of the original sediments. The sediments were partially consolidated, probably under the weight of other overlying sediments which have since eroded. Present hills are the result of erosion, which has cut into the currently exposed uppermost layers. The soils at the site do not fall conveniently into standard classification nomenclature. The project authority also studied the geotechnical investigation of the project area in great detail.

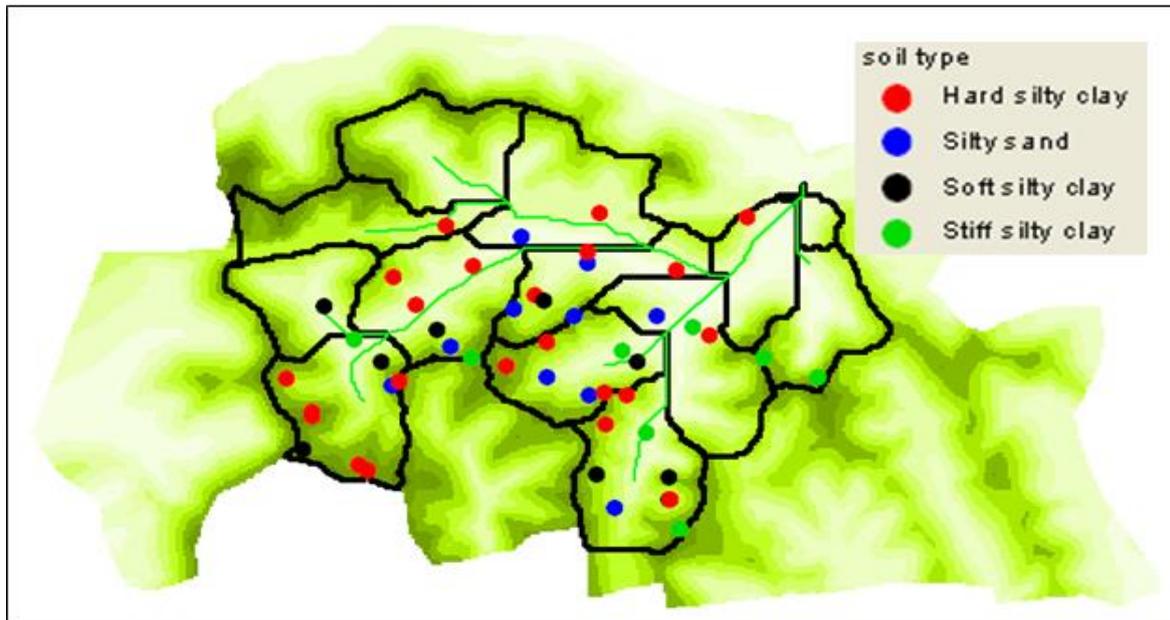


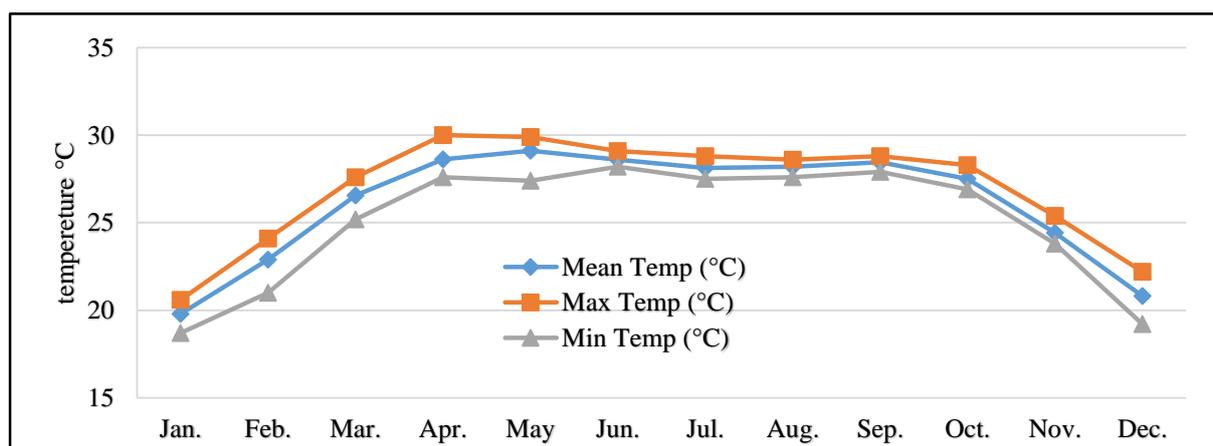
Figure 15: Geotechnical Soil Survey Map Conducted by AUW

The AUW Master Plan classifies soils in the study area under three categories: untethered deposits, consisting typically of soft shale and calcareous sand; weathered in-place soils, consisting typically of weathered shale (silty sand with clay and shale fragments) and soft clayey silt; and recent sediments, in valley floors, consisting typically of loose sand and soft silt. Up to several meters of weathered soils are present at the tops of the hills, while the weathered side soils of the hills tend to be much thinner.

4.3.5 Meteorology

4.3.5.1 Temperature

Considering last 10 years data, it is observed that the minimum temperature was 18.7 degrees centigrade in January of 2013 and the maximum temperature of 30 degree centigrade was in April 2014 (Figure 16).

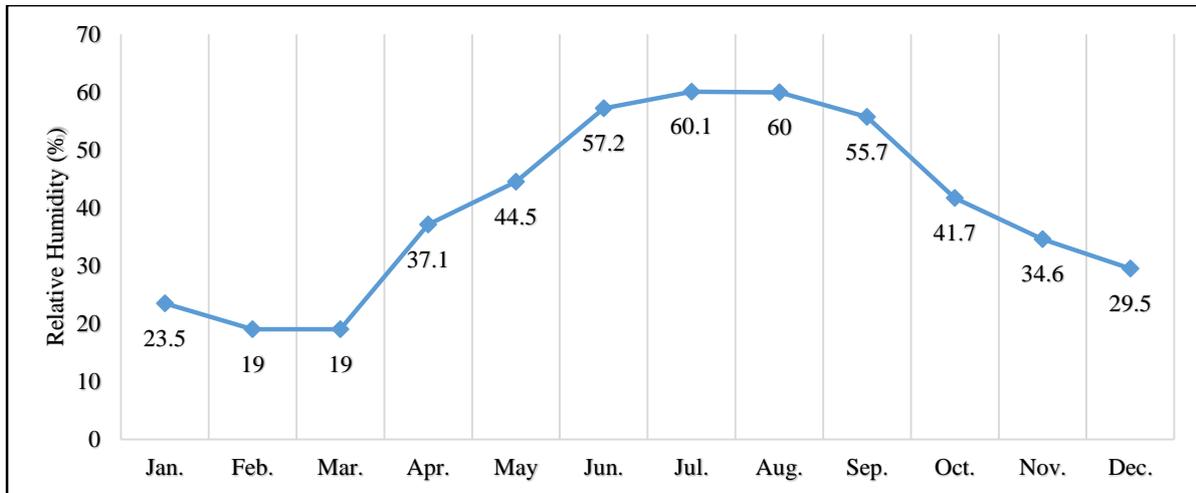


Source: Bangladesh Meteorological Department (BMD)

Figure 16: Monthly Average Maximum, Minimum & Mean Temperature during 2008-2017

4.3.5.2 Humidity

Analysis of previous ten years humidity data (monthly) reveals that the minimum average humidity was observed 19.00 mm in March and the maximum average humidity was observed 60% in July.

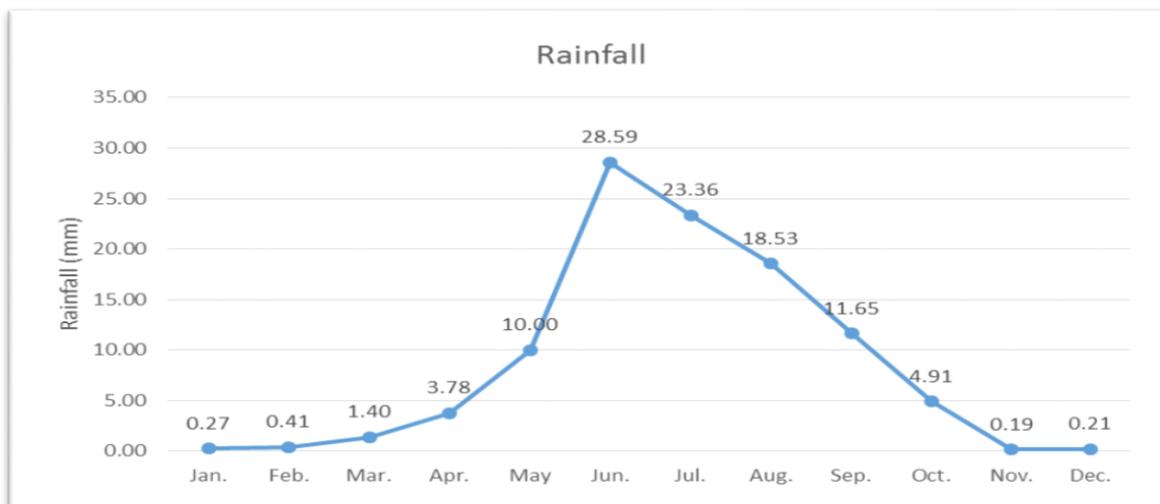


Source: Bangladesh Meteorological Department (BMD)

Figure 17: Monthly Average Humidity of the Project Site during 2008-2017

4.3.5.3 Rainfall

Considering previous 10 years data it is observed that the minimum average daily rainfall was 0.19 mm in November and the maximum average rainfall was 28.59 mm in June.



Source: Bangladesh Meteorological Department (BMD)

Figure 18: Monthly Average Rainfall Pattern during 2006-2016

4.3.5.4 Sunshine

The sun in Bangladesh regularly shines in the dry season, while in the monsoon season, from June to September, it is rarely seen. The average daily sunshine hours in Chattogram is depicted below (Table 16).

Table 16: Monthly Average Sunshine hours in Chattogram

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sunshine Hour	8.5	8.7	8.9	8.1	7.3	3.9	3.4	4	5.6	7	8	7.9

4.3.6 Water Resources

At present, there is no water in the project area but rainwater accumulates and flows through the natural drainage channels in rainy days. The runoff of these areas eventually fall into the Karnafuli River through local canals.

4.3.7 Agriculture Resources

Within the project area, there are no agriculture activities. However, in the surrounding areas of the project (1 km radius), there are some agricultural activities ongoing e.g., cultivating various types of vegetables (cabbage, cauliflower, beans, carrot, bottlegurd, brinjal, etc.), crops (jute, paddy) and orchard gardens.

4.4 Environmental Quality

4.4.1 Ambient Air Quality Measurements

The air quality index (AQI) is a tool for reporting daily air quality of any city or country. It tells how clean or polluted the air is, and what associated health effects might be a concern for public. The AQI focuses on health effects that one might experience within a few hours or days after breathing polluted air.

In Bangladesh the AQI is based on five criteria of pollutants namely Particulate Matter (PM10 and PM2.5), NO2, CO, SO2 and Ozone (O3). The Department of Environment (DoE) has also set national ambient air quality standards for these pollutants. These standards aim to protect against adverse human health impacts. The approved AQI standard and summary of two months AQI Report of Bangladesh is shown in Table 17.

Table 17: Approved Air Quality Index (AQI) for Bangladesh

Air Quality Index (AQI) Range	Category Definition	Color
0-50	Good	Green
51-100	Moderate	Yellow Green
101-150	Caution	Yellow
151-200	Unhealthy	Orange
201-300	Very Unhealthy	Red
301-500	Extremely Unhealthy	Purple

The air quality sampling (PM2.5, PM10, CO, SOX, and NOX) has been conducted at near main gate and site office of the project.

Table 18: Location of Air quality sampling

Sl.	Location	GPS Coordinates
5	Near main gate	22°23'08.9"N; 91°47'52.91"E
6	Site Office	22°23'9.23"N; 91°47'35.80"E

4.4.1.1 Results Analysis

Ambient air samples were collected for 8-hour monitoring in peak hour of the day through high volume sampler. The NO_x, SO₂, and CO values are within DOE standards for both the locations and PM₁₀, PM_{2.5} values exceeded the DOE standard at the main gate only. The main reason for higher concentrations of PM₁₀ and PM_{2.5} in this area could be due to the construction works of the nearby motorway.

The overall air quality data shows that the ambient air quality is suitable for human health at the site of the AUW Campus. The test results are presented in the following table.

Table 19: Test Results of Ambient Air Quality Analysis

Sl No	Parameter	Unit	Location		Duration (hrs)	DoE (Bangladesh) Standard (Schedule – 2)	Method of Analysis
			Near Main Gate (22°23'8.09"N 91°47'52.91"E)	Near Site Office (22°23'9.23"N 91°47'35.80"E)			
01	PM ₁₀	µg/m ³	185.19	112.50	8	150	Gravimetric
02	PM _{2.5}	µg/m ³	91.32	35.46	8	65	Gravimetric
03	SO ₂	µg/m ³	< LOD	< LOD	8	365	West-Gaeke
04	NO _x	µg/m ³	48.05	37.38	8	100	Jacob & Hochheiser
05	CO	ppm	0.00	0.00	1	35	Sensor

Note:

- During monitoring the day was sunny, and the weather condition was good.
- Regular checkup and calibration of the equipment are done by the manufacturers and ECL personnel to avoid any error
- The LOD of SO₂ is 5 µg/m³

4.4.2 Ambient Noise Level Measurements

Ambient noise levels were recorded at two locations (e.g., Near Main gate and Site Office) in the study areas. These sites have been considered as they can be affected by the construction activities. Detailed sampling locations are provided as follows.

Table 20: Location of Noise Quality Sampling

Sl.	Location	GPS Coordinates
1	Near main gate	22°23'08.21"N, 91°47'52.27"E
2	Near Site Office	22°23'09.20"N, 91°47'35.33"E

4.4.2.1 Results Analysis

Table 21 shows that most of the noise levels are between 39 dB and 63 dB whereas minimum and maximum national noise level standard is between 45 and 60. The noise recording analysis shows slightly high level of noise in day and night time ambient environment (near main gate), which was due to the construction works of the nearby motorway.

Table 21: Test Results of Ambient Noise Level Analysis

Location	Leq		Category	Day time standard	Night time standard
	Day Time (6 AM-6 PM)	Night Time (9 PM-6 AM)			
Near Site Office (22°23'9.20"N 91°47'35.33"E)	50	39	Residential Area	55	45
Near Main Gate (22°23'8.21"N 91°47'52.27"E)	63	54	Mixed zone	60	50

4.4.3 Surface Water Quality Sampling

Surface water sampling and analysis was undertaken to understand the overall baseline water quality (pH, TDS, EC, DO, BOD, COD, TSS) characteristics of the surface water in the study area. Surface water samples had been collected from representative selected surface water sources representing different parts of the study area.

Two samples of surface water were collected from adjacent water body (e.g., canal and ditch) that could possibly be affected by the construction activity.

Table 22: Location of surface water sampling

Sl.	Location	GPS Coordinates
1	Near ditch	22°23'15.08"N, 91°47'29.99"E
2	Near canal	22°23'08.95"N, 91°47'42.77"E

The samples were analyzed as per standard procedures/methods of the respective laboratories.

Table 23: Testing Method of Surface Water Quality are as follows

Parameters	Unit	Testing Methods
BOD ₅	mg/L	5 days Incubation
COD	mg/L	Close Reflex Method
DO	mg/L	Multimeter
pH	-	pH meter
TDS	ppt	TDS meter
EC	μS/cm	Conductivity is measured electrometrically with (or without) temperature compensation and is calibrated against a standard solution of potassium chloride. Measurement of Conductivity Method 2510 (APHA, 1998).
TSS	mg/L	Total suspended solids dried at 105°C 2540-D. (APHA, 1998) Method also in accordance with AS 3550.4:1990 Sample is filtered through a glass fibre (GF/C) filter of nominal pore size (WIN has nominated a pore size of 0.45 μm). The Gooch crucible, filter and the retained material is dried at 105°C. TSS is determined as the weight of the retained material.

4.4.3.1 Results Analysis

The test result of the surface water quality (following table) for both the sampling locations shows within the standard limit of DOE and IFC guidelines.

Table 24: Test Results of Surface Water Quality Analysis

Sl No	Parameter	Unit	Locations		Bangladesh (DoE) Standard for Surface Water (Schedule- 3-A)
			Ditch (22°23'15.08"N 91°47'29.99"E)	Canal (22°23'8.95"N 91°47'42"E)	
01	pH		7.4	7.6	6.5 – 8.5
02	TDS	mg/L	100	105	<1200 as per WHO guidelines
03	EC	µS/cm	202	209	2250
04	DO	mg/L	5.7	6.7	≥5
05	BOD ₅	mg/L	0.6	1.8	≤10
06	COD	mg/L	48	64	125 as per IFC guidelines
07	TSS	mg/L	1.4	2	50 as per IFC guidelines

4.4.4 Groundwater Quality Sampling

The groundwater sampling and analysis were undertaken to understand the overall baseline water quality (pH, Total Dissolved Solids, Dissolved Oxygen, As, Fe, EC and COD) of the groundwater in the study area. Groundwater samples were taken from representative selected groundwater sources representing different parts (e.g., Near Main Gate and Near Site Office) of the study area. Details of sampling location and methodology is given below.

The samples were collected from existing tube wells. Two groundwater samples were collected from two different locations of the project area. The sampling locations are provided as follows

Table 25: Location of groundwater sampling

Sl.	Location	GPS Coordinates
1	Near Main Gate	22°23'6.83"N, 91°47'51.92"E
2	Near Site Office	22°23'8.91"N, 91°47'36.19"E

The samples were analyzed as per standard procedures/methods of the respective laboratories. Details of the analysis method and protocol are presented in the following tables 26 and 27.

Table 26: Testing Method of Groundwater

Parameters	Unit	Testing Methods
Arsenic (As)	mg/L	Atomic Absorption Spectrophotometer
DO	mg/L	Multimeter
Iron (Fe)	mg/L	Atomic Absorption Spectrophotometer
COD	mg/L	Close Reflex Method
pH	-	pH meter
TDS	ppt	Multimeter
EC	µS/cm	Conductivity is measured electrometrically with (or without) temperature compensation and is calibrated against a standard solution of potassium chloride. Measurement of Conductivity Method 2510 (APHA,

Parameters	Unit	Testing Methods
		1998).

4.4.4.1 Results Analysis

Analytical test results indicate that all test results are within the national standards and WHO standard, except manganese COD (32 mg/l) in both locations, DO and Iron (2.01mg/L) in near site office, which may differ for various reasons. High COD in and near the site may be due to long-term infiltration of rain water through the organics rich soils of the site. Hilly terrain, consisting of loose sand, silt and silty-shale, weathered by excessive rain can be reasoned for high Fe concentration.

Table 27: Test Results of Groundwater Quality Analysis

S. N	Parameter	Unit	Locations		Bangladesh (DoE) Standard for Groundwater (Schedule-3-B)
			Near Site Office (22°23'8.91"N 91°47'36.19"E)	Near Main Gate (22°23'6.83"N 91°47'51.92"E)	
01	pH		6.5	7.8	6.5 – 8.5
02	TDS	mg/L	146	174	1000
03	EC	µS/cm	293	348	<400 as per WHO standard
04	DO	mg/L	6.4	7	6
05	COD	mg/L	32	32	4
06	Arsenic (As)	mg/L	<LOD	<LOD	0.05
07	Iron (Fe)	mg/L	2.01	<LOD	0.3 - 1.0

Note:

NYS - Not Yet Set

LOD - Limit of Detection (0.01 mg/L for Iron, 0.001 mg/L for Arsenic, 10 mg/L for COD)

TW - Tube well

COD - Chemical Oxygen Demand

TDS - Total Dissolved Solid

DO - Dissolved Oxygen

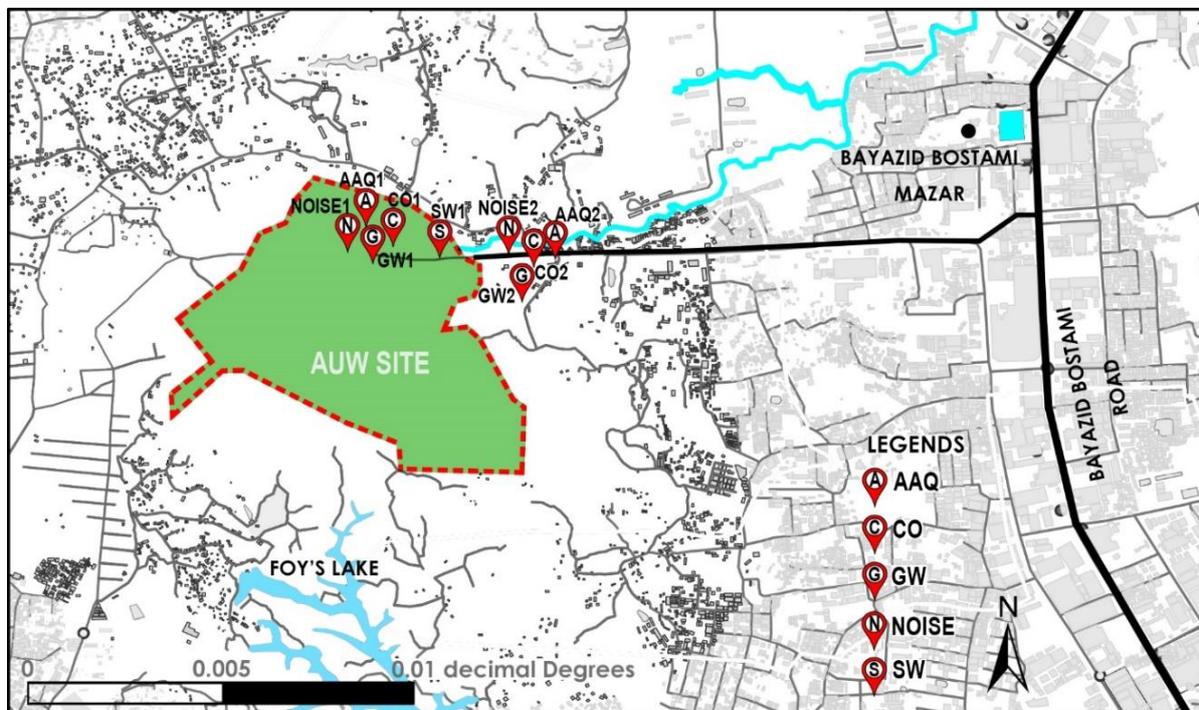


Figure 19: Monitoring Location of Ambient Air, Noise, Groundwater and Surface water

Photographs of sample collection:



Photo-2: Ambient Air Quality Monitoring (Main Gate)



Photo-3: CO Monitoring at Near Main Gate



Photo-4: Ambient Air Quality Monitoring (Site Office)



Photo-5: CO Monitoring at Near Site Office



Photo-6: Noise level monitoring Near Main Gate



Photo-7: Noise level monitoring Near Site Office



Photo-8: Surface water sample from a canal



Photo-9: Surface water sample from a ditch



Photo-10: Groundwater sample from the site office



Photo-11: Groundwater sample from main gate

4.5 Biological Environment

Terrestrial Flora: The project area contains a diversity of species in the different ecosystems described above. The species are planted in and around homesteads according to their potential for human use and consumption for timber, fuel and fruit purposes. Gagon Sirish (*Albizia richardiana*), Rendi Sirish (*Albizia saman*), Sada Koroi (*Albizia procera*), Mahagoni (*Swietenia mahogoni*), Sal (*Shorea robusta*), Ban chalta (*Dillenia pentagyna*), Chitrika/Neul (*Bursera serrata*), Ban karpash (*Thespesia lampus*), Bhela (*Semicarpus anacardium*) trees that can be found in the area. To address fruit demand (coconuts, banana, jackfruits, mango etc) Narikel (*Cocos nucifera*), Taal (*Borassus flabellifer*), Kola (*Musa sp.*), Khejur (*Phoenix sylvestris*), and Aam (*Mangifera indica*) are grown mainly around homesteads. Bamboo is grown widely. Commercial planted crops can be found in homesteads, along village roads and directly in crop land and the following three species predominate - Akashmoni (*Acacia moniliformis*), Mahagoni (*Swietenia mahogoni*), Sal (*Shorea robusta*), Ban chalta (*Dillenia pentagyna*), Chitrika/Neul (*Bursera serrata*), Ban karpash (*Thespesia lampus*), Bhela (*Semicarpus anacardium*), and Taal (*Borassus flabellifer*) or the Asian sugar palm.

Table 28: The major plant species and their usage

Tree Species	Family	Usage	Average Height (Meter)	Density
Narikel (<i>Cocos nucifera</i>)	Palmae	Fruit and fuel wood	15-20	L
Aam (<i>Mangifera indica</i>)	Anacardiaceae	Fruit and timber	10-15	H
Akashmoni (<i>Acacia sp.</i>)	Mimosaceae	Timber and fuel	20-25	L
Bansh (Bamboosa sp)	Poaceae	Thatching	15-20	H
Mahagoni (<i>Swietenia mahogoni</i>)	Meliaceae	Timber and medicine	10-15	L
Sirish (<i>Albizia lebbek</i>)	Leguminosae	Timber and fuel	20-25	L
Chambul (<i>Albizia richardiana</i>)	Leguminosae	Timber	30-35	M
Eucalyptus (<i>Eucalyptus sp</i>)	Leguminosae	Timber and fuel	25-30	L
Rendi Sirish (<i>Albizia saman</i>)	Leguminosae	Timber and fuel	25-30	M
Taal (<i>Borassus flabellifer</i>)	Palmae	Fruit and timber	15-20	L
Khajur (<i>Phoenix dactylifera</i>)	Arecaceae	Fruit and fuel wood	9-12	M
Katbel (<i>Limonia acidissima</i>)	Rutaceae	Fruit and timber	5-7	L
Supari (<i>Areca catechu</i>)	Palmae	Timber and fuel	8-10	M
Tatul (<i>Tamarindus indica</i>)	Leguminosae	Fruit	10-15	L

Tree Species	Family	Usage	Average Height (Meter)	Density
Silkoroi (<i>Albizia procera</i>)	Leguminosae	Timber and fuel	20-25	M
Sisso (<i>Dalbergia sissoo</i>)	Fabaceae	Timber and fuel	15-20	M
Kanthal (<i>Artocarpus heterophyllus</i>)	Moraceae	Fruit and timber	5-8	M
Kadom(<i>Anthocephalus chinensis</i>)	Rubiaceae	Timber and fuel	10-15	L

Note: H = High M = Medium L = Low

Fauna

Birds

The common birds of the project area include crow, sparrow, shalik, black drongo, bulbul and the pariah kite. Nearly as common as these are the doel, tailor bird, pied moyna, common weaver bird, green bee-eater and the common kingfisher. Besides these, there are broad bills, parakeets, woodpecker, barbets, and cuckoos.

Indian pitta (*Pitta brachyuran*), Dollar bird (*Eurystomus orientalis*), Blue-tailed bee-eater (*Merops philippinus*), Dusky eagle owl (*Bubo coromandus*), Green-billed malkoha (*Phaenicophaeus tristis*), lesser coucal (*Centropus bengalensis*), Yellow-footed green pigeon (*Treron phoenicoptera*) are also seen in the area.

Amphibians

Common amphibians in the project areas are Kaloula/painted bull frog (*Kaloula pulchra*), Ornate microhylid (*Microhyla ornate*), Red microhylid (*Microhyla rubra*, Taipeh from (*Rana taipehensis*), Balloon from (*Uperodon globulosus*).

Reptiles

Indian black turtle (*Melanochelys trijuga*), Monocellate cobra (*Naja kaouthia*), Cantoros kukri snake (*Oligodon cyclurus*) etc. are commonly found in the project area.

Mammals

Capped langur (*Trachypithecus pilcatus*), Wild boar (*Sus scrofa*), Asiatic brush-tailed porcupine (*Atherurus macrorurus*), Jackal (*Canis aureus*), Jungle cat (*Felis chaus*) etc. are found in the project area.

Butterflies

Butterflies play a vital role in the ecosystem and act as bio-indicator; the diversity and abundance of butterflies is a good indicator of the state of a habitat or biosphere. Larvae, pupae, eggs and adult butterflies are source of food for various species of birds, bats, dragonflies, lizards, small mammals and large insects. Many butterflies within Bangladesh are widely distributed and abundant. The common Mormon and Lime butterfly are very common and are distributed throughout the country, as are the peacock pansy, Common Grass Yellow, Common Emigrant, Pale Grass blue and Tiny Grass Blue. Other, such as the Common Birdwing, Clipper, Purple Sapphire, Popinjay, Courtesan, Knight and Orange Oakleaf are more restricted in their distribution. They are found in the hill forest of Chattogram and it is one of the major butterfly regions in Bangladesh. This project area is in the hilly forest area of Chattogram.

Wild animal and elephant movement route

From the data of field visit and literature review, it was found that no wild animal and elephant movement route are along and around the project area. Elephant movement and passes routes are at Chunati and Adhunagar (Lohagara), Puichari (Banshkhali), Chiringa, Harbang and Dulhazara (Chakaria), 25-75 km away from the project site.

Protected Areas and Threatened species in the project area:

There is no protected area around this project site. Nearest protected area is Sitakunda Eco park (30 km away from the project site) where the following threatened species persist.

Table 29: Threatened species in the project area

Threatened mammal's species			
Local Name	English Name	Scientific Name	Bangladesh status
Banrui	Chinese pangolin	<i>Manis crassicaudata</i>	CR
Mecho Biral	Fishing cat	<i>Prionailurus viverrinus</i>	EN
Maya harin	Barking Deer	<i>Muntiacus muntjak</i>	EN
Baro kathbirali	Black giant Squirrel	<i>Ratufa bicolor</i>	VU
Khek Shial	Bengal fox	<i>Vulpes bengalensis</i>	VU
Threatened reptiles			
Holud Pahari kachim	Elongated Tortoise	<i>Indotestudo elongata</i>	CR
Ajogor	Retuculated python	<i>Malayopython reticulatus</i>	CR
Burmese Ajogor	Burmese python	<i>Python bivittatus</i>	VU

Note: CR: Critically Endangered, EN: Endangered, VU: Vulnerable
(Source: REED+ list /book of IUCN 2015)

4.6 Socio-Economic Environment

A total of 312 respondent's survey was interviewed within the 0.5km buffer area around the project site. Though there were no directly affected peoples (DAPs) for the project, only households which were located within the radius of 500 meters was considered as survey population. The sample size was calculated by using Raosoft sample size calculator, where the margin of error was 5%, the confidence interval was 95%, the number of total households was 960, and response distribution was 50%. The quantitative data were collected electronically using semi-structured questionnaire by real-time mobile data collection method. The survey has assessed the impacts of the project, the socio-economic conditions, and living standards of affected persons due to the project implementation. The following issues were considered during the survey:

- Socio-economic conditions of the mostly directly/indirectly affected persons
- Family structure and number of family members
- Literacy levels and health
- Occupation type and income levels
- Loss of immovable assets due to the project by type and degree of loss
- Accessibility to the community resources
- Perceived income restoration measures
- Willingness to participate in the project
- Possible positive impacts of the project

- Possible adverse impacts of the project, etc.

The survey data was downloaded from the server instantly after the survey was completed to get the first database. After coding the open-ended responses, and doing a rigorous checking by trained staff members in the office, the clean database was prepared. The study team members then processed the data to get the complete set of tables. The collected data were tabulated and analyzed using quantitative technique disaggregated by age and gender of the respondents by using SPSS 25, Microsoft Excel 2016 and Windows Visio 2016 software. Both univariate and bivariate analysis were done to get the result.

The respondents were informed clearly that the information they provided during the interview would be kept strictly confidential. The interview was held under conditions wherein the respondent felt most comfortable in responding openly. Besides, their identity was not linked to the study at any point of time or stages of the study. The study registered oral consent from all interviewees.

Four FGDs and twelve KIIs were conducted in the project surrounding areas to assess project impacts on neighboring communities and the environment. The FGDs were conducted among male, female and mixed people of the communities. The KIIs were conducted among public administrator, ward councilor, NGO manager, CBO leader, journalist, teachers, businessperson, religious leaders, cultural leaders, etc. Detail checklists for FGD and KII were developed in Bangla. Four skilled and qualified field researchers collected qualitative data. Digital recorders were used in conducting KIIs and in-depth interviews whenever it is possible and detail notes had also been kept. Digitally recorded data were transcribed and coded for analysis.

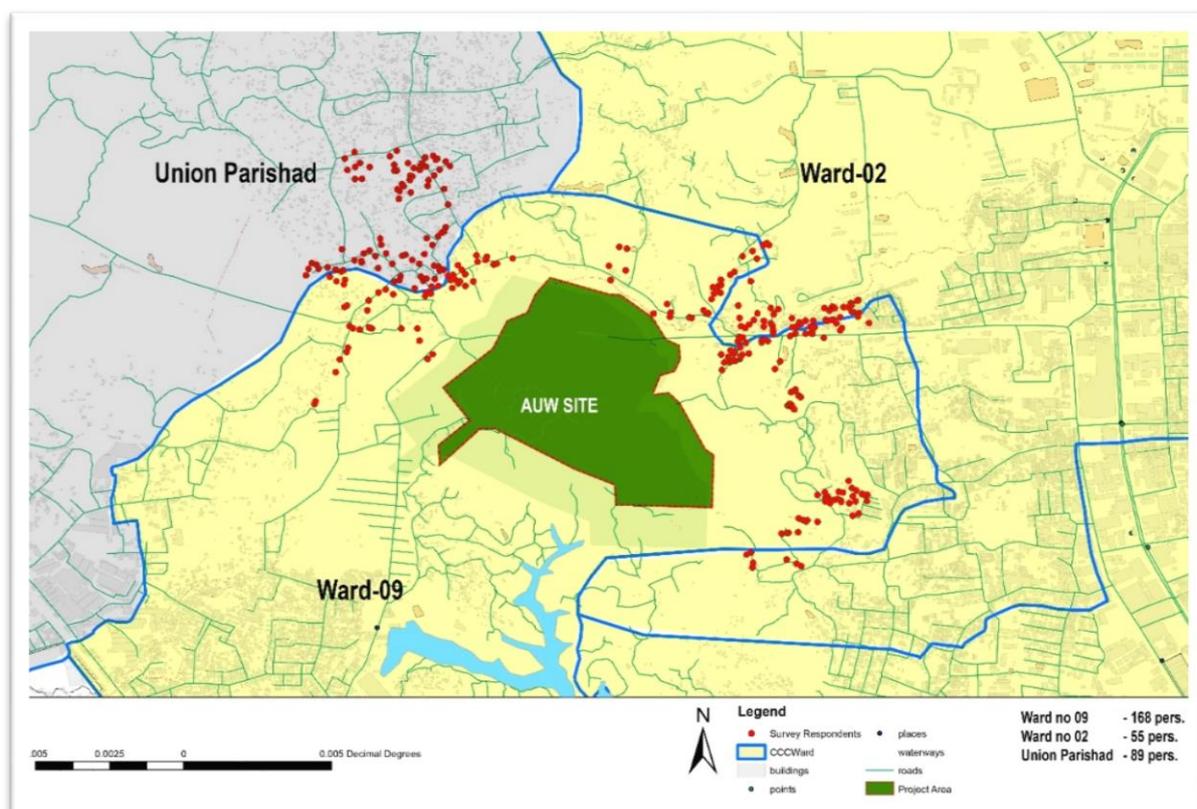


Figure 20: Map of Survey Respondents around the Project Area

4.6.1 Population

It has been already mentioned that the surrounding project area encompasses a little bit gathering of poor people and the local people accepted the establishment of the project with delight. A study team visited the

project area and discussed with the general people regarding the project. The local people gave a positive opinion to implement the project. It may be noted that during construction of the project and after completion, it will create employment opportunity for the surrounding people.

As the area surrounding the project site is undeveloped and naturally formed vegetated land, the presence of population is very rare except some scattered slums here and there. About 60-65 scattered families of the total population about 250 (approximate) reside outside the project area in slum type houses. Some of them lead their life by cultivating on the slope of the hill, and the rest of them are wage laborer. It may be included that Pahartali Thana where the project area is located has an area of 46.62 sq. km having a population of 198894; male 57.45%, female 42.55%; Muslim 90.17%, Hindu 9.22% and others 0.61%; ethnic nationals: Chakma, Marma, and Larma. No indigenous population are currently living the buffer areas of the project (0.5km radius).

4.6.1.1 Demography

The project (partially) spreads in two thanas (Baizid Bostami and Khulshi) of Chattogram City Corporation. The following table indicates the demographic profiles of the two wards of the two thanas. The total studied area covers of the two thanas is 19.02 sq. kilometer (but the project is having a radius of 0.5 kilometers) with 42,636 households (HHs) and total population is 181,627. Population density per square km is 21,901.

Table 30: Demography of the Project Surrounding Area

Thana	Ward	Area (sq. km.)	Household	Population			Sex-Ratio	Literacy (7 years +)	Density (per sq. km)
				Male	Female	Both Sex			
Bayejid Bostami	02	13.53	24703	53620	49694	103314	108	67.3	7636
Bayejid Bostami	03	5.77	14251	34751	34043	68794	102	64.3	11923
Khulshi	09	5.49	17933	40904	37409	78313	109	66.5	14265
Total	14	24.79	56887	129275	121146	250421	106.33	66.03	11274.67

(Source: BBS, Census 2011)

4.6.1.2 Ethnic Composition

All participants of the survey were of Bengali origin. No ethnic people were found to match survey criterion. Table below shows that about 100% male and 100% female respondents are Bengali, however, the indigenous people will be benefitted for getting enrollment and various incentive mechanisms, including stipends after completion of the project.

Table 31: Ethnic Compositions of the Project Area

Race	Percentage (%)		
	Male (N=160)	Female (N=152)	Total
Bengali	100	100	100

(Source: BBS, Census 2011)

4.6.1.3 Religion

The population of the project study area primarily consists of Muslims. Muslims constitute almost 95.15% of the total population (96.6% of respondents are male and 93.4% respondents are female).

Remaining 4.85% is primarily constituted by Hindus (3.1% are male and 6.6% are female respondents). The following table indicates the various religious profiles of the project study area.

Table 32: Religion of the Respondents

Religion of the respondent	Percentage (%)		
	Male (N=160)	Female (N=152)	Total
Islam	96.9	93.4	95.15
Hindu	3.1	6.6	4.85

4.6.2 Education

Table 33 shows the status of education facilities for children in the study area. Here about 10% male and 11.2% female respondents assumed that the education facilities for children are in good condition, another 45% male and 40.1% female respondents respectively opined that the facilities of education for children are moderate. Furthermore, 45% male and 48.7% female respondents opined that the education facilities for children are below satisfactory level. So, it is clear that almost 47% respondents both male and female opined that children's education facility are below satisfactory level.

Table 33: Education Facilities for Children of the Project Area

Education facilities for Children	Percentage (%)		
	Male (N=160)	Female (N=152)	Total
Good	10	11.2	10.6
Moderate	45	40.1	42.55
Low (Below Satisfactory Marks)	45	48.7	46.85

4.6.3 Settlements and Housing

Since the project's surrounding area is undeveloped, a few huts and slums exist on the slope of the hill, far away from the project location. In addition, all of the houses or slums are scattered. Due to project development, the existing huts and slums will not be disturbed or replaced as they are at a significant distance from the project area. Moreover, there will be a good opportunity to do small business by the local people after establishment of the project. If anyone is displaced due to security or other concern as the university is the place of students of multi lingual nations the affected people will be rehabilitated and compensated properly. But at this stage, there is no need to displace anyone for project development.

Table 34 depicts the types of house structure in the study area, where 4.4% of male respondent's houses are all over constructed with brick and cement whereas 2% of female respondent's houses are all over constructed with brick and cement. About 41.9% of male respondents houses are constructed by brick and cement (floor/partial) while 38.8% female houses constructed by brick and cement (floor/partial). 27.55% respondent's both male and female households' houses are well built earthen house constructed with Bamboo/CI sheet/, while, 29% respondents both male and female households are weakly built earthen houses constructed by Bamboo/CI sheet.

Table 34:Type of Structure in the Study Area

Types of structure	Percentage (%)		
	Male (N=160)	Female (N=152)	Total
Brick and cement (all)	4.4	2	3.2
Brick and cement (floor/partial)	41.9	38.8	40.35
Bamboo/Tin/ Earthen house – well built	29.4	25.7	27.55

Types of structure	Percentage (%)		
	Male (N=160)	Female (N=152)	Total
Bamboo/Tin/ Earthen house – weakly built	24.4	33.6	29

Table 35 represents the information of ownership of the dwelling units in the project study area. It shows that the highest (35.5%) respondents both male and female are living in rented properties and 26.4% live at their own land. Moreover 15.45% and 16.25% of respondents live the dwellings built on private and government land respectively. In only 6.45% of the cases, both male and female live in other residences.

Table 35: Ownership of the Dwelling House in the Study Area

Housing Tenancy	Percentage (%)		
	Male (N=160)	Female (N=152)	Total
Live at own land	21.9	30.9	26.4
Live on rent	38.8	32.2	35.5
House built on private land	13.1	17.8	15.45
House built on Govt. land	21.3	11.2	16.25
Others	5	7.9	6.45

Table 36 represents the information about the number of rooms the dwelling house in the project study area. About 36.6% of the respondents both male and female have only one room, while most (37.8%) of the respondents' dwell in 2 room units. The table also shows that about 15.45% of respondents live in 3 room units and only 10.15% of respondents dwell in more than three room units.

Table 36: Number of rooms of the Dwelling units in the Study Area

Number of rooms	Percentage (%)		
	Male (N=160)	Female (N=152)	Total
1 room	34.4	38.8	36.6
2 rooms	39.4	36.2	37.8
3 rooms	13.1	17.8	15.45
3+ rooms	13.1	7.2	10.15

Table 37 shows the floor area of the dwelling units in the study area. Here (most) 48.45% of respondents dwell in 151-300 sq. ft. floor. Another 24.05% respondents live in 301-500 sq. ft. floor space. Only 1.6% of respondents are reside in more than 1000 sq. ft. floor space in this particular study area.

Table 37: Floor Area of Dwelling Units in the Study Area

Area of floor (sq. ft.)	Percentage (%)		
	Male (N=160)	Female (N=152)	Total
Up to150	9.4	9.9	9.65
151-300	46.9	50	48.45
301-500	23.8	24.3	24.05
501-750	13.1	11.8	12.45
751-1000	5	2.6	3.8
1000+	1.9	1.3	1.6

4.6.4 Public Utilities

4.6.4.1 Water Supply

Table 38 shows the sources of drinking water in the project study area. At the project area, the most 64.4% respondents both male and female claimed that the potable water was not at household site while about 12.85% of respondents claimed to have access to tube well (manual), and 6.8% claimed to have access to tube well with the overhead tank. On the other hand, 3.2% of respondents claimed to access protected dug well and another 1.95% claimed to access unprotected dug well. Only 1% of respondents claimed to use surface water.

Table 38: Sources of Drinking Water in the Study Area

Sources of drinking water	Percentage (%)		
	Male (N=160)	Female (N=152)	Total
Supply water (Connected to HH)	11.3	8.6	9.95
Supply water (Not connected to HH)	66.3	62.5	64.4
Tube well with overhead tank	4.4	9.2	6.8
Tube well (manual)	11.9	13.8	12.85
Dug well (protected)	3.8	2.6	3.2
Dug well (unprotected)	1.3	2.6	1.95
Surface water (River/canal/Pond/ lake/ditch)	1.3	0.7	1

Table 39 shows the alternate sources of drinking water in the project study area. Here 3.2% respondent's using alternate sources of supply water which is not connected with households. The most 92.3% of respondents have no secondary water sources. Only 0.95% of respondents use tube well (manual) for their alternative water sources as well. Due to the project activities, the local people will not be affected for getting of drinking water because of, the university will install or arrange their own water sources in their premises with the negotiation of the Chattogram City Corporation (CCC) and Bangladesh Water Development Board (BWDB). Even, the local people will get the access to drinking water through the established mechanism of the project area.

Table 39: Sources of the Alternate Drinking Water of the Study Area

Sources of Alternative Drinking Water	Percentage (%)		
	Male (N=160)	Female (N=152)	Total
Supply water (Connected to HH)		0.7	0.4
Supply water (Not connected to HH)	2.5	3.9	3.2
Tube well with overhead tank	0.6		0.3
Tube well (manual)	0.6	1.3	0.95
Dug well (protected)	1.3	1.3	1.3
Dug well (unprotected)	1.3	1.3	1.3
Surface water (River/canal/Pond/ lake/ditch)		0.7	0.4
No secondary water source	93.8	90.8	92.3

4.6.4.2 Electricity

Electricity is an important indicator for measuring the quality of life in the study area. Table 18 represents the source of energy used for lighting in the project area. Here, about 84.95% respondents both male and female claimed to have electricity connection for lighting in their households. On the

other hand, 6.05% used kerosene along with electricity connection, whereas 6.5% of respondents use kerosene only for lighting and only 1.6% of respondents' households have solar power for lighting.

Table 40: Types of energy used in the Respondent's Household

Source of energy is used for lighting	Percentage (%)		
	Male (N= 160)	Female (N= 152)	Total
Electricity connection	84.4	85.5	84.95
Electricity connections and kerosene	7.5	4.6	6.05
Electricity connections and solar	1.9		0.9
Solar	1.9	1.3	1.6
Kerosene	4.4	8.6	6.5

4.6.4.3 Sanitation

Table 41 shows the main sources of water for latrine use in the project study area. About 65.05% respondents both male and female do not have water connection at latrine (water pot is used to carry water to the latrine) while 9.95% have water connection at latrines. Almost 11% respondents use tube well as a main source of water for latrine use while only 1.3% of respondent's use surface water for the latrine.

Table 41: Main Source of Water Used for Latrine in the Study Area

Main source of water for latrine use	Percentage (%)		
	Male (N=160)	Female (N=152)	Total
Supply water (Connected to HH)	11.3	8.6	9.95
Supply water (Not connected to HH)	66.9	63.2	65.05
Tube well with overhead tank	4.4	9.9	7.15
Tube well (manual)	10.6	11.2	10.9
Dug well (protected)	3.1	3.9	3.5
Dug well (unprotected)	1.9	2.6	2.25
Surface water (River/canal/Pond/ lake/ditch)	1.9	0.7	1.3

Table 42 shows the alternate source of water for latrine use in the project area. About 93.3% of respondents have no secondary sources of water for using the latrine in the study area.

Table 42: Alternative Source of Water for Latrine Use in the Study Area

Alternative source of water for latrine use	Percentage (%)		
	Male (N= 160)	Female (N= 152)	Total
Supply water (Connected to HH)	0.6		
Supply water (Not connected to HH)	1.9	2.6	2.25
Tube well with overhead tank		0.7	
Tube well (manual)	1.9	1.3	1.6
Dug well (protected)	1.3	0.7	1
Dug well (unprotected)	0.6	1.3	0.95
Surface water (River/canal/Pond/ lake/ditch)		0.7	
No secondary water source	93.8	92.8	93.3

Table 43 shows the type of latrine of the project study area. About 39.85% of respondents use ring-slab latrine without flap/water seal and about 14.2% of respondents use ring-slab latrine with flap/water seal. 34.25% respondent's use latrine connected with a septic tank while 6.35% of respondents use well-built latrine connected to drain/open.

Table 43: Type of Latrine of the Study Area

Type of Latrine Facility	Percentage (%)		
	Male (N= 160)	Female (N= 152)	Total
Latrine connected with septic tank	36.9	31.6	34.25
Ring-slab latrine with flap/water seal	11.3	17.1	14.2
Ring-slab latrine without flap/water seal	36.3	43.4	39.85
Pit latrine with cover/lid	4.4	0.7	2.55
Pit latrine without cover/lid	3.1	2	2.55
Well-built latrine connected to open/drain	8.1	4.6	6.35
No latrine/ Defecated open/ On drain		0.7	

Table 44 shows the superstructure of the latrine of the study area. Almost half (51.8%) of respondents use the moderate structured latrine, 24.7% of respondents use good, and 23.5% of respondents use the bad structured latrine respectively.

Table 44: Superstructure of the Latrine Used in the Study Area

Superstructure of the Latrine	Percentage (%)		
	Male (N= 160)	Female (N= 151)	Total
Good	27.5	21.9	24.7
Moderate	50	53.6	51.8
Bad	22.5	24.5	23.5

4.6.4.4 Drainage Network

Table 45 shows the status of drainage connection to the respondent's house in the study area. 59.25 % of houses have no drainage connection, whereas 39.15% of respondents have a surface drain and 1.6% of respondents have underground drainage connection to their houses.

Table 45: Status of Drainage Connection to the Respondent's House

Aspects	Percentage (%)		
	Male (N= 160)	Female (N= 152)	Total
Yes, underground	1.9	1.3	1.6
Yes, surface drain	37.5	40.8	39.15
No	60.6	57.9	59.25

Table 46 illustrates the perception of the destination point of the rainwater or wastewater. About 78.15% of respondents could not specifically perceive the destination point of rainwater or wastewater while 15.55% and 5.87% respondents perceived the destination point of rainwater or wastewater to be a local drain and canal/ditch respectively.

Table 46: Perception on Destination Point of the Rainwater or Wastewater

Aspects	Percentage (%)		
	Male (N= 97)	Female (N= 88)	Total
City Corp drains	1		
Local drains	17.5	13.6	15.55

Aspects	Percentage (%)		
	Male (N= 97)	Female (N= 88)	Total
Canal/ ditches	9.3	2.3	5.87
Unspecific place	72.2	84.1	78.15

According to table 47, most of the respondents (93.3%) house have no problem with water logging, only 6.7% of respondents' houses have some waterlogging problem.

Table 47: Status of Water Logging in Respondent's House

Aspects	Percentage (%)		
	Male (N= 160)	Female (N= 152)	Total
Yes, some	7.5	5.9	6.7
No	92.5	94.1	93.3

The drainage network also receives a large amount of domestic kitchen wastes. Table 48 shows the kitchen waste disposal method at households in the study area. Here about 75.05% of respondents dispose their kitchen waste in a specific place/ditch while 19.3% of respondents throw their kitchen waste in unspecific place. Only 4.4% of respondents dispose kitchen waste in the dustbin.

Table 48: Way to dispose of the Kitchen Waste at Respondent's Households

Aspects	Percentage (%)		
	Male (N= 160)	Female (N= 152)	Total
Collected by waste collectors	2.5		
Dispose of in the dustbin	7.5	1.3	4.4
Throw in specific place/ditch	73.1	77	75.05
Throw in unspecific place	16.9	21.7	19.3

4.6.4.5 Pollution

Table 49 represents the Perception on Facing Water Pollution among respondents. In here, about 88.7% of respondents cannot perceive the water pollution in their houses and 10.7% of respondents can perceive the water pollution in their houses.

Table 49: Perception on Facing Water Pollution among Respondents

Aspects	Percentage (%)		
	Male (N= 160)	Female (N= 152)	Total
Yes, High	1.3		
Yes, some	6.9	14.5	10.7
No	91.9	85.5	88.7

According to table 50, about 44.2% of respondents facing some air pollution in their houses, on the other side 39.7% respondents do not face air pollution in their houses. Remaining 16.1%, respondents face high air pollution in their houses.

Table 50: Perception on Facing Air Pollution among Respondents

Aspects	Percentage (%)		
	Male (N= 160)	Female (N= 152)	Total
Yes, high	13.1	19.1	16.1
Yes, some	46.3	42.1	44.2

Aspects	Percentage (%)		
	Male (N= 160)	Female (N= 152)	Total
No	40.6	38.8	39.7

According to table 51, about 60.85% respondents do not face sound pollution in their houses, while 36.6% respondents face some sound pollution in their houses and 2.6% respondents face high sound pollution in their houses.

Table 51: Perception on Facing Sound Pollution in the Respondent's Households

Aspects	Percentage (%)		
	Male (N= 160)	Female (N= 152)	Total
Yes, high	1.9	3.3	2.6
Yes, some	35	38.2	36.6
No	63.1	58.6	60.85

4.6.4.6 Hill Profiling

Table 52 illustrates the level of hill profiling in the study area. Study finds that about half of the respondents (49.1%) perceive there is no hill cutting in this study area. About 36.9% of respondents cited that some hill cutting occurred there. Another 11.8% respondents said there are medium numbers of hill cutting and 2.25% perceive a high level of hill cutting occur in this area.

Table 52: Level of Hill Cutting in the Study Area

Aspects	Percentage (%)		
	Male (N= 160)	Female (N= 152)	Total
Yes, high	3.8	0.7	2.25
Yes, medium	13.1	10.5	11.8
Some	36.3	37.5	36.9
None	46.9	51.3	49.1

Table 53 shows the perception on the risk of infrastructure damage due to hill cutting. In this study area, about 59.75% of respondents positively replied that there is a risk of infrastructure damage due to hill cutting, while 28.1% respondent's replied that there is no infrastructure damage due to hill cutting. Remaining 12.25% of respondents are unaware of the risk of infrastructure damage due to hill cutting

Table 53: Perception on the Risk of Infrastructure Damage due to Hill Cutting

Aspects	Percentage (%)		
	Male (N= 160)	Female (N= 152)	Total
Yes	56.3	63.2	59.75
No	33.8	22.4	28.1
Do not know	10	14.5	12.25

Table 54 shows that 82.2% male and 71.9% female respondents opined that landslide can happen due to hill cutting at the study area. In addition, 48.9% of the male and 34.4% of the female respondents opined that loss of biodiversity can occur due to hill cutting at the study area.

Table 54: Kinds of damage that can be happened due to hill cutting at the Study Area

Aspects (Yes Response)	Percentage (%)		
	Male (N= 90)	Female (N= 96)	Total
Landslide will be increased	82.2	71.9	77.05
Surface water shortage	3.3		
Lack of trees/forest	70	66.7	68.35
Loss of biodiversity	48.9	34.4	41.65
Loss of agricultural production	16.7	14.6	15.65

4.6.5 Agriculture

Table 55 shows, among the total, 77.8% male respondents and 100% female respondents replied that they cultivate paddy on agricultural land. In addition, 44.4% of the male respondents cultivate vegetables and 22.32% of the female respondents also cultivate vegetables.

Table 55: Type of Crops produced in the Study Area

Type of crops is cultivated on agricultural land (Yes Response)	Percentage (%)		
	Male (N= 9)	Female (N= 9)	Total
Paddy	77.8	87.8	88.9
Jute	11.1	-	-
Wheat	11.1	-	-
Mustard	11.1	-	-
Potatoes	11.1	-	-
fruit garden	11.1	-	-
Vegetables	44.4	22.2	33.3

4.6.6 Livelihood

In the perspective of primary occupation on the household head, 23.1% of the male respondents are unskilled labor where 6.1% of the female respondents replied are housewives (Table 56).

Table 56: Primary Occupation of Household Head

	Percentage (%)		
	Male (N= 276)	Female (N= 36)	Total
Housewife		6.1	6.1
Emigrant	6.1	1.0	7.1
Unskilled laborer / House maid	23.1	0.3	23.4
Rikshaw/Van/ Cart puller	9.3		9.3
Service/ Garment worker/	20.8	3.2	24
Skilled labor/ Driver	13.8		13.8
Small Business/ Vendor	5.1	0.3	5.4
Medium Business	0.3		0.3
Unemployed	1.0		1
Retired/Old person	8.3	0.6	9
Teacher	0.6		0.6
Total	88.5	11.5	100

Furthermore, in the perspective of the secondary occupation of household head, 81.1% of the male-headed and 9.3% of the female-headed household replied that they have no secondary occupation (Table 57).

Table 57: Secondary Occupation of Household Head

Aspects	Percentage (%)		
	Male (N= 276)	Female (N= 36)	Total
No secondary occupation	81.1	9.3	90.4
Farmer	1.0		1
Student (no work)	0.3		0.3
Housewife		0.6	0.6
Unskilled laborer / House maid	2.6	0.3	2.9
Skilled labor/ Driver		0.3	0.3
Rikshaw/Van/ Cart puller	0.3		0.3
Service/ Garment worker/		0.6	0.6
Small Business/ Vendor	1.9	0.3	2.2
Medium Business	1.3		1.3
Total	88.5	11.5	100

4.6.7 Education

30.1% of the male respondents and 6.1% of female respondents are uneducated as Household Head (Table 58). Remaining 63.8% of the Household Heads have the literacy at a certain extent.

Table 58: Education of Household Head of the respondents in Study Area

Aspects	Percentage (%)		
	Male (N= 276)	Female (N= 36)	Total
Uneducated	30.1	6.1	36.2
Below class 5	23.1	2.2	25.3
Class 5-9	22.1	2.2	24.4
SSC pass	5.8	0.6	6.4
HSC pass	2.6	0.3	2.9
Graduate	1.6	-	1.6
Masters or above	1.6	-	1.6
Madrassa	1.6	-	1.6
Total	88.5	11.5	100

4.6.8 Occupation and Income

Table 59 reveals the average monthly income of households of the study area. It can be seen from the table that the lowest portion (13%) of the household's average monthly income is Tk 20001-25000. On the other side, the highest portion (58.6%) of the households have an average monthly income of Tk 10001-15000.

Table 59: Avg. Monthly Household Income of the respondents in the Study Area

Avg. Monthly Household Income	Percentage (%)		
	Male (N=160)	Female (N=152)	Total
Up to Tk.10000	17.5	19.7	18.6
Tk.10001-15000	24.4	34.2	58.6
Tk.15001-20000	17.5	21.7	19.6
Tk.20001-25000	18.8	7.2	13
Tk.25000+	21.9	17.1	19.5

Table 60 shows the average monthly expense of household. 40.45% of the households' average monthly expense is Tk 10,001-15,000. Only 6.35% of the household's average monthly expense is more than Tk 25000.

Table 60: Avg. monthly expense of the respondents in project area

Avg. monthly expense	Percentage (%)		
	Male (N=160)	Female (N=152)	Total
Up to Tk.10000	25.6	31.6	28.6
Tk.10001-15000	37.5	43.4	40.45
Tk.15001-20000	21.3	15.8	18.55
Tk.20001-25000	8.1	4.6	6.35
Tk.25000+	7.5	4.6	6.05

4.6.9 Traffic

Within the project site, there is a brick-soling road, which is used mainly by the guards and site office users. General people do not enter the site and they do not use this road. CDA recently completed a four-lane road adjacent to the project site on the northern (outer periphery) side of the university territory which connects Shershah Circle at the East and Fouzderhat at the West. At present, the peak flow of traffic is significantly low compared to capacity of the road. The RoW of this road is 30 meters. Three-wheelers and rickshaw constitute the majority of vehicular traffic near the project site. The following figure shows the location of the campus and the connection of Shershah Circle and Fouzderhat through CDA Road.

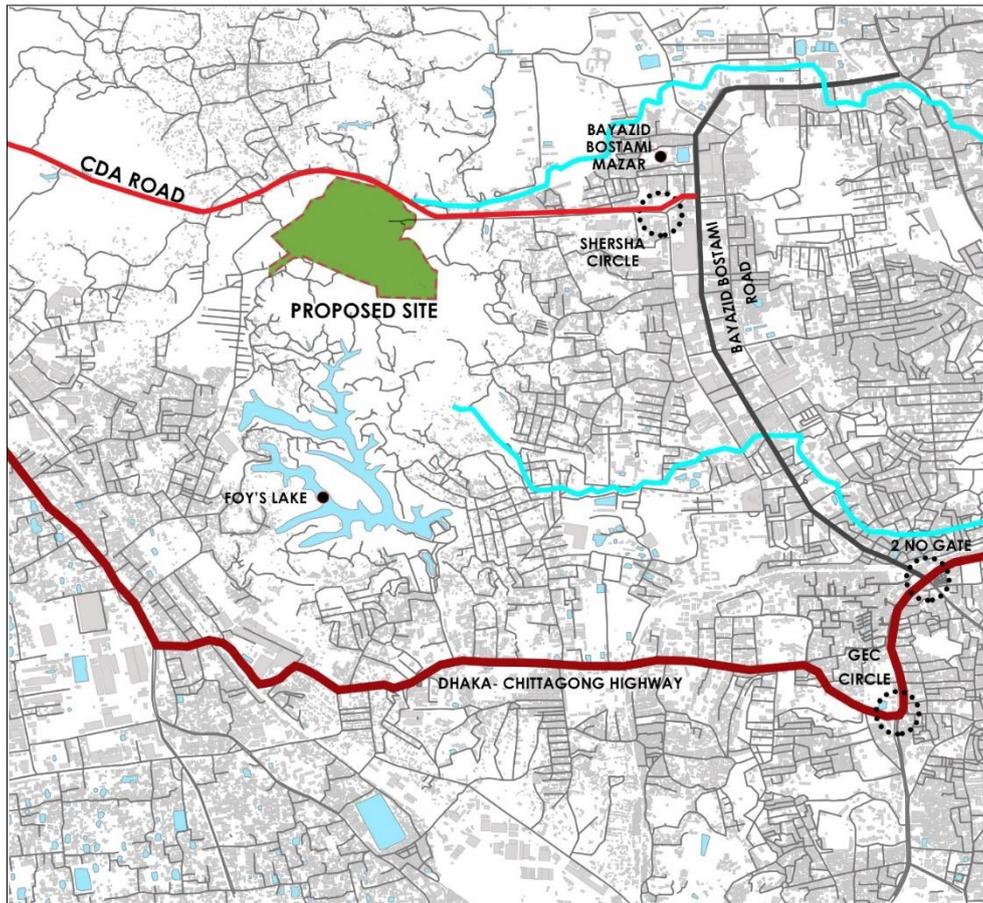


Figure 21: Road Network around the Project Site

4.6.10 Energy Access for Lighting and Cooking

Lighting and cooking sources are the very important needed energy for any households and higher quality and easy access to quality energy can ease the household’s daily life. Results have found that 85% of the total households have access to electricity followed by 1.6% solar (Table 61).

Table 61: Different Energy Access by the Households

SI.	Details	Percentage (%)			
		Male (N= 160)	Female (N= 152)	Total	
1	Lighting Source	Electricity connection	84.4	85.5	85
		Electricity connections and kerosene	7.5	4.6	6.05
		Electricity connections and solar	1.9		
		Solar	1.9	1.3	1.6
		Kerosene	4.4	8.6	6.5
2.	Fuel/energy used for Cooking	Gas connection	2.7	3.4	3.05
		Cylinder Gas / LPG	32.4	21.2	26.8
		Lamb/dung etc.	64.9	75.4	70.15

In respect to using of cooking fuel; it is found that all the households are relying on the conventional ways of cooking. About 70.15% of households are rely on lamb/dung for cooking whereas 26.8% of households use LPG/ gas cylinder connection for cooking.

4.6.11 Access to Social Market and Medical Services and Other Facilities

Convenient and easy access to market and medical services help households get basic needs and health services when it is necessary or urgent. The distance may provide a barrier from easy access to these services. Survey results have found that, the mean distance of market from households is 75km and maximum is 3km whereas the mean time required to reach market from households is 11.45 minute and the maximum time required is 45 minutes. The locals can get all sorts of amenities from the markets. Easy access to hospitals enhances the frequency of health services taking frequency. The higher distance may hinder taking health services which ultimately increase the health risk. Survey results have found that the hospital is 15km from the study area and requires 240 minutes travel time to reach (Table 62).

Moreover, study found that the maximum distance of primary school is 3.5 km while, the maximum distance of high school is 5.5 km and both require is 60 minutes to reach.

Table 62: Access to Market, Medical Services and Other Facilities

Sl. No	Details			Percentage (%)		
				Male (N= 160)	Female (N= 152)	Total
1	Distance	Primary school (km)	Mean	1.5	1.5	1.5
			Minimum	0.2	0.3	0.25
			Maximum	3	4	3.5
			Std. Deviation	0.8	0.9	0.85
	Access time	Primary school (Minute)	Mean	22.8	21.4	22.1
			Minimum	3	3	3
			Maximum	60	60	60
			Std Deviation	11.9	12.9	12.4
2	Distance	High school (km)	Mean	1.6	1.6	1.6
			Minimum	0.2	0.3	0.25
			Maximum	5	6	5.5
			Std Deviation	0.8	1	0.9
	Access time	High school (Minute)	Mean	23.5	22.5	23
			Minimum	3	3	3
			Maximum	60	60	60
			Std Deviation	12.3	14.2	13.25
3	Distance	College (km)	Mean	5.3	5.7	5.5
			Minimum	2	3	2.5
			Maximum	15	10	12.50
			Std Deviation	1.6	1.3	1.45
	Access time	College (Minute)	Mean	76.6	78.4	77.5
			Minimum	6	40	23
			Maximum	225	150	187.5
			Std Deviation	26.8	23.2	25
4	Distance	University (km)	Mean	8.5	8.8	8.65
			Minimum	6	6	6
			Maximum	25	25	25
			Std Deviation	4.2	5	4.6
	Access time	University (Minute)	Mean	115	123.5	119.25
			Minimum	60	60	60
			Maximum	375	375	375
			Std Deviation	37.5	37.5	37.5

Sl. No	Details			Percentage (%)			
				Male (N= 160)	Female (N= 152)	Total	
5	Distance	Community clinic (km)	Std Deviation	61.5	79.6	70.55	
			Mean	2.8	3.3	3.05	
			Minimum	1	1	1	
			Maximum	8	8	8	
			Std Deviation	1.4	1.5	1.45	
	Access time	Community clinic (Minute)	Mean	42	46.2	44.1	
			Minimum	10	10	10	
			Maximum	120	120	120	
			Std Deviation	19.2	21.2	20.2	
			6	Distance	Government hospital (km)	Mean	11.2	12.1	11.65
Minimum	10	10				10	
Maximum	15	15				15	
Std Deviation	1.6	1.7				1.65	
Access time	Government hospital (Minute)	Mean		155.8	156.4	156.1	
		Minimum		120	120	120	
		Maximum		240	240	240	
		Std Deviation		24	31.2	27.6	
7	Distance	Medical college hospital (km)		Mean	6.2	7	6.6
				Minimum	3	3	3
			Maximum	15	15	15	
			Std Deviation	3	3.3	3.15	
	Access time	Medical college hospital (Minute)	Mean	90.5	96	93.25	
			Minimum	40	30	35	
			Maximum	240	240	240	
			Std Deviation	42.3	44.3	43.3	
	8	Distance	Market (km)	Mean	0.7	0.8	0.75
				Minimum	0.2	0.3	0.25
Maximum				3	3	3	
Std Deviation				0.4	0.4	0.4	
Access time		Market (Minute)	Mean	11	11.8	11.4	
			Minimum	5	5	5	
			Maximum	45	45	45	
			Std Deviation	6.3	6.7	6.5	

4.6.12 Gender Analysis

In the perspective of the percentage of male and female-headed household, 88.5% are from male-headed household where the rest of the respondents (11.5%) are from female-headed household (Table 63).

Table 63: Percentage of Male and Female-headed Households in the Study Area

Aspects	Percentage (%)
Male	88.5
Female	11.5
Total	100

Among the entire respondents, most of the female respondents are from 41-45 years range where most of the male respondents are from 36-40 years old. In the perspective of a total number of respondents according to age, most of the respondents are from 36-40 years old (Table 64).

Table 64: Age Distribution of the Study Area

Aspects	Percentage (%)		
	Male (N= 276)	Female (N= 36)	Total
Up to 30 years	13.1	1.6	14.7
31-35 years	12.2	1.9	14.1
36-40 years	18.3	2.2	20.5
41-45 years	10.3	2.6	12.8
45-50 years	12.2	1.0	13.1
51-55 years	7.4	0.6	8.0
55+ years	15.1	1.6	16.7
Total	88.5	11.5	100.0
Avg. age	44.0	42.9	43.9

In the perspective of the marital status of household head, among the entire number of respondents, 87.8% of the male respondents and 4.8% of the female respondents are married (Table 65).

Table 65: Marital Status of Respondents in the Perspective of the Household Head

Aspects	Percentage (%)		
	Male (N= 276)	Female (N= 36)	Total
Unmarried	0.6		0.6
Married	87.8	4.8	92.6
Widow/widower	-	2.9	2.9
Divorced	-	2.2	2.2
Separated/Deserted	-	1.6	1.6
Total	88.5	11.5	100

In the case of education status of household head, 30.1% of the male respondents and 6.1% of female respondents are uneducated (Table 66).

Table 66: Education Status of the Household Head

Aspects	Percentage (%)		
	Male (N= 276)	Female (N= 36)	Total
Un-educated	30.1	6.1	36.2
Below class 5	23.1	2.2	25.3
Class 5-9	22.1	2.2	24.4
SSC pass	5.8	0.6	6.4
HSC pass	2.6	0.3	2.9
Graduate	1.6		1.6
Masters or above	1.6		1.6
Madrassa	1.6		1.6
Total	88.5	11.5	100

In the perspective of disability status of households in the project study area, 88.1% of male respondents and 11.5% of female respondents replied that they have no physical disability (Table 67).

Table 67: Disability status of the Households in the Study Area

Aspects	Percentage (%)		
	Male (N= 276)	Female (N= 36)	Total
No	88.1	11.5	99.7
Physical	0.3		0.3
Total	88.5	11.5	100.0

In the perspective of primary occupation of the household head, 23.1% of the male respondents claimed that they were unskilled labor and 6.1% of the female respondents replied that they are working as a housewife (Table 68).

Table 68: Primary Occupation of the Household Head

	Percentage (%)		
	Male (N= 276)	Female (N= 36)	Total
Housewife		6.1	6.1
Emigrant	6.1	1.0	7.1
Unskilled laborer / House maid	23.1	0.3	23.4
Rikshaw/Van/ Cart puller	9.3		9.3
Service/ Garment worker/	20.8	3.2	24
Skilled labor/ Driver	13.8		13.8
Small Business/ Vendor	5.1	0.3	5.4
Medium Business	0.3		0.3
Unemployed	1.0		1
Retired/Old person	8.3	0.6	9
Teacher	0.6		0.6
Total	88.5	11.5	100

In the perspective of the secondary occupation of household head, 81.1% of the male-headed household and 9.3% of the female-headed household stated that they have no secondary occupation (Table 69).

Table 69: Secondary Occupation of the Household Heads

Aspects	Percentage (%)		
	Male (N= 276)	Female (N= 36)	Total
No secondary occupation	81.1	9.3	90.4
Farmer	1.0		1
Student (no work)	0.3		0.3
Housewife		0.6	0.6
Unskilled laborer / House maid	2.6	0.3	2.9
Skilled labor/ Driver		0.3	0.3
Rickshaw/Van/ Cart puller	0.3		0.3
Service/ Garment worker/		0.6	0.6
Small Business/ Vendor	1.9	0.3	2.2
Medium Business	1.3		1.3
Total	88.5	11.5	100

In the perspective of monthly average income of the household head, most of the male respondents (32.7%) claimed to have income in range of Tk. 10001-15000 while 5.4% of the female respondents claimed to have an income in the range of Tk. 50001- 10000.

Table 70: Monthly Average Income of the Household Head (BDT)

Monthly Average Income	Percentage (%)		
	Male (N= 276)	Female (N= 36)	Total
No income	8.7	4.5	13.1
Up to Tk.5000	3.5	1.0	4.5
Tk.5001-10000	26.6	5.4	32.1
Tk.10001-15000	32.7	0.6	33.3
Tk.15001-25000	12.5		12.5
Tk.25000+	4.5		4.5
Total	88.5	11.5	100
Avg. income	12651	4911	11758

Table 71 illustrates the status of women education facilities of the project area. It represents that about 7.5% male and 7.9% female respondents assumed that the education facilities for women are good in condition, 30.6% male and 32.9% female respondents respectively opined that the facilities of education for women are moderate. While, 61.9% male and 59.2% female respondents opined that the facilities of education for women are low. The table displays that the most 47% respondents both male and female opined that low condition persist for women education in the area.

Table 71: Education Facilities for women in the Study Area

Education facilities for the only daughter	Percentage (%)		
	Male (N=160)	Female (N=152)	Total
Good	7.5	7.9	7.7
Moderate	30.6	32.9	31.75
Low	61.9	59.2	60.55

4.6.13 Vulnerability Analysis

Table 72 shows the security related problem in the project area. About 40.5% of respondents face a medium level of security problem whereas 2.9% of respondents very high level of the security problem in this study area.

Table 72: Intensity of Security-related Problem in the Study Area

Security-related problem	Percentage (%)		
	Male (N=160)	Female (N=152)	Total
Very High	2.5	3.3	2.9
High	12.5	7.9	10.2
Medium	36.3	44.7	40.5
Low	35.6	28.9	32.25
Very low	13.1	15.1	14.1

Table 73 illustrates that about 30.35% respondents cited that there is a medium level of drug addiction problem, and 4.1% respondents cited that there is a very serious level of drug addiction in the area. In this particular area male is comparatively more addicted to drugs than female. University authority should give high concentration on this matter to avoid the possible risks of effect on the university student. The university authority should resolve the matter professionally through university rules and regulations if in case any drug issue is found in the campus. The university should form a powerful committee to avoid any incidence in the campus.

Table 73: Drug Addiction Problem in the Study Area

Drug addiction problem	Percentage (%)		
	Male (N=160)	Female (N=152)	Total (N=312)
Very serious	5.6	2.6	4.1
Serious	8.1	16.4	12.25
Medium	33.1	27.6	30.35
Low	20.6	20.4	20.5
Very low	23.8	19.7	21.75
Do not know	8.8	13.2	11

4.8.14 Project Awareness

Project awareness and perception may hinder or facilitate any project work's successful implementation.

4.8.14.1 Perceived Impacts

In table 74, it has been found that about 39.85% respondents have a moderate level of knowledge about Asian University for Women, whereas 26.4% have little knowledge and only 1% have very well knowledge about this university. About 2.9% of respondents do not know Asian University for Women new campus. It indicates that the university authority needs more information dissemination about ongoing project in the local communities, so that people are aware about this project. The university will conduct local consultation e.g., meeting. A communication office must be established during construction and operation phase to handle any unexpected situation or conduct more consultation with the local people, local government and civil society.

Table 74: Extent of knowledge of the Respondents regarding the project

Aspects	Percentage (%)		
	Male (N= 160)	Female (N= 152)	Total
Very well	1.3	0.7	1
Fairly well	8.8	3.3	6.05
Moderate	48.8	30.9	39.85
Little	20.6	32.2	26.4
Very little	18.8	28.9	23.85
Do not know	1.9	3.9	2.9

Table 75 shows the source of knowledge on Asian University for Women among the respondents. In this study area, about 87.95% of respondents secured knowledge about Asian University for Women

from friends or neighbors. About 27% of respondents sourced of knowledge on Asian University for Women from household's member.

Table 75: Source of knowledge on Asian University for Women

Source of knowledge	Percentage (%)		
	Male (N= 157)	Female (N= 146)	Total
From elected reps/ counselor	3.2	0.7	1.95
From city corporation	6.4	4.1	5.25
From local leaders	40.8	26	33.4
From friends/ neighbors	91.7	84.2	87.95
From household member	19.1	34.9	27
From Social media	1.3		

In this study area about the most 93.05%, respondents could not perceive the success of this project, whereas only 6.95% of respondents could perceive the success of this project (Table 76).

Table 76: Perception on the Success of this Project

Perception on the success	Percentage (%)		
	Male (N= 160)	Female (N= 152)	Total
Yes	11.9	2	6.95
No	88.1	98	93.05

Table 77 represents the perception of people on the level of support the local people will give towards the project. Here about 42.45% of respondents have a high level of tendency to provide the support in this project; on the other hands, only 1.6% of respondents have a low level of intended support towards the project.

Table 77: Perception of the Respondents on the Level of Support towards the Project

Features	Percentage (%)		
	Male (N= 160)	Female (N= 152)	Total
Very high	29.4	29.6	29.5
High	49.4	35.5	42.45
Moderate	15.6	28.3	21.95
Low	1.9	1.3	1.6
Very low	0.6	1.3	0.95
Don't know	3.1	3.9	3.5

Chapter 5: Environmental and Social Risks and Impacts

5.1 Introduction

This section addresses the possible risks and impacts on environmental and social parameters of the project based on the overall baseline study, context, and assessment of the activities. The project is expected to have both positive and negative impacts and threats, due to the nature of the large construction work.

During pre-construction, construction and operation periods, the potential impacts of the project on land resources, water resources, ecosystem, disadvantaged or vulnerable people and socio-economic etc., are identified and discussed below.

5.2 Impact Identification

Depending on the project activities, the project has developed an impact interaction matrix for the phases of construction and operation. Impacts were classified in terms of environmental and social aspect. The Impacts of the proposed project are primarily covered three phases as follow:

- Pre-Construction and Construction Phase
- Operation Phase, and
- Decommissioning Phase

The impact identification matrices are listed below, based on the activities involved in the different phases.

5.3 Assessment of Environmental and Social Issues

In connection with the implementation, various activities of the project were assessed including hill profiling, dressing, cutting and filling, soil erosion and sedimentation, different types of building (administrative, Academic, residential, dormitory, auditorium, recreation facility etc.) access roads, culvert, bridge, storm water management, drainage system network development, water supply, construction of central sewerage treatment plant, etc. Potential various environmental and social impacts for both negative and positive have been identified based on Environmental and Social Standard 1 (ESS1 of WB) for the site development, pre-construction, construction and operation phase of the project.

Assessing the risk factors in the education sector for SEA/SH and potential risks from project activities the overall GBV risks for the project is rated as “substantial”. The “substantial” risk captures risks assessed based on the GBV Risk Assessment Tool for Education that is currently under discussion as well as the GBV Risk Assessment Tool for Civil Works. For project-related civil works, the GBV risk rating will be continuously monitored and revised as more information becomes available from further assessments and consultations on non-construction related activities.

The following environmental and social impact identification checklist has been prepared based on the project activities involved against pre-construction, construction and operation phase under ESS1 to ESS8. In compliance with this proposal and the ESF Directive, the study describes disadvantaged/vulnerable individuals and surrounding hills and structures from possible project activities along with expected impacts. Possible potential environmental and social risks and impacts are given in the Table 78.

Table 78: Potential Environmental and Social Impacts

Project Activities	Potential Environmental and Social Impacts																						
	ESS1		ESS2		ESS4,5		ESS4,5		ESS3		ESS3,4,6		ESS4		ESS4		ESS5,6,7		ESS3,6,7		ESS 4,8		ESS,3,6
	Disadvantage/Vulnerable	Vulnerable Land use	Labor Influx and working condition	Occupational Health & Safety	Livelihood	Gender Based Violence	Employment	Social Conflict	Water Resource (Quality & Quantity)	Air Quality	Soil Quality	Noise Level	Community Health and safety	Traffic and Transport	Hazardous and non-hazardous waste	Employment generation	Land acquisition, Restriction on Land use and Involuntary Resettlement	Terrestrial Ecology	Aquatic Ecology	Impact of Indigenous & Tribal People	Physical Cultural resource	Risks to human security and crime	Slope Stability & Soil erosion
Pre-Construction & Construction Phases																							
Site Clearance / Removal of Vegetation and Trees for access road and building		√	√	√		√	√	√		√	√	√	√	√		√		√				√	√
Construction of Access Roads		√	√	√	√	√	√		√	√	√	√	√	√		√		√				√	√
Use of Heavy Machineries				√			√			√		√		√	√	√						√	
Labor shed construction			√	√	√	√	√	√	√	√	√	√	√			√						√	√
Site development			√	√	√	√	√	√	√	√	√	√	√	√				√	√			√	√
Hill profiling, dressing, earthwork and filling		√	√	√	√	√	√	√		√	√	√	√	√		√		√	√				√
Construction of culvert and bridge		√	√	√	√	√	√		√	√	√	√	√	√		√		√	√			√	√
Construction of administrative, residential, dormitory buildings and facilities		√	√	√	√	√	√	√	√	√	√	√	√	√		√		√	√				√
Construction of sewerage system network			√	√	√	√	√		√				√		√	√							√
Storm water drainage system							√		√							√							√
Construction of a central sewage treatment plant (CSTP)							√		√				√		√								√
Operation Phase																							

Project Activities	Potential Environmental and Social Impacts																						
	ESS1		ESS2		ESS4,5		ESS4,5		ESS3		ESS3,4,6		ESS4		ESS4		ESS5,6,7		ESS3,6,7		ESS 4,8		ESS,3,6
	Disadvantage/Vulnerable	Vulnerable Land use	Labor Influx and working condition	Occupational Health & Safety	Livelihood	Gender Based Violence	Employment	Social Conflict	Water Resource (Quality & Quantity)	Air Quality	Soil Quality	Noise Level	Community Health and safety	Traffic and Transport	Hazardous and non-hazardous waste	Employment generation	Land acquisition, Restriction on Land use and Involuntary Resettlement	Terrestrial Ecology	Aquatic Ecology	Impact of Indigenous & Tribal People	Physical Cultural resource	Risks to human security and crime	Slope Stability & Soil erosion
Maintenance of Liquid waste generation				√					√				√			√							
Maintenance of solid waste generation		√									√				√								
Maintenance of access roads, culvert and bridge		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√							√
Maintenance of teaching, administrative, residential, dormitory buildings and facilities	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√		√	√	√	√		
Maintenance of storm water drainage system network management		√	√	√			√		√				√										√
Maintenance of Water Supply system			√	√	√		√		√				√										
Maintenance of land fill site management for solid waste disposal			√	√	√		√	√					√	√	√	√							
Maintenance of central Sewage Treatment Plant			√	√	√		√		√				√			√							

5.4 Impacts During Pre-Construction, Construction and Operation Phases

The potential environmental and social impacts are listed in Table 79.

Table 79: Potential environmental and social impacts of the project

Stage	Project activity	Environmental / Social, Health and Safety component likely to be Affected	Potential Environmental & Social Impact
Environmental and Social Risks and Impacts related to ESS-2			
Planning and Pre-construction stage	Preparation of Labor Management Plan, construction of temporary access roads, survey work and geotechnical investigations,	Land use	The land alignment will be changed
	constructing temporary labor camps and supplying water, electricity, sanitary facilities, medical aid, and other basic amenities to the workers.		Local habitat (both fauna and flora) will be disturbed and displaced.
			Injuries / accidents can occur.
			Dust and noise generated.
			Health risks of Labor relating to HIV/AIDS/COVID-19 and other sexually transmitted diseases.
		Occupational health and safety	The workers working in the hilly area will face occupational health hazard due to different activities. Separate LMP (labour management plan) will be prepared by contractor considering the labor and working conditions in the site.
Construction stage	Hill profiling, levelling, cutting and filling of earth work, slope protection, and soil erosion controlled, loading and unloading of materials, laying foundation, construction of superstructure, installation of various utilities and protect structures.	Land & water	Contamination of soil and water resources at work sites and fields.
		Land & water	Contamination of soil and water by construction waste and hazardous waste generation in project area.
		Land & water	Hazardous waste with contamination to land & water and impact to human health.
		Water	Water quality can be affected
		Interference with roads and road crossing	Due to carrying out of materials, earth and labourer
		Sound pollution	Sound pollution occurred by transportation of materials and using of brick-breaker, and other equipment relating to construction works.
		Occupational Safety and Health Issues (OHS)	Occupational health and safety issues will be vital during construction works and other related activities (transportation). Injuries/ accidents, even, death can be occurred if not properly handled.
			Communicable diseases (HIV/AIDS) can be spreading due to labour influx at the site if laborers are not medically examined.
			Engagement of child labor
			Sexual harassment at work
Forced labor engagement			
	Security of women work-force		
	Increased community conflicts due to increased interface between migrants and locals		
	The sharp increase in daily wage rates for labor, impacting the availability of agriculture labor for cultivation activities;		

Stage	Project activity	Environmental / Social, Health and Safety component likely to be Affected	Potential Environmental & Social Impact		
			On the contrary, there could be an enhancement of local skills and skill sets through the interaction of local unskilled or semi-skilled Laborers with the skilled migrant workers.		
		Gender-based violence (GBV)	Wage discrimination between women and men		
			Women workers may face physical and mental harassment during construction period.		
			Women workers may be affected by eve teasing and sexual harassment.		
Environmental and Social Risks and Impacts Related to ESS3					
Construction stage	Hill cutting (cutting of 1,873,000 cubic meters of earth, and filling of 749,000 cubic meters of earth).	Land (hill cutting and filling, slope stability)	Soil Erosion: The site is a complex area of deep valleys that are vulnerable to erosion with thin delicate ridges.		
			Man-made activities include cutting hills, storage/disposal of excess soil, removal of vegetation, cutting of trees, running heavy traffic and other earthworks, while natural activities include heavy rainfall, soil erosion, floods, earthquakes,		
			Hill profiling will result in fugitive dust in the surrounding environment which will have impact on the air quality during the site development and construction.		
				Water (surface)	Surrounding surface water will be contaminated due to runoff resulting from heavy rainfall. Different types of waste (construction waste) and labour-camp waste (household waste) can lead to contamination of the surface water too.
				Water (underground)	Substantial amount of groundwater will be pumped daily that could lead to depletion of ground-water reservoir locally.
				Air quality	During site development, hill profiling, cutting, filling and levelling will create fugitive dust in the surrounding environment and contaminate the air quality.
		Noise Quality	The movement of vehicles, lorries, carrying of construction equipment, and material at the project site will produce noise and vibration that could pollute the noise quality in that areas.		
Environmental and Social Risks and Impacts Related to ESS4					
Construction stage	Traffic and Transport Accessibility: Transportation of construction materials, equipment and earth waste etc.	Community Health and Safety	On the Northern side of the project, there is a CDA bypass. Currently, there is no major traffic on this road, except frequent movement of three wheelers. This road will be used for transporting construction materials, which may cause increase of vehicle movement in day time, and nuisance to road users and pedestrians and elevate risks for accident.		

Stage	Project activity	Environmental / Social, Health and Safety component likely to be Affected	Potential Environmental & Social Impact
	Hazardous and non-hazardous: the project will generate solid waste both hazardous and non-hazardous in nature. Non-hazardous waste forms are supposed to include excavated waste, building materials, sewerage wastes and wastewater. Toxic waste may include used oil, empty drums or replaced machinery parts, concreting chemicals such as admixture etc.	Air, Water, Soil and Community Health and Safety.	The handling, storage and disposal of waste on and off-site may pose a number of potential risks to human health and the environment. Faulty management, uncontrolled waste disposal and storage may lead to potential air, soil, and water contamination that lead to direct or indirect human health effects. Discharge of untreated wastewater can lead to soil and water contamination and adverse effects to human health.
	Labour engagement.	Community health and safety, occupational health and safety.	Due to labour influx at the site, the community health and safety and occupational health and safety may be at risk. Temporary employment opportunities will be created for the local people.

Environmental and Social Risks and Impacts Related to ESS5

Pre-construction and Construction	Land Acquisition, Resettlements, changes of Land Use and Involuntary Resettlement: hill cutting, levelling and land development; construction of infrastructure such as academic building, hostels and dormitories, auditorium, etc., construction of internal roads and retaining walls; construction of a wall between the mosque and the university; construction of utility services like water supply network, sewerage network, electricity supply network etc.	Land use; community health and safety, air, noise	<p>No land acquisition or voluntary land donation is required because of government has already allotted 140 acres of land in favour of AUW for establishment of permanent campus.</p> <p>There is presence of 5 to 6 squatter's small-scale business just outside of the proposed site which may be affected during construction period due to movements of heavy vehicles. The squatters are running their business on the land of Chattogram Development Authority (CDA) which is completely outside of the AUW proposed campus area. All of the business structures are shiftable and owners run the business only. No presence of daily labors are recorded during social assessment. However, during implementation, more detailed information's will be collected following the guidelines of RPF. Moreover, these squatters may be also benefitted during the construction period due to influx of labors as business will increase.</p> <p>The vehicles will carry construction workers and construction material that may increase the possibility of accidents. The construction works may increase noise pollution that might affect the surrounding communities. Suppressive dust may generate from the vehicular movement & construction activities which may deteriorate the air quality.</p>
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Environmental and Social Risks and Impacts Related to ESS6

Stage	Project activity	Environmental / Social, Health and Safety component likely to be Affected	Potential Environmental & Social Impact
Construction stage	Clearing of land, vegetation (grass and shrub)	Land use; biological environment and natural resources;	Local ecological balance will be disturbed and biological environment (flora and fauna) will be at risk but could be recoverable because of short-term loss of vegetation. There is no endangered species both for fauna and flora in the project area. Aquatic life will not be disturbed as there is no surface water sources (ponds, canals, rivers) inside the project but some ditches (seasonal/during heavy rains) are present in the hill valleys in the project areas but there is no significant aquatic resources (except frog) that would be disturbed by the project activities. No significant threat to the scenic beauty is posed by the project site or its nearby vicinity.
Environmental and Social Risks and Impacts Related to ESS7			
Construction stage	Construction of permanent campus for AUW	Ethnic Minority / Tribal People	No ethnic minority/ tribal people at the project site but some groups of ethnic people are living at the Chattogram city and its adjoining areas which is 10-15 km away from the site. So, no ethnic minority will be affected by the project activities.
Environmental and Social Risks and Impacts Related to ESS8			
Construction stage	Construction of AUW permanent campus.	Physical Resources Cultural	No Physical and Cultural Resources in the project area .However, there are some cultural places in Chattogram (war cemetery of second world war, museum and Buddhist temple, Mazar Sharif (graveyard of pious persons) etc. which are 15-35 km away from the project site.
Impacts during Operation Phase:			
Environmental and Social Risks and Impacts Related to ESS2			
Operation stage	Campus activities (academic, research, social, co-curriculum, exchange program, etc.)	Occupational and Safety Health	There are some possible hazards to the project workers, employees, and technical personnel from hazards/fires/spillage, etc. Assurance of safe drinking water supply and sanitation. The workers who will work in the hilly area will face occupational health hazard due to different operational processes like Central STP, fume which may generate from the laboratory etc.
Environmental and Social Risks and Impacts Related to ESS3			
Operation stage	Campus activities	Land Resources, and Soil Quality	Domestic wastewater will be treated by a central STP. Biological sludge will be created from the digester. This digester sludge will not be harmful for the environment. The settled and thicken sludge can be used as fertilizer for gardening and horticulture after drying on sand bed.

Stage	Project activity	Environmental / Social, Health and Safety component likely to be Affected	Potential Environmental & Social Impact
			As the area will have small gardens and orchards, use of fertilizer and pesticides would be very much common. There is a possibility of using excessive amount of chemical fertilizer and chemical pesticides both of which have impact on fertility of soil and water quality in the long run.
Operation stage	Campus activities	Air quality	Carbon emissions and fugitive dust may occur from vehicles while transporting students and teachers and staff at the campus. Vehicle and equipment operation will result in carbon monoxide, sulphur dioxide and nitrogen oxide emissions as most of the commercial vehicles will be fuelled by diesel. Bad odour may generate from the STP.
Operation stage	Campus activities	Noise quality	The movement of vehicle at the project site and waste treatment machinery, pumps, diesel generator, will produce noise and vibration during the operation stages. This impact will be minor and of short duration for throughout the area.
Operation stage	Campus activities	Surface and Groundwater Quality	Surface water may be contaminated from soil erosion during rain and surface runoff. This surface runoff will increase various suspended solid, organic matter, pathogen, oil and grease etc. Groundwater may be contaminated by Central STP sludge if not treated properly.
Environmental and Social Risks and Impacts Related to ESS4			
Operation stage	Campus activities	Traffic and Road Safety	Although AUW will be fully residential and restricted for outsider but some vehicle may move here for different operational purposes.
Operation stage	Campus activities	Security of the campus	Campus security will be at risk if it is not properly maintained.
Operation stage	Campus activities	Hazardous Material and Wastes	In particular, domestic waste poses a threat, since they ferment, creating conditions favourable to the survival and growth of microbial pathogens. Direct handling of solid waste can result in various types of infectious and chronic diseases of workers and the rag pickers will be the most vulnerable. Waste disposal sites can also create health hazards. The sites if improperly managed will attract all types of insects and rodents that spread disease. Disposal of medical waste requires special attention since this can create major health hazards. The waste generated from the health care centres and research centres. Wastes such as discarded syringe needles, bandages, swabs, plasters, and other types of infectious wastes may be disposed with the regular non-infectious waste.

Stage	Project activity	Environmental / Social, Health and Safety component likely to be Affected	Potential Environmental & Social Impact
Operation stage	Campus activities	Impacts for vulnerable people	Vulnerable people (e.g., teachers, students and staff with disabilities) often face difficulty in using university facilities. The campus will be designed in line with “Persons with Disabilities Rights and Protection Act”, 2013. The structural design should be inclusive of the drawing and design to reduce the risks to vulnerable people during operation. State of the art technology, lift, wheel-chairs and medical facilities would help to reduce the challenges of vulnerability.
Environmental and Social Risks and Impacts Related to ESS5			
Operation stage	Campus activities	Land Acquisition, Restrictions on Land Use and Involuntary Resettlement.	There is no settlement within the AUW campus area and hence there is no land acquisition, restrictions on land use and involuntary resettlement. Business squatters outside the proposed AUW campus area may be benefitted as it is expected that their business will increase due to operation of the AUW campus.
Environmental and Social Risks and Impacts Related to ESS6			
Operation stage	Campus activities	Biodiversity and Ecosystem	Delicate flora will cover the slopes of the hills in the region, which becomes extremely lush following the rains of the monsoon season. There will be no adverse impact on ecology and biodiversity during the operation of AUW. There is a canal beside the proposed campus which ultimately meets Foy’s Lake. Using chemical pesticides and fertilizers at the operation phase might be adverse for the fisheries and aquatic lives. Using organic fertilizers and pesticides may result in minimum impact in this regard.
Operation stage	Campus activities	Operation of Central STP	<ul style="list-style-type: none"> - Odours and air pollution from the plant and from the disposal of effluents and sludge. - Infiltration of sewage into topsoil, aquifer or water supply and impact on drinking water quality. - Mosquito breeding and diseases transmitted by mosquitoes. - Solid waste disposal of sludge and other wastes.
Environmental and Social Risks and Impacts Related to ESS7			
Operation stage	Campus activities	Ethnic Minority / Tribal People	The AUW education program will induct and encourage enrolment of IP (Indigenous People) students from marginalized areas and backgrounds.
Impacts on Cultural Heritage (ESS8)			
Operation stage	Campus activities	Physical Cultural Resources	No Physical Cultural Resources in the project area. However, there are some cultural places in Chattogram (war cemetery of second world

Stage	Project activity	Environmental / Social, Health and Safety component likely to be Affected	Potential Environmental & Social Impact
			war, museum and buddhist temple, mazars sharif (graveyard of pious persons) etc, which are 15-35 km away from the project site. So, the above-mentioned resources will not be disturbed by the project activities. Through student cultural exchanges, the campus will add value to these resources by using moveable cultural heritage artefacts for teaching purposes.

5.6 Summary of Impacts and Risks

In a nutshell, the project will come up with following impacts.

Table 80: Significance of Impact for Different Issues

Impact During Different Phases	ESS	Impacts	Nature of impact Positive or Negative	Likely/unlikely	Risk*
Impact during Pre-construction	ESS1	Site Clearance / Removal of Vegetation and Trees for access road and building	Negative	Likely	Substantial
		Construction of Access Roads	Negative	Likely	Substantial
	ESS2	Labor Influx and Working Conditions	Negative	Likely	Low
		Occupational Health and Safety	Negative	Likely	Low
		Gender Based Violence (GBV)	Negative	Likely	Low
		Social Conflict	Negative	Likely	Low
		Employment	Positive	Likely	Low
Impact during Construction Phase	ESS1	Disadvantaged and vulnerable persons	Negative	Likely	Substantial
		Vulnerable of Land Use	Negative	Likely	High
	ESS2	Labor Influx and Working Conditions	Negative	Likely	Substantial
		Occupational Health and Safety Hazard	Negative	Likely	Substantial
		Gender Based Violence (GBV)	Negative	Likely	Substantial
		Social Conflict	Negative	Likely	Low
		Employment	Positive	Likely	Substantial
	ESS3	Land Resources (Soil stability)	Negative	Likely	High
		Hill Profiling, dressing and Earthwork for Site Development)	Negative	Likely	High
		Soil Erosion and Sedimentation	Negative	Likely	High
		Water Resources (Surface and Groundwater) and Quality	Negative	Likely	Minor
		Impact on Air Quality	Negative	Likely	Substantial
		Land Resources (Soil)	Negative	Likely	Minor
		Impact on Noise	Negative	Likely	Minor
ESS4	Community Health and Safety	Negative	Likely	Minor	
	Transport and Traffic	Negative	Likely	Minor	
	Hazardous and non-hazardous waste	Negative	Likely	Substantial	
	Employment Generation	Positive	Likely	Substantial	

	ESS5	Impact on squatters	Negative	Likely	Moderate
		Construction induced impacts	Negative	Likely	Moderate
	ESS6	Biodiversity and Natural resources	Negative	Likely	Substantial
	ESS7	Ethnic Minority & Tribal People	Negative	Unlikely	Minor
	ESS8	Physical Cultural Resources	Negative	Unlikely	Minor
Impacts during Operation Phase	ESS2	Occupational Health and Safety	Negative	Likely	Moderate
		Gender Based Violence (GBV)	Negative	Likely	Moderate
		Social Conflict	Negative	Likely	Minor
	ESS3	Land Resources and Soil Quality	Negative	Unlikely	Moderate
		Air Quality	Negative	Likely	Substantial
		Noise Quality	Negative	Unlikely	Minor
		Surface and Groundwater Quality	Negative	likely	Substantial
	ESS4	Disadvantage women education for leadership	Positive	Likely	Substantial
		Access to civic amenities and communication	Positive	Likely	High
		Scenic beauty of the campus	Positive	Likely	High
		Tourist Visit	Positive	Likely	High
	ESS5	Land Use, Land-Acquisition-Restrictions-on-Land-Use-and-Involuntary-Resettlement	Positive	Likely	Low
	ESS6	Biodiversity and Ecosystem	Negative	Unlikely	Moderate
ESS7	Ethnic Minority & Tribal People	Positive	Unlikely	Minor	
ESS8	Physical Cultural Resources	Negative	Unlikely	Minor	

* Minor, moderate, substantial and high Consequences means

Chance of Impact	Consequence		
	Low	Medium	High
Unlikely (that probably will not happen or has a very low chance of happening)	Minor Risk	Moderate Risk	Substantial Risk
Likely (that would probably happen or has a moderate to high chance of happening)	Minor Risk	Substantial Risk	High Risk

Chapter 6: Cultural Heritage Assessment

6.1 Introduction

Cultural heritage reflects the values, beliefs, knowledge, and culture in different visible and intangible forms from past to future. Cultural heritage has importance from different perspectives e.g. scientific, historical, economic and social and it is vital to ensure the cultural heritage of a project over the project life cycle. This is relevant to WB ESS8.

The term ‘cultural heritage’ includes tangible and intangible aspects of heritage, which may be considered and identified at different levels e.g. local, regional, national or global level, as follows:

- Tangible cultural heritage, which includes various types of objects both in movable or immovable forms, location, infrastructures, groups of constructions, and natural features and places that have importance from archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural aspects.
- Intangible cultural heritage encompasses different types of practices, representations, expressions, knowledge and expertise as well as the instruments, objects, artifacts and cultural views associated with communities and groups of people recognized as part of their cultural heritage, as transmitted from generation to generation and constantly regenerated by them in response to their environment including approach of their interaction with nature, tradition and history.

Cultural heritage issue is important to address any probable risks or effects of the project on cultural heritage in the perspective of alteration in the physical environment, the presence of any identified buffer zone and cultural heritage site.

6.2 Objectives

Objectives of the cultural heritage assessment are listed below:

- To assess the cultural heritage of the project
- To examine the impacts on cultural heritage of project activities and support its preservation
- To identify scope and threats on cultural heritage of the project through conducting meaningful consultation with different level stakeholders
- To suggest measures taken for equitable sharing of benefits from the use of cultural heritage.

6.3 Identification of Cultural Heritage of the Project Area

Following actions were taken to ensure stakeholder engagement and identification of cultural heritage:

- Conducted one public consultation meeting with different types of stakeholders including representatives from government, non-government, university faculties, local people, etc.
- Conducted four focus group discussions with local people around the project area, and
- As part of consultation, twelve KIIs (Key Informant Interviews) with local representative, project impacted people, personnel from different government and nongovernment departments, etc. were carried out.

After consultation and field survey, it has been found that no cultural heritage (current definition of built heritage is narrow and rely on conventional architectural and historical value) site exist in the project area.

In addition, local people were found positive on the establishment of this project, scoping that after establishment of the university campus, the local cultural resources will be diversified.

The establishment of AUW campus will not impose any risks and impacts to cultural activities of any indigenous communities. There is no ethnic/IP in the project area. Students from different countries across the world will study together and amalgamation, sharing and spreading different culture, tradition and knowledge; which will enrich the cultural values of the community. Chattogram is a major commercial city in Bangladesh where people from a different religion, races, and tribes are living and combination of students from different countries will promote the benefits of cultural heritage.

Furthermore, in the perspective of tangible cultural heritage, separate prayer rooms will be constructed inside the campus premises. It will help them to escape difficulties to perform religious activities inside the campus boundary. Efforts to increase positive interaction between students and community people will be initiated resulting positive changes.

Proper orientation about local culture and tradition would be considered to students of AUW. In addition, community people including political leaders, representatives from societies might be considered for invitation in different programs of the university that would enhance the community engagement procedures and students will be informed on local cultural resources and values. A culture of mutual respect and tolerance among students and community people may be ensured which will help to eradicate any barriers of AUW students to perform religious and cultural activities in community level.

Moreover, in the case of sharing intangible cultural parts, students will get the scope to practice their traditional performance e.g. songs, dance, drama, etc. as it is a hope that different cultural groups will be formed and scope to practice will be ensured. In addition, sharing of own culture among the students with other universities and organizations will enrich the cultural aspects of AUW. Students from AUW will participate in different cultural programs in Chattogram and different places of Bangladesh. This will help students to know the culture of Bangladesh and the people of Bangladesh will also able to know the culture of different countries. By this approach, a cultural sharing will be developed.

After establishment of the university in the project location, the aesthetic beauty will raise in Chattogram. The human settlement will be increased around the campus which will enhance the architectural, aesthetic, spiritual and sociocultural issues and commercial ventures also.

There are some forms of specific cultural heritages of the project area presented below:

6.3.1 Archaeological sites and materials

The project location does not contain any archaeological sites. However, Chance Find Procedures have been outlined (Annex 16) in case items of cultural significance are found during the construction phase. These must be included in the construction contract documents.

6.3.2 Built heritage

There is no built heritage in the project location. So, there is no risks of damaging any sort of built heritage due to implementation of the project.

6.3.3 Natural features with cultural significance

Natural aspects e.g. landscape will not be disturbed as there is no presence of sacred hills, sacred trees or plants, carvings or painting on an exposed rock or in caves in the project location.

6.3.4 Movable cultural heritage

There is no movable cultural heritage e.g. historic or rare books and manuscripts; paintings, drawings, sculptures, statuettes and carvings; modern or historic religious items; historic costumes, jewelry and

textiles; fragments of monuments or historic buildings; archaeological material; and natural history collections such as shells, flora, or minerals in the project area.

Moreover, establishment of AUW campus in the project location will increase several forms of movable cultural heritages such as, historic or rare books, sculptures, modern and historic religious items, drawings and others which will eventually enrich the cultural heritage of the area.

6.4 Confidentiality

There is no structured heritage site, protected areas, and cultural buffer zone in the project area. Even, there are no debatable or confidential issues arisen from the direct interaction with local people to deal with confidentiality.

6.5 Stakeholders' Access

There are no tangible forms of cultural heritage sites i.e. archaeological site or any religious sites where local people or other stakeholders visit. After the establishment of this campus, this place will be considered as a place of aesthetic beauty and people will visit this site.

6.6 Legally Protected Cultural Heritage Areas

This project will not be established in a protected area or an ecologically critical areas, so there is no matter of legal action that appears in the aspect of establishing this university in the project location. Moreover, by establishing this university campus, planned vegetation will be developed which will help to promote biodiversity of the area.

6.7 Commercial Use of Cultural Heritage

Though there is no presence of any tangible cultural heritage site in this project location, so no commercial use of tangible heritage is possible here.

In addition, different conferences, workshop, training and student learning campaign would be arranged by the university authority that will increase the value of AUW in respect to cultural heritage.

Chapter 7: Analysis of Alternatives

7.1 Site Selection

The Asian University for Women (AUW) was also considered to be founded in other Asian countries such as India, Malaysia, and Sri Lanka but the preconditions were not met (set-up by the University founder). The preconditions were as follows:

- Academic and Administrative Autonomy,
- Minimum 100 acres of land provided by the host country, and
- Campus site to be in the vicinity of an international airport.

Based on the aforementioned preconditions, the Government of Bangladesh agreed to establish the AUW campus in Bangladesh and scoped various locations in Bogura, Sylhet, Dhaka, and Chattogram in considering 140 acres of available land (Khas/government).

Fulfilling the foregoing preconditions, reasonable land was not found near Dhaka. There was land available in Bogura but there is no international airport. In Sylhet, unutilized and non-agricultural land of 140 acres was not locally managed.

Nevertheless, at Pahartali (this present location) only 6 km away from Chattogram city and 10 km from the Shah Amanath International Airport, 140 acres of unused hilly khas land were managed and met the pre-conditions set by the university founder.

In 2006, the Government of Bangladesh (GoB) passed an act in Parliament allocating 140 acres of land for establishment of AUW permanent campus at Pahartali, Chattogram.

The university's aesthetic looks are modern and environmentally compatible, and the project authority planned the AUW campus would be a unique architecture as scenic beauty for tourist and university dwellers. The site is environmentally acceptable and will be attractive to the foreign women students.

- The site with the existing topography, hydrology, with existing flora and fauna and scenic beauty is most suitable to function as a real-life campus for the study and development of human resource of the Asian Women leading to build women leadership.
- The government already donated the 140 acres of khas land in favor of AUW for establishment of permanent campus.

Present Status of the Project: The project received site clearance certificate (SCC) from Department of Environment (DoE) on 25.05.2010 and ESIA approval from DoE on 06.09.2010, and subsequently every year the project authority renews the Clearance.

7.2 Approach Road to the Project Site

The campus is connected to the city through a road from Baizid Bostami through Ser Shah Circle. This road was a dead end until recently. It goes up to the University gate. CDA has linked this road with Dhaka-Chattagram Highway. This road is adjacent to the north side of AUW campus.

7.3 Alternative Method of Building Construction

Since the AUW is to be built on most of the hilltop and slope of the hill side, modern green building technology would be used for the construction of the campus keeping the scenic beauty of the hill intact.

The authority has planned the campus to make it a self-sustaining with respect to water consumption and energy supply. Water supply system will consist of rainwater harvesting, reuse and recycle of

treated wastewater from the STP and energy supply system will include renewable sources. The drainage network would be designed keeping the existing undulation in consideration. The valley would be connected together and would become a center of scenic beauty. The water level would be maintained round the year to keep the campus environment friendly and sustainable.

The project authority also planned for tree plantation for scientific study and increasing scenic beauty at the same time. The trees will balance the warm temperature, be a source of carbon sink, and reduce soil erosion.



Photo-13: The connector is started from Arefin Nagar



Photo-14: The Road in front of the project site (AUW Main Gate)



Photo-15: CDA Road during construction

7.4 No Project Scenario

From a physical environmental point of view, the ‘do-nothing is preferable to any project implementation’ to avoid the adverse impacts associated with the project. However, the potential socio-economic benefits to the nation would be foregone, and human resources will not be developed.

It is concluded that the ‘No build’ alternative is unacceptable, and the potential socio-economic benefits of implementation of such project far outweigh the adverse impacts, all of which can be controlled and minimized to an allowable level.

Chapter 8: Information Disclosure, Consultation and Participation

8.1 Introduction

Public consultation was initiated with an explicit objective to ensure people's participation right from the planning stage of the project. More specifically, this was aimed at improving the study taking into account opinions from the people of the impacted area. While undertaking household survey, semi-structured questionnaire was used to assess the socio-economic baseline of the project area. Public consultation meeting was carried out with Chattogram City Corporation Mayor, representatives of government agencies, knowledgeable persons, community leaders, commissioner, and other stakeholders to learn the expectations about the project in-depth. These aspects are relevant to ESS1 and ESS10.

The purpose of public consultation meetings was to invite comments and detailed suggestions on any environmental issues considered relevant by the people living in the area of the Project corridor. The public consultation program is an essential part of the environmental assessment process and has been undertaken both formally and informally throughout the study to ensure that the knowledge, experience, and views of stakeholders and the public are taken into account during the ESIA work.

The study team arranged a public consultation meeting at the beginning of the project. The meeting was attended by several honorable persons who include local people, local community leaders (members & chairman) and other interested persons from different corners

8.2 Approach and Methodology for Consultation

The approach undertaken for information disclosure and consultation involved the following key processes.

- Mapping and Identification of key stakeholders such as primary (direct project influence) and secondary (indirect project influence) stakeholders;
- Undertaking expert consultation, interviews and public consultation meeting with the respective stakeholders
- Assessing the influence and impact of the project on these stakeholder's groups;
- Summarizing of key findings and observations from the consultation;
- Preparing a future stakeholder engagement strategy consultation plan for a more detailed assessment at a microscopic level taking into account the various project lifecycle phases and their implications on the stakeholders.

8.3 Stakeholder Identification and Analysis

A stakeholder is defined as “a person, group, or organization that has a direct or indirect stake in a project/organization because it can affect or be affected by the Project or its Proponent's actions, objectives, and policies”. Stakeholders vary in terms of the degree of interest, influence, and control they have over the project or the proponent.

In the present study, all the stakeholders have been primarily categorized into two categories that have been identified as:

- Primary Stakeholders (people, groups, institutions that either has direct influence or impact on the project or by the project).
- Secondary Stakeholders (people, groups, institutions that have an indirect influence or impact on the project or by the project).

The influence and priority have both been primarily rated as:

- **High Influence/Priority:** This implies a high degree of influence of the stakeholder on the project in terms of participation and decision making or high priority for the project proponent to engage that stakeholder.
- **Moderate Influence/Priority:** This implies a moderate level of influence and participation of the stakeholder in the project as well as a priority level for the project proponent to engage the stakeholder who is neither highly critical nor are insignificant in terms of influence.
- **Low Influence/Priority:** This implies a low degree of influence of the stakeholder on the project in terms of participation and decision making or low priority for the project proponent to engage that stakeholder.

Primary Stakeholders include students, employees, local people (including a representative from every stratum of society), natural environment, suppliers, and other partners. Secondary Stakeholders include concerned Government agencies (CDA, CCC, DOE, CMP, etc.), local NGOs, and community-based organizations, etc.

8.4 Information Disclosure and Consultation

Number of consultation exercises was conducted during this phase of ESIA preparation. The stakeholders consulted include local people, community in the vicinity of project area, local elected representatives and other external stakeholders such as government officials. The details of consultations held with issues raised or discussed and suggestions provided by the respective stakeholders are presented below.

A combination of mixed methods of information disclosure and consultation process was adopted at this stage of ESIA preparation. The method selected for consultation was basically designed keeping in mind the profile of the stakeholders, type of information desired and level of engagement required. A leaflet in Bengali was distributed before and during the public consultation meeting. The consultant and representative of the project proponent answered the question of the public. In each consultation session the consultant introduced themselves, introduced the project and the purpose of engagement with the respective stakeholder.

The primary methods followed in the consultation process are:

- Key informant interview (KII);
- Focus group discussion (FGD); and
- Public Consultation meeting (PCM).

8.5 Public Consultation Meeting during Project Preparation

Different types of meetings were conducted with different purposes at different locations. During the ESIA stage in 2008 and 2018, Public Consultation Meetings (PCMs) were conducted for informing the Project details to the local people so that they can understand the Project and could play important roles to implement the project smoothly. The Focus Group Discussions (FGDs) were carried out for collecting relevant information from same professional group of people for validating the information collected from general public consultations.

Table 81: Public Consultation meeting places

Sl. No	Meeting place	Date of meeting	Time	Objectives
1	Conference Room, CDA (Chattogram	November 17, 2008	11:00 am to 1:00 pm	Attaining opinions from the Hill Cutting Committee for the development of the

Sl. No	Meeting place	Date of meeting	Time	Objectives
	Development Authority)			AUW campus as it requires hills to be cut and filled. Statutory Committee formed through a Government Gazette notification of the Committee.
2	Spectrum Hall, Hotel Lord's Inn, Chattogram	March 14, 2018	10:00 am to 12:30 pm	Informed local people and other stakeholders related to this project about the Environmental and Social Impact Assessment process and collected recommendations/opinions from the stakeholders.

Table 82: List of officials consulted during public consultation (November 17, 2008)

SI	Designation	Organizations
1	Chairman	CDA
2	Chief Engineer (CE)	CDA
3	Deputy Chief Town Planner	CDA
4	Authorization Officer	CDA
5	Member CDA Board	CDA
6	Chief Town Planner	Chattogram City Corporation (CCC)
7	Executive Engineer	CCC
8	Chairman	Institution of Engineers Chattogram Branch (IEB ctg)
9	Convener	Institute of Architects Chattogram Branch (IAB ctg)
10	Representative from Dept. of Environment (DoE)	
11	Representative from Chattogram Metropolitan Police (CMP)	
12	Representative from CUET (head of civil engineering dept.)	
13	Representative from Civic Society (Transparency International Bangladesh Chattogram Branch (TIB ctg)	
14	Zarina Hossain from AUW	
15	M A Mozammel Haque, Structural Engineer, and Soil Testing expert	
16	Former VC of CUET and head of civil engineering department, CUET	

Table 83: List of officials consulted (March 14, 2018)

Sl.	Designation	Organization
1	Registrar	AUW
2	Director (Admission)	AUW
3	Chief Engineer	AUW
4	Project Advisor	AUW
5	Team Leader	AUW
6	Social Expert	ESIA Study
7	Ward Councilor	Ward No- 9, Chattogram City Corporation (CCC)
8	Reserved Women Member of Parliament (MP)	Chattogram
9	Sr. Architect	CDA

Sl.	Designation	Organization
10	Member	CDA Board CDA
11	Representative	Chattogram University
12	Representative	LGED, Chattogram
13	Representative	World Bank
14	Authorized Officer	CDA
15	Representative	Chattogram City Corporation (CCC)
16	President	Institution of Engineers, Chattogram Branch (IEB ctg)
17	President	Bangladesh Institute of Planners, Chattogram Chapter (BIP ctg)
18	Representative	Dept. of Environment (DoE)
19	Representative	Chattogram WASA (CWASA)
20	Representative	Chattogram Chamber of Women
21	Representative	Local Businessman
22	Representative	Local Educational Institutes
23	Representative	Civic Society
24	Local Journalist	Press Club, Chattogram

Table 84: Outcomes of the Public Consultation meetings

Date of Meeting	Participants	Outcome
17-11-08	CDA, CCC, AUW, IEB, IAB, DOE, CMP, CUET, TIB	The Committee will recommend granting of Hill Cutting Permit. It will make a press statement supporting the project.
14-03-18	AUW, Consultants, Ward Councilor, MP, Chattogram University, LGED, WB, CDA, CCC, IEB, DOE, WASA, Chattogram Chamber of Women, Local Businessman, Representative from Local Educational Institutes, Representative from Civic Society, Local Journalists	Salient features of the project were presented by Mr. Mostaque Habib and Ar. Ishtiaque Zahir. This included project brief, the site, and various components of the campus, its layout, and design, including photographs of the presentation models. All participants were very cooperative and welcomed the project. The participants recommended various things to minimize the social and environmental impacts of the project. Recommendations coming from the public consultation meeting has been addressed in ESIA.

Table 85: Identified Environmental and Social Impacts during consultation

Aspects	Issues	Recommendations
Activities of project	Development of land, projection of landslide, hill cut Road construction Construction of drain Construction of different infrastructures	<ul style="list-style-type: none"> - Water should be sprinkled to reduce the fugitive dust. - The air quality of the project area should be assessed twice in a year to understand the acceptability of the air quality. - Tree plantation will be done in the project area and compensation will be
Environmental	Emission of gas and sand	

	Waterlogging Excessive sound and vibration Pollution of surface and groundwater Occupational health risk Waste management Tree and hill cut	given if any damage happens to the local people. - Due to project activities, sound pollution may happen. In this issue, the sound level will be controlled respecting the allowable sound level near religious institutions, education institutions, and hospitals.
Social	Replacement of different structures Probable temporary loss of business and economy	- Proposed design and direction will be followed to reduce the pollution of ground and surface water.
Benefits and remedy of AUW project	Social and economic development Employment scope Technical training Education institute and hospital Development of lifestyle Improvement of environment Environmentally friendly initiatives like solar, rainwater harvesting, etc.	- Occupational health is at risk probably. In this issue, safe water, toilet, and residence facilities for the workers should be ensured. Also, protection measures should be made available. - Mismanagement of waste may pollute surface and groundwater. For which, waste should be dumped in a specific place. - Training and technical course-based programs may be offered to local youth, which may create employment opportunities. - A clean campus should be built with an educational institution and a hospital. - Any kind of complaints could be handled seriously

Table 86: Key findings in the PCMs

Sl. No.	Name	Position	Organization	Questions during discussions	Reply to the questions
1	MD. Shamim	XEN & Authorized Officer	CDA	Is any clearance certificate taken from CDA authority? CDA will support to establish service facilities for AUW.	All types of clearance certificate have been taken from both CDA and DoE. Appreciate for supportive the activities of the project.
2	MD. Golam Rabbani Chowdhury	Senior Architect	CDA	There are 4 educational institutions (2 medical colleges, 1 polytechnic institute and 1 private university) campuses around the proposed AUW site. Did you study about the effect and impact of these campuses on AUW site area? You should have a proposal to create access to surrounding areas for university students to use proposed lake facility and the hilly nature. Have a proposal to build a recreation area where students can gather.	Social Impact Assessment (SIA) is ongoing. Impact on these surrounding educational institutions will reflect on SIA report. AUW authority will take the further decision about the accessibility of surrounding institute students to use the lake facilities. Recreation area has already included in the design.

Sl. No.	Name	Position	Organization	Questions during discussions	Reply to the questions
3	Mohammad Ariful Islam	Superintending Engineer	Chattogram WASA (CWASA)	<p>Is there any necessity for Resettlement Action Plan (RAP) for the proposed site?</p> <p>2. Do you have a proposal to advertise about the GRM process through billboard or notice on newspaper at different public and private places so that one can easily know about complain process (if any).</p> <p>3. What are the water supply and treatment process?</p> <p>4. Propose to include CWASA in water supply system.</p> <p>5. Propose to ensure the health and safety issues of worker in detail in bid document and contractor's agreement.</p>	<p>As there is no settlement at proposed site, apparently RAP is not required for this project.</p> <p>2. All the information will be available in online and different govt. offices so one can easily access any documents from anywhere.</p> <p>3. Water supply will be a combined use of groundwater, rain water, CWASA supply and recycled water for flushing and gardening purposes. A STP will be installed at the site also.</p> <p>4. Inclusion of CWASA in water supply network is in progress.</p> <p>5. Health and safety issues are primary concern for construction process and will reflect the issues in detail at contractor agreement.</p>
4	Ms. Sangjucta Das Gupta	Assistant Director	Department of Environment, Chattogram metropolitan	<p>Request to follow the guidelines of Environmental Clearance (EC).</p> <p>2. Is there any clearance for hospital development in campus?</p> <p>3. How you recharge the groundwater and what are the process of rainwater harvesting?</p> <p>4. Request to inform the DoE in written if there any expansion of the project in future.</p>	<p>1. This project will completely follow the guidelines of EC from the DoE.</p> <p>2. Initially a medical centre will be established. Proper clearance certificate and permission will be taken if any medical school is developed in future.</p> <p>3. All the detail process of groundwater recharge and rain water harvesting system is described in master plan.</p> <p>4. Extension of project (if any) will be informed to DoE in written documents.</p>
5	Planner Md. Sadat Khan	Assistant Director (Urban Planning)	RMSU, LGED, Chattogram Region	Is there any study and map of Drainage Network, drainage catchment area, drainage category?	A detail drainage network and hydrological study and map was done by IWFM, BUET.
6	Mohammad Nue Nobil	Associate Professor	Dept. of Economics, Chattogram University	<p>There is a military establishment near the proposed site. Consultants should aware and coordinate with the authority about this issue.</p> <p>2. There must be homogeneity of the structure of surround area with the proposed master plan/ design.</p> <p>3. Request to ensure the protection of existing ecology of nature and diversity during the development.</p>	<p>AUW authority will take necessary steps about this issue during the development phase.</p> <p>2. CDA can take initiative in this regard by imposing height restriction and authority will take necessary arrangement for this purpose.</p> <p>3. All types of ecological and environmental issues will be considered and monitored during development phase.</p>
7	MD. Zahurul Alam Jashim	Councilor, 09 no Ward	Chattogram City Corporation (CCC)	<p>1. Is any priority given to the local inhabitants for the employment in the university?</p> <p>2. Propose to establish a technical school for the betterment of surrounding affected people.</p>	<p>1. Obviously capable local inhabitants will be given priority for being recruited as staff at AUW.</p> <p>2. The proposal is very good and the authority will make proper arrangement to do so.</p>
8	Zarina Hossain	Architect-Planner	President, BIP, Chattogram Chapter	Propose to maintain homogeneity of surrounding area with the proposed site and establish housing facilities for post graduate research fellows in the campus like AIT.	Family housing or studio apartment will be developed in next phase for post graduate research fellows.

Sl. No.	Name	Position	Organization	Questions during discussions	Reply to the questions
9	MD. A.K. Fazlul Haque	Former Principal	Chattogram College	How many students will accommodate in this campus and is there any plan for expansion?	About 3000 students can accommodate in this campus and future expansion of the project will depend on serving the targeted students.
10	Daisy Moudud	Sr. Journalist	Dainik Purbokone	Request to take necessary arrangements in order to conserve the hilly area, trees etc.	The necessary govt. and World Bank approved environmental and other study is done to best utilization of the area by conserving natural environment.
11	Taslima Muna	Environment Specialist	KWSP-2, CWASA	1. How do you maintain the quality of lake water? Is there any urban water management plan for the site? 2. Is there any waste treatment plant in the master plan? 3. Do you have a proposal to connect with CWASA sewerage network plan.	An urban water management plan is done for this purpose and the water quality of the lake without contamination from the campus activities and waste water will be treated by STP. 2. A STP and Secondary Transfer station will be established in the site. 3. Initiative has been taken to integrate with CWASA sewerage network.
12	Abida Mustafa	Senior Vice President	Chattogram Women's Chamber of Commerce	Is there any fire hazard plan in design?	All types of fire safety assessment have been done for the master plan design. Detail fire safety plan is shown in design.
13	Rafiqul Islam Manik	Additional Chief Engineer	Chattogram City Corporation	1. Request to avoid accident road in the plan and establish open recreational space which will be accessible for surrounding people. 2. Introduce AUW's own transport facilities/ bus services for the students for easy commination with the city area.	1. Authority may consider this issue by further studies. 2. AUW authority has the plan to have this service for the students.
14	Dr. Abul Kashem	Professor	Chattogram University	1. All the urban service provider of the city should come forward to assist the AUW authority (CWASA, CCC, CDA, REB). 2. Request to be careful about soil condition of the site because of hilly area.	1. A warming welcome approach if all the service provider of the city come forward to establish the AUW campus. 2. All types of soil have been tested during design phase.
15	M.N. Mahbub ALam	Principal	Sultanul Arefin Bidyaniketon	1. Request to be careful about the adverse effect on environment and surrounding ecology due to development. 2. Propose to involve local people in development process.	Adverse effect on environment, ecological and social dimensions are addressed in this ESIA study and involvement of local people in development process will be ensured as per WB guidelines
16	Shariful Islam	Social Safeguard Specialist	World Bank	1. Propose to have facilities of prayer room for all religion. 2. Like to inform the audience that this project will follow the new social safeguard guidelines in Asia and all types of data/ information will store and publish on different govt offices web side and national newspaper.	1. Consider the observation on design. 2. Thanks for sharing the information that this will be the pioneer project under the World Bank's new social safeguard policies.
17	S.M Elias Karim Mintu	Local Businessman		Request to consider the minimum hill cutting for development.	This consideration has been taken followed by DoE guidelines in design stage.
18	Arc. Nazmul Latif	Architect	President, Institute of Architect, Chattogram	1. If Detail Area Plan by CDA is followed during design phase? 2. Is 50% of the site buildable? It looks higher in your master plan map.	1. Detail area plan of CDA has been followed during the design. 2. Will recheck the calculation and inform you later.

Photos of PCMs:



Figure 22: Photographs of the PCMs

8.6 Findings from Key Informant Interviews (KIIs)

The findings from KIIs are summarized in the table below.

Table 87: Details of key informant interviews with major stakeholders

Date	Stakeholders details	Details of participants	Outcome of the briefs	Actions taken by the A UW
12/2/2019	Md. Zahurul Alam Jashim;	Ward commissioner, 3 no. ward; Chattogram City Corporation.	-Poor and marginalized people should have access to the university for study.	<p>-A UW has provisions of scholarships for the talented and insolvent students. Scholarship information's will be disclosed to the A UW websites, and local and national newspapers.</p> <p>-Project will prepare E&S documents including ESIA and ESMP to mitigate environmental impacts.</p> <p>-During implementation, C-ESMP and Labor Management Plan will be prepared and implemented to ensure health and safety of the community people, ensure COVID-19 management, working conditions of the labors. Road safety management plan will be also prepared to manage the accidents. GBV and GAP will be prepared to prevent any incidents.</p>
12/2/2019	Dr. Nisar Uddin Ahmed (Monzu);	Panel mayor, Chattogram City Corporation.	Scholarship should be given to the talented and insolvent students.	
14/02/2019	Md. Anamul Hoque Khondaker;	District facilitator, LGSP-3; Office of the Deputy Commissioner, Chattogram.	-The university should reduce the impact on air, noise, water in and outside the campus areas.	
14/02/2019	Zahirul Islam;	Branch manager (NFPC), BRAC education program, Panchlaish, Chattogram.	-Hill cutting is an issue in Chattogram, many people have been displaced due to hill cutting for different purposes.	
15/02/2019	Mohammad Jasim Uddin;	District Education officer, Chattogram	Since the location of the university is free from residents, so it would not be problem for local people.	
15/02/2019	Md. Dedarul Islam;	CAD operator and campus supervisor; 20/ A, M. M. Ali road Chattogram- 4000.	-Hill cutting should be scientifically sound and environment friendly, considering the local residents outside of the campus areas.	
15/02/2019	Omar Kayser;	Deputy news auditor; The Daily Prothom Alo; Chattogram office	-Migratory birds are habitually coming in Chattogram areas in the winter season. Detail bird census should be conducted whether migratory birds are temporarily living in the project area or not. If, yes, then necessary precaution should be taken by A UW authority.	
15/02/2019	Masum Ahmed;	Associate professor, Department of philosophy, University of Chattogram.	-Community health and safety would be at risk as this project is conducting significant amount of construction works in the project area including increasing risks of road accident & excessive use of road etc.	
15/02/2019	Md. Selim Uddin Sobuj;	Local people, Baizid Bostami area, Chattogram.		
16/02/2019	Naznin Sultana Nipa;	Investigator; Department of Environment.		
16/02/2019	Md. Nazrul Islam;	1 no. ward, information dissemination secretary; Bangladesh Awami league		
16/02/2019	Mrs. Bilkis Banu;	Local resident; Anser camp Para; 2 no. ward, Nasirabaad		

Photographs of KIIs:



Photo 16: District facilitator, LGSP-3, DC Office, Chattogram



Photo 17: KII with Branch manager (NFPC), BRAC, Panchlaish.



Photo 18: KII with District Education officer, Chattogram



Photo 19: KII with CAD operator and campus supervisor.



Photo 20: KII with Deputy news auditor, The Daily Prothom Alo



Photo 21: KII with Associate prof, Department of philosophy, University of Chattogram.



Photo 22: KII with local people at Baizid Bostami area



Photo 23: KII with investigator of DoE, Chattogram Metropolitan area.

8.7 Findings from Focus Group Discussions

Focus group discussion (FGD) is a small, but demographically similar occupational group of people and whose reactions are studied especially in market research or political analysis in guiding or open discussions about a proposed project to determine the reactions that can be expected from a larger population. It is a form of qualitative research consisting of interviews in which groups of people are asked about their perceptions, opinions, beliefs, and attitudes towards the project, service, concept, advertisement, idea or packaging. Questions are asked in an interactive group setting where participants are free to talk with other group members. Discussion was held with the local people at near the proposed project site. Date, location and the number of participants of each discussion is listed in to capture their perceptions.

Table 88: Details of FGDs listed below

FGD no.	Location	Date	Total participants	Category of participants
1	House of Mr. Faruk, Abedin gate, Bangla Bazar, Bayezid, Chattogram	13/ 2/ 2019	8	Female group- housewife and job holder etc.
2	Central Graveyard, Arefin Nagar, Bayezid, Chattogram	13/ 2/ 2019	9	Male group- business, driver, job holders, Day labourer, Imam etc.
3	Abu Taher Master Bari, M. Hasem Plot, 312 Line, ward 2, Ansar Camp Para, South side of University Gate.	13/ 2/ 2019	9	Mixed group (male & female): Business, teacher, job holder, Ansar force etc.
4	Nazrul Islam er bari, Jangal Saleem pur, Chinnomul, Boro Tola, Sitakund	14/2/2019	9	Mixed group (male & female): journalist, retired person, housewife, job holders, religious leader etc.

During ESIA stage, 4 FGD were organized in the project area, a list of FGD participants are provided in Annexure-4.

Table 89: Summary of FGDs

Participant's Opinion, comments and Suggestions	Response to Questions/Action Point
They have no idea about the project, though they are seeing signage in that area. This project will improve the education facilities in the Chattogram areas, particularly for higher studies.	Consultant briefly discuss about the proposed project to the participants.
They have suggested for keeping the scholarship and stipend facilities to the poor students during studying period.	Consultant assured that the university will provide this type of facilities as it is an international university.
Hill cutting is a problem, if proper measurements are not taken by the university during hill cutting, filling and levelling, then it would be disastrous for the local people also.	Appropriate measurements would be taken and following 'no harm to people and environment' strategy during construction of the project.
Excessive horn noise will be created due to movement of the vehicles for carrying out materials, and other construction works that could disturb the local people. They have suggested to avoid vehicle movement at night times.	No hydraulic horn will be used during transportation of goods to the project site and speed limit will be below 40 km/hr near the project area. It is assured that the project activities will be limited from 7 am to 6 pm. So, night time will be free from excessive noise created by the project activities.
Business opportunities should be given to the local people during supplying & carrying of materials, earth etc.	Local people will get the facilities to do small business during construction period.
Foy's lake water should not be used during construction and operation of the campus activities as it is a breeding point of local fisheries	The project will not use the lake water during construction period, deep tube well will be installed at the project site for drinking purpose

Participant's Opinion, comments and Suggestions	Response to Questions/Action Point
and other diversified fauna which are existant there.	and CSWA supply water also will be used during construction and operation periods. A memorandum of understanding will be made with CSWA for access to their water use.

Photographs of FGDs:



Photo-24: FGD-1 with female group at House of Mr. Faruk, Abedin gate, Bangla Bazar, Bayezid, Chattogram.



Photo-25: FGD-2 with male group at Central Graveyard, Arefin Nagar, Bayezid, Chattogram.



Photo-26: FGD-3 with mixed group at Abu Taher Master Bari, M. Hasem Plot, 312 Line, ward 2, Ansar Camp Para, Chattogram.



Photo-27: FGD-4 with local people at Nazrul Islam er bari, Jangal Saleem pur, Chinnomul, Boroil Tola, Sitakund, Chattogram.

8.8 Stakeholder Engagement Plan

The stakeholder engagement process will be carried out at two levels, namely, local community and local governing bodies. A summary of the proposed plans that are to be initiated by the developer(s) and WB/PIA have been described below. It is to be noted that the proposed plan of activities relating to the stakeholder engagement can change as per the future planning of activities by Developer(s) and WB/PIA.

Table 90: Proposed Plan Activities Summary

SI	Key Stakeholders	Proposed Plan
1	Positively Influenced Stakeholders/ Local Communities	<ul style="list-style-type: none"> - Announcement of vacancies (skilled/unskilled) at the proposed site; - Announcement of contract work for small scale work associated with the proposed project; - Local Area Development Activities as per PIA of Action for Community Development; - Consultation with village people/local government about the movement of heavy vehicles; - Information on route and timing of vehicle movement to be provided to local administrations; - Set up a grievance redress mechanism and inform the community about the procedure; and - Discuss the management plan with the community and incorporate the comments.
2	Local Governing Bodies	<ul style="list-style-type: none"> - Compliance with legal requirements; and - Involvement of various Local Area Development Activities
3	Lenders	<ul style="list-style-type: none"> - Compliance with International Guidelines (World Bank Operational Policies, IFC Sustainability Framework & other national and local legal requirements) - Regular Reporting

8.9 Plan for Continuous Consultations Throughout the Project Cycle

In the preparation phase of this project, two public consultations, several KIIs, FGDs and meetings were conducted in the project areas. This process will be followed in the implementation and operation phase of the project. During the implementation phase, consultation will be carried out focusing on several issues like maintenance of safety and security of the workers, the process to manage resources, proper communication, avoid the impact on environment and society, etc. Before the operation phase, consultation meetings on highlighting the maintenance of university without affecting community and environment, ensure cultural diversity and gender safety etc. will also be carried out.

Chapter 9: Grievance Redress Mechanisms

9.1 Grievance Redress Mechanisms (GRMs)

Grievance Redress Mechanisms (GRMs) are defined as organizational systems and resources established by national government agencies (or, as appropriate, by regional or municipal agencies) to receive and address concerns about the impact of their policies, programs and operations on external stakeholders. GRMs are intended to be accessible, collaborative, expeditious, and effective in resolving concerns through dialogue, joint fact-finding, negotiation, and problem solving⁸. These aspects are relevant to ESS1, 2, and 10.

Grievance redress mechanisms (GRMs) are institutions, instruments, methods, and processes by which a resolution to a grievance is sought and provided. A number of mechanisms are available to aggrieved parties to access redress. They can be complex and diverse. They may include institutions specific (internal) to a project and set up from its inception or others that have emerged over time in response to needs identified while the project evolved. In addition, if a project is funded through external sources, the aid agency itself sometimes provides a forum for grievance redress. GRMs can include avenues for resolving conflicts between APs or other stakeholders, and can provide information sought by the public on the project⁹.

A GRM provides a predictable, transparent, and credible process to all parties, resulting in outcomes that are seen as fair, effective, and lasting. Table below shows the benefits of GRM to PAPs and other stakeholders.

Benefits to Projects	Benefits to Affected Persons and Other Stakeholders
<ul style="list-style-type: none"> ✓ Provides information about project implementation ✓ Provides an avenue to comply with government policies ✓ Provides a forum for resolving grievances and disputes at the lowest level ✓ Resolves disputes relatively quickly before they escalate to an unmanageable level ✓ Facilitates effective communication between the project and affected persons ✓ Helps win the trust and confidence of community members in the project and creates productive relationships between the parties ✓ Ensures equitable and fair distribution of benefits, costs, and risks ✓ Mitigates or prevents adverse impacts of the project on communities and produces appropriate corrective or preventive action ✓ Helps avoid project delays and cost increases, and improves quality of work 	<ul style="list-style-type: none"> ✓ Provides a cost-effective method to report their grievances and complaints ✓ Establishes a forum and a structure to report their grievances with dignity, and access to a fair hearing and remedy ✓ Provides access to negotiate and influence decisions and policies of the project that might adversely affect them ✓ Facilitates access to information

⁸ ADB (2010) Designing and implementing grievance redress mechanisms. A Guide for Implementers of Transport Projects in Sri Lanka. Asian Development Bank

⁹ UNDP (2017) Guidance Note-UNDP Social and Environmental Standards (SES). Stakeholder Engagement. Supplemental Guidance: Grievance Redress Mechanisms. United Nations Development Programme

The Grievance Redress Mechanism (GRM) has been developed with the intention of it being a useful tool for early identification, assessment, and resolution of complaints during the project entire life cycle. It means ‘acceptance, assessment, and resolution of community and workers complaints’ concerning the performance or activity which is being undertaken by the Asian University for Women (AUW) Authority and Contractor/ sub-contractors are ascertained and addressed. The mechanism should be able to address the aggrieved parties concerns and complaints promptly by using an understandable and transparent grievance addressing process which is readily accessible by all segments of the stakeholders including workers in a workplace environment. This is related to ESS2 and ESS7.

There can be a range of issues arising during a project period. Some of these issues could be related to, not limited to,

- Compensation payment,
- Failure to fulfill commitments,
- Poor management of construction activities,
- Accidents due to inappropriate planning of vehicle movement,
- Cultural conflicts between migrant workers and local communities,
- Disturbance due to excessive noise or other nuisance during construction or operation to unfair treatment of workers or unsafe working conditions.

Hence, a robust GRM is required that is gender responsive, culturally appropriate and readily accessible to the affected persons at no costs and without retribution. The Developers/Project Implementation Authority (PIA) while developing the Grievance Mechanism are required to adhere to the following steps:

9.1.1 Development of Procedures

The developers/PIA should ensure that procedures for lodging and registering of grievances are in place before the plan is implemented at the site level. The procedures of Grievance Mechanism should comprise of identifying the personnel at the site level who will be responsible for receiving and addressing the grievances at the site level and handle the cases at the escalation level. The procedures to be developed should include assessment procedures, procedure to determine the appropriate resolution process, procedures for making decisions on proposed settlements, appropriate time frames for each step in the grievance resolution process and notification procedure to the complainant about eligibility, assessment results, proposed settlements and the like.

9.1.2 Resolution Options and Response

Once Developers’/PIA developed procedures, formal and informal resolution options would also be developed along with preparation of formulating a response. General approaches to grievance resolution may include proposing a solution, reaching a resolution through discussion or negotiation, using the third party to either informally or formally resolve the matter through mediation and traditional and customary practices.

9.1.3 Public Disclosure of the Grievance Redress Mechanism

Once the procedures for Grievance Redress Mechanism have been developed by the developers/PIA, it has to be publicized through various stakeholder engagement activities as detailed out in the Stakeholder Engagement Plan and should be disseminated to the developer(s) as well. The Developers/PIA should inform the local community in the first instance and then remind them of this mechanism regularly during the project construction and operation periods. Various communicative methods can be adopted in disseminating the information like printed materials, displays, face to face meetings and website updating. The grievances redress mechanism (GRM) shall be documented in English and Bangla and copies shall be kept at the project site office and corporate office. The GRM is also to be displayed at notice board at the project site office and training on the GRM shall also be provided during orientation.

Developer(s) is to ensure that the contractor would keep the workers informed about the grievance mechanism at the time of recruitment and make it easily accessible to them. All the relevant contact numbers to be made available to them.

9.1.4 Training/ Workshops on Grievance Redress Mechanism

A separate training/ workshop will be undertaken by the Developers/PIA at the community and worker level to discuss the process of how a grievance gets registered, the local contact person's/grievance officer details of receiving grievances, the significance of grievance boxes, the timelines for addressing the grievances and the personnel's involved in the redressal process. These training should be held half-yearly, and feedback/suggestions from the community should be acknowledged, and changes to the GRM should accordingly be undertaken to make it more user-friendly.

9.1.5 Recording of Grievances

Once the stakeholders are aware of the mechanism and access it to raise grievances, the developer(s) is required to acknowledge the same and keep the complainant's identity anonymous. Consequently, the developer(s) is required to collect grievances by checking the grievance boxes once every fifteen days, record and register the grievances that have come in as per the identified formats and track them throughout the redressal process to reflect on their status and important details. A Grievance Log or database emphasizing the records and status of the grievance is to be maintained by the identified Grievance Officer at the site level. The Grievance Log can be used to analyze information about grievance, community issues and project operations to anticipate the kinds of conflicts that World Bank (WB) might expect in the future both to ensure a grievance mechanism is set up to handle such issues and to propose organizational or operational changes.

9.1.6 Appeal Process

If the grievance redressal solution is not acceptable or agreed by the complainant, the complainant should be offered an appeal process. Circumstance revolving around when an appeal can be made should be set by the developers/PIA so that accountability and transparency are promoted by them in every step.

9.1.7 Grievance Resolution and Follow Up

Once the corrective action has been agreed upon, a good practice is to collect proof of those actions in terms of taking photographs, documentary evidence, getting confirmation from the complainant and filing the same within the case documentation. Also, monitoring and follow up on the resolution agreed upon should be conducted once to close the case accordingly. Developers/PIA are required to provide regular (semi-annual) reports to WB that track the number of complaints received, resolved, not resolved and referred to a third party. In addition, the funding agency also needs to be constantly apprised of the yearly reports to support the identification of developing risks.

9.2 Proposed Grievance Redress Mechanism for Developer

The Grievance Redress Mechanism (GRM) outlines the process for lodging of grievances, steps to be taken for subsequent action and the time limit within which the issue would be resolved to the satisfaction of the complainant (community members, project affected persons, and workers). All complaints shall be recorded and addressed in a uniform and consistent manner. The GRM for the proposed project is presented below with time-bound schedules and specific persons to address grievances. AUW has a well-functioning existing GRM system for the students and faculty. Proposed project GRM will be linked with the existing GRM.

Proposed project GRM is already disclosed to the stakeholders (annex 3). However, a brochure of project Grievance Redressal Committee will be prepared in local language and distributed among the stakeholders and interested groups.

9.2.1 Grievance Redress Committee

A site level approach is proposed to be developed for redressing of all cases of grievances. All grievances are to be redressed at this stage. The representatives proposed for the grievance committee is provided below

Table 91: Proposed GRM committee

Sl. No.	Members of GRM Committee (proposed)	Designation	Functions/ responsibility
1	Registrar/focal person of the AUW	Convenor	Organize monthly or quarterly meeting
2	Director of the Developer Company/ Contractor	Member Secretary	Recorded all the issues and circulated among the interested people and Infront of the university gate.
3	Environmental Specialist	Member	Summarize the grievances relating to environmental issues, construction related issues, and OHS issues etc.
4	Social Specialist	Member	Community Health & Safety Issues, issues of small ethnic communities' interest & grievances, and other social issues
5	Gender Specialist	Member	Gender and GVB related issues
6	Grievance Officer	Member	Note discussions and decisions of the meeting and disseminate the information about GRM.

The steps of grievance redressal for the developer have been provided below:

9.2.2 Receiving and Registering a Grievance

The developers/PIA in order to implement the Grievance Redress Mechanism is required to nominate a Grievance Officer for registering the grievances, initiating the process of registering and action taken thereon for the resolution of the grievance and the timeline required in each step. The contact details of the Grievance Officer shall be maintained and updated in the following format displayed at prominent places available to the public and the project area.

Table 92: Contact Details of Grievance Officers

Sl	Name of the Grievance Officer	Mobile Phone No	Email Address

Any stakeholder such as worker, person from the local community or any other stakeholder, with concerns about onsite work such as community health and safety, local employment, community risk, migrant labor or any issues, etc. may register their complaint in writing to the nominated person/grievance officer at the site level. Moreover, all grievances will be addressed by the developers/PIA during the construction and operation period. For any unresolved grievances, the developer/PIA will forward the grievances to WB and AUW authority for redressing. In addition, secured grievance boxes shall be placed at the entrance of the site office. If any stakeholder or community member wishes to remain anonymous, he/she can write down the grievances and drop in the available complaint box, and once a complaint has been received, it shall be recorded in the grievance log register or data system.

Details of grievance received shall be maintained by the Grievance Officer in a register as per the following format:

Table 93: Records of Grievance Received

Date of Receipt	Particulars of Complainant				Particulars of Grievance			
	Name	Address	Contact No	Whether acknowledgment is given at the time of receipt	The subject of the Grievance	Office	Brief Description	Date of acknowledgment /date of redress

9.2.3 Assessment and Addressing of Grievance

- The Grievance Officer will open the grievance boxes once every week and register the grievance in the Grievance Log Register as per the format provided above;
- The Grievance Officer will then forward the grievances after registration to the Site Supervisor for further action;
- The grievance will be assessed by the Site Supervisor within two (2) working days to determine if the issues raised by the complaint fall within the mandate of the grievance mechanism or not;
- During the assessment of complaints, the GRC team (Environment Specialist, Social Specialist and Gender Specialist, Site Supervisor & Safety Officer) will gather information about the key issues and concerns and helps determine whether and how the complaint might be resolved and pass to the Convenor and Member Secretary of the GRM Committee.
- The grievances will be redressed at the Site Level by the GRC within seven (7) working days;
- If the grievance fails to be addressed at this level the complainant will have the option to approach the appropriate court of laws for redress; and
- The complainant will have the opportunity to be present at the committee meetings and discuss the grievance faced by him/her.

The Grievance Mechanism proposed for developer to consider and implement is presented in Figure below.

9.2.4 Documentation

To ensure effective documentation of Grievance Mechanism, the following steps should be followed:

- The Grievance Redress Mechanism will be documented in English and Bangla and copies will be kept at the project site office;
- The GRM will also be displayed at notice board at the project site office and labor campsites and will be included in worker documentation;
- The developers/PIA should inform the local community and workers about the Grievance Redress Mechanism during the project construction and operation periods. Various communicative methods can be adopted in disseminating the information like printed materials, displays and face to face meetings;
- The Contractor or Admin Officer will inform the workers about the grievance mechanism at the time of recruitment or induction training and make it easily accessible to them;
- The Grievance Officer’s contact number will be made available to them. The project office phone number will be posted in public areas within the project area;
- The mechanism will address concerns promptly, using an understandable and transparent process and provide timely feedback to the concerned stakeholder;

- Verifiable records of implementation of corrective action like dated photographs, documentary evidence, getting confirmation from the complainant and filing the same within the case documentation should be kept;
- A Grievance Log or database emphasizing the records and status of the grievance shall be maintained by the Grievance Officer at the site level.

9.3 Resources Required for Grievance Mechanism Implementation

A Grievance Mechanism becomes successful if adequate resources are assigned in its implementation. Adequate resources here refer to people, systems and processes and associated financial resources. To incorporate the responsibility of designing, implementing and monitoring the grievance mechanism, the senior management of the Developers/PIA at the corporate level should be involved in executing the various tasks. For a grievance mechanism to function effectively, it is important to establish a governance structure and assign responsibilities for the mechanism's implementation. The following roles and responsibilities have been identified for grievance mechanism implementation:

9.3.1 Nominated Grievance Officer

Admin Officer based at the Site Level is to be nominated as the Grievance Officer. The incumbent is to work in tandem with the Site Supervisor, EHS Manager, and Safety Officer. They cumulatively form the Grievance Committee at the site level.

9.3.2 Engagement of Third Party

To maintain ultimate transparency and accountability for the grievance mechanism process, third parties such as local governments, local community, etc. can at times be involved in the grievance redress process. These parties can serve as process organizers, places to bring a complaint to be passed on to the institution or as facilitators, witnesses, advisors or mediators. Third parties can assist in enhancing the trust level from communities as well as overcome limitations of the project-level mechanism.

9.3.3 Monitoring and Reporting

Monitoring and reporting are requisite tools of measuring the effectiveness of the grievance mechanism, the efficient use of resources, determining broad trends and acknowledging recurring problems so that they can be resolved before they reach a higher level of contention. They also create a base level of information that can be used by WB to report back to the stakeholders.

9.3.3.1 Monitoring

Depending on the extent of project impacts and the volume of grievances, monitoring measures like internal (by identified Developers Corporate level staff) and external audits (third party consultants) once in a year based on the complexity of the nature of grievances can be adopted by the Developers/PIA. Grievance records should provide the background information for these regular monitoring exercises. Through the review of each grievance and analysis of its effectiveness and efficiency, Developers/PIA can draw on the complaints to evaluate systematic deficiencies. In addition, monitoring of the grievance mechanism helps to ensure that the design and implementation of the mechanism are adequately responding to stakeholder's comments in a cost-effective manner.

9.3.3.2 Reporting

All grievances registered have to be recorded and regularly updated. The site management or Grievance Officer is responsible for discharging this responsibility, and should be able to produce this document whenever any audits take place. All minutes of meetings with stakeholders, complainants and Grievance Committee are to be recorded and documented regularly for reference purposes. In addition, through the process of monitoring and the reports produced after that, assurance of continual improvement of the institution's operations is guaranteed. The institution can also use these monitoring reports to report

back to the community on its implementation of the mechanism, and the modification/changes proposed to make it more user-friendly.

9.4 Proposed Grievance Redress Mechanism for PIA

In the course of the construction process, community peoples and other stakeholders may feel treated unjustly. This might happen for various reasons such as: if the contractor does not adhere to sound construction principles, misunderstandings have arisen, or disagreement with procedures of consultation or notification. If this happens people shall be encouraged to lodge their complaints in a timely and effective manner without directly addressing the court, i.e., through a grievance mechanism. All Stakeholders including PAPs, project-surrounding community will be notified about the Grievance Redress Mechanism (GRM) of the Project during the Public Consultation meetings, as well as through the disclosed project information leaflets. Contact data of the Grievance Officer (GO), part of the Grievance Committee, will be disclosed.

During consultation, the stakeholders shall be notified orally or in a written form about their rights and the procedure of filing complaints. Local NGOs or university authority can inform communities about the possibility to raise complaints and how and where to address them. Grievances can be addressed at the local community level where the grievance will be recorded and forwarded to PIA. Grievances that are addressed to the Contractor during the execution of civil works shall also be forwarded to Grievance Committee (GC). Even if the contractor decides to settle the grievance on the spot, the documentation of the grievance settlement procedure needs to be prepared by GO.

All project related complaints can in addition be directly addressed to AUW's GO via phone, e-mail or grievance form (discussed above). A project grievance hotline shall be made available by PIA for direct complaints (at national level), and all received grievances shall be recorded in a grievance log-book. The GC then decides whether to settle directly, to arrange a meeting with the Grievance Committee, or go to court. The decision has to be taken within 15 days. In case of major grievances that cannot be directly settled, permanent and non-permanent members of the Grievance Committee will be called for a meeting. In case of failure of the grievance redress system, the affected person can submit their case to the appropriate court of law.

Although the grievance mechanism is designed to avoid lengthy court procedures, it does not limit the citizen's right to submit the case straight to the court of law.

Special consideration has to be taken for vulnerable people as complaint mechanisms may be unusual and contact with legal procedures let alone courts of law may appear uninviting. This would prevent the most disadvantaged persons from addressing their grievance. A close monitoring on a village or community level by an independent social expert during the implementation of the project and a personal contact with project affected people (PAP) is therefore recommended. Vulnerable PAP also (all households below the poverty line) will be entitled to a legal aid/ social worker to support them with complaints procedures.

More than 2000 students will study at the university and several hundred staffs and faculty members will work within this campus. Therefore, special attention will be needed to tackle the incidents like gender discrimination, SBV and sexual harassment. An extreme powerful committee headed by Registrar or Vice-Chancellor will be formed according to the constitution of the university, UGC regulations and safeguard policy of the university to deal with these incidents. This committee will develop the guideline of the Grievance Redress Mechanism with the help of faculty members and other stakeholders of the university. All students, parents, staffs and faculty members must be made aware

about the guideline of the GRM and also the procedure to register a grievance case. GRM must address the issues of racism and discrimination to ethnic people, vulnerable people and physical challenged person.

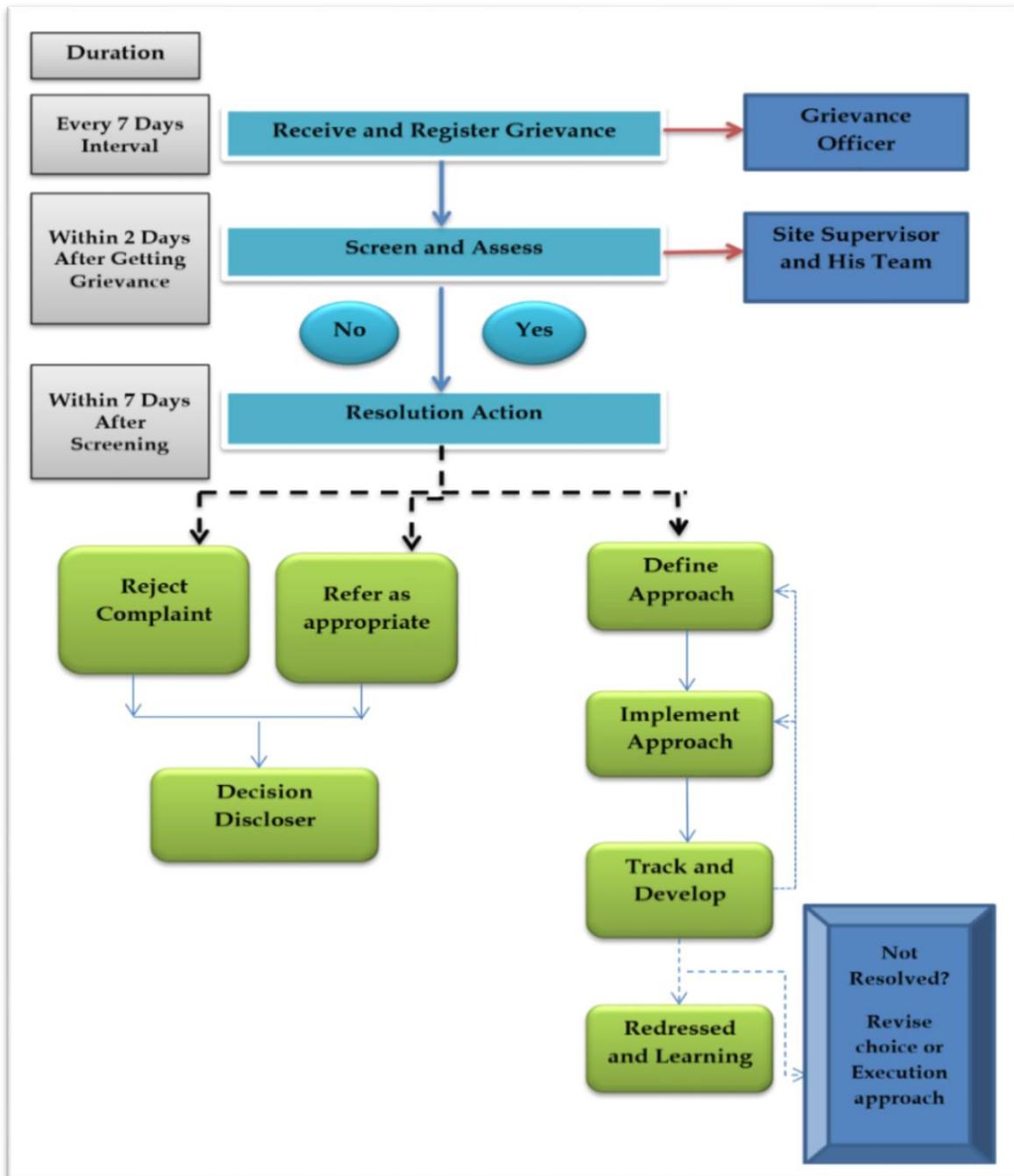


Figure 23: Proposed Grievance Redress Mechanism

Chapter 10: Environmental and Social Management Plan (ESMP)

10.1 Introduction

The Environmental and Social Management Plan (ESMP) should be integrated into the project design for sustainable development of the project. Integration of the ESMP into the project design would minimize the effects of the negative impacts and increase the benefits of the positive impacts in the pre-construction, construction, and post-construction periods. The benefit of the ESIA study would not be derived and would remain a theoretical exercise if the ESMP is not integrated into the project design as well as contractor bidding documents. Where and when required, this ESIA and the ESMP should be updated during project implementation.

The Environmental and Social Management Plan (ESMP) includes the following:

- Mitigation measures aimed at avoiding, minimizing/reducing or offsetting the effects of the negative impacts;
 - Enhancement plan containing measures aimed at increasing the benefits of the positive impacts;
 - Compensation plan for offsetting negative impacts which cannot be sufficiently mitigated;
 - Contingency plan for addressing accidental events;
 - Environmental monitoring plan for detecting changes taking place due to the proposed interventions. The environmental monitoring plan includes indicators on which data are to be collected, measurement locations and frequencies and the necessary institutional arrangements.
- Costs of the ESMP measures are estimated so that the same may be included in the project cost for economic and financial analysis as well as for proper budget allocation by implementing authority.

10.1.1 Mitigation Measures

Mitigation of impacts is a process in the ESIA which determines the possible preventive, remedial or compensatory measures for the adverse impacts which have been evaluated as significant. It aims to prevent adverse impacts from occurring and keep residual impacts (impacts which remain after considering mitigation) within an acceptable level.

As per the WB's ESF, the overall objectives of mitigation are to:

- Avoid and find better alternatives and ways of doing things;
- Minimize or remedy the adverse impacts through the adoption of mitigating measures;
- Ensure that residual adverse impacts are kept within an acceptable level;
- Offset any residual adverse impacts that are not acceptable; and
- Enhance the environmental and social benefits of the project.

One of the main mitigation measures for this project is slope stabilization due to the considerable amount of hill cutting and filling. Therefore, the mitigation measures for this project impact in particular is described in detail below.

Slope Stabilization

Preparation of slopes:

- 1V:2H (maximum) slopes without any terrace should be designed.
- Unwanted materials like plant roots, debris, etc. which may impede the laying of geojute on the prepared slopes should be removed.

- Prior to laying of geojute, holes for plantation should be kept at the points specified in the landscape architectural drawing.
- Trenches for top drain and toe drain should be prepared for anchoring geojute at the top and toe of the slopes.

Laying of Geojute:

- Prior to laying of geojute, urea fertilizer (at least 1500 gm @ 100 m²) should be spread over the prepared slopes in order to facilitate faster growth of the grass and vegetation/ plants
- Followed by this, grass seeds (e.g. Zoysa) should be spread evenly (at least 250 gm @ 100 m²) on the slopes.
- Thereafter, 750 gsm and 1200 mm wide geojute having at least 400% water absorption capacity should be laid on the prepared slopes with the length of the geojute rolling down the slope.
- While laying, geojute should be pegged with 6mm diameter steel U-hooks @600mm spacing in a regular grid pattern as shown in the relevant drawings of slope protection work.
- An overlap of 150mm must be provided at the edges of adjacent geojute rolls.
- In order to obtain the best results, spreading of fertilizer & seeds and laying of geojute should be completed prior to rainy season.

Plantation

- After laying of geojute, the plantations of different species should be completed at the predefined positions on the slopes as shown in the landscape drawings.
- The plants must be so chosen so that they are non-invasive and fast growing, e.g. so that they grow in one monsoon. The root system of the plants must be deep and widespread so that they bind the soil mass and hold the soil matrix together.

Drainage Structures:

- A proper gradient of the top drain and toe drain should be maintained so that there is no siltation due to mudflow from the hills.
- Brick masonry surface tributary drains connecting the top drain and toe drain should be provided along the slopes.

Construction of Anchored Earth Wall:

- Existing ground should be excavated to the depth and extent required for construction of footing pad and reinforced fill of the walls. The necessary dimensions should be read out from the drawings.
- Followed by this, the wall segment up to the EGL may be cast and the trench for footing construction should be backfilled up to the EGL after proper curing and setting of concrete is complete.
- The remaining height of the wall may now be cast to its full height first with adequate propping arrangement. Care should be taken so that, the 300 mm segment of anchor rods-hooked to the wall shall remain protruded towards the reinforced fill at this stage. Provisions for weep holes should also be provided at this stage.
- Present concrete anchor blocks of the required dimensions (shown in drawings) should be prepared simultaneously. While preparing the anchor blocks, a 300mm reinforcement segment should be kept embedded in the anchor block.
- After the concrete of the wall and anchor blocks has attained its 28-day strength and the formworks are removed, a layer jute geotextile (JGT) filter shall be secured against the wall.
- JGT used for the purpose shall have a design life of at least ten years.
- The wide width tensile strength should be more than 10kN/M, and O₉₅ of the JGT should be less than 0.25 mm.

- The backfilling work should then be started. Sand of FM >0.8 and $d_{85} > 0.10$ mm should be used for the purpose. Compaction should be done so that a relative density of at least 80% is achieved. A 150 mm thick 25 mm downsize well-graded brick chips layer should also be provided between the JGT layer and sand backfill.
- The backfilling should be done from the bottom up to the level of the first layer of horizontal reinforcement. The anchor block of this layer shall be placed in its position and then the 300 mm segments of reinforcement with proper welding as shown in the drawings must be placed.
- It must be noted that the welding of the reinforcement segments should be done under strict supervision and there should be no sagging of the reinforcement segments. The position of the anchor blocks may be readjusted to remove slack off the entire reinforcement system.
- The horizontal reinforcement segments must be thoroughly and evenly coated with bitumen.
- The steps involved with the first layer of anchor rod shall be repeated for other layers of reinforcements up to the height shown in the drawings. No anchor rods are provided in the top 1750 mm of the wall.

Additional mitigation measures are listed in the table below.

Table 94: Recommended Mitigation Measures

Sl. No.	Category of Impacts & ESS	Significant Environmental and Social Impacts	Recommended Mitigation Measures
1	Site Clearance /Removal of Vegetation for access road and building ESS3	<ul style="list-style-type: none"> ▪ Destruction of plants and dust load on vegetation and trees ▪ Loss of vegetation ▪ Erosion, sedimentation ▪ Increase in turbidity of surface water ▪ Ecological 	<ul style="list-style-type: none"> ▪ Minimize vegetation disturbance and removal/cutting of trees. ▪ Avoid sensitive environments ▪ Landscape buffer zone ▪ Minimize soil movements and short excavation/filling cycle ▪ Provide sediment/silt traps, plant strip areas, temporary drainage routes/channels ▪ Provide adequate stabilization protection works against the lake erosion and sedimentation according to design ▪ Ensure adequate supervision and monitoring ▪ Provide sufficient openings of drainage of excess rainwater ▪ Afforestation program for medicinal for research, fruits, and timber tree replacement ▪ Plantation to increase the scenic beauty of the campus ▪ Plant more tree for carbon sink
2	Removal of Existing Earth Materials	<ul style="list-style-type: none"> ▪ Noise, Dust ▪ Increase in surface water turbidity due to surface run-offs ▪ Safety risk from accidents ▪ Traffic congestion 	<ul style="list-style-type: none"> ▪ Ensure all machinery and equipment are in good working condition, carry out scheduled maintenance ▪ Limit work hours from 7am to 6pm to reduce noise emission to sensitive receptors ▪ Moisten surfaces to reduce dust dispersion, sediment traps, strip buffers ▪ Regularly train on-site workers on occupational health & safety measures and monitor implementation

Sl. No.	Category of Impacts & ESS	Significant Environmental and Social Impacts	Recommended Mitigation Measures
3	Selection of Base Camp Site ESS2, ESS5	<ul style="list-style-type: none"> Loss of land use 	<ul style="list-style-type: none"> Avoid sensitive environments and endangered species areas Avoid areas with potential risks of landslide Provide awareness and notify potentially affected parties of project activities Ensure labour influx minimized through implementation of Labour Influx Management Plan by Contractor
4	Soil Erosion ESS3, ESS6	<ul style="list-style-type: none"> Removal of topsoil for hill cutting Uproot of vegetation Formation of fracture and hole on the land Deposition of sediment onto roads, neighbouring properties and into drains May cause landslide 	<ul style="list-style-type: none"> Planting Vegetation Retaining wall Geotextile carpeting Vetiver grass Capital plantation
5	Slope Stability and failure ESS3	<ul style="list-style-type: none"> Landslide Erosion and Sedimentation 	<ul style="list-style-type: none"> Maintain slope 1V:2H Planting vegetation Reinforce the existing slopes Concrete panel Geotextile carpeting Vetivier grass Install a device for early detection of crack Put cement grouting immediately All building or operational habitation should be located with lower slope surface to avoid the unforeseen landslides Provide nailing with retaining wall Provide geotextile to protect the slope
6	Hill Profiling & Earthwork ESS3	<ul style="list-style-type: none"> Loss of landscape Imbalance of hills Loss of strength of hill lithology 	<ul style="list-style-type: none"> Need to take proper slope protection measures Only loose soil should be taken out for site development After profiling, the hilltop's uncovered soil should be vegetated immediately to prevent runoff and erosion Excess soil materials to be sold to willing buyers and not be used to fill wetlands.
7	Failure of equipment ESS2, ESS4	<ul style="list-style-type: none"> Health risk Accident 	<ul style="list-style-type: none"> Special modern equipment should be used to minimize accident risk Most of the equipment should be mechanical with automation
8	Sedimentation of lake ESS3, ESS6	<ul style="list-style-type: none"> Floods Decreasing the depth of water reservoir/lake Deposition onto streets and roads Runoff mud to lake and canal 	<ul style="list-style-type: none"> Soil erosion prevention Dredging of the lake after sedimentation or filled the lake

Sl. No.	Category of Impacts & ESS	Significant Environmental and Social Impacts	Recommended Mitigation Measures
9	Temporary Drainage ESS4, ESS6	<ul style="list-style-type: none"> ▪ Altered surface hydrology affecting aquatic flora/fauna ▪ Flood control/drainage 	<ul style="list-style-type: none"> ▪ Compartmentalize clearing, ▪ Provide adequate culverts for drainage rail embankments and other areas to allow free movement of water
10	Constructing Facilities and Supporting Infrastructure (buildings, Amenities, and Utilities) ESS2, ESS3, ESS4, ESS6	<ul style="list-style-type: none"> ▪ Loss of existing green and changes in the landscape ▪ Drainage pattern changes affecting water resources/wildlife ▪ Erosion, sedimentation, the turbidity of waters ▪ Dust ▪ Exhaust emissions, ▪ Inadvertent soil carries over ▪ Soil and groundwater contamination ▪ Health and safety hazards of the workforce ▪ Creation of stagnant water bodies/habitats for disease vectors ▪ Leaks from heavy machinery, spills 	<ul style="list-style-type: none"> ▪ Create green buffer zones ▪ Hydrology control-drainage canals, culverts ▪ Use vegetation cover, sedimentation/silt traps, plant strip areas ▪ Control speed within site, maintain vehicles, wet surfaces, install water troughs for vehicles at exits, water spray on the roads ▪ Setup warning sign, label, and signals at appropriate locations ▪ Ensure proper monitoring of all activities ▪ Limit hours of construction activities ▪ Cover stockpiles, moisten surfaces ▪ Enforce safety measures, signpost warnings, use barricades ▪ Monitoring and audit the site throughout the construction period
11	Construction of Access Roads ESS2, ESS3, ESS4, ESS6	<ul style="list-style-type: none"> ▪ Noise, ▪ Dust ▪ Safety of workforce, precautions to the general public ▪ Creation of stagnant water bodies/habitats for disease vectors ▪ Soil erosion, landslides, hydrological impacts ▪ Impacts on marine ecosystems ▪ Leaks from heavy machinery, spills 	<ul style="list-style-type: none"> ▪ Limit hours of operation, cover stockpiles, moisten surfaces ▪ Enforce safety measures, signpost warnings, use barricades ▪ Filling or drainage to avoid creation of habitats ▪ Construct dikes, bunds drainage canals, culverts ▪ Vegetation cover, sedimentation ponds/silt traps, plant strips ▪ Dispose of debris accordingly ▪ Construction of sound barrier walls if near schools, mosques and other institutions
12	Use of Heavy Machineries ESS2, ESS3	<ul style="list-style-type: none"> ▪ Air emission from exhausts ▪ Fugitive dust ▪ Noise ▪ Accidents ▪ Contaminating spills, leaks to soil and surface water 	<ul style="list-style-type: none"> ▪ Strictly regulate vehicle and machinery emissions to the manufacturer's standard ▪ Spray water on dry surface regularly to reduce dust generation ▪ Maintain optimum moisture content during transportation, compaction, and handling of soils ▪ Regulate the use of horns ▪ Install the power generator unit inside a sound and vibration proof room ▪ Priorities/provide for safety at work ▪ Limit hours of operation, moisten surfaces ▪ Mop up operations for contaminating spills, containment

Sl. No.	Category of Impacts & ESS	Significant Environmental and Social Impacts	Recommended Mitigation Measures
13	Presence of Workers ESS2, ESS4	<ul style="list-style-type: none"> Worker's health and safety COVID-19 spread Environmental/social conflict, law and order problems Accident Risks from heavy moving machinery, working from heights 	<ul style="list-style-type: none"> Provide proper worker's camp with amenities Provide access to toilets or construct prefabricated/pit toilets Training (incl. COVID-19 precautions) and administration Priorities safety on site, illuminate well if working at night Provide helmets, safety shoes and other personal protective equipment (PPE) for workers by relevant accident prevention and work safely procedures
14	Base Camp for Site Workers ESS2, ESS4	<ul style="list-style-type: none"> Environmental/social conflict, law and order problems 	<ul style="list-style-type: none"> Proper worker's camp with adequate amenities Provide access to toilets or construct prefabricated/pit toilets Training and administration, Priorities safety on site, illuminate well if working at night
15	Site Security ESS2, ESS4	<ul style="list-style-type: none"> Breach of the security fence and scavenging by unprotected persons 	<ul style="list-style-type: none"> Ensure secure fencing and security patrols
16	Discharge from Construction, Utilities, Human Activities ESS3, ESS6	<ul style="list-style-type: none"> Water and soil pollution Reduced water quality-oil, grease, and hydraulic fluid spills Litter-waste disposal 	<ul style="list-style-type: none"> Implement strict chemical and solid waste handling and storage practices to prevent accidental spillage Prevent discharge of fuel, lubricants, chemicals, wastes, etc. into surface waters Provide secure containers for disposal at the designated area Keep camps in good order. Clean up litter and other inappropriate waste as the operation moves forward
17	Water pollution and wastewater treatment ESS3, ESS4, ESS6	<ul style="list-style-type: none"> Prohibition of water uses for intended purposes 	<ul style="list-style-type: none"> Steps will be taken to prevent water pollution by construction (solid) wastes through proper waste management STP should be constructed for the treatment of domestic wastewater as well as sludge treatment. Minimize the use of groundwater
		<ul style="list-style-type: none"> Prohibition of water uses for intended purposes Causes water-borne diseases 	<p>During Operation</p> <ul style="list-style-type: none"> Construction of separate sewerage system Sewage Treatment Plant (STP) with sludge treatment (dewatering and stabilization) Regular monitoring of water quality
18	Air Pollution ESS2, ESS3, ESS4	<ul style="list-style-type: none"> Respiratory diseases Effect on vegetation 	<p>During Construction</p> <ul style="list-style-type: none"> Control of emission of fugitive dust by wetting the subsoil Use of less smoke producing motor vehicle Use sanitary latrine and improved septic tank
			<p>During Operation</p>

Sl. No.	Category of Impacts & ESS	Significant Environmental and Social Impacts	Recommended Mitigation Measures
		<ul style="list-style-type: none"> Respiratory diseases 	<ul style="list-style-type: none"> Source control of air pollution (e.g. generators) Regular maintenance of air conditioning units, which are energy efficient and minimal greenhouse gas emissions Regular air quality monitoring Prohibition of black smoke producing by car
19	Noise ESS2, ESS4, ESS6	During Construction	
		<ul style="list-style-type: none"> Extensive noise from IC engine, drill and welding machines and heavy vehicles 	<ul style="list-style-type: none"> Use of new machines and engines Provide ear protection devices to the workers
		During Operation	
		<ul style="list-style-type: none"> Noise from vehicle, generators, etc. Noise from meeting, conference, concert, etc. 	<ul style="list-style-type: none"> Prohibition of using the hydraulic horn of vehicles Use of sound barriers/dampeners near generators Prohibition of noise producing mike and speakers
20	Solid and Hazardous Wastes ESS2, ESS3, ESS4, ESS6	<ul style="list-style-type: none"> Water, air and land pollution Cause diseases to man and other lives 	<ul style="list-style-type: none"> Implementation of improved waste management systems Setting up of separate waste collectors at different points Regular cleaning and replacing of waste collectors Waste disposal and incineration at a safe place
21	Solid Waste Generation and Disposal ESS2, ESS3, ESS4, ESS6	<ul style="list-style-type: none"> Public health, eyesore, odour Disease vector proliferation, sanitary problems 	<ul style="list-style-type: none"> Propose for adequate solid waste collection and disposal system Dispose of appropriately and routinely to municipal authority
22	Sewage Generation and Discharge ESS2, ESS3, ESS4, ESS6	<ul style="list-style-type: none"> Public health and sanitary problems from improper disposal Contamination of receiving waters if not properly treated 	<ul style="list-style-type: none"> Adequate sanitary facilities away from drainage streams Rent toilets with disposal schemes during construction period Maintain and monitor performance of STP and sludge treatment unit (operation phase)
23	Wastewater Generation and Discharge ESS2, ESS3, ESS4, ESS6	<ul style="list-style-type: none"> Pollution on surface waters, turbidity from various operations Ground and surface water deterioration 	<ul style="list-style-type: none"> Install drainage, sediment silt traps, and oil interceptors Dispose of wastewater, lubricating/fuel oils to secure landfill Prevent discharge of fuel, chemical waste, untreated wastewater, and other construction materials into surface waters Reuse treated wastewater from STP (operation phase). STP must include sludge treatment unit.
24	Flood ESS3, ESS4	<ul style="list-style-type: none"> Landslide 	<ul style="list-style-type: none"> Increase the water storage capacity of the adjacent lake by dredging Ensure proper drainage routes in hill slopes

Sl. No.	Category of Impacts & ESS	Significant Environmental and Social Impacts	Recommended Mitigation Measures
25	Land Use ESS3, ESS4, ESS6	<ul style="list-style-type: none"> Hill cutting and filling Tree cutting 	<ul style="list-style-type: none"> Minimize the use of land and less hill profiling through proper planning made by highly qualified planners and designers Re-vegetation for increase scenic beauty
26	Habitat and Species ESS6	<ul style="list-style-type: none"> Disturbance to the existing species and population Replacement of existing species and population to the other places 	<ul style="list-style-type: none"> Making conservation area for species and population Protection of habitats Awareness building to protect the different lives
27	Socio-economic Issues ESS2, ESS4, ESS5	<ul style="list-style-type: none"> Social issues 	<ul style="list-style-type: none"> Employment opportunities for the local people Awareness building on different social issues
28	Utilities and Services ESS2, ESS3, ESS4	<ul style="list-style-type: none"> Water, gas, electricity, roads, transports, etc. Medical 	<ul style="list-style-type: none"> Use of groundwater and surface water in sustainable manner Gas line connection from the adjacent area Electricity supply from the area and set up its own generator to meet the excessive demand Road construction by own finance Provide own transport services for the students, staff, and teachers Own medical center with qualified doctors Use of energy efficient and low carbon footprint air conditioning systems
29	Road and Traffic ESS2, ESS3, ESS4	<ul style="list-style-type: none"> Road construction Traffic management 	<ul style="list-style-type: none"> Construction of developed roads through proper planning by financing from own source of AUW Contractor to prepare Traffic Management Plan Traffic management by own trained staffs during operation phase
30	Traffic Volume ESS2, ESS4,	<ul style="list-style-type: none"> Road traffic related hazards at crossing points 	<ul style="list-style-type: none"> Raise on-site awareness regarding traffic safety Provide signals at main gates and at crossing points of the roads.
31	Impacts of business and livelihood ESS4, ESS5	<ul style="list-style-type: none"> Shops beside the road outside of the main gate of the University campus maybe affected due to the establishment of the campus. Although some shops are situated beside roads and minimum 100 feet away from the proposed University main gate 	<ul style="list-style-type: none"> University authority will not force shopkeepers to leave their place or relocate from their present place and will help them to run their as usual business. Moreover, their sale will increase due to the presence of different types of people in university during the implementation and operational period
32	Indigenous community/people development ESS7	<ul style="list-style-type: none"> No indigenous community will be impacted directly but there is a possibility to attend this university to gain higher study 	<ul style="list-style-type: none"> Infrastructure development should be in a way that ensures respect to the culture for ethnic or indigenous communities Proper awareness and dissemination of information must be done to share opportunities with them To eradicate difficulties in the perspective of language barriers, a basic course on English can be conducted in the first semester of the graduation program

Sl. No.	Category of Impacts & ESS	Significant Environmental and Social Impacts	Recommended Mitigation Measures
			<ul style="list-style-type: none"> Proper interaction with students from ethnic communities with university authorities might be done The quota for the students from ethnic communities must be confirmed Financial support such as a waiver or monthly stipend will be provided
33	Impact due to drug addiction problem ESS4	<ul style="list-style-type: none"> Students, staffs, and workers (during the construction period) might be affected due to the use of illegal drugs though drug addiction incidents are quite higher in the community 	<ul style="list-style-type: none"> Awareness program on impacts of drug addiction will be conducted with the students and communities Proper monitoring will be ensured surrounding the university area University authority must be alert about this issue so that students of this university would not be affected by the problem University authority will try to control the business of illegal drugs through initiating proper ways with the help of community people, political personnel and local administration by advocacy and awareness building program
34	Migration in community level ESS4, ESS5	<ul style="list-style-type: none"> From qualitative study on community people, indicates that land price and rent of flat maybe increased due to implementation of the university. In this case, low income people may migrate from their present location to others 	<ul style="list-style-type: none"> Establishment of low-cost housing in the community might solve this problem After establishing AUW campus, income generating options will be increased which may create opportunities for low income people of the area
35	Perception of local people about the project ESS4, ESS10	<ul style="list-style-type: none"> Survey study found that around one fourth of the community people perceive that the project will not be completed due time. It creates a negative impression about the university 	<ul style="list-style-type: none"> More information dissemination activities i.e. meeting, seminar, advertisement, billboard etc. will be arranged with community people and other stakeholders; so that they will know about the project progress and future success of the university
36	Impact on the peaceful atmosphere of the area ESS4	<ul style="list-style-type: none"> Peaceful atmosphere may be disturbed due to the construction period After establishing the university campus here, crowd and movement of the people might be increased Noise from large generators can disturb neighbours Road communication system may be developed for which vehicle movement, garage and noise may be increased 	<ul style="list-style-type: none"> Proper measures will be taken to reduce the noise during construction period especially during night Noise level (e.g. from large generators) may be controlled at a level following the guidelines of World Bank and Department of Environment through ensuring proper sound barriers and dampening measures Road guidelines and safety road transport facility will be ensured through participation of community people and local authority

Sl. No.	Category of Impacts & ESS	Significant Environmental and Social Impacts	Recommended Mitigation Measures
37	Impact on water source and supply in the community ESS3, ESS4	<ul style="list-style-type: none"> No visible impact to water sources and supply in the community because the University will use different sources such as, CWASA, rain water harvesting, recycled water, etc. 	<ul style="list-style-type: none"> University authority will ensure their water requirement through supply water provided by CWASA, rainwater harvesting, recycled water. Groundwater will be used in construction phase for non-drinking purposes. Precautions should be taken to prevent spills, and all workers should be trained in the proper handling, storage, and disposal of hazardous or toxic materials during implementation period so that the ground and surface water sources will not be contaminated Regular segregation of all waste oils and lubricants from maintenance of construction equipment and dispose of these wastes properly during construction period to be ensured A proper sewage treatment system can be employed to treat sanitary wastes. Under no circumstances should untreated sewage be discharged into local water courses Proper drainage system will be ensured inside and outside of the university campus project authority will control waste water during construction and operation periods STP will be established in the campus. STP must include sludge treatment (dewatering and stabilizing) facilities
38	Impact on hill in the campus site ESS3, ESS6	<ul style="list-style-type: none"> Small scale adjustment with hill will be occurred in the project location 	a) Project design will incorporate in a way that minimal damage of hill might be occurred due to construction of AUW campus
39	Impact on road communication to the local community ESS4	<ul style="list-style-type: none"> Road communication may be restricted 	b) No visible impact on the community people to travel from one place to another around the project area as a new road has been constructed
40	Expansion of social crimes ESS4	<ul style="list-style-type: none"> Safe movement of students, university faculty and staffs may be hampered Stealing from university hall may be occurred 	<ul style="list-style-type: none"> A boundary wall or fencing will be constructed around the university Security and monitoring will be ensured over the university campus under a structured approach e.g. monitoring at different points of the university, establishing CCTV surveillance system over the full campus area
41	Impact on access restriction of stakeholders ESS5	<ul style="list-style-type: none"> Easy access to the campus will be restricted 	<ul style="list-style-type: none"> As a specialized university restriction must be applied to ensure safety of female students, however stakeholders may be allowed to visit the campus with permission of authority

Sl. No.	Category of Impacts & ESS	Significant Environmental and Social Impacts	Recommended Mitigation Measures
42	Occupational Health and Safety Hazard ESS2	<ul style="list-style-type: none"> ▪ Accidents and injuries associated with the operation of heavy machinery and other construction activities ▪ Health impacts associated with environmental conditions and changes in environmental quality, arising from emissions of air, water pollution and noise generation from construction activities as well as from storage and handling of waste, particularly hazardous waste ▪ Improper disposal of demolition waste and obsolete machinery will lead to contamination of soil, water, and discontent of community ▪ Demolition activity is anticipated to generate dust and exhaust emissions which can be carried downwind to habitations • Risks associated with health and safety issues such as trip and fall, electrical hazard etc.; • COVID-19 spread 	<ul style="list-style-type: none"> ▪ A Community Health & Safety Plan will be required from contractors, which will also include procedures on incident investigation and reporting, recording and reporting of non-conformances, emergency preparedness and response procedures and community awareness raising activities. Provision should be made for contractors to make arrangements of adequate cautions and warning signs for the potential risks in the site. Any accidents or fatalities on either of the sites should be responded on an emergency basis and will have to be immediately reported to AUW, UGC and the Bank team. ▪ The workers (both regular and contractual) on the project will be provided with training on the Health and Safety policy in place, and their role in the same and refresher courses will be provided throughout the life of the project ▪ Operation of loading-unloading equipment should be undertaken under the guidance/supervision of trained professional ▪ Child labor during the project construction should be prohibited ▪ Adequate training should be provided to staff about raising awareness about use of Personal Protection Equipment (PPE) and emergency response measures ▪ Safety sign should be marked at appropriate places ▪ Excessive waste debris and liquid spills will be cleaned up regularly ▪ Dismantling activities will be taken care of by experienced professionals under the guidance of plant EMS Head ▪ The metal structure will be sold out to the approved recyclers, whereas, debris will be disposed-off as per their characteristics ▪ All waste generated from decommissioning period shall be collected and disposed of at the nearest identified disposal site • All necessary Personal Protection Equipment (PPE) shall be used by the workers during demolition work • COVID-19 awareness and training will be conducted

Sl. No.	Category of Impacts & ESS	Significant Environmental and Social Impacts	Recommended Mitigation Measures
43	Gender based violence and vulnerability ESS2, ESS4	<ul style="list-style-type: none"> ▪ Women and girl' workers may face Physical and mental harassment during construction period ▪ Female teachers, students and staffs may face physical and mental harassment during operational period • Female workers and women from community may face physical and mental harassment during decommissioning period 	<ul style="list-style-type: none"> ▪ Train supervisors, managers, teachers and staffs ▪ Adopt a clear sexual harassment policy ▪ Ensure regular monitoring ▪ Take complaint seriously ▪ Take action to eliminate discriminatory jokes, posters, graffiti, and photos at the work site ▪ Ensure proper and effective implementation of the grievance mechanism ▪ Increase awareness about gender-based violence among students ▪ Discussion program among teachers, students, parents, local representatives, and other stakeholders ▪ Ensure proper and effective implementation of the grievance mechanism

The estimated budget for mitigation measures in the construction phase is provided in the table below. The total for the 4.5 yrs is Thirty-three Crore Sixty-six Lac Seventy thousand BDT (336,670,000 which is equivalent to USD 3,960,824).

Table 95: Budget for Mitigation Measures during Construction Phase

Sl. No.	Mitigation Measure	Cost (BDT)	Cost (USD)	Mitigation Measure Sl. No.
1	Provide adequate stabilization protection works against the lake erosion and sedimentation according to design	118,624,000	1,395,576	10.01
2	Afforestation program for medicinal for research, fruits, and timber tree replacement	30,000,000	352,941	10.01
3	Moisten surfaces to reduce dust dispersion, sediment traps, strip buffers	500,000	5,882	10.02
4	Provide awareness and notify potentially affected parties of project activities	100,000	1,176	10.03
5	Provide adequate culverts for drainage rail embankments and other areas to allow free movement of water	65,496,000	770,541	10.09
6	Control speed within site, maintain vehicles, wet surfaces, install water troughs for vehicles at exits, water spray on the roads	450,000	5,294	10.10
7	Setup warning sign, label, and signals at appropriate locations	100,000	1,176	10.10
8	Cover stockpiles, moisten surfaces	500,000	5,882	10.10
9	Enforce safety measures, signpost warnings, use barricades	100,000	1,176	10.10
10	Dispose of debris accordingly	2,250,000	26,471	10.11
11	Construction of sound barrier walls if near schools, mosques and other institutions	80,000,000	941,176	10.11
12	Provide access to toilets or construct prefabricated/pit toilets	100,000	1,176	10.13
13	Training (incl. COVID-19 precautions) and administration	450,000	5,294	10.13
14	Provide helmets, safety shoes and other personal protective equipment (PPE) for workers by relevant accident prevention and work safely procedures	200,000	2,353	10.13
15	Prevent discharge of fuel, lubricants, chemicals, wastes, etc. into surface waters	2,250,000	26,471	10.16

Sl. No.	Mitigation Measure	Cost (BDT)	Cost (USD)	Mitigation Measure Sl. No.
16	Provide secure containers for disposal at the designated area	2,250,000	26,471	10.16
17	STP should be constructed for the treatment of domestic wastewater.	10,000,000	117,647	10.17
18	Minimize the use of groundwater	1,000,000	11,765	10.17
19	Provide ear protection devices to the workers	100,000	1,176	10.19
20	Regular cleaning and replacing of waste collectors	100,000	1,176	10.20
21	Gas line connection from the adjacent area	2,000,000	23,529	10.28
22	Electricity supply from the area and set up its own generator to meet the excessive demand	10,000,000	117,647	10.28
23	Road construction by own finance	10,000,000	117,647	10.28
24	Provide signals at main gates and crossing points of the road.	100,000	1,176	10.30
	Estimated total budget for construction period	336,670,000	3,960,824	

Note: Estimate to be finalized during detailed design stage.

The estimated budget for mitigation measures in the operation phase is provided in the table below. The total annual cost is Fourteen Lacs and Fifteen Thousand BDT (1,450,000 which is equivalent to USD 15,882/yr).

Table 96: Budget for Mitigation Measures during Operation Phase

Sl. No.	Mitigation Measure	Cost (BDT)	Cost (USD/yr)	Mitigation Measure Sl. No.
1	Maintenance of plants on slopes	200,000	2,353	10.05
2	Maintenance of slope 1:2	300,000	2,353	10.05
3	Dredging of the lake after sedimentation or filled the lake	100,000	1,176	10.08
4	Drain clearing	100,000	1,176	10.09
5	Replacement helmets, safety shoes and other personal protective equipment (PPE) for staff/workers	100,000	1,176	10.02
6	Maintenance of Sewage Treatment Plant (STP)	150,000	1,765	10.17
7	Control of emission of fugitive dust by wetting the soils	100,000	1,176	10.18
8	Regular cleaning and replacing of waste collection bins	100,000	1,176	10.2
9	Waste disposal and incineration at a safe place	100,000	1,176	10.2
10	Maintenance of sediment silt traps and oil interceptors	100,000	1,176	10.23
11	Traffic Safety Awareness Raising campaign	50,000	588	10.29
12	Regular training of onsite staff/workers	50,000	588	10.42
	Estimated total budget for operation period	1,450,000	15,882	

10.2 Environmental and Social Monitoring Plan

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

- To check on whether mitigation and benefit enhancement measures are being adopted and are providing effective in practice
- To provide a means whereby impacts are subjected to uncertainty at the time of preparation of ESMP, or which were unforeseen, can be identified, and steps to be taken to adopt appropriate control measures.

- To provide information on the existing natural phenomena and extent of key impacts and the effectiveness of the mitigation measures via a feedback mechanism, that can help to take account in the planning and execution of similar projects in future.

There are two basic forms of monitoring:

- Visual observation or checking, coupled with inquiries
- Physical measurement of selected parameters

In the said project in general, the monitoring will be conducted considering physical measurement of some selected parameters like air, water (drinking and surface), wastewater, noise, solid waste, liquid waste, sludge etc. in accordance with compliance to national environmental standards. In some cases, WHO & IFC guideline will also be followed.

The importance of this monitoring program is to ensure that the project does not create adverse impact on surrounding environment and provide a database of operations and maintenance, that can be utilized if unwarranted complaints are made. Where there may be excess dust and noise issue, ad hoc monitoring should be initiated at the problem locations. In case of infringement of regulatory levels, the monitoring results can be used to get the contractors to remediate / mitigate the problems. The results can also be used to resolve stakeholders' disputes.

Table 97: Monitoring Plan for Proposed Developments

Sl. No	Attributes	Stage	Parameters to be Monitored	Frequency	Responsibility
1	Air Quality at hot spots	Construction Stage	PM ₁₀ , PM _{2.5} , NO _x , SO ₂ , and CO	Monthly (dry season) for the entire construction period	Contractor to be monitored through approved Monitoring Agency and PIC (AUW and SC)
				Ad hoc (Daily)	AUW using handheld devices
2	Noise Levels at hot spots	Construction Stage	Equivalent Day & Night Time Noise Levels	Monthly	Contractor to be monitored through an approved monitoring Agency and PIC (AUW and SC)
				Ad hoc (Daily)	AUW using handheld devices
		Operation Stage	Quarterly	AUW	
3	Water quality	Construction stage	pH, TDS, TSS, Hardness, BOD and Fecal Coliform, Fe and As.	Monthly (pre-monsoon and post monsoon) for the entire period of construction	Contractor to be monitored through an approved monitoring Agency and PIC (AUW and SC)
				Ad hoc (Daily)	AUW using handheld devices
5	Adequacy of solid waste management systems and	Post Construction Stage & Operation stage	Functionality of composting of kitchen waste and treated wastewater	Before, during and after the monsoons, annually for three	AUW

Sl. No	Attributes	Stage	Parameters to be Monitored	Frequency	Responsibility
	STP		quality monitoring before disposal	years. Effluent from the mini STP should be monitored daily for the first 3 months or until the plant operation and effluent quality has stabilized. There after monitored once a week.	
6	Survival Rate of Plantation and landscaping	Operation Stage	Survival Rate of Proposed roadside plantations	Twice a year till the trees reach a minimum height of 2m	AUW
7	Gender equity and Sexual harassment	Construction, Operation and decommissioning stages	<ul style="list-style-type: none"> • Responses of worker during construction and decommissioning stage • Responses of students and female teachers, staffs during implementation phase • Number of cases reported to project implemented authority, UGC and WB 	Twice a year	<ul style="list-style-type: none"> • Contractor and GRC during construction period and decommissioning phase • University authority and teachers during operation stage
8	Social issues e.g. social crime, drug addition	Construction, Operation and decommissioning stages	<ul style="list-style-type: none"> • Practical observation through physical movement <ul style="list-style-type: none"> - Responses of students and people from local communities 	Twice a year	<ul style="list-style-type: none"> • Contractor • Project engineer, • Local police, • University authority
9	Gender action plan	Construction, Operation and decommissioning stages	<ul style="list-style-type: none"> • Number of training • Number of awareness program • Number of beneficiaries • Number of women employees during construction and implementation period • Assessment of effectiveness of programs 	Twice a year	<ul style="list-style-type: none"> • PIA and other stakeholders

Sl. No	Attributes	Stage	Parameters to be Monitored	Frequency	Responsibility
10	Students from ethnic community	Operational stage	<ul style="list-style-type: none"> Number of beneficiaries <ul style="list-style-type: none"> - Number of scholarship and other forms of financial support 	Once a year	<ul style="list-style-type: none"> AUW authority
11	Disable and vulnerable students	Operational stage	<ul style="list-style-type: none"> Number of beneficiaries <ul style="list-style-type: none"> - Number of scholarship and other forms of financial support 	Once a year	<ul style="list-style-type: none"> AUW authority

Table 98: Monitoring frequency during STP Construction & Operation

Environmental component/ Types of monitoring	Parameters	Location	No. of Samples	
			First 3 months of STP Operation	After Stabilization of STP Effluent Quality
Treated Wastewater	pH, DO, BOD, COD, TDS, Fecal Coliform and TSS.	At the outlet of Sewage Treatment Plant (STP)	12	12

10.3 Budget for Environmental and Social Monitoring Plan

The estimated budget for environmental and social monitoring is given below:

Table 99: Budget for Professional Involvement during Construction Period

Item No.	Designation of the professionals	Man month	Salary per month (BDT)	Total amount (BDT)	Total amount (USD)
1	Environment Specialist	54	180,000.00	9,720,000	114,352
2	Social Specialist	54	150,000.00	8,100,000	95,294
3	Labour & OHS Specialist	54	150,000.00	8,100,000	95,294
4	Gender Specialist	54	150,000.00	8,100,000	95,294
	Total	216	-	34,020,000	400,234

Note: Exchange rate @ 1 USD = 85 BDT.

Table 100: Environmental Monitoring & Social Risk Management Implementation Costs (Construction)

Component	Item	Unit Cost (BDT)	Quantity (Yearly)	Total Costs (BDT)	Total Cost (USD/yr)
Environmental Monitoring					
Infectious Diseases	Testing of workers	25,000	2	50,000	588
Air Pollution	Measurement of PM ₁₀ , PM _{2.5} , NO _x ,	75,000	2	150,000	1,765

Component	Item	Unit Cost (BDT)	Quantity (Yearly)	Total Costs (BDT)	Total Cost (USD/yr)
	SO ₂ , CO (2 locations)				
Water Quality	Measurement of pH, EC, Turbidity, DO, Fecal Coliform, BOD, NH ₄ N, Oil and Grease	15,000	10	150,000	1,765
Noise	By Third Party	5,000	12	60,000	706
Drinking Water supply	pH, TDS, Fecal coliform	5,000	12	60,000	7059
Reporting on Environmental & Social Monitoring	Quarterly Monitoring Report	75,000	4	300,000	3,529
Sub-total				1,310,000	15,412
Social Risk Management and Implementation					
Awareness Building (arranging workshop), social issues, road safety, etc.	Workshop and rally	200,000	1	200,000	2,353
Information dissemination about gender-based violence, project implementation, drug addiction, etc.	Bill Board	200,000	1	200,000	2,353
Information dissemination to increase awareness on different social issues	Poster, Booklet, Brochure for social issues	100,000	1	100,000	1,176
Tribal people interaction and dissemination	Tribal people interaction and dissemination	100,000	1	100,000	1,176
Gender Action Plan for reducing gender and sexual based violence, social crime and increasing employment opportunities and capacity building	Training, workshop, rally, campaign, advocacy	200,000	1	200,000	2,353
Sub-total				800,000	9,412
Grand Total (per year of Construction)				2,110,000	24,824

Table 101: Annual Environmental Monitoring & Social Risk Management and Implementation Cost (O&M)

Sl. No.	Component	Items / Parameters	Rate in BDT	Quantity (yearly)	Total Amount in BDT/yr	Total Amount in USD/yr
1	Drinking water	pH, DO, TDS, Salinity, EC, Fe, Fecal coliform	10,000	4	40,000	471
2	Surface water	pH, TDS, EC, TSS, DO, BOD, COD	12,000	4	48,000	565
3	Ambient Air Quality	PM _{2.5} , PM ₁₀ , NO _x , SO ₂ , CO, O ₃	80,000	4	320,000	3,765
4	Noise Level	dBA	5,000	4	20,000	235
5	Awareness Building (arranging workshop), social issues, road accidents, etc.	Workshop and rally	100,000	1	100,000	1,176
6	Information dissemination about gender-based violence, project implementation, drug addiction	Billboard	100,000	1	100,000	1,176
7	Information dissemination to increase awareness on different social issues	Poster, Booklet, Brochure for social issues	100,000	1	100,000	1,176
8	Tribal people interaction and dissemination	Meeting, advocacy, campaign	100,000	1	100,000	1,176
9	Gender Action Plan for reducing gender and sexual-based violence, social crime and increasing employment opportunities and capacity building	Training, workshop, rally, campaign, advocacy	100,000	1	100,000	1,176
10	Annual Monitoring Report preparation		1	50,000	50,000	588
	Total Amount (per year of Operation)				978,000	11,560

Note: Monitoring locations: 1. Drinking Water-Hostel, administrative building, teachers' quarters, dormitories, 2. Surface water- Outlet of the drain, near ditches, 3. Ambient air quality & noise quality- construction areas, near main gate of the campus and near administrative building.

10.4 Institutional Setting and Implementation Arrangements

10.4.1 Institutional Arrangements

UGC will be the executing agency (EA) responsible for overall guidance and project implementation of the WB funded construction works. Through a Project Director, UGC will implement the project investments and will be responsible for overall planning, management, coordination, supervision, and progress monitoring of the Project. The AUW will be responsible for day-to-day monitoring of project activities and will ensure compliance with the statutory and legal requirements of the Government, and WB. The AUW will prepare and submit an Environmental and Social Risk Management and Monitoring Reports as part of ESIA and Project Monitoring Reports to UGC and WB semi-annually. Figure 27 shows the organizational chart for updated ESIA implementation. Funds for the WB supported construction work will be managed by UGC and the academic building after completion will be transferred to AUW. UGC will be responsible and accountable for the procurement, contract management and supervision of two contracts: 1) consulting services contract for design, procurement support and construction supervision, and 2) the civil works contract for the Academic building. Hence, the contractual relationship under each of these contracts will be exclusively between the two parties to the contract, i.e. UGC and the consulting firm for design, procurement support and construction supervision, and between UGC and the construction contractor for the AUW academic building. AUW is responsible for providing quality assurance to campus design and construction, hence quality assurance of ESMP and mitigation measures implementation. UGC will hire a full time dedicated social Development specialist, an environmental specialist to monitor the construction of AUW infrastructure. These two specialists will work with AUW's environment department for the quality assurance of ESMP and mitigation measure implementation for the construction of infrastructure and all other activities implemented by AUW. UGC will also ensure similar expertise are included in the Design & Supervision firm. UGC, the key implementing agency and AUW, the quality assurance entity of design and construction, both will be responsible for the environmental and social compliance relevant to AUW campus related construction works. AUW will deploy 01 Gender and GBV specialist from the Gender department of AUW-responsible for implementing the GBV and Gender actions plans for the AUW related component/sub-components with the direct supervision of Gender and GBV specialist of the PIC.

10.4.2 Implementation of Environmental and Social Management Plan (ESMP)

The contractor is to be responsible for implementation of ESMP and it will be part of the contractor's agreement. All cost for implementing ESMP will be the part of the civil works contract and to be quoted by the contractor in their proposal as per this ESIA.

The Environment Department of AUW will be responsible for the quality assurance of the environmental and social compliance of construction works.

UGC will hire an Environment Specialist who will be responsible for assuring the ESMP and environmental mitigation implementation for the AUW campus infrastructure construction and for all other activities implemented by the AUW. S/he will work closely with the environment department of AUW and will report to UGC.

A Social consultant/ specialist will be hired by UGC who will be responsible for social compliance. Focal person from Gender department from AUW will be responsible to implement GBV and Gender actions plans for the AUW related component/sub-components.

The bid documents will be concurred by the World Bank to ensure the incorporation of the World Bank ESF requirements.

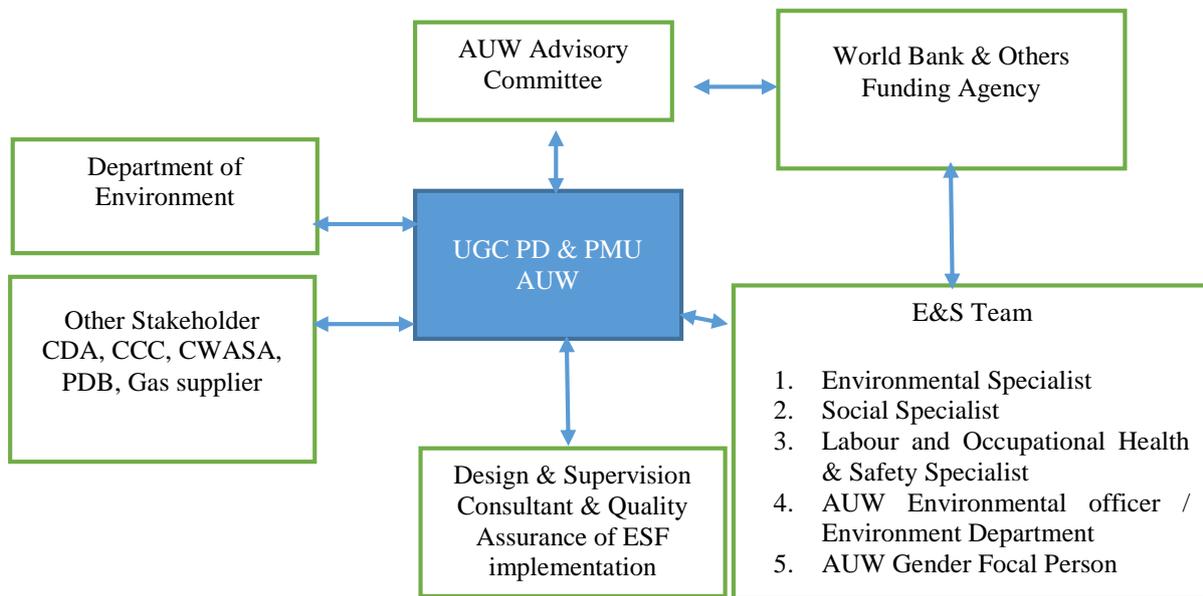


Figure 24: Organization Chart for ESIA Implementation

Roles and responsibilities of the concerned professionals/personals to implement the ESIA in the project during construction period are outlined in the table below.

Table 102: Roles & Responsibilities for Implementation of Environmental & Social risk management

Sl. No	Position	Responsibilities
1	UGC Project Director	<ul style="list-style-type: none"> • Overview of the A UW Project’s compliance to World Bank’s and national laws and regulations on EHS Aspects • Ensure that the EHS requirements are integrated in the Project formulation, implementation and formulation e.g. bid documents and contract of all involved in the planning, construction, and operations of the roads • Ensure that sufficient funds are available for implementation of all agreed Environmental and Social risk management measures. • Review of environment and social monitoring and audit findings and grievances • Submit quarterly risk management monitoring reports to UGC and the Bank and its closure. • Review of the annual environmental audit and approve any changes in the ESIA and ESMP if any new or unanticipated impacts occur during project implementation due to design change or other reasons • In case of significant new or unforeseen impacts, immediately inform Bank to make a decision on the same as well as updating relevant project reports.
2	UGC Environmental Specialist	<ul style="list-style-type: none"> • Ensure that A UW Projects meets the statutory and Bank’s requirements; • Monitoring for air quality, noise and water quality on daily basis using portable, hand held, monitoring meters • Recommend for approval to PMU all documents and ensure that design and documents include all relevant EHS risk management; • Recommend for approval to PMU the Contractor’s ESMP after approval of the Environmental Engineer of the PMC; • Review the environmental performance of the project through Monthly Reports and Monthly Environmental Audits reports submitted by the Project Management Consultants and report to the PD; • Carry out quarterly environmental audits and report back to the management

Sl. No	Position	Responsibilities
		<ul style="list-style-type: none"> Review Corrective Action Plan for closure of monitoring non-compliances and Environmental Audit Findings Overall coordination and management of environmental risk management through PIA supported by Design and Supervision Consultants Review and action on all grievances related to environment through the Grievance Redress Mechanism. Prepare the Annual risk management Monitoring Reports to the Management for review and onwards submission to UGC and the Bank; Review of all the finding in the monitoring and auditing report and ensuring corrective action are implemented so that it does not reoccur; Updating of the ESMP if any new or unanticipated environmental impacts occur during project implementation due to design change or other reasons Organize training for Capacity building of the PMU and the PIA for effective implementation of safeguard requirements
3	UGC Social Specialist	<ul style="list-style-type: none"> Ensure that AUW Projects meets the statutory and Bank's requirements; Recommend for approval to PMU all documents and ensure that design and documents include all relevant Social Safeguards; Review the social performance of the project through Monthly Reports and report to the PD; Review Corrective Action Plan for closure of monitoring non-compliances; Overall coordination and management of social risk management through PIA supported by Design and Supervision Consultants; Review and action on all grievances related to social issues through the Grievance Redress Mechanism; Prepare the Annual Safeguards Monitoring Reports to the Management for review and onwards submission to UGC and the Bank; Review of all the finding in the monitoring and auditing report and ensuring corrective action are implemented so that it does not reoccur; Updating of the ESMP if any new or unanticipated social impacts occur during project implementation due to design change or other reasons; Organize training for Capacity building of the PMU and the PIA for effective implementation of risk management requirements.
4	UGC Labour and Occupational Health and Safety Officer)	<ul style="list-style-type: none"> Responsible for monitoring and assessing labour management issues, hazardous and unsafe situations and developing measures to assure site safety. Correct unsafe acts or conditions or stop unsafe acts when immediate action is required Inspect construction camps and worksites to identify potential hazards unsafe works and reporting the findings with recommendations for Corrective Action. Report back to the PIA and PMU on follow-up actions Reduce or eliminate work-related accidents which may occur through <ul style="list-style-type: none"> Usage of faulty equipment and electrical cord extensions trenching and excavating working at height, elevated surfaces, and night time. In case of an accident, the safety officer will conduct a safety investigation to determine root causes, what procedures may have gone wrong, and gather the evidence necessary to identify the cause of the accident. Based on investigation results, the safety officer will document findings and recommendations that would be followed to prevent the accident from happening again. The safety officer is also responsible for reviewing and meeting all state and national safety standard requirements for record-keeping. The safety officer

Sl. No	Position	Responsibilities
		<ul style="list-style-type: none"> also submits a record of all injuries that resulted in lost work time, restricted duties or job transfers. • Guide the Contractor to develop safety management systems like work permits, close-out and tag-out procedures etc. • Carry out periodic health and safety training / refresher training on Health & Safety; • Assist the PIA & PMU in making reporting the performance of the project.w.r.t safety to the Management. • Carry out induction and refresher training of PMU and PIA contractor on Occupational Health and safety aspects;
5	AUW Environment Officer	<ul style="list-style-type: none"> • Preparation of all applications including documentation required for statutory clearance. Assisting AUW in obtaining requisite clearances. • Review of all documents and ensure that design and documents include all relevant EHS Safeguards; • Monitoring for air quality, noise and water quality on daily basis using portable, hand held, monitoring meters • Compile and analyse all reports submitted by the Contractor; • Review the Contractor’s Environmental Management Plan and make necessary recommendations to PMU; • Carry out monthly environmental audits of the project components; • Preparation of the Corrective Action Plan for closure of the Environmental Audit Findings along with the PIA the Authority Engineer and the Contractor; • Assisting the Environment Specialist of the PMU in the discharge of their duties; • Carry out any specialized studies which would be required for the environmental safeguards e.g. rainwater harvesting, environmental enhancements, etc. • Assist the PMU to implement the process and procedures described in the Project Management Manual; • Capacity building of PIAs for effective implementation of ESMP; • Updating of checklists and reporting formats prepared by Authority Engineer for ESMP implementation.
6	AUW Gender Focal Person	<ul style="list-style-type: none"> • Ensure all applicable laws and regulations relating to gender issues are followed • Assist with resolution of grievances related to gender issues are properly resolved in a timely manner • Ensure project Gender Action Plan is properly implemented • Provide input to monthly, quarterly, annual reports as directed by PD and/or PIA.
7	Contractor (Environment, Health and Safety Officer)	<ul style="list-style-type: none"> • Ensure all applicable laws and regulations relating to environment, health and safety are followed • Ensure the reinstatement pathways, other local infrastructure to at least their pre-project condition upon the completion of construction; and • Ensure application of all Labor laws and standards related to: <ul style="list-style-type: none"> - prohibition of child Labor as defined in national legislation for construction and maintenance activities;

Sl. No	Position	Responsibilities
		<ul style="list-style-type: none"> - equal pay for equal work of equal value regardless of gender, ethnicity, or caste; - no discrimination in respect of employment and occupation; - allow freedom of association and effectively recognize the right to collective bargaining and - elimination of forced Labor; and with the requirement to disseminate information on sexually transmitted diseases, including HIV/AIDS, to employees and local communities surrounding the project sites.

10.5 Tribal/Small Ethnic Minorities and Vulnerable Peoples Development Plan

10.5.1 Development Plan for Students from Ethnic Communities

Although there are no ethnic communities' inhabitants present in the project location, but students from different ethnic communities may attend this university for higher study. Following aspects can be initiated to ensure the equal participation of students from ethnic communities:

- Infrastructure development should be in a way that ensures respect to the culture for ethnic or indigenous communities. For example, facilities for religious practice for them should be arranged inside the university premises.
- Ethnic communities may experience language difficulties, difficulties in accessing information; they may think that service-providers do not care about them, do not listen, or even are irrelevant to them. Proper awareness and dissemination of information must be done to share opportunities with them. Awareness of the availability of services and scopes needs to be raised among diverse communities. To eradicate difficulties in the perspective of language barriers, a basic course on English can be conducted in the first semester of the graduation program.
- Proper interaction with students from ethnic communities with university authorities might be done and, in that case, representative of different ethnic or indigenous people groups in Bangladesh can act as a focal point of those communities.
- The quota for the students from ethnic communities must be confirming the participation of them in the education program in AUW.
- Financial support such as a waiver or monthly stipend may be confirmed for ethnic students from university authority, which will ensure the participation of ethnic students.

10.5.2 Development Plan for Vulnerable Students

Physically challenged women students may attend this university for higher study. To ensure equal participation of physically and economically vulnerable students, the university authority will take the following aspects to ensure the equal participation of that group of students:

- University authority will develop a policy on vulnerable students to promote their development through consulting with other different stakeholders
- Facilities should be developed in a way that physically challenged students can get access to everywhere on the university campus. For example, infrastructure design should meet the need of physically vulnerable students, e.g. lift and ramp.
- To conduct awareness programs with teachers, staffs, and students of the university to sensitize them on students with physical challenge

- To ensure admission of differently-abled students through the open quota and allocate monthly stipend for them
- To assess the educational needs of differently abled persons enrolled in the university to determine the types of assistive devices to be procured

10.6 Waste Management Plan

Throughout the project, the emphasis will follow the principles of waste minimization to reduce the potential for waste impacts on the local and surrounding environment. These principles are illustrated in the figure below.

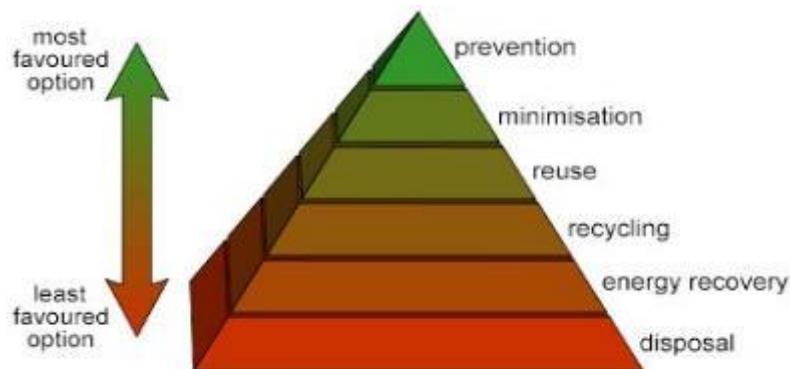


Figure 25: The Waste Hierarchy (Source: Wikipedia)

The waste minimization hierarchy will be implemented in this project in a manner consistent to the objectives outlined in the table below.

Table 103: Waste Management Objectives

Principle	Application in this Project
Prevent	Products and services to be utilized for this project will be assessed for their potential to generate waste. Those with a lower potential will be favored.
Minimize	If a product or service that produces more waste than the desirable limit and it must be used for particular reasons, than the use of that product or service will be minimized.
Reuse	No project materials with the potential to be reused will be disposed of after only single use.
Recycle	Where facilities are available, all recyclable domestic and office wastes generated by this project will be recycled.
Recover	Creation of facilities for energy recovery from waste products including that for waste gas to be encouraged. All other items that may be reused for energy or other purposes will be employed wherever possible.
Dispose	As a final resort waste will be disposed of. All waste disposed of will be done responsibly in approved landfills with necessary treatment.

10.6.1 Objectives

The Contractor will follow ESS3 and promote waste minimization by waste avoidance, reduction, reuse and recycling to the extent practical. Waste minimization is generally accomplished through the "4Rs" (reduce, reuse, recycle and recover).

The Contractor will produce a Waste Management Plan (WMP) describing the waste generated by project activities. This WMP will specify provisions for disposal, re-use or recycling of solid and hazardous waste.

10.6.2 Scope

The Contractor will ensure that all wastes (hazardous, non-hazardous and wastewater) are all disposed of in an environmentally sound manner.

The WMP includes actions to be taken by the Contractor's / Subcontractor's project personnel for the management and safe disposal of waste materials generated during construction. Specifically, the WMP will:

- list the different waste categories likely to be generated during the construction period;
- define their segregation methods;
- provide information on local waste transportation and disposal regulations and permit requirements;
- define responsibilities for waste management handling including safe disposal;
- comply with the Contractor's environmental requirements, policies and procedures and with environmental laws, rules, regulations applicable in Bangladesh regarding waste management.

The Contractor shall maintain labour camps and construction sites in clean and tidy conditions and shall provide appropriate and adequate facilities for temporary dumping of all types of wastes before their proper disposal.

Equipment, surplus material, and rubbish shall be removed, and the site will be left in a clean condition to the satisfaction of the Employer's representative after completion of construction activities. The Contractor shall be responsible for safe transportation and disposal of all types of wastes generated by construction activities in such a way that no environmental pollution or hazard to health is caused to workers or local people. In case the Contractor employs a third party to dispose of any wastes, the Contractor is considered to be responsible under this clause until the wastes leave the site. Contractor remains legally bound to exercise due diligence to ascertain that the proposed transport and disposal mechanism do not cause pollution or public health hazards.

The Contractor shall not allow waste oil, lubricant or other petroleum derivatives to be used as dust suppressants and shall take all reasonable precautions to prevent accidental spillage of petroleum products, contact of such materials with soil or watercourse through discharge, run-off, and seepage. Where practical, garbage and solid wastes generated in the project area will be converted into compost. Where this is not possible, they will be buried in designed landfill areas. Good construction practices and site management shall be adopted to avoid affecting soil and groundwater, and pollution of water bodies from accidental spills from fuels and lubricants, etc.

10.6.3 Waste Types and Quantities Generated

Where practical, garbage, kitchen waste and solid wastes generated in the project area will be converted into compost. Where this is not possible, they will be buried in designed landfill areas.

10.6.3.1 Construction stage

Construction stage wastes are the wastes that will generate from construction activities like site clearing, leveling, etc. Other categories of waste which be produced daily comprise of the following:

- Scrap metal;
- Food waste from kitchen premises of labor camps;
- Construction debris; and

- Sewage from temporary toilets;

The construction and decommissioning stages will require the use of hazardous materials such as diesel or petrol as fuel for equipment and vehicles. The following hazardous wastes will also be produced from construction activities.

- Oily rags;
- Used oil and oil filters - from generators or vehicle maintenance; and
- Scraps and packaging materials

10.6.3.2 Operation stage

The types of wastes generated during operation stage include:

- Solid wastes from offices, academic areas and residences;
- Food waste from kitchen premises;
- Lubricants and oils from generator; and
- Wastewater from kitchens, showers and toilets

10.6.4 Waste Handling, Management, and Disposal

The Contractor's Pollutant Spill Contingency Plan (PSCP) sets out the procedures for proper handling of pollutants and the procedures to be taken in the event of a spill. The purpose is to minimize the risk of spills during construction as well as to provide remedial actions.

10.6.5 Human Wastewater Management

Construction phase wastewater management is described in section 10.8.8. During operation stage, wastewater will generate at a volume of 25 m³/hr (500 m³/day) mainly from the domestic wastewater¹⁰. A central STP will be set up for treatment of the wastewater. The plant will be modular design so its capacity will be increased in stages as the campus population increases. The treated wastewater will be used for toilet flushing, gardening, and horticulture. There will be minimal impact on the canal adjacent to the AUW campus due to the STP operation. Sludge from the STP will be safely disposed safely with proper arrangements of local authorities (CWASA and CCC).

10.7 Occupational Health and Safety Plan

10.7.1 Purpose and Scope

The Occupational Health and Safety Plan (OHSP) is the overall framework which shall be implemented in order to avoid or minimize injuries, accidents or deaths during the construction works of AUW, Chattogram, Bangladesh.

10.7.2 Definitions

The AUW project itself along with its associated facilities including hill cutting, filling and dressing has to be designed to avoid or minimize impacts on the environment and people wherever practical. AUW would ensure implementation of mitigation measures to reduce negative environmental and social impacts on Health, Environment, and Safety, and would ensure the protection of health and safety of not only its operating personnel but also for that of the developer and its 3rd party service contractors

¹⁰ Wastewater generate 3,500 (2,500 Student + 250 access academy + Teacher 200 + staff 550) persons x 120 liter/person/day = 420 m³/day (21 m³/hr). Say 25 m³/hr.

as well as members of the neighboring public. A well-designed Operation Management System (OMS) inbuilt in the organizational set-up of AUW has provided a consistent delivery mechanism to address potential adverse impacts, to enhance project benefits and to introduce standards of good practice to be adopted for project activities.

10.7.3 Roles and Responsibilities

The Contractor/Subcontractor shall abide by the rules of regulation of the occupational health and safety as stipulated in the Labor Act 2006 and Bangladesh National Building Code (BNBC) of Bangladesh. The Contractor shall also abide by the clauses of ESS2 and health and safety in the clauses of the General Conditions of Contract and the subsequent Special Conditions of Contract of the bidding documents.

10.7.4 Creating and Maintaining a Safe and Healthy Work Environment

The PIA shall comply concerning the site and the construction works that are contemplated to follow ESS2:

- cause a preliminary hazard identification to be performed by a competent person before commencing any physical construction activity;
- evaluate the risks associated with such work constituting a hazard to the health and safety of such employees and the steps that need to be taken; and
- As far as is practicable, prevent the exposure of such employees to the hazards concerned or, where prevention is not reasonably practicable, minimize such exposure.

The client shall ensure that:

- all practicable steps are taken to prevent the uncontrolled collapse of any new or existing structure or any part thereof, which may become unstable or is in a temporary state of weakness or instability due to the carrying out of construction work; and
- no structure or part of a structure is loaded in a manner which would render it unsafe.

The client shall carry out regular inspections and audits to ensure that the works are being performed by the requirements of this specification.

10.7.5 Risk Assessment

In the process of the risk assessment, technical evaluation of facilities, construction, and operations are conducted to identify hazards and risks, establish qualitative/quantitative risk levels, and provide recommendations for cost-effective engineering and administrative controls to reduce risk and loss. The focus is primarily on the application of engineering techniques during the administrative building and facility design stage on recognized codes, standards practices and operational and administrative controls needed to reduce materials hazards and risk. All required codes, standards and practices should apply to the design and construction of new facilities. A review must be conducted when expansion or change occurs to an existing facility, equipment, construction technology, operating procedure or software program, which could result in exceeding the current design limits and/or increasing the risks associated with the building construction system in the hilly area beyond acceptable levels. Hazards and risks are identified and evaluated through the following steps:

A team of experienced operating and safety personnel will be involved in determining potential risks

- Identify major hazard scenarios
- Analyze their consequences (severity)
- Determine the probability of occurrence (likelihood)

The overall approach is summarized below:

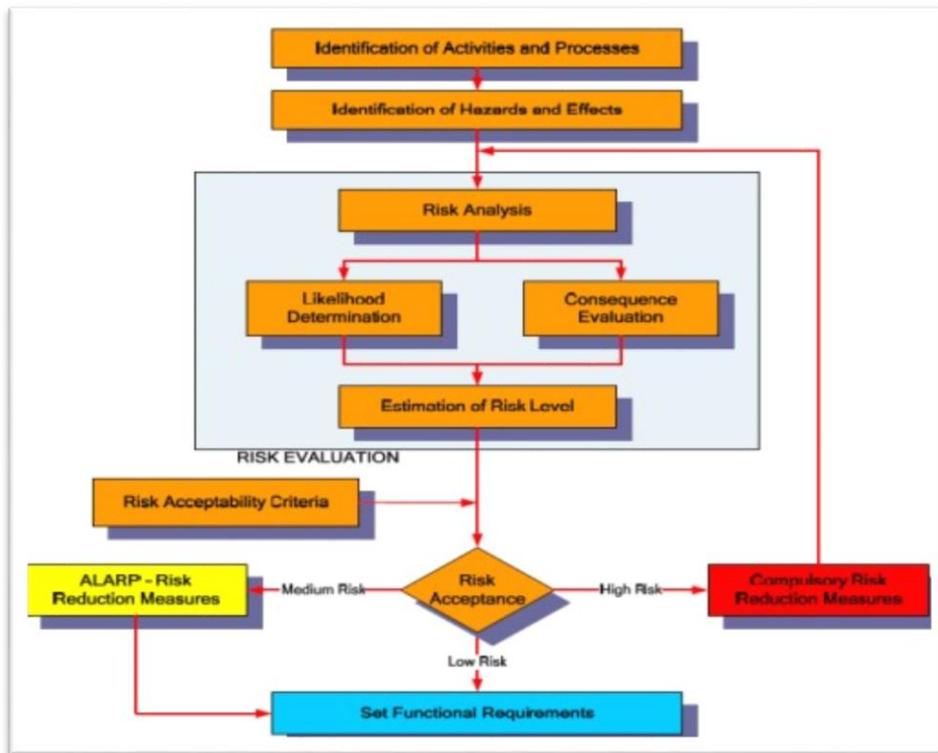


Figure 26: Risk Assessment Process

10.7.6 Training

A basic occupational health and safety training program and specialty courses should be provided, as needed, to ensure that workers are oriented to the specific hazards of individual work assignments. Training should generally be provided to management, supervisors, workers, and occasional visitors to areas of risks and hazards.

Initial safety training is required to inform the employees about the risk of the project. The orientation shall include the following:

- Specific job hazards
- COVID-19 precautions
- Safety precautions
- Job responsibilities
- Regulatory requirements
- Policy of the Institution
- Labour and working conditions
- Worker’s right to be informed about and to refuse unsafe work
- Grievance redress mechanism
- GBV risks
- Waste management

Reporting Accidental Events: Immediate reporting to the OMS is essential to take actions against accidents. So, a standard easy reporting procedure should be followed as per A UW’s rule.

Routine monitoring on the environmental performance of the project will be reported by the Health Environment and Safety Department, and a copy of the same will be made available to the DoE, UGC and WB.

10.7.7 Documentation and Record Keeping

The Risk Assessment study reveals that hill slide occurs due to heavy rainfall within the premises of the proposed project site for the most probable scenarios. In addition, the overall safety record of the landslides in Chattogram after rain needs to be recognized while many accidents have been reported in a recent year. This reported record of casualty due to landslide remind for strictly following the safety procedure before the project is commissioned and operations can commence.

10.7.8 Communication and Information Dissemination

The Risk Assessment (RA) aims to provide a systematic analysis of the major risks that may arise as a result of the operation of the proposed project. The RA process outlines rational evaluations of the identified risks based on their significance and provides the outline for appropriate preventive and risk mitigation measures. The output from the risk assessment will contribute towards strengthening of the Emergency Response Disaster Management Plan (ERDMP) to prevent damage to personnel, infrastructure, and receptors near the project. As in practice, the following issues stand out to be of significance for taking into consideration in averting any risk and hazard during different stages of construction and operation of the project.

- Identify potential risk scenarios that may arise due to hill cutting, filling, and dressing.
- Review existing information and historical databases to arrive at the possible likelihood of such risk scenarios;

The employment of Geographic Information Systems (GIS) methods allow one to visualize the risk levels and to assign them to specific geographical areas. Furthermore, GIS facilitates the interpretation of data and the final results. The accumulated risk layers lead to interesting, sometimes surprising results because several minor events accumulated at the same geographical site might result in significant total risk.

As part of the mutual aid scheme, AUW will explore the possibility of sharing of information and resources with CDA in case of serious crisis. However, the decision of seeking external assistance will be taken by the duty manager on the advice of ERT.

10.7.9 Safe Work Practices

There are always Hazards everywhere in any workplace. But to work safely, hazards needed to be identified and mitigated properly. Safety is an integral part of AUW construction and operation. It is the part of the university's philosophy to protect employees, contractors, property, the environment, and the public. By fulfilling safety responsibilities, employees will share the benefits of a safe workplace. The university has its safety management and mitigation plan and policy.

To determine compliance with safety and hazard issues while performing a task, the following will be followed:

- Employees are to be provided with safety equipment and safe working environment.
- Employees are to draw up and ensure the implementation of safe systems and procedures for work which poses an acute risk.
- Employees are to be provided with adequate personal protective and safety equipment (PPE).
- Arrange safety training for concerned employees on safe work procedures and refresher training;
- Employees entrusted by these tasks participate in the development of safe work procedures:

- Employees are involved in the maintenance of safe work procedures;
- Review records to ensure that employees receive training on hazardous work procedures, codes and practices; and
- Where practical, observe employees performing critical tasks to ensure that they follow the operating procedures and general safety.

Accidents and near-miss incidents shall be investigated to determine what caused the problem and what action is required to prevent a recurrence. The purpose of impact mitigation and countermeasures are to avoid creating negative impacts wherever possible, to minimize impacts where they may be unavoidable and to generate opportunities for improvements or positive impacts where appropriate.

It should be assessed to determine what personal protective and safety equipment is needed and the equipment must be available. A maintenance schedule must be developed for PPE and employees must be trained in fitting, care, maintenance, and use of same.

10.7.10 General Working Conditions

To ensure healthy and safe working conditions, several steps should be taken as follows:

Housekeeping

- Work areas should be maintained in a neat and orderly condition;
- Scrap material, such as rags, bolts, and wedges should not be allowed to accumulate in the site area;
- Spills of oil, grease, paint and other slippery substances should be cleaned up immediately;
- Walkways should be kept clear of tripping hazards at all times;
- All personal protective equipment required for a procedure or production area must be properly fitted and worn;
- Maintain free access to all safety equipment including firefighting equipment, electrical panels, and boxes, etc.;
- Scaffolding and ladders; etc. must be secured;
- Proper barricades, safety rings, and safety wires should be used for openings, manholes, etc. Barricades must be properly lighted for visibility;
- Operating equipment, tools or machinery without proper guards and/or signaling devices is prohibited;
- Observe all warning signs in the yard; and
- Before leaving the job, always check the area for any sparks or smoldering materials.

Ventilation

- Adequate Local Ventilation (with filtration/mitigation arrangements where required) is to be arranged in connection with all types of works involving injurious or irritating gases/smoke/ fumes, which may occur or may form while the work is going on; and
- Ventilation is to start up before work commences; a check is to be made by the EHS Manager;

First Aid

- All work areas must be provided with adequate first aid facilities with a trained first aider/doctor during working hours; and
- The developer must provide or ensure that there is the provision of adequate and appropriate facilities for enabling first aid to be rendered to their employees if they are injured or become ill at work.

10.8 Construction Labor Management Plan

10.8.1 Objectives

During the construction period, it is anticipated that the Contractor's labor force will consist mostly of subcontractors and small crews retained to conduct minimal clearing activities, construct temporary way-leave access roads, survey work, and geotechnical investigations.

10.8.2 General Requirement

Hire and recruit casual labor from surrounding local communities and transport them to and from work.

10.8.3 Hiring and Recruitment Procedure

The following procedure shall follow during the hiring and recruitment of labor

- Hire skilled labor.
- To hire casual labor from surrounding local communities and transport them to and from work site
- No child or forced labor
- The Contractor shall abide by the Bangladesh Labor Act and the eight ILO's core labor standards. Special attention shall be paid to Convention No. 138 "Minimum Age" (1973) still not ratified by the Government of Bangladesh. However, the Contractor must follow this convention according to WB guidelines.
- The Contractor shall not discriminate people based on their gender, caste, color and place of origin. Similarly, jobs shall preferably be given to vulnerable groups as per their ability and skills and willingness to work in the project area.

10.8.4 Worker's Accommodation

Construction labor accommodation will be arranged at designated Labour Camp within the project site boundary. The Labour Camp shall have safe drinking water supply and safe sanitation facilities with proper gender separation arrangements.

10.8.5 Security

Provide security for the workers during construction work.

10.8.6 Provisions for Drinking Water

Provide safe and pure potable drinking water will be provided on site, and workers will be encouraged to drink enough water during hot weather.

10.8.7 Cooking Arrangements

Provide cooking arrangement to the workers in the project site during the construction period.

10.8.8 Wastewater Generation

During construction phase, temporary toilets will be used for labor wastewater management. The sludge from the toilet will be disposed safely with proper arrangements of local authorities (CWASA and CCC).

10.8.9 Solid Waste Management

During the construction, the Project would generate domestic solid waste of ~50 kg/day. Of the domestic waste, ~30% is expected to be biodegradable. Both biodegradable and non-biodegradable waste will be disposed of in separate bins at the nearby disposal site. Other waste during the construction

would be civil construction waste of ~20 tones which will be used in raising the ground levels within the AUW facility.

During the operation, solid wastes (i.e., garbage containing waste plastic, paper, rags, bottles, metal, etc.) will be segregated and temporarily stored at the site. Food wastes of ~100 kg/day would be generated from the Canteen. This food waste will be mainly organic waste which will be composed in the university premises. Organic fertilizer will be generated from the composting plant and will be used in gardening. Plastic and non-incinerable waste (~5 kg/day) will be collected and disposed of along with solid wastes (~15 kg/day) from the main facility to be disposed of at an approved waste handling facility.

10.8.10 Medical Facilities

There will be a well-furnished and equipped medical center with ten-bed facility. During Medical Centre operation several types of waste may be generated. 85% of medical waste is generally not-dangerous and equivalent to other local waste. The staying 15% is viewed as hazardous material that might be irresistible, chemical or radioactive.¹¹ The waste that will generate in the medical center are (i) Sharp Waste such as syringes, needles, disposable scalpels and blades, etc. (ii) Pathological such as human fluids, tissue, blood, body parts, bodily fluids, and contaminated animal carcasses come under this waste category (iii) Infectious or potentially infectious including swabs, tissues, excreta, equipment, and lab cultures (iv) Pharmaceuticals includes all unused, expired, and/or contaminated vaccines and drugs. It also encompasses antibiotics, injectables, and pills (v) General Non-Regulated Medical Waste I.e. Packages, papers etc.

Medical waste will be collected separately with segregation on site in green, yellow and red color bins with covers. Treatment of such medical wastes may be carried out at on-site treatment or off-site treatment facilities. The amount of waste from medical centre will be little and can be managed by on-site treatment system using small autoclave or oven. The leftover residuals from autoclave or oven can be disposed to local landfill site. On the other hand, these wastes can also be managed by handing over to the medical waste collection van of Chattogram City Corporation. Then, the wastes can be incinerated by combined medical waste management system.

10.8.11 Inspection of Accommodation Facilities

Provide accommodation facilities of the workforce and maintain an acceptable hygienic condition for the convenience of workers. The accommodation facility must be checked regularly to ensure acceptable hygienic condition.

10.8.12 Labor Management Plan during COVID-19

The Contractor will identify measures to address the COVID-19 situation based on the location, existing project resources, availability of supplies, capacity of local emergency/health services, the extent to which the virus already exist in the area. A systematic approach to planning, recognizing the challenges associated with rapidly changing circumstances, will be taken by the project with the support of PIC to address the situation. The following steps will be taken:

¹¹ World Health Organization, 2013

(a) ASSESSING WORKFORCE CHARACTERISTICS

- Construction sites may have a mix of workers e.g. workers from the local communities; workers from a different part of the country; workers from another country. Workers will be employed under different terms and conditions and be accommodated in different ways. The following steps will be taken to identifying appropriate mitigation measures: The Contractor will prepare a detailed profile of the project work force, key work activities, schedule for carrying out such activities, different durations of contract and rotations (e.g. 4 weeks on, 4 weeks off).
- This will include a breakdown of workers who reside at home (i.e. workers from the community), workers who lodge within the local community and workers in on-site accommodation.
- Consideration will be given to ways in which to minimize movement in and out of site. This will include lengthening the term of existing contracts, to avoid workers returning home to affected areas, or returning to site from affected areas.
- Workers accommodated on site will be required to minimize contact with people near the site, and in certain cases be prohibited from leaving the site for the duration of their contract, so that contact with local communities is avoided.
- Consideration will be given to requiring workers lodging in the local community to move to site accommodation (subject to availability) where they would be subject to the same restrictions.
- Workers from local communities, who return home daily, weekly or monthly, will be more difficult to manage. They will be subject to health checks at entry to the site (as set out above) and at some point, circumstances may make it necessary to require them to either use accommodation on site or not to come to work.

(b) ENTRY/EXIT TO THE WORK SITE AND CHECKS ON COMMENCEMENT OF WORK

Entry/exit to the work site will be controlled and documented for both workers and other parties, including support staff and suppliers. Possible measures will include:

- Controlling entry/exit to the site, securing the boundaries of the site, and establishing designating entry/exit points. Entry/exit to the site will be documented.
- Training security staff on the (enhanced) system that has been put in place for securing the site and controlling entry and exit, the behaviors required of them in enforcing such system and any COVID -19 specific considerations.
- Training staff who will be monitoring entry to the site, providing them with the resources they need to document entry of workers, conducting temperature checks and recording details of any worker that is denied entry.
- Confirming that workers are fit for work before they enter the site or start work. Special attention will be paid to workers with underlying health issues or who may be otherwise at risk. Consideration will be given to demobilization of staff with underlying health issues.
- Checking and recording temperatures of workers and other people entering the site or requiring self-reporting prior to or on entering the site.
- Providing daily briefings to workers prior to commencing work, focusing on COVID-19 specific considerations including cough etiquette, hand hygiene and distancing measures, using demonstrations and participatory methods.
- During the daily briefings, reminding workers to self-monitor for possible symptoms (fever, cough) and to report to their supervisor or the COVID-19 focal point if they have symptoms or are feeling unwell.
- Preventing a worker from an affected area or who has been in contact with an infected person from returning to the site for 14 days or (if that is not possible) isolating such worker for 14 days.

- Preventing a sick worker from entering the site, referring them to local health facilities if necessary or requiring them to isolate at home for 14 days.

10.9 Framework for Emergency Preparedness and Response Plan

Having taken all the preventative measures, a Disaster Management Team (DMT) should be established which would be responsible for preparing a specific Disaster Management Plan for the project. The team should meet at regular intervals to update the Disaster Management Plan based on accident data and any changes to support agencies. The team should also undertake trial runs to be fully prepared and to improve upon the communication links response time and other critical factors.

10.9.1 Identification of Emergencies

There are broadly 3 Categories to identify the emergencies which are likely to happen as narrated below:

- Level 1 Emergency is a MINOR EMERGENCY, which can be controlled entirely by personnel and facilities, located within the immediate vicinity of the accident/incident site. LEVEL-1 Emergencies are those which cause minor property or equipment damage that is non-disruptive to operations and do not pose a safety risk to personnel or property outside of the boundaries of property.
- Level 2 Emergency is a SERIOUS EMERGENCY, which is disruptive but not extensive and forces a portion of the institution operates to be temporarily suspended or shut down. Events or conditions which describe LEVEL 2 Emergencies are accidents/incidents that endanger the safety of personnel or the public outside of the boundaries of the property, or have the potential to endanger the safety of personnel or the public outside of the boundaries of the property, and would require the notification of external support services.
- Level 3 Emergency is a DISASTER EMERGENCY that forces the indefinite shut down of the operations or a sector of institution's operations. Safe operating control has been lost, causing or having to cause; serious injuries or fatalities among employees, contractors or the public; extensive damage to property or equipment; or serious harm to the environment.

10.9.2 Declaration of Emergencies

It is the responsibility of the emergency site commander to take situational decision to declare the emergency. This guideline is in addition to the Emergency Procedure Manual. In case of any emergency event, the first action shall be to stop all cutting and dressing of hills. Each hill shall have its characteristics and nature. Contingency plans should be addressed during the construction work on hills.

10.9.3 Emergency Equipment

Preparation of any evacuations involving nearby communities and settlements will include training and awareness, alarms, procedures for evacuation, firefighting, emergency communication systems, first aid, etc. Procedures are to be established for a large emergency with district and state authorities, coast guard, etc.

Infrastructure for Execution of Emergency Plan:

- *Fire Fighting Facilities:* The premise will have adequate firefighting aids including fire hydrants close to the various sections of the power generation area and Portable Fire Extinguishers of various types and sizes need to be installed at conveniently reachable locations.
- *Disaster signaling Siren:* Siren to be used for raising the alarm and also for ALL CLEAR signal should be installed within the premises.

- *First Aid Boxes* should be provided at specific locations including at the Assembly point for administering preliminary treatment. Some employees will be trained for first aid use.
- *Emergency Control Centre* should be at a central as well as the safe location in the plant premises wherefrom the Site Controller could direct the movements of Personnel and Equipment during an Emergency.

Contents of Emergency Control Centre should be as under:

- External telephone line and a list of relevant telephone numbers to contact at times of emergency.
- Internal telephone and telephone list of Emergency Assembly Points.
- List of Emergency Control Team, who must be called showing addresses and telephone numbers.
- Emergency Controller's Red & White Helmet.
- A list of all persons (by title) responsible for groups of employees.
- Logs and Emergency Controller's checklist.
- Emergency lighting.
- Copy of the emergency plan.
- List of persons trained in First Aid & Fire Fighting.
- List of safety cabinets and their contents & locations.
- Battery operated torches.
- Detailed site plan.
- First aid equipment including stretchers.

10.9.4 Coordination with External Agencies

The following external agencies may be called in to tackle the emergency.

- Medical or hospital services
- Police department
- Army

10.9.5 Emergency Response Plan

As with the emergency preparedness plan, Bangladesh law does not yet require Emergency Response Plans at the implementation of University facilities. However, like all other industries and installations, facilities must have adequate measures against accidents or incidents to meet the emergency. The purpose of having an Emergency Response Plan (ERP) is to:

- Assist personnel in determining the appropriate response to emergencies.
- Provide personnel with established procedures and guidelines.
- Notify the appropriate Emergency Response Team personnel and regulatory/ Govt. agencies.
- Manage public and media relations.
- Notify the next-to-kin of accident victims.
- Promote inter-departmental Communications to ensure a “University-wide” Co-ordinated emergency response.
- Minimize the effects that disruptive events can have on the operations by reducing recovery times and costs.
- Respond to immediate requirements to safeguard the subtending environment and community.

10.9.6 Response Procedures

Emergency Response Procedures will identify who does what and when in the event of an emergency. Responsibility for who is in charge and their coordination of emergency actions shall be identified. The following are important events that require emergency response procedures:

- Fire
- Slope failure
- Accidents and Medical emergency
- Spills, leaks and other releases of hazardous substances
- Natural disasters (e.g., Earthquakes, floods, cyclones, etc.)

10.9.7 Reporting and Documentation

Major disasters are often preceded by a string of minor incidents which are ignored, neglected or not fully understood. Therefore, a routine system should be enforced to ensure that all accidents are investigated and reported to the plant supervisors in a specified format such as the following:

- Description of incident or episode;
- Immediate cause;
- Background on the factors that might have made the incident possible;
- What form of energy release or toxic substance was involved?
- What was done to prevent an accident (who responded and how)
- What effect did it produce on the immediate and surrounding environment?
- What repercussions did the incident have (loss of life damage to equipment and buildings) and
- Cost estimates of damage done and repairs needed.

Register of all incidents should be kept and should be analyzed regularly (at least monthly) to identify trends or patterns in incident occurrence. In particular cases this may prevent significant chronic incidents or single-event events that are the result of an accumulation of either physically hazardous materials or substances, or operational complacency.

10.10 Disaster Management Plan

10.10.1 Objectives

On-site Emergency Plan is required to meet the emergency condition during a disastrous event in the project. Its objectives are to:

- Rescue and treat casualties
- Safeguard other people & Installations
- Minimize damage
- Control initially and restore ultimately to a normal situation
- Arrange rehabilitation of the affected people

10.10.2 Types of disasters

Accident - an unintended incident which results in injury to persons and/or damages to property, the environment, third party or which leads to production loss.

Emergency - a serious, unexpected and often dangerous situation which poses an immediate threat to, personals, processes, assets, environment, and communities and requiring immediate action.

Incident - a sudden accident or near miss.

Medical Treatment Case - injury at work (other than a lost-time injury and restricted work case) requiring treatment by a doctor, or nurse in consultation with a doctor, before the injured person's resumes normal work.

Natural Disasters - are types of disasters that cause material and physical damages and human losses. These include drought, water rise, earthquake, flood, storms, epidemics, and others.

Anthropogenic Disasters - disasters causing material and physical damage and destruction and human losses. These include explosions, plane crash, fire accidents due to human negligence and other human-generated disasters.

10.10.3 Roles and Responsibilities

Potential impacts could originate from the developer/contractor's activities. Therefore, AUW shall ensure that Contractors take due responsibility to mitigate these negative impacts. Particularly AUW will ensure that the Contractor:

- Takes reasonable steps to protect the environment and avoid damage and nuisance arising from their activities and operations.
- Complies with statutes and regulations concerning the execution of work.
- Familiarizes with legislation and regulations relating to environmental protection that is relevant to their activities.
- Refers to national environmental quality guidelines.
- Be responsible for the costs of cleaning up any environmental pollution resulting from their activities, if methods for doing so are available and effective.
- Maintains sites under their control in a clean and tidy condition and shall provide appropriate and adequate facilities for the temporary storage of wastes before disposal.
- Shall not allow used oil or other petroleum wastes to be used as dust suppressants and reasonable precautions shall be taken to control and prevent accidental blow off of gas and/or spillage of petroleum products or discharge into atmosphere or watercourses.
- Be responsible for the provision of adequate sanitary facilities for the construction workforce (including those employed under sub-contracts) at construction and campsites. Vehicles operated by the Contractor (including sub-contractors) shall be maintained according to the original manufacturer's specifications and manuals with particular regard to the control of noise and/or smoke emissions.
- Takes reasonable measures to minimize dust-blow arising from sites under their control by regular watering of soil stockpiles, bare soil, haul roads, non-surfaced traffic areas and sources of fugitive dust, when conditions require dust suppression.
- Be responsible for paying compensation upon the appropriate monetary evaluation applicable to the local market if any damage is incurred to agricultural land or surrounding homesteads outside of the requisitioned land.
- Precautionary signboards/ danger signals/ propitiatory billboards shall be placed in appropriate places to notify people about the possible dangers particularly in the eve of nondestructive testing inspections involving radiations.
- No pollution materials will be discharged to surface water without treatment
- Removes equipment, surplus material, rubbish, and temporary works and leave the sites in a clean condition to the satisfaction of the institution's representatives after completion of construction activities.

10.10.4 Emergency Procedure

Designated persons will carry out the actions detailed in the Individual Plant Emergency Procedure. Their presence at the Emergency Assembly Point should be verified and ascertained through roll-calls. Personnel not at their normal workplace must also move to the emergency assembly point and await necessary safety instructions.

Contractor's employees should also be instructed of the Emergency Procedures before commencing work on this site. They will report to the emergency assembly point on this site. Personnel Manager will guide them in case a major decision like evacuation from the factory is taken.

10.10.5 Evacuation Procedure

This section outlines the procedure for the management of emergencies and evacuation plans during the operations stage. The main objective of the Emergency Response Plan (ERP) is to ensure that activities are carried out to the following priorities:

- Safeguard lives;
- Protect the environment;
- Respond to emergencies using an effective communication network and organized procedures;
- Protect the institution's or Third-Party assets
- Maintain the institution's image/reputation
- Resume normal activities

Personnel involved in dealing with emergencies shall follow these priorities while making decisions and developing strategies.

Contractor's employees should also be instructed of the Emergency Procedures before commencing work on this site. They will report to the emergency assembly point on this site. Personnel Manager will guide them in case a major decision like evacuation from the factory is taken. High Disaster-Catastrophic condition. All employees need to be evacuated. Local administration is to be properly informed and interacted with. These will be pursued upon verification of or environmental acceptability.

10.10.6 Verification and Monitoring

Verification of the emergency will be done by the concerned AUW authority. Based on the verification findings, the concerned authority shall prepare an appropriate monitoring plan.

10.10.7 Training

Before the commencement of any construction activity, all personnel shall be provided with chemical management training to ensure the safe and proper handling of hazardous chemicals and to reduce the potential for accidents.

Training is an integral part of a preventive strategy. Environmental and disaster management training will be required to ensure proper implementation of effective environmental management and monitoring plan; and disaster management plan. However, training could be organized by PIA involving relevant staff. As a trainer, competent Consultant can be outsourced. Important training under the spectrum of disaster management includes:

- Training on firefighting;
- Training on disaster and environmental regulations and standards;
- Staff training on disaster and environmental monitoring;
- Training on environmental as well as occupational health and safety measures.

Chapter 11: Conclusions and Recommendations

The project involves the construction of a permanent campus for Asian University of Women (AUW) at Pahartali, Chattogram. The Government of Bangladesh has allocated 140 acres of land to AUW for the establishment of a permanent campus in the said location. Large construction activities e.g., constructing academic buildings, dormitories, teachers and staff quarters, auditorium, gymnasium, research facilities, internal pavement, water supply system, sewerage treatment plant, etc., will be carried out under this project. The project is considered 'Red' category as per DoE. An EIA report for the site has already been approved by DoE but it was for a previous Master Plan. This report is for the updated Master Plan and also satisfies World Bank's Environmental and Social Framework (ESF). This ESIA study outlines potential impacts on physical & biological environments as well as socio-economic environment. Also, provides the possible mitigation measures in absolute terms to reduce the potential risks and monitoring plan.

There are potentially significant risks and impacts on environmental and social receptors in this project. One of the main impacts is related to cutting of hills and disposal of excess soil materials. To this end, 1.873 million cubic meters of hill will be cut or profiled as per the revised Master Plan, out of which 0.749 million cubic meters will be used to fill low-lying areas at the project site and the remaining (1.124 million cubic meters) will be sold and disposed of in appropriate sites. The disposal points are not yet selected but will be finalized in consultation with Chattogram Development Authority (CDA). No hill trimming should be carried out until the disposal points have been identified and cleared with CDA and the Supervision Engineer

Other impacts are related to air, noise and water pollution in the physical environment. Air can be polluted by dust, emissions from vehicles, and different forms of chemicals/fuels used during construction and operation phases. Excessive dust may be produced in the project site while clearing the vegetation, cutting the hills, filling the ground, levelling and transporting the earth materials. Due to usage of different equipment and vehicles, noise levels can increase due to the generation of excessive sounds at the project site. The surface water can become polluted during construction works by release of hazardous materials, kitchen wastes, dust, engine oil, and different types of chemicals. Unintended release of chemicals and wastewaters from the project site can also pollute surrounding groundwater resources.

Baseline surveys confirmed that the project area is free of endangered species (fauna & flora). However, mitigation measures have been proposed to ensure that existing fauna and flora are not permanently impacted due to the proposed project activities.

Occupational health and safety will be more important during the construction period. Community health and safety must also be taken seriously as the project involves transporting large amounts of construction materials, soil and other wastes. As a result, the vehicular movement will increase in motorways where pedestrian and people will be at risk in terms of accidents, injuries and even death. To reduce this impact, the vehicle speed will be limited to below 40 km/hr near the project site.

In addition, there are good numbers of positive impacts expected from this project. One of which is that higher education scope will be extended, access to the quality education will be easy for local & national people, as this university aims to provide international standard education. Different types of businesses will be opened up for the local people, as the university would enroll international students from different Asian countries. Employment opportunities will be created, marginalized and minorities (IP-indigenous people/ ethnic communities) will have access to study in this campus. Access academic program (Pre- college preparatory program) would be beneficial in enrolling local students for higher

studies. Thanks to mixture of students from different nationalities and different backgrounds, this university would strengthen cultural traditions and values in the local areas.

The local people consulted in different ways were found very much supportive of the Project. They thought that setting up this project would boost their livelihood pattern, creating employment opportunities and getting access to higher studies. They also plan to support its implementation process so that work can be done on time without interruption.

Overall, this project is assumed to provide enormous positive outcomes for local, national and regional communities in the long run.

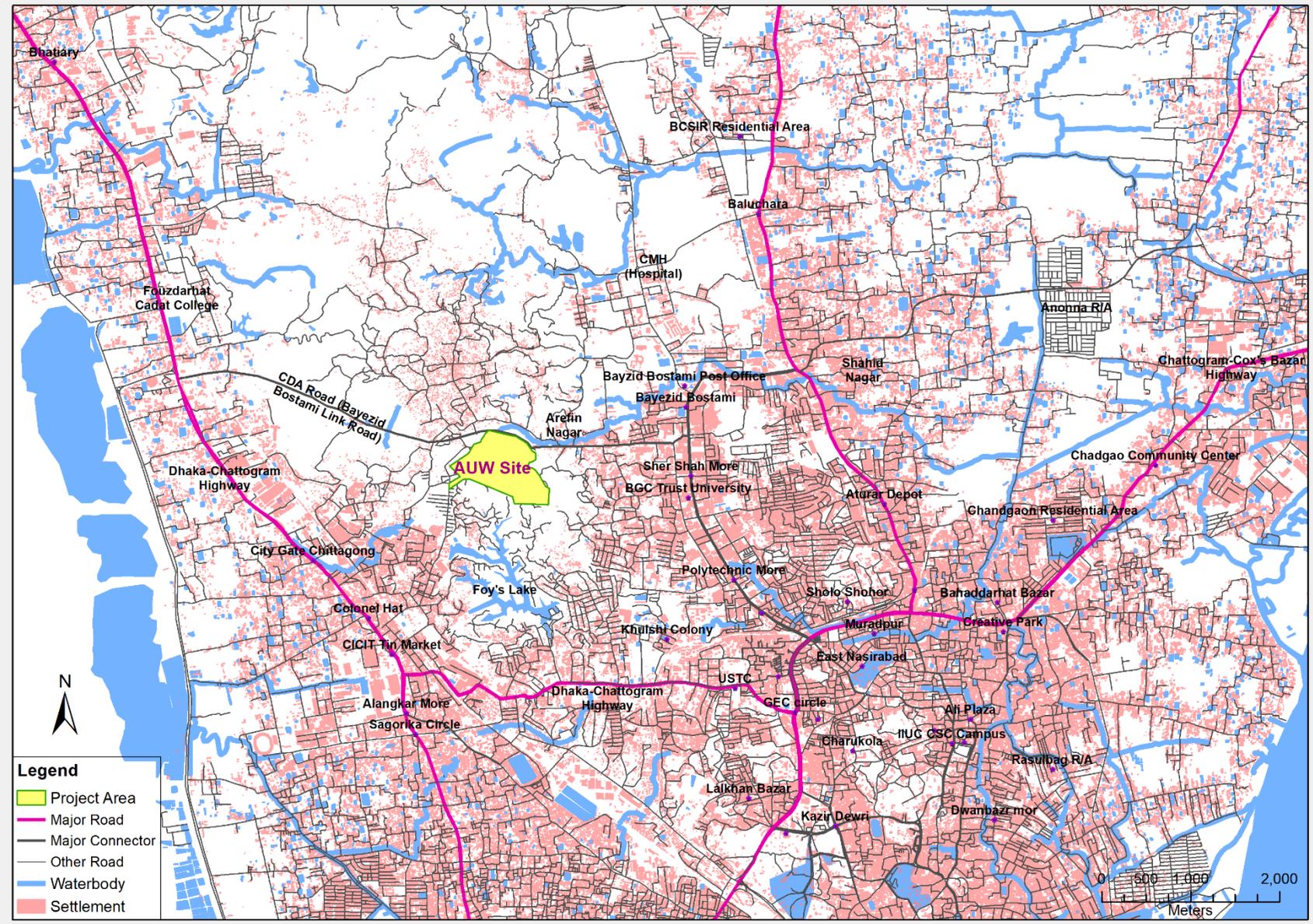
Recommendations:

Implementing the mitigation measures provided in the ESMP, including monitoring plan, will ensure that the possible negative impacts will be reduced to acceptable levels and positive impacts will be strengthened.

Based on the findings of the ESIA study, the following recommendations have been made:

- Under all circumstances, the project shall sternly enforce the planned environmental and social safeguard measures, including hiring of necessary supporting specialists, intended for the construction phase in order to avoid or minimize environmental and social risks impacts on site workers, the surrounding communities and general public.
- The project shall conduct an environmental and social monitoring at all times for any adjustment of the project design and/or the baseline environmental and social conditions.
- Continue stakeholder engagements throughout the project implementation. The comments, concerns and suggestions from concerned stakeholders shall be considered and incorporated into the project environmental and social management plan as appropriate.
- Local administration and representatives shall be involved during implementation of project activities, and
- A grievance resolution process with a complaint register to be ensured at the project site for prompt response from the project implementing authority and issues to be resolved accordingly.

Annex- 1: Project Site and Surrounding Features



Annex- 2: Public Consultation Participants List

Sl. No	Name & Designation	Name of Organization
1	Md. Khalid Hasan	Assistant Professor, IDMVS, University of Dhaka
2	Dave Dowland	Register, AUW
3	Mushtaque Habib	Project Advisor, AUW
4	Rehana Alam Khan	Director & Admission Asian University for Women
5	Afida Mostafa	Senior Vice President, CWCCI Ctg.
6	Planner Md. Sadat Khan	Assistant Director (Urban Planning), RMSU, LGED, Chattogram Region
7	Engr. Md. Delwar Hossain PEng	Chairman, WPML, PACE
8	Mohammad Ariful Islam	Superintending Engineer Chattogram WASA
9	Mohammad Nur Nobi	Associate Prof. Dept. of Economics, CU
10	Dr. & M. Sohrab Uddin	Professor, Department of Finance, University of Chattogram.
11	Dr. Md. Saiful Islam	Professor of Economics University of Chattogram
12	Md. Abdul Hasem	Teacher of Islamia Madrasha, Sherkili
13	Mohammed Ilias	Ex-student of University of Chattogram, Economics Department.
14	Mukesh Gupta	Assistant Professor of Environmental Science of Asian University for Women
15	Md. Alauddin Majumder	Professor, Dept of Economics University of Chattogram.
16	A.R Jafree	CEO, Ghashful
17	Nazmul Latif	Chairman, IAB Ctg.
18	Zariaa Hossain	Fellow Institute of Architect, Bangladesh, Urban Bangladesh Institute of Planner Chattogram Center
19	Sangjucta Das Gupta	Assistant Director, Department of Environmental Chattogram Metropolitan.
20	Waseqa Ayesha Khan	Member of Parliament, Chattogram
21	Shamim Morshed	Director Chattogram Women Chamber of commerce
22	Rehana Khan	Principal, Taher Memorial School

Sl. No	Name & Designation	Name of Organization
23	Daisy Maudud	Sr. Journalist, Dainik Porboconi
24	Shirin Akhter	Director of Dewdrops, Preparatory School
25	Dr. Abul Kashem	Professor, Soil Service, CU
26	Jesmin Sultana Pervin	Chief Executive, Ensure legal support through local solvent + Action-ELLMA Shugndha R/A, Pauchlaish, Ctg.
27	Rozina Akter Lipi	Director of Chattogram women chamber of commerce & Industry's.
28	Md. A.K.Fazlul Haq	Principal (PRL) Chattogram College Chattogram
29	Md. Solaiman Bhuiyan	Asst. General Manager Grameen Bank. Ctg.
30	Munshi Md. Abul Hossan	Zonal Audit Officer, Grameen Bank, Ctg.
31	Md. A Kashem Chowdhury	Surgeon Army Colony Arhin Bazar, Bayazid Bostami, Ctg.
32	Abdul Owahad	Businessman,S.R S Trading Corporation Arfin, Nagor Bazar
33	Md. Humayun Kabir	S.S. Store
34	Md. Nurul Alam Babu	Businessman,Sowpnopuri Traders Versity Gate Arifin Nagar
35	Tasnim Hasan	Staff reporter, Daily Prothom Alo
36	Bhupen Dash	Staff reporter, Daily Azadi
37	Aurun Bikhas De	Staff reporter, The Daily Star
38	S.M Rubaiyatul Kader	Asst. Engineer, Chottogram, WASA
39	Asma Sahreen	Student
40	Taslina Muna	Environment Specialist, KWSP – 2, NTS Consultant
41	Mohammaed Hasem Iqbal	Head of IT, Ctg. City Corporation
42	Robi Long	Urban Planner, CGP, Ctg. City Corporation
43	Ishtiaque Zahir	Team Leader, Vitti Sthapati Brindo Ltd.
44	Md. Harun	Businessman, Bismillah Store
45	S.M Elias Karim Mito	K.R Enterprise Anwara
46	Kazi Rahed Iqbal	A.J Construction KEPZ Anowara Ctg.
47	Md. Najim	Rahman Nagar

Sl. No	Name & Designation	Name of Organization
48	Anupam Barua	Dainik Azadi
49	MN Mahabub Alam	Principal SAB
50	Md. Anisuzzaman Bhuiyan	Social Development Consultant, Word Bank Officer Dhaka
51	Shariful Islam	Social Safeguard Specialist, Word Bank
52	Md. Nezamul Islam	Major (Retd.), Director security & Estate management
53	Shajahan	ARP nagar gate
54	R.M Zainul Abedin	Businessman
55	Md. Jabedur rahman	Daily Baizid
56	Iqbal Mahmood	Staff reporter, Daily Nayabangla
57	Md. Mehedi Hasan	Architect, Vitti Sthapati Brindo Ltd.
58	Md. Abu Taher	Surveyor
59	Jico Barun	AUW Engineer, 20 mm Ali road, Ctg.
60	Md. Dedarul Alam	AUW Engineer, 20 mm Ali road, Ctg.
61	Fayeka Zabeen Siddiqua	Program Coordinator, AUW
62	Fahima Harun	Admission Officer, AUW
63	Mohammad Osman	Assistant Authorized Officer, CDA, Chattogram
64	Md. Golam Rabbani Chowdhury	Senior Architect, CDA
65	Md. Shamim	XEN & Authorized Officer, CDA
66	Abul Kalam Azad	Coordinator, Vitti Sthapati Brindo Ltd.
67	Md. Abu Taher	Kazi Enterprise, Nasirabad, Ctg.
68	Imam Monjor Mawla	Senor Research Officer, Vitti Sthapati Brindo Ltd.
69	Md. Shahidul Islam	SIA Field Expert, Vitti Sthapati Brindo Ltd.
70	Sheikh Imran Hossain	SNI International Limited
71	Sudipta Ghosh	Environmental Consultant, ECL

Sl. No	Name & Designation	Name of Organization
72	Engr. Rafiqul Islam Manik	Additional Chief Engineer, Ctg. City Corporation & Honorary Secretary, IEB, Ctg.
73	Md. Zahrul Alam Jashim	Councilor Ctg. City Corporation – 9 no ward
74	Toufiqul Alam	Sr. Urban Planner Vitti Sthapati Brindo Ltd.



**অভিযোগ প্রতিকার প্রক্রিয়া
(Grievance Redress Mechanism/গিয়ারএম)**

এক এককটি নির্বাচকীয় সময়ে দুই ছাত্রী জনগণের যে কোনো সমস্যা সমাধানের ক্ষেত্রে একটি প্রতিকার ব্যবস্থাপনা সমিতি গড়ে তোলা হবে। এই সমিতির সদস্যরা হলেন এশিয়ান ইউনিভার্সিটি ফর উইমেন অনুষদের পরিচালক/অতিরিক্তি ১জন, প্রধান নির্দিষ্ট কার্যালয়ের চেয়ার/অতিরিক্তি ১ জন, স্থায়ী এনভির সচিব/সি ১ জন, নির্বাহী সচিব/নিয়ন্ত্রিত অধিন অতিরিক্তি-২ জন (পুরুষ ও মহিলা)।

নিম্নবর্ণিত উপরে স্থায়ী জনগণের যেকোনো সমস্যা সমাধানের চেষ্টা করা হবে।

ধাপ ১- অভিযোগকারী সমস্যাটি সনাক্ত/ইতিহাসের মাধ্যমে যোগাযোগ করে সমস্যাটি সমাধানের চেষ্টা করবেন যদি অভিযোগকারী সমস্যাটি এক সপ্তাহের মধ্যে প্রতিকার না হয় তাহলে তীব্র মন অবলম্বন করতে পারবেন।

ধাপ ২- অভিযোগকারী স্থপিত ডি অর সি কমিটির মাধ্যমে সমস্যাটির সমাধানের চেষ্টা করবেন।

ধাপ ৩- যদি সমস্যাটি দুই সপ্তাহের মধ্যে সমাধান না হয় তাহলে স্থপিত ডি অর সি কমিটি একটি আনুষ্ঠানিক আবেদন ব্যবস্থা করবে। এ পর্যায়ে একটি দু'মাসের বিরতি রাখা হবে এবং পাঁচ দিনের মধ্যে তা কার্যকর করা হবে।

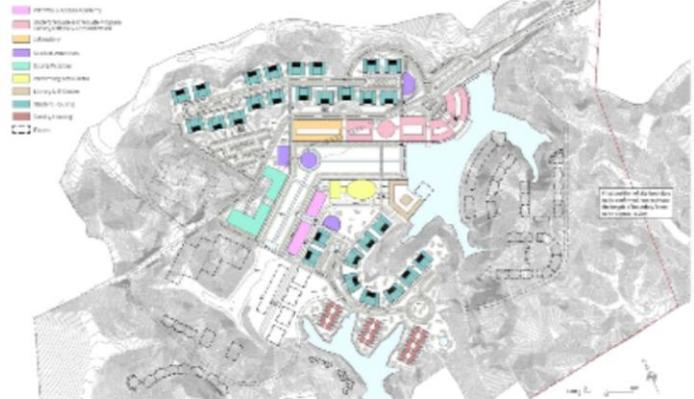
ধাপ ৪- ধাপ ৩ এর পূর্বত নিম্নোক্ত অভিযোগকারী জনগণ না হলে অভিযোগকারী আইনি সাহায্য নিষ্পত্তি করতে পারেন।

ব্যবস্থাপনা, মতামত এবং পরামর্শের জন্য করা করে নির্দিষ্ট কার্যক্রমে যোগাযোগ করুন।

২০/এ, এম এম সার্ভিস রোড
এশিয়ান ইউনিভার্সিটি ফর উইমেন, চট্টগ্রাম

**AUW
Asian University for Women**

Environmental & Social Impact Assessment of Asian University for Women
একক প্রতিষ্ঠানের নাম: এশিয়ান ইউনিভার্সিটি ফর উইমেন
পরিবেশগত ও সামাজিক প্রভাব ও এর ব্যবস্থাপনা পরিবেশগত ও সামাজিক দায়িত্বশীল প্রতিষ্ঠা।
পরামর্শ প্রতিষ্ঠান অংশগ্রহণকারী শব্দের জন্য সহায়ক তথ্য।



MASTER PLAN OF ASIAN UNIVERSITY FOR WOMEN

১৭ই মার্চ ২০১৯
উপরে প্রতিকার প্রতিস্থাপিত বৃন্দ লি:

Annex- 4: Site Clearance Certificate from DoE 2011

পরিবেশ অধিদপ্তর, চট্টগ্রাম বিভাগ
পরিবেশ ভবন
জাকির হোসাইন সড়ক, খুলশী, চট্টগ্রাম-
www.doe.bd.org

8žož

স্মারক নম্বরঃ পঅ/চবি/ছাড়পত্র-১৫৩৪২/২০০৯/ ৫২০৪

১২/০৭/১৪১৮ বঙ্গাব্দ
তারিখঃ-----
০৬/১১/২০১১ খ্রিষ্টাব্দ

বিষয়ঃ এশিয়ান ইউনিভার্সিটি ফর উইমেন নামক প্রতিষ্ঠানের অবস্থানগত ছাড়পত্র নবায়ন (শ্রেণীঃ "লাল") ।

আপনার ০৯/০৮/২০১১ তারিখের অবস্থানগত ছাড়পত্র নবায়নের আবেদনের প্রেক্ষিতে পরিবেশ অধিদপ্তর, সদর দপ্তর, ঢাকার ২৫/০৫/২০১০ তারিখের পঅ/ছাড়পত্র/৪০৮৫/২০১০/১৬০ সংখ্যক স্মারকে বাংলাদেশ পরিবেশ সংরক্ষণ বিধিমালা, ১৯৯৭ অনুযায়ী "লাল" শ্রেণীভুক্ত বিবেচনায় পাহাড়তলী, চট্টগ্রাম- এ প্রস্তাবিত এশিয়ান ইউনিভার্সিটি ফর উইমেন নামক প্রকল্পের অনুকূলে জারীকৃত অবস্থানগত ছাড়পত্রের সকল শর্তাবলী অপরিবর্তিত রেখে নিম্নবর্ণিত শর্ত যুক্ত করে আগামী ২৪/০৫/২০১২ তারিখ পর্যন্ত মেয়াদের জন্য নবায়ন করা হলো। উল্লেখ্য যে, আরোপিত যে কোন শর্ত ভঙ্গের কারণে জারীকৃত ছাড়পত্র বাতিল বলে গণ্য হবে।

শর্তাবলী :

১. প্রকল্পের নির্মাণ কর্মকান্ড ও পরিচালনা দ্বারা মাত্রাতিরিক্ত পরিবেশ (মাটি, পানি, বায়ু ও শব্দ) দূষণ করা যাবে না।
২. প্রকল্প এলাকায় নির্দিষ্ট স্থানে অবকাঠামোগত উন্নয়ন কার্যক্রম পরিচালনা করা যাবে।
৩. অবস্থানগত ছাড়পত্রের শর্তসমূহ যথাযথ বাস্তবায়ন করতে হবে।
৪. অনুমোদিত স্থানে অনুমোদিত কন্ট্রোল ম্যাপ অনুসরণে পাহাড়/টিলা কর্তন ও মোচনের কার্যক্রম কন্ট্রোল ম্যাপ অনুসারে যথাযথ বাস্তবায়ন করতে হবে।
৫. প্রকল্পের অনুকূলে ০৬/০৯/২০১১ তারিখের পঅ/ছাড়পত্র/৪৮০৫/২০১০/২৯৯ সংখ্যক স্মারকে অনুমোদিত ইআইএ প্রতিবেদনে উল্লেখিত শর্ত সমূহ যথাযথভাবে বাস্তবায়ন করতে হবে।
৬. অবৈধভাবে পাহাড়/টিলা কর্তন ও মোচন করা যাবে না।
৭. প্রকল্প কাজে নিয়োজিত কর্মরত শ্রমিক/কর্মচারীদের জন্য সেপটি ইকুইপমেন্ট ও দুর্ঘটনা রোধে কার্যকরী ব্যবস্থা গ্রহণ করতে হবে।
৮. প্রকল্পের কাজে নিয়োজিত শ্রমিক/কর্মচারীদের জন্য সুপেয় পানির ব্যবস্থা নিশ্চিত করতে হবে।
৯. অবস্থানগত ছাড়পত্রের মেয়াদ শেষ হওয়ার কমপক্ষে ৩০ (ত্রিশ) দিন পূর্বে ছাড়পত্র নবায়নের জন্য আবেদন করতে হবে।
১০. অবস্থানগত ছাড়পত্রের মূলকপি, ইআইএ অনুমোদনের মূলকপি এবং প্রকল্পের কন্ট্রোল ম্যাপ প্রকল্প অফিসে সংরক্ষণ করতে হবে। পরিবেশ অধিদপ্তরের এনফোর্সমেন্ট টিম, পরিদর্শক ও পরিদর্শনের ক্ষমতাপ্রাপ্ত অন্যান্য কর্মকর্তাগণ প্রকল্প পরিদর্শনকালে অবস্থানগত ছাড়পত্রসহ প্রকল্পের অনুকূলে যাবতীয় কাগজপত্র প্রদর্শন এবং প্রকল্পের কার্যক্রম পরিদর্শনে সহযোগিতা করতে হবে।

✓ প্রকল্প পরিচালক
এশিয়ান ইউনিভার্সিটি ফর উইমেন
প্লট নংঃ ২০/এ, এম এম আলী রোড
দামপাড়া, চট্টগ্রাম।


(মোঃ জাফর আলম)
পরিচালক

ফোনঃ ৬৫৯৩৭৯

Annex- 5: Renewal of Clearance form DoE 2018



গণপ্রজাতন্ত্রী বাংলাদেশ সরকার
পরিবেশ অধিদপ্তর
চট্টগ্রাম মহানগর কার্যালয়
পরিবেশ ভবন, জাকির হোসেন রোড
ফয়েজ লেক এলাকা, খুলশী, চট্টগ্রাম -৪২০২
www.doe.gov.bd

ছাড়পত্র নবায়ন

ছাড়পত্র নং: ১৮-০৬৭০২

পরিবেশগত ব্যবস্থাপনা নিশ্চিতকরণ সাপেক্ষে সংযুক্ত শর্তে নিম্নবর্ণিত প্রতিষ্ঠান/প্রকল্পের অনুকূলে ছাড়পত্র নবায়ন প্রদান করা হলো :

প্রতিষ্ঠান/প্রকল্পের নাম	: Asian University for Women
উদ্যোক্তার নাম	: Asian University For Women
সনাক্তকরণ নং	: ৫৭৬০০
প্রতিষ্ঠান/প্রকল্পের কার্যক্রম	: Engineering works: capital above 10 (ten) hundred thousand Taka
প্রতিষ্ঠান/প্রকল্পের শ্রেণী	: Red
প্রতিষ্ঠান/প্রকল্পের ঠিকানা	: Asian University for Women, Arefin : Nagar,Bayazid,Chittagong.,Pahartali ,Chittagong : Metro
প্রদানের তারিখ	: ১২/০৬/২০১৮
মেয়াদ উত্তীর্ণের তারিখ	: ২৪/০৬/২০১৯

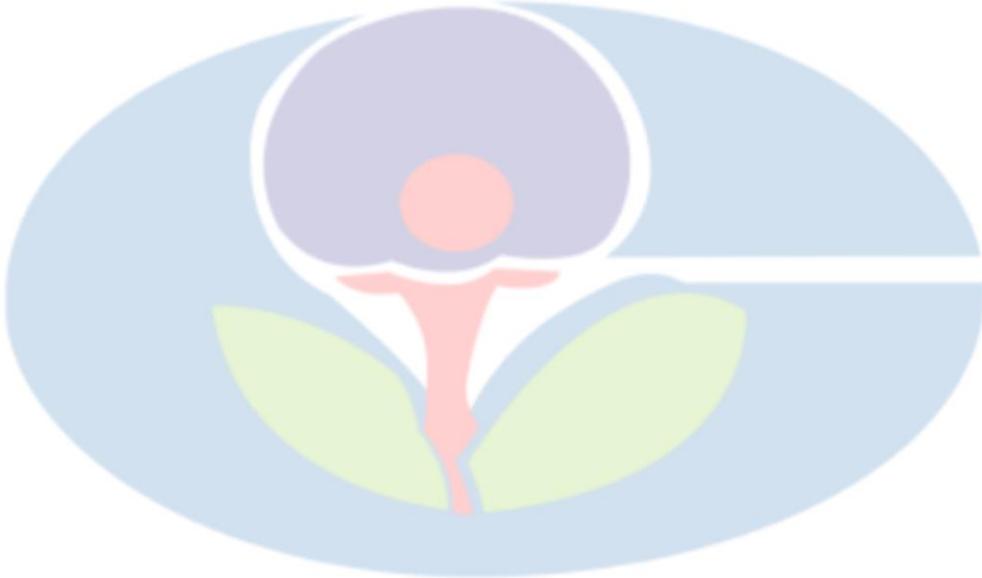


ছাড়পত্রটি যাচাই করতে নিম্নলিখিত লিঙ্ক: http://ecc.doe.gov.bd/certificate_verification

Page 1 of 3

এ ছাত্রপত্র সনদের সাথে পূর্বসন্মানে সংযুক্ত প্রদত্ত পরীক্ষণী বর্নামবন্দনে প্রতিলিপন করতে হবে,
অন্যথায় ছাত্রপত্র বাতিল/অসিদ্ধের আশংকায় যে কোন আইনকূল ব্যয়গ্রা গ্রহণ করা হবে।

বিজ্ঞা এটি একটি সিস্টেম সেন্সরেটের ছাত্রপত্র এবং এতে সেন্সরের স্বাক্ষরের প্রয়োজন নেই।



ছাড়পত্র নবায়ন এর জন্য প্রযোজ্য শর্তাবলী:

১. প্রকল্পের নিয়ম কার্যকর ও পরিচালনা ছাত্র সেনান্যেই পরিবেশ দূষণ করা যাবে না।
২. প্রকল্প এলাকায় নির্দিষ্ট স্থানে অবকাঠামোগত উন্নয়ন কাজ পরিচালনা করা যাবে।
৩. অবস্থানসমূহ ছাড়পত্রের পরিসরভূমি তথ্যে বাক্যব্যয় করতে হবে।
৪. অনুমোদিত স্থানে অনুমোদিত ক্ষেত্রের ছাত্র অনুসরণে কার্যকর ব্যবস্থা বাস্তবায়ন করতে হবে।
৫. প্রকল্পের অনুসূচী ০৬/০৬/২০১১ তারিখের পরোক্ষস্বাক্ষর-০৮০৫/২০১০/২৬৬ সংখ্যক স্মারকে অনুমোদিত ইআইএ প্রতিবেদনে উল্লিখিত পরিসরভূমি তথ্যবহনকে বাস্তবায়ন করতে হবে।
৬. অবস্থানসমূহে পর্যায়/সীমা সঠিক ও সঠিক করা যাবে না।
৭. প্রকল্প কাজে নিয়োজিত কর্তৃক প্রকল্প/কর্তৃপক্ষের জন্য সেন্ট ইকুইপমেন্ট ও দুর্ঘটনা গ্রামে কার্যকরী ব্যবস্থা গ্রহণ করতে হবে।
৮. প্রকল্পের কাজে নিয়োজিত কর্তৃক প্রকল্প/কর্তৃপক্ষের জন্য সেন্ট ইকুইপমেন্ট ও দুর্ঘটনা গ্রামে কার্যকরী ব্যবস্থা গ্রহণ করতে হবে।
৯. প্রতিবেদনের বিস্তারিত অধিভুক্ত পরিবেশ দূষণ/দূষণ সেনা অনিবেশ উৎপাদিত হলে ও অম দূষণ কর্তৃক অ প্রযোজিত হলে অম দূষণের নিবেশিত নিয়ম/সংক্রমণদূষণ ব্যবস্থাদি (হান্ডবুর্ক/স্মারক বহনসহ) গ্রহণ করতে অপনার প্রতিবেদন বাধ্য থাকবে।
১০. অসুস্থী ০১ মাসের মধ্যে ২০১০ সাল হতে ২০১৫ সাল পর্যন্ত প্রত্যেক সনুদ্বয় কি-এর উপর ১৫% আট রাখান দাখিল করতে হবে।
১১. এই ছাড়পত্র নবায়ন প্রক্রিয়ায় অসুস্থী ১ (এক) মাসের মধ্যে অসুস্থী গ্রামে অসুস্থী গ্রামে অসুস্থী গ্রামে ০০ (শিশু) দিন পূর্বে নবায়নের জন্য আবেদন করতে হবে।
১২. ছাড়পত্রের মূলসূচী, ইআইএ অনুমোদনের মূলসূচী এবং প্রকল্পের ক্ষেত্রের ছাত্র প্রকল্প অধিনে সংক্রমণ করতে হবে। পরিবেশ অধিদপ্তরের অনুমোদনসমূহী সীম বা সেনা কার্যকরী প্রতিবেদনটি পরিদপ্তরে গেসে অসুস্থীকে ছাড়পত্র প্রদানসহ প্রকল্প কার্যকরী পরিদপ্তরে সনুদ্বয় সংবেদনীয় প্রদান করতে হবে।
১৩. বাস্তবায়ন পরিবেশ সংক্রমণ আইন, ১৯৯৫ এবং পরিবেশ সংক্রমণ বিধিমালা, ১৯৯৭-এ প্রদত্ত ক্ষমতাসমূহে উপস্থিতিপত্র পরিসরভূমি enforce

Annex- 6: ESIA Approval Letter from DoE 2010

Government of the People's Republic of Bangladesh
Department of Environment
www.doe-bd.org
Head Office, Paribesh Bhaban
E-16 Agargaon, Dhaka-1207

Memo No : DoE/Clearance/4085/2010/299

Date: 09/09/2010

Subject: Approval of Environmental Impact Assessment Report for Construction of Asian University for Women campus at Pahartali, Chittagong.

Ref: Your Application dated 15/07/2010.

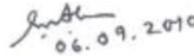
With reference to the above, the Department of Environment (DOE) is pleased to approve Environmental Impact Assessment (EIA) Report for Construction of Asian University for Women campus at Pahartali, Chittagong. This approval authorizes and regulates the following activities:

1. Project Proponent may undertake activities for land development and infrastructural development of the project.
2. Project Proponent may open L/C (Letter of Credit) for importing machineries for the project which shall also include machineries relating to waste treatment plant and other pollution control devices.
3. The activity under Asian University for Women Project shall not result in the loss of containment of any materials that would affect health or will have damaging impact on the environment or natural resources.
4. Proper and adequate mitigation measures shall be ensured throughout the proposed Asian University for Women campus construction program.
5. No solid waste can be burnt in the project area. An environment friendly solid waste management should be in place during the whole period of the project in the field.
6. Proper and adequate on-site precautionary measures and safety measures shall be ensured so that no habitat of any flora and fauna would be demolished or destructed.
7. All the required mitigation measures suggested in the EIA report along with the emergency response plan are to be strictly implemented and kept operative/functioning on a continuous basis.
8. To reduce dust, spraying of water over the earthen materials should be carried out from time to time.
9. Adequate considerations should be given to facilitate drainage system for run off water from rain.
10. Adequate facilities should be ensured for silt trap to avoid clogging of drain/canal/water bodies.
11. Resettlement plan should be properly implemented and people should be adequately compensated.
12. Construction material should be properly disposed off after the construction work is over.
13. As described in the report environmental monitoring should be strictly followed and monitoring report should be shared with DOE to ensure the environmental management properly.



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14. The Environmental Management Plan to be prepared under the EIA study shall strictly be implemented and kept functioning on a continuous basis.
15. In case of any emergency, the following information shall immediately be reported to Chittagong Divisional office and Headquarters of the Department of Environment (DOE) simultaneously
 - a) Nature of incident (land slides, fire, accident, collision, etc.)
 - b) Personnel affected (injured, missing, fatalities, etc.)
 - c) Emergency support available and its location (standby transport, medical facilities, etc.)
 - d) Weather conditions
 - e) Current operations (abandoning the site, fire fighting, etc.)
16. All pollution incidents shall be reported immediately and simultaneously to the Chittagong Divisional Office and Headquarters of the Department of Environment at Dhaka.
17. The project authority shall submit a detail work plan with time schedule of development activities at least 7 (seven) days ahead of the work commences in the field to Chittagong Divisional office and Headquarters of the Department of Environment (DOE) simultaneously.
18. There shall be specific format for Environment Monitoring. Environmental Monitoring Reports shall be made available simultaneously to DOE Head Quarter and Chittagong Divisional Office on a monthly basis during the construction period of the project.
19. No activity of cutting/razing/dressing of hill or hilly land is endorsed under this clearance without due permission/clearance of the concerned authority of the Government of Bangladesh.
20. The project authority shall extend active cooperation to DOE officials to facilitate their visit to the site as and when necessary.
21. Violation of any of the above conditions shall render this approval void.
22. Project Proponent shall, after land development and infrastructural development as well as installation of waste treatment plant and other pollution control equipment, apply for Environmental Clearance Certificate without which proponent shall not start operation of the project.


06.09.2010

(Syed Nazmul Ahsan)
Deputy Director (Environmental Clearance)
&
Member Secretary
Environmental Clearance Committee

✓
Dr. Hoon Eng Khoo
Vice Chancellor
Asian University for Women
House # 87, Road # 6/B, Apt # 4C, Banani, DOHS
Dhaka-1206, Bangladesh.

Copy Forwarded to :

- 1) Private Secretary to the Hon'ble Secretary, Ministry of Environment and Forests, Bangladesh Secretariat, Dhaka.
- 2) Director, Department of Environment, Chittagong Division, Chittagong.
- 3) Staff Officer to the Director General, Department of Environment, Head Office, Dhaka.

Annex- 7: Social Survey Questionnaire

Unique ID #

Environmental and Social Impact Assessment (ESIA) Study of Asian University for Women Support Foundation (AUWSF)

এশিয়ান মহিলা ইউনভার্সিটি সহায়তা ফাউন্ডেশনের জন্ম পরবিশেষত ও সামাজিক প্রভাব মূল্যায়ন স্টাডি

Household Questionnaire

Greetings!

My name is I am working for Pathways Consulting Services Ltd. Our agency has been engaged by Vitti SBL for conducting **Social Impact Assessment Study of Asian University for Women Support Foundation (AUWSF)**. We are interviewing some of the residents living within half a kilometer from the border of the AUW lands. The information and opinion provided by the respondents are likely to be useful in smooth implementation of the AUW campus. Your name has been randomly selected for the interview. Hope you will participate in the interview and talk to me freely. Let me assure you that strict confidentiality will be maintained about the information and opinion which we receive from you. These will be used for research purpose only. While interviewing, you will also have the option of not responding to any particular question. May I now proceed with the interview, which may take about half an hour (maximum)?

1- Agreed → Proceed 2- Not interested → Thank and go to the next respondent in the list.

ভৌগোলিক দিক	1 = বিশ্ববিদ্যালয়ের পূর্ব দিকে 2 = বিশ্ববিদ্যালয়ের পশ্চিম দিকে 3 = বিশ্ববিদ্যালয়ের উত্তর দিকে 4 = বিশ্ববিদ্যালয়ের দক্ষিণ দিকে	
পাড়া/ এলাকার নামঃ		
ওয়ার্ড		
উত্তরদাতার নাম		
উত্তরদাতা পুরুষ না মহিলা?	1 = পুরুষ, 2 = মহিলা, 3 = তৃতীয় লিঙ্গ	
উত্তরদাতার বয়স		
ধর্ম	1 = ইসলাম, 2 = হিন্দু, 3 = খ্রিস্টান, 4= বৌদ্ধ, 5= অন্যান্য	
জাতি	1 = বাঙালি, 2 = আদবাসী/ উপজাতি	
সাক্ষাতকার সময়ঃ	শুরুঃ	শেষঃ

Interviewer's pledge:

I do hereby pledge that I have filled out the questionnaire myself interviewing the person named and I have tried to remain as neutral as possible in recording the information.

Interviewer's Name & ID		Date	
Supervisor's Name & ID		Date	

Household Member Matrix

Sl. #	নাম	খানা প্রধানের সাথে সম্পর্ক (Code-1)	বয়স (Rounded Year)	পুরুষ না মহিলা? পুরুষ-1 মহিলা-2 হিজড়া-3	বৈবাহিক অবস্থা (Code-2)	শিক্ষাগত যোগ্যতা (সর্বোচ্চ শ্রমের পাশ) (Code-3)	প্রতিবন্ধি কনি? (Code-4)	প্রধান পেশা (Code-5)	দ্বিতীয় পেশা (Code-5)	মাসিক গড় আয় (avg. per month)
1	2	3	4	5	6	7	8	9	10	11
01										
02										
03										
04										
05										
06										
07										
08										
09										
10										

Relation to the household head (Code-1)		Marital status: (code-2)		Disable: (code-4)	
খানা প্রধান.....	1	জামাই/পুত্র বধু.....	7	অবিবাহিত.....	1
খানা প্রধানের স্ত্রী/স্বামী.....	2	শালা/শালী/ ভাই এর স্ত্রী/ বোন.....	8	বিবাহিত.....	2
ছোলে/ময়ে.....	3	জামাই.....	8	বধিবা/ বিপত্নীক.....	3
ভাই/বোন.....	4	নাত/নাতনী.....	9	তালাকপ্রাপ্ত.....	4
বাবা/মা.....	5	ভাগ্নে/ভাগ্নী.....	10	বিচ্ছিন্ন/ পরিত্যাক্ত.....	5
শ্বশুর/শ্বশুড়ী.....	6	অন্যান্য আত্মীয়.....	11		
		অনাত্মীয়/ আশ্রিত.....	12		
					নাই.....1
					শারীরিক ...2
					অন্ধ.....3
					মুগ ও বধি 4
					মানসিক .....5

Occupation: (Code-5)				Education: (Code-3)			
শিশু	1	মাঝারী বয়স	10	Uneducated	1		
ছাত্র/ছাত্রী	2	শিক্ষকতা	11	Below class 5	2		
গৃহিণী	3	ভিক্ষুক	12	5 – 10	3		
প্রবাসী	4	বেকার	13	SSC	4		
অদক্ষ শ্রমিক/ বুয়া	5	অবসর প্রাপ্ত/ বৃদ্ধ	14	HSC	5		
দক্ষ শ্রমিক/ ড্রাইভার	6	প্রতিবন্ধি	15	Graduate	6		
রিক্সা/ভ্যান/ঠলোগাড়ি চালক	7	দ্বিতীয় পেশা নাই	16	Masters or above	7		
চাকরী/ গার্মেন্টস কর্মী	8	কৃষক	17	Vocational Institute	8		
ছোট বয়স	9	অন্যান্য.....	18	Madrassa	9		

Section 1: Socio-economic Information of Respondent Households

Q. #	Question	Answer
101	বর্তমানে এই খানায় কত মাস বসবাস করছেন?	..... months Since birth 99

Q. #	Question	Answer
102	বসত বাড়ির মালিকানা	নজিরে জমতি থাকে 1 ভাড়ায় থাকে 2 অন্যরে জমতি বাড়ী তুলে থাকে 3 সরকারী জমতি বাড়ী তুলে থাকে 4 বনি ভাড়ায় 5 অন্যান্য 5
103	বসত বাড়ি করি দিয়ে তরৈ	সম্পূর্ণ পাকা 1 আধা/মঝো পাকা 2 বাঁশ/টনি/কাঠ/মাটির মজবুত ঘর 3 বাঁশ/টনি/কাঠ/মাটির দুর্বল ঘর 4 ছাপড়া/ঝুপড়া 5 অন্যান্য 6
104	ঘরের সংখ্যা (exclude rooms rented or given sublet)	রুম সংখ্যা:
105	ফ্লোরের পরিমাপ:	.....sq.ft.
106	খানার মতো টি মাসিক গড় ব্যয় কত?	..... টাকা.
107a	বসত ভটি জমির পরিমিত (নজি মালিকানা)	..... শতক
107b	কৃষি জমির পরিমিত (নজি মালিকানা)	..... শতক
107c	পুকুর/ ডোবা জমির পরিমিত (নজি মালিকানা)	..... শতক
107d	পতি জমির পরিমিত (নজি মালিকানা)	..... শতক
108	কৃষি জমতি, করি ফসল চাষ করে থাকেন?	ধান 1 পাট 2 গম 3 সরষি 4 আলু 5 কলা 6 ফলের বাগান 7 সবজি 8 অন্যান্য 9
109	খানায় আলোর জন্য জ্বালানি হিসাবে কোন উৎস ব্যবহার করেন?	বদ্যুৎ সংযোগ 1 বদ্যুৎ সংযোগ ও কেরোসিন 2 বদ্যুৎ সংযোগ ও সোলার 3 কেরোসিন 4 সোলার 5
110	খানায় রান্নার জন্য জ্বালানি হিসাবে কোন উৎস ব্যবহার করেন?	গ্যাস সংযোগ 1 সলিনিডার গ্যাস/ এলপজি 2 কেরোসিন 3 লাকড়া/ গ্যাসের ইত্যাদি 4
111	বর্তমানে খানার মতো টি সঞ্চয় কত? (সকল উৎস)	..... টাকা
112	বর্তমানে খানার মতো টি খণ কত? (সকল উৎস)	..... টাকা

Section-2: WaSH

A. Water use, all purposes

20	Interviewer: For each of the purpose of water use mentioned in the left column of the Table below, please ask main and alternative sources of water and write the answer in the corresponding right columns using source code below.
1	

Purpose of water use	Main source (Code)	Alternate source (Code)		
আপনার খানায় খাওয়ার পানির উৎস কি?				
খানায় রান্নার পানির উৎস কি?				
গোসলের ও কাপড় ধোয়ার পানির উৎস কি?				
পায়খানার পানির উৎস কি?				

Water source Code:

1=খানায় সাপ্লাই পানির লাইন, 2= খানার বাইরে সাপ্লাই পানির লাইন, 3= চাপকল (ট্যাঙ্ক এর সাথে সংযুক্ত), 4= চাপকল, 5= কুয়া (সুরক্ষিত), 6= কুয়া (অরক্ষিত), 7= ভূ-উপরস্থ পানি (নদী/পুকুর/খাল), 8= দ্বিতীয় উৎস নাই, 9= অন্যান্য

B. Latrine use

Q. #	Question	Answer	Skip	
202	আপনি ও খানার সদস্যরা কোন ধরনের পায়খানা ব্যবহার করেন?	ল্যাট্রিনি (সুয়ারজে লাইন এর সঙ্গী সংযুক্ত) ল্যাট্রিনি (সেপটিক ট্যাঙ্ক এর সঙ্গী সংযুক্ত) রিং-স্লাব ল্যাট্রিনি (ঢাকনা / ওয়াটার সীল সহ) রিং-স্লাব ল্যাট্রিনি (ঢাকনা / ওয়াটার সীল ছাড়া) পটি পায়খানা (কভার / ঢাকনা সহ) পটি পায়খানা (কভার / ঢাকনা ছাড়া) ভাল ল্যাট্রিনি (খোলা ড্রনে এর সঙ্গী সংযুক্ত) বুলন্ত পায়খানা খোলা স্থান / ড্রনে এ অন্যান্য	1 2 3 4 5 6 7 8 9	>>204 >>301
203	<i>(Please Ask and observe)</i> পায়খানার মল/মূত্র নির্গমন হয়ে কোথায় যায়?	সুয়ারজে লাইনে সেপটিক ট্যাঙ্ক খোলা ড্রনে পাইপের মাধ্যমে খানার বাইরে খালে গর্তের ভিতরে অন্যান্য	1 2 3 4 5 6	
204	পায়খানার অবকাঠামো কমন?	ভাল মোটামুটি খারাপ	1 2 3	
205	ল্যাট্রিনি পর্যবেক্ষণ করুন উত্তর দিন (e.g., Water seal/ breakage/ leakage etc.)	স্বাস্থ্যসম্মত স্বাস্থ্যসম্মত নয়	1 2	
206	এই খানায় কি ৫ বছরে কম বয়সের শিশু বা প্রতিনিধী আছে যারা এই ল্যাট্রিনি ব্যবহার করতে পারেন?	হ্যাঁ না পর্যবেক্ষণ নয়	1 2 3	
207	<i>If yes,</i> তাদের মল/মূত্র কোথায় ফেলেন?	পায়খানার মাধ্যমে ড্রনে বা আবর্জনার স্তুপে কোন নির্দিষ্ট জায়গা নাই খোলা জায়গায় খালে জুগল অন্যান্য...	1 2 3 4 5 6 7	

Section-3: Environmental and Waste management

Q. #	Question	Answer	Skip	
301	আপনার খানায় কি কোন ড্রনের সংযোগ আছে কনি?	হ্যাঁ, ভূগর্ভস্থ হ্যাঁ, ভূ-উপরস্থ ড্রনে না	1 2 3	→303
302	খানায় ব্যবহৃত এবং বৃষ্টির পানি কোথায় গিয়ে পড়ে?	সর্টি কর্পোরেশনের ড্রনে পড়ে সাধারণ ড্রনে পড়ে পাইপ দিয়ে খালে গিয়ে পড়ে কোন নির্দিষ্ট জায়গা নাই	1 2 3 4	

Q. #	Question	Answer	Skip
303	আপনার খানা কজিলাবদ্ধতার কবলে পড়ে?	হ্যা, প্রায় হ্যা মাঝমোঝে না	1 2 3 →305 →305
304	গড়ে বছরে কত দিন জলাবদ্ধতার সমস্যা থাকে?	.....Days	
305	খানার/ রান্নাঘরের আবর্জনা প্রধানত কোথায় ফেলা হয়?	বর্জ্য সংগ্রাহক বাসা থেকে নিয়ে যায় নরিদষ্টি ডাস্টবিনে ফলে নরিদষ্টি জায়গায় ফলে যে কোন জায়গায় ফলে দেই অন্যান্য	1 2 3 4 5
306	আপনার বাড়ির আশপোশে পানি দূষনরে মাত্রা কমন?	হ্যা, অনেকে হ্যা, কিছুকছু না	1 2 3
307	আপনি কি খানায় বায়ু দূষনরে মুখোমুখি হন?	হ্যা, অনেকে হ্যা, কিছুকছু না	1 2 3
308	আপনি কি খানায় শব্দ দূষনরে মুখোমুখি হন?	হ্যা, অনেকে হ্যা, কিছুকছু না	1 2 3
309	আপনার এলাকায় পাহাড় কটে ফেলোর মাত্রা কমন?	অনেকে মোটামুটি কম নাই	1 2 3 4
310	আপনি কি মনে করেন পাহাড় কটে ফেলোর কারণে আপনার কমিউনিটি ক্যতগিরস্থ হবে?	হ্যা না জাননি	1 2 3
311	যদি হ্যা হয় তবে ককি ধরনরে ক্যত হতে পারে?	ভূমিস্থলন ভূগর্ভস্থ পানি ঘাটতি গাছ / বন অভাব জীব বটৈতির্য হ্রাস কৃষি উপাদন জাননি অন্যান্য	1 2 3 4 5 6 7

Section-4: Social facilities and problems

Q. #	Question	Answer	Skip
401	আপনি কি কোন রাজনৈতিক দল, পশোগত প্রতিষ্ঠান, সামাজিক প্রতিষ্ঠান, স্কুল কমিটি, মসজিদ, ক্রীড়া ক্লাব ইত্যাদি এর সদস্য? <i>[FI: Please mark those apply]</i>	রাজনৈতিক দল পশোগত প্রতিষ্ঠান সামাজিক প্রতিষ্ঠান স্কুল কমিটি মসজিদ ক্রীড়া ক্লাব জড়তি নাই অন্যান্য	1 2 3 4 5 6 7
402	সদস্যরে ধরণ? <i>[For more than one, mention the most prestigious one]</i>	সাধারন সদস্য কার্যনির্বাহী সদস্য	1 2
403	বাচ্চাদরে খলোধুলা করার জন্য এই এলাকায় মাঠ আছে কি?	পর্যাপ্ত অপর্যাপ্ত নাই	1 2 3
404	হাটাহাটিকরার জন্য এই এলাকায় খেলামলো জায়গা বা পার্ক আছে কি?	পর্যাপ্ত অপর্যাপ্ত নাই	1 2 3
405	চিত্ত বনোদনরে জন্য এই এলাকায় কোন সুযোগ সুবিধা যমেন সামাজিক অনুষ্ঠান, সনিমো, নাটক উপভোগ করার ব্যবস্থা আছে কি?	পর্যাপ্ত অপর্যাপ্ত নাই	1 2 3
406	আপনার মতে, এই এলাকায় মাদক আসক্তি সমস্যার মাত্রা কমন?	অনেকে গুরুর গুরুর মাঝমাঝি গুরুর কম গুরুর খুবই কম গুরুর জাননি	1 2 3 4 5 6

Q. #	Question	Answer	Skip
407	আপনার মতে, এই এলাকায় নরিপাত্তা জনতি সমস্যার মাত্রা কমনে?	অনকে বেশি বেশি মাঝামাঝি কম খুবই কম	1 2 3 4 5
408	আপনার মতে, এই এলাকায় একে অপরের সাথে সামাজিক যোগাযোগ এর মাত্রা কমনে?	অনকে বেশি বেশি মাঝামাঝি কম খুবই কম	1 2 3 4 5
409	এই এলাকায় আপনার সন্তানদের জন্য শিক্ষা সুবিধা কমন আছে বলে আপনি মনে করেন?	ভাল সুবিধা মোটামুটি সুবিধা কম সুবিধা	1 2 3
410	এই এলাকায় আপনার কন্যা সন্তানদের জন্য উচ্চ শিক্ষা সুবিধা কমন আছে বলে আপনি মনে করেন?	ভাল সুবিধা মোটামুটি সুবিধা কম সুবিধা	1 2 3
411	আপনার খানা হতে নকিটবর্তী প্রাইমারী স্কুলের দুরত্ব কত কিলোমিটার?		
412	আপনার খানা হতে নকিটবর্তী প্রাইমারী স্কুলে পায় হটে যেতে কত মিনিটি সময় লাগে?		
413	আপনার খানা হতে নকিটবর্তী হাই স্কুলের দুরত্ব কত কিলোমিটার?		
414	আপনার খানা হতে নকিটবর্তী হাই স্কুলে পায় হটে যেতে কত মিনিটি সময় লাগে?		
415	আপনার খানা হতে নকিটবর্তী কলেজে দুরত্ব কত কিলোমিটার?		
416	আপনার খানা হতে নকিটবর্তী কলেজে পায় হটে যেতে কত মিনিটি সময় লাগে?		
417	আপনার খানা হতে নকিটবর্তী বিশ্ববিদ্যালয়ের দুরত্ব কত কিলোমিটার?		
418	আপনার খানা হতে নকিটবর্তী বিশ্ববিদ্যালয়ে পায় হটে যেতে কত মিনিটি সময় লাগে?		
419	আপনার খানা হতে নকিটবর্তী কমিউনিটি কলনিকের দুরত্ব কত কিলোমিটার?		
420	আপনার খানা হতে নকিটবর্তী কমিউনিটি কলনিকে পায় হটে যেতে কত মিনিটি সময় লাগে?		
421	আপনার খানা হতে নকিটবর্তী সরকারী হাসপাতালের দুরত্ব কত কিলোমিটার?		
422	আপনার খানা হতে নকিটবর্তী সরকারী হাসপাতালে পায় হটে যেতে কত মিনিটি সময় লাগে?		
423	আপনার খানা হতে নকিটবর্তী মেডিকলে কলেজে হাসপাতালের দুরত্ব কত কিলোমিটার?		
424	আপনার খানা হতে নকিটবর্তী মেডিকলে কলেজে হাসপাতালে পায় হটে যেতে কত মিনিটি সময় লাগে?		
425	আপনার খানা হতে নকিটবর্তী হাট বাজারের দুরত্ব কত কিলোমিটার?		
426	আপনার খানা হতে নকিটবর্তী হাট বাজারে পায় হটে যেতে কত মিনিটি সময় লাগে?		

Section-5: Questions related to Asian University for Women Project

5-A. General

Q. #	Question	Answer	Skip
501	এশিয়ান ইউনভার্সিটি ফর উইমানে সম্পর্কে আপনি কতটুকু জানেন? [Ask supportive questions learnt in the training to assess on the spot]	খুব ভালোভাবে জানি ভালোভাবে জানি মোটামুটি জানি অল্প জানি খুব অল্প জানি জানি না	1 2 3 4 5 6 > 607
502	কার কার কাছ থেকে শুনছেন বা জেনেছেন? (Multiple)	কাউন্সিলরের কাছ থেকে সিটি কর্পোরেশন থেকে স্থানীয় নতাদের কাছ থেকে বন্ধু / প্রতিনিধির কাছ থেকে খানার সদস্য এর কাছ থেকে স্বয়ংশাল মডিয়া থেকে কাজ করতে দেখে জেনেছি অন্যান্য	1 2 3 4 5 6 7

Interviewer: Give a brief description of the present initiative:

১৪৩ একর জমতি একটি আন্তর্জাতিক বিশ্ববিদ্যালয় ক্যাম্পাস তৈরি করা হচ্ছে। এই জমতি বাংলাদেশ সরকার এশিয়ান ইউনভার্সিটি ফর উইমানে বিশ্ববিদ্যালয়কে লীজ বরাদ্দ করেছে এবং তারা কয়েক বছর ধরে সেখানে অবস্থান করছে। আগামী ৩-৪ বছরে এশিয়ান ইউনভার্সিটি ফর উইমানে বিশ্ববিদ্যালয় স্থায়ী ক্যাম্পাসের জন্য প্রচুর ভবন নির্মাণ করবে। নির্মাণের পর এখানে হাজার হাজার স্থানীয় ও বিদেশী শিক্ষার্থী পড়াশোনা করবে। নারী বিশ্ববিদ্যালয় হিসাবে, বহুরাগতদের প্রবশে নিষিদ্ধ করা হবে।

503	আপনি বা আপনার পরিবারের কে-নো সদস্যকে কি কোন কারণে এই এলাকায় যাওয়া আসার প্রয়োজন পড়ে?	হ্যাঁ না	1 2
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Q. #	Question	Answer	Skip
504	যদি হুঁচু হয়, তবে কী কারণে এবং যাওয়া আসার মাত্রা কতটা কমেন?		
505	আপনার মতে, প্রকল্প বাস্তবায়নে স্থানীয়দের সমর্থন কতটা কমেন?	অনেক বেশী বেশী মাঝামাঝি কম খুবই কম জানি না	1 2 3 4 5 6
506	প্রকল্প বাস্তবায়নে আপনি ব্যক্তিগতভাবে কতটা সমর্থন করেন?	অনেক বেশী সমর্থন করি মোটামুটি সমর্থন করি সমর্থন করি না	1 2 3
507	সমর্থনের কারণ গুলি বলুনঃ:		

5-B. Possible problems that the people may face during implementation of the project

509	আপনার মতে, প্রকল্প চলাকালীন এই এলাকার মানুষ প্রধানত কী কী সমস্যার মুখোমুখি হতে পারে? (Probe) [FI: First circle the responses mentioned spontaneously in the 'Unaided' column. Then mention the rest of the listed responses one by one and ask whether that could also be a problem. Circle those agreed in the 'Aided' column and if not agreed circle the last column]			
	Responses	Unaided, yes	Aided, yes	No
	a. এলাকার শান্তিপূর্ণ পরিবেশকে প্রভাবিত করবে।	1	2	3
	b. বায়ু দূষণ বেড়ে যাবে।	1	2	3
	c. শব্দ দূষণ বেড়ে যাবে।	1	2	3
	d. পানি দূষণ বেড়ে যাবে।	1	2	3
	e. অনেকে দনিমজুর ও অন্য এলাকার মানুষের ভেড়া বাড়বে।	1	2	3
	f. পাহাড় কাটা / ভূমি ধস হতে পারে।	1	2	3
	g. বিশ্ববন্দিতায় প্রবেশে ন্যায়বিচারের ফলে আমাদের এক স্থান থেকে অন্য স্থানে যেতে হতে পারে সমস্যা হবে।	1	2	3
	h. পাহাড় প্রবেশে ন্যায়বিচারে আমাদের আয় / জীবিকা প্রভাবিত করতে পারে।	1	2	3

5-C. Possible benefits / good impacts when the project will be complete

510	আপনার মতে, প্রকল্পটি বাস্তবায়িত হলে এই এলাকার মানুষ প্রধানত কী কী সুফল ভোগ করতে পারবে? আর কী? (Probe) [FI: First circle the responses mentioned spontaneously in the 'Unaided' column. Then mention rest of the listed responses one by one and ask whether that could be a benefit. Circle those agreed in the 'Aided' column and if not agreed circle the last column]			
	Responses	Unaided, yes	Aided, yes	No
	a. জমির দাম বেড়ে যাবে/ ডভেলপাররা আকৃষ্ট হবে।	1	2	3
	b. আয়ের সুযোগ বৃদ্ধি পাবে।	1	2	3
	c. এলাকা আকর্ষণীয় ও সুন্দর হবে।	1	2	3
	d. ব্যাপক কাজের কারণে ব্যবসার সুযোগ বৃদ্ধি পাবে।	1	2	3
	e. স্থানীয় মানুষের জন্য আয়ের সুযোগ বৃদ্ধি পাবে।	1	2	3

5-D. Possible problems or adverse impacts when the project will be complete

511	আপনার মতে, বিশ্ববন্দিতায় এই ক্যাম্পাস যখন চলবে তখন এই এলাকার মানুষের প্রধানত কী কী সমস্যার মুখোমুখি হতে পারে বলে আপনি মনে করেন? (Probe) [FI: First circle the responses mentioned spontaneously in the 'Unaided' column. Then mention rest of the listed responses one by one and ask whether that could be a problem. Circle those agreed in the 'Aided' column and if not agreed circle the last column]			
	Responses	Unaided, yes	Aided, yes	No
	a. বাড়ির ভাড়া বাড়বে / কম আয়ের লোকদের এই এলাকা ত্যাগ করতে হতে পারে।	1	2	3
	b. এলাকা খুব ভিড়ি বাড়বে।	1	2	3
	c. স্থানীয়দের উপর অভিবাসীদের চাপ বাড়বে।	1	2	3
	d. সামাজিক অপরাধ বৃদ্ধি হবে।	1	2	3
	e. অন্যান্য আরো কিছু বলে থাকলে সরিয়াল নম্বর দিয়ে লিখুন	1	2	3

Q. #	Question	Answer	Skip
512	বিশ্ববদ্বিঘালায়রে ভবনরে কারগে আপনকি সরাসরকি ক্মতগিরস্থ হবনে?	হাঁ না	1 2 →515
513	কমেন ভাবে ক্মতগিরস্থ হবনে, বলুন?		
514	কভাবে তা কাটয়ি উঠবনে বলুন?		
515	এশয়ান ইউনভারসটি ফর উইমনে প্রকল্প করতুপকক্ষকে কোন পরামর্শ থাকলে বলুন		

Mobile number of the respondent		
Take a photograph		
GPS Location		

FI: Please examine the whole questionnaire to ensure that you have nothing more to ask. Then thank the respondent for his/her cooperation to conclude your interview.

Annex- 8: Data Tables of Socio-economic Profile of the Respondents

Section 1: Social Survey Analysis

Sample distribution							
		Respondents' sex				Total	
		Male		Female		C	%
		C	%	C	%		
Location	East side	60	37.5	43	28.3	103	33
	West side	20	12.5	20	13.2	40	12.8
	North side	58	36.3	78	51.3	136	43.6
	South side	22	13.8	11	7.2	33	10.6
Socio-economic	High	65	40.6	37	24.3	102	32.7
	Medium	51	31.9	54	35.5	105	33.7
	Low	44	27.5	61	40.1	105	33.7
Total		160	100	152	100	312	100

Household family size										
	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
up to 2 members	5.6	8.6	6.8	12.5	5.1	9.1	2	7.6	11.4	7.1
3 members	13.1	15.8	15.5	20	13.2	9.1	8.8	13.3	21	14.4
4 members	28.8	27	32	27.5	23.5	33.3	13.7	35.2	34.3	27.9
5 members	27.5	25	21.4	17.5	33.1	24.2	31.4	27.6	20	26.3
5+ members	25	23.7	24.3	22.5	25	24.2	44.1	16.2	13.3	24.4
Total	%	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105
	Avg.	4.7	4.5	4.5	4.3	4.8	4.6	5.4	4.4	4.1

Religion of the respondent										
	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
Islam	96.9	93.4	98.1	90	93.4	100	98	93.3	94.3	95.2
Hindu	3.1	6.6	1.9	10	6.6		2	6.7	5.7	4.8
Total	%	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105

Race of the respondent										
	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
Bengali	100	100	100	100	100	100	100	100	100	100
Total	%	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105

How long have you been staying in the present residence?										
	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
up to 1 year	10.6	11.8	18.4	10	7.4	6.1	8.8	10.5	14.3	11.2
2-3 years	11.9	16.4	18.4	15	11	12.1	13.7	14.3	14.3	14.1
4-5 years	12.5	11.8	8.7	17.5	11.8	18.2	12.7	13.3	10.5	12.2
6-10 years	19.4	26.3	20.4	27.5	22.1	27.3	25.5	21.9	21	22.8
11-15 years	18.8	15.8	11.7	17.5	21.3	18.2	13.7	22.9	15.2	17.3
15+ years	18.8	9.2	16.5	10	12.5	18.2	15.7	15.2	11.4	14.1
By born	8.1	8.6	5.8	2.5	14		9.8	1.9	13.3	8.3
Total	%	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105
	Avg	119.5	94.3	96.8	96.6	116.1	118.8	111.7	113.2	95.9

102. Ownership of the dwelling house:											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
Live at own land		21.9	30.9	14.6	42.5	35.3	6.1	33.3	22.9	22.9	26.3
Live on rent		38.8	32.2	73.8	15	14.7	27.3	40.2	34.3	32.4	35.6
House built on private land		13.1	17.8	7.8	25	16.2	24.2	7.8	17.1	21	15.4
House built on Govt. land		21.3	11.2		17.5	26.5	24.2	14.7	15.2	19	16.3
5		5	7.9	3.9		7.4	18.2	3.9	10.5	4.8	6.4
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

103. Type of house construction											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
Brick and cement (all)		4.4	2	7.8	2.5	0.7		4.9	1.9	2.9	3.2
Brick and cement (floor/partial)		41.9	38.8	63.1	30	29.4	27.3	52	40	29.5	40.4
Bamboo/Tin/Earthen house – well built		29.4	25.7	14.6	47.5	35.3	12.1	24.5	23.8	34.3	27.6
Bamboo/Tin/Earthen house – weakly built		24.4	33.6	14.6	20	34.6	60.6	18.6	34.3	33.3	28.8
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

104. Number of rooms											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
1 room		34.4	38.8	39.8	22.5	36.8	42.4	22.5	39	47.6	36.5
2 rooms		39.4	36.2	39.8	37.5	37.5	33.3	38.2	37.1	38.1	37.8
3 rooms		13.1	17.8	8.7	22.5	17.6	18.2	17.6	17.1	11.4	15.4
3+ rooms		13.1	7.2	11.7	17.5	8.1	6.1	21.6	6.7	2.9	10.3
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312
	Avg	2.05	1.93	1.92	2.35	1.97	1.88	2.38	1.91	1.7	1.99

105. Area of floor											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
Upto 150 sq.ft.		9.4	9.9	20.4	2.5	4.4	6.1	5.9	12.4	10.5	9.6
151-300 sq.ft.		46.9	50	43.7	47.5	51.5	51.5	34.3	51.4	59	48.4
301-500 sq.ft.		23.8	24.3	23.3	20	26.5	21.2	33.3	18.1	21	24
501-750 sq.ft.		13.1	11.8	5.8	22.5	13.2	18.2	15.7	14.3	7.6	12.5
751-1000 sq.ft.		5	2.6	2.9	5	4.4	3	6.9	3.8	1	3.8
1000+ sq.ft.		1.9	1.3	3.9	2.5			3.9		1	1.6
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312
	Avg	361.7	342.8	339	403.5	349.2	345.9	433.1	329.8	296.7	352.5

106. Avg. monthly expense HH											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	Upto Tk.10000	25.6	31.6	20.4	45	29.4	30.3	8.8	14.3	61.9	28.5
	Tk.10001-15000	37.5	43.4	38.8	35	44.1	36.4	19.6	65.7	35.2	40.4
	Tk.15001-20000	21.3	15.8	21.4	12.5	18.4	18.2	34.3	19	2.9	18.6
	Tk.20001-25000	8.1	4.6	5.8	5	5.9	12.1	18.6	1		6.4
	Tk.25000+	7.5	4.6	13.6	2.5	2.2	3	18.6			6.1
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312
	Avg.	16078	14010	17578	12463	14029	14697	21216	13900	10271	15071

Avg. monthly income HH										
		Respondents' sex		Location				Total		
		Male	Female	East side	West side	North side	South side			
	Upto Tk.10000			17.5	19.7	15.5	25	17.6	24.2	18.6
	Tk.10001-15000			24.4	34.2	22.3	25	36.8	24.2	29.2
	Tk.15001-20000			17.5	21.7	20.4	25	16.9	21.2	19.6
	Tk.20001-25000			18.8	7.2	16.5	12.5	11.8	9.1	13.1
	Tk.25000+			21.9	17.1	25.2	12.5	16.9	21.2	19.6
Total	%			100	100	100	100	100	100	100
	N=			160	152	103	40	136	33	312
	Avg.			21116	17763	22907	16818	18137	17570	19483

107. Land size											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	No land	59.4	58.6	58.3	47.5	58.1	78.8	51	59	66.7	59
	1-5 desimal	16.9	22.4	15.5	30	23.5	3	20.6	18.1	20	19.6
	5+-10 desimal	12.5	9.9	13.6	12.5	11	3	14.7	12.4	6.7	11.2
	10+ to 50 desimal	8.8	7.2	10.7	7.5	5.1	12.1	9.8	8.6	5.7	8
	50+ desimal	2.5	2	1.9	2.5	2.2	3	3.9	1.9	1	2.2
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312
	Avg. Land in the house	2.6	3.1	3.2	3	2.8	1.4	3.5	2.9	2.1	2.8
	Avg. Agricultural land	4.4	2.2	4.5	2.8	2.3	4.5	6.7	2.7	0.7	3.3
	Avg. Pond / ditch land	0.2	0	0.2	0.1	0	0.2	0.2	0.1	0.1	0.1
	Avg. Land fallen	1.7	1.1	2.8	0.3	0.2	3.4	2.4	0.2	1.7	1.4
	Avg. Total land	8.8	6.5	10.7	6.2	5.4	9.5	12.7	5.8	4.6	7.7

108. What crops are cultivated on agricultural land?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	Paddy	77.8	100	100	100	100	33.3	71.4	100	100	
	Jute	11.1		14.3				14.3			
	Wheat	11.1			50				14.3		
	Mustard	11.1					33.3	14.3			
	Potatoes	11.1			50				14.3		
	fruit garden	11.1				16.7		14.3			
	Vegetables	44.4	22.2	28.6		33.3	66.7	71.4	14.3		
Total	N	9	9	7	2	6	3	7	7		4

*Multiple responses

109. What source of energy is used for lighting?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
Electricity connection		84.4	85.5	87.4	80	80.9	100	83.3	84.8	86.7	84.9
Electricity connections and kerosene		7.5	4.6	12.6		4.4		7.8	7.6	2.9	6.1
Electricity connections and solar		1.9				2.2		2.9			1
Solar kerosene		1.9	1.3		2.5	2.9		1	1.9	1.9	1.6
		4.4	8.6		17.5	9.6		4.9	5.7	8.6	6.4
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

110. What source of energy is used as cooking for food?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
Gas connection		2.7	3.4	7.9		1.1		5.7	4		3.1
Cylinder Gas / LPG		32.4	21.2	43.4	21.2	20.2	7.7	40	24	17.9	26.6
Lamb / dung etc.		64.9	75.4	48.7	78.8	78.7	92.3	54.3	72	82.1	70.3
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	111	118	76	33	94	26	70	75	84	229

111. HH savings at present (all sources)											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
None		76.3	71.1	73.8	62.5	75.7	78.8	68.6	68.6	83.8	73.7
Upto Tk.3000		2.5	3.9	5.8	2.5	2.2		1	6.7	1.9	3.2
Tk.3001-15000		6.3	5.3	1.9	20	4.4	6.1	3.9	7.6	5.7	5.8
Tk.15001-50000		8.8	15.8	11.7	12.5	13.2	9.1	13.7	15.2	7.6	12.2
Tk.50001-100000		3.1	2	4.9	2.5	1.5		5.9	1	1	2.6
Tk.100000+		3.1	2	1.9		2.9	6.1	6.9	1		2.6
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312
	Avg.	84690	47557	61063	22100	79864	99286	127938	24324	24353	64765

112. HH loan at present (all sources)											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
None		40	46.7	43.7	42.5	44.1	39.4	49	42.9	38.1	43.3
Upto Tk.20000		16.9	23	18.4	17.5	22.1	18.2	11.8	21	26.7	19.9
Tk.20001-50000		20.6	16.4	22.3	20	13.2	27.3	17.6	17.1	21	18.6
Tk.50001-100000		13.8	5.3	8.7	15	8.8	9.1	10.8	12.4	5.7	9.6
Tk.100000+		8.8	8.6	6.8	5	11.8	6.1	10.8	6.7	8.6	8.7
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312
	Avg.	76892	70179	61666	71761	85776	66000	104769	55727	65762	73820

Section 2& 3

301a. Drinking Water's Main source											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
Supply water (Connected to HH)		11.3	8.6	16.5	2.5	8.1	6.1	14.7	6.7	8.6	9.9

301a. Drinking Water's Main source										
Supply water (Not connected to HH)	66.3	62.5	65	45	65.4	81.8	61.8	65.7	65.7	64.4
Tube well with overhead tank	4.4	9.2	13.6		5.1		7.8	8.6	3.8	6.7
Tube well (manual)	11.9	13.8	1.9	32.5	18.4		12.7	10.5	15	12.8
Dug well (protected)	3.8	2.6		7.5	2.2	12.1	1	4.8	3.8	3.2
Dug well (unprotected)	1.3	2.6		12.5	0.7			2.9	2.9	1.9
Surface water (River/canal/Pond/lake/ditch)	1.3	0.7	2.9				2	1		1
Total	%	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

201a1. Drinking Water's Alternate source										
	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
Supply water (Connected to HH)		0.7	1				1			0.3
Supply water (Not connected to HH)	2.5	3.9			5.1	9.1	2.9	4.8	1.9	3.2
Tube well with overhead tank	0.6				0.7			1		0.3
Tube well (manual)	0.6	1.3			2.2		1		1.9	1
Dug well (protected)	1.3	1.3			2.9		2	1	1	1.3
Dug well (unprotected)	1.3	1.3			2.9		1		2.9	1.3
Surface water (River/canal/Pond/lake/ditch)		0.7				3			1	0.3
No secondary water source	93.8	90.8	99	100	86	87.9	92.2	93.3	91.4	92.3
Total	%	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

201b. Cooking Water's Main source										
	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
Supply water (Connected to HH)	11.3	8.6	16.5	2.5	8.1	6.1	14.7	6.7	8.6	9.9
Supply water (Not connected to HH)	66.9	63.2	66	45	66.2	81.8	61.8	67.6	65.7	65.1
Tube well with overhead tank	4.4	9.2	13.6		5.1		7.8	8.6	3.8	6.7
Tube well (manual)	10.6	11.8	1.9	30	15.4		12.7	9.5	11.4	11.2
Dug well (protected)	3.8	3.9		10	2.9	12.1	1	4.8	5.7	3.8
Dug well (unprotected)	1.9	2.6		12.5	1.5			2.9	3.8	2.2
Surface water (River/canal/Pond/lake/ditch)	1.3	0.7	1.9		0.7		2		1	1
Total	%	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

201b1. Alternate source for Cooking water										
	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
Supply water (Not connected to HH)	2.5	2.6	1		2.9	9.1	2.9	4.8		2.6
Tube well with overhead tank		1.3	1		0.7		1	1		0.6
Tube well (manual)	1.9	1.3			3.7		1	1	2.9	1.6

201b1. Alternate source for Cooking water										
Dug well (protected)	1.3	0.7				2.2		2	1	1
Dug well (unprotected)	0.6	1.3				2.2		1		1.9
Surface water (River/canal/Pond/ lake/ditch)		0.7					3			1
No secondary water source	93.8	92.1	98.1	100		88.2	87.9	92.2	92.4	94.3
%	100	100	100	100		100	100	100	100	100
Total	N=	160	152	103	40	136	33	102	105	105
										312

201c. Bathing and washing clothes Main source										
	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
Supply water (Connected to HH)	11.3	8.6	16.5	2.5	8.1	6.1	14.7	6.7	8.6	9.9
Supply water (Not connected to HH)	66.9	63.2	66	45	66.2	81.8	61.8	67.6	65.7	65.1
Tube well with overhead tank	4.4	9.2	13.6		5.1		7.8	8.6	3.8	6.7
Tube well (manual)	10.6	10.5	1.9	30	14		11.8	8.6	11.4	10.6
Dug well (protected)	2.5	3.9		10	2.9	6.1	1	3.8	4.8	3.2
Dug well (unprotected)	1.9	2.6		12.5	1.5			2.9	3.8	2.2
Surface water (River/canal/Pond/ lake/ditch)	2.5	2	1.9		2.2	6.1	2.9	1.9	1.9	2.2
%	100	100	100	100	100	100	100	100	100	100
Total	N=	160	152	103	40	136	33	102	105	105
										312

201c1. Bathing and washing clothes Alternate source										
	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
Supply water (Connected to HH)	0.6				0.7				1	0.3
Supply water (Not connected to HH)	1.9	3.3			3.7	9.1	2.9	3.8	1	2.6
Tube well with overhead tank	0.6	0.7	1.9				1		1	0.6
Tube well (manual)	1.9	1.3			3.7		1	1	2.9	1.6
Dug well (protected)	1.3	0.7			2.2		2	1		1
Dug well (unprotected)	0.6	1.3			2.2		1		1.9	1
Surface water (River/canal/Pond/ lake/ditch)		0.7				3			1	0.3
No secondary water source	93.1	92.1	98.1	100	87.5	87.9	92.2	94.3	91.4	92.6
%	100	100	100	100	100	100	100	100	100	100
Total	N=	160	152	103	40	136	33	102	105	105
										312

201d. Main source of water for latrine use										
	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
Supply water (Connected to HH)	11.3	8.6	16.5	2.5	8.1	6.1	14.7	6.7	8.6	9.9
Supply water (Not connected to HH)	66.9	63.2	66	45	66.2	81.8	61.8	67.6	65.7	65.1
Tube well with overhead tank	4.4	9.9	13.6		5.9		8.8	8.6	3.8	7.1
Tube well (manual)	10.6	11.2	1.9	30	14.7		10.8	9.5	12.4	10.9
Dug well (protected)	3.1	3.9		10	2.9	9.1	2	3.8	4.8	3.5
Dug well (unprotected)	1.9	2.6		12.5	1.5			2.9	3.8	2.2

201d. Main source of water for latrine use											
Surface water (River/canal/Pond/ lake/ditch)		1.9	0.7	1.9		0.7	3	2	1	1	1.3
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

201d1. Alternate source of water for Latrine use											
	Respondents' sex		Location				Socio-economic			Total	
	Male	Female	East side	West side	North side	South side	High	Medium	Low		
Supply water (Connected to HH)	0.6				0.7				1	0.3	
Supply water (Not connected to HH)	1.9	2.6			2.9	9.1	2.9	3.8		2.2	
Tube well with overhead tank		0.7	1				1			0.3	
Tube well (manual)	1.9	1.3			3.7		1	1	2.9	1.6	
Dug well (protected)	1.3	0.7			2.2		2	1		1	
Dug well (unprotected)	0.6	1.3			2.2		1		1.9	1	
Surface water (River/canal/Pond/ lake/ditch)		0.7				3			1	0.3	
No secondary water source	93.8	92.8	99	100	88.2	87.9	92.2	94.3	93.3	93.3	
Total	%	100	100	100	100	100	100	100	100	100	
	N=	160	152	103	40	136	33	102	105	105	312

202. What is the type of latrine that you and the members of your household use?											
	Respondents' sex		Location				Socio-economic			Total	
	Male	Female	East side	West side	North side	South side	High	Medium	Low		
Latrine connected with septic tank	36.9	31.6	56.3	20	22.1	33.3	43.1	34.3	25.7	34.3	
Ring-slab latrine with flap/water seal	11.3	17.1	10.7	20	16.2	9.1	10.8	17.1	14.3	14.1	
Ring-slab latrine without flap/water seal	36.3	43.4	17.5	57.5	52.9	33.3	32.4	41	45.7	39.7	
Pit latrine with cover/lid	4.4	0.7			2.9	12.1	3.9	1	2.9	2.6	
Pit latrine without cover/lid	3.1	2	1		2.2	12.1	2	1	4.8	2.6	
Well-built latrine connected to open/drain	8.1	4.6	14.6	2.5	2.9		7.8	5.7	5.7	6.4	
No latrine/ Defecated open/ On drain		0.7			0.7				1	0.3	
Total	%	100	100	100	100	100	100	100	100	100	
	N=	160	152	103	40	136	33	102	105	105	312

203. Where do the latrine water/sludge/feces go?											
	Respondents' sex		Location				Socio-economic			Total	
	Male	Female	East side	West side	North side	South side	High	Medium	Low		
To septic tank	11.9	5.8	4.4	15.6	10.5		10.3	8.7	7.8	8.8	
To open drain/canal	9.9	5.8	15.6	3.1	6.7	4.5	3.4	14.5	5.2	7.8	
To the edge of the HH through pipe	8.9	4.9	6.7	3.1	8.6	4.5		5.8	13	6.9	
To the Canal	4	1.9	13.3				8.6	1.4		2.9	
In the pit	65.3	81.6	60	78.1	74.3	90.9	77.6	69.6	74	73.5	
Total	%	100	100	100	100	100	100	100	100	100	
	N=	101	103	45	32	105	22	58	69	77	204

204. Super structure of the latrine										
	Respondents' sex		Location				Socio-economic			Total

204. Super structure of the latrine										
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
Good	27.5	21.9	47.6	20	12.6	9.1	32.4	22.9	19.2	24.8
Moderate	50	53.6	49.5	55	54.8	42.4	51	52.4	51.9	51.8
Bad	22.5	24.5	2.9	25	32.6	48.5	16.7	24.8	28.8	23.5
Total	%	100	100	100	100	100	100	100	100	100
	N=	160	151	103	40	135	33	102	105	104

205. Observed status of the latrine										
	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
Hygienic	58.1	47	61.2	55	51.9	27.3	70.6	42.9	45.2	52.7
Unhygienic	41.9	53	38.8	45	48.1	72.7	29.4	57.1	54.8	47.3
Total	%	100	100	100	100	100	100	100	100	100
	N=	160	151	103	40	135	33	102	105	104

206. Is there any children under 5 or disable member in this household who cannot use latrine?										
	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
Yes	32.5	34.4	33	40	32.6	30.3	33.3	26.7	40.4	33.4
No	52.5	47.7	67	52.5	45.2	15.2	52.9	53.3	44.2	50.2
Not applicable	15	17.9		7.5	22.2	54.5	13.7	20	15.4	16.4
Total	%	100	100	100	100	100	100	100	100	100
	N=	160	151	103	40	135	33	102	105	104

207. Where do you dispose off the excreta?										
	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
In latrine	67.3	67.3	61.8	87.5	70.5	40	73.5	75	57.1	67.3
At the garbage stack/ In the drain	19.2	11.5	23.5		11.4	30	11.8	14.3	19	15.4
No specific place	9.6	9.6	5.9	6.3	11.4	20	8.8	10.7	9.5	9.6
In drain/open space	1.9	7.7	2.9		6.8	10	2.9		9.5	4.8
In the Canal	1.9	3.8	5.9	6.3			2.9		4.8	2.9
Total	%	100	100	100	100	100	100	100	100	100
	N=	52	52	34	16	44	10	34	28	42

301. Is there any drainage connection to your house?										
	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
Yes, underground	1.9	1.3	1.9	2.5	1.5		2	2.9		1.6
Yes, surface drain	37.5	40.8	54.4	15	36.8	30.3	42.2	42.9	32.4	39.1
No	60.6	57.9	43.7	82.5	61.8	69.7	55.9	54.3	67.6	59.3
Total	%	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105

302. Where do the rains or wastewater go?										
	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side		High	Medium	Low	

302. Where do the rains or wastewater go?											
To the City Corp drain		1		2.2						1.4	0.5
To a local drain		17.5	13.6	26.7	3	13.1	21.7	15.8	15.8	15.5	15.7
To the canal/ ditch		9.3	2.3	15.6		2.4	8.7	10.5	5.3	2.8	5.9
To unspecified place		72.2	84.1	55.6	97	84.5	69.6	73.7	78.9	80.3	77.8
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	97	88	45	33	84	23	57	57	71	185

303. Do you face water logging in your house?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	Yes, some	7.5	5.9	5.8	2.5	6.6	15.2	7.8	6.7	5.7	6.7
	No	92.5	94.1	94.2	97.5	93.4	84.8	92.2	93.3	94.3	93.3
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

304. How many days a year you face water logging?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	Up to 4 days	100	100	100	100	100	100	100	100	100	100
	%	100	100	100	100	100	100	100	100	100	100
Total	N=	12	9	6	1	9	5	8	7	6	21
	Avg.	1	1	1	1	1	1	1	1	1	1

305. How are the kitchen wastes of yours HH usually disposed off ?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	Collected by waste collectors	2.5		3.9				2	1.9		1.3
	Dispose in the dustbin	7.5	1.3	10.7		2.2		5.9	5.7	1.9	4.5
	Throw in specific place/ditch	73.1	77	72.8	65	77.2	84.8	80.4	67.6	77.1	75
	Throw in unspecified place	16.9	21.7	12.6	35	20.6	15.2	11.8	24.8	21	19.2
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

306. Do you face water pollution staying in your house?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	Yes, high	1.3				1.5			1.9		0.6
	Yes, some	6.9	14.5	10.7	10	12.5	3	9.8	8.6	13.3	10.6
	No	91.9	85.5	89.3	90	86	97	90.2	89.5	86.7	88.8
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

307. Do you face air pollution staying in your house?											
		Respondents' sex		Location				Socio-economic			Total

307. Do you face air pollution staying in your house?											
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	Yes, high	13.1	19.1	21.4	2.5	19.9		14.7	20	13.3	16
	Yes, some	46.3	42.1	50.5	35	44.9	33.3	43.1	43.8	45.7	44.2
	No	40.6	38.8	28.2	62.5	35.3	66.7	42.2	36.2	41	39.7
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

308. Do you face sound pollution staying in your house?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	Yes, high	1.9	3.3	1.9		4.4		2	3.8	1.9	2.6
	Yes, some	35	38.2	47.6	27.5	36	15.2	39.2	37.1	33.3	36.5
	No	63.1	58.6	50.5	72.5	59.6	84.8	58.8	59	64.8	60.9
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

309. What is the level of mountain cutting in your area?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	Yes, high	3.8	0.7	1.9		3.7		2.9	1	2.9	2.2
	Yes, medium	13.1	10.5	9.7	12.5	16.2		10.8	11.4	13.3	11.9
	Some	36.3	37.5	33	42.5	38.2	36.4	39.2	33.3	38.1	36.9
	None	46.9	51.3	55.3	45	41.9	63.6	47.1	54.3	45.7	49
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

310. Do you think your community will be damaged due to mountainous cut?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	Yes	56.3	63.2	42.7	52.5	70.6	75.8	58.8	59	61	59.6
	No	33.8	22.4	37.9	42.5	17.6	24.2	28.4	25.7	30.5	28.2
	Do not know	10	14.5	19.4	5	11.8		12.7	15.2	8.6	12.2
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

311. If yes, what kind of damage can it cause?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	Landslide	82.2	71.9	90.9	61.9	75	72	86.7	69.4	75	76.9
	Surface water shortage	3.3		4.5		1		3.3	1.6		1.6
	Lack of trees/forest	70	66.7	68.2	66.7	69.8	64	70	75.8	59.4	68.3
	Loss of biodiversity	48.9	34.4	25	42.9	39.6	76	31.7	46.8	45.3	41.4
	Loss of agricultural production	16.7	14.6		4.8	19.8	36	10	21	15.6	15.6
Total	N=	90	96	44	21	96	25	60	62	64	186

*Multiple responses

Section 04

401. Membership of any political party, professional organization, social organization, school committee, mosque, sports club etc.?

	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
Political party	1.3				1.5		1		1	0.6
Professional organization	1.9	4.6	8.7		0.7		4.9	3.8	1	3.2
Social/ women organization	3.1	3.9	1	7.5	5.1		2.9	3.8	3.8	3.5
School committee	0.6	0.7			1.5				1.9	0.6
Mosque/ madrasa	9.4	0.7	3.9	5	5.9	6.1	9.8	3.8	1.9	5.1
Sports club	0.6				0.7			1		0.3
None	83.1	90.1	86.4	87.5	84.6	93.9	81.4	87.6	90.5	86.5
Total	%	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

402. If member, type of membership:

	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
General member	70.4	86.7	85.7	80	66.7	100	78.9	76.9	70	76.2
Executive member	29.6	13.3	14.3	20	33.3		21.1	23.1	30	23.8
Total	%	100	100	100	100	100	100	100	100	100
	N=	27	15	14	5	21	2	19	13	10	42

403. How much play grounds or facilities in this area for the children to play in the field?

	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
Adequate	5	5.9	6.8	17.5	2.2		2	5.7	8.6	5.4
Inadequate	48.1	54.6	38.8	55	61	45.5	55.9	48.6	49.5	51.3
Not at all	46.9	39.5	54.4	27.5	36.8	54.5	42.2	45.7	41.9	43.3
Total	%	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

404. How much open space of parks in this area for the residents to walk or socialize?

	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
Adequate	3.8	5.3	5.8	12.5	2.2		2.9	5.7	4.8	4.5
Inadequate	53.8	63.8	39.8	65	66.2	78.8	58.8	65.7	51.4	58.7
Not at all	42.5	30.9	54.4	22.5	31.6	21.2	38.2	28.6	43.8	36.9
Total	%	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

405. How much facilities in this area for the residents to enjoy cultural events, movie, drama etc?

	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
Adequate	2.5	0.7	1	10				1.9	2.9	1.6
Inadequate	43.1	49.3	28.2	47.5	54.4	66.7	40.2	51.4	46.7	46.2
Not at all	54.4	50	70.9	42.5	45.6	33.3	59.8	46.7	50.5	52.2

405. How much facilities in this area for the residents to enjoy cultural events, movie, drama etc?											
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

406. In your opinion, how serious is the problem of drug addiction in your area?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
Very serious		5.6	2.6	1.9		7.4	3	8.8		3.8	4.2
Serious		8.1	16.4	13.6	10	14	3	11.8	12.4	12.4	12.2
Medium		33.1	27.6	23.3	30	30.9	51.5	27.5	36.2	27.6	30.4
Low		20.6	20.4	29.1	15	16.2	18.2	19.6	18.1	23.8	20.5
Very low		23.8	19.7	19.4	37.5	19.1	21.2	21.6	20	23.8	21.8
Do not know		8.8	13.2	12.6	7.5	12.5	3	10.8	13.3	8.6	10.9
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

407. In your opinion, how much is the security related problem in your area?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
Very High		2.5	3.3	1.9	5	3.7		2	2.9	3.8	2.9
High		12.5	7.9	10.7	7.5	11	9.1	9.8	9.5	11.4	10.3
Medium		36.3	44.7	40.8	45	38.2	42.4	39.2	46.7	35.2	40.4
Low		35.6	28.9	29.1	32.5	35.3	30.3	32.4	30.5	34.3	32.4
Very low		13.1	15.1	17.5	10	11.8	18.2	16.7	10.5	15.2	14.1
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

409. How do you think the education facilities for your children in this area are?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
Good		10	11.2	9.7	22.5	10.3		7.8	9.5	14.3	10.6
Moderate		45	40.1	43.7	50	41.2	36.4	43.1	44.8	40	42.6
Low		45	48.7	46.6	27.5	48.5	63.6	49	45.7	45.7	46.8
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

410. How do you think the high education facilities for your daughters in this area?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
Good		7.5	7.9	9.7	22.5	3.7		4.9	8.6	9.5	7.7
Moderate		30.6	32.9	28.2	27.5	35.3	33.3	36.3	33.3	25.7	31.7
Low		61.9	59.2	62.1	50	61	66.7	58.8	58.1	64.8	60.6
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

How many kilometers and How long does it take you to walk to away from the nearest "....." to your house?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
Primary school (km)	Mean	1.5	1.5	2	1	1.1	2	1.5	1.6	1.4	1.5
	Minimum	0.2	0.3	0.5	0.3	0.2	1	0.3	0.3	0.2	0.2
	Maximum	3	4	3	3	4	3	3	3	4	4
	Std Deviation	0.8	0.9	0.5	0.7	0.8	0.7	0.8	0.9	0.9	0.9
	Mean	22.8	21.4	28.5	14.8	16.7	33.2	21.3	24.3	20.7	22.1

How many kilometers and How long does it take you to walk to away from the nearest "....." to your house?											
Primary school (Minute)	Minimum	3	3	5	3	5	15	3	3	3	3
	Maximum	60	60	45	45	60	60	60	60	60	60
	Std Deviation	11.9	12.9	6.8	10.7	12.1	11.4	11.5	12.8	12.5	12.4
High school (km)	Mean	1.6	1.6	2.1	1.1	1.2	2	1.6	1.7	1.4	1.6
	Minimum	0.2	0.3	1	0.3	0.2	1	0.3	0.3	0.2	0.2
	Maximum	5	6	3	5	6	3	6	5	4	6
High school (Minute)	Std Deviation	0.8	1	0.5	1	1	0.7	1	0.9	0.9	0.9
	Mean	23.5	22.5	29.4	16.1	17.5	34.1	22.2	25.5	21.3	23
	Minimum	3	3	15	3	5	15	3	3	3	3
College (km)	Maximum	60	60	60	60	60	60	60	60	60	60
	Std Deviation	12.3	14.2	7	12.8	13.4	12.1	12.2	14	13.2	13.3
	Mean	5.3	5.7	4.9	6.3	5.7	5.4	5.4	5.1	5.8	5.5
College (Minute)	Minimum	2	3	3	2	3	3	2	2	3	2
	Maximum	15	10	8	8	15	7	10	8	15	15
	Std Deviation	1.6	1.3	0.9	1.8	1.5	1.5	1.5	1	1.7	1.4
University (km)	Mean	76.6	78.4	67.7	90.6	79.7	83	76.5	71.9	84	77.5
	Minimum	6	40	6	30	40	45	6	30	40	6
	Maximum	225	150	120	130	225	130	150	130	225	225
University (Minute)	Std Deviation	26.8	23.2	16.1	29.3	25.5	30.4	25.7	19.1	28.2	25.1
	Mean	8.5	8.8	8.3	10.9	8.2	9	8.5	8.5	9	8.7
	Minimum	6	6	6	6	6	6	6	6	6	6
University (Minute)	Maximum	25	25	25	25	25	25	25	25	25	25
	Std Deviation	4.2	5	4.9	5.1	4.1	4.4	4.1	4.8	4.9	4.6
	Mean	115	123.5	117.9	152.2	115.3	99.3	116	118.7	122.8	119.2
Community clinic (km)	Minimum	60	60	60	60	60	60	60	60	60	60
	Maximum	375	375	375	375	375	375	375	375	375	375
	Std Deviation	61.5	79.6	77.6	82.9	62.7	54	62.6	74.1	75.7	70.9
Community clinic (Minute)	Mean	2.8	3.3	2.2	4.1	3.4	2.9	2.7	3	3.3	3
	Minimum	1	1	1	1	1	1	1	1	1	1
	Maximum	8	8	8	8	8	5.5	8	8	6	8
Government hospital (km)	Std Deviation	1.4	1.5	0.8	1.6	1.4	1.5	1.3	1.4	1.5	1.4
	Mean	42	46.2	32.5	60.3	48.2	43.3	40.4	42.8	48.8	44.1
	Minimum	10	10	10	10	10	15	10	10	10	10
Government hospital (Minute)	Maximum	120	120	120	120	120	75	120	120	120	120
	Std Deviation	19.2	21.2	11.5	26.1	19.7	16.2	18.6	18.6	22.5	20.2
	Mean	11.2	12.1	10.6	12.5	12.3	11.2	11.6	11.6	11.8	11.7
Government hospital (km)	Minimum	10	10	10	10	10	10	10	10	10	10
	Maximum	15	15	15	15	15	13	15	15	15	15
	Std Deviation	1.6	1.7	1.1	1.9	1.7	1.3	1.8	1.5	1.8	1.7
Government hospital (Minute)	Mean	155.8	156.4	149.5	164.9	158.1	158	160.2	151.7	156.6	156.1
	Minimum	120	120	120	120	120	120	120	120	120	120
	Maximum	240	240	240	240	230	240	240	240	240	240
Medical college hospital (km)	Std Deviation	24	31.2	25.4	25	28.7	30.3	28.1	28.4	26.3	27.7
	Mean	6.2	7	6.8	9.5	5.9	5.3	6.4	7	6.4	6.6
	Minimum	3	3	3	5	3	3	3	3	3	3
Medical college hospital (Minute)	Maximum	15	15	15	15	15	7	15	15	15	15
	Std Deviation	3	3.3	3.8	3.2	2.4	1.1	3.1	3.6	2.8	3.2
	Mean	90.5	96	97.3	131.9	82.5	77.1	92.6	95.6	91.2	93.2
Market (km)	Minimum	40	30	30	60	45	50	30	40	45	30
	Maximum	240	240	240	180	180	100	240	240	180	240
	Std Deviation	42.3	44.3	55.1	44.5	27.3	17.9	45.9	44.5	39.6	43.3
Market (Minute)	Mean	0.7	0.8	0.6	0.9	0.8	0.7	0.6	0.8	0.7	0.7
	Minimum	0.2	0.3	0.3	0.3	0.2	0.5	0.2	0.3	0.3	0.2
	Maximum	3	3	3	3	3	1.5	1	3	3	3
Market (Minute)	Std Deviation	0.4	0.4	0.3	0.8	0.3	0.3	0.3	0.5	0.5	0.4
	Mean	11	11.8	9.4	15.7	11	13.6	10.2	12.2	11.8	11.4
	Minimum	5	5	5	5	5	5	5	5	5	5
Market (Minute)	Maximum	45	45	45	45	45	25	20	45	45	45
	Std Deviation	6.3	6.7	5.3	11	4.9	5.7	4.2	7.5	7.2	6.5

Section 05

501. How much do you know about Asian University for Women?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	Very well	1.3	0.7	2.9					1.9	1	1
	Fairly well	8.8	3.3	9.7		6.6		6.9	5.7	5.7	6.1
	Moderate	48.8	30.9	40.8	42.5	39	39.4	47.1	41.9	31.4	40.1
	Little	20.6	32.2	19.4	35	28.7	27.3	19.6	24.8	34.3	26.3
	Very little	18.8	28.9	22.3	17.5	25	30.3	24.5	21.9	24.8	23.7
	Do not know	1.9	3.9	4.9	5	0.7	3	2	3.8	2.9	2.9
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

502. From whom did you hear or know?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	From elected reps/ counselor	3.2	0.7	1		3.7		3	2	1	2
	From city corporation	6.4	4.1	4.1		5.9	12.5	9	5.9	1	5.3
	From local leaders	40.8	26	36.7	15.8	34.1	43.8	33	39.6	28.4	33.7
	From friends/ neighbors	91.7	84.2	79.6	92.1	90.4	100	91	85.1	88.2	88.1
	From household member	19.1	34.9	24.5	13.2	31.9	28.1	25	28.7	26.5	26.7
	From Social media	1.3		1		0.7			1	1	0.7
	Others	11.5	4.8	11.2	15.8	5.9		12	5.9	6.9	8.3
	N=	157	146	98	38	135	32	100	101	102	303

503. Do you think this project will succeed?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	Yes	11.9	2	9.7	10	4.4	6.1	8.8	6.7	5.7	7.1
	No	88.1	98	90.3	90	95.6	93.9	91.2	93.3	94.3	92.9
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

504. Why do you think so?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	Advantage for road to pass	88.8	98	90.3	90	96.3	93.9	91.2	94.3	94.3	93.3
	Goes to mosque for praying	2.5		1.9	2.5	0.7		2		1.9	1.3
	To collect wood as fuel	3.1		4.9				2	1	1.9	1.6
	To cut grass for cattle feed	3.8	2	2.9		2.9	6.1	2.9	3.8	1.9	2.9
		1.9			7.5			2	1		1
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

504. Why do you think so?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	

504. Why do you think so?											
		5.3				16.7			14.3		4.5
	Advantage for road to pass	21.1		20	25	16.7		22.2		33.3	18.2
	Goes to mosque for praying	26.3		50				22.2	14.3	33.3	22.7
	To collect wood as fuel	31.6	100	30		66.7	100	33.3	57.1	33.3	40.9
	To cut grass for cattle feed	15.8			75			22.2	14.3		13.6
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	19	3	10	4	6	2	9	7	6	22

504. Why do you think so?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	Advantage	21.1		20	25	16.7		22.2		33.3	18.2
	Goes to	26.3		50				22.2	14.3	33.3	22.7
	To collie	36.8	100	30		83.3	100	33.3	71.4	33.3	45.5
	To cut g	15.8			75			22.2	14.3		13.6
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	19	3	10	4	6	2	9	7	6	22

505. In your opinion, how much support the local people will give towards the project?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	Very high	29.4	29.6	34	32.5	27.9	18.2	34.3	22.9	31.4	29.5
	High	49.4	35.5	42.7	25	49.3	36.4	45.1	41.9	41	42.6
	Moderate	15.6	28.3	12.6	37.5	20.6	36.4	13.7	27.6	23.8	21.8
	Low	1.9	1.3	1.9		1.5	3	2	1.9	1	1.6
	Very low	0.6	1.3	1.9		0.7		2	1		1
	Don't know	3.1	3.9	6.8	5		6.1	2.9	4.8	2.9	3.5
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

506. Do you know the plan how the Canal will be restored?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	Very much support	78.1	61.8	73.8	70	68.4	66.7	78.4	60	72.4	70.2
	Moderately support	21.9	37.5	26.2	30	30.9	33.3	21.6	39	27.6	29.5
	No		0.7			0.7			1		0.3
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

507. Do you personally support the kind of restoration that has been planned?											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	The opportunities for girls education will be increased	22.7	28.7	18.2	41	23.3	39.3	20.9	26.6	30	25.8
	The area will develop	28.8	23.1	23.9	10.3	30.8	32.1	30.8	24.5	22.2	25.8
	The area's environment will be beautiful	10.6	22.4	23.9	7.7	15	14.3	19.8	18.1	12.2	16.7
	The quality of education will increase	18.2	6.3	8	23.1	10.8	14.3	13.2	9.6	13.3	12

507. Do you personally support the kind of restoration that has been planned?										
The reputation of the area will increase	9.8	12.6	3.4	10.3	19.2	3.6	8.8	7.4	17.8	11.3
Our country's reputation will increase	11.4	7	6.8	12.8	8.3	14.3	5.5	9.6	12.2	9.1
The opportunities for girls education will increase	6.8	2.8	5.7	7.7	3.3	3.6	4.4	4.3	5.6	4.7
Our country will be developed	9.1	0.7	12.5	5.1			8.8	3.2	2.2	4.7
The rate of education will increase	3.8	4.2	4.5	5.1	4.2		5.5	3.2	3.3	4
The source of income of the people will increase	3	7	6.8	5.1	4.2	3.6	4.4	5.3	5.6	5.1
Living quality will improve	3	4.9	2.3		5.8	7.1	4.4	5.3	2.2	4
Business and trade would be better	0.8	2.8	2.3		2.5		1.1	2.1	2.2	1.8
It is good for everyone	2.3	0.7	2.3	2.6	0.8		1.1	2.1	1.1	1.5
Attraction of the area will increase	1.5				1.7		2.2			0.7
Crime trend will decrease	0.8		1.1					1.1		0.4
Our cost of living will increase		0.7			0.8				1.1	0.4
The traffic system will improve	0.8	1.4	1.1	2.6	0.8		2.2		1.1	1.1
Security system will be improved	0.8		1.1				1.1			0.4
The price of the land will increase	1.5	0.7			2.5		1.1	1.1	1.1	1.1
N=	132	143	88	39	120	28	91	94	90	275

509a. Affect the peaceful atmosphere of the area.										
	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
Unaided, yes	13.1	15.8	6.8	25	14.7	24.2	10.8	17.1	15.2	14.4
Aided, yes	29.4	32.9	30.1	30	37.5	9.1	32.4	32.4	28.6	31.1
No	57.5	51.3	63.1	45	47.8	66.7	56.9	50.5	56.2	54.5
Total	%	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105

509b. There may increase air pollution										
	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
Unaided, yes	10	7.9	13.6	5	8.8		13.7	5.7	7.6	9
Aided, yes	36.3	42.8	38.8	35	44.1	27.3	40.2	38.1	40	39.4
No	53.8	49.3	47.6	60	47.1	72.7	46.1	56.2	52.4	51.6
Total	%	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105

509c. There may increase noise pollution										
	Respondents' sex		Location				Socio-economic			Total
	Male	Female	East side	West side	North side	South side	High	Medium	Low	
Unaided, yes	18.1	9.9	17.5	12.5	14.7	3	16.7	8.6	17.1	14.1

509a. Affect the peaceful atmosphere of the area.											
Aided, yes		38.1	49.3	47.6	32.5	47.8	27.3	40.2	43.8	46.7	43.6
No		43.8	40.8	35	55	37.5	69.7	43.1	47.6	36.2	42.3
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

509d. There may increase water pollution											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
Unaided, yes		3.1	2.6	2.9	5	2.9		3.9	2.9	1.9	2.9
Aided, yes		16.3	26.3	18.4	15	27.9	9.1	19.6	22.9	21	21.2
No		80.6	71.1	78.6	80	69.1	90.9	76.5	74.3	77.1	76
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

509e. Too many laborers/ outside people will crowd the area											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
Unaided, yes		22.5	26.3	23.3	25	25	24.2	20.6	25.7	26.7	24.4
Aided, yes		64.4	60.5	58.3	65	64.7	63.6	62.7	61	63.8	62.5
No		13.1	13.2	18.4	10	10.3	12.1	16.7	13.3	9.5	13.1
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

509f. The hill can be cut / ground collapse											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
Unaided, yes		6.9	9.9	4.9	15	10.3	3	11.8	6.7	6.7	8.3
Aided, yes		62.5	63.2	54.4	47.5	69.1	81.8	56.9	66.7	64.8	62.8
No		30.6	27	40.8	37.5	20.6	15.2	31.4	26.7	28.6	28.8
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

509g. Due to the entry restriction on the university, we will have problems traveling from one place to another.											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
Unaided, yes		6.9	9.9	7.8	12.5	9.6		8.8	5.7	10.5	8.3
Aided, yes		26.9	36.8	28.2	35	36.8	18.2	22.5	39	33.3	31.7
No		66.3	53.3	64.1	52.5	53.7	81.8	68.6	55.2	56.2	59.9
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

510h. Mounting restrictions can affect our income / livelihood											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
Unaided, yes		4.4	3.9	9.7	2.5	1.5		3.9	4.8	3.8	4.2
Aided, yes		34.4	43.4	32	40	44.1	36.4	31.4	45.7	39	38.8
No		61.3	52.6	58.3	57.5	54.4	63.6	64.7	49.5	57.1	57.1
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

510a. Land value will increase/ Developers will be attracted											
		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
Unaided, yes		41.3	48	44.7	42.5	43.4	51.5	44.1	47.6	41.9	44.6
Aided, yes		58.8	50.7	54.4	57.5	55.9	48.5	55.9	52.4	56.2	54.8
No			1.3	1		0.7				1.9	0.6
Total	%	100	100	100	100	100	100	100	100	100	100

	N=	160	152	103	40	136	33	102	105	105	312
510b. Income opportunity will increase											
		Respondents' sex		Location				Socio-economic			
		Male	Female	East side	West side	North side	South side	High	Medium	Low	Total
	Unaided, yes	59.4	47.4	45.6	35	64.7	54.5	56.9	49.5	54.3	53.5
	Aided, yes	39.4	51.3	53.4	62.5	33.8	45.5	43.1	48.6	43.8	45.2
	No	1.3	1.3	1	2.5	1.5			1.9	1.9	1.3
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312
510c. Area will be attractive, beautified											
		Respondents' sex		Location				Socio-economic			
		Male	Female	East side	West side	North side	South side	High	Medium	Low	Total
	Unaided, yes	54.4	58.6	49.5	32.5	68.4	57.6	60.8	54.3	54.3	56.4
	Aided, yes	45	41.4	50.5	65	31.6	42.4	39.2	45.7	44.8	43.3
	No	0.6			2.5					1	0.3
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312
510d. There will be a scope in business due to massive work											
		Respondents' sex		Location				Socio-economic			
		Male	Female	East side	West side	North side	South side	High	Medium	Low	Total
	Unaided, yes	41.3	23.7	31.1	17.5	36	42.4	32.4	31.4	34.3	32.7
	Aided, yes	57.5	73	67	80	61.8	54.5	65.7	66.7	62.9	65.1
	No	1.3	3.3	1.9	2.5	2.2	3	2	1.9	2.9	2.2
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312
510e. There will be a lot of income sources for local people											
		Respondents' sex		Location				Socio-economic			
		Male	Female	East side	West side	North side	South side	High	Medium	Low	Total
	Unaided, yes	29.4	24.3	27.2	20	28.7	27.3	28.4	24.8	27.6	26.9
	Aided, yes	66.3	68.4	64.1	77.5	66.9	66.7	66.7	69.5	65.7	67.3
	No	4.4	7.2	8.7	2.5	4.4	6.1	4.9	5.7	6.7	5.8
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312
511a. House rent will increase/ Low income people will be ousted											
		Respondents' sex		Location				Socio-economic			
		Male	Female	East side	West side	North side	South side	High	Medium	Low	Total
	Unaided, yes	21.3	34.2	20.4	25	37.5	12.1	23.5	28.6	30.5	27.6
	Aided, yes	60	55.3	65	62.5	49.3	63.6	60.8	53.3	59	57.7
	No	18.8	10.5	14.6	12.5	13.2	24.2	15.7	18.1	10.5	14.7
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312
511b. The area will be much crowded											
		Respondents' sex		Location				Socio-economic			
		Male	Female	East side	West side	North side	South side	High	Medium	Low	Total
	Unaided, yes	31.3	26.3	24.3	27.5	32.4	30.3	33.3	21	32.4	28.8
	Aided, yes	61.9	66.4	63.1	70	61.8	69.7	56.9	69.5	65.7	64.1
	No	6.9	7.2	12.6	2.5	5.9		9.8	9.5	1.9	7.1
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312
511c. Migrants will take over the locals											
		Respondents' sex		Location				Socio-economic			
		Male	Female	East side	West side	North side	South side	High	Medium	Low	Total

		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	Unaided, yes	10	14.5	6.8	7.5	20.6		12.7	9.5	14.3	12.2
	Aided, yes	46.3	54.6	50.5	57.5	47.1	54.5	46.1	55.2	49.5	50.3
	No	43.8	30.9	42.7	35	32.4	45.5	41.2	35.2	36.2	37.5
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

511d. Social crime will increase

		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	Unaided, yes	3.1	5.3	2.9	2.5	6.6		3.9	1.9	6.7	4.2
	Aided, yes	27.5	38.8	37.9	40	33.8	6.1	30.4	41.9	26.7	33
	No	69.4	55.9	59.2	57.5	59.6	93.9	65.7	56.2	66.7	62.8
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

512. Would you be affected due to building the university?

		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	No	100	100	100	100	100	100	100	100	100	100
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	160	152	103	40	136	33	102	105	105	312

515. Do you have any suggestion for the authorities involved in Asian University for Women project?

		Respondents' sex		Location				Socio-economic			Total
		Male	Female	East side	West side	North side	South side	High	Medium	Low	
	Get started quickly	29.8	16.7	10.3	83.3	24.5	27.3	29.3	24.1	17.2	24.2
	The women in the area will have more opportunity to read	26.3	19	37.9		20.8	9.1	24.4	27.6	17.2	23.2
	Priority should be given to local people's jobs	8.8	23.8	27.6		11.3	9.1	9.8	17.2	20.7	15.2
	Do not harm the people	5.3	11.9			13.2	9.1	2.4	10.3	13.8	8.1
	Do not corruption in work	1.8	14.3			9.4	18.2	2.4	3.4	17.2	7.1
	Girls from Small-income family should be given the opportune	5.3		3.4		3.8		4.9		3.4	3
	Increase the chance of admission of girls from our country	5.3				3.8	9.1	4.9	3.4		3
	It would be better to arrange jobs for our girls	3.5	2.4		16.7	1.9	9.1	7.3			3
	Please do the project beautifully	5.3		10.3				2.4	6.9		3
	Do not harm the beautiful environment	1.8	2.4	6.9						6.9	2
	The area's roads should be improved	3.5				3.8			3.4	3.4	2
	The cost of education should be not high	1.8	2.4			1.9	9.1	4.9			2
	I want rehabilitation in the land that the university acquire		2.4			1.9			3.4		1

515. Do you have any suggestion for the authorities involved in Asian University for Women project?											
The university should be out of political influences			2.4			1.9		2.4			1
This area requires a police station for the safety of the st			2.4	3.4				2.4			1
Try to help the locals, the locals themselves will also assi		1.8				1.9		2.4			1
Total	%	100	100	100	100	100	100	100	100	100	100
	N=	57	42	29	6	53	11	41	29	29	99

Section 4: Gender related data analysis

Age of household head						
	Household Head				Total	
	Male		Female		Count	%
	Count	%	Count	%		
Up to 30 years	41	13.1	5	1.6	46	14.7
31-35 years	38	12.2	6	1.9	44	14.1
36-40 years	57	18.3	7	2.2	64	20.5
41-45 years	32	10.3	8	2.6	40	12.8
45-50 years	38	12.2	3	1.0	41	13.1
51-55 years	23	7.4	2	0.6	25	8.0
55+ years	47	15.1	5	1.6	52	16.7
Total	276	88.5	36	11.5	312	100.0
Avg. age	44.0		42.9		43.9	

Marital status of household head						
	Household Head				Total	
	Male		Female		Count	%
	Count	%	Count	%		
Unmarried	2	0.6			2	0.6
Married	274	87.8	15	4.8	289	92.6
Widow/widower			9	2.9	9	2.9
Divorced			7	2.2	7	2.2
Separated/Deserted			5	1.6	5	1.6
Total	276	88.5	36	11.5	312	100

Education status of household head						
	Household Head				Total	
	Male		Female		Count	%
	Count	%	Count	%		
Un-educated	94	30.1	19	6.1	113	36.2
Below class 5	72	23.1	7	2.2	79	25.3
Class 5-9	69	22.1	7	2.2	76	24.4
SSC pass	18	5.8	2	0.6	20	6.4
HSC pass	8	2.6	1	0.3	9	2.9
Graduate	5	1.6			5	1.6
Masters or above	5	1.6			5	1.6
Madrassa	5	1.6			5	1.6
Total	276	88.5	36	11.5	312	100

Disability status of household head						
	Household Head				Total	
	Male		Female		Count	%
	Count	%	Count	%		
No	275	88.1	36	11.5	311	99.7
Physical	1	0.3			1	0.3
Total	276	88.5	36	11.5	312	100.0

Primary occupation of household head						
	Household Head				Total	
	Male		Female		Count	%
	Count	%	Count	%		
Housewife			19	6.1	19	6.1
Emigrant	19	6.1	3	1.0	22	7.1
Unskilled Laborer / House maid	72	23.1	1	0.3	73	23.4
Rikshaw/Van/ Cart puller	29	9.3			29	9.3
Service/ Garment worker/	65	20.8	10	3.2	75	24
Skilled Labor/ Driver	43	13.8			43	13.8
Small Business/ Vendor	16	5.1	1	0.3	17	5.4
Medium Business	1	0.3			1	0.3
Unemployed	3	1.0			3	1
Retired/Old person	26	8.3	2	0.6	28	9

Primary occupation of household head						
Teacher	2	0.6			2	0.6
Total	276	88.5	36	11.5	312	100

Secondary occupation of household head						
	Household Head				Total	
	Male		Female		Count	%
	Count	%	Count	%		
No secondary occupation	253	81.1	29	9.3	282	90.4
Farmer	3	1.0			3	1
Student (no work)	1	0.3			1	0.3
Housewife			2	0.6	2	0.6
Unskilled Laborer / House maid	8	2.6	1	0.3	9	2.9
Skilled Labor/ Driver			1	0.3	1	0.3
Rikshaw/Van/ Cart puller	1	0.3			1	0.3
Service/ Garment worker/			2	0.6	2	0.6
Small Business/ Vendor	6	1.9	1	0.3	7	2.2
Medium Business	4	1.3			4	1.3
Total	276	88.5	36	11.5	312	100

Income of household head						
	Household Head				Total	
	Male		Female		Count	%
	Count	%	Count	%		
No income	27	8.7	14	4.5	41	13.1
Upto Tk.5000	11	3.5	3	1.0	14	4.5
Tk.5001-10000	83	26.6	17	5.4	100	32.1
Tk.10001-15000	102	32.7	2	0.6	104	33.3
Tk.15001-25000	39	12.5			39	12.5
Tk.25000+	14	4.5			14	4.5
Total	276	88.5	36	11.5	312	100
Avg. income	12651		4911		11758	

Annex- 09: Requirement of Water for the Project

Calculation of volume of water consumption during construction					
Contractors worker					
Total Contractors	10 nos	@	68 person	per day	680 person per day
Suppliers	10 contractors	@	8 person	per day	80 person per day
Management staff	10 groups	@	12 person	per day	120 person per day
				Total	880 person per day
Total project period-4.50 years	1642.5 days	@	880 person	per day	1445400 person per day
Water required	1445400 person	@	135 liter/per day/per person		195129000 Litre
			Total		42923229 gallone
For works	10 contractor	@	2000 gallone/per day/per contractor		
Total project period-4.5years	1642.5 days	@	2000 gallone/per day/per contractor		3285000 gallone
			Total		46208229 gallone
Calculation of volume of drinking water consumption during construction					
Total person	880 person	@	5 Litre/per day/per person		967.88385 gallone
Total project period-4.50 years	1642.5 days	@	967.88 gallone		1589749.2 gallone

Annex- 10: Required Volume of Raw Materials for the Project

Raw Materials		
1 Cement	998513	Bags
2 Sand	2597829	cum
3 Stone	4790248	cum
4 Reinforcement	12996.27	M. Ton
5 First Class Bricks	3565060	nos
6 Facing Bricks	5920890	nos

Annex- 11: Required Manpower for the AUW Campus Construction

Calculation of Manpower during construction					
Contractors worker					
Total Contractors	10 nos	@	68 person	per day	680 person per day
Suppliers	10 contractors	@	8 person	per day	80 person per day
Management staff	10 groups	@	12 person	per day	120 person per day
				Total	880 person per day
Total project period-4.50 years	1642.5 days	@	880 person	per day	1445400 person

SL No	Nature of Work	Contractors Manpower (Man days)						Total Manpower (Man days)
		Management Staffs (Man Days)	Suppliers Manpower (Man days)	Mason /Mistry	Skilled labour	Unskilled Labour	Total	
1	Construction of Academy Building	17,323	11,549	19,633	44,175	34,358	98,166	127,039
2	Construction of Laboratory	6,819	4,546	7,728	17,388	13,524	38,640	50,004
3	Construction of Student Accommodation	83,038	55,359	94,110	211,747	164,692	470,548	608,945
4	Construction of Faculty Accommodation	61,398	40,932	69,585	156,565	121,773	347,923	450,253

5	Construction of Student Amenities	3,936	2,624	4,461	10,037	7,806	22,304	28,864
6	Construction of Sports Facilities	4,623	3,082	5,240	11,790	9,170	26,199	33,905
7	Construction of Performing Arts Center	5,472	3,648	6,201	13,952	10,852	31,006	40,125
8	Construction of Library & IT Center	5,230	3,486	5,927	13,336	10,372	29,635	38,351
9	Construction of Utilities & Operations	2,296	1,531	2,603	5,856	4,555	13,013	16,840
10	Construction of Pathway & Access Academy	6,965	4,643	7,893	17,760	13,813	39,466	51,073
		197,100	131,400	223,380	502,605	390,915	1,116,900	1,445,400

Annex- 12: Required Fuel for the Project

Calculation of Fuel During Construction					
Contractors Transport	10 Nos Vehicles	@	40 liters	per day	400 liters
Suppliers Transport	10 Nos Vehicles	@	80 liters	per day	800 liters
Management Staff Transport	10 Groups	@	30 liters	per day	300 liters
Construction Worker Equipment	10 Groups	@	40 liters	per day	400 liters
Total					1900 liters
Total Project Period (4.5 years)	1642.5 Day	@	1900 liters	Per day	3120750 liters
Total					686482.62 gallon

Annex- 13: Site Management Protocol for Covid-19

The “site protocol” has been prepared according to the guidelines of Ministry of Health, GoB which needs to be ensured first before commencement of the construction works.

Step 01: Before opening the site:

The following team will visit the site before starting the site activities:

1. Client Representative (with financial decision-making authority)
2. Engineer supervising the site of the consulting firm
3. Contractor/Representative

This joint inspection team will address the following issues, will decide if necessary and inform their respective organizations regarding the following matters.

1. Determine (plan) different ways to enter into and exit from the site
2. Take steps to make everyone accustomed to hand washing, sanitation and disinfectant use
3. Arrange disinfection tunnel / spray, hand wash and thermal scanning, determine the location for these and mark it in the site plan
4. Determine the maximum number of construction workers to be aggregated on site and fix the protocol for entry and exit of workers
5. Decide whether the site can accommodate residential workers and, in this case, discuss and decide on ensuring the health and sanitation of the workers
6. One of the client’s representatives or site supervising engineers will be appointed as Health and Safety Officer
7. The portion of workers who will commute daily, would have to provide transport facility to avoid public transport
8. A disposal unit with lid should be arranged on each floor of the site or at a convenient place for disposal of daily use items such as tissues, cups, glasses, masks etc.

Sharing of Works:

1. The supervising engineer shall ensure proper coordination for speedy implementation of the recommendations of the report prepared in the light of site inspection
2. The Contractor shall arrange safety material for the respective officers and employees for at least one month
3. Client representative/contractor will release funds for purchasing of disinfection tunnel, hand wash and thermal scanner on urgent basis
4. The contractor will prepare the list of construction workers using the following table:

Serial No.	Name, Age and Sex	Permanent Address	Present Address & Type of Residence	Did you come from outside Dhaka	History of cold, cough or fever in the recent past
			Mess / Home	Yes / No	Yes / No

Step 02- Daily activities:

Daily work of the site will be conducted in accordance with the protocol mentioned below.

1. A health and safety committee will be formed at the site with the following persons:
 - a. Supervising Engineer (Convener)
 - b. Client Representative (with financial decision-making authority)
 - c. A suitable representative of each contractor
2. On-site arrival protocol

All construction workers will be present at the designated meeting place before starting of the shift. They will maintain social distance. Members of the Health and Safety Committee will check and allow each worker to enter the site following the steps below:

- Change / disinfect shoes
- Wash hands with soap
- Crossing the disinfection tunnel
- Measure and record body temperature
- Monitor for signs of cold / cough or fever
- Transfer to room to change clothes
- Manage the attendance register according to the following table:

Serial No.	Worker's name	Measured body temperature

- If a person's body temperature is higher than 96 degrees, he will not be allowed to enter the site. In this case, the structure of superiority will not be applicable. The decision of the Health and Safety Committee would be the decision-making body in this regard
- Outsiders would not be allowed to enter into the site. Important persons would be able to enter into the site with disinfectant spray and hand sanitization. Anyone without mask will not be able to enter into the site

Working protocol

1. Workers will work with maximum social distance. The supervising engineers will confirm the matter
2. Supervising engineers will always tell the workers about social distance and other rules of safety and hygiene
3. All workers will wear masks and gloves for full-time
4. Assigning specific worker to specific place and in case of change of place, disinfect the place with appropriate measure

Having food etiquette during break

1. Workers will be disinfected at the entrance of the tiffin box site
2. Ensuring social distance while eating, ensuring a clean place for eating and ensuring overall cleanliness of the place is a must. Food must not be shared by anyone
3. All workers would keep separate water bottles. Workers must not share the same bottle
4. Smoking and spitting should be avoided

Exiting from the site

1. Workers would not be allowed to leave the site during operation (without serious reasons), if anyone leaves the site before entering again, he must follow the same policy of entering (regarding hand washing, cleanliness etc.). No instrument or tool can be taken out of the site
2. All workers themselves will disinfect their masks and gloves
3. Workers cannot go to tea stall under any circumstances. If necessary, the concerned contractor will arrange light breakfast on the site

Annex- 14: Estimation of Hill Cutting, Filling, Levelling and Excess Earth Disposal

Due to the complex and challenging topography of the site, and substantial cut and fill are required to create the proposed topography to support the master plan proposals as follows:

- Cutting: 1,873,000 cubic meters of earth,
- Filling: 749,000 cubic meters of earth.

Cut or filled areas are vulnerable to erosion and must be protected as soon as practical by erosion controls vegetation, slope protection or buildings. After cutting of hills, the hill surface would be exposed to air which would be loose in character resulting in soil erosion. During rainy season, these loose soil will come in contact with rainwater and create mud runoff and flow to the valley. Exposing the hill surface may cause landslide, too. The volume of cutting is much higher than that of filling. Additional 1.124 million cubic meters of earth that would remain after the filling works, would be sold.

It is ascertained that hill profiling/ cutting waste materials (soil) will be used to fill low lying areas in the project site, . Furthermore, particular attention will be given to enhancing the beauty of existing wetlands. That is why, this issue has been given the utmost importance in the Master Plan.

For the first year (2021), about 960 cubic meters, around 1,440 cubic meters in year-2 (2022) & year-3 (2023) and 840 cubic meter in year-4 (2024), soil will be cut from hill profiling per day and temporarily piled up nearby for a short duration. In the following days, these excess materials (soil) will be sold and transported off-site to willing buyers. Potential buyers of the excess materials (soil) in local private and public projects (e.g. roads, housing estates, etc.). Furthermore, there are many uncultivated and low lying areas (not wetlands) of CDA, where these surplus materials (soil) can be used. Such zones are very close to the project site, within 10/15 minutes' drive. This action can commence after formal agreement with CDA AUW has revised the Master Plan, whereby the quantity of waste materials (soil) for filling low lying areas has been increased from the estimated amount of 4,27,000 m³ to the revised amount of 7,49,200 cubic meter (0.749 million m³). The increased amount will be used to fill the valley section and new areas of land filling of the AUW campus.

Table 104: Estimation of quantity of earth materials (soil) from hill profiling

Sl. No.	Earth materials (soil)	Quantity (m ³)
1	Total volume	1.873 million
2	Filling of low-lying areas	0.749 million
3	Volume for safe disposal	1.124 million

Table 105: Sale or disposing schedule for excessive waste materials (soil):

ASIAN UNIVERSITY OF WOMEN (AUW)				
SL No	Year	Percentage	Quantity (m ³)	
Already disposing (15%)			1,68,570	
Remaining amount (85%)				
1	2021	10%	1,91,046	
2	2022	25%	2,86,569	

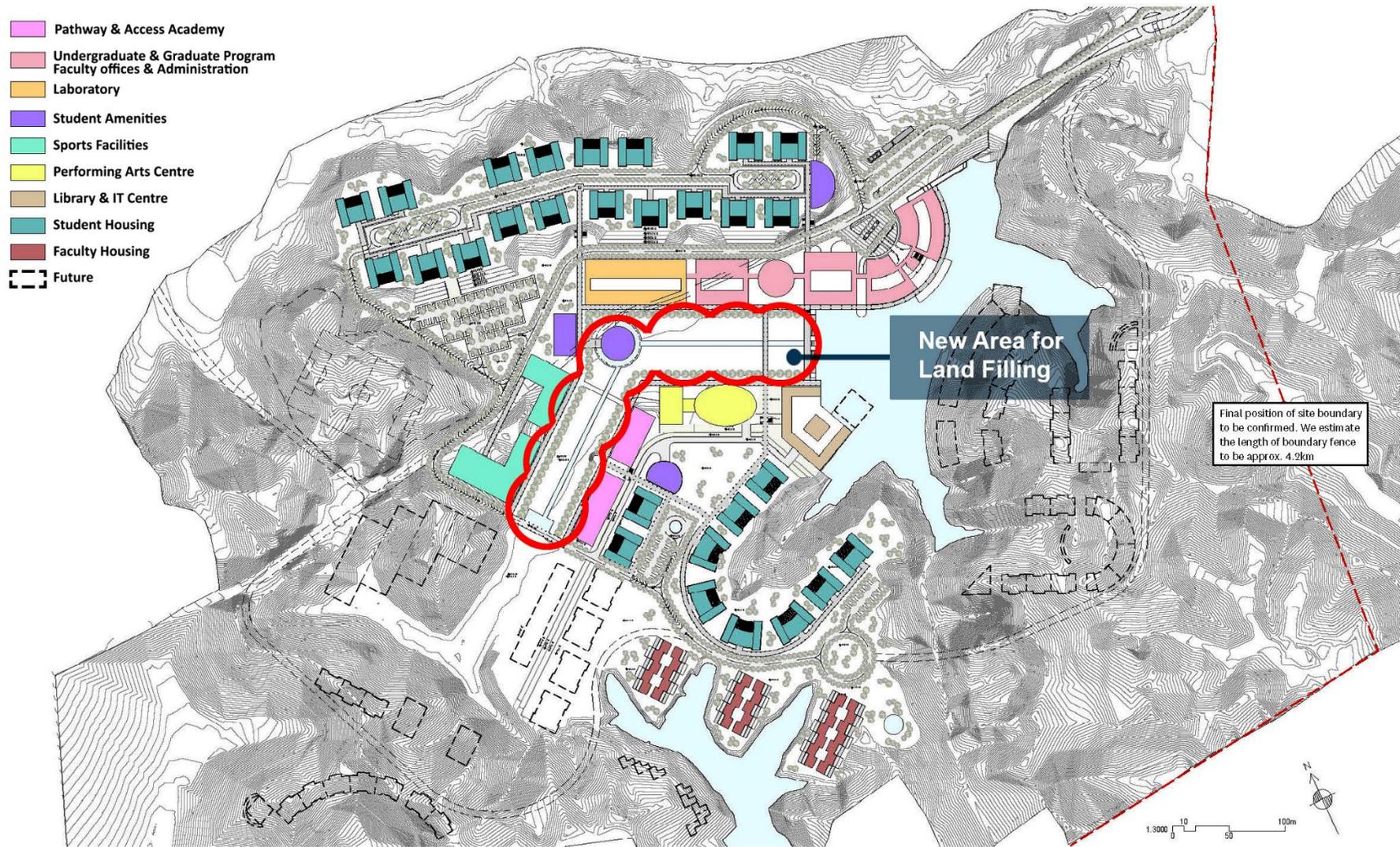
ASIAN UNIVERSITY OF WOMEN (AUW)			
3	2023	34%	3,24,778
4	2024	16%	1,52,837
		100.00%	9,55,230
Grand total			11,23,800

- Note: Disposal volume will be adjusted taking into account the actual situation during construction.

Table-106: Transportation schedule of waste materials (soil) taken away from project site

Proposed Years	No of truck	Trip/ truck (10 hrs in a day)	Soil quantity (m ³)	Days in a year	Total quantity (m ³)
Year-1	10	8	12	200	1,92,000
Year-2	12	10	12	200	2,88,000
Year-3	12	10	12	225	3,24,000
Year-4	10	7	12	180	1,51,200
Grand total					9,55,200

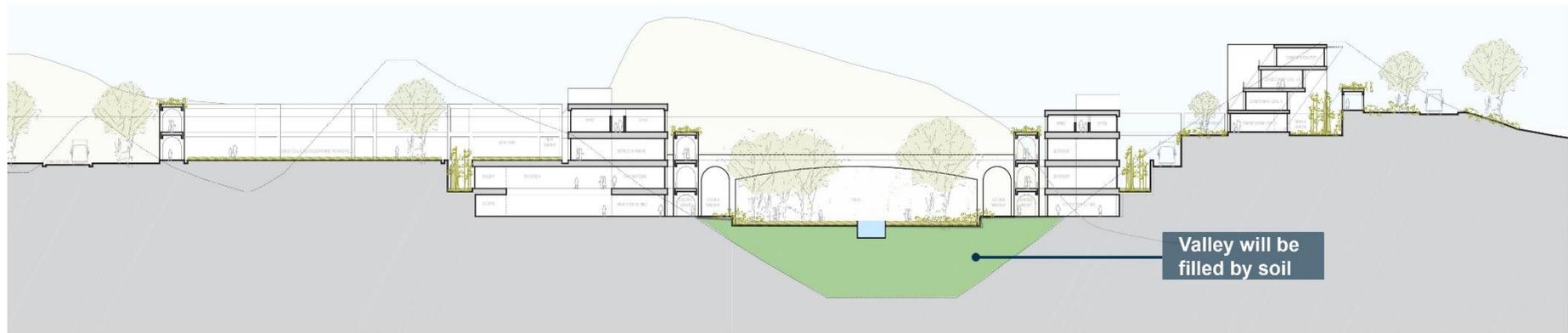
Figure: Revised Master Plan (AUW)



Asian University for Women
08 February 2019

Masterplan
Current Proposal

Figure: Section from the academic valley through gymnasium ('green-colored shape' circle)



Section through Academic Valley at Gymnasium Looking East

0 5 10 15 20 m

Annex- 15: Chance Find Procedures

Works could impact sites of social, sacred, religious, or heritage value. “Chance find” procedures would apply when those sites are identified during the design phase or during the actual construction period and the related activity.

- (1) Cultural property includes monuments, structures, works of art, or sites of significant points of view, and are defined as sites and structures having archaeological, historical, architectural, or religious significance, and natural sites with cultural values. This includes cemeteries, graveyards and graves.
- (2) The list of negative project attributes which would make a project ineligible for support includes any activity that would adversely impact cultural property.
- (3) In the event of finding of properties of cultural value during construction, the following procedures for identification, protection from theft, and treatment of discovered artifacts should be followed and included in standard bidding documents:
 - (a) Stop the construction activities in the area of the chance find;
 - (b) Delineate the discovered site or area;
 - (c) Secure the site to prevent any damage or loss of removable objects.
 - (d) Notify the Supervisory Engineer who in turn will notify the responsible local authorities;
 - (e) Responsible local authorities and the relevant Ministry would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures.
 - (f) Decisions on how to handle the finding shall be taken by the responsible authorities and the relevant Ministry. This could include changes in the layout (such as when finding an irremovable remain of cultural or archeological importance), conservation, restoration and salvage.
 - (g) Implementation of the authority decision concerning the management of the finding shall be communicated in writing by the relevant Ministry.
 - (h) Construction work could resume only after permission is given from the responsible local authorities and the relevant Ministry concerning safeguard of the heritage.
- (4) These procedures must be referred to as standard provisions in construction contracts. During project supervision, the Site Engineer shall monitor the above regulations relating to the treatment of any chance find encountered.
- (5) Relevant findings will be recorded in World Bank Supervision Reports and Implementation Supervision Reports will assess the overall effectiveness of the project’s cultural property mitigation, management, and activities, as appropriate.