



Government of The People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Co-operatives
Local Government Engineering Department (LGED)

Host and FDMN Enhancement of Lives through
Infrastructure Improvement Project (HELP)



ENVIRONMENTAL AND SOCIAL SCREENING REPORT

Of the Sub-project:

Construction of 36.00m RCC Variable Girder Bridge on Bridge Bazar - Bridge on Sakh Char Bazar near Balirpool R&H road at Ch: 1400m, under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364024)
Under the Package No. **HELP-NOA/BR-1**

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ACRONYMS

BOQ	Bill of Quantities
BPDB	Bangladesh Power Development Board
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
DPHE	Department of Public Health Engineering
EA	Environmental Assessment
EC	Electrical Conductivity
E-I-C	Engineer-in-Charge
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESF	Environmental and Social Framework
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standards
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
HBB	Herring Bone Bond
HELP	Host and FDMN Enhancement of Lives through Infrastructure Improvement Project
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
MPSC	Multi-purpose Community and Service Center
MoLGRD&C	Ministry of Local Government, Rural Development and Cooperatives
MoRTB	Ministry of Road Transport and Bridges
MoPEMR	Ministry of Power, Energy and Mineral Resources
NDRCC	National Disaster Response Coordination Center
OHS	Occupational Health and Safety
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Pre-Stressed Concrete
PSC	Project Steering Committee
RCC	Reinforced Cement Concrete
RHD	Roads and Highways Department
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Bank

1. INTRODUCTION

1.1 Project Background

Since 2017, Bangladesh has been hosting nearly one million Displaced Rohingya Population (DRP) who fled violence in Myanmar. Most of this population resides in 33 densely populated camps in Ukhiya and Teknaf upazilas of Cox's Bazar district. At the same time, approximately 30,000 have been voluntarily relocated to Bhasan Char, an isolated island in Noakhali District. This unprecedented humanitarian influx has placed immense pressure on the host communities, infrastructure, essential services, and the surrounding environment in a region already characterized by socio-economic vulnerabilities.

The FDMNs now outnumber host populations in affected areas by a ratio of approximately 2:1, contributing to crowding in local markets, overburdening social service systems, escalating environmental degradation, and heightening risks during disasters. In response to these complex challenges, the Government of Bangladesh (GoB), with support from the World Bank has initiated the **Host and FDMN Enhancement of Lives through Infrastructure Improvement Project (HELP)**. The project aims to improve access to basic services and enhance disaster and climate resilience of DRP (Displaced Rohingya Population) and host communities. HELP builds on lessons learned from the ongoing **Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) and its additional financing**, which have been supporting emergency response, resilient infrastructure and institutional strengthening in Cox's Bazar since 2019.

HELP proposes a multi-sectoral development approach focusing on critical needs such as water supply, sanitation, renewable energy, shelter upgrades, solid and fecal waste management and the improvement of road connectivity. The project also emphasizes disaster risk reduction, climate-resilient infrastructure, and institutional capacity building. It targets the high-priority gaps identified through annual needs assessments and field consultations, with particular attention to vulnerable groups including female-headed households, persons with disabilities, and those residing in disaster-prone areas.

The project scope encompasses a range of integrated infrastructure interventions aimed at improving resilience, accessibility, and service delivery for both the DRP and host communities. Key activities include the construction of new multi-purpose disaster shelters to provide enhanced protection during natural calamities, as well as the improvement and repair of existing shelters to ensure they meet disaster-resilience standards. The project also involves the development of road communication infrastructure, including the construction and rehabilitation of roads, bridges, and culverts to improve connectivity and access to essential services. In addition, various community-level facilities will be developed or upgraded, such as internal roads, drainage systems, hat-bazar (local markets), footpaths, firefighting systems, lightning protection devices, and solar-powered street lighting contributing to safer and more inclusive living environments.

The project is jointly implemented by four government agencies LGED, DPHE, RHD, and BPDB under the Ministry of Local Government, Rural Development and Cooperatives (MoLGRD&C), the Ministry of Road Transport and Bridges (MoRTB), and the Ministry of Power, Energy and Mineral Resources (MoPEMR). The project comprises four components, covering resilient water and sanitation services, climate-resilient infrastructure and energy, institutional capacity strengthening, and emergency

response. Under Component 2, LGED is undertaking key infrastructure development including rural roads and bridges to ensure improved connectivity and disaster preparedness.

The objective of the Project is to improve access to basic services and enhance disaster and climate resilience of the FDMN and host communities through:

- Supporting improved access to basic services, climate-resilient infrastructure, and disaster and emergency response services;
- Improving Road interventions for easy access to essential services;
- Reducing vulnerability to accidental fire;
- Strengthening disaster preparedness and response through construction of multipurpose disaster shelters, provision of key equipment, and disaster risk management trainings at the community level;
- Improving Renewable and sustainable energy infrastructure in camps and for host community;
- Strengthening the GoB's capacity to provide essential services and address the needs of the host communities and the DRP, including risks to disasters and climate change;
- Reducing poverty in the project area

This Environmental and Social Screening Report has been prepared to assess potential environmental and social risks and impacts associated with the proposed interventions for constructing a bridge at Hatia Upazila of Noakhali District under HELP. It provides a preliminary evaluation of the biophysical and socio-economic settings of the project areas and identifies key issues that require special consideration or mitigation. The report serves as a guiding tool for environmentally and socially sound project implementation in compliance with national regulations and the World Bank Environmental and Social Framework (ESF).

1.2 Rationale of Site Selection for bridge under the project

LGED is responsible for development and management of local infrastructure including rural roads, bridges, culverts, waterways, markets, river jetties and others in order to contributing to socioeconomic development of the rural community and overall reducing poverty in the country. It is also developing, maintaining and managing transport, trading and small-scale water resources infrastructure at the local level with ensuring LGI and community participation and taking care of environmental and social issues. In 2013, Government of Bangladesh (GoB) has adopted a Rural Roads and Bridges Maintenance Policy with an objective to develop a sustainable rural transport system through appropriate maintenance management to provide safe operation of vehicles and to ensure necessary funding for their maintenance establishing a comprehensive and reliable inventory of roads, bridges and culverts across the country.

The onsite investigation reveals that a dilapidated bridge currently exists at the same location where the proposed new bridge will be constructed over Char Bogula Khal. The existing bridge has deteriorated significantly and has become structurally unsafe, posing serious risks to pedestrians, local vehicles, and goods transportation. As a result, the mobility of local people is restricted, and their daily lives and livelihood activities are adversely affected.

The local communities in and around the project area mainly depend on fishing, agriculture, and small-scale trade as their primary livelihood options. These activities require a reliable, climate-resilient, and sustainable transport infrastructure to ensure the smooth movement of goods and products to nearby local markets, regional trading centers, and processing hubs. In addition, the local population relies on this route to access educational institutions, healthcare facilities, employment opportunities, and other essential services. In this context, the proposed bridge will serve as a vital lifeline for the surrounding communities.

The project aims to strengthen the Government of Bangladesh's capacity to improve access to basic services and climate-resilient rural infrastructure in host communities. Construction of the proposed 36.00 m RCC Variable Girder Bridge on Bridge Bazar - Sakh Char Bazar near Balirpool R&H Road (Road ID: 475364024) will restore safe and uninterrupted connectivity between Charking Union and other parts of Hatiya Upazila, which is currently at risk due to the unsafe condition of the existing bridge.

The project approach includes phased implementation of rural bridge construction and rehabilitation activities based on site-specific needs, technical feasibility, and availability of resources. Accordingly, construction of the proposed bridge at this location is necessary to eliminate the existing physical barrier caused by the presence of Char Bogula Khal, improve local communication and service delivery, and accelerate socioeconomic activities in and around the project area.

Project activities will largely be on existing available lands, preferably of government owned.

1.3 Background of the Work Package

HELP (Host and FDMN Enhancement of Lives through Infrastructure Improvement Project) is a World Bank-supported project that aims to assist the Government of Bangladesh in responding to the continued humanitarian and development challenges posed by the presence of the Forcibly Displaced Myanmar Nationals (FDMNs) and their impact on host communities. The project seeks to improve access to basic services, and enhance disaster and climate resilience in both Cox's Bazar and Noakhali district.

The Hatia Upazila faces persistent development challenges common to remote coastal regions. The local host communities experience constraints related to inadequate road connectivity, limited access to markets and essential services, and high vulnerability to natural hazards such as flooding, tidal surges, and cyclones. Seasonal inundation and poor crossing facilities over local canals further restrict mobility, particularly during the monsoon period, affecting daily commuting, emergency response, and economic activities. In response to these challenges, the HELP Project focuses on strengthening resilient and inclusive infrastructure that directly benefits the local population. The proposed bridge under this sub-project is intended to improve year-round connectivity, enhance access to services and livelihoods, and reduce disaster-related risks for communities in Boalia and surrounding villages of Charking Union, Hatia Upazila.

Under this specific work package of the HELP project, four (4) bridges are planned to be constructed across three different union of Hatia Upazila- Charking, Burirchar and Chanondi. These bridges aim

to strengthen the rural road communication network by improving access to essential services such as health, education, markets, and disaster shelters. The improved infrastructure is expected to support both the mobility of the local communities and the efficiency of service delivery, especially in remote or underserved areas of the district. This report focuses specifically on the construction of 36.00m RCC Variable Girder Bridge on Bridge Bazar - Bridge on Sakh Char Bazar near Balirpool R&H road at Ch: 1400m, under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364024). The bridge will replace an existing structurally weak bridge that has been heavily affected by long-term usage. Once implemented, this sub-project is expected to significantly improve transport connectivity, facilitate the movement of goods and people, and enhance the resilience of the local community in the surrounding agricultural land areas.

Host community members predominantly reside within the catchment area of this sub-project, covering surrounding villages, including Boalia, Charbogula, Panchadia, Rajab Ali Gram, Sabir Bari Gram, and nearby growth and rural markets such as Bridge Bazar, Daserhat, Killar Bazar, South Shollikiya, Rasagram, and Bhairab Bazar under Charking Union of Hatiya Upazila, Noakhali District. These communities are the primary users of the proposed bridge for daily movement, trade, and access to essential services.

The selected location for the proposed 36.00 m RCC Variable Girder Bridge on Bridge Bazar - Sakh Char Bazar near Balirpool R&H Road (Road ID: 475364024), over Char Bogula Khal, has been prioritized based on field-level needs assessment and community consultation. The site holds strategic importance for improving local road connectivity, ensuring safe and reliable access to markets, educational institutions, religious establishments, and health and service centers, and enhancing disaster resilience in a flood- and cyclone-prone coastal environment. Construction of the proposed bridge will also support the socio-economic activities of surrounding rural communities by facilitating uninterrupted movement of people, goods, and services throughout the year.

The objective of this Environmental and Social Screening Report is to evaluate the environmental and social settings of the proposed bridge construction site under this work package, identify potential impacts both positive and adverse and recommend appropriate mitigation, enhancement, and management measures. This screening ensures that all interventions align with national regulatory requirements and the World Bank's Environmental and Social Framework (ESF), while promoting environmentally sustainable and socially inclusive development.

1.4 Fundamentals of Work Package Components

It is crucial to acknowledge the proposed infrastructure component under Work Package HELP-NOA/BR-1 to conduct an effective screening and verification process aligned with the World Bank's Environmental and Social Framework (ESF) as well as the project's Environmental and Social Management Framework (ESMF). Accordingly, detailed information of the proposed sub-project under this package has been outlined in Table 1.4.1, with a location-specific overview map of Hatiya Upazila presented in Figure 1.4.1.

The proposed sub-project will follow standardized construction features and safety protocols, including but not limited to:

1. Construction of a Semi-Pucca Field Office, fully equipped with essential office furniture, computers with printing equipment, sanitary and electrical facilities, water supply arrangements and necessary tools and equipment for engineering supervision. The site office will ensure heat resistance, damp-proofing, and proper ventilation as directed by the Engineer-in-Charge (E-I-C).
2. Installation of Temporary Diversion Bridge (2m wide bamboo structure) as directed by the Engineer-in-Charge (E-I-C) to maintain uninterrupted movement for local communities during construction activities, ensuring minimal disruption to daily life.
3. Full Construction of Bridge Structures including foundation, substructure, and superstructure as per the approved design and technical drawings, along with all related fittings and fixtures.
4. Provision and Installation of Safety Features, such as painted vertical end faces of posts, wheel guards, railing systems, parapet walls, bilingual nameplates (in Bengali and English), guideposts, traffic signage, and kilometer markers.
5. Backfilling Behind Abutments and Retaining Structures with selected granular material, followed by proper compaction using approved machinery like plate compactors.
6. Construction of Approach Roads on both ends of the bridge, ensuring connectivity in compliance with LGED specifications and site conditions.
7. Placement of RCC Guideposts (1.70m long), positioned as per standard drawings and safety regulations.
8. Health, Safety, and Environmental Safeguards, including maintaining first-aid boxes at site and office, displaying safety notices, deploying environmental and social safeguard personnel for continuous monitoring, implementing dust suppression through water sprinkling, erecting health and safety signage, and organizing two rounds of safety and ESHS training for Upazila Engineers and Contractors before and after commencement of works.

Table 1.4.1: Basic Featured Information of component [Sources of data: Field survey, 2025, LGED]

Sl n o .	Component's name	Upazila	Unio n	Distance from Upazila HQ	Primary Catchment area	Name of the river/ canal	Prop ose d leng th (m)	Carr iage Wid th (m)	Estima ted Footpr int (Sq.m)	GPS coordina te	Constru ction Period
1	Construction of 36.00m RCC Variable Girder Bridge on Bridge Bazar - Bridge on Sakh Char Bazar near Balirpool R&H road at Ch: 1400m, under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364024).	Hatia	Chark ing Post: Dhon u Miah Hat	9Km	Boalia, Charbogula, Panchadia, Rajab Ali gram, Sabir Bari gram	Char Bogula khal	36	7.3	262.8	22.3163 6656, 91.0924 987	2 years

Though the bridge was initially planned to be 25 m in length, after detailed survey in the area the length has been replanned to 36 m. Therefore, the total footprint area for the bridge is 262.8 sq.m.

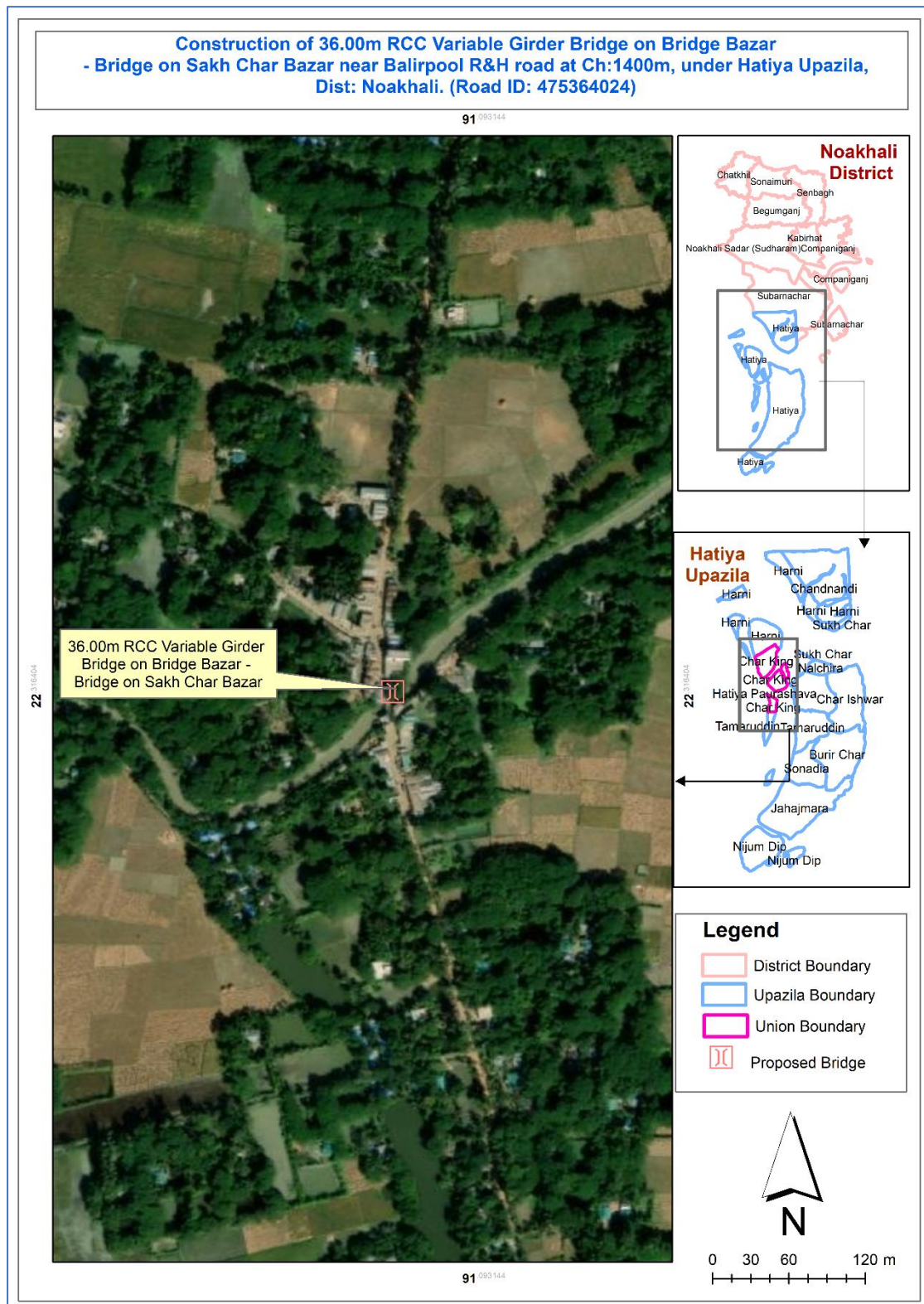


Figure 1.4.1: Map illustrating bridge location in the proposed Upazila

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology and Approach

Public participation and community consultation have been taken up as an integral part of environmental and social assessment process of the project. As part of the impact assessment, participatory public consultation was conducted in areas of concern for proposed bridges by the field level staffs and consultants from PIU. The consultation meeting was attended by different social groups representing local inhabitants of different age groups, social class and occupations. Among the participants, some will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases. In order to serve our screening process, relevant items placed towards the audience to discuss and troubleshoot confusing or worrying matters regarding the proposed interventions under the package work. Impacts in regards to environment, socio-economic matters during pre-construction, construction and post construction phases and the provision for project Grievance Redress Mechanism along with its applicability have been put forth. Possible mitigation measures and relevant needs have turned out during these sessions as well. Moreover, their comprehension as a stakeholder has been up lifted in light of project guidelines.



Figure 2.1.1 Consultation events taking place at sites

However, public consultation is a living process as the types of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution processes are more likely to differ with time. Thus, consultation with different parties or stakeholders will be continued throughout the sub-projects' implementation period and records of resolutions, whatsoever and wherever possible, will be kept in writing at the site and made available on any enquiries or requests by all parties concerned.

2.2 Issues and Recommendations raised by the Participants in regards to component interventions

After facilitating the consultation sessions with a warm and informed manner at Bridge Bazar near the proposed site, the participants and stakeholders drifted delightfully with the sessions and pointed out many which have been taken into account for further inclusion in design, estimation and formulation of ESMP. During the period of consultation, environmental and social issues and their relevant impacts for the infrastructure development work such as bridge improvement or maintenance were discussed. The advantages and possible nuisance that may emerge during the sub-project activities were also revealed. The participants expected that none of the interventions

would worsen their living conditions, social cohesion surrounding environment and they requested for adopting all measures to reduce/avoid both environmental and social risks during the implementation phase. Participants were also informed of the structure and redressing procedure under project Grievance Redress Mechanism (GRM).

Table 2.2.1: Consultation Meetings Summary

Meeting No.	Date	Venue	Main Participant Groups	No. of Participants	Remarks (If any)
1.	26 November, 2025	Bridge Bazar	Host Community	21	Discussions focused on the importance of the bridge for local accessibility and safety. Participants emphasized the urgent need for a new bridge due to the deteriorated condition of the existing one.

Note: Here, Meeting number column corresponds with Serial Number column in Table 2.2.2

Some key issues discussed during the consultation are summarized in the table (Table 2.2.2) below, reflecting participants' inputs relevant to the specific components of the proposed intervention. The consultation meeting summary, attendance sheet, and photographs from the meeting held at Bridge Bazar near the proposed site are provided in Table 2.2.1, Annexure-01, and Annexure-02, respectively.

Table 2.2.2: Issues and Recommendations raised by the Participants

Sl. No.	Component's name under HELP-NOA/BR-1	Issues raised and discussed	Recommendations and Comments
1.	Construction of 36.00m RCC Variable Girder Bridge on Bridge Bazar - Bridge on Sakh Char Bazar near Balirpool R&H road at Ch: 1400m, under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364024).	•They are very much concerned with absence of reliable path route over the Dhara Khal. •Existing RCC Bridge is old, structurally weak, and prone to accidents. •The existing RCC bridge is a critical infrastructure asset that significantly supports the local population's livelihood and economic well-being. It is particularly vital for fishing, agriculture, and small-scale trade, as it facilitates and governs nearly all of their economic activities. •Lack of accessibility in case of emergency exits. •They cannot carry the dead on this (existing) weak structure in times of grief •Heavy vehicle movement and long-term use have accelerated the	•Representatives participating in the discussions assured the local people that the dilapidated RCC bridge will be replaced by a longer and stronger bridge structure, which will strongly support local life and livelihoods and increase connectivity and accessibility to various services and amenities. •The bridge has been planned to redesign to change its length and width so that non-motorized vehicles can easily use the structure due to the smooth slope, and accessibility under the structure remains Uninterrupted. •The bridge design should consider highest water level thereby ensuring it is not submerging or affected by mass water flow during rainy seasons. Appropriate diversion should be placed during the construction period as alternative pathway. •The bridge should use corrosion-resistant materials and protective coatings suitable for saline environments. •The participants have expressed their greater interest in this intervention and believe this will surely bring

Sl. No.	Component's name under HELP-NOA/BR-1	Issues raised and discussed	Recommendations and Comments
		deterioration of the existing bridge, affecting safety and durability. •Possible dust and noise pollution during the construction works. •Safety of children and adults at the sites during construction works. Involving local people as a priority in implementation works as far as possible. •Local community wish to have a better drainage system along with the Bridge in order to allow waters from high grounds to find an uninterrupted pathway, not causing weak establishment to wash away. Moreover, from a conservation stand point, it will protect the top soil for future growth. •The construction work will include dismantling the current RCC bridge in order to make space for the new RCC Grider Bridge. •Participants recommended the construction of a durable RCC bridge with proper drainage and design standards to withstand heavy traffic and reduce future structural damage, along with regular maintenance after completion.	security and prosperity for the entire catchment dwellers. •Construction site safety should be ensured to avoid any mishaps or accidents during the working periods. •They considered small lumbering and suggested tree plantation initiatives. • local community will be given preference in engaging to construction works; however, technical labors will be welcome outside the local area. Priority for jobs should also consider women. • Alternate pathway should be facilitated during the construction near or around existing structure. •Since the bridge is on running canal (Char Bogula Khal), the intervention will invite water pollution on moderate level. However, preventive actions and measures should be taken to keep the surface water quality from degrading more than it is. •Participants, made certain that they will provide surveillance over raw materials and material storage area. •They have also ascertained that the selected site is free from any events related to resettlement and major environmental impacts. The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be of short duration, yet proper management/conservative options should be adopted. • Proper drainage system will be embedded with the bridge as well as the bridge-approach. • Dismantling of bridge will be undertaken with optimum caution and care to avoid any potential risk to the people and resources. • They also requested regular maintenance of approach roads and bridge surface to ensure durability. •They also suggested to include dedicated pedestrian walkway and strong side railings for enhanced safety.

3. ENVIRONMENTAL AND SOCIAL SURVEY AND SCREENING

3.1. Objective of the Survey and Screening

The primary purpose of the survey and screening is to identify potential risks and impacts associated with the sub-project, assess their significance, and propose appropriate mitigation and management measures to ensure compliance with the ESF along with the project ES compliance documents. The screening process also considers the cumulative and residual impacts of the intervention within the context of the local physical, biological, and socio-economic environment.

To achieve a comprehensive understanding of the environmental and social baseline and the possible implications of the proposed works, detailed field investigations were carried out for the sub-project site within the Project Influence Area (PIA). The screening process included direct observation, stakeholder consultations and the use of the Environmental and Social Screening Format (ESSF), aligned with the Environmental and Social Management Framework (ESMF) developed for the HELP project.

Screening results, impact identification, and mitigation guidance have been summarized and compiled in **Appendix-1**, with site-specific details and supporting documentation. This integrated approach ensures early identification of risks and supports the development of appropriate mitigation and enhancement measures for sustainable project implementation.

The subsequent sections outline the survey findings including important features and establishment within the PIA, along with potential environmental and social impacts that may arise due to the proposed sub-project interventions within a half-kilometer radial distance around the project site. This Environmental and Social Screening has been conducted in accordance with the requirements of the World Bank's Environmental and Social Framework (ESF), particularly focusing on the relevant Environmental and Social Standards (ESSs).

3.2 Important features/establishments around the PIA

The proposed bridge sub-project has undergone a thorough review to identify Environmental and Social resources and baseline conditions, potential environmental and socio-economic risks that may arise during construction and future operation. To accurately assess these concerns, a Project Influence Area (PIA) with a 0.5-kilometer radius surrounding the bridge site was considered during the screening process. Each issue was evaluated on a case-by-case basis without generalization, ensuring site-specific factors were properly addressed. Sensitive environmental and social findings, if any, were carefully noted, and appropriate mitigation or minimization measures were recommended to manage these risks throughout the project lifecycle. In addition, opportunities for enhancing both environmental and social conditions, as well as incorporating monitoring initiatives, have been outlined and integrated into the Environmental and Social Management Plan (ESMP) and its corresponding budget. The contractor's role in addressing identified impacts has been clearly defined, and all assessments and proposed interventions were conducted in full compliance with the Environmental and Social Management Framework (ESMF) of the HELP project.

Initial screening process is conducted through direct involvement of PIU in the influence area of the proposed component, which allows to raise significant questions and ideas towards participants. In combination of both field walk-through and inputs of audience, a register of existing features is formed. The following table describes the important features under Project Influence Area.

Additional spatial understanding is supported through a hand-sketched map provided in Appendix-01.

Table 3.2.1: Important features under Project Influence Area

Sl. No.	Component's name	Direction	Important features/ establishment (approx. distance from the proposed site)
1.	Construction of 36.00m RCC Variable Girder Bridge on Bridge Bazar - Bridge on Sakh Char Bazar near Balirpool R&H road at Ch: 1400m, PB 40m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364024).	North	Bridge Bazar (40m), Boaliya High School (670m), Panchayet Bari Jame Mosque (650m), Soressar Roy Government Primary School (100m), Pond (80m & 100m), Shops (30m), Sree Sree Shib Mondir (600m NE)
		South	Hatiya Ideal School (80m), Pond (70m), Shops (40m), Households (80m SW)
		East	Modinatul Madrasah (80m), Pond (90m), Haji Mukul Ahmed Mosque (80m), Agricultural land (100m)
		West	Homestead Garden (50m), Agricultural land (200m)

Field Survey, 2025

3.3 Major Findings

The Environmental and Social Screening has revealed an integrated overview of site-specific environmental and social conditions of the proposed sub-project. These findings offer valuable insight into the interaction between the sub-project components and their surrounding biophysical and socio-economic settings. While many sub-projects are found to be aligned with the characteristics of their respective locations, the nature, magnitude, and extent of impacts vary based on topography, ecological sensitivity, surrounding land use, and community dependency.

The analysis indicates that while common construction-related impacts such as temporary disruption to local traffic and pedestrian movement, generation of noise and dust, and minor vegetation clearance are anticipated, several site-specific concerns have been identified for the proposed 36.00 m RCC Girder Bridge on Bridge Bazar - Bridge on Sakh Char Bazar near Balirpool R&H road at Ch. 1400 m under Hatiya Upazila, Noakhali District. The bridge will be constructed over the Char Bogula Canal, which flows from the north-east to the south-west, and serves as an active drainage channel with tidal influence. The proposed bridge site is located in close proximity to Bridge Bazar, nearby rural markets, local shops, mosques, educational institutions, ponds, agricultural land, and surrounding residential households. Due to the presence of these community and commercial facilities, the area experiences high pedestrian movement and regular local traffic, particularly during market hours and school times. During construction, short-term impacts may arise related to community access, pedestrian safety, localized drainage management, and access to bazar and religious institutions. These impacts are expected to be temporary in nature and can be effectively managed through appropriate traffic control, safety measures, and environmental mitigation actions outlined in the ESMP.

The screening has also identified both direct and indirect risks that may arise if not appropriately mitigated. Findings indicate that with suitable mitigation measures as proposed in the ESMF and site-specific Environmental and Social Management Plans (ESMPs) most risks are manageable under ESS1 (Assessment and Management of Environmental and Social Risks and Impacts), and relevant associated standards such as ESS4 (Community Health and Safety), ESS2 (Labor and Working Conditions), and ESS10 (Stakeholder Engagement and Information Disclosure).

A summary of the significant environmental and social issues identified during the screening process, along with associated potential impacts, is presented in **Table 3.3.1**. These findings provide critical input for developing context-specific mitigation strategies and highlight areas requiring enhanced monitoring and community engagement during project implementation. None of the activities fall in the E&S exclusion list attached to the project ESMF.

Table 3.3.1: Concerning environmental and social issues relating to each proposed subproject and influence area

	Key Environmental & Social Findings	Anticipated Impacts / Concerns
ESS1: Assessment and Management of Environmental and Social Risks and Impacts	The proposed site is not located within any ecologically critical or environmentally sensitive area. However, the Char Bogula Khal flows directly beneath the proposed bridge alignment and represents the notable surface water feature within the project area. Surrounding land use is predominantly rural in nature, consisting of agricultural land, small shops, bazar, ponds, educational institutions, mosques and scattered households, with no critical habitats identified within the immediate project influence area.	Will not cause any severe negative effects to the area's environmental settings, nor to important ecological features.
	The proposed sub-project targets an existing old concrete bridge over the Char Bogula khal, which has deteriorated over time due to prolonged use.	Replacing a concrete bridge with an identical one at the same location necessitates the removal of the existing bridge, which may result in waste production, harm water quality and minor air pollution due to dust and airborne particles less than PM ₁₀ .
	Environmental and social screening conducted; moderate risks identified.	Manageable with appropriate mitigation measures.
	Heavy vehicular movement and future construction activities may cause air, noise, and water pollution.	Construction and demolition activities may lead to localized dust, air pollution, and runoff contamination; these impacts are short-term, site specific and can be effectively managed through water sprinkling, dust control, noise barriers and proper site drainage.
	No fish farming activities or ecologically sensitive habitats were identified within the immediate vicinity of the proposed bridge site. Vegetation coverage in the surrounding area is limited and mainly consists of scattered trees, roadside vegetation, and homestead greenery. The adjacent land use is predominantly characterized by agricultural fields, local bazar areas, ponds, mosques, madrasas, and nearby residential households. These features play an important role in supporting local livelihoods, social interaction, and daily community activities. Therefore require careful management during construction to avoid temporary disturbance or environmental nuisance.	Will not cause any severe negative effects to the environmental settings of the area nor important environmental features. Air and noise pollution may occur during the construction period due to construction activities and the transportation of materials. In some cases, accidents may happen due to unauthorized entry into the construction site. These impacts are short-term, site-specific, and within a small scale and manageable by mitigation measures.

	Construction activities and the establishment of labor camps, along with associated facilities and services, may lead to adverse environmental and social impacts if not properly managed.	Noise pollution from piling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge (in labor camp), will more likely to take place. Strain on local resources such as water, sanitation and electricity. Health and hygiene risk due to overcrowding or poor camp management. Social tension with nearby communities may arise if laborers' behavior or camp facilities are not adequately supervised.
	Earth excavation work will be involved during the piling.	Consequently, air, noise and dust pollution will be occurred within a small-scale during the construction period only.
	Chemical spills or improper disposal of construction waste materials due to a lack of workers' training and contractor safety initiatives. Kitchen and labor camp waste may be generated during construction period.	Soil and water can be further eroded and polluted.
	Vibration effects generated from piling, drilling, or other construction works	May trigger harmful disturbances to local faunal species.
	A functional Grievance Redress Mechanism (GRM) must be in place to ensure community feedback, transparency, and accountability in managing environmental and social risks during project implementation.	Lack of an effective GRM may lead to unresolved community complaints, misinformation, reduced stakeholder trust, and potential conflict or resistance during project implementation. However, the project's three-level GRM structure comprising Local, Project, and Ministry-level committees offers a systematic approach to resolve such issues in a timely, transparent, and inclusive manner.
ESS2: Labor and Working Conditions	Local workers may be hired; labor influx is not anticipated. No child or forced labor permitted.	Low risk of labor-community tension or burden on local infrastructure; reduced potential for social conflict.
	OHS risks during pile-driving and construction works.	Injury risk for laborers.
	Safe working conditions, personal protective equipment (PPE), and sanitation facilities must be ensured at site.	Risk of injury or health hazards if workers lack PPE or safety supervision. Potential spread of illness if hygiene and sanitation facilities are inadequate.
	Risk of accidents during demolition of old structure or pile-driving and construction phase; proper training and labor code compliance are required.	Risk of falls, tool-related injuries, or exposure to noise and dust without safety training. Possibility of non-compliance with national labor standards or World Bank EHS guidelines.
	Labor camps must comply with EHS guidelines. Inadequate ventilation, poor lighting and overcrowded conditions can disrupt normal living standards, increase the risk of disease transmission and negatively impact workers' health and well-being.	Risk of poor living conditions, waste mismanagement, health and hygiene issues, or community tension if camps are not properly managed.
	Dust from earthwork, vehicle movement, and material handling during the construction period may cause air pollution.	Site specific, short-term, can be controlled by regular sprinkling and covered transport

ESS3: Resource Efficiency and Pollution Prevention and Management	Construction works will involve chemical usages (Cementitious Chemicals as Ordinary Portland Cement, Fly Ash, Slag Cement, and Lubricants & Fuels as Diesel, engine oil, hydraulic oil) and preparation of on-site add-ons to the bridge that will generate scraps and residues. Use of concrete, cement and machinery used oil/grease during construction may lead to runoff polluting nearby salt fields and canals.	short-term water pollution may occur during the construction period due to the use of concrete, cement, and other construction materials. Runoff from the work site may enter the Char Bogula khal, potentially causing localized deterioration of surface water quality if not properly managed. Such impacts are expected to be temporary and site-specific. The risk can be effectively minimized through the implementation of proper drainage arrangements, use of silt traps, controlled concrete works, and timely cleanup of construction residues.
	Noise from piling and construction machinery.	Potential hearing risks and stress for laborers and local residents exposed to prolonged noise. Limited to working hours and local area, can be reduced by timing and barriers.
	Construction waste, including debris from dismantling of old bridge and packaging materials, waste from labor camps, must be handled with designated waste management plan.	Potential soil and water contamination may occur due to improper handling or disposal of solid and construction waste near the project site and adjacent Char Bogula khal. Accumulation of unmanaged waste could pose health and safety risks to workers and nearby communities. To prevent such impacts, all solid and construction waste should be properly segregated, temporarily stored in designated areas, and regularly transported to approved disposal or landfill sites under the supervision of the contractor.
ESS4: Community Health and Safety	The construction zones must be barricaded; signage and awareness campaigns to minimize risks to pedestrians and vehicles. Participants recommended dedicated pedestrian walkways and strong railings to enhance community safety.	Increased risk of accidents and injuries to pedestrians, especially children and elderly, due to unprotected construction zones. Obstruction or confusion for local traffic and pedestrians in the absence of proper signage and temporary pathways. Community dissatisfaction if safety measures are not visibly in place. Unsafe movement near deep excavation or elevated bridge structures during construction. Proper use of signage and barricades may ensure the construction site's safety.
	Use of heavy machinery during construction may result in significant dust and noise emissions. Runoff containing oil, grease, or cement slurry may enter nearby agriculture land, ponds and khal, potentially affecting community health and livelihoods.	Air pollution from dust and emissions can affect nearby residents. Noise pollution may disturb local communities. Water pollution may occur due to runoff of oil, grease, fuel residues, or cement slurry from construction activities, which could enter the adjacent Char Bogula khal and nearby ponds, temporarily affecting surface water quality and local use, harming aquatic life and reducing water usability. These impacts are short-term, site-specific and within a small area and manageable by mitigation measure.

ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlemen	No land acquisition required; construction is within the existing right of way.	Temporary access disruptions during construction can be mitigated by providing alternative access during construction. Vehicles. A Memorandum of Understanding (MoU) should be signed with the landowner in cases where private or community land is temporarily required for storing construction materials or setting up labor camps.
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	No critical natural habitats within 500m. The surrounding area is characterized by rural settlement features, including agricultural land, local market (Bridge Bazar), shops, ponds, mosques, and scattered homesteads. The Char Bogula khal flows beneath the bridge alignment and functions as a local drainage channel with tidal influence, but it does not support any ecologically sensitive habitats or protected biodiversity features.	Some features are located near the proposed sites, where dust and noise pollution may cause impacts. These impacts are expected to be negative but short-term, site-specific, and reversible with appropriate mitigation measures. Other features are situated at relatively greater distances, where significant disturbance is not anticipated. To minimize any potential impacts, strict construction site management practices should be enforced, including limiting work to daytime hours, applying water-sprinkling at least twice daily around the site, installing proper fencing around the working area, and ensuring safe storage of construction materials.
ESS7: Indigenous Peoples/Sub- Saharan African Historically Underserved Traditional Local Communities	No Indigenous or Small Ethnic Communities found in project influence area.	Not applicable.
ESS8: Cultural Heritage	No known cultural or archaeological sites identified within project site.	Not applicable.
ESS9: Financial Intermediaries	Not applicable as project does not involve financial intermediaries.	Not applicable.
ESS10: Stakeholder Engagement and Information Disclosure	Consultations were conducted with local host community members and relevant stakeholders at proposed bridge locations. On 26 November 2025, a meeting was held with 21 participants at Brridge Bazar near the proposed subproject site, where participants emphasized the urgent need for a new bridge to address transport difficulties and safety risks due to the deteriorated condition of the existing structure.	Participants anticipated support for the project and emphasized the importance of safety features and pollution control. The feedback collected underscores the need for continued stakeholder engagement during implementation, including maintaining a functional grievance redress mechanism (GRM), accessible communication channels and a transparent complaint registry to ensure inclusive and responsive project delivery.

The navigability of canals and community safety remain critical considerations during both the construction and operational phases of the bridge subproject. As per good environmental and social practice, and consistent with World Bank Environmental and Social Standards (ESS4 and ESS6), no

construction or structural intervention over waterways should impede the free and safe passage of local water transport. During construction, temporary arrangements must be ensured so that local communities can continue crossing canals from alternative access points without disruption.

Safety during the operation phase is equally important. Measures such as the installation of reflective guideposts, visible signage, and proper lighting for vehicles and pedestrians approaching the bridge are essential and must be integrated into the construction phase planning. These elements significantly enhance commuter and pedestrian safety and should be reflected in the engineering design and budget estimations.

Furthermore, to minimize environmental degradation and offset potential negative impacts, a comprehensive set of site-specific mitigation measures will be adopted in addition to standard construction practices. These will follow the Environmental and Social Management Plan (ESMP) and the relevant national codes of practice, ensuring compliance with the requirements outlined in the Environmental and Social Management Framework (ESMF).

3.4 Climate Change Impact

3.4.1 General Consideration

Noakhali is one of the most climate-sensitive coastal districts of Bangladesh, characterized by low-lying terrain, tidal floodplains, and extensive char (island) formations. Due to its geographical position along the Bay of Bengal, the district is highly exposed to climate change impacts, including frequent cyclones, tidal surges, saline water intrusion, coastal flooding, and unpredictable rainfall patterns. National climate vulnerability assessments, as well as recent reports from the World Bank¹ and the IPCC², indicate that the coastal belt of Bangladesh will experience increasing climatic stresses, including stronger cyclonic storms, prolonged monsoon rainfall, higher temperatures, and rising sea levels, in the coming decades. Such conditions threaten infrastructure, agricultural production, water supply systems, communication networks, and human settlements.

The overall climatic condition of Noakhali is becoming more unpredictable, with intense rainfall events, prolonged waterlogging, changes in seasonal patterns, and increased heat stress already reported³. Communities in vulnerable unions regularly face tidal flooding during monsoon and post-monsoon seasons, and salinity intrusion is gradually affecting southern coastal upazilas such as Subarnachar and Hatiya. Although inland areas are less saline, they remain exposed to cyclonic winds and heavy rainfall. In this context, rural road bridges play a vital role in enhancing climate resilience by ensuring uninterrupted connectivity during extreme weather events such as floods, cyclones, and tidal surges. Strengthening the structural integrity and climate resilience of the proposed bridge is essential to maintain safe access for local communities, support emergency response and evacuation, and safeguard livelihoods during and after climate-induced hazards.

3.4.2 Site Specific Consideration

The proposed RCC girder bridge is located within a rural coastal setting of Hatiya Upazila, Noakhali District. Although the bridge site is not directly adjacent to the open sea, it lies within a low-lying coastal plain that is regularly influenced by cyclonic wind, heavy monsoon rainfall, tidal fluctuations, and storm surges. The bridge crosses the Char Bogula Khal, which extends from the northeast to the southwest and experiences tidal flow, particularly during high tides and the monsoon season. As a result, the surrounding areas are periodically exposed to increased water levels and flow velocity.

Field observations and community consultations indicate that the khal remains a flowing channel and therefore does not cause prolonged waterlogging near the bridge approaches. However, seasonal high tides and intense rainfall can temporarily affect the canal banks and approach roads, leading to erosion, surface damage, and access difficulties.

Site specific climate change impacts are often not so easy to measure or deduce plausibly while the site is confined to a narrow strip of roadways only, and associated mitigation or offsetting measures are really hard to plot on the same tiny impact areas, though an overall set of measures are often considered in practical aspect. The proposed bridge will incorporate enhanced structural strength, appropriate foundation design, adequate drainage arrangements, and durable construction

¹ https://climateknowledgeportal.worldbank.org/sites/default/files/country-profiles/16813-WB_Bangladesh%20Country%20Profile-WEB.pdf

² <https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg2-chapter6-1.pdf>

³ https://doe.portal.gov.bd/sites/default/files/files/doe.portal.gov.bd/page/936c9ced_0267_48bf_87d0_4e0c43168cf0/2024-05-14-11-21-17bcdcf2bceffea77921c54c689a50367.pdf

materials. These interventions are essential to ensure long-term functionality of the bridge, maintain uninterrupted connectivity during extreme weather events, and enhance the resilience of local communities that rely on this route for daily movement, emergency access, and livelihood activities.

4. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

4.1 General

The anticipated environmental and social impacts of the proposed sub-project are primarily construction-related and considered to be temporary, site-specific, and manageable. These impacts can be effectively addressed through the adoption of good engineering practices, good housekeeping, better in-situ construction materials management, standard environmental controls, and adherence to World Bank Environmental and Social Standards (ESS1–ESS10), especially those related to health, safety protocols, and pollution prevention.

The contractor shall be fully responsible for implementing the Environmental and Social Management Plan (ESMP) as an integral part of the contractual obligations for the construction of the proposed RCC girder bridge over the Bogula Khal in Hatiya Upazila, Noakhali. All construction activities must be carried out in compliance with the approved ESMP to minimize adverse environmental and social impacts on the surrounding communities and environmental features.

During construction, the contractor shall regularly implement dust control measures, including water spraying on exposed surfaces and access roads at least twice daily or as required. Proper solid waste management practices shall be followed through segregation, safe storage, and disposal of construction and domestic waste at approved locations. Noise control measures, such as maintaining equipment in good condition and restricting high-noise activities to daytime hours, shall be enforced. The construction site shall be clearly demarcated using barricades, signage, and safety tape to ensure public safety and minimize disturbance to nearby households, shops, and community facilities.

Given the close proximity of the proposed bridge site over Char Bogula Khal, and the presence of sensitive surrounding features including Bridge Bazar (approximately 40 m north), local shops (30–40 m), Haji Mukul Ahmed Mosque (about 80 m east), Panchayet Bari Jame Mosque (about 650 m north), Modinatul Madrasah (about 80 m east), Hatiya Ideal School (about 80 m south), Soressar Roy Government Primary School (about 100 m north), Boaliya High School (about 670 m north), nearby ponds within 70–110 m, agricultural lands within 100–200 m, and adjacent residential households, special care shall be taken during construction to prevent runoff of construction materials, cement slurry, oil, grease, or debris into Char Bogula Khal, nearby ponds, agricultural lands, and other environmentally and socially sensitive areas. Construction materials shall be stored on raised and protected platforms, and appropriate measures such as silt traps, drainage control, and spill prevention arrangements shall be implemented to protect water quality. All construction-related activities with the potential to cause environmental or social impacts shall be closely monitored, and corrective mitigation measures shall be promptly applied with due care and diligence throughout the construction period.

In addition, all site workers, engineers, and Contractor's staffs must receive training on occupational health and safety (OHS), good practice construction works, code of conduct, efficient labor camp management, labor management procedure, emergency response, and environmental best practices and relevant awareness building sessions will also be conducted, and records of all those

training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects of this proposed construction work are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

The sub-project specific mitigation and monitoring measures have been outlined in the respective ESMP in Appendix-2, which guides pre-construction, construction, and post-construction phases. With proper implementation of these measures, the proposed infrastructure intervention is expected to deliver long-term social and economic benefits to the host communities, with minimal residual environmental impact.

4.2 Cost of Environmental and Social Enhancement Works in BOQ

In consideration to the aforementioned environmental impacts and their mitigation measures for the proposed construction activities, a set of items are included in the BOQ for every sub-project. The estimated cost to implement the ESMP is shown in Appendix-3.

5. CONTRACTOR AND LABOR MANAGEMENT

Most of the workers for this subproject will come from the local community, who share a common socio-economic, cultural, religious, and demographic background. Based on consultations with local stakeholders, it is anticipated that only a small portion of skilled labor may need to be hired from outside the project area, depending on availability. Therefore, the likelihood of internal conflicts among workers is expected to be minimal. It is estimated that approximately 20 laborers will be engaged during the construction phase, comprising 4 skilled (25%) and 16 unskilled (75%) workers, generating around 10,800 active working man-days (as detailed in Table- 5.1).

Although female participation in rural construction work is traditionally low, higher involvement of women is expected in this sub-project. Nonetheless, if female participation remains limited, the contractor must still conduct mandatory GBV (Gender-Based Violence) awareness training for all workers prior to the commencement of construction to mitigate risks of harassment, discrimination, or hostile behavior at the worksite.

The contractor's area will include the working zone surrounding the construction site, materials stacking and storage area, labor shed, and office space ideally located within or adjacent to the proposed Sub project location premises/boundaries for better coordination and monitoring. Contractor will be strictly instructed to maintain cleanliness at the worksite by ensuring waste, debris and dust are regularly cleared and that all bulk construction materials such as sand, stone chips, and steel are stored properly and covered with plastic sheets to prevent environmental degradation. Experiences from ongoing LGED projects in Hatia indicate a shortage of skilled labor, which has contributed to delays in some cases. In this sub-project, LGED anticipates that general and non-technical labor will be sufficiently available locally, with only specific technical expertise needing to be sourced from outside if required. It is expected that the scale of labor influx will remain manageable and will not pose significant risks of social tension or GBV during the construction period.

Table 5.1: Subproject-wise number of labor and total active working days

Sl no	Package Number	Name of Subproject	Total Space of proposed Construction (Square meters)	Tentative per day labor (No)	Days	Total active working days
01	HELP-NOA/BR-1	Construction of 36.00m RCC Variable Girder Bridge on Bridge Bazar - Bridge on Sakh Char Bazar near Balirpool R&H road at Ch: 1400m, PB 40m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364024).	262.8	20	540	10,800
Grand Total =				20	540	10,800

6. GRIEVANCE REDRESS MECHANISM (GRM)

In accordance with the Environmental and Social Management Framework (ESMF) of the HELP project, a robust and accessible Grievance Redress Mechanism (GRM) has been established to address project-related grievances from host communities, workers and other stakeholders. A structured and inclusive Grievance Mechanism (GM) has been established to ensure timely and effective resolution of complaints arising from project activities in the host communities. Since LGED is the Implementing Agency (IA), the grievance redress structure has been designed to operate across three levels local (Upazila), Project Implementation Unit (PIU) and Project Steering Committee (PSC) to address concerns efficiently and equitably.

Local Level GRC

At the local level, a Grievance Redress Committee (GRC) is formed in each Upazila where LGED has subproject activities. The GRC is chaired by the Upazila Engineer from LGED (or a nominated official by the Project Director if required), serving as the Convener. The Environmental Specialist and/or Social Specialist from the PIU, depending on the nature of the complaint, act as the Member-Secretary and remain common across all local GRCs under LGED. The committee also includes an Environmental and/or Social Specialist from the Supervision Firm appointed by LGED, a representative from the respective Union Parishad (preferably female if the complainant is female), and a community representative such as a teacher, NGO staff member, or a local individual nominated by the complainant. Specialists for these roles are expected to be hired within 3 to 6 months of project effectiveness. All grievances at the local level must be heard and resolved within 10 working days of receipt. Complaints related to LGED activities will be received at the office of the respective Upazila Engineer.

PIU-level GRC

If a complaint cannot be resolved at the local level, it is escalated to the PIU-level GRC. This committee is chaired by the Project Director of LGED and includes the Social and Environmental Specialists from the PIU as Member-Secretaries. It also includes a local government representative either the same individual from the local level hearing or another as appropriate (must be female if the complainant is female) and a community representative, preferably the same individual who participated at the local level. The PIU-level GRC is responsible for reviewing unresolved grievances and delivering a decision within 15 working days. In addition, the Social or Environmental Specialist

at the PIU, with assistance from the local GRC's Member-Secretary, will conduct regular visits to subproject sites to engage with communities and affected persons, and to document any new concerns, suggestions, or complaints in the GRM register.

PSC-level GRC

For grievances that remain unresolved at the PIU level, the matter is further referred to the PSC-level GRC, which represents the final tier of grievance resolution. This committee is led by a representative of the Secretary from the relevant ministry, serving as the Convener, with the Project Director of LGED acting as the Member-Secretary. The PSC-level GRC is required to make a final decision on such grievances within a maximum of four weeks. Any resolution reached at any level of the grievance process that is agreed upon by the aggrieved party is considered binding on LGED and will be implemented accordingly.

This multi-tiered GM structure under LGED ensures that all grievances from host community members are addressed in a fair, inclusive, and transparent manner. It fosters accountability and trust in project implementation while upholding the World Bank's Environmental and Social Standard 10 (ESS10) on stakeholder engagement and information disclosure.

7. INSTITUTIONAL ARRANGEMENT

LGED, through the Project Implementation Unit (PIU), will have overall responsibility for environmental and social risk management through implementation of ESMP and compliance with the World Bank's Environmental and Social Framework (ESF). The PIU's ES team comprising of a Sr. Environmental Consultant, a Sr. Social Development Consultant, and a Gender Specialist will oversee ESMP implementation including functional operation of Grievance Redress system, review monitoring reports from the D&S Consultant, and coordinate reporting to the World Bank. The Design and Supervision Consultant (D&SC) will provide day-to-day site supervision, verify contractor's compliance with ESMP requirements along with taking prime actions in the progress of grievance redressal and advise corrective actions wherever required. The Contractor will be responsible for on-site implementation of all mitigation measures, including occupational health and safety (OHS), waste management, environmental protection and grievance management. Coordination among PIU of LGED, D&SC, and the Contractor will be ensured through regular supervision, reporting, and redressal mechanisms.

Institutional Roles and Responsibilities Table (Recommended for ESMP)

Institution / Entity	Key Roles and Responsibilities
LGED Project Implementation Unit (PIU)	• Oversee environmental and social risk management framework and activities
	• Review and approve site-specific ESMPs
	• Monitor implementation through field inspections
	• Manage and supervise GRM at the project level
	• Approve E&S documents and corrective actions
	• Report ESMP performance to the World Bank
PIU Environmental & Social Specialists	• Technical supervision of ESMP implementation
	• Review contractor's E&S compliance plans and related records.
	• Conduct site visits and compliance audits

	• Provide guidance on ESS compliance and required corrective actions	
	• Leads capacity-building and training sessions for consultants and contractors.	
	• Review and approve periodic monitoring reports and submit to the Project Director for sending them to the WB.	
Design & Supervision Consultant (D&SC)	• Provides full-time, site-level supervision of ESMP implementation.	
	• Verifies that mitigation measures are integrated into physical construction activities.	
	• Verify contractor compliance with mitigation measures	
	• Maintains detailed monitoring checklists, incident logs, and photographic records.	
	• Support PIU in Compliance reporting.	
Construction Contractor	• Executes all mitigation measures defined in the approved ESMP.	
	• Prepare site-specific plans (OHS, waste, traffic, labor camp, etc.) and implement the same.	
	• Ensure PPE use, safety training, and daily toolbox meetings	
	• Appoints a designated EHS Supervisor to manage site-level compliance and reporting.	
Grievance Redress Committees (3-tier GRM)	• Receives, registers, and investigates grievances from workers and the community.	
	• Ensures a transparent, culturally appropriate, and timely resolution process.	
	• Coordinate with PIU and local administration	

8. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

Monitoring is a critical component under the Host and FDMN Enhancement of Lives through Infrastructure Improvement Project (HELP) to ensure that environmental and social mitigation and enhancement measures outlined in the Environmental and Social Management Plan (ESMP) are effectively implemented and that their intended benefits are realized over time. The Environmental and Social Management Framework (ESMF) of the HELP Project provides a detailed monitoring mechanism, assigning responsibilities to all relevant parties directly involved in or overseeing the construction and implementation of sub-projects.

Several tiers of monitoring responsibilities have been established under the HELP Project. At the implementation level, contractors are required to ensure that environmental and social risks are effectively minimized throughout the construction period. This includes implementing adequate Occupational Health and Safety (OHS) measures for both workers and surrounding host communities. Contractors must assign site managers and safeguard supervisors (or equivalent personnel) to supervise daily implementation of the ESMP. These personnel are responsible for ensuring environmental protection both on and off-site and for preventing damage or nuisance to individuals, public and private property, and surrounding features or institutions. Pollution, noise, and other detrimental effects arising from construction operations must be strictly controlled. In

addition to implementing the ESMP, contractors are also responsible for preparing and executing specific management plans, such as drainage management, traffic management and emergency preparedness and response, where required. Proper implementation of these plans, along with timely site decommissioning and restoration, must be ensured. The detailed Environmental and Social Monitoring Plan, including monitoring parameters, indicators, responsible institutions, and frequency of monitoring during pre-construction, construction, and operation phases, is presented in Appendix-4.

The first tier of supervision is led by the Design and Supervision Consultant (D&SC) firm. Once the contractors are mobilized, safeguard consultants from the D&SC and the Resident Engineer are tasked with ensuring contractor compliance with the ESMP and with the application of good engineering practices at the site. This includes strict enforcement of OHS measures. The D&SC is responsible for preparing regular monitoring reports based on field-level supervision and findings.

At the second tier, the Project Implementation Unit (PIU) will play a key role in overall monitoring. The PIU will have dedicated environmental and social safeguard specialists who will conduct frequent field visits to assess ESMP implementation. These specialists, in coordination with the Executive Engineer's Office in Noakhali district and Upazila Engineers' Office in the respective upazila, will ensure strong site-level oversight. The PIU safeguard team will also ensure that all contractor staff and other relevant personnel receive adequate initial and ongoing training on environmental and social safeguards. Moreover, the PIU will verify proper site cleaning and reclamation upon completion of construction and recommend necessary corrective or punitive measures if any non-compliance is observed.

At the highest tier, the Ministerial Project Steering Committee (PSC), chaired by the Senior Secretary/Secretary of the Local Government Division (LGD), Ministry of LGRD&C, will provide strategic oversight of monitoring activities. In collaboration with the PIU, the PSC will ensure that environmental and social safeguard training is provided to all relevant project staff and that implementation at the field level aligns with national policies and the World Bank's Environmental and Social Framework (ESF). This structured multi-tiered monitoring approach under HELP will help ensure that the construction of the RCC bridge at Hatia Upazila is environmentally and socially responsible, and aligned with sustainable development objectives.

9. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are fully implemented, there will be no significant negative environmental or social impacts related to the selection, design, construction, and operation of the proposed sub-project. In fact, the recommended mitigation and enhancement measures will lead to significant benefits, improving both the environmental quality and the social well-being of the local communities. The project will contribute to enhanced infrastructure, improved livelihoods and better access to essential services, ultimately benefiting both the host communities and the displaced populations. Major improvements in quality of life, communication and socio-economic influences will be ensured once the scheme is in operation.

Overall, the screening study can be summarized as follows:

- The communities will receive large benefits in terms of quality of life, particularly with better reach of services and goods.

- The short-term negative impacts that may come by the way of air quality, noise, solid waste, occupational health & safety during the construction period, that need to be minimized through the management plan.
- The project will create employment for those who live in the vicinity of the construction site and will provide them a short-term economic gain.
- A comprehensive Environmental and social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from these Subproject activities.
- Detail cost estimation for incorporating ESMP has been shown in Appendix-3. This budget can change due to change of market prices and if the project implementation period extends.

Implementation of this Sub-project will have large positive impacts to the communities in terms of improved infrastructural transportation & communication facilities, which would eventually develop the socio-economic condition of the catchment areas. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Annexure-01: Attendance of consultation meetings for sub-project

Host and FDMN Enhancement of Lives through Infrastructure
Improvement Project (HELP)

Local Government Engineering Department (LGED)

Public Consultation Participants List

Focus Group Discussion

সময় : ৪.০০ ঘটিকা

তারিখ : ২৬/০৩/২০১৮

উপ-প্রকল্প/কম্পোনেন্ট এর নাম: Construction of 36.00m RCC Variable Girder Bridge on Bridge Bazar on Sukh Char bazar near Balirpool R&H road at Ch: 1400m, PB 40m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364024).

মত বিনিময় স্থান : ব্রীজ বাজার

ইউনিয়ন : হাতিয়া

ওয়ার্ড নং : ৭নং

ডাকঘর : হাতিয়া

উপজেলা : হাতিয়া

জেলা : নোয়াখালী

সাব প্রকল্প নং: HELP-NOA/BR-1

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর / টিপসই
১	শ্রী. বাবুল	৪০	পুরুষ	হাতিয়া	হাতিয়া
২	এনাখুল হক	৫৪	পুরুষ	হাতিয়া	এনাখুল হক
৩	নোহেল	৩২	পুরুষ	হাতিয়া	নোহেল
৪	মিজান উদ্দিন	৩৪	পুরুষ	বগুনা	মিজান উদ্দিন
৫	জিয়াউল হক	৩৫	পুরুষ	হাতিয়া	জিয়াউল হক
৬	শ্রী. কামাল	৫৬	পুরুষ	হাতিয়া	কামাল
৭	আজহার	৩৬	পুরুষ	হাতিয়া	আজহার
৮	বাবুল হাতিয়া	২৫	পুরুষ	হাতিয়া	বাবুল হাতিয়া
৯	শ্রী. নবী	৫৫	পুরুষ	হাতিয়া	নবী
১০	শ্রী. নাহিদ	৩০	পুরুষ	হাতিয়া	নাহিদ
১১	শ্রী. ইমরুল	৩৫	পুরুষ	হাতিয়া	ইমরুল
১২	জাহিদুল হক	৩৬	পুরুষ	হাতিয়া	জাহিদুল হক
১৩	শ্রী. বাবুল হাতিয়া	৩৪	পুরুষ	হাতিয়া	বাবুল হাতিয়া
১৪	শ্রী. জাহিদ	৪০	পুরুষ	হাতিয়া	জাহিদ
১৫	শ্রী. বাবুল	৪২	পুরুষ	হাতিয়া	বাবুল
১৬	শ্রী. জাহিদ	২৫	পুরুষ	হাতিয়া	জাহিদ
১৭	বাবুল হাতিয়া	৪২	পুরুষ	হাতিয়া	বাবুল
১৮	আবুল হাতিয়া	৪৬	পুরুষ	হাতিয়া	আবুল হাতিয়া

Annexure-02: Sub-project location pictures



Figure: Present condition of the proposed location for 36.00m RCC Variable Girder Bridge on Bridge Bazar - Bridge on Sakh Char Bazar near Balirpool R&H road at Ch: 1400m, PB 40m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364024)

Appendix-01: Environmental and Social Screening Form for examining sub-project

Environmental Screening Form

Work Package Description Form:

Name of component: Construction of 36.00m RCC Variable Girder Bridge on Bridge Bazar - Bridge on Sakh Char Bazar near Balirpool R&H road at Ch: 1400m, PB 40m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364024).

Package no: HELP-NOA/BR-1

Implementing Agency/Agencies: Local Government Engineering Department (LGED)

Estimated total cost of sub-project (in Taka): As per LGED rate schedule

Estimated construction period duration: 18-24 months

Estimated Operation and Maintenance period (life of sub-project): Project design life is more than 15 (Fifteen) years but Government policies will determine the period for sub-projects to operate in the areas.

District: Noakhali

Sub-District: Hatia

Union: Charking

Name of Community/Local Area: Bridge Bazar near bridge location

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.):

One RCC Bridge will be constructed replacing an existing concrete bridge. There are some activities for RCC bridge construction such as Earth cutting and filling for foundation, Back filling and approach road construction, Brick soling work, CC work, RCC work, Rod cutting, bending and binding and Shuttering work.

Estimated footprint / land area for this sub-project is 262.8 sq. meter

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.):

The proposed sub-project site is located on the Bridge Bazar - Sakh Char Bazar near Balirpool R&H Road at Ch: 1400 m under Hatiya Upazila of Noakhali District (Road ID: 475364024). The bridge will be constructed over Char Bogula Khal, which is a tidal canal flowing through the area and remains active throughout the year due to regular tidal influence. The khal functions as a natural drainage channel and tidal water conveyance system, allowing continuous water exchange and generally preventing long-term waterlogging in the surrounding areas.

The surrounding land use is predominantly mixed rural and semi-commercial in nature. Bridge Bazar is located approximately 40 m north of the site, along with nearby local shops (within 30-40 m), scattered households, homestead gardens, ponds (within 70-110 m), and agricultural lands (within 100-200 m). Several important community establishments are situated near the site, including Hatiya Ideal School (about 80 m south), Modinatul Madrasah (about 80 m east), Soressar Roy Government Primary School (about 100 m north), Boaliya High School (about 670 m north), Haji Mukul Ahmed Mosque (about 80 m east), Panchayet Bari Jame Mosque (about 650 m north), and Sree Sree Shib Mondir (about 600 m northeast). The presence of these facilities indicates the high

socio-economic and community importance of the location, as well as significant daily pedestrian and local vehicular movement.

The proposed bridge serves as a vital connectivity point for people from surrounding villages and markets, including Charbogula, Panchadia, Rajab Ali Gram, Sabir Bari Gram, Daserhat, Killar Bazar, South Shollikiya, Rasagram, and Bhairab Bazar. The existing approach roads are actively used by residents, traders, students, farmers, and fishers for daily commuting, transportation of agricultural and fishery products, and access to markets, schools, religious institutions, and essential services.

No ecologically critical habitats or protected areas are located within the immediate vicinity of the site. However, the Char Bogula Khal itself is an important local environmental feature supporting drainage, tidal flow, and small-scale water use. Therefore, careful management of construction activities will be required to avoid obstruction of water flow, contamination of surface water, and disturbance to surrounding community features during implementation.

The proposed Sub-project of RCC Bridge is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction of the sub-project.

Types of waste to be generated during construction and operation phase:

During construction period solid waste will be generated due to demolition of an old bridge and later construction of a new bridge on the same place. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic etc. Negligible amount of plastic. Human wastes might be generated in labor camps.

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions:

The following activities for PSC bridge construction are:

- Earth cutting and filling for the foundation
- Backfilling and approach road construction
- Brick soling work
- CC work
- RCC work
- Rod cutting, bending and binding
- Shuttering work

For bridge safety,

- Color painting on rallying
- Traffic safety guide post for approach
- Safety measures will be taken within the construction

Others,

- Any bridge side is not on private land.
- Alternative diversion will be provided for traffic movement and not disturbing of water flow

or flora and fauna - Mainly on very small canals and dispersed land will be necessary for water drainage For livelihood, - No private land will be used - No shifting of any structure will be needed
Sub-project Location: The proposed sub-project site is located on the Bridge Bazar – Sakh Char Bazar near Balirpool R&H Road at chainage 1400 m under Hatiya Upazila of Noakhali District (Road ID: 475364024). The bridge will be constructed over Char Bogula Khal, a tidal canal that remains active throughout the year due to regular tidal movement. Geographically, the bridge site falls within Charking Union under Hatiya Upazila. The surrounding villages and market centers that depend on this bridge for daily communication include Charbogula, Panchadia, Rajab Ali Gram, Sabir Bari Gram, Boaliya, South Shollikiya, Rasagram, Daserhat, and Bhairab Bazar. The bridge location holds strategic importance for improving local connectivity by linking rural settlements with growth centers, markets, educational institutions, religious establishments, and other essential service facilities. The GPS coordinates of the proposed bridge site are approximately 22.31636656° N latitude and 91.0924987° E longitude. The site is located about 9 km from the Hatiya Upazila headquarters.
Land ownership Government Land
Expected construction period: 18-24 months
Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas and historical or cultural assets): Please also explain any analysis on alternative location was conducted: The proposed sub-project is confined to the existing bridge location over Char Bogula Khal, where the new 36.00 m RCC Variable Girder Bridge will be constructed by replacing the existing dilapidated structure on the Bridge Bazar - Sakh Char Bazar near Balirpool R&H Road under Hatiya Upazila, Noakhali District. Construction activities will be limited to the bridge footprint, abutments, piers, and immediate approach roads. Within the project influence area (approximately 500 m radius), several community and environmental features were identified during field-level screening: North side: Bridge Bazar (approximately 40 m), local shops (about 30 m), Soressar Roy Government Primary School (around 100 m), Boaliya High School (approximately 670 m), Panchayet Bari Jame Mosque (about 650 m), and several ponds within 80–110 m. South side: Hatiya Ideal School (about 80 m), shops (around 40 m), a pond (approximately 70 m), and scattered households within 80 m. East side: Modinatul Madrasah (about 80 m), Haji Mukul Ahmed Mosque (around 80 m), a pond

(approximately 90 m), and agricultural land (about 100 m).

West side:

Homestead garden (around 50 m), agricultural land (approximately 200 m), and scattered residential structures.

The surrounding area represents a rural growth center with mixed residential, commercial, agricultural, and educational land use. The presence of schools, mosques, ponds, and markets indicates significant social importance and daily pedestrian movement. However, no officially recognized historical, archaeological, or protected cultural heritage sites were identified within the 500 m influence area during screening.

Section B: Environmental Screening

B.1: Environmental feature of sub-project location

Description of cultural properties (if applicable, including distance from site):

The proposed sub-project is located at Ch: 1400 m on the Bridge Bazar - Sakh Char Bazar near Balirpool R&H Road, where the new bridge will replace the existing dilapidated structure over Char Bogula Khal. During field screening, no archaeological, historical, or nationally protected cultural heritage sites were identified within or adjacent to the proposed sub-project site.

However, several locally important religious and community establishments are present within the surrounding area. Haji Mukul Ahmed Mosque is located approximately 80 meters east of the proposed bridge site, while Panchayet Bari Jame Mosque is situated about 650 meters north of the site. Additionally, Sree Sree Shib Mondir is located approximately 600 meters northeast of the proposed bridge location. These religious institutions are actively used by the local community and hold cultural and social importance at the local level.

The proposed bridge construction will not require any land acquisition from these religious or cultural properties, nor will it involve physical alteration, relocation, or restriction of access to these sites. With the implementation of appropriate construction management measures such as dust suppression, noise control, proper site demarcation, traffic management, and (where feasible) avoiding high-noise activities during prayer times, no significant adverse impacts on cultural or religious practices are anticipated. The sketch of the surrounding features are given below.

preventive and mitigation measures will be followed during the entire construction period.

(1) potential impacts on remaining forests in/around camps Yes/No

N/A

(2) Other issues:

No other issues identified.

Baseline air quality and noise levels:

Air Quality

Site-specific baseline ambient air quality monitoring was not conducted for this sub-project. However, baseline conditions have been assessed based on secondary information drawn from relevant environmental studies, monitoring reports, and previous coastal and rural infrastructure project documents implemented in Noakhali District, including Hatiya Upazila. These sources indicate that the ambient air quality in rural coastal areas such as Hatiya is generally good due to the absence of major industrial activities, low traffic density, and the predominance of open agricultural land and water bodies.

According to DoE Continuous Air Monitoring Station (CAMS) data for nearby coastal districts, concentrations of gaseous pollutants such as sulfur dioxide (SO₂), nitrogen dioxide (NO₂), and carbon monoxide (CO) typically remain well within the Bangladesh National Ambient Air Quality Standards in rural and semi-rural settings. Previous environmental assessments for LGED road and bridge projects in Noakhali report indicative 24-hour average concentrations of SO₂ ranging from 5–15 µg/m³ and NO₂ ranging from 10–25 µg/m³, while CO concentrations remain below 1.5 mg/m³⁴.

Particulate matter (PM₁₀ and PM_{2.5}) levels in Hatiya Upazila are generally moderate but may increase seasonally during the dry period due to wind-driven dust, movement of light vehicles, and unpaved rural roads. Secondary data from past LGED and World Bank-supported project EIAs indicate PM₁₀ concentrations in the range of 80–140 µg/m³ and PM_{2.5} concentrations between 35–60 µg/m³ during peak dry months, with occasional short-term exceedances of 24-hour standards⁵. Such exceedances are typically localized, temporary, and reversible.

Field observations at the proposed bridge site in Hatiya confirm low background pollution levels, limited vehicular movement, and the absence of nearby industrial emission sources. Therefore, the baseline air quality conditions at the site are generally acceptable and representative of rural coastal environments. Construction activities may temporarily increase dust and vehicle-related emissions, particularly during earthworks and material transport; however, these impacts are expected to be short-term and manageable through standard mitigation measures such as water spraying, covering of materials, and controlled vehicle movement.

Noise Levels

Baseline noise monitoring was not carried out at the project site. However, secondary information from DoE noise surveys, LGED environmental reports, and field observations indicates that ambient

⁴ Local Government Engineering Department (LGED) (2020). Environmental Impact Assessment Reports for Rural Infrastructure Projects in Noakhali District. LGED, Dhaka.

⁵ Local Government Engineering Department (LGED) (2018). Environmental Assessment and Environmental Management Framework for Rural Roads and Bridges Projects in Coastal Bangladesh. LGED, Ministry of Local Government, Rural Development and Cooperatives, Dhaka.

noise levels in Hatiya Upazila are generally low to moderate and consistent with rural and semi-rural land use patterns⁶. Indicative noise levels reported in previous studies conducted in rural Noakhali range from 45 to 55 dB(A) during the daytime and from 38 to 45 dB(A) during nighttime.

These levels generally comply with the permissible limits prescribed under the DoE Noise Pollution (Control) Rules, which set standards of 55 dB(A) for daytime and 45 dB(A) for nighttime in rural and residential areas⁷. Existing noise sources in the project influence area are limited to light vehicular traffic, local market activities, and occasional agricultural operations. No continuous or high-intensity noise-generating sources were identified near the proposed bridge site.

During construction, temporary increases in noise levels may occur due to the operation of construction machinery and vehicles. Such impacts are expected to be localized, intermittent, and time-bound, and can be effectively mitigated through scheduling works during daytime hours, maintaining equipment in good condition, and providing appropriate personal protective equipment (PPE) for workers.

Baseline soil quality:

Site-specific soil quality was not conducted for the proposed bridge site at the screening stage. However, baseline soil conditions have been assessed using secondary information. Hatiya Upazila is located within the coastal floodplain of Bangladesh and is characterized by young alluvial and tidal floodplain soils, primarily consisting of silty clay to clay loam textures. These soils are generally fertile but moderately to highly saline, particularly during the dry season due to tidal influence and saline water intrusion⁸. Soil pH in the area typically ranges from 6.5 to 8.0, indicating neutral to slightly alkaline conditions, which are common in coastal deltaic environments.

Electrical Conductivity (EC) values of soils in Hatiya vary seasonally and spatially, with moderate salinity (4–8 dS/m) commonly observed in surface soils during the dry season, while salinity levels reduce significantly during the monsoon due to rainfall and freshwater flushing. Organic matter content is generally low to moderate (1–2%), reflecting frequent sediment deposition, tidal action, and limited biomass retention in cultivated and open areas.

Available secondary data indicate that concentrations of heavy metals such as lead (Pb), cadmium (Cd), chromium (Cr), and arsenic (As) in soils of Hatiya Upazila are generally within permissible limits for rural and agricultural land use, with no evidence of industrial contamination⁹. Iron content in soil is naturally high due to alluvial sediment characteristics, but this is not considered a constraint for construction activities.

The proposed bridge site is located over an active canal corridor, with no agricultural activity within the immediate construction footprint. Agricultural land is present near the site but outside the direct

⁶ Department of Environment (DoE) (2025). Noise Pollution (Control) Rules, 2025. Ministry of Environment, Forest and Climate Change, Government of the People's Republic of Bangladesh, Dhaka.

Local Government Engineering Department (LGED) (2020). Environmental Impact Assessment Reports for Rural Infrastructure Projects in Noakhali District. LGED, Dhaka.

⁷ Department of Environment (DoE) (2025). Noise Pollution (Control) Rules, 2025. Ministry of Environment, Forest and Climate Change, Government of the People's Republic of Bangladesh, Dhaka.

⁸ SRDI (2018). Soil Salinity Status of Bangladesh. Soil Resources Development Institute, Ministry of Agriculture.

⁹ DoE (2022). Environmental Quality Standards and Monitoring Report. Department of Environment, Bangladesh.

construction area. No evidence of contaminated land, waste dumping, or previous industrial activity was observed during field observation.

Construction activities may temporarily disturb topsoil and increase the risk of localized soil contamination from fuel, lubricants, cement slurry, and construction debris if not properly managed. However, such impacts are expected to be temporary, localized, and reversible, provided that appropriate ESMP measures such as controlled material storage, spill prevention, proper waste handling, and site restoration are effectively implemented.

Landslide potential (high/medium/low, with explanation):

N/A (the sub-project will be constructed in a plain land)

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):

Surface Water Quality

Site-specific baseline surface water quality was not conducted for the proposed bridge site. However, baseline conditions have been assessed using secondary information from the different Department and World Bank-funded projects previously implemented in Hatiya and adjacent coastal upazilas of Noakhali District.

Surface water bodies in Hatiya Upazila mainly consist of tidal canals (khals), ponds, and estuarine channels connected to the Meghna River system. Secondary water quality monitoring data indicate that surface water pH values generally range between 7.0 and 8.2, reflecting neutral to slightly alkaline conditions typical of coastal tidal systems. Total Dissolved Solids (TDS) in surface water show seasonal variation, with values typically ranging from 1,500 to 5,000 mg/L, increasing during the dry season due to tidal influence and salinity intrusion.

Iron (Fe) concentrations in surface water are generally low to moderate, commonly recorded between 0.3 and 1.0 mg/L, which is within acceptable limits for surface water but not suitable for direct drinking without treatment¹⁰. Fecal coliform contamination has been reported in canals and ponds, particularly near settlements and markets, with counts often exceeding 1,000 MPN/100 ml, indicating contamination from domestic wastewater and open sanitation practices¹¹. As a result, surface water in Hatiya is mainly used for washing, bathing, and limited household purposes, rather than for potable use.

The canal at the proposed bridge site is a tidal watercourse with regular flow and flushing action. No stagnant water or chronic waterlogging was observed during field reconnaissance, suggesting a reduced risk of prolonged pollution accumulation at the site.

Groundwater Quality

Groundwater is the primary source of drinking water in Hatiya Upazila and is accessed mainly through shallow and deep tube wells. According to DPHE and BWDB groundwater quality surveys, shallow aquifers (typically less than 200 feet deep) in Hatiya are often affected by salinity and iron,

¹⁰ DoE (2022). Environmental Quality Standards and Monitoring Report. Department of Environment, Bangladesh.

¹¹ LGED (2019). Environmental Assessment Report for Rural Roads and Bridges in Noakhali District. Local Government Engineering Department.

whereas deeper aquifers (generally 600–800 feet deep) provide comparatively better quality water¹². Secondary data indicate that groundwater pH values typically range from 6.8 to 7.5, remaining within acceptable limits for drinking water. TDS concentrations in shallow groundwater may exceed 2,000 mg/L in saline-prone zones, particularly during the dry season, while deep groundwater sources usually show TDS levels below 1,000 mg/L¹³.

Iron (Fe) concentrations in groundwater are a known concern in Hatiya, with reported values ranging from 1.0 to 5.0 mg/L, exceeding the Bangladesh drinking water standard of 0.3–1.0 mg/L in many shallow tube wells. Fecal coliform contamination in groundwater is generally low, especially in deep tube wells, provided that proper well construction and sanitary protection measures are maintained. Overall, groundwater quality in the project influence area is considered acceptable for domestic use when sourced from deep aquifers.

Status of wildlife movement:

N/A (None of the information was found about the wildlife movement in or across the area)

State of forestation:

The proposed bridge site is located in a rural coastal setting of Hatiya Upazila, where no natural forest, reserved forest, or protected forest area exists within the project intervention area or within a 500-meter project influence area. The surrounding landscape is predominantly characterized by agricultural land, rural settlements, local markets, and scattered homestead vegetation.

Vegetation in the vicinity mainly consists of common roadside and homestead tree species and other locally planted trees, along with shrubs and grasses. These trees are primarily associated with private homesteads, agricultural boundaries, and market areas rather than organized forest cover.

Field verification confirms that the construction work will not require clearing of forest land or removal of any significant tree cover. Only minor trimming of roadside vegetation, if required for construction safety or access, may be necessary and can be managed through routine site management practices.

Summary of water balance analysis (For water supply scheme only): N/A

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable):

The proposed bridge is located at chainage (CH) 1400m on the Bridge Bazar - Bridge on Sakh Char Bazar near Balirpool R&H road (Road ID: 475364024). It is possible to carry the construction materials on this road to the construction site.

Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction:

No tubewell or fresh water sources are present at the proposed location, as there are no known permanent residents in the immediate vicinity. In order to make a sustainable management to usage

¹² DPHE (2020). Groundwater Quality Monitoring Report for Coastal Districts. Department of Public Health Engineering, Bangladesh.
BWDB (2021). Hydrological and Water Quality Assessment of Coastal Zone of Bangladesh. Bangladesh Water Development Board.

¹³ BWDB (2021). Hydrological and Water Quality Assessment of Coastal Zone of Bangladesh. Bangladesh Water Development Board.

of water for construction works two numbers of tubewells should be installed. The cost of installation of the tube wells are included into the civil works item, therefore is not repeated in ESMP budget.

Electricity is available at the site.

Toilet facilities are not available near this location. During the construction period, the toilet will need preparation for both male and female staff.

Possible location of labor camps:

On the south-west side of the proposed site, or can be placed near the location of sub-project site.

Requirement and type of raw materials (e.g. sand, stone, wood, etc.):

Some of the raw materials for bridge construction are steel, concrete, stone, asphalt, water, bamboo & wood. Other materials include iron, timber, aluminum, rubber and other joint materials, and electro-mechanical equipment used in construction.

Identification of access road for transportation (Yes/No):

The proposed bridge is located at chainage (CH) 1400m on the Bridge Bazar - Bridge on Sakh Char Bazar near Balirpool R&H road (Road ID: 475364024). It is possible to carry the construction materials on this road to the construction site. It passes from north to south.

Location identification for raw material storage:

On the southwest side of the proposed sub-project. Material storage area must be well fenced and materials will be covered with tarpaulins.

Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.):

Solid waste: An existing concrete bridge will be demolished and the new RCC bridge will be constructed here. So, construction debris and other solid wastes will be generated both during the demolition and construction periods.

Type: woods-bamboo, copper wires, concrete, iron, plastic, tin, etc.

Quantity: Nearly 10 metric ton of solid waste, including demolition materials will be produced.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.):

Solid waste: Iron, concrete, metal, drywall, wood, plastic, rubber, copper wires, excavated soils etc.

Quantity: It is difficult to give exact figures of construction waste produced on a typical construction site. However, in order to approximate the quantity, it is estimated that nearly 7 kg of waste would be generated each working day, which are mainly construction wastes. Some plastic, paper and organic waste will be generated from the use of workers, though a very negligible amount- half a kilogram a day maximum. Wastes from food and kitchen (biodegradable organic waste) will be generated at an amount of 2 kg per day in the labor camp.

Liquid waste: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 6 kg per day, which would be reduced in weight in course of time.

Type and quantity of raw materials used (wood, bricks, cement, water, etc.):

Type: i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) concretes viii) Bamboo & wood from mobilized materials and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction.

Quantity: It is difficult to give exact figures of construction waste produced on a typical construction

site.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: There is no soil land or major vegetation cover on the right-of-way for the sub-project. No other placement as waste dumps or equipment is targeted in any vegetation cover as well.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) Low: No borrow pit or quarries will be required to dig out during the construction period in or around/ adjacent to the sub-project area. During construction period one or two water reservoir may be constructed due to construction activities. But all those will be completely demolished and cleared out, once the construction period is over.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) Low: The proposed bridge site is located along the Bridge Bazar - Bridge on Sakh Char Bazar near Balirpool R&H road in Hatiya Upazila, Noakhali District, crossing over the Char Bogula Khal, which flows diagonally from the northeast to the southwest. The khal functions as a natural drainage channel with regular tidal influence and is not subject to any realignment, diversion, or structural modification under the proposed sub-project. No alteration of the existing hydrological regime of the canal is anticipated during either the construction or operational phases. However, during the construction period, temporary disturbances to surface water quality may occur due to site preparation activities, use of concrete and cement materials, and movement of construction machinery. Dust deposition, accidental spillage of construction materials, or runoff from the work site during rainfall events may enter the Char Bogula Khal. Such impacts are expected to be localized, short-term, and reversible in nature.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low: The site is free from any significant aquatic ecosystems or habitats of endangered species. There are some terrestrial flora species around the project site, which will not be affected by the works. Life cycle or movement of some terrestrial living species (fauna) (i.e. Insects - ant, bees, earthworm, reptiles, birds etc.) might be disturbed for the time being, but with very less impact indeed. So, overall potential effect is very low or absent for this specific sub project.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: N/A
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) N/A
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impact on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles:
No
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description)
No
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description)
No
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation)
There is no possibility of stagnant water bodies remained for encouraging mosquito breeding and other disease vectors, during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project:
Construction or implementation of a bridge project substantially contributes to the development of the project areas. It surely improves the communication network, reduces the transport time, increases the trade and business in/around the areas, and ensures access to better living conditions with amenities, better educational and job opportunities and health facilities. Thus, the direct and indirect impacts on economic development in the project areas would be enormous by this sub-project.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes):(High/Medium/Low with description)
No significant modification to the water channel is anticipated. The khal itself functions as a seasonal waterway and is not classified as a wetland or marsh. Surrounding areas are primarily small-scale trade, residential structures, water bodies, and agricultural land, but not dependent on the khal for drainage; therefore, no such effect can be anticipated. Therefore, the overall extent of disturbance to existing drainage channels and surface water bodies is assessed as Low.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description)
There are no protected areas in or around project sites, and no known areas of ecological interest.
Activities leading to landslides, slumps, slips and other mass movements in road cuts:
The entire sub-project component area is nearly flat; thus, no such type of impacts is anticipated.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation)
No.
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:
During operation period, traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred, primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to the bad condition of the access road and unsafe driving through it.

High = Likely to cause long-term impacts or over large area (> 1 sq km); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1 sq km); Low = Likely to cause little, short-term damage and over small area (< 0.5 sq km)

Section C: Social Screening

C.1 General Labor Influx Screening

Key Screening questions	Aspects to Consider
Will the project potentially involve an influx of workers to the project location, and will the influx be considered significant for the local community?	How many foreign and local workers will be needed for the remaining period of the project, with what skill set? Answer: The project will not require any foreign workers for the remaining construction period. The contractors will hire all skilled and unskilled labor locally. For the bridge construction, the project will need about 10 skilled workers and 20 unskilled workers. Skilled workers, such as masons, carpenters, and steel fixers, will come from nearby areas based on the technical needs of the bridge construction. Since the bridge will be constructed within a host community area, and local skilled and unskilled labor is willingly available, the project will prioritize hiring from the local community. This approach will not only support local livelihoods but also promote stronger community ownership of the project. ✓ Can the project hire workers from the local workforce? Answer: Yes, the project can hire workers from the local workforce. Both skilled and unskilled laborers will be recruited from nearby communities. The availability of local workers is sufficient to meet the project's labor demands. ✓ What is the size and skill level of the existing local workforce? Answer: Based on consultations with local stakeholders, most of the required workforce both skilled and unskilled is available within the project area. However, if specialized skills are needed for specific technical activities, the contractors may need to hire a limited number of skilled workers from outside the immediate locality. Overall, the local workforce is capable of supporting the construction activities under the project. ✓ If the skill level of the local workforce does not match the needs of the project, can they be trained within a reasonable timeframe to meet project requirements? Answer: Unskilled labor is readily available in the project area. If the skill level of the local workforce does not fully meet project requirements, the contractors can provide on-the-job training to upgrade their skills within a reasonable timeframe. This approach will enable the project to utilize local labor effectively while enhancing their technical capacity for bridge

Key Screening questions	Aspects to Consider
	construction activities. ✓ How will the workers be accommodated? Will they commute or reside on site or outside of the camp? If so, what size of camp will be required? Answer: Most of the workforce will be hired from the local community, and they will commute daily from their own homes; therefore, they will not require accommodation at the construction site. However, skilled workers who may be sourced from outside the project area will require temporary accommodation near the site. Contractors will establish temporary labor sheds to house these external workers. The size of the labor camp will depend on the number of outside skilled workers needed, but it will be designed to comply with Environmental, Health, and Safety (EHS) guidelines to ensure proper living conditions, sanitation, and worker safety.
Is the project located in a rural or remote area?	✓ What is the size of local population in the project area? Answer: The size of the local population in the project area is approximately 10500 people, including both male and female residents. This estimate is based on information collected during community consultation meetings held at the subproject site. ✓ What is the size of the host Rohingya community? Answer: N/A ✓ Is the project located / being carried out in an area that is not usually frequented by outsiders? Answer: No. The proposed sub-project is located in an area that is regularly frequented by outsiders. The bridge site is situated near Bridge Bazar, which is actively used by traders, farmers, transport operators, and daily commuters from surrounding villages. The route serves as an important local connectivity corridor for movement of goods, access to markets, religious institutions, and social services. As a result, the area experiences regular human movement and interaction, and is not considered isolated or restricted to only residents. ✓ What is the frequency and extent of contact between the local community and outsiders? Answer: Daily ✓ Are there sensitive environmental conditions that need to be considered? Answer: Yes, there are sensitive environmental conditions that need to be carefully considered during the implementation of the

Key Screening questions	Aspects to Consider
	project. In addition to general construction activities, the demolition of the existing old bridge may also generate significant dust, noise, debris, and vibrations, which could impact nearby mosques, market areas, ponds, and residential structures within close proximity, pedestrians, and other sensitive establishments located within close vicinity to the site. To minimize these impacts, the construction site must be properly fenced to contain dust dispersion and reduce noise pollution, thereby safeguarding residents and pedestrians. Dust suppression measures, such as water spraying at least twice daily, must be implemented throughout the construction and demolition periods. High-noise activities should be considered during less sensitive hours to minimize disturbance to nearby communities. Furthermore, all machinery and equipment should be properly maintained to control noise levels. Careful debris management during the dismantling of the old bridge will also be essential to prevent contamination of surrounding agricultural lands, market areas, and nearby water bodies.
Based on the socioeconomic, cultural, religious and demographic qualities of the local community, Rohingya population and the incoming workers, is there a possibility that their presence or interaction with the local community could create adverse impacts?	✓ Is it likely that the incoming workers and the local community come from a shared socio-economic, cultural, religious or demographic background? Answer: Most of the workforce is expected to come from the local host community. A small percentage of skilled workers may be hired from outside the project area if required. The local workforce and the incoming workers generally share a common socio-economic, cultural, religious, and demographic background, which is expected to support smooth integration at the work sites. Since this subproject is located in the host community area and will not involve Rohingya workers, the risk of conflict due to cultural or social differences is considered low. However, contractors must still take precautionary measures, such as awareness training on social behavior, code of conduct enforcement, and community engagement, to prevent misunderstandings and ensure a harmonious working environment. ✓ What is the level of existing resources, and will the incoming workers use or create competition for these resources? Answer: The existing local resources, such as water supply,

Key Screening questions	Aspects to Consider
	food, basic health services, and transportation facilities, are limited compared to the size of the local population. Although workers will be hired from the local community, a small number of incoming skilled workers from outside may create additional pressure on local resources. This could lead to a temporary increase in the demand for basic commodities and may cause price hikes in local markets during the construction period. ✓ What is the expected duration of the incoming workers' presence in the community? Answer: One year but it may be extended. ✓ Given the characteristics of the local community, are there any specific adverse impacts that may be anticipated? Answer: Yes, considering the characteristics of the local community, some specific adverse impacts may be anticipated during the construction phase. These include: • Temporary price hikes in local markets due to increased demand for goods and services from workers. • Pressure on water supply and sanitation facilities, particularly if labor camps are not properly managed. • Movement disruption for local vehicles and pedestrians around the construction sites due to road blockages and heavy machinery operation. However, no significant religious or cultural barriers are anticipated, as both the local community and the incoming workforce largely share a similar socio-cultural background.
Consultation with Community People	✓ Has the project authority and contractors conducted any consultation meetings with the community people and Rohingya population? Answer: The project authority has already conducted several consultation meetings with the local community during the environmental and social screening stage. Community opinions, concerns, and suggestions were received with great respect and consideration. After the finalization of the contractor, additional consultation meetings will be organized by the contractor in coordination with the project authority to ensure continued community engagement and address any new concerns during the

Key Screening questions	Aspects to Consider
	construction phase. ✓ Are local people aware about the labors? Answer: Local community members are well aware of the engagement of local laborers in the project activities. However, they currently have limited knowledge regarding the potential involvement of outside skilled workers. ✓ Has the project authority involved the local community with the project? Answer: Yes, the project authority has actively involved the local community throughout the site selection and screening stages. Several formal consultation meetings and informal discussions were conducted at the proposed bridge location and with the local community. Community members shared their views, concerns, and expectations, which were carefully considered.

Involuntary restrictions on land use or on access to legally designated parks and protected areas

Effects	Yes	No	Not Known	Remarks
10. Will people lose access to natural resources, communal facilities and services?		✓		People's access to communal facilities and services will not be affected by the project.
11. If land use is changed, will it have an adverse impact on social and economic activities?		✓		No scope to change site location.
12. Will access to land and resources owned communally or by the state be restricted?		✓		No
Information on Displaced Persons:				
Any estimate of the likely number of persons that will be displaced by the Project? [✓] No [] Yes If yes, approximately how many? N/A				
Are any of them poor, female-heads of households, or vulnerable to poverty risks? [✓] No [] Yes				
Are any displaced persons from indigenous or ethnic minority groups? [✓] No [] Yes				
During Screening, project authority will conduct consultation with the primary and secondary stakeholders and provide their observations in the following sections (13 to 18)				

13: Who are the stakeholders of the project?

Answer: The stakeholders of the project include a wide range of individuals and institutions connected to the sub-project areas. They are:

- Local community members
- Households and shopkeepers located on both sides of the project roads
- Students and guardians from nearby educational institutions
- Religious leaders and teachers
- Local elected representatives (Union Parishad members, Ward members)
- Local administration officials
- Implementing agency (LGED) and relevant supporting agencies
- Workers and laborers engaged in project construction activities
- Community-Based Organizations (CBOs)
- Local NGOs
- Local traders

14: What social and cultural factors affect the ability of stakeholders to participate or benefit from the proposed policy or project?

Answer: There are no significant social or cultural factors that would restrict stakeholders' ability to participate in or benefit from the proposed project. The project area maintains a socially cohesive and culturally conducive environment, which supports broad community participation and equal access to project benefits. Stakeholders, including local residents, traders, students, and vulnerable groups, are expected to benefit positively from the improved infrastructure and services. The project's inclusive approach ensures that participation opportunities are available to all community members without discrimination.

15: Are project objectives consistent with their needs, interests and capacity?

Answer: Yes, the project objectives are highly consistent with the needs, interests, and capacities of the stakeholders. Community consultations and FGD during field visits clearly indicated strong local support for the project.

16: What will be the impact of the project or sub-project on the various stakeholders, especially women and vulnerable groups?

Answer: The construction of the proposed bridges will have a significantly positive impact on various stakeholders, particularly women, children, elderly people and other vulnerable groups. Improved transportation infrastructure will ensure easier and safer mobility, allowing women and vulnerable populations to travel more conveniently between villages, markets, schools and health care facilities.

Access to hospitals and emergency services will become faster, which is crucial for women, elderly, and persons with disabilities. School-going children will also benefit through safer, uninterrupted access to educational institutions. Overall, the project will enhance social inclusion, reduce travel time, promote economic opportunities, and contribute to an improved quality of life for all segments of the local population.

17: What social risks might affect project or sub-project success?

Answer: Several social risks could potentially affect the success of the sub-projects if not properly managed. These risks include:

- **Minor conflicts** may arise between local community members and incoming skilled laborers, particularly if there are differences in behaviour or competition over local resources.
- **Temporary price hikes** of essential commodities in local markets (hat-bazar) due to increased demand from workers.
- **Risk of engagement in anti-social activities** by a few incoming workers, which could challenge local social norms and community harmony.
- **Noise and dust pollution** may be generated during construction activities, which may disturb schoolchildren, elderly residents, and other vulnerable groups living close to the project sites.

18: Has the project authority or any other organizations conducted any consultations with the affected community or people? If yes. Please provide a summary.

Answer: Yes, the project authority has conducted several consultation meetings with the potentially affected communities and other stakeholders. During the site selection phase, LGED officials organized discussions with local community members, Union Parishad representatives, local elites, school teachers, and civil society organizations to gather feedback regarding the construction of the proposed bridges.

Additionally, during the environmental and social screening process, the PIU Consultant of LGED conducted community consultations to inform local people about the project objectives, construction activities, potential impacts, and safeguard measures.

The key feedback and observations from the consultations include:

- During the consultation meeting and FGD, Community members strongly supported the construction of the bridges, they would enhance connectivity between economically complementary areas, boosting local trade and labor movement.
- Local farmers, small traders, and transport operators expressed that the improved communication network would allow them to receive fair prices for their commodities and reduce transportation costs.
- Transportation systems would become easier, faster, and more reliable, saving time and reducing daily hardships for local residents.
- The construction of the bridges is expected to encourage the growth of local businesses and industries, stimulating the rural economy.
- Land value in the surrounding areas is likely to increase as accessibility improves.
- Improved road connectivity will enable quicker access to upazila and district-level hospitals, ensuring better healthcare facilities for the local population.
- The attendance and enrollment rates of school-going children are expected to rise due to safer and more convenient travel routes.

- The bridges will also strengthen the communication network by acting as vital links within the rural transportation system.

Section D: Environmental Screening Summary of the Work Package

Main Environmental & Social Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
				Indicators	Frequency
Sub-project Interventions					
Construction of a RCC Bridge (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention, the overall score is low	- Limiting earthworks and artificial bank reinforcement should be avoided as far as possible; - Bridge soffit (The bottom part of the bridge) levels and flood spans should be at least 1 metre above the maximum known flood level to allow floating debris to pass freely through the structure; - Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; - The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. - The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. - Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. - The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. - Storage of fuel, chemicals, equipment and construction materials so as to minimize the risk of soil contamination or water pollution; - Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water.	Contractor, environmental specialist of PIU and D&SC	Visual monitoring result of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Throughout the time during the construction period.

		• Monitor water quality according to the environmental management plan. • Phasing of construction work to minimize disturbance to wildlife at sensitive times of year, such as during the breeding season or when young are being raised; • Use of techniques to minimize compaction of soil, such as restricting access during wet conditions, and using protective boarding and low-ground pressure machinery. If necessary, soil should be carefully removed and stored for subsequent reinstatement; • Access roads should avoid riparian zones and should be built using appropriate construction materials.			
Pre-construction Phase					
Site planning (i.e. Labor camp, construction of material storage area etc.)	Under the sub-project intervention, the overall score is low.	• The proposed sub-project is targeted at existing old concrete bridges over local running canal. The construction area over this canal needs to be covered so that the water cannot receive debris and dust from the demolition and construction work. • Construction camp and material storage area should be located at the site & approved by the Environmental Specialist of D&SC. • As the proposed RCC girder bridge will be constructed along the Bridge Bazar - Bridge on Sakh Char Bazar near Balirpool R&H road, which serves as an important local access route with regular pedestrian and vehicular movement, any temporary labor camp or ancillary facilities must be carefully located. The labor camp should be established at a suitable off-road location to avoid obstruction of traffic, disruption to market activities, or inconvenience to local residents and road users.	Contractor, environmental specialist of PIU and D&SC	Water quality test results. Location of stockpiles and labor shed.	Prior to the start of Construction works.
Loss of land / and	No adverse	• No land acquisition will be required as RCC bridge will be	Safeguard	Number of	Ensure regular

other physical assets	impact will be generated.	constructed in own existing alignment, which is entirely Government land. • No additional land will be required to construct the RCC bridge due to both sides of the canal being government vacant property as well as LGED roads. • The local community has been agreed to provide space beside the bridge construction site to keep the construction materials during construction work. • There is no physical asset affected by the intervention of the sub-project (bridge). In case of any grievance from a neighboring household, emergency consultation will be conducted to resolve the issue through the project GRC.	team of PIU, PSC and D&SC	Complaints. Check Grievance register. Resolutions against the grievances.	supervision and Monitoring based on compliance.
Loss of livelihood	No impact may be generated.	• Contractor need to engage local labor as priority (both skilled and unskilled) at their construction work. • Woman labor should get priority at the time of labor recruitment. • During construction work social safeguard compliance shall be maintained properly by the contractor.	PIU, Contractor, Safeguard team of PIU, PSC and D&SC	Labor wages payroll. Interview with labor. Frequent visit by D&SC and PIU personnel	Monthly basis
Stakeholders Engagement	Under the sub-project intervention, the overall score is low.	• One community-level consultation meeting has already been conducted with the relevant stakeholders. The meeting aimed to gather feedback, ensure local participation and inform the community about the project scope and potential impacts. • Moving forward, additional consultation sessions will be held as needed to ensure inclusive stakeholder engagement throughout the project lifecycle. • All safeguard documents will be disclosed to the stakeholders prior to the commencement of construction works. • All the stakeholders will be made aware of the Grievance Redress Mechanism (GRM) and their active participation will	PIU, Contractor, Safeguard team of PIU, PSC and D&SC	List of participants in consultation and GRC. Disclosure records of safeguard documents. Feedback and grievances are recorded and addressed. Level of awareness on GRM among stakeholders.	Weekly basis

		be ensured through representation in the Grievance Redress Committee (GRC).			
Material storage area for construction (Creating dust/ air pollution, Spillage of liquid/ hazardous substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, children, animals, etc.)	Under the sub-project intervention, the overall score is low.	- The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures. - Proper procedure for stockpiling/ storage of construction materials at the site will be proposed by the contractor & approved by the Environmental Specialist of D&SC. - Proper covering of dust producing materials with polythene sheet, - Proper fencing around the storage area in order to be secure, to minimize the risk of crime and to be safe from access by outsiders, children, animals, etc. - Spills/ hazardous substances should be disposed of at the site proposed by the contractor & approved by the Environmental Specialist of D&SC to avoid soil/ water contamination.	Contractor, environmental specialist of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage
Demolishing of an existing structure	Under the sub-project intervention, the overall score is Medium	- Water spraying at the demolition site - Fencing / Installing barriers should be shield from dust and aggregates - Avoid usage of machines/equipment with extra noise; - Do not accumulate and burn waste at the site - Carry out demolition activities in stages, give adequate notice and information of activities to the adjoining stakeholders - It needs to Identify proper location to dispose of solid waste from demolition and other activities in consultation with respective bodies - Make mandatory the use of safety gears (helmets, safety belts, masks, gloves and boot) by workers depending on nature of work. - Further guidance on demolition works and wastes	Contractor, environmental specialist of PIU and D&SC	List of selected sites; Identified sources of materials.	During Design Stage

		management is given in appendix 2, below the ESMP table, to be followed by the contractor.			
Setting up of labor camp (Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention, the overall score is low.	- Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. - No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. - Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. - Construction of sanitary latrine with septic tank for both male and female workers and staffs. - Construction of the first tube well for drinking water and providing water filters for further ensuring access to the safe drinking water. - Provision of waste bins/ cans, where appropriate; and litter is to be collected daily. - Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site pre-approved by the Environmental Specialist of D&SC. - Camp and working areas are to be kept clean and tidy at all times.	Contractor, environmental specialist of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Construction works
Accidents	Under the sub-project intervention, the overall score is low.	- Provision of standard safety protocol. - Providing training on Environmental health and safety to the labors and associated field staffs is the responsibility of Upazila Engineer & Contractors. - Training should be scheduled twice, once before starting the construction & another in the middle of construction period. - Safety & protection gears, first aid box etc. should be available in the site during construction period.	Contractor, environmental specialist of PIU and D&SC	Complaints from community; Complaints from the labors and associated field staffs; Regular inspection of materials transport vehicles.	Before and during the construction phase

Construction Phase					
Site Preparation: Soil Erosion; Alteration of natural drainage	Under the sub-project intervention, the overall score is low.	- Construction facilities including material are to be placed at least 30 meters distance from bridge construction area in order to minimize impacts on water bodies and natural flow paths. - Any disruption of socially sensitive areas with regard to human habitation and areas of cultural significance will be avoided. - Retaining wall need to construct that structure retain (holds back) any material (usually earth) and prevents it from sliding or eroding away. - Ensured diversion / alternative bamboo made bridge for considering the bi-cycle, and Rickshaw movement, pedestrian and other transportation etc. - The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	Contractor, environmental & Social specialist of PIU and D&SC	- Presence and adequacy of retaining structures. - Functionality of the temporary bamboo bridge. - Visual evidence of erosion or drainage issues. - Community complaints on disruption.	Monthly, Immediate follow-up after heavy rainfall or erosion events.
Increase in diversion road accidents	Under the sub-project intervention, the overall score is low.	- The contractor will prepare a response plan to accidents, it will ensure the victim to receive quick treatment. - The movement of heavy machinery and equipment shall be restricted to diversion or temporary bridge. - Proper signage to be displayed at diversion. - Road diversions and closures to be informed well in advance to the local community. - Local community will be trained on traffic management and awareness	Construction Contractor, Safeguard team of PIU and D&SC	- Traffic and Road Conditions. - Accident and incident logs. - Number and visibility of traffic signage.	- Weekly inspections by D&SC - Daily monitoring by contractor - Monthly review by PIU Safeguard team - Immediate review after any accident or complaint.
Quality construction work of the RCC	Under the sub-project	Respected community deserving quality construction works (side by side with the construction engineers and Design and	Construction Contractor,	•Community feedback should be	Daily supervision by

bridge	intervention, the overall score is low.	Supervision Consultant)	Environmental & Social Consultant of PIU and D&SC	acknowledged and addressed regarding construction quality. •Material quality test results. •Ensure timely rectification of any construction defects.	D&SC. Weekly progress review by PIU.
Safety during construction of the RCC bridge	Under the sub-project intervention, the overall score is low.	• An unauthorized person entry to the proposed site should restrict strictly and ensure proper storage and control of hazardous materials on site. • Child labors are not allowed for any kind of activities • Site shall be secured by fencing and ridge (if needed). • Ensuring that clear safety policies and procedures are in place and strictly enforced is essential, as is regular inspection and maintenance of all workplace equipment. • Awareness building program will be taken on social safety matters through imparting training from the project before commencement. At the same time, compliance should be ensured by the contractors.	Construction Contractor, Environmental & Social Consultant of PIU and D&SC	• Regular inspection and maintenance records of machinery and safety gear. • Register/Documents on social safety matters Checking stock register of personal protective equipment (PPE)	
Noise Impacts	Under the sub-project intervention, the overall score is low.	• Avoid high noise making activities during after daylight. • Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times. • Avoid using of construction equipment producing excessive	Contractor, environmental specialist of PIU and D&SC	Number of complaints from stakeholders, use of silencers in noise-producing equipment and	Weekly

		noise at night. • Ear protection devices for the workers & site staffs should be available in site during construction period.		sound barriers, Noise Level following decibel meter (dB)	
Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related pollutants which will affect people who live and work near the sites. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	Under the sub-project intervention, the overall score is low.	• Damp down exposed soil and any sand stockpiled on site by spraying with water during dry weather. • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of water sprinklers and dust extraction systems shall be provided at all stone crushers (if these establishments are being setup exclusively for the subproject). • Limiting speed of construction vehicles in work sites to maximum of 20 km/h. • Regular monitoring of air quality.	Contractor, environmental specialist of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive receptors, Heavy equipment and pollution control devices, Maintain records	Monthly
Biodiversity (There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	Under the sub-project intervention, the overall score is low.	• Prohibit employees from cutting trees for firewood. • If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna. • Construction works should be limited or be finished before the fish breeding period (springtime esp. Bangla months of	Contractor, environmental specialist of PIU and D&SC	If tree cutting is required, to be determined during Design stage, Numbers of complaints from sensitive receptors.	Monthly

		Baishakh and Jaishtha/ April and May, when the water warms up and the daylight lengthens), and restoration of sites (with removal of any hindrance or cofferdam, etc.) is imperatively necessary to protect the fish species.			
Workers' health and safety	Under the sub-project intervention, the overall score is low.	- Prevent excessive noise; - Construction staffs are to make use of the facilities provided for them (e.g., fires for cooking); - No fires permitted on site except if needed for the construction works; - Staff must be trained to operate equipment. - Availability and access to first-aid equipment and medical supplies. - Ensure the presence and use of safety gear at site: Ear protection devices, Goggles, Illuminating jackets, Masks, Gloves, Helmets, Uniforms etc., - Ensure adequate supply of drinking water. - Sanitation facilities for male & female workers separately.	Contractor, environmental specialist of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of walkway signage, and metal sheets placed at project location;	Monthly
Labour Base Camp: Conflicts with the local residents	Low impact may be generated.	- An alternate arrangement for fuel wood, heating and cooking should be arranged for the labors at labor camp. - Awareness building about nutrition, disaster risk resilience or mitigation, adoption of clean energy for cooking; and prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. - Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. - To be ensured adequate sanitation facilities in the labour camps. - Treated water will be made available at site for labour drinking purpose.	Contractor, environmental & Social specialist of PIU and D&SC	Checking use of resources by labor. Document checking of awareness building activities. Physical Checking. Grievance register. Interview with local community.	Daily site visit

		Adequate accommodation arrangements for labour and code of conduct to be disclosed through consultation and FGD.			
Post-Construction Phase					
Construction clean-up (Damage due to debris, spoils, excess construction materials, and after-effect water test)	Under the sub-project intervention, the overall score is low.	- Remove all spoils, wreckage, rubbish or temporary structures which are no longer required; - All affected structures rehabilitated/compensated; - The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up; - All imported materials are to be removed and the area shall be re-vegetated as per the specification that forms part of this document; - The contractor must arrange the cancellation of all temporary services;	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory; camp has been restored to pre project conditions. Water test before handover of the project to check water quality for severe modification (if any).	After the completion of Works
Odor& waste disposal	Under the issue, the overall score is low.	Use bin covers and/or tarpaulins during transport of wastes.	Contractor monitored by Consultant and PIU	Complaints from communities	Site inspection daily / weekly basis.
Vegetation	Under the issue the overall score is low.	After construction work, all structures need to be removed and the area shall be topsoiled and re-grassed using the guidelines set out in the re-vegetation specification that forms part of the bidding document.	Contractor monitored by Consultant and PIU	The worksite is restored to its original conditions.	Over the completion of Works
Traffic Accidents	The low impact may be generated during	- Clear diversion/bridge markings and signage. - Diversion Road design to ensure traffic speed is not hazardous given slopes of the diversion. - Recording and reporting of accident incidents to local police	PIU, PSC, LGED and Local Governance institution	No. of the accident took place. Marking and signage of road. Record of the Police	Monthly basis

	construction even some times after construction	station. Annual reporting of accident figures to PSC.		Station and PSC. Newspaper	
The sub-projects are expected to be sustainable	Low	The safeguard issues and maintenance of the RCC bridge taken care of by the concerned Union Parishad and Upazila Parishad for sustainability.	LGED, Union Council and Upazila Parishad	Evidence of routine inspection and maintenance activities; community feedback on bridge condition.	Bi-annually
Traffic movement and economic enhancement		- LGED expecting that after completion of RCC bridge, traffic movement will be increased, diverted traffic will be generated, lives and livelihood of people will be improved of the catchment area. - The important places will be well-connected. - People will enjoy improved facilities for connecting both side canal local school, college and other educational institution.	PIU, PSC, LGED and the Local Governance institution	- Community feedback. - Number of connected routes. - Increase in traffic volume. - Economic activity (shops, transport).	Quarterly, post-construction assessment

* Overall Impact Score: High = Likely to cause long-term E&S impacts; Medium = Likely to cause temporary impacts; Low = Likely to cause little, short-term impacts

Recommendation for further environmental and social assessment and/or site-specific environmental and social management plan: Yes

**If yes, please specify what assessments/plans would be required.*

Appendix-02: Environmental and Social Management Plan (ESMP)

ESMP for Construction of 36.00m RCC Variable Girder Bridge on Bridge Bazar - Bridge on Sakh Char Bazar near Balirpool R&H road at Ch: 1400m, PB 40m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364024).

Package no: HELP-NOA/BR-1:

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-construction Stage			
Loss of land / and other physical assets	- No land acquisition is required within this sub-project activity so, there is no mitigation measures according to this impact. - The subproject will be constructed on Government land.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Loss of livelihood	Under this subproject, there is no scope of negative impact on livelihoods of the people of catchment area.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Stakeholders Engagement	- All the project stakeholders will be consulted - Separate community level consultation meeting with the potentially affected HHs - Consultation meeting with nearby local community about the project objectives and scope of works - People living in nearby community and members of LGED Upazila will be involved with the GRM	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Loss of right to access	- In case of unavoidable circumstances, alternative access will be provided. - Proposed bridges will be well demarcated and accessibly paved.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Site Preparation: Soil Erosion; Alteration of natural drainage	- Construction facilities including materials are to be placed at least 10 m (32 ft) distance from any water body in order to minimize impacts on water bodies and natural flow paths. - Minimize cut & fill operations, the site clearing and grubbing operations should be limited to specific locations only. - The existing slope and natural drainage pattern on the site should not be significantly altered. - The contractor shall ensure that site preparation activities do not lead to disruption of activities of the camp settlers and host community.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction stage			
Noise from construction works	- Construction activities will be finished at day time within 06:00 PM. Proper measures will be taken to avoid any disturbances. - All Personal Protective Equipment (PPE) shall be available at site before starting any kind of construction works.	Contractor	Environmental Consultant of PIU, PSC
Dust	Construction machinery shall be properly maintained to minimize exhaust emissions of CO, particulate matter (SPM, PM2.5, PM 10) and Hydrocarbons.	Contractor	Environmental Consultant of PIU, PSC

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	• Provision of using water sprinklers to dust control. • Construction materials should be covered properly while carrying in vehicles to the site. • Vehicle movement will be controlled on haul roads/access roads for limiting dust generation.		
Safety Issues	• Unauthorized entry to the site area is completely prohibited and the site will be properly fenced with a single entry, for this purpose. • It will be ensured that proper training and guidance are provided on general and occupational health and safety to Contractors' personnel and labors forces, and records of training sessions are to be kept at site. • All kinds of Child labor will be completely prohibited.	Contractor	Environmental Consultant of PIU, PSC
Traffic Management	• Contractors will discuss with traffic management authorities and take site specific traffic management measures to avoid congestion and any unwanted incidents or accidents. • Road signs and speed ramps are to be placed at strategic locations.	Contractor	Environmental Consultant of PIU, PSC

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Conflicts with existing users due to the scarcity of resource base.	- A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. - If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells. - Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. - Local community must be consulted before any construction work starts.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Increase in road accidents	- Maintain safety measures during the movement and operation of heavy machineries and equipment. - Vehicular movement will be carefully managed in the vicinity of the proposed site, particularly near sensitive locations such as Bridge Bazar area, nearby mosques, educational institutions (GPS), market places, and residential clusters identified along the designated transport routes. - Local community will be trained up about traffic management and awareness.	Contractor	Environmental Consultant of PIU, PSC
Labor Base Camp: Conflicts with the local	Awareness building session will be	Contractor	Social Development

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
residents	undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labor camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation.		Specialist and Gender Specialist of PIU, PSC
Construction runoff, sediment, cement slurry, and wastewater may enter the adjacent canal during earthworks, piling, and concreting activities, potentially causing temporary deterioration of surface water quality and increased turbidity. Improper management of construction materials and spoil may obstruct natural drainage and affect local water flow.	• Install temporary silt traps, sedimentation pits and perimeter earthen bunds around excavation areas and material storage zones. • Earthworks, piling, and concreting activities shall be carefully managed to prevent direct discharge of construction runoff, cement slurry, wastewater, or debris into the canal. • Ensure proper drainage management to	Contractor (implementation of mitigation measures and monitoring); Design & Supervision Consultant (technical verification and guidance)	PIU (Environmental & Social Specialists); Design & Supervision Consultant

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Additionally, tidal influence in the canal during high tide may cause backflow, which could interact with construction activities and influence local hydrology as well as the long-term durability of bridge substructures if not adequately addressed.	prevent direct discharge of cement slurry, oil-contaminated water or construction runoff into the canal. • Monitor pH and Total Suspended Solids (TSS) of any construction-phase discharge water at regular intervals. • Regular site inspections shall be conducted, particularly during the monsoon season, to ensure effective functioning of erosion and sediment control measures. • Works within or near the canal shall be scheduled, where feasible, during low-flow periods to minimize turbidity and disturbance to natural flow.		
Temporary disturbance to local biodiversity, including small terrestrial fauna and common bird species present in surrounding rural and agricultural landscapes; potential short-term alteration of aquatic habitat conditions and natural water flow in the canal during construction.	• Conduct site-specific assessment of aquatic and ecological conditions prior to construction • Monitor bird activity, particularly during migratory season (November–February) • Avoid or limit piling, demolition, and other high-disturbance activities during peak migratory periods where feasible • Restore disturbed areas after construction • Construction works should be limited or be finished before the fish breeding period (springtime esp. Bangla months of Baishakh and Jaishtha/ April and May, when the water warms up and the daylight lengthens), and restoration	Contractor	PIU and Supervision Consultant

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	of sites (with removal of any hindrance or cofferdam, etc.) is imperatively necessary to protect the fish species.		
Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting construction works in order to provide a better sanitation facility to the workers and staffs. • Working areas are kept clean and tidy at all times. • Construction site is to be checked for spills of substances i.e. chemical, oil, paint, etc. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed of at waste disposal areas and/ or at the site. • The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in a stack yard and sold to local recyclers. • Hazardous waste viz. waste oil etc. will be collected and stored in the paved and bounded area and subsequently sold to authorized recyclers.	Contractor	Environmental Consultant of PIU, PSC

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Health & Safety Risks: - The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. - Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	- All construction equipment will be properly inspected timely and kept fit for purpose. - The risk assessment will be prepared time to time for all types of work activities on site. - Proper Signpost at any slippery areas will be ensured in construction site. - Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. - This sub project will have Proper communicative Emergency Response Plan (ERP) with all parties, to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. - All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. - Provision to first aid box in sub-project areas will be ensured. - Proper Emergency evacuation response plan	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	will exist in sub-project area. • All equipment will be available suitably (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.) in sub-project site, the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight/make aware of the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. • Adequate quantities of drinking water will be available at all sites, on different locations within the site. • Ensure to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Contractor must ensure that all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used. • Establish emergency response procedures,		

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	including fire, accident, and medical emergencies. • Display emergency contact charts at site offices and work areas. • Maintain OHS incident reporting and accident logbooks. • Conduct regular toolbox meetings and refresher safety training for all workers.		
Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE. • Oil interceptors or drip trays can be used in vehicle parking areas, and are inspected and cleaned regularly;	Contractor	Environmental Consultant of PIU/D&SC, PSC
Operation Stage			
Maintenance of assets, properties and equipment	• Periodic maintenance of Bridge structure and seasonal conditions has to be carried out.	LGED	UNO, Upazila Chairman of Upazila Parishad
Decommissioning			
The impacts are similar to those listed in construction stage: • Pollution from waste materials • Health & Safety risks to workers and local	• Proper measures of mitigation and monitoring to minimize or reduce the environmental and social impacts during decommissioning are anticipated to be	Contractor	Environmental Consultant of PIU/D&SC, XEN of the respected district,

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
community	similar to those identified for the construction phase. Third party monitoring of air quality as well as on receiving land and water bodies, may be undertaken, if the condition of those compartments seems to be significantly worse.		PSC.

Demolition and Waste Management Plan:

Demolition Plan:

The purpose of this Demolition Plan is to ensure the safe, environmentally sound, and socially responsible removal of the existing dilapidated bridge structure prior to the construction of the proposed RCC Girder Bridge. The plan aims to prevent environmental pollution, ensure worker and community safety, and minimize disruption to local movement and livelihoods. The scope of demolition works includes the removal of the existing concrete deck slab and girders, dismantling of damaged abutments and substructures as required, extraction and segregation of reinforcement steel, and clearing of debris from the canal and adjacent approach areas. All demolition activities will be confined within the existing bridge footprint and right-of-way.

Demolition Phase	Demolition Technique	Methodology
Pre-Demolition phase	Structural Assessment & Method Statement	- Detailed structural assessment of the old bridge condition. - Identify weak sections, reinforcement exposure, and deterioration level. - Confirm load positions and dismantling sequence.
	Site Preparation	- Demarcation and barricading of the demolition zone. - Signboards, warning signs, and safety instructions in Bangla. - Installation of temporary crossing facilities (if needed), e.g.: Temporary wooden planks for pedestrians,

		• Alternate route notification for vehicles
	Utility and Service Disconnection	• Confirm absence of underground utilities. • Disconnect or reroute any drainage pipes, electricity poles, or telecom cables if nearby.
	Worker Safety Orientation	• Conduct safety training and toolbox meeting before demolition. • Ensure all workers receive PPE: helmets, gloves, safety boots, masks, goggles, life jackets (for water-edge work).
Demolition phase	Demolition Technique	• Manual and mechanical combination method to minimize vibration and protect nearby features. Steps include: • Removal of railings, parapet walls, and footpaths (manual). • Breaking RCC deck slab using small hydraulic breakers. • Cutting reinforcement bars using gas cutter. • Sequential removal of girders using crane or excavator. • Demolition of piers and abutments after girder removal. • Extraction of old piles (if required); otherwise, trim piles below ground level.
	Vibration & Noise Control	• Use low-vibration hydraulic breakers. • Avoid nighttime demolition. • Install temporary noise barriers near households.
	Water Protection Measures	• Silt traps placed near the canal edge. • Tarpaulin sheets under deck demolition to prevent debris falling into water. • Immediate collection of debris from any accidental drop.

Environmental Compliance	Dust & Air Quality Control	• Install temporary debris containment systems (e.g., netting or catch platforms) to prevent falling debris into the khal. • Avoid dumping any demolition waste into the canal. • Implement waste segregation at source (concrete, steel, other materials). • Reuse suitable concrete rubble as sub-base or backfilling material where technically feasible. • Transport non-reusable waste to an approved disposal site with authorization from LGED and the respective authority. • Apply water spraying to control dust during dismantling. • Prohibit washing of equipment directly in or near the khal.
	Oil, Fuel, Hazardous Material, and Waste Management	• Demolition waste includes: RCC debris, Steel rods, Brick/earth materials, Packaging waste • Waste Handling Measures: Segregate waste at source. • Recyclable steel rods sold to authorized recyclers. • Concrete debris reused as road sub-base (if suitable) or disposed of at LGED-approved disposal site. • Hazardous waste (oil, lubricants) stored in spill-proof containers and handed over to DoE-approved handlers. • Store fuels and lubricants in a designated area with secondary containment (bundled platform or drip trays). • Keep spill kits available at the site at all times. • Prohibit refueling or oil changing near the khal or ponds.
	Water Quality Protection	• Prevent concrete slurry, cement dust, oil, and debris from entering the canal. • Collect all water used in demolition activities in settling pits.

Occupational Health & Safety (OHS)	Worker Health and Safety	• Provide Personal Protective Equipment (PPE) such as helmets, gloves, masks, safety boots, and harnesses. • Ensure trained personnel handle cutting and dismantling works. • Conduct toolbox safety meetings before commencement of demolition. • Prohibit child labor and ensure compliance with national labor laws and WB standards.
Traffic and Community Management	Traffic Diversion	• Prepare temporary detour route with signage. • Coordinate with community and local leaders.
	Community Safety Measures	• Inform local residents 3-5 days before demolition. • Restrict community access near the demolition zone. • Provide alternative pedestrian routes as needed. • Install proper barricades and warning signage around the demolition zone.
Demolition Completion and Site Clearance		• Remove all debris from site. • Level the ground and prepare substructure area for new bridge foundation. • Restore access roads and pathways. • Conduct final environmental cleanup.

Waste Management Plan:

The Waste Segregation and Reuse Plan is to ensure environmentally sound management of construction and demolition waste generated during the dismantling of the existing bridge and construction of the proposed RCC bridge. The plan aims to minimize waste generation, promote reuse and recycling, prevent soil and water pollution, and ensure compliance with relevant regulations.

Waste Type	Source of Waste	Potential Impacts / Concerns	Management, Segregation & Reuse Measures	Institutional Responsibility	Supervision & Monitoring
Concrete debris and rubble	Demolition of existing bridge structure	Obstruction of drainage, soil and water pollution, visual nuisance	Segregate at source; crush and reuse as sub-base, embankment fill, or approach road material subject to	Contractor	LGED PIU & D&SC Consultant

			LGED approval		
Steel reinforcement and metal scraps	Dismantling of old bridge and construction activities	Injury risk, improper disposal	Store separately; sell or hand over to authorized scrap dealers/recyclers	Contractor	LGED PIU & D&SC Consultant
Excavated soil and spoil	Foundation excavation and earthworks	Sedimentation of nearby canals, land degradation	Reuse for site leveling, slope protection, or embankment filling; excess disposed at approved sites	Contractor	D&SC Consultant
Packaging materials (cement bags, plastics, timber)	Construction material handling	Littering, clogging of drainage	Collect separately; reuse where possible; recycle or dispose of at approved facilities	Contractor	LGED PIU & D&SC Consultant
Domestic solid waste	Labor camps and work sites	Health hazards, vector breeding	Provide covered bins; daily collection; disposal at LGED/Local Authority approved sites	Contractor	PIU, D & SC Consultant & Local Authority
Used oil, grease, lubricants	Equipment maintenance and refueling	Soil and water contamination, fire hazard	Store in sealed containers with secondary containment; hand over to licensed recyclers; prohibit dumping	Contractor	LGED PIU & D&SC Consultant
Oil-contaminated rags and containers	Machinery operation and maintenance	Hazardous exposure, pollution	Collect in labeled containers; dispose through approved hazardous waste handlers	Contractor	D&SC Consultant
Mixed non-recyclable waste	Construction activities	Environmental pollution	Transport to DoE/LGED-approved landfill sites; maintain disposal records	Contractor	LGED PIU & D&SC Consultant

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Appendix-03: Cost of Environmental Mitigation and Enhancement Works in BOQ

In consideration to the above-mentioned environmental and social impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

Sl no.	Description of item	Unit	Quantity/ Area	Unit price	Total amount
1	Erection and maintenance of semi-permanent site office and removal of the same after completion of work in accordance with the conditions of contract. In addition to the office required for own use, the contractor shall provide and maintain furnished site office for the use of Engineer-in-charge and his staff. The site office must have tiles floor, adequate foundation, brick walls, false ceiling of gypsum board and all windows are to be glazed, shuttered and provided with steel grill. Outside and inside wall surface are to be painted on plaster acceptable to the Engineer-in-charge. The site office shall be maintained in a secure condition by the contractor until the completion of the contract and shall be provided with electricity, water supply, wash rooms and sewerage facilities. All doors shall be fitted with approved locks and windows shall be provided with screen/blinds. Before construction the contractor shall submit plans and drawings showing proposed details and location for the site office, including foundations, access roads, shades, layout of electrical and water supply and hard standings there for the approval of Engineer-in-charge. The Engineer-in-charge may require revision of the plans prior to giving approval for construction. The contractor shall also submit detailed proposed furniture, fittings and other items of equipment and plant to the Engineer-in-charge for approval. These items shall be of the standard quality suitable for site. The office, complete with furnishings, fittings, access roads and hard standings shall be ready for occupation by the Engineer-in-charge within 28	job	1	535843	5,35,843.00

Sl no.	Description of item	Unit	Quantity/ Area	Unit price	Total amount
	days of the date when the contractor first occupies the site. The contractor shall provide day and night guards and an attendant for the field office. At the end of the contract all materials, equipment and plant, furniture, fittings recovered from dismantling the office and removing access road will be the property of the contractor. No interim payment shall be certified unless engineer's office with required facilities are constructed and accepted by the Engineer-in-charge. (This is a time related item; proportionate payment for this item shall be made distributing in each bill on the basis of percentage progress of the whole works under contract) Engineer's site office of minimum 38 sqm plinth area with providing necessary facilities including office furniture, 24000 BTU air cooler, umbrella, crookeries, water purifier, PC with monitor, uninterruptible power supply (UPS), laserjet printer (minimum 20 ppm), LED flood light fittings(Halogen) for sight security etc.				
2	Project Profile Signboard: Providing and fixing of typical project profile signboard as per direction of E-I-C, to be placed at a suitable place of the site including submission of proposals for the materials & size of the signboards (recommended size: 1800mm x 1200 mm with 2 nos. 75mm dia. MS post, outer & inner frames of board shall be 50mm x 50mm x 5mm & 25mm x 25mm x 5 mm respectively) and text layout to the engineer for approval which will be positioned as directed by the engineer and removing the same on completion of the works or as instructed by the E-I-C. Sheeting will be made of encapsulated lens with retro-reflective type and messages/ borders will be screen printed. The text shall mention among others the name of the project, name of the implementing agency, cost of the project, completion time, name of the contractor etc.	sqm	Length-1.8m Width 1.2m Area volume 2.160m ² No. of bridge 1 Total quantity of works 1*2.16m ² = 2.16m ² .	18508.52	39,978.40
3	Supplying and providing of first aid box with necessary materials/medicine (hygienic gown, thermometer, adhesive dressings, antiseptic solutions, bandages, cotton balls or swabs, emergency blanket, gloves, hand sanitizer,	each	2	17836	35,673.00

Sl no.	Description of item	Unit	Quantity/ Area	Unit price	Total amount
	ice pack, saline etc). All complete as per direction of Engineer-in - charge.				
4	Mobilization and cleaning site before commencing actual physical work and during contract period and demobilization after completion of the works under contract to be accepted by the Engineer-in-charge. This work shall also cover cleaning and clearing, cutting or filling, dressing the project area on and in the ground to an extent that all the events of works of the project can be executed smoothly in a working environment with a particular attention on safety and security in all respects, and to stockpile the end outcome to a place for disposal agreed by the Engineer-in-charge, where, payments are to be based on ground area determined by the Engineer-in-charge and be proportionate to the percentage progress of work under contract as a whole in all respects and approved by the Engineer-in-charge.	sqm	Length 20m width 15m Area 300m ² No of items per bridge 2. Total qty per bridge 300*2= 600m ² .	235.40	1,41,240.00
5	Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men.	each	2	14172.16	28,344.32
6	Marble Name Plate: Supplying, fitting and fixing 18mm thick marble Name plate including cost of materials, labour, form work, engraving neatly the approved Sample given by the engineer etc. complete as per drawings and direction of the Engineer-in-charge.	sqm	2	9343.42	18,686.84
7	Drinking Water Facilities: Providing continuous adequate drinking water supply at worksite and site office as well by installing necessary tube-well/s where applicable or any other means depending on local situation, also providing essential arrangement for storing drinking water by supplying portable best quality water tank equivalent to Gazi/Padma of adequate capacity depending on the number of users, including supplying 1 (one) no. best quality water filter of minimum capacity 30 liters with necessary kits, etc. all complete as per satisfaction and direction of the Engineer-in-charge,	Ls	1	20000	20,000.00

Sl no.	Description of item	Unit	Quantity/ Area	Unit price	Total amount
	all relevant goods and equipment under this item shall be property of the contractor and payment will be made after 100% completion of the contract successfully.				
8	Control of Air Pollution (Dust Suppression): Maintaining, carrying out proper and efficient measures wherever and as often as necessary to reduce dust nuisance, and to prevent dust which has originated from contractor's activities/ operations at the worksite and site office, including sprinkling water on aggregates/unpaved roads at least three times a day or more depending on the atmospheric conditions, including keeping necessary covering/protection on stockpiled fine aggregates to reduce dust nuisance during natural air blowing, all complete like emission of dust into the atmosphere shall be strictly controlled during manufacture, handling, storage of concrete, road aggregates, and to be used such methods and equipment as are necessary for collection and disposal, or prevention, of dust during these operations means of eliminating atmospheric discharges of dust as per requirement and carrying out air quality test as PM10, PM25, SPM, NOx, Sox as per instruction of Engineer-in-charge. Payment will be made after 100% completion of the contract successfully.	Ls	1	15000	15,000.00
9	Personal Protection Equipment for Workers: Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket for construction workers made of 100% polyester waterproof fabric, fluorescent yellow/orange/green/red/blue or pantone color, (ii) suitable hand protection gloves for construction work of Flexible/ durable/ excellent puncture resistance working gloves with PVC palm and T/C drill	Ls	1	150000	1,50,000.00

Sl no.	Description of item	Unit	Quantity/ Area	Unit price	Total amount
	back, pasted cuff, palm liner and fit properly and be reasonably comfortable to wear, (iii) appropriate foot protection shoes having impact-resistant toes and heat-resistant soles that will protect the feet against hot working surfaces, (iv) best quality safety helmets of ABS shell, tough, lightweight, durable which will be able to resist penetration by objects, absorb the shock of a blow and water-resistant and slow burning with available four-six-point adjustable suspension for shock-absorbing, slotted sides to accommodate accessories, such as face shields, ear muffs (v) suitable eye protection goggles to protect against specific workplace hazards, fit properly and be reasonably comfortable to wear, provide unrestricted vision and movement, including instructing workers to wear strictly during working time and reviewing periodically, updating, evaluating the effectiveness of PPE and maintaining, replacing worn or damaged PPE etc. all complete as per requirement and full satisfaction of Engineer-in-charge. Payment will be made after 100% completion of the contract successfully.				
10	Painting the vertical end faces of posts, wheel guard, railing, rail post, parapet wall, kilometer post, road name plate, guide post, traffic signs, etc. in two coats with best quality synthetic enamel paint of approved make and brand of different shades over a coat of priming, applying one vertical and one horizontal coat for each coat and successive coat is to be applied after drying up of previous coat by brush/roller/spray, including cleaning and washing the surface, rubbing and mending good damages as necessary and necessary scaffolding, etc. all complete in all respect as direction of the Engineer-in-charge. Rate is inclusive of cost of all materials, labour and all incidental charges in this connection. Two coats over a prime coat for new concrete surface.	sqm	236.958	246.38	58,381.71
Subtotal Bill: Environmental Safety and Enhancement Works					10,43,147.27

Appendix-04: Environmental and Social Monitoring Plan (ESMP Implementation and Monitoring Framework)

Environmental and social monitoring for the proposed sub-project has been incorporated into the Environmental and Social Management Framework (ESMF). The detailed Environmental and Social Monitoring Plan, including monitoring parameters, indicators, responsible institutions, the frequency of monitoring during the pre-construction, construction, and operation phases, and the reporting line, is presented here. A mid-term third-party environmental audit may be conducted during implementation to independently assess compliance with the ESMP and World Bank Environmental and Social Standards (ESS1–ESS10).

Monitoring stage	Monitoring Indicator	Method of Verification	Frequency	Responsibility	Reporting Line
1. Monitoring During Pre-Construction Phase	Site-specific ESMP approved before mobilization	Approved ESMP document	Once (Before mobilization)	PIU	PIU → PSC → WB
	Baseline environmental condition (visual record, nearby water condition) documented	Baseline checklist & photos	Once	Contractor (verified by D&SC)	Contractor → D&SC → PIU
	Appointment of EHS Supervisor	Appointment letter	Once	Contractor	Contractor → D&SC
	OHS Plan, Emergency Response Plan (ERP) prepared	Approved plan copies	Once	Contractor	Contractor → D&SC → PIU
	Waste Management Plan prepared	Approved WMP	Once	Contractor	Contractor → D&SC
	Traffic Management Plan prepared	Approved TMP	Once	Contractor	Contractor → D&SC
	ESMP summary disclosed in Bengali at Union Parishad & site	Disclosure photos & record	Once before works	PIU	PIU → WB
2. Monitoring During Construction	A. Environmental Monitoring				
	Indicator	Standard / Target	Monitoring Frequency	Responsibility	Reporting Line

Phase	General ESMP compliance (%)	100% compliance	Weekly	D&SC	D&SC → PIU
	PM10 / Dust control	No visible excessive dust; water sprinkling ≥2 times/day	Daily visual; weekly record	Contractor	Contractor → D&SC
	Noise Level	Within DoE standard (Daytime ≤ 75 dB(A) for commercial/mixed areas)	Monthly or during piling	Contractor (verified by D&SC)	Contractor → D&SC → PIU
	pH of discharge water	6.5–8.5	Monthly (if water discharge occurs)	Contractor	Contractor → D&SC
	TSS in runoff	Within DoE surface water standard	Monthly (during piling/concreting)	Contractor	Contractor → D&SC
	Installation of silt traps & bunds	100% installed where required	Weekly inspection	D&SC	D&SC → PIU
	Oil & lubricant storage with secondary containment	100% compliance	Weekly	D&SC	D&SC → PIU
	Construction waste segregated & disposed at approved site	Disposal records maintained	Weekly	Contractor	Contractor → D&SC
	Obstruction of canal flow	No blockage observed	Weekly	D&SC	D&SC → PIU
	Bird disturbance (if observed Nov–Feb)	No active piling during high congregation	Seasonal (Nov–Feb)	D&SC	D&SC → PIU
B. Occupational Health & Safety Monitoring					

Indicator	Target	Frequency	Responsibility	Reporting Line
Workers provided PPE	100% PPE use	Daily	Contractor	Contractor → D&SC
Toolbox meetings conducted	At least 1/week	Weekly	Contractor	Contractor → D&SC
OHS incident reporting	100% incidents recorded within 24 hrs	As needed	Contractor	Contractor → D&SC → PIU
First-aid station functional	Fully equipped	Weekly inspection	D&SC	D&SC → PIU
Labor camp sanitation & hygiene	Clean, adequate toilets & waste bins	Weekly	D&SC	D&SC → PIU
No child or forced labor	Zero tolerance	Monthly verification	PIU	PIU → WB
C. Community Health & Safety Monitoring				
Indicator	Target	Frequency	Responsibility	Reporting Line
Site barricading & signage installed	100% coverage	Weekly	D&SC	D&SC → PIU
Safe pedestrian diversion pathway	Functional & safe	Weekly	D&SC	D&SC → PIU
Traffic management implementation	No major accident	Weekly	D&SC	D&SC → PIU
Spill incidents affecting canal/agri land	Zero major spill	Continuous	Contractor	Contractor → D&SC
D. Stakeholder & GRM Monitoring				
Indicator	Target	Frequency	Responsibility	Reporting Line
GRM register maintained	Updated regularly	Monthly review	PIU	PIU → PSC
Grievances resolved within timeline	10–15 days (as per tier)	Monthly tracking	PIU	PIU → WB
Community consultation during construction	At least 1 meeting/quarter	Quarterly	PIU	PIU → WB

3. Post-Construction / Operation Phase Monitoring	Indicator	Target	Frequency	Responsibility	
	Site restoration completed	100% cleared & restored	Once after completion	D&SC	
	Waste cleared from site	No residual debris	Once	D&SC	
	Bridge safety features (railings, guideposts, signage) installed	100% installed	Once before handover	D&SC	
	Canal flow unobstructed	No blockage	Once after completion	PIU	
	Final community feedback	Documented	Once before closure	PIU	

Reporting Hierarchy: Contractor → D&SC → PIU (LGED) → World Bank

The D&SC will prepare a Monthly report on Environmental and Social Compliance and submit it to the PIU. The PIU will review and transmit the Monthly Environmental and Social Compliance Report to the World Bank as part of the project's regular safeguard reporting obligations.



Government of The People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Co-operatives
Local Government Engineering Department (LGED)

Host and FDMN Enhancement of Lives through
Infrastructure Improvement Project (HELP)



ENVIRONMENTAL AND SOCIAL SCREENING REPORT

Of the Sub-project:

Construction of 45.00m RCC Girder Bridge on Bhairab Bazar road at Ch: 0.00m, under
Hatiya Upazila, Dist: Noakhali. (Road ID: 475364007)

Under the Package No. **HELP-NOA/BR-1**

Funded by:



Government of the People's Republic of Bangladesh & World Bank

February 2025

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ACRONYMS

BOQ	Bill of Quantities
BPDB	Bangladesh Power Development Board
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
DPHE	Department of Public Health Engineering
EA	Environmental Assessment
EC	Electrical Conductivity
E-I-C	Engineer-in-Charge
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESF	Environmental and Social Framework
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standards
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
HBB	Herring Bone Bond
HELP	Host and FDMN Enhancement of Lives through Infrastructure Improvement Project
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
MPSC	Multi-purpose Community and Service Center
MoLGRD&C	Ministry of Local Government, Rural Development and Cooperatives
MoRTB	Ministry of Road Transport and Bridges
MoPEMR	Ministry of Power, Energy and Mineral Resources
NDRCC	National Disaster Response Coordination Center
OHS	Occupational Health and Safety
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Pre-Stressed Concrete
PSC	Project Steering Committee
RCC	Reinforced Cement Concrete
RHD	Roads and Highways Department
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Bank

1. INTRODUCTION

1.1 Project Background

Since 2017, Bangladesh has been hosting nearly one million Displaced Rohingya Population (DRP) who fled violence in Myanmar. Most of this population resides in 33 densely populated camps in Ukhiya and Teknaf upazilas of Cox's Bazar district. At the same time, approximately 30,000 have been voluntarily relocated to Bhasan Char, an isolated island in Noakhali District. This unprecedented humanitarian influx has placed immense pressure on the host communities, infrastructure, essential services, and the surrounding environment in a region already characterized by socio-economic vulnerabilities.

The FDMNs now outnumber host populations in affected areas by a ratio of approximately 2:1, contributing to crowding in local markets, overburdening social service systems, escalating environmental degradation, and heightening risks during disasters. In response to these complex challenges, the Government of Bangladesh (GoB), with support from the World Bank has initiated the Host and FDMN Enhancement of Lives through Infrastructure Improvement Project (**HELP**). The project aims to improve access to basic services and enhance disaster and climate resilience of DRP (Displaced Rohingya Population) and host communities. HELP builds on lessons learned from the ongoing **Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) and its additional financing**, which have been supporting emergency response, resilient infrastructure and institutional strengthening in Cox's Bazar since 2019.

HELP proposes a multi-sectoral development approach focusing on critical needs such as water supply, sanitation, renewable energy, shelter upgrades, solid and fecal waste management and the improvement of road connectivity. The project also emphasizes disaster risk reduction, climate-resilient infrastructure, and institutional capacity building. It targets the high-priority gaps identified through annual needs assessments and field consultations, with particular attention to vulnerable groups including female-headed households, persons with disabilities, and those residing in disaster-prone areas.

The project scope encompasses a range of integrated infrastructure interventions aimed at improving resilience, accessibility, and service delivery for both the DRP and host communities. Key activities include the construction of new multi-purpose disaster shelters to provide enhanced protection during natural calamities, as well as the improvement and repair of existing shelters to ensure they meet disaster-resilience standards. The project also involves the development of road communication infrastructure, including the construction and rehabilitation of roads, bridges, and culverts to improve connectivity and access to essential services. In addition, various community-level facilities will be developed or upgraded, such as internal roads, drainage systems, hat-bazar (local markets), footpaths, firefighting systems, lightning protection devices, and solar-powered street lighting contributing to safer and more inclusive living environments.

The project is jointly implemented by four government agencies LGED, DPHE, RHD, and BPDB under the Ministry of Local Government, Rural Development and Cooperatives (MoLGRD&C), the Ministry of Road Transport and Bridges (MoRTB), and the Ministry of Power, Energy and Mineral Resources (MoPEMR). The project comprises four components, covering resilient water and sanitation services, climate-resilient infrastructure and energy, institutional capacity strengthening, and emergency

response. Under Component 2, LGED is undertaking key infrastructure development including rural roads and bridges to ensure improved connectivity and disaster preparedness.

The objective of the Project is to improve access to basic services and enhance disaster and climate resilience of the the FDMN and host communities through:

- Supporting improved access to basic services, climate-resilient infrastructure, and disaster and emergency response services;
- Improving Road interventions for essay access to essential services;
- Reducing vulnerability to accidental fire;
- Strengthening disaster preparedness and response through construction of multipurpose disaster shelters, provision of key equipment, and disaster risk management trainings at the community level;
- Improving Renewable and sustainable energy infrastructure in camps and for host community;
- Strengthening the GoB's capacity to provide essential services and address the needs of the host communities and the DRP, including risks to disasters and climate change;
- Reducing poverty in the project area

This Environmental and Social Screening Report has been prepared to assess potential environmental and social risks and impacts associated with the proposed interventions for constructing a bridge at Hatia Upazila of Noakhali District under HELP. It provides a preliminary evaluation of the biophysical and socio-economic settings of the project areas and identifies key issues that require special consideration or mitigation. The report serves as a guiding tool for environmentally and socially sound project implementation in compliance with national regulations and the World Bank Environmental and Social Framework (ESF).

1.2 Rationale of Site Selection for bridge under the project

LGED is responsible for development and management of local infrastructure including rural roads, bridges, culverts, waterways, markets, river jetties and others in order to contributing to socioeconomic development of the rural community and overall reducing poverty in the country. It is also developing, maintaining and managing transport, trading and small-scale water resources infrastructure at the local level with ensuring LGI and community participation and taking care of environmental and social issues. In 2013, Government of Bangladesh (GoB) has adopted a Rural Roads and Bridges Maintenance Policy with an objective to develop a sustainable rural transport system through appropriate maintenance management to provide safe operation of vehicles and to ensure necessary funding for their maintenance establishing a comprehensive and reliable inventory of roads, bridges and culverts across the country.

The onsite investigation reveals that a dilapidated bridge does exist on the same point where a new bridge has been proposed. The existing bridge on a local canal has turned into a shabby structure posing risks for moving vehicles and people, thus affecting the lives and livelihoods of local communities. In fact, fishing, transportation of business product and agriculture- all three dominant livelihood options for the local people in the areas require climate resilient and sustained infrastructure for transportation of goods or products to local, regional or national trading centers as well as to processing hubs and so on. People living in and across the areas also need to have access

to nearby educational, health, employment and other services, which for this proposed bridge would act as a lifeline for the entire community

As the project is intended to strengthen the Government of Bangladesh systems in order to improve access to basic services and climate-resilient infrastructure of the host communities, constructing a bridge at the proposed point would resuscitate the communication, trade and service delivery system between Charking union and other parts of the Hatia Upazila, which has been at risk now with the use of the dilapidated existing bridge structure.

The approach of this project also includes undertaking design, construction, rehabilitation or expansion of rural bridges in phases based on site-specific requirement and availability and allocation of resources. Accordingly, the proposed site for **Construction of 45.00m RCC Girder Bridge on Bhairab Bazar Road at Ch: 0.00m** is required to be implemented in order to remove the existing barrier (e.g., presence of Khal/river on this point) to the local communication system and service delivery through this specific place, and expedite the socioeconomic activities in/around the place.

Project activities will largely be on existing available lands, preferably of government owned.

1.3 Background of the Work Package

HELP (Host and FDMN Enhancement of Lives through Infrastructure Improvement Project) is a World Bank-supported project that aims to assist the Government of Bangladesh in responding to the continued humanitarian and development challenges posed by the presence of the Forcibly Displaced Myanmar Nationals (FDMNs) and their impact on host communities. The project seeks to improve access to basic services, and enhance disaster and climate resilience in both Cox's Bazar and Noakhali district.

The Hatia Upazila faces persistent development challenges common to remote coastal regions. The local host communities experience constraints related to inadequate road connectivity, limited access to markets and essential services, and high vulnerability to natural hazards such as flooding, tidal surges, and cyclones. Seasonal inundation and poor crossing facilities over local canals further restrict mobility, particularly during the monsoon period, affecting daily commuting, emergency response, and economic activities. In response to these challenges, the HELP Project focuses on strengthening resilient and inclusive infrastructure that directly benefits the local population. The proposed bridge under this sub-project is intended to improve year-round connectivity, enhance access to services and livelihoods, and reduce disaster-related risks for communities in Charbogula and surrounding villages of Charking Union, Hatia Upazila.

Under this specific work package of the HELP project, four (4) bridges are planned to be constructed across three different union of Hatia Upazila- Charking, Burirchar and Chanondi. These bridges aim to strengthen the rural road communication network by improving access to essential services such as health, education, markets, and disaster shelters. The improved infrastructure is expected to support both the mobility of the local communities and the efficiency of service delivery, especially in remote or underserved areas of the district. This report focuses specifically on the Construction of 45.00m RCC Girder Bridge on Bhairab Bazar Road at Ch: 0.00m, PB 40m under Hatia Upazila, Dist: Noakhali. (Road ID: 475364007). The bridge will replace an existing structurally weak bridge that has been heavily affected by long-term usage. Once implemented, this sub-project is expected to

significantly improve transport connectivity, facilitate the movement of goods and people, and enhance the resilience of the local community in the surrounding agricultural land areas.

Host community members predominantly inhabit the catchment area of this sub-project from surrounding villages and market centers, including Ramcharan, Dasher Hat, Sukhchar, Afazia, Khasher Hat, Tomoruddi Bazar, Dhonu Miar Hat, Bhairab Bazar, Janata Bazar, Shullukia Bazar, and Bafuter Bazar under Charking Union of Hatiya Upazila, Noakhali District. The selected location of the proposed 45.00 m RCC Girder Bridge on Bairab Bazar Road has been prioritized based on field-level needs assessments and community consultations, reflecting its strategic importance in improving local road connectivity, ensuring safe and reliable access to markets, religious institutions, and service centers, enhancing disaster resilience in a flood and cyclone prone coastal setting, and supporting the socio-economic activities of the surrounding rural and semi-urban communities.

The objective of this Environmental and Social Screening Report is to evaluate the environmental and social settings of the proposed bridge construction site under this work package, identify potential impacts both positive and adverse and recommend appropriate mitigation, enhancement, and management measures. This screening ensures that all interventions align with national regulatory requirements and the World Bank's Environmental and Social Framework (ESF), while promoting environmentally sustainable and socially inclusive development.

1.4 Fundamentals of Work Package Components

It is crucial to acknowledge the proposed infrastructure component under Work Package HELP-NOA/BR-1 to conduct an effective screening and verification process aligned with the World Bank's Environmental and Social Framework (ESF) as well as the project's Environmental and Social Management Framework (ESMF). Accordingly, detailed information of the proposed sub-project under this package has been outlined in Table 1.4.1, with a location-specific overview map of Hatia Upazila presented in Figure 1.4.1.

The proposed sub-project will follow standardized construction features and safety protocols, including but not limited to:

1. Construction of a Semi-Pucca Field Office, fully equipped with essential office furniture, computers with printing equipment, sanitary and electrical facilities, water supply arrangements and necessary tools and equipment for engineering supervision. The site office will ensure heat resistance, damp-proofing, and proper ventilation as directed by the Engineer-in-Charge (E-I-C).
2. Installation of Temporary Diversion Bridge (2m wide bamboo structure) as directed by the Engineer-in-Charge (E-I-C) to maintain uninterrupted movement for local communities during construction activities, ensuring minimal disruption to daily life.
3. Full Construction of Bridge Structures including foundation, substructure, and superstructure as per the approved design and technical drawings, along with all related fittings and fixtures.
4. Provision and Installation of Safety Features, such as painted vertical end faces of posts, wheel guards, railing systems, parapet walls, bilingual nameplates (in Bengali and English), guideposts, traffic signage, and kilometer markers.
5. Backfilling Behind Abutments and Retaining Structures with selected granular material, followed by proper compaction using approved machinery like plate compactors.
6. Construction of Approach Roads on both ends of the bridge, ensuring connectivity in compliance with LGED specifications and site conditions.

7. Placement of RCC Guideposts (1.70m long), positioned as per standard drawings and safety regulations.
8. Health, Safety, and Environmental Safeguards, including maintaining first-aid boxes at site and office, displaying safety notices, deploying environmental and social safeguard personnel for continuous monitoring, implementing dust suppression through water sprinkling, erecting health and safety signage, and organizing two rounds of safety and ESHS training for Upazila Engineers and Contractors before and after commencement of works.

Table 1.4.1: Basic Featured Information of component [Sources of data: Field survey, 2025, LGED]

S l n o .	Component's name	Upazila	Union	Distance from Upazila HQ	Primary Catchment area	Name of the river/canal	Proposed length (m)	Carr iage Width (m)	Estimated Footprint (Sqm)	GPS coordinate	Construction Period
1	Construction of 45.00m RCC Girder Bridge on Bairab Bazar Road at Ch: 0.00m, PB 40m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364007).	Hatia	Char king	11Km	Charbogula, Boalia, Sulukia, Jelepara	Bogul a khal	45	7.3	328.5	22.3255 2014, 91.0737 9824	2 years

Though the bridge was initially planned to be 25 m in length, after detailed survey in the area the length has been replanned to 45 m. Therefore, the total footprint area for the bridge is 328.5 sq.m.

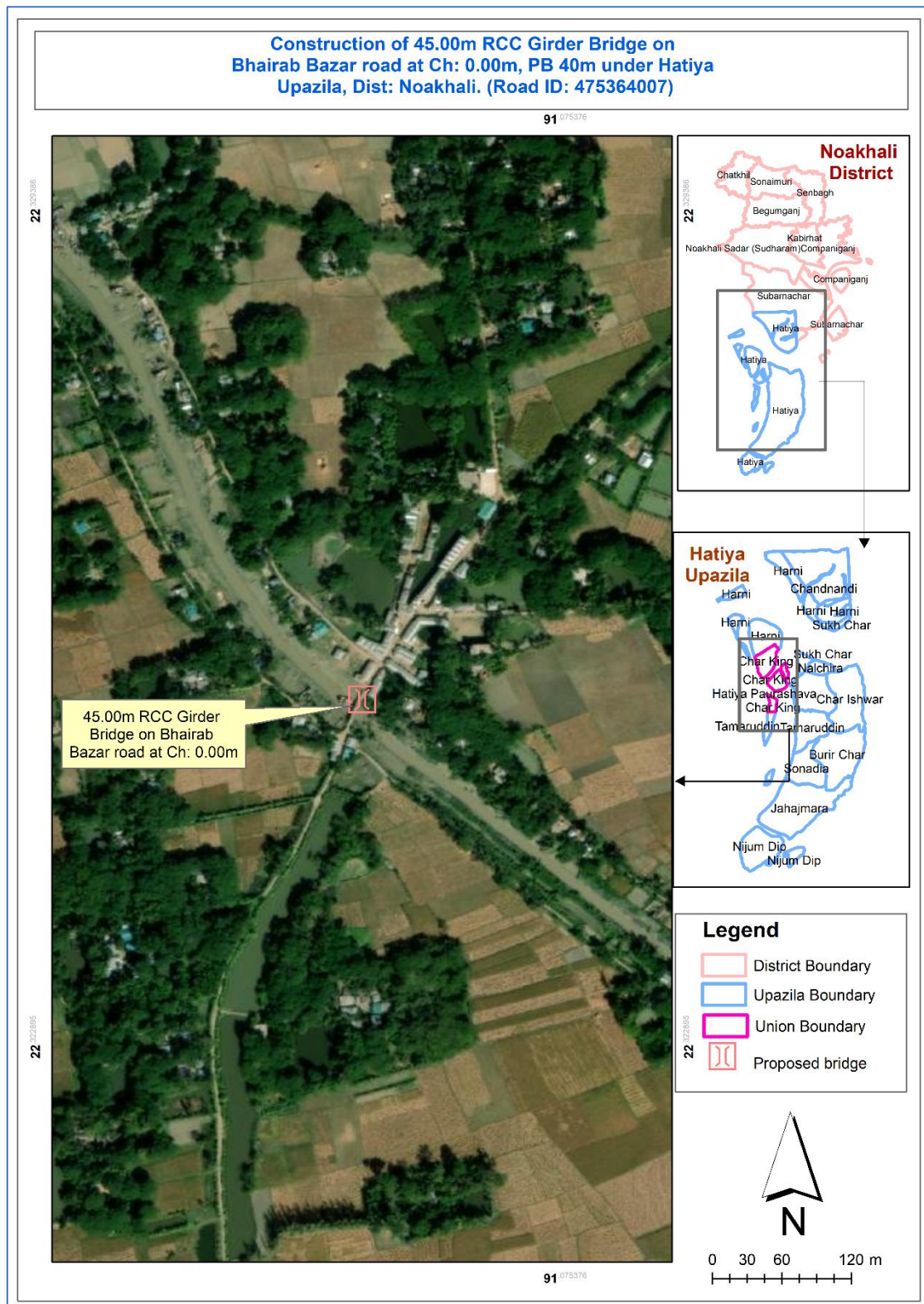


Figure 1.4.1: Map illustrating bridge location in the proposed Upazila

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology and Approach

Public participation and community consultation have been taken up as an integral part of environmental and social assessment process of the project. As part of the impact assessment, participatory public consultation was conducted in areas of concern for proposed bridges by the field level staffs and consultants from PIU. The consultation meeting was attended by different social groups representing local inhabitants of different age groups, social class and occupations. Among the participants, some will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases. In order to serve our screening process, relevant items placed towards the audience to discuss and troubleshoot confusing or worrying matters regarding the proposed interventions under the package work. Impacts in regards to environment, socio-economic matters during pre-construction, construction and post construction phases and the provision for project Grievance Redress Mechanism along with its applicability have been put forth. Possible mitigation measures and relevant needs have turned out during these sessions as well. Moreover, their comprehension as a stakeholder has been up lifted in light of project guidelines.



Figure 2.1.1 Consultation events taking place at sites

However, public consultation is a living process as the types of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution processes are more likely to differ with time. Thus, consultation with different parties or stakeholders will be continued throughout the sub-projects' implementation period and records of resolutions, whatsoever and wherever possible, will be kept in writing at the site and made available on any enquiries or requests by all parties concerned.

2.2 Issues and Recommendations raised by the Participants in regards to component interventions

After facilitating the consultation sessions with a warm and informed manner at Bhairab Bazar near the proposed site, the participants and stakeholders drifted delightfully with the sessions and pointed out many which have been taken into account for further inclusion in design, estimation and formulation of ESMP. During the period of consultation, environmental and social issues and their relevant impacts for the infrastructure development work such as bridge improvement or maintenance were discussed. The advantages and possible nuisance that may emerge during the sub-project activities were also revealed. The participants expected that none of the interventions

would worsen their living conditions, social cohesion surrounding environment and they requested for adopting all measures to reduce/avoid both environmental and social risks during the implementation phase. Participants were also informed of the structure and redressing procedure under project Grievance Redress Mechanism (GRM).

Table 2.2.1: Consultation Meetings Summary

Meeting No.	Date	Venue	Main Participant Groups	No. of Participants	Remarks (If any)
1.	26 November, 2025	Bhairab Bazar	Host Community	20	Discussions focused on the importance of the bridge for local accessibility and safety. Participants emphasized the urgent need for a new bridge due to the deteriorated condition of the existing one.

Some key issues discussed during the consultation are summarized in the table (Table 2.2.2) below, reflecting participants' inputs relevant to the specific components of the proposed intervention. The consultation meeting summary, attendance sheet, and photographs from the meeting held at Bhairab Bazar near the proposed site are provided in Table 2.2.1, Annexure-01, and Annexure-02, respectively.

Table 2.2.2: Issues and Recommendations raised by the Participants

Sl. No.	Component's name under HELP-NOA/BR-1	Issues raised and discussed	Recommendations and Comments
1.	Construction of 45.00m RCC Girder Bridge on Bhairab Bazar road at Ch: 0.00m, PB 40m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364007).	•They are very much concerned with absence of reliable path route over the Dhara Khal. •Existing RCC Bridge is old, structurally weak, and prone to accidents. •The existing RCC bridge is a critical infrastructure asset that significantly supports the local population's livelihood and economic well-being. It is particularly vital for traders, local people, regular pedestrians, vehicular activity and fishermen, as it facilitates and governs nearly all of their economic activities. •Lack of accessibility in case of emergency exits. •Heavy vehicle movement and long-term use have accelerated the	•Representatives participating in the discussions assured the local people that the dilapidated RCC bridge will be replaced by a longer and stronger bridge structure, which will strongly support local life and livelihoods and increase connectivity and accessibility to various services and amenities. •The bridge has been planned to redesign to increase its length so that non-motorized vehicles can easily use the structure due to the smooth slope, and accessibility under the structure remains Uninterrupted. •The bridge design should consider highest water level thereby ensuring it is not submerging or affected by mass water flow during rainy seasons. Appropriate diversion should be placed during the construction period as alternative pathway. •The bridge should use corrosion-resistant materials and protective coatings suitable for saline environments. •The participants have expressed their greater interest for this intervention and believe this will surely bring

Sl. No.	Component's name under HELP-NOA/BR-1	Issues raised and discussed	Recommendations and Comments
		deterioration of the existing bridge, affecting safety and durability. • They cannot carry the dead on this (existing) weak structure in times of grief • Possible dust and noise pollution during the construction works. • Safety of children and adults at the sites during construction works. Involving local people as a priority in implementation works as far as possible. • Local community wish to have a better drainage system along with the Bridge in order to allow waters from high grounds to find an uninterrupted pathway, not causing weak establishment to wash away. Moreover, from a conservation stand point, it will protect the top soil for future growth. • The construction work will include dismantling the current RCC bridge in order to make space for the new RCC Grider Bridge. • Participants recommended construction of a durable RCC bridge with proper drainage and design standards to withstand heavy traffic and reduce future structural damage, along with regular maintenance after completion.	security and prosperity for the entire catchment dwellers. • Construction site safety should be ensured to avoid any mishaps or accidents during the working periods. • They considered small lumbering and suggested tree plantation initiatives. • local community will be given preference in engaging to construction works; however, technical labors will be welcome outside the local area. Priority for jobs should also consider women. • Alternate pathway should be facilitated during the construction near or around existing structure. • Since the bridge is on running canal (Bogula Khal), the intervention will invite water pollution on moderate level. However, preventive actions and measures should be taken to keep the surface water quality from degrading more than it is. • Participants, made certain that they will provide surveillance over raw materials and material storage area. • They have also ascertained that the selected site is free from any events related to resettlement and major environmental impacts. The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be of short duration, yet proper management/conservative options should be adopted. • Proper drainage system will be embedded with the bridge as well as the bridge-approach. • Dismantling of bridge will be undertaken with optimum caution and care in order to avoid any potential risk to the people and resources. • They also requested regular maintenance of approach roads and bridge surface to ensure durability. • They also suggested to include dedicated pedestrian walkway and strong side railings for enhanced safety.

3. ENVIRONMENTAL AND SOCIAL SURVEY AND SCREENING

3.1. Objective of the Survey and Screening

The primary purpose of the survey and screening is to identify potential risks and impacts associated with the sub-project, assess their significance, and propose appropriate mitigation and management measures to ensure compliance with the ESF along with the project ES compliance documents. The screening process also considers the cumulative and residual impacts of the intervention within the context of the local physical, biological, and socio-economic environment.

To achieve a comprehensive understanding of the environmental and social baseline and the possible implications of the proposed works, detailed field investigations were carried out for the sub-project site within the Project Influence Area (PIA). The screening process included direct observation, stakeholder consultations and the use of the Environmental and Social Screening Format (ESSF), aligned with the Environmental and Social Management Framework (ESMF) developed for the HELP project.

Screening results, impact identification, and mitigation guidance have been summarized and compiled in **Appendix-1**, with site-specific details and supporting documentation. This integrated approach ensures early identification of risks and supports the development of appropriate mitigation and enhancement measures for sustainable project implementation.

The subsequent sections outline the survey findings including important features and establishment within the PIA, along with potential environmental and social impacts that may arise due to the proposed sub-project interventions within a half-kilometer radial distance around the project site. This Environmental and Social Screening has been conducted in accordance with the requirements of the World Bank's Environmental and Social Framework (ESF), particularly focusing on the relevant Environmental and Social Standards (ESSs).

3.2 Important features/establishments around the PIA

The proposed bridge sub-project has undergone a thorough review to identify Environmental and Social resources and baseline conditions, potential environmental and socio-economic risks that may arise during construction and future operation. To accurately assess these concerns, a Project Influence Area (PIA) with a 0.5-kilometer radius surrounding the bridge site was considered during the screening process. Each issue was evaluated on a case-by-case basis without generalization, ensuring site-specific factors were properly addressed. Sensitive environmental and social findings, if any, were carefully noted, and appropriate mitigation or minimization measures were recommended to manage these risks throughout the project lifecycle. In addition, opportunities for enhancing both environmental and social conditions, as well as incorporating monitoring initiatives, have been outlined and integrated into the Environmental and Social Management Plan (ESMP) and its corresponding budget. The contractor's role in addressing identified impacts has been clearly defined, and all assessments and proposed interventions were conducted in full compliance with the Environmental and Social Management Framework (ESMF) of the HELP project.

Initial screening process is conducted through direct involvement of PIU in the influence area of the proposed component, which allows to raise significant questions and ideas towards participants. In combination of both field walk-through and inputs of audience, a register of existing features is formed. The following table describes the important features under Project Influence Area.

Additional spatial understanding is supported through a hand-sketched map provided in Appendix-01.

Table 3.2.1: Important features under Project Influence Area

Sl. No.	Component's name	Direction	Important features/ establishment (approx. distance from the proposed site)
1.	Construction of 45.00m RCC Girder Bridge on Bhairab Bazar Road at Ch: 0.00m, PB 40m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364007).	North	Bhairab bazar ghat- 30m, Haji mokbul jame mosque- 50m, Bhairab Bazar Mosque 207m, Pond 90m & 200m, Bhairab bazar- 40m (north east), shops- 40m (north east)
		South	Tin shed shop- 40m, agriculture land- 50m, 0-420m, A mosque- 80m, Balia GPS- 100m (South west)
		East	Trees- 40m, Tin sheed shop- 40m
		West	Agriculture land- 100m, Tin shed house- 80m, Pond 150m

Field Survey, 2025

3.3 Major Findings

The Environmental and Social Screening has revealed an integrated overview of site-specific environmental and social conditions of the proposed sub-project. These findings offer valuable insight into the interaction between the sub-project components and their surrounding biophysical and socio-economic settings. While many sub-projects are found to be aligned with the characteristics of their respective locations, the nature, magnitude, and extent of impacts vary based on topography, ecological sensitivity, surrounding land use, and community dependency.

The analysis indicates that while common construction-related impacts such as temporary disruption to local traffic and pedestrian movement, generation of noise and dust, and minor vegetation clearance are anticipated, several site-specific concerns have been identified for the proposed 45.00 m RCC Girder Bridge on Bhairab Bazar Road at Ch. 0.00 m under Hatiya Upazila, Noakhali District. The bridge will be constructed over the Bogula Canal, which flows from the north-west to the south-east, and serves as an active drainage channel with tidal influence. The site is located in close proximity to Bhairab Bazar, market ghats, shops, mosques, ponds, agricultural land, and nearby residential structures, resulting in high pedestrian and local traffic movement. During construction, short-term impacts may arise related to community access, pedestrian safety, localized drainage management, and access to bazar and religious institutions. These impacts are expected to be temporary in nature and can be effectively managed through appropriate traffic control, safety measures, and environmental mitigation actions outlined in the ESMP.

The screening has also identified both direct and indirect risks that may arise if not appropriately mitigated. Findings indicate that with suitable mitigation measures as proposed in the ESMF and site-specific Environmental and Social Management Plans (ESMPs) most risks are manageable under ESS1 (Assessment and Management of Environmental and Social Risks and Impacts), and relevant associated standards such as ESS4 (Community Health and Safety), ESS2 (Labor and Working Conditions), and ESS10 (Stakeholder Engagement and Information Disclosure).

A summary of the significant environmental and social issues identified during the screening process, along with associated potential impacts, is presented in **Table 3.3.1**. These findings provide critical input for developing context-specific mitigation strategies and highlight areas requiring enhanced monitoring and community engagement during project implementation. None of the activities fall in the E&S exclusion list attached to the project ESMF.

Table 3.3.1: Concerning environmental and social issues relating to each proposed subproject and influence area

Key Environmental & Social Findings		Anticipated Impacts / Concerns
ESS1: Assessment and Management of Environmental and Social Risks and Impacts	The proposed bridge site is not located within any ecologically sensitive or protected area. The Bogula Canal, which flows beneath the proposed bridge alignment, functions as a local tidal flow channel. Surrounding land use is predominantly rural in nature, consisting of agricultural land, small shops, ponds, and scattered households, with no critical habitats identified within the immediate project influence area.	Overall environmental and social risks are expected to be low and site-specific. Potential concerns include temporary disturbance to local canal during construction, localized water quality impacts from construction runoff if not properly managed, and short-term nuisance to nearby households, shops, and community facilities due to noise, dust, and movement of construction vehicles. No long-term or irreversible environmental or social impacts are anticipated if appropriate mitigation measures are implemented.
	The proposed sub-project targets an existing old concrete bridge over the Bogula canal, which has deteriorated over time due to prolonged use.	Replacing a concrete bridge with an identical one at the same location necessitates the removal of the existing bridge, which may result in waste production, harm water quality and minor air pollution due to dust and airborne particles less than PM ₁₀ .
	Environmental and social screening conducted; moderate risks identified.	Manageable with appropriate mitigation measures.
	Heavy vehicular movement and future construction activities may cause air, noise, and water pollution.	Construction and demolition activities may lead to localized dust, air pollution, and runoff contamination; these impacts are short-term, site specific and can be effectively managed through water sprinkling, dust control, noise barriers and proper site drainage.
	No fish farming activities or ecologically sensitive habitats were identified within close proximity to the proposed bridge site. Vegetation cover in the surrounding area is limited and mainly consists of scattered trees and homestead vegetation. The adjacent land use is predominantly agricultural, along with bazar, ponds, and residential structures. These surrounding features support local livelihoods and community activities and therefore require careful management during construction to avoid temporary disturbance or environmental nuisance.	Will not cause any severe negative effects to the environmental settings of the area nor important environmental features. Air and noise pollution may occur during the construction period due to construction activities and the transportation of materials. In some cases, accidents may happen due to unauthorized entry into the construction site. These impacts are short-term, site-specific, and within a small scale and manageable by mitigation measures.

	Construction activities and the establishment of labor camps, along with associated facilities and services, may lead to adverse environmental and social impacts if not properly managed.	Noise pollution from piling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge (in labor camp), will more likely to take place. Strain on local resources such as water, sanitation and electricity. Health and hygiene risk due to overcrowding or poor camp management. Social tension with nearby communities may arise if laborers' behavior or camp facilities are not adequately supervised.
	Earth excavation work will be involved during the piling.	Consequently, air, noise and dust pollution will be occurred within a small-scale during the construction period only.
	Chemical spills or improper disposal of construction waste materials due to lack of workers' training and misconduct of contractor's safety initiatives. Kitchen and labor camp waste may be generated during construction period.	Soil and water can be further eroded and polluted.
	Vibration effects generated from piling, drilling, or other construction works	May trigger harmful disturbances to local faunal species.
	A functional Grievance Redress Mechanism (GRM) must be in place to ensure community feedback, transparency, and accountability in managing environmental and social risks during project implementation.	Lack of an effective GRM may lead to unresolved community complaints, misinformation, reduced stakeholder trust, and potential conflict or resistance during project implementation. However, the project's three-level GRM structure comprising Local, Project, and Ministry-level committees, offers a systematic approach to resolve such issues in a timely, transparent, and inclusive manner.
ESS2: Labor and Working Conditions	Local workers may be hired; labor influx is not anticipated. No child or forced labor permitted.	Low risk of labor-community tension or burden on local infrastructure; reduced potential for social conflict.
	OHS risks during pile-driving and construction works.	Injury risk for laborers.
	Safe working conditions, personal protective equipment (PPE), and sanitation facilities must be ensured at site.	Risk of injury or health hazards if workers lack PPE or safety supervision. Potential spread of illness if hygiene and sanitation facilities are inadequate.

	Risk of accidents during demolition of old structure or pile-driving and construction phase; proper training and labor code compliance are required.	Risk of falls, tool-related injuries, or exposure to noise and dust without safety training. Possibility of non-compliance with national labor standards or World Bank EHS guidelines.
	Labor camps must comply with EHS guidelines. Inadequate ventilation, poor lighting and overcrowded conditions can disrupt normal living standards, increase the risk of disease transmission and negatively impact workers' health and well-being.	Risk of poor living conditions, waste mismanagement, health and hygiene issues, or community tension if camps are not properly managed.
ESS3: Resource Efficiency and Pollution Prevention and Management	Dust from earthwork, vehicle movement, and material handling during the construction period may cause air pollution.	Site specific, short-term, can be controlled by regular sprinkling and covered transport
	Construction works will involve chemical usages (Cementitious Chemicals as Ordinary Portland Cement, Fly Ash, Slag Cement, and Lubricants & Fuels as Diesel, engine oil, hydraulic oil) and preparation of on-site add-ons to the bridge that will generate scraps and residues. Use of concrete, cement and machinery used oil/grease during construction may lead to runoff polluting nearby salt fields and canals.	short-term water pollution may occur during the construction period due to the use of concrete, cement, and other construction materials. Runoff from the work site may enter the present khal, potentially causing localized deterioration of surface water quality if not properly managed. Such impacts are expected to be temporary and site-specific. The risk can be effectively minimized through the implementation of proper drainage arrangements, use of silt traps, controlled concrete works, and timely cleanup of construction residues.
	Noise from piling and construction machinery.	Potential hearing risks and stress for laborers and local residents exposed to prolonged noise. Limited to working hours and local area, can be reduced by timing and barriers.
	Construction waste, including debris from dismantling of old bridge and packaging materials, waste from labor camps, must be handled with designated waste management plan.	Soil and water contamination from unmanaged waste near agricultural fields and the Bogula canal. Health hazards for workers and nearby communities due to uncollected solid waste. Waste can be stored and disposed at designated landfill with contractor oversight.

ESS4: Community Health and Safety	The construction zones must be barricaded; signage and awareness campaigns to minimize risks to pedestrians and vehicles. Participants recommended dedicated pedestrian walkways and strong railings to enhance community safety.	Increased risk of accidents and injuries to pedestrians, especially children and elderly, due to unprotected construction zones. Obstruction or confusion for local traffic and pedestrians in the absence of proper signage and temporary pathways. Community dissatisfaction if safety measures are not visibly in place. Unsafe movement near deep excavation or elevated bridge structures during construction. Proper use of signage and barricades may ensure the construction site's safety.
	The use of heavy machinery during construction activities may result in temporary increases in dust and noise levels in the surrounding area. Additionally, runoff containing construction materials such as oil, grease, fuel residues, or cement slurry may enter the Bogula Canal if not properly managed. Such runoff could affect local water quality and cause temporary nuisance to nearby households, shops, agricultural land, and community users of the canal, with potential implications for community health and daily activities.	Air pollution from dust and emissions can affect nearby residents. Noise pollution may disturb local communities. Water pollution due to runoff of oil, grease, or cement slurry may contaminate the nearby agricultural land and khal, harming aquatic life and reducing water usability. These impacts are short-term, site-specific and within a small area and manageable by mitigation measure.
ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	No land acquisition required; construction is within the existing right of way.	Temporary access disruptions during construction can be mitigated by providing alternative access during construction. Vehicles. A Memorandum of Understanding (MoU) should be signed with the landowner in cases where private or community land is temporarily required for storing construction materials or setting up labor camps.
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	No critical natural habitats were identified within a 500-meter radius of the proposed 45.00 m RCC Girder Bridge site in Hatiya Upazila. The surrounding area is characterized by rural settlement features, including agricultural land, local markets (Bhairab Bazar), shops, ponds, mosques, and scattered homesteads. The Bogula Canal flows beneath the bridge alignment and functions as a local drainage channel with tidal influence, but it does not support any ecologically sensitive habitats or protected biodiversity features.	Some features are located near the proposed sites, where dust and noise pollution may cause impacts. These impacts are expected to be negative but short-term, site-specific, and reversible with appropriate mitigation measures. Other features are situated at relatively greater distances, where significant disturbance is not anticipated. To minimize any potential impacts, strict construction site management practices should be enforced, including limiting work to daytime hours, applying water-sprinkling at least twice daily around the site, installing proper fencing around the working area, and ensuring safe storage of construction materials.

ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	No Indigenous or Small Ethnic Communities found in project influence area.	Not applicable.
ESS8: Cultural Heritage	No known cultural or archaeological sites identified within project site.	Not applicable.
ESS9: Financial Intermediaries	Not applicable as project does not involve financial intermediaries.	Not applicable.
ESS10: Stakeholder Engagement and Information Disclosure	Consultations were conducted with local host community members and relevant stakeholders at proposed bridge locations. On 26 November 2025, a meeting was held with 20 participants at Bhairab bazar near the bridge, where participants emphasized the urgent need for a new bridge to address transport difficulties and safety risks due to the deteriorated condition of the existing structure.	Participants anticipated support for the project and emphasized the importance of safety features and pollution control. The feedback collected underscores the need for continued stakeholder engagement during implementation, including maintaining a functional grievance redress mechanism (GRM), accessible communication channels and a transparent complaint registry to ensure inclusive and responsive project delivery.

The navigability of canals and community safety remain critical considerations during both the construction and operational phases of the bridge subproject. As per good environmental and social practice, and consistent with World Bank Environmental and Social Standards (ESS4 and ESS6), no construction or structural intervention over waterways should impede the free and safe passage of local water transport. During construction, temporary arrangements must be ensured so that local communities can continue crossing canals from alternative access points without disruption.

Safety during the operation phase is equally important. Measures such as the installation of reflective guideposts, visible signage, and proper lighting for vehicles and pedestrians approaching the bridge are essential and must be integrated into the construction phase planning. These elements significantly enhance commuter and pedestrian safety and should be reflected in the engineering design and budget estimations.

Furthermore, to minimize environmental degradation and offset potential negative impacts, a comprehensive set of site-specific mitigation measures will be adopted in addition to standard construction practices. These will follow the Environmental and Social Management Plan (ESMP) and the relevant national codes of practice, ensuring compliance with the requirements outlined in the Environmental and Social Management Framework (ESMF).

3.4 Climate Change Impact

3.4.1 General Consideration

Noakhali is one of the most climate-sensitive coastal districts of Bangladesh, characterized by low-lying terrain, tidal floodplains, and extensive char (island) formations. Due to its geographical position along the Bay of Bengal, the district is highly exposed to climate change impacts, including frequent cyclones, tidal surges, saline water intrusion, coastal flooding, and unpredictable rainfall patterns. National climate vulnerability assessments, as well as recent reports from the World Bank¹ and the IPCC², indicate that the coastal belt of Bangladesh will experience increasing climatic stresses, including stronger cyclonic storms, prolonged monsoon rainfall, higher temperatures, and rising sea levels, in the coming decades. Such conditions threaten infrastructure, agricultural production, water supply systems, communication networks, and human settlements.

The overall climatic condition of Noakhali is becoming more unpredictable, with intense rainfall events, prolonged waterlogging, changes in seasonal patterns, and increased heat stress already reported³. Communities in vulnerable unions regularly face tidal flooding during monsoon and post-monsoon seasons, and salinity intrusion is gradually affecting southern coastal upazilas such as Subarnachar and Hatiya. Although inland areas are less saline, they remain exposed to cyclonic winds and heavy rainfall. In this context, rural road bridges play a vital role in enhancing climate resilience by ensuring uninterrupted connectivity during extreme weather events such as floods, cyclones, and tidal surges. Strengthening the structural integrity and climate resilience of the proposed bridge is essential to maintain safe access for local communities, support emergency response and evacuation, and safeguard livelihoods during and after climate-induced hazards.

3.4.2 Site Specific Consideration

The proposed RCC girder bridge is located within a rural coastal setting of Hatiya Upazila, Noakhali District. Although the bridge site is not directly adjacent to the open sea, it lies within a low-lying coastal plain that is regularly influenced by cyclonic wind, heavy monsoon rainfall, tidal fluctuations, and storm surges. The bridge crosses the Bogula Khal, which extends from the northwest to the southeast and experiences tidal flow, particularly during high tides and the monsoon season. As a result, the surrounding areas are periodically exposed to increased water levels and flow velocity.

Field observations and community consultations indicate that the khal remains a flowing channel and therefore does not cause prolonged waterlogging near the bridge approaches. However, seasonal high tides and intense rainfall can temporarily affect the canal banks and approach roads, leading to erosion, surface damage, and access difficulties.

Site specific climate change impacts are often not so easy to measure or deduce plausibly while the site is confined to a narrow strip of roadways only, and associated mitigation or offsetting measures are really hard to plot on the same tiny impact areas, though an overall set of measures are often considered in practical aspect. The proposed bridge will incorporate enhanced structural strength, appropriate foundation design, adequate drainage arrangements, and durable construction

¹ https://climateknowledgeportal.worldbank.org/sites/default/files/country-profiles/16813-WB_Bangladesh%20Country%20Profile-WEB.pdf

² <https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg2-chapter6-1.pdf>

³ https://doe.portal.gov.bd/sites/default/files/files/doe.portal.gov.bd/page/936c9ced_0267_48bf_87d0_4e0c43168cf0/2024-05-14-11-21-17bcdcf2bceffea77921c54c689a50367.pdf

materials. These interventions are essential to ensure long-term functionality of the bridge, maintain uninterrupted connectivity during extreme weather events, and enhance the resilience of local communities that rely on this route for daily movement, emergency access, and livelihood activities.

4. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

4.1 General

The anticipated environmental and social impacts of the proposed sub-project are primarily construction-related and considered to be temporary, site-specific, and manageable. These impacts can be effectively addressed through the adoption of good engineering practices, good housekeeping, better *in-situ* construction materials management, standard environmental controls, and adherence to World Bank Environmental and Social Standards (ESS1–ESS10), especially those related to health, safety protocols, and pollution prevention.

The contractor shall be fully responsible for implementing the Environmental and Social Management Plan (ESMP) as an integral part of the contractual obligations for the construction of the proposed RCC girder bridge over the Bogula Khal in Hatiya Upazila, Noakhali. All construction activities must be carried out in compliance with the approved ESMP to minimize adverse environmental and social impacts on the surrounding communities and environmental features.

During construction, the contractor shall regularly implement dust control measures, including water spraying on exposed surfaces and access roads at least twice daily or as required. Proper solid waste management practices shall be followed through segregation, safe storage, and disposal of construction and domestic waste at approved locations. Noise control measures, such as maintaining equipment in good condition and restricting high-noise activities to daytime hours, shall be enforced. The construction site shall be clearly demarcated using barricades, signage, and safety tape to ensure public safety and minimize disturbance to nearby households, shops, and community facilities.

Given the close proximity of the proposed bridge site to Bogula Khal flowing beneath the bridge, nearby Bhairab Bazar within 40 m, Bhairab Bazar Ghat within 30m, religious institutions including Haji Mokbul Jame Mosque at approximately 50 m, another mosque at about 80 m, ponds located within 90m and agricultural land at around 50 m, special care shall be taken to prevent runoff of construction materials, cement slurry, oil, grease, or debris into the Bogula Khal, adjacent agricultural lands and environmentally and economically sensitive zones. Construction materials shall be stored on raised and protected platforms, and appropriate measures such as silt traps, drainage control, and spill prevention arrangements shall be implemented to protect water quality. All construction-related activities with the potential to cause environmental or social impacts shall be closely monitored, and corrective mitigation measures shall be promptly applied with due care and diligence throughout the construction period.

In addition, all site workers, engineers, and Contractor's staffs must receive training on occupational health and safety (OHS), good practice construction works, code of conduct, efficient labor camp management, labor management procedure, emergency response, and environmental best practices and relevant awareness building sessions will also be conducted, and records of all those training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects of this

proposed construction work are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

The sub-project specific mitigation and monitoring measures have been outlined in the respective ESMP in Appendix-2, which guides pre-construction, construction, and post-construction phases. With proper implementation of these measures, the proposed infrastructure intervention is expected to deliver long-term social and economic benefits to the host communities, with minimal residual environmental impact.

4.2 Cost of Environmental and social Enhancement Works in BOQ

In consideration to the aforementioned environmental impacts and their mitigation measures for the proposed construction activities, a set of items are included in the BOQ for every sub-project. The estimated cost to implement the ESMP is shown in Appendix-3.

5. CONTRACTOR AND LABOR MANAGEMENT

Most of the workers for this subproject will come from the local community, who share a common socio-economic, cultural, religious, and demographic background. Based on consultations with local stakeholders, it is anticipated that only a small portion of skilled labor may need to be hired from outside the project area, depending on availability. Therefore, the likelihood of internal conflicts among workers is expected to be minimal. It is estimated that approximately 20 laborers will be engaged during the construction phase, comprising 4 skilled (25%) and 16 unskilled (75%) workers, generating around 10,800 active working man-days (as detailed in Table- 5.1).

Although female participation in rural construction work is traditionally low, higher involvement of women is expected in this sub-project. Nonetheless, if female participation remains limited, the contractor must still conduct mandatory GBV (Gender-Based Violence) awareness training for all workers prior to the commencement of construction to mitigate risks of harassment, discrimination, or hostile behavior at the worksite.

The contractor's area will include the working zone surrounding the construction site, materials stacking and storage area, labor shed, and office space ideally located within or adjacent to the proposed Sub project location premises/boundaries for better coordination and monitoring. Contractor will be strictly instructed to maintain cleanliness at the worksite by ensuring waste, debris and dust are regularly cleared and that all bulk construction materials such as sand, stone chips, and steel are stored properly and covered with plastic sheets to prevent environmental degradation. Experiences from ongoing LGED projects in Hatia indicate a shortage of skilled labor, which has contributed to delays in some cases. In this sub-project, LGED anticipates that general and non-technical labor will be sufficiently available locally, with only specific technical expertise needing to be sourced from outside if required. It is expected that the scale of labor influx will remain manageable and will not pose significant risks of social tension or GBV during the construction period.

Table 5.1: Subproject-wise number of labor and total active working days

Sl no	Package Number	Name of Subproject	Total Space of proposed Construction (Square meters)	Tentative per day labor (No)	Days	Total active working days
01	HELP-NOA/BR-1	Construction of 45.00m RCC Girder Bridge on Bhairab Bazar Road at Ch: 0.00m, PB 40m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364007).	328.5	20	540	10,800
Grand Total =				20	540	10,800

6. GRIEVANCE REDRESS MECHANISM (GRM)

In accordance with the Environmental and Social Management Framework (ESMF) of the HELP project, a robust and accessible Grievance Redress Mechanism (GRM) has been established to address project-related grievances from host communities, workers and other stakeholders. A structured and inclusive Grievance Mechanism (GM) has been established to ensure timely and effective resolution of complaints arising from project activities in the host communities. Since LGED is the Implementing Agency (IA), the grievance redress structure has been designed to operate across three levels local (Upazila), Project Implementation Unit (PIU) and Project Steering Committee (PSC) to address concerns efficiently and equitably.

Local Level GRC

At the local level, a Grievance Redress Committee (GRC) is formed in each Upazila where LGED has subproject activities. The GRC is chaired by the Upazila Engineer from LGED (or a nominated official by the Project Director if required), serving as the Convener. The Environmental Specialist and/or Social Specialist from the PIU, depending on the nature of the complaint, act as the Member-Secretary and remain common across all local GRCs under LGED. The committee also includes an Environmental and/or Social Specialist from the Supervision Firm appointed by LGED, a representative from the respective Union Parishad (preferably female if the complainant is female), and a community representative such as a teacher, NGO staff member, or a local individual nominated by the complainant. Specialists for these roles are expected to be hired within 3 to 6 months of project effectiveness. All grievances at the local level must be heard and resolved within 10 working days of receipt. Complaints related to LGED activities will be received at the office of the respective Upazila Engineer.

PIU-level GRC

If a complaint cannot be resolved at the local level, it is escalated to the PIU-level GRC. This committee is chaired by the Project Director of LGED and includes the Social and Environmental Specialists from the PIU as Member-Secretaries. It also includes a local government representative either the same individual from the local level hearing or another as appropriate (must be female if the complainant is female) and a community representative, preferably the same individual who participated at the local level. The PIU-level GRC is responsible for reviewing unresolved grievances and delivering a decision within 15 working days. In addition, the Social or Environmental Specialist at the PIU, with assistance from the local GRC's Member-Secretary, will conduct regular visits to

subproject sites to engage with communities and affected persons, and to document any new concerns, suggestions, or complaints in the GRM register.

PSC-level GRC

For grievances that remain unresolved at the PIU level, the matter is further referred to the PSC-level GRC, which represents the final tier of grievance resolution. This committee is led by a representative of the Secretary from the relevant ministry, serving as the Convener, with the Project Director of LGED acting as the Member-Secretary. The PSC-level GRC is required to make a final decision on such grievances within a maximum of four weeks. Any resolution reached at any level of the grievance process that is agreed upon by the aggrieved party is considered binding on LGED and will be implemented accordingly.

This multi-tiered GM structure under LGED ensures that all grievances from host community members are addressed in a fair, inclusive, and transparent manner. It fosters accountability and trust in project implementation while upholding the World Bank's Environmental and Social Standard 10 (ESS10) on stakeholder engagement and information disclosure.

7. INSTITUTIONAL ARRANGEMENT

LGED, through the Project Implementation Unit (PIU), will have overall responsibility for environmental and social risk management through implementation of ESMP and compliance with the World Bank's Environmental and Social Framework (ESF). The PIU's ES team comprising of a Sr. Environmental Consultant, a Sr. Social Development Consultant, and a Gender Specialist will oversee ESMP implementation including functional operation of Grievance Redress system, review monitoring reports from the D&S Consultant, and coordinate reporting to the World Bank. The Design and Supervision Consultant (D&SC) will provide day-to-day site supervision, verify contractor's compliance with ESMP requirements along with taking prime actions in the progress of grievance redressal and advise corrective actions wherever required. The Contractor will be responsible for on-site implementation of all mitigation measures, including occupational health and safety (OHS), waste management, environmental protection and grievance management. Coordination among PIU of LGED, D&SC, and the Contractor will be ensured through regular supervision, reporting, and redressal mechanisms.

Institutional Roles and Responsibilities Table (Recommended for ESMP)

Institution / Entity	Key Roles and Responsibilities
LGED Project Implementation Unit (PIU)	• Oversee environmental and social risk management framework and activities
	• Review and approve site-specific ESMPs
	• Monitor implementation through field inspections
	• Manage and supervise GRM at the project level
	• Approve E&S documents and corrective actions
	• Report ESMP performance to the World Bank
PIU Environmental & Social Specialists	• Technical supervision of ESMP implementation
	• Review contractor's E&S compliance plans and related records.
	• Conduct site visits and compliance audits
	• Provide guidance on ESS compliance and required corrective actions

	• Leads capacity-building and training sessions for consultants and contractors. • Review and approve periodic monitoring reports and submit to the Project Director for sending them to the WB.
Design & Supervision Consultant (D&SC)	• Provides full-time, site-level supervision of ESMP implementation. • Verifies that mitigation measures are integrated into physical construction activities. • Verify contractor compliance with mitigation measures • Maintains detailed monitoring checklists, incident logs, and photographic records. • Support PIU in Compliance reporting.
Construction Contractor	• Executes all mitigation measures defined in the approved ESMP. • Prepare site-specific plans (OHS, waste, traffic, labor camp, etc.) and implement the same. • Ensure PPE use, safety training, and daily toolbox meetings • Appoints a designated EHS Supervisor to manage site-level compliance and reporting.
Grievance Redress Committees (3-tier GRM)	• Receives, registers, and investigates grievances from workers and the community. • Ensures a transparent, culturally appropriate, and timely resolution process. • Coordinate with PIU and local administration

8. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

Monitoring is a critical component under the Host and FDMN Enhancement of Lives through Infrastructure Improvement Project (HELP) to ensure that environmental and social mitigation and enhancement measures outlined in the Environmental and Social Management Plan (ESMP) are effectively implemented and that their intended benefits are realized over time. The Environmental and Social Management Framework (ESMF) of the HELP Project provides a detailed monitoring mechanism, assigning responsibilities to all relevant parties directly involved in or overseeing the construction and implementation of sub-projects.

Several tiers of monitoring responsibilities have been established under the HELP Project. At the implementation level, contractors are required to ensure that environmental and social risks are effectively minimized throughout the construction period. This includes implementing adequate Occupational Health and Safety (OHS) measures for both workers and surrounding host communities. Contractors must assign site managers and safeguard supervisors (or equivalent personnel) to supervise daily implementation of the ESMP. These personnel are responsible for ensuring environmental protection both on and off-site and for preventing damage or nuisance to individuals, public and private property, and surrounding features or institutions. Pollution, noise, and other detrimental effects arising from construction operations must be strictly controlled. In addition to implementing the ESMP, contractors are also responsible for preparing and executing specific management plans, such as drainage management, traffic management and emergency preparedness and response, where required. Proper implementation of these plans, along with timely site decommissioning and restoration, must be ensured. The detailed Environmental and Social Monitoring Plan, including monitoring parameters, indicators, responsible institutions, and frequency of monitoring during pre-construction, construction, and operation phases, is presented in Appendix-4.

The first tier of supervision is led by the Design and Supervision Consultant (D&SC) firm. Once the contractors are mobilized, safeguard consultants from the D&SC and the Resident Engineer are tasked with ensuring contractor compliance with the ESMP and with the application of good engineering practices at the site. This includes strict enforcement of OHS measures. The D&SC is responsible for preparing regular monitoring reports based on field-level supervision and findings.

At the second tier, the Project Implementation Unit (PIU) will play a key role in overall monitoring. The PIU will have dedicated environmental and social safeguard specialists who will conduct frequent field visits to assess ESMP implementation. These specialists, in coordination with the Executive Engineer's Office in Noakhali district and Upazila Engineers' Office in the respective upazila, will ensure strong site-level oversight. The PIU safeguard team will also ensure that all contractor staff and other relevant personnel receive adequate initial and ongoing training on environmental and social safeguards. Moreover, the PIU will verify proper site cleaning and reclamation upon completion of construction and recommend necessary corrective or punitive measures if any non-compliance is observed.

At the highest tier, the Ministerial Project Steering Committee (PSC), chaired by the Senior Secretary/Secretary of the Local Government Division (LGD), Ministry of LGRD&C, will provide strategic oversight of monitoring activities. In collaboration with the PIU, the PSC will ensure that environmental and social safeguard training is provided to all relevant project staff and that implementation at the field level aligns with national policies and the World Bank's Environmental and Social Framework (ESF). This structured multi-tiered monitoring approach under HELP will help ensure that the construction of the RCC bridge at Hatia Upazila is environmentally and socially responsible, and aligned with sustainable development objectives.

9. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are fully implemented, there will be no significant negative environmental or social impacts related to the selection, design, construction, and operation of the proposed sub-project. In fact, the recommended mitigation and enhancement measures will lead to significant benefits, improving both the environmental quality and the social well-being of the local communities. The project will contribute to enhanced infrastructure, improved livelihoods and better access to essential services, ultimately benefiting both the host communities and the displaced populations. Major improvements in quality of life, communication and socio-economic influences will be ensured once the scheme is in operation.

Overall, the screening study can be summarized as follows:

- The communities will receive large benefits in terms of quality of life, particularly with better reach of services and goods.
- The short-term negative impacts that may come by the way of air quality, noise, solid waste, occupational health & safety during the construction period, that need to be minimized through the management plan.
- The project will create employment for those who live in the vicinity of the construction site and will provide them a short-term economic gain.
- A comprehensive Environmental and social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from these Subproject activities.

- Detail cost estimation for incorporating ESMP has been shown in Appendix-3. This budget can change due to change of market prices and if the project implementation period extends.

Implementation of this Sub-project will have large positive impacts to the communities in terms of improved infrastructural transportation & communication facilities, which would eventually develop the socio-economic condition of the catchment areas. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Annexure-01: Attendance of consultation meetings for sub-project

Host and FDMN Enhancement of Lives through Infrastructure Improvement Project (HELP)
Local Government Engineering Department (LGED)
Public Consultation Participants List
Focus Group Discussion

সময় : ২৬/০১/২০২১ - ৬.০০ ঘটিকা তারিখ :
উপ-প্রকল্প/কমপোনেন্ট এর নাম: Construction of 45.00m RCC Girder Bridge on Bairab Bazar Road at Ch: 0.00m, PB 40m
under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364007)
মত পিনিময় স্থান : হাতিয়া বাজার
ইউনিয়ন : হাতিয়া ওয়ার্ড নং : ০৫ ডাকঘর : হাতিয়া উপজেলা : হাতিয়া জেলা : নোয়াখালী
সাব প্রকল্প নং: HELP-NOA/BR-1

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর / টিপসই
০১	মো: মাহমুদ	৫৫	পুরুষ	হাতিয়া	মো: মাহমুদ
০২	মো: হাতিয়া	৩০	পুরুষ	হাতিয়া	হাতিয়া
০৩	মো: হাতিয়া	৩০	পুরুষ	হাতিয়া	মো: হাতিয়া
০৪	মো: হাতিয়া	২২	পুরুষ	হাতিয়া	হাতিয়া
০৫	মো: হাতিয়া	৫৫	পুরুষ	হাতিয়া	মো: হাতিয়া
০৬	মো: হাতিয়া	৪২	পুরুষ	হাতিয়া	মো: হাতিয়া
০৭	হাতিয়া	৩৫	পুরুষ	হাতিয়া	মো: হাতিয়া
০৮	হাতিয়া	৩৮	পুরুষ	হাতিয়া	হাতিয়া
০৯	হাতিয়া	৩২	পুরুষ	হাতিয়া	হাতিয়া
১০	মো: হাতিয়া	৫৫	পুরুষ	হাতিয়া	মো: হাতিয়া
১১	মো: হাতিয়া	৪৫	পুরুষ	হাতিয়া	হাতিয়া
১২	হাতিয়া	৬৫	পুরুষ	হাতিয়া	হাতিয়া
১৩	মো: হাতিয়া	৩৫	পুরুষ	হাতিয়া	হাতিয়া
১৪	মো: হাতিয়া	৫২	পুরুষ	হাতিয়া	মো: হাতিয়া
১৫	মো: হাতিয়া	৫০	পুরুষ	হাতিয়া	মো: হাতিয়া
১৬	হাতিয়া	২৪	পুরুষ	হাতিয়া	হাতিয়া
১৭	মো: হাতিয়া	৩০	পুরুষ	হাতিয়া	হাতিয়া
১৮	মো: হাতিয়া	৬৫	পুরুষ	হাতিয়া	হাতিয়া

Annexure-02: Sub-project location pictures



Figure: Present condition of the proposed location for 45.00m RCC Girder Bridge on Bhairab Bazar Road at Ch: 0.00m, PB 40m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364007)

Appendix-1: Environmental and Social Screening Form for examining sub-project

Environmental Screening Form

Work Package Description Form:

Name of component: Construction of 45.00m RCC Girder Bridge on Bhairab Bazar Road at Ch: 0.00m, PB 40m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364007).

Package no: HELP-NOA/BR-1

Implementing Agency/Agencies: Local Government Engineering Department (LGED)

Estimated total cost of sub-project (in Taka): As per LGED rate schedule

Estimated construction period duration: 18-24 months

Estimated Operation and Maintenance period (life of sub-project): Project design life is more than 15 (Fifteen) years but Government policies will determine the period for sub-projects to operate in the areas.

District: Noakhali

Sub-District: Hatia

Union: Charking

Name of Community/Local Area: Bhairab Bazar near bridge location

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.):

One RCC Bridge will be constructed replacing an existing concrete bridge. There are some activities for RCC bridge construction such as Earth cutting and filling for foundation, Back filling and approach road construction, Brick soling work, CC work, RCC work, Rod cutting, bending and binding and Shuttering work.

Estimated footprint / land area for this sub-project is 328.5 sq. meter

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.):

The proposed sub-project site is located on the Bhairab Bazar Road at chainage 0.00 km (PB 40 m) under Hatiya Upazila of Noakhali District (Road ID: 475364007). The bridge will be constructed over the Bogula Khal, a tidal canal that flows in a north-west to south-east direction and remains active throughout the year due to regular tidal movement. The canal functions as a natural drainage and tidal water conveyance channel and does not experience waterlogging, as water flows continuously with tidal exchange.

The surrounding land use is predominantly commercial and mixed rural in nature. Bhairab Bazar and its adjacent market facilities are located within close proximity to the bridge site, along with shops, tin-shed structures, agricultural lands, ponds, and scattered households. Several important community establishments are situated near the site, including mosques, bazar ghats, educational institutions (GPS), and ponds within a 500-meter radius. The presence of these facilities indicates the socio-economic importance of the location and the high level of daily pedestrian and vehicular movement.

The bridge serves as a vital connectivity point for people from surrounding villages, including Ramcharan, Dasher Hat, Sukhchar, Afazia, Khasher Hat, Tomoruddi Bazar, Dhonu Miar Hat, Bhairab

Bazar, Janata Bazar, Shullukia Bazar, and Bafuter Bazar. The existing approach roads are actively used by residents, traders, students, and agricultural workers for daily commuting, transportation of goods, and access to markets and services.

No ecologically critical habitats or protected areas are located within the immediate vicinity of the site. However, the Bogula Khal itself is an important local environmental feature supporting drainage, tidal flow, and small-scale water use. Therefore, careful management of construction activities will be required to avoid obstruction of water flow, contamination of surface water, and disturbance to surrounding community features during implementation.

The proposed Sub-project of RCC Bridge is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction of the sub-project.

Types of waste to be generated during construction and operation phase:

During construction period solid waste will be generated due to demolition of an old bridge and later construction of a new bridge on the same place. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic etc. Negligible amount of plastic. Human wastes might be generated in labor camps.

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions:

The following activities for PSC bridge construction are:

- Earth cutting and filling for the foundation
- Backfilling and approach road construction
- Brick soling work
- CC work
- RCC work
- Rod cutting, bending and binding
- Shuttering work

For bridge safety,

- Color painting on rallying
- Traffic safety guide post for approach
- Safety measures will be taken within the construction

Others,

- Any bridge side is not on private land.
- Alternative diversion will be provided for traffic movement and not disturbing of water flow or flora and fauna
- Mainly on very small canals and dispersed land will be necessary for water drainage

For livelihood,

- No private land will be used
- No shifting of any structure will be needed

Sub-project Location:

The proposed sub-project site is located on Bhairab Bazar Road at chainage 0.00 km (PB 40 m) under Hatiya Upazila of Noakhali District (Road ID: 475364007). The bridge will be constructed over the Bogula Khal, a canal flowing from the north-west to the south-east direction. The canal serves as an important local drainage and tidal water channel for the surrounding area.

Geographically, the bridge site falls within Charking Union under Hatiya Upazila. The surrounding villages and growth centers that rely on this bridge for daily movement include Charbogula, Boalia, Sulukia, Jelepura. The bridge location is strategically important for local connectivity, linking rural settlements with market centers, educational institutions, and service facilities.

The GPS coordinates of the proposed bridge site are approximately 22.32552014 N latitude and 91.07379824 E longitude. The site is located at a considerable distance from the Hatiya Upazila headquarters, approximately 11 km away, and the bridge plays a critical role in ensuring uninterrupted communication, especially during monsoon and tidal conditions when water levels rise in the canal.

Land ownership

Government Land

Expected construction period: 18-24 months

Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas and historical or cultural assets): Please also explain any analysis on alternative location was conducted:

The proposed sub-project is confined to the existing bridge location over the Bogula Khal, where the new 45.00 m RCC Girder Bridge will be constructed by replacing the existing structure on the Bhairab Bazar Road under Hatiya Upazila, Noakhali District. Construction activities will be limited to the bridge footprint, abutments, piers, and immediate approach roads, thereby minimizing land take and physical disturbance.

Within this influence area, several community and environmental features were identified during field screening. To the north, important features include Bhairab Bazar Ghat (approximately 30 m), Haji Mokbul Jame Mosque (about 50 m), Bhairab Bazar Mosque (around 207 m), ponds within 90-200 m, and Bhairab Bazar with associated shops located roughly 40 m to the northeast. To the south, tin-shed shops and agricultural land are located within 40-50 m, Uttor Sukhchar Government Primary School is situated about 420 m away, a mosque lies approximately 80 m from the site, and Balia Government Primary School is around 100 m to the southwest.

On the eastern side, trees and tin-shed shops are located within approximately 40 m, while the western side consists mainly of agricultural land (about 100 m), tin-shed residential structures (around 80 m), and a pond at a distance of roughly 150 m. These surrounding features are typical of a rural market-cum-settlement area and are not considered environmentally sensitive or vulnerable to significant adverse impacts if standard mitigation measures are applied. No historical, archaeological, or nationally protected cultural heritage sites were identified within the 500 m influence area.

Section B: Environmental Screening

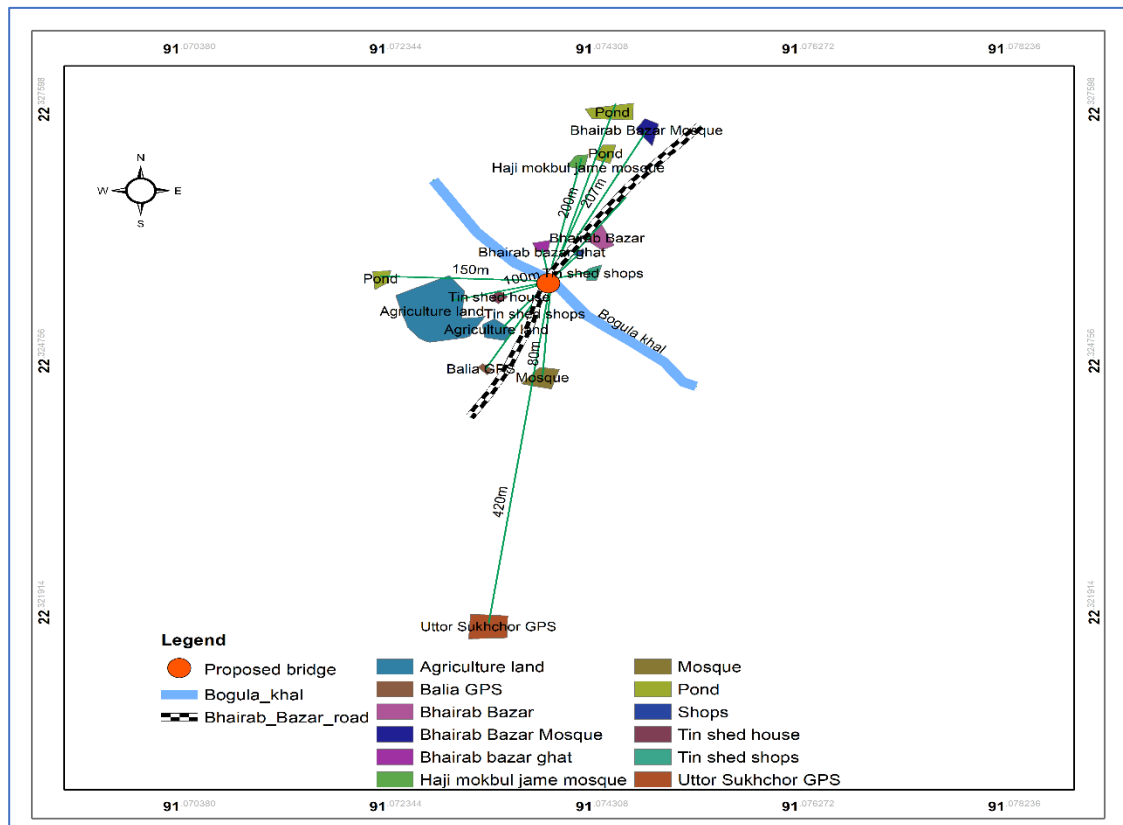
B.1: Environmental feature of sub-project location

Description of cultural properties (if applicable, including distance from site):

The proposed sub-project is located at CH 0.00km on the Bhairab Bazar Road, will replace an existing old concrete bridge, crossing over Bogula khal. No archaeological, historical, or nationally protected cultural heritage sites were identified within or adjacent to the proposed sub-project site. However, several locally important religious and community structures are present within the surrounding area. Notably, Haji Mokbul Jame Mosque is located approximately 50 meters north of the proposed bridge site, while Bhairab Bazar Mosque is situated at a distance of about 207 meters to the north. Another mosque is located approximately 80 meters to the south of the site.

These religious establishments are actively used by the local community and are considered culturally significant at the local level. The proposed bridge construction will not require land acquisition from these sites, nor will it involve any physical alteration or relocation of cultural properties. With the implementation of appropriate construction management measures such as noise and dust control, restricted work during prayer times (where feasible), and clear site demarcation, no adverse impacts on cultural or religious practices are anticipated. The sketch of the surrounding features are given below.

A diagram showing the major features around and apparent distances (in parentheses) from the proposed construction site is given below.



Location of environmentally important and sensitive areas:

The proposed sub-project site is not located within any nationally designated environmentally sensitive area, protected area, ecologically critical area (ECA), forest reserve, or wildlife sanctuary. The bridge will be constructed over the Bogula Canal, which flows from north-west to south-east and experiences regular tidal flow. The canal functions as a local drainage and tidal water conveyance system but is non-navigable and does not support any identified critical aquatic habitat.

The surrounding area is predominantly characterized by salt cultivation fields, located approximately 40–60 meters from the proposed bridge site in the north, south, and east directions. These salt fields are economically important for local livelihoods but are not classified as environmentally sensitive areas. No wetlands, fish breeding grounds, mangroves, or significant natural vegetation were identified within a 500-meter radius of the sub-project location.

With appropriate implementation of erosion control, runoff management, and pollution prevention measures during construction, the sub-project is not expected to cause adverse impacts on environmentally important or sensitive areas.

There are no environmentally important or sensitive areas within the proposed site, except for the agricultural land surrounding the area, which are located 50 meters to the south and 100 meters to the west. Construction and demolition activities may lead to dust and runoff contamination to the agricultural field; These impacts are short-term, site-specific and can be effectively managed through proper water sprinkling and site drainage. The proposed bridge will be replaced with an existing old concrete structure, crossing over Bogula khal.

Those will not be affected by the construction works, as the activities will be carried out over the existing concrete bridge, and necessary preventive and mitigation measures will be followed during the entire construction period.

(1) potential impacts on remaining forests in/around camps Yes/No

N/A

(2) Other issues:

No other issues identified.

Baseline air quality and noise levels:

Air Quality

Site-specific baseline ambient air quality monitoring was not conducted for this sub-project. However, baseline conditions have been assessed based on secondary information drawn from relevant environmental studies, monitoring reports, and previous coastal and rural infrastructure project documents implemented in Noakhali District, including Hatiya Upazila. These sources indicate that the ambient air quality in rural coastal areas such as Hatiya is generally good due to the absence of major industrial activities, low traffic density, and the predominance of open agricultural land and water bodies.

According to DoE Continuous Air Monitoring Station (CAMS) data for nearby coastal districts, concentrations of gaseous pollutants such as sulfur dioxide (SO₂), nitrogen dioxide (NO₂), and carbon monoxide (CO) typically remain well within the Bangladesh National Ambient Air Quality Standards in rural and semi-rural settings. Previous environmental assessments for LGED road and bridge

projects in Noakhali report indicative 24-hour average concentrations of SO₂ ranging from 5–15 µg/m³ and NO₂ ranging from 10–25 µg/m³, while CO concentrations remain below 1.5 mg/m³⁴.

Particulate matter (PM₁₀ and PM_{2.5}) levels in Hatiya Upazila are generally moderate but may increase seasonally during the dry period due to wind-driven dust, movement of light vehicles, and unpaved rural roads. Secondary data from past LGED and World Bank-supported project EIAs indicate PM₁₀ concentrations in the range of 80–140 µg/m³ and PM_{2.5} concentrations between 35–60 µg/m³ during peak dry months, with occasional short-term exceedances of 24-hour standards⁵. Such exceedances are typically localized, temporary, and reversible.

Field observations at the proposed bridge site in Hatiya confirm low background pollution levels, limited vehicular movement, and the absence of nearby industrial emission sources. Therefore, the baseline air quality conditions at the site are generally acceptable and representative of rural coastal environments. Construction activities may temporarily increase dust and vehicle-related emissions, particularly during earthworks and material transport; however, these impacts are expected to be short-term and manageable through standard mitigation measures such as water spraying, covering of materials, and controlled vehicle movement.

Noise Levels

Baseline noise monitoring was not carried out at the project site. However, secondary information from DoE noise surveys, LGED environmental reports, and field observations indicates that ambient noise levels in Hatiya Upazila are generally low to moderate and consistent with rural and semi-rural land use patterns⁶. Indicative noise levels reported in previous studies conducted in rural Noakhali range from 45 to 55 dB(A) during the daytime and from 38 to 45 dB(A) during nighttime.

These levels generally comply with the permissible limits prescribed under the DoE Noise Pollution (Control) Rules, which set standards of 55 dB(A) for daytime and 45 dB(A) for nighttime in rural and residential areas⁷. Existing noise sources in the project influence area are limited to light vehicular traffic, local market activities, and occasional agricultural operations. No continuous or high-intensity noise-generating sources were identified near the proposed bridge site.

During construction, temporary increases in noise levels may occur due to the operation of construction machinery and vehicles. Such impacts are expected to be localized, intermittent, and time-bound, and can be effectively mitigated through scheduling works during daytime hours, maintaining equipment in good condition, and providing appropriate personal protective equipment (PPE) for workers.

⁴ Local Government Engineering Department (LGED) (2020). Environmental Impact Assessment Reports for Rural Infrastructure Projects in Noakhali District. LGED, Dhaka.

⁵ Local Government Engineering Department (LGED) (2018). Environmental Assessment and Environmental Management Framework for Rural Roads and Bridges Projects in Coastal Bangladesh. LGED, Ministry of Local Government, Rural Development and Cooperatives, Dhaka.

⁶ Department of Environment (DoE) (2025). Noise Pollution (Control) Rules, 2025. Ministry of Environment, Forest and Climate Change, Government of the People's Republic of Bangladesh, Dhaka.

Local Government Engineering Department (LGED) (2020). Environmental Impact Assessment Reports for Rural Infrastructure Projects in Noakhali District. LGED, Dhaka.

⁷ Department of Environment (DoE) (2025). Noise Pollution (Control) Rules, 2025. Ministry of Environment, Forest and Climate Change, Government of the People's Republic of Bangladesh, Dhaka.

Baseline soil quality:

Site-specific soil quality was not conducted for the proposed bridge site at the screening stage. However, baseline soil conditions have been assessed using secondary information. Hatiya Upazila is located within the coastal floodplain of Bangladesh and is characterized by young alluvial and tidal floodplain soils, primarily consisting of silty clay to clay loam textures. These soils are generally fertile but moderately to highly saline, particularly during the dry season due to tidal influence and saline water intrusion⁸. Soil pH in the area typically ranges from 6.5 to 8.0, indicating neutral to slightly alkaline conditions, which are common in coastal deltaic environments.

Electrical Conductivity (EC) values of soils in Hatiya vary seasonally and spatially, with moderate salinity (4–8 dS/m) commonly observed in surface soils during the dry season, while salinity levels reduce significantly during the monsoon due to rainfall and freshwater flushing. Organic matter content is generally low to moderate (1–2%), reflecting frequent sediment deposition, tidal action, and limited biomass retention in cultivated and open areas.

Available secondary data indicate that concentrations of heavy metals such as lead (Pb), cadmium (Cd), chromium (Cr), and arsenic (As) in soils of Hatiya Upazila are generally within permissible limits for rural and agricultural land use, with no evidence of industrial contamination⁹. Iron content in soil is naturally high due to alluvial sediment characteristics, but this is not considered a constraint for construction activities.

The proposed bridge site is located over an active canal corridor, with no agricultural activity within the immediate construction footprint. Agricultural land is present near the site but outside the direct construction area. No evidence of contaminated land, waste dumping, or previous industrial activity was observed during field observation. Construction activities may temporarily disturb topsoil and increase the risk of localized soil contamination from fuel, lubricants, cement slurry, and construction debris if not properly managed. However, such impacts are expected to be temporary, localized, and reversible, provided that appropriate ESMP measures such as controlled material storage, spill prevention, proper waste handling, and site restoration are effectively implemented.

Landslide potential (high/medium/low, with explanation):

N/A (the sub-project will be constructed in a plain land)

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):

Surface Water Quality

Site-specific baseline surface water quality was not conducted for the proposed bridge site. However, baseline conditions have been assessed using secondary information from the different Department and World Bank-funded projects previously implemented in Hatiya and adjacent coastal upazilas of Noakhali District.

Surface water bodies in Hatiya Upazila mainly consist of tidal canals (khals), ponds, and estuarine channels connected to the Meghna River system. Secondary water quality monitoring data indicate that surface water pH values generally range between 7.0 and 8.2, reflecting neutral to slightly alkaline conditions typical of coastal tidal systems. Total Dissolved Solids (TDS) in surface water show

⁸ SRDI (2018). Soil Salinity Status of Bangladesh. Soil Resources Development Institute, Ministry of Agriculture.

⁹ DoE (2022). Environmental Quality Standards and Monitoring Report. Department of Environment, Bangladesh.

seasonal variation, with values typically ranging from 1,500 to 5,000 mg/L, increasing during the dry season due to tidal influence and salinity intrusion.

Iron (Fe) concentrations in surface water are generally low to moderate, commonly recorded between 0.3 and 1.0 mg/L, which is within acceptable limits for surface water but not suitable for direct drinking without treatment¹⁰. Fecal coliform contamination has been reported in canals and ponds, particularly near settlements and markets, with counts often exceeding 1,000 MPN/100 ml, indicating contamination from domestic wastewater and open sanitation practices¹¹. As a result, surface water in Hatiya is mainly used for washing, bathing, and limited household purposes, rather than for potable use.

The canal at the proposed bridge site is a tidal watercourse with regular flow and flushing action. No stagnant water or chronic waterlogging was observed during field reconnaissance, suggesting a reduced risk of prolonged pollution accumulation at the site.

Groundwater Quality

Groundwater is the primary source of drinking water in Hatiya Upazila and is accessed mainly through shallow and deep tube wells. According to DPHE and BWDB groundwater quality surveys, shallow aquifers (typically less than 200 feet deep) in Hatiya are often affected by salinity and iron, whereas deeper aquifers (generally 600–800 feet deep) provide comparatively better quality water¹². Secondary data indicate that groundwater pH values typically range from 6.8 to 7.5, remaining within acceptable limits for drinking water. TDS concentrations in shallow groundwater may exceed 2,000 mg/L in saline-prone zones, particularly during the dry season, while deep groundwater sources usually show TDS levels below 1,000 mg/L¹³.

Iron (Fe) concentrations in groundwater are a known concern in Hatiya, with reported values ranging from 1.0 to 5.0 mg/L, exceeding the Bangladesh drinking water standard of 0.3–1.0 mg/L in many shallow tube wells. Fecal coliform contamination in groundwater is generally low, especially in deep tube wells, provided that proper well construction and sanitary protection measures are maintained. Overall, groundwater quality in the project influence area is considered acceptable for domestic use when sourced from deep aquifers.

Status of wildlife movement:

N/A (None of the information was found about the wildlife movement in or across the area)

State of forestation:

The proposed bridge site is located in a rural coastal setting of Hatiya Upazila, where no natural forest, reserved forest, or protected forest area exists within the project intervention area or within a 500-meter project influence area. The surrounding landscape is predominantly characterized by agricultural land, rural settlements, local markets, and scattered homestead vegetation.

¹⁰ DoE (2022). Environmental Quality Standards and Monitoring Report. Department of Environment, Bangladesh.

¹¹ LGED (2019). Environmental Assessment Report for Rural Roads and Bridges in Noakhali District. Local Government Engineering Department.

¹² DPHE (2020). Groundwater Quality Monitoring Report for Coastal Districts. Department of Public Health Engineering, Bangladesh. BWDB (2021). Hydrological and Water Quality Assessment of Coastal Zone of Bangladesh. Bangladesh Water Development Board.

¹³ BWDB (2021). Hydrological and Water Quality Assessment of Coastal Zone of Bangladesh. Bangladesh Water Development Board.

Vegetation in the vicinity mainly consists of common roadside and homestead tree species and other locally planted trees, along with shrubs and grasses. These trees are primarily associated with private homesteads, agricultural boundaries, and market areas rather than organized forest cover.

Field verification confirms that the construction work will not require clearing of forest land or removal of any significant tree cover. Only minor trimming of roadside vegetation, if required for construction safety or access, may be necessary and can be managed through routine site management practices.

Summary of water balance analysis (For water supply scheme only): N/A

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable):

The proposed bridge is located at chainage (CH) 0.00 on the Bhairab Bazar Road (Road ID: 475364007). It is possible to carry the construction materials on this road to the construction site.

Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction:

No tubewell or fresh water sources are present at the proposed location, as there are no known permanent residents in the immediate vicinity. In order to make a sustainable management to usage of water for construction works two numbers of tubewells should be installed. The cost of installation of the tube wells are included into the civil works item, therefore is not repeated in ESMP budget.

Electricity is available at the site.

Toilet facilities are not available near this location. During the construction period, the toilet will need preparation for both male and female staff.

Possible location of labor camps:

On the south-west side of the proposed site, or can be placed near the location of sub-project site.

Requirement and type of raw materials (e.g. sand, stone, wood, etc.):

Some of the raw materials for bridge construction are steel, concrete, stone, asphalt, water, bamboo & wood. Other materials include iron, timber, aluminum, rubber and other joint materials, and electro-mechanical equipment used in construction.

Identification of access road for transportation (Yes/No):

Yes. The proposed bridge is located at chainage (CH) 0.00 on the Bhairab Bazar Road (Road ID: 475364007). It is possible to carry the construction materials on this road to the construction site. It passes from northeast to southwest.

Location identification for raw material storage:

On the southwest side of the proposed sub-project. Material storage area must be well fenced and materials will be covered with tarpaulins.

Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.):

Solid waste: An existing concrete bridge will be demolished and the new RCC bridge will be constructed here. So, construction debris and other solid wastes will be generated both during the

demolition and construction periods.

Type: woods-bamboo, copper wires, concrete, iron, plastic, tin, etc.

Quantity: Nearly 10 metric ton of solid waste, including demolition materials will be produced.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.):

Solid waste: Iron, concrete, metal, drywall, wood, plastic, rubber, copper wires, excavated soils etc.

Quantity: It is difficult to give exact figures of construction waste produced on a typical construction site. However, to approximate the quantity, nearly 7 kg of waste is estimated to be generated each working day, mainly construction waste. Some plastic, paper and organic waste will be generated from the use of workers, though a very negligible amount- half a kilogram a day maximum. Food and kitchen waste (biodegradable organic waste) will be generated at 2 kg per day in the labor camp.

Liquid waste: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 6 kg per day, which would be reduced in weight in course of time.

Type and quantity of raw materials used (wood, bricks, cement, water, etc.):

Type: i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) concretes viii) Bamboo & wood from mobilized materials and other electro-mechanical equipment and ix) clay are the most common type of building material used in construction.

Quantity: It is difficult to give exact figures of construction waste produced on a typical construction site.

Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards:

There is no soil land or major vegetation cover on the right-of-way for the sub-project. No other placement as waste dumps or equipment is targeted in any vegetation cover as well.

Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation)

Low: No borrow pit or quarries will be required to dig out during the construction period in or around/ adjacent to the sub-project area. During construction period one or two water reservoir may be constructed due to construction activities. But all those will be completely demolished and cleared out, once the construction period is over.

Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description)

Low: The proposed bridge site is located along the Bhairab Bazar Road in Hatiya Upazila, Noakhali District, crossing over the Bogula Khal, which flows diagonally from the northwest to the southeast. The khal functions as a natural drainage channel with regular tidal influence and is not subject to any realignment, diversion, or structural modification under the proposed sub-project. No alteration of the existing hydrological regime of the canal is anticipated during either the construction or operational phases.

However, during the construction period, temporary disturbances to surface water quality may occur due to site preparation activities, use of concrete and cement materials, and movement of construction machinery. Dust deposition, accidental spillage of construction materials, or runoff from the work site during rainfall events may enter the Bogula Khal. Such impacts are expected to be

localized, short-term, and reversible in nature.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low: The site is free from any significant aquatic ecosystems or habitats of endangered species. There are some terrestrial flora species around the project site, which will not be affected by the works. Life cycle or movement of some terrestrial living species (fauna) (i.e. Insects - ant, bees, earthworm, reptiles, birds etc.) might be disturbed for the time being, but with very less impact indeed. So, overall potential effect is very low or absent for this specific sub project.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: N/A
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) N/A
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impact on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: No
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) No
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) No
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no possibility of stagnant water bodies remained for encouraging mosquito breeding and other disease vectors, during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project: Construction or implementation of a bridge project substantially contributes to the development of the project areas. It surely improves the communication network, reduces the transport time, increases the trade and business in/around the areas, and ensures access to better living conditions with amenities, better educational and job opportunities and health facilities. Thus, the direct and indirect impacts on economic development in the project areas would be enormous by this sub-project.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes):(High/Medium/Low with description) No significant modification to the water channel is anticipated. The khal itself functions as a seasonal waterway and is not classified as a wetland or marsh. Surrounding areas are primarily small-scale trade, residential structures, water bodies, and agricultural land, but not dependent on the khal for

drainage; therefore, no such effect can be anticipated. Therefore, the overall extent of disturbance to existing drainage channels and surface water bodies is assessed as Low.

Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description)

There are no protected areas in or around project sites, and no known areas of ecological interest.

Activities leading to landslides, slumps, slips and other mass movements in road cuts:

The entire sub-project component area is nearly flat; thus, no such type of impacts is anticipated.

Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation)

No.

Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:

During operation period, traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred, primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to the bad condition of the access road and unsafe driving through it.

High = Likely to cause long-term impacts or over large area (> 1 sq km); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1 sq km); Low = Likely to cause little, short-term damage and over small area (< 0.5 sq km)

Section C: Social Screening

C.1 General Labor Influx Screening

Key Screening questions	Aspects to Consider
Will the project potentially involve an influx of workers to the project location, and will the influx be considered significant for the local community?	How many foreign and local workers will be needed for the remaining period of the project, with what skill set? Answer: The project will not require any foreign workers for the remaining construction period. The contractors will hire all skilled and unskilled labor locally. For the bridge construction, the project will need about 10 skilled workers and 20 unskilled workers. Skilled workers, such as masons, carpenters, and steel fixers, will come from nearby areas based on the technical needs of the bridge construction. Since the bridge will be constructed within a host community area, and local skilled and unskilled labor is willingly available, the project will prioritize hiring from the local community. This approach will not only support local livelihoods but also promote stronger community ownership of the project. ✓ Can the project hire workers from the local workforce? Answer: Yes, the project can hire workers from the local workforce. Both skilled and unskilled laborers will be recruited from nearby communities. The availability of local workers is sufficient to meet the project's labor demands. ✓ What is the size and skill level of the existing local

Key Screening questions	Aspects to Consider
	workforce? Answer: Based on consultations with local stakeholders, most of the required workforce both skilled and unskilled is available within the project area. However, if specialized skills are needed for specific technical activities, the contractors may need to hire a limited number of skilled workers from outside the immediate locality. Overall, the local workforce is capable of supporting the construction activities under the project. ✓ If the skill level of the local workforce does not match the needs of the project, can they be trained within a reasonable timeframe to meet project requirements? Answer: Unskilled labor is readily available in the project area. If the skill level of the local workforce does not fully meet project requirements, the contractors can provide on-the-job training to upgrade their skills within a reasonable timeframe. This approach will enable the project to utilize local labor effectively while enhancing their technical capacity for bridge construction activities. ✓ How will the workers be accommodated? Will they commute or reside on site or outside of the camp? If so, what size of camp will be required? Answer: Most of the workforce will be hired from the local community, and they will commute daily from their own homes; therefore, they will not require accommodation at the construction site. However, skilled workers who may be sourced from outside the project area will require temporary accommodation near the site. Contractors will establish temporary labor sheds to house these external workers. The size of the labor camp will depend on the number of outside skilled workers needed, but it will be designed to comply with Environmental, Health, and Safety (EHS) guidelines to ensure proper living conditions, sanitation, and worker safety.
Is the project located in a rural or remote area?	✓ What is the size of local population in the project area? Answer: The size of the local population in the project area is approximately 35300 people, including both male and female residents. This estimate is based on information collected during community consultation meetings held at the subproject site. ✓ What is the size of the host Rohingya community? Answer: N/A ✓ Is the project located / being carried out in an area that is

Key Screening questions	Aspects to Consider
	not usually frequented by outsiders? Answer: No. The proposed sub-project is located in an area that is regularly frequented by outsiders. The bridge site is situated near Bhairab Bazar and adjacent market areas, which are actively used by traders, farmers, transport operators, and daily commuters from surrounding villages. The route serves as an important local connectivity corridor for movement of goods, access to markets, religious institutions, and social services. As a result, the area experiences regular human movement and interaction, and is not considered isolated or restricted to only local residents. ✓ What is the frequency and extent of contact between the local community and outsiders? Answer: Daily ✓ Are there sensitive environmental conditions that need to be considered? Answer: Yes, there are sensitive environmental conditions that need to be carefully considered during the implementation of the project. In addition to general construction activities, the demolition of the existing old bridge may also generate significant dust, noise, debris, and vibrations, which could impact nearby mosques, market areas, ghats, ponds, and residential structures within close proximity, pedestrians, and other sensitive establishments located within close vicinity to the site. To minimize these impacts, the construction site must be properly fenced to contain dust dispersion and reduce noise pollution, thereby safeguarding residents and pedestrians. Dust suppression measures, such as water spraying at least twice daily, must be implemented throughout the construction and demolition periods. High-noise activities should be considered during less sensitive hours to minimize disturbance to nearby communities. Furthermore, all machinery and equipment should be properly maintained to control noise levels. Careful debris management during the dismantling of the old bridge will also be essential to prevent contamination of surrounding agricultural lands, market areas, ghats, and nearby water bodies.
Based on the socioeconomic, cultural, religious and demographic qualities of the local community, Rohingya population and the incoming workers, is there a possibility	✓ Is it likely that the incoming workers and the local community come from a shared socio-economic, cultural, religious or demographic background? Answer: Most of the workforce is expected to come from the local host community. A small percentage of skilled workers may be

Key Screening questions	Aspects to Consider
that their presence or interaction with the local community could create adverse impacts?	hired from outside the project area if required. The local workforce and the incoming workers generally share a common socio-economic, cultural, religious, and demographic background, which is expected to support smooth integration at the work sites. Since this subproject is located in the host community area and will not involve Rohingya workers, the risk of conflict due to cultural or social differences is considered low. However, contractors must still take precautionary measures, such as awareness training on social behavior, code of conduct enforcement, and community engagement, to prevent misunderstandings and ensure a harmonious working environment. ✓ What is the level of existing resources, and will the incoming workers use or create competition for these resources? Answer: The existing local resources, such as water supply, food, basic health services, and transportation facilities, are limited compared to the size of the local population. Although workers will be hired from the local community, a small number of incoming skilled workers from outside may create additional pressure on local resources. This could lead to a temporary increase in the demand for basic commodities and may cause price hikes in local markets during the construction period. ✓ What is the expected duration of the incoming workers' presence in the community? Answer: One year but it may be extended. ✓ Given the characteristics of the local community, are there any specific adverse impacts that may be anticipated? Answer: Yes, considering the characteristics of the local community, some specific adverse impacts may be anticipated during the construction phase. These include: • Temporary price hikes in local markets due to increased demand for goods and services from workers. • Pressure on water supply and sanitation facilities, particularly if labor camps are not properly managed. • Movement disruption for local vehicles and pedestrians around the construction sites due to road blockages and

Key Screening questions	Aspects to Consider
	heavy machinery operation. However, no significant religious or cultural barriers are anticipated, as both the local community and the incoming workforce largely share a similar socio-cultural background.
Consultation with Community People	✓ Has the project authority and contractors conducted any consultation meetings with the community people and Rohingya population? Answer: The project authority has already conducted several consultation meetings with the local community during the environmental and social screening stage. Community opinions, concerns, and suggestions were received with great respect and consideration. After the finalization of the contractor, additional consultation meetings will be organized by the contractor in coordination with the project authority to ensure continued community engagement and address any new concerns during the construction phase. ✓ Are local people aware about the labors? Answer: Local community members are well aware of the engagement of local laborers in the project activities. However, they currently have limited knowledge regarding the potential involvement of outside skilled workers. ✓ Has the project authority involved the local community with the project? Answer: Yes, the project authority has actively involved the local community throughout the site selection and screening stages. Several formal consultation meetings and informal discussions were conducted at the proposed bridge location and with the local community. Community members shared their views, concerns, and expectations, which were carefully considered.

Involuntary restrictions on land use or on access to legally designated parks and protected areas

Effects	Yes	No	Not Known	Remarks
10. Will people lose access to natural resources, communal facilities and services?		✓		People's access to communal facilities and services will not be affected

				by the project.
11. If land use is changed, will it have an adverse impact on social and economic activities?		√		No scope to change site location.
12. Will access to land and resources owned communally or by the state be restricted?		√		No
Information on Displaced Persons:				
Any estimate of the likely number of persons that will be displaced by the Project?				
[V] No [] Yes				
If yes, approximately how many? N/A				
Are any of them poor, female-heads of households, or vulnerable to poverty risks?				
[V] No [] Yes				
Are any displaced persons from indigenous or ethnic minority groups?				
[V] No [] Yes				
During Screening, project authority will conduct consultation with the primary and secondary stakeholders and provide their observations in the following sections (13 to 18)				
13: Who are the stakeholders of the project?				
Answer: The stakeholders of the project include a wide range of individuals and institutions connected to the sub-project areas. They are: • Local community members • Households and shopkeepers located on both sides of the project roads • Students and guardians from nearby educational institutions • Religious leaders and teachers • Local elected representatives (Union Parishad members, Ward members) • Local administration officials • Implementing agency (LGED) and relevant supporting agencies • Workers and laborers engaged in project construction activities • Community-Based Organizations (CBOs) • Local NGOs • Local traders				
14: What social and cultural factors affect the ability of stakeholders to participate or benefit from the proposed policy or project?				
Answer: There are no significant social or cultural factors that would restrict stakeholders' ability to participate in or benefit from the proposed project. The project area maintains a socially cohesive and culturally conducive environment, which supports broad community participation and equal access to project benefits. Stakeholders, including local residents, traders, students, and vulnerable groups, are expected to benefit positively from the improved infrastructure and services. The project's inclusive approach ensures that participation opportunities are available to all community members without discrimination.				

15: Are project objectives consistent with their needs, interests and capacity?

Answer: Yes, the project objectives are highly consistent with the needs, interests, and capacities of the stakeholders. Community consultations and FGD during field visits clearly indicated strong local support for the project.

16: What will be the impact of the project or sub-project on the various stakeholders, especially women and vulnerable groups?

Answer: The construction of the proposed bridges will have a significantly positive impact on various stakeholders, particularly women, children, elderly people and other vulnerable groups. Improved transportation infrastructure will ensure **easier and safer mobility**, allowing women and vulnerable populations to travel more conveniently between villages, markets, schools and health care facilities.

Access to hospitals and emergency services will become faster, which is crucial for women, elderly, and persons with disabilities. School-going children will also benefit through **safer, uninterrupted access to educational institutions**. Overall, the project will enhance social inclusion, reduce travel time, promote economic opportunities, and contribute to an improved quality of life for all segments of the local population.

17: What social risks might affect project or sub-project success?

Answer: Several social risks could potentially affect the success of the sub-projects if not properly managed. These risks include:

- **Minor conflicts** may arise between local community members and incoming skilled laborers, particularly if there are differences in behaviour or competition over local resources.
- **Temporary price hikes** of essential commodities in local markets (hat-bazar) due to increased demand from workers.
- **Risk of engagement in anti-social activities** by a few incoming workers, which could challenge local social norms and community harmony.
- **Noise and dust pollution** may be generated during construction activities, which may disturb schoolchildren, elderly residents, and other vulnerable groups living close to the project sites.

18: Has the project authority or any other organizations conducted any consultations with the affected community or people? If yes. Please provide a summary.

Answer: Yes, the project authority has conducted several consultation meetings with the potentially affected communities and other stakeholders. During the site selection phase, LGED officials organized discussions with local community members, Union Parishad representatives, local elites, school teachers, and civil society organizations to gather feedback regarding the construction of the proposed bridges.

Additionally, during the environmental and social screening process, the PIU Consultant of LGED conducted community consultations to inform local people about the project objectives,

construction activities, potential impacts, and safeguard measures.

The key feedback and observations from the consultations include:

- During the consultation meeting and FGD, Community members strongly supported the construction of the bridges, they would enhance connectivity between economically complementary areas, boosting local trade and labor movement.
- Local farmers, small traders, and transport operators expressed that the improved communication network would allow them to receive fair prices for their commodities and reduce transportation costs.
- Transportation systems would become easier, faster, and more reliable, saving time and reducing daily hardships for local residents.
- The construction of the bridges is expected to encourage the growth of local businesses and industries, stimulating the rural economy.
- Land value in the surrounding areas is likely to increase as accessibility improves.
- Improved road connectivity will enable quicker access to upazila and district-level hospitals, ensuring better healthcare facilities for the local population.
- The attendance and enrollment rates of school-going children are expected to rise due to safer and more convenient travel routes.
- The bridges will also strengthen the communication network by acting as vital links within the rural transportation system.

Section D: Environmental Screening Summary of the Work Package

Main Environmental & Social Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
				Indicators	Frequency
Sub-project Interventions					
Construction of a RCC Bridge (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention, the overall score is low	- Limiting earthworks and artificial bank reinforcement should be avoided as far as possible; - Bridge soffit (The bottom part of the bridge) levels and flood spans should be at least 1 metre above the maximum known flood level to allow floating debris to pass freely through the structure; - Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; - The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. - The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. - Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. - The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. - Storage of fuel, chemicals, equipment and construction materials so as to minimize the risk of soil contamination or water pollution; - Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water.	Contractor, environmental specialist of PIU and D&SC	Visual monitoring result of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Throughout the time during the construction period.

		• Monitor water quality according to the environmental management plan. • Phasing of construction work to minimize disturbance to wildlife at sensitive times of year, such as during the breeding season or when young are being raised; • Use of techniques to minimize compaction of soil, such as restricting access during wet conditions, and using protective boarding and low-ground pressure machinery. If necessary, soil should be carefully removed and stored for subsequent reinstatement; • Access roads should avoid riparian zones and should be built using appropriate construction materials.			
Pre-construction Phase					
Site planning (i.e. Labor camp, construction of material storage area etc.)	Under the sub-project intervention, the overall score is low.	• The proposed sub-project is targeted at existing old concrete bridges over local running canal. The construction area over this canal needs to be covered so that the water cannot receive debris and dust from the demolition and construction work. • Construction camp and material storage area should be located at the site & approved by the Environmental Specialist of D&SC. • As the proposed RCC girder bridge will be constructed along the Bhairab Bazar Road, which serves as an important local access route with regular pedestrian and vehicular movement, any temporary labor camp or ancillary facilities must be carefully located. The labor camp should be established at a suitable off-road location to avoid obstruction of traffic, disruption to market activities, or inconvenience to local residents and road users.	Contractor, environmental specialist of PIU and D&SC	Water quality test results. Location of stockpiles and labor shed.	Prior to the start of Construction works.
Loss of land / and	No adverse impact will be	• No land acquisition will be required as RCC bridge will be constructed in own existing alignment, which is entirely	Safeguard team of PIU,	Number of Complaints. Check	Ensure regular supervision and

other physical assets	generated.	Government land. • No additional land will be required to construct the RCC bridge due to both sides of the canal being government vacant property as well as LGED roads. • The local community has been agreed to provide space beside the bridge construction site to keep the construction materials during construction work. • There is no physical asset affected by the intervention of the sub-project (bridge). In case of any grievance from a neighboring household, emergency consultation will be conducted to resolve the issue through the project GRC.	PSC and D&SC	Grievance register. Resolutions against the grievances.	Monitoring based on compliance.
Loss of livelihood	No impact may be generated.	• Contractor need to engage local labor as priority (both skilled and unskilled) at their construction work. • Woman labor should get priority at the time of labor recruitment. • During construction work social safeguard compliance shall be maintained properly by the contractor.	PIU, Contractor, Safeguard team of PIU, PSC and D&SC	Labor wages payroll. Interview with labor. Frequent visit by D&SC and PIU personnel	Monthly basis
Stakeholders Engagement	Under the sub-project intervention, the overall score is low.	• One community-level consultation meeting has already been conducted with the relevant stakeholders. The meeting aimed to gather feedback, ensure local participation and inform the community about the project scope and potential impacts. • Moving forward, additional consultation sessions will be held as needed to ensure inclusive stakeholder engagement throughout the project lifecycle. • All safeguard documents will be disclosed to the stakeholders prior to the commencement of construction works. • All the stakeholders will be made aware of the Grievance Redress Mechanism (GRM) and their active participation will be ensured through representation in the Grievance Redress	PIU, Contractor, Safeguard team of PIU, PSC and D&SC	List of participants in consultation and GRC. Disclosure records of safeguard documents. Feedback and grievances are recorded and addressed. Level of awareness on GRM among stakeholders.	Weekly basis

		Committee (GRC).			
Material storage area for construction (Creating dust/ air pollution, Spillage of liquid/ hazardous substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, children, animals, etc.)	Under the sub-project intervention, the overall score is low.	- The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures. - Proper procedure for stockpiling/ storage of construction materials at the site will be proposed by the contractor & approved by the Environmental Specialist of D&SC. - Proper covering of dust producing materials with polythene sheet, - Proper fencing around the storage area in order to be secure, to minimize the risk of crime and to be safe from access by outsiders, children, animals, etc. - Spills/ hazardous substances should be disposed of at the site proposed by the contractor & approved by the Environmental Specialist of D&SC to avoid soil/ water contamination.	Contractor, environmental specialist of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage
Demolishing of an existing structure	Under the sub-project intervention, the overall score is Medium	- Water spraying at the demolition site - Fencing / Installing barriers should be shield from dust and aggregates - Avoid usage of machines/equipment with extra noise; - Do not accumulate and burn waste at the site - Carry out demolition activities in stages, give adequate notice and information of activities to the adjoining stakeholders - It needs to Identify proper location to dispose of solid waste from demolition and other activities in consultation with respective bodies - Make mandatory the use of safety gears (helmets, safety belts, masks, gloves and boot) by workers depending on nature of work. - Further guidance on demolition works and wastes management is given in appendix 2, below the ESMP table,	Contractor, environmental specialist of PIU and D&SC	List of selected sites; Identified sources of materials.	During Design Stage

		to be followed by the contractor.			
Setting up of labor camp (Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention, the overall score is low.	- Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. - No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. - Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. - Construction of sanitary latrine with septic tank for both male and female workers and staffs. - Construction of the first tube well for drinking water and providing water filters for further ensuring access to the safe drinking water. - Provision of waste bins/ cans, where appropriate; and litter is to be collected daily. - Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site pre-approved by the Environmental Specialist of D&SC. - Camp and working areas are to be kept clean and tidy at all times.	Contractor, environmental specialist of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Construction works
Accidents	Under the sub-project intervention, the overall score is low.	- Provision of standard safety protocol. - Providing training on Environmental health and safety to the labors and associated field staffs is the responsibility of Upazila Engineer & Contractors. - Training should be scheduled twice, once before starting the construction & another in the middle of construction period. - Safety & protection gears, first aid box etc. should be available in the site during construction period.	Contractor, environmental specialist of PIU and D&SC	Complaints from community; Complaints from the labors and associated field staffs; Regular inspection of materials transport vehicles.	Before and during the construction phase
Construction Phase					

Site Preparation: Soil Erosion; Alteration of natural drainage	Under the sub-project intervention, the overall score is low.	- Construction facilities including material are to be placed at least 30 meters distance from bridge construction area in order to minimize impacts on water bodies and natural flow paths. - Any disruption of socially sensitive areas with regard to human habitation and areas of cultural significance will be avoided. - Retaining wall need to construct that structure retain (holds back) any material (usually earth) and prevents it from sliding or eroding away. - Ensured diversion / alternative bamboo made bridge for considering the bi-cycle, and Rickshaw movement, pedestrian and other transportation etc. - The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	Contractor, environmental & Social specialist of PIU and D&SC	- Presence and adequacy of retaining structures. - Functionality of the temporary bamboo bridge. - Visual evidence of erosion or drainage issues. - Community complaints on disruption.	Monthly, Immediate follow-up after heavy rainfall or erosion events.
Increase in diversion road accidents	Under the sub-project intervention, the overall score is low.	- The contractor will prepare a response plan to accidents, it will ensure the victim to receive quick treatment. - The movement of heavy machinery and equipment shall be restricted to diversion or temporary bridge. - Proper signage to be displayed at diversion. - Road diversions and closures to be informed well in advance to the local community. - Local community will be trained on traffic management and awareness	Construction Contractor, Safeguard team of PIU and D&SC	- Traffic and Road Conditions. - Accident and incident logs. - Number and visibility of traffic signage.	- Weekly inspections by D&SC - Daily monitoring by contractor - Monthly review by PIU Safeguard team - Immediate review after any accident or complaint.
Quality construction work of the RCC bridge	Under the sub-project intervention,	Respected community deserving quality construction works (side by side with the construction engineers and Design and Supervision Consultant)	Construction Contractor, Environmental &	Community feedback should be acknowledged and	Daily supervision by D&SC. Weekly

	the overall score is low.		Social Consultant of PIU and D&SC	addressed regarding construction quality. •Material quality test results. •Ensure timely rectification of any construction defects.	progress review by PIU.
Safety during construction of the RCC bridge	Under the sub-project intervention, the overall score is low.	• An unauthorized person entry to the proposed site should restrict strictly and ensure proper storage and control of hazardous materials on site. • Child labors are not allowed for any kind of activities • Site shall be secured by fencing and ridge (if needed). • Ensuring that clear safety policies and procedures are in place and strictly enforced is essential, as is regular inspection and maintenance of all workplace equipment. • Awareness building program will be taken on social safety matters through imparting training from the project before commencement. At the same time, compliance should be ensured by the contractors.	Construction Contractor, Environmental & Social Consultant of PIU and D&SC	• Regular inspection and maintenance records of machinery and safety gear. • Register/Documents on social safety matters Checking stock register of personal protective equipment (PPE)	
Noise Impacts	Under the sub-project intervention, the overall score is low.	• Avoid high noise making activities during after daylight. • Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times. • Avoid using of construction equipment producing excessive noise at night.	Contractor, environmental specialist of PIU and D&SC	Number of complaints from stakeholders, use of silencers in noise-producing equipment and sound barriers,	Weekly

		• Ear protection devices for the workers & site staffs should be available in site during construction period.		Noise Level following decibel meter (dB)	
Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related pollutants which will affect people who live and work near the sites. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	Under the sub-project intervention, the overall score is low.	• Damp down exposed soil and any sand stockpiled on site by spraying with water during dry weather. • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of water sprinklers and dust extraction systems shall be provided at all stone crushers (if these establishments are being setup exclusively for the subproject). • Limiting speed of construction vehicles in work sites to maximum of 20 km/h. • Regular monitoring of air quality.	Contractor, environmental specialist of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive receptors, Heavy equipment and pollution control devices, Maintain records	Monthly
Biodiversity (There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	Under the sub-project intervention, the overall score is low.	• Prohibit employees from cutting trees for firewood. • If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna. • Construction works should be limited or be finished before the fish breeding period (springtime esp. Bangla months of	Contractor, environmental specialist of PIU and D&SC	If tree cutting is required, to be determined during Design stage, Numbers of complaints from sensitive receptors.	Monthly

		Baishakh and Jaishtha/ April and May, when the water warms up and the daylight lengthens), and restoration of sites (with removal of any hindrance or cofferdam, etc.) is imperatively necessary to protect the fish species.			
Workers' health and safety	Under the sub-project intervention, the overall score is low.	• Prevent excessive noise; • Construction staffs are to make use of the facilities provided for them (e.g., fires for cooking); • No fires permitted on site except if needed for the construction works; • Staff must be trained to operate equipment. • Availability and access to first-aid equipment and medical supplies. • Ensure the presence and use of safety gear at site: Ear protection devices, Goggles, Illuminating jackets, Masks, Gloves, Helmets, Uniforms etc., • Ensure adequate supply of drinking water. • Sanitation facilities for male & female workers separately.	Contractor, environmental specialist of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of walkway signage, and metal sheets placed at project location;	Monthly
Labour Base Camp: Conflicts with the local residents	Low impact may be generated.	• An alternate arrangement for fuel wood, heating and cooking should be arranged for the labors at labor camp. • Awareness building about nutrition, disaster risk resilience or mitigation, adoption of clean energy for cooking; and prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • To be ensured adequate sanitation facilities in the labour camps. • Treated water will be made available at site for labour drinking purpose.	Contractor, environmental & Social specialist of PIU and D&SC	Checking use of resources by labor. Document checking of awareness building activities. Physical Checking. Grievance register. Interview with local community.	Daily site visit

		Adequate accommodation arrangements for labour and code of conduct to be disclosed through consultation and FGD.			
Post-Construction Phase					
Construction clean-up (Damage due to debris, spoils, excess construction materials, and after-effect water test)	Under the sub-project intervention, the overall score is low.	- Remove all spoils, wreckage, rubbish or temporary structures which are no longer required; - All affected structures rehabilitated/compensated; - The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up; - All imported materials are to be removed and the area shall be re-vegetated as per the specification that forms part of this document; - The contractor must arrange the cancellation of all temporary services;	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory; camp has been restored to pre project conditions. Water test before handover of the project to check water quality for severe modification (if any).	After the completion of Works
Odor& waste disposal	Under the issue, the overall score is low.	Use bin covers and/or tarpaulins during transport of wastes.	Contractor monitored by Consultant and PIU	Complaints from communities	Site inspection daily / weekly basis.
Vegetation	Under the issue the overall score is low.	After construction work, all structures need to be removed and the area shall be topsoiled and re-grassed using the guidelines set out in the re-vegetation specification that forms part of the bidding document.	Contractor monitored by Consultant and PIU	The worksite is restored to its original conditions.	Over the completion of Works
Traffic Accidents	The low impact may be	- Clear diversion/bridge markings and signage. - Diversion Road design to ensure traffic speed is not	PIU, PSC, LGED and Local	No. of the accident took place. Marking	Monthly basis

	generated during construction even some times after construction	hazardous given slopes of the diversion. - Recording and reporting of accident incidents to local police station. - Annual reporting of accident figures to PSC.	Governance institution	and signage of road. Record of the Police Station and PSC. Newspaper	
The sub-projects are expected to be sustainable	Low	The safeguard issues and maintenance of the RCC bridge taken care of by the concerned Union Parishad and Upazila Parishad for sustainability.	LGED, Union Council and Upazila Parishad	Evidence of routine inspection and maintenance activities; community feedback on bridge condition.	Bi-annually
Traffic movement and economic enhancement		- LGED expecting that after completion of RCC bridge, traffic movement will be increased, diverted traffic will be generated, lives and livelihood of people will be improved of the catchment area. - The important places will be well-connected. - People will enjoy improved facilities for connecting both side canal local school, college and other educational institution.	PIU, PSC, LGED and the Local Governance institution	- Community feedback. - Number of connected routes. - Increase in traffic volume. - Economic activity (shops, transport).	Quarterly, post-construction assessment

* Overall Impact Score: High = Likely to cause long-term E&S impacts; Medium = Likely to cause temporary impacts; Low = Likely to cause little, short-term impacts

Recommendation for further environmental and social assessment and/or site-specific environmental and social management plan: Yes

**If yes, please specify what assessments/plans would be required.*

Appendix-2: Environmental and Social Management Plan (ESMP)

ESMP for Construction of 45.00m RCC Girder Bridge on Bhairab Bazar Road at Ch: 0.00m, PB 40m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364007).

Package no: HELP-NOA/BR-1:

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-construction Stage			
Loss of land / and other physical assets	- No land acquisition is required within this sub-project activity so, there is no mitigation measures according to this impact. - The subproject will be constructed on Government land.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Loss of livelihood	Under this subproject, there is no scope of negative impact on livelihoods of the people of catchment area.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Stakeholders Engagement	- All the project stakeholders will be consulted - Separate community level consultation meeting with the potentially affected HHs - Consultation meeting with nearby local community about the project objectives and scope of works - People living in nearby community and members of LGED Upazila will be involved with the GRM	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Loss of right to access	- In case of unavoidable circumstances, alternative access will be provided. - Proposed bridges will be well demarcated and accessibly paved.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Site Preparation: Soil Erosion; Alteration of natural drainage	- Construction facilities including materials are to be placed at least 10 m (32 ft) distance from any water body in order to minimize impacts on water bodies and natural flow paths. - Minimize cut & fill operations, the site clearing and grubbing operations should be limited to specific locations only. - The existing slope and natural drainage pattern on the site should not be significantly altered. - The contractor shall ensure that site preparation activities do not lead to disruption of activities of the camp settlers and host community.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction stage			
Noise from construction works	- Construction activities will be finished at day time within 06:00 PM. Proper measures will be taken to avoid any disturbances. - All Personal Protective Equipment (PPE) shall be available at site before starting any kind of construction works.	Contractor	Environmental Consultant of PIU, PSC
Dust	Construction machinery shall be properly maintained to minimize exhaust emissions of CO, particulate matter (SPM, PM2.5, PM 10) and Hydrocarbons.	Contractor	Environmental Consultant of PIU, PSC

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	• Provision of using water sprinklers to dust control. • Construction materials should be covered properly while carrying in vehicles to the site. • Vehicle movement will be controlled on haul roads/access roads for limiting dust generation.		
Safety Issues	• Unauthorized entry to the site area is completely prohibited and the site will be properly fenced with a single entry, for this purpose. • It will be ensured that proper training and guidance are provided on general and occupational health and safety to Contractors' personnel and labors forces, and records of training sessions are to be kept at site. • All kinds of Child labor will be completely prohibited.	Contractor	Environmental Consultant of PIU, PSC
Traffic Management	• Contractors will discuss with traffic management authorities and take site specific traffic management measures to avoid congestion and any unwanted incidents or accidents. • Road signs and speed ramps are to be placed at strategic locations.	Contractor	Environmental Consultant of PIU, PSC

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Conflicts with existing users due to the scarcity of resource base.	- A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. - If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells. - Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. - Local community must be consulted before any construction work starts.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Increase in road accidents	- Maintain safety measures during the movement and operation of heavy machineries and equipment. - Vehicular movement will be carefully managed in the vicinity of the proposed site, particularly near sensitive locations such as Bhairab Bazar area, nearby mosques, educational institutions (GPS), market places, and residential clusters identified along the designated transport routes. - Local community will be trained up about traffic management and awareness.	Contractor	Environmental Consultant of PIU, PSC
Labor Base Camp: Conflicts with the local	Awareness building session will be	Contractor	Social Development

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
residents	undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labor camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation.		Specialist and Gender Specialist of PIU, PSC
Construction runoff, sediment, cement slurry, and wastewater may enter the adjacent canal during earthworks, piling, and concreting activities, potentially causing temporary deterioration of surface water quality and increased turbidity. Improper management of construction materials and spoil may obstruct natural drainage and affect local water flow.	• Install temporary silt traps, sedimentation pits and perimeter earthen bunds around excavation areas and material storage zones. • Earthworks, piling, and concreting activities shall be carefully managed to prevent direct discharge of construction runoff, cement slurry, wastewater, or debris into the canal. • Ensure proper drainage management to	Contractor (implementation of mitigation measures and monitoring); Design & Supervision Consultant (technical verification and guidance)	PIU (Environmental & Social Specialists); Design & Supervision Consultant

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Additionally, tidal influence in the canal during high tide may cause backflow, which could interact with construction activities and influence local hydrology as well as the long-term durability of bridge substructures if not adequately addressed.	prevent direct discharge of cement slurry, oil-contaminated water or construction runoff into the canal. • Monitor pH and Total Suspended Solids (TSS) of any construction-phase discharge water at regular intervals. • Regular site inspections shall be conducted, particularly during the monsoon season, to ensure effective functioning of erosion and sediment control measures. • Works within or near the canal shall be scheduled, where feasible, during low-flow periods to minimize turbidity and disturbance to natural flow.		
Temporary disturbance to local biodiversity, including small terrestrial fauna and common bird species present in surrounding rural and agricultural landscapes; potential short-term alteration of aquatic habitat conditions and natural water flow in the canal during construction.	• Conduct site-specific assessment of aquatic and ecological conditions prior to construction • Monitor bird activity, particularly during migratory season (November–February) • Avoid or limit piling, demolition, and other high-disturbance activities during peak migratory periods where feasible • Restore disturbed areas after construction • Construction works should be limited or be finished before the fish breeding period (springtime esp. Bangla months of Baishakh and Jaishtha/ April and May, when the water warms up and the daylight lengthens), and restoration	Contractor	PIU and Supervision Consultant

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	of sites (with removal of any hindrance or cofferdam, etc.) is imperatively necessary to protect the fish species.		
Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting construction works in order to provide a better sanitation facility to the workers and staffs. • Working areas are kept clean and tidy at all times. • Construction site is to be checked for spills of substances i.e. chemical, oil, paint, etc. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed of at waste disposal areas and/ or at the site. • The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in a stack yard and sold to local recyclers. • Hazardous waste viz. waste oil etc. will be collected and stored in the paved and bounded area and subsequently sold to authorized recyclers.	Contractor	Environmental Consultant of PIU, PSC

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Health & Safety Risks: - The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. - Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	- All construction equipment will be properly inspected timely and kept fit for purpose. - The risk assessment will be prepared time to time for all types of work activities on site. - Proper Signpost at any slippery areas will be ensured in construction site. - Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. - This sub project will have Proper communicative Emergency Response Plan (ERP) with all parties, to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. - All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. - Provision to first aid box in sub-project areas will be ensured. - Proper Emergency evacuation response plan	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	will exist in sub-project area. • All equipment will be available suitably (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.) in sub-project site, the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight/make aware of the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. • Adequate quantities of drinking water will be available at all sites, on different locations within the site. • Ensure to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Contractor must ensure that all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used. • Establish emergency response procedures,		

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	including fire, accident, and medical emergencies. • Display emergency contact charts at site offices and work areas. • Maintain OHS incident reporting and accident logbooks. • Conduct regular toolbox meetings and refresher safety training for all workers.		
Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE. • Oil interceptors or drip trays can be used in vehicle parking areas, and are inspected and cleaned regularly;	Contractor	Environmental Consultant of PIU/D&SC, PSC
Operation Stage			
Maintenance of assets, properties and equipment	• Periodic maintenance of Bridge structure and seasonal conditions has to be carried out.	LGED	UNO, Upazila Chairman of Upazila Parishad
Decommissioning			
The impacts are similar to those listed in construction stage: • Pollution from waste materials • Health & Safety risks to workers and local	• Proper measures of mitigation and monitoring to minimize or reduce the environmental and social impacts during decommissioning are anticipated to be	Contractor	Environmental Consultant of PIU/D&SC, XEN of the respected district,

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
community	similar to those identified for the construction phase. Third party monitoring of air quality as well as on receiving land and water bodies, may be undertaken, if the condition of those compartments seems to be significantly worse.		PSC.

Demolition and Waste Management Plan:

Demolition Plan:

The purpose of this Demolition Plan is to ensure the safe, environmentally sound, and socially responsible removal of the existing dilapidated bridge structure prior to the construction of the proposed RCC Girder Bridge. The plan aims to prevent environmental pollution, ensure worker and community safety, and minimize disruption to local movement and livelihoods. The scope of demolition works includes the removal of the existing concrete deck slab and girders, dismantling of damaged abutments and substructures as required, extraction and segregation of reinforcement steel, and clearing of debris from the canal and adjacent approach areas. All demolition activities will be confined within the existing bridge footprint and right-of-way.

Demolition Phase	Demolition Technique	Methodology
Pre-Demolition phase	Structural Assessment & Method Statement	- Detailed structural assessment of the old bridge condition. - Identify weak sections, reinforcement exposure, and deterioration level. - Confirm load positions and dismantling sequence.
	Site Preparation	- Demarcation and barricading of the demolition zone. - Signboards, warning signs, and safety instructions in Bangla. - Installation of temporary crossing facilities (if needed), e.g.: Temporary wooden planks for pedestrians, - Alternate route notification for vehicles

	Utility and Service Disconnection	• Confirm absence of underground utilities. • Disconnect or reroute any drainage pipes, electricity poles, or telecom cables if nearby.
	Worker Safety Orientation	• Conduct safety training and toolbox meeting before demolition. • Ensure all workers receive PPE: helmets, gloves, safety boots, masks, goggles, life jackets (for water-edge work).
Demolition phase	Demolition Technique	• Manual and mechanical combination method to minimize vibration and protect nearby features. Steps include: • Removal of railings, parapet walls, and footpaths (manual). • Breaking RCC deck slab using small hydraulic breakers. • Cutting reinforcement bars using gas cutter. • Sequential removal of girders using crane or excavator. • Demolition of piers and abutments after girder removal. • Extraction of old piles (if required); otherwise, trim piles below ground level.
	Vibration & Noise Control	• Use low-vibration hydraulic breakers. • Avoid nighttime demolition. • Install temporary noise barriers near households.
	Water Protection Measures	• Silt traps placed near the canal edge. • Tarpaulin sheets under deck demolition to prevent debris falling into water. • Immediate collection of debris from any accidental drop.

Environmental Compliance	Dust & Air Quality Control	• Install temporary debris containment systems (e.g., netting or catch platforms) to prevent falling debris into the khal. • Avoid dumping any demolition waste into the canal. • Implement waste segregation at source (concrete, steel, other materials). • Reuse suitable concrete rubble as sub-base or backfilling material where technically feasible. • Transport non-reusable waste to an approved disposal site with authorization from LGED and the respective authority. • Apply water spraying to control dust during dismantling. • Prohibit washing of equipment directly in or near the khal.
	Oil, Fuel, Hazardous Material, and Waste Management	• Demolition waste includes: RCC debris, Steel rods, Brick/earth materials, Packaging waste • Waste Handling Measures: Segregate waste at source. • Recyclable steel rods sold to authorized recyclers. • Concrete debris reused as road sub-base (if suitable) or disposed of at LGED-approved disposal site. • Hazardous waste (oil, lubricants) stored in spill-proof containers and handed over to DoE-approved handlers. • Store fuels and lubricants in a designated area with secondary containment (bundled platform or drip trays). • Keep spill kits available at the site at all times. • Prohibit refueling or oil changing near the khal or ponds.
	Water Quality Protection	• Prevent concrete slurry, cement dust, oil, and debris from entering the canal. • Collect all water used in demolition activities in settling pits.

Occupational Health & Safety (OHS)	Worker Health and Safety	• Provide Personal Protective Equipment (PPE) such as helmets, gloves, masks, safety boots, and harnesses. • Ensure trained personnel handle cutting and dismantling works. • Conduct toolbox safety meetings before commencement of demolition. • Prohibit child labor and ensure compliance with national labor laws and WB standards.
Traffic and Community Management	Traffic Diversion	• Prepare temporary detour route with signage. • Coordinate with community and local leaders.
	Community Safety Measures	• Inform local residents 3-5 days before demolition. • Restrict community access near the demolition zone. • Provide alternative pedestrian routes as needed. • Install proper barricades and warning signage around the demolition zone.
Demolition Completion and Site Clearance		• Remove all debris from site. • Level the ground and prepare substructure area for new bridge foundation. • Restore access roads and pathways. • Conduct final environmental cleanup.

Waste Management Plan:

The Waste Segregation and Reuse Plan is to ensure environmentally sound management of construction and demolition waste generated during the dismantling of the existing bridge and construction of the proposed RCC bridge. The plan aims to minimize waste generation, promote reuse and recycling, prevent soil and water pollution, and ensure compliance with relevant regulations.

Waste Type	Source of Waste	Potential Impacts / Concerns	Management, Segregation & Reuse Measures	Institutional Responsibility	Supervision & Monitoring
Concrete debris and rubble	Demolition of existing bridge structure	Obstruction of drainage, soil and water pollution, visual nuisance	Segregate at source; crush and reuse as sub-base, embankment fill, or approach road material subject to LGED approval	Contractor	LGED PIU & D&SC Consultant
Steel reinforcement and metal scraps	Dismantling of old bridge and construction activities	Injury risk, improper disposal	Store separately; sell or hand over to authorized scrap dealers/recyclers	Contractor	LGED PIU & D&SC Consultant
Excavated soil and spoil	Foundation excavation and earthworks	Sedimentation of nearby canals, land degradation	Reuse for site leveling, slope protection, or embankment filling; excess disposed at approved sites	Contractor	D&SC Consultant
Packaging materials (cement bags, plastics, timber)	Construction material handling	Littering, clogging of drainage	Collect separately; reuse where possible; recycle or dispose of at approved facilities	Contractor	LGED PIU & D&SC Consultant
Domestic solid waste	Labor camps and work sites	Health hazards, vector breeding	Provide covered bins; daily collection; disposal at LGED/Local Authority approved sites	Contractor	PIU, D & SC Consultant & Local Authority
Used oil, grease, lubricants	Equipment maintenance and refueling	Soil and water contamination, fire hazard	Store in sealed containers with secondary containment; hand over to licensed recyclers; prohibit dumping	Contractor	LGED PIU & D&SC Consultant
Oil-contaminated rags and containers	Machinery operation and maintenance	Hazardous exposure, pollution	Collect in labeled containers; dispose through approved hazardous waste	Contractor	D&SC Consultant

			handlers		
Mixed non-recyclable waste	Construction activities	Environmental pollution	Transport to DoE/LGED-approved landfill sites; maintain disposal records	Contractor	LGED PIU & D&SC Consultant

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Appendix-3: Cost of Environmental Mitigation and Enhancement Works in BOQ

In consideration to the above-mentioned environmental and social impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

Sl no.	Description of item	Unit	Quantity/ Area	Unit price	Total amount
1	Erection and maintenance of semi-permanent site office and removal of the same after completion of work in accordance with the conditions of contract. In addition to the office required for own use, the contractor shall provide and maintain furnished site office for the use of Engineer-in-charge and his staff. The site office must have tiles floor, adequate foundation, brick walls, false ceiling of gypsum board and all windows are to be glazed, shuttered and provided with steel grill. Outside and inside wall surface are to be painted on plaster acceptable to the Engineer-in-charge. The site office shall be maintained in a secure condition by the contractor until the completion of the contract and shall be provided with electricity, water supply, wash rooms and sewerage facilities. All doors shall be fitted with approved locks and windows shall be provided with screen/blinds. Before construction the contractor shall submit plans and drawings showing proposed details and location for the site office, including foundations, access roads, shades, layout of electrical and water supply and hard standings there for the approval of Engineer-in-charge. The Engineer-in-charge may require revision of the plans prior to giving approval for construction. The contractor shall also submit detailed proposed furniture, fittings and other items of equipment and plant to the Engineer-in-charge for approval. These items shall be of the standard quality suitable for site. The office, complete with furnishings, fittings, access roads and hard standings shall be ready for occupation by the Engineer-in-charge within 28	job	1	535843	5,35,843.00

Sl no.	Description of item	Unit	Quantity/ Area	Unit price	Total amount
	days of the date when the contractor first occupies the site. The contractor shall provide day and night guards and an attendant for the field office. At the end of the contract all materials, equipment and plant, furniture, fittings recovered from dismantling the office and removing access road will be the property of the contractor. No interim payment shall be certified unless engineer's office with required facilities are constructed and accepted by the Engineer-in-charge. (This is a time related item; proportionate payment for this item shall be made distributing in each bill on the basis of percentage progress of the whole works under contract) Engineer's site office of minimum 38 sqm plinth area with providing necessary facilities including office furniture, 24000 BTU air cooler, umbrella, crockeries, water purifier, PC with monitor, uninterruptible power supply (UPS), laserjet printer (minimum 20 ppm), LED flood light fittings(Halogen) for sight security etc.				
2	Project Profile Signboard: Providing and fixing of typical project profile signboard as per direction of E-I-C, to be placed at a suitable place of the site including submission of proposals for the materials & size of the signboards (recommended size: 1800mm x 1200 mm with 2 nos. 75mm dia. MS post, outer & inner frames of board shall be 50mm x 50mm x 5mm & 25mm x 25mm x 5 mm respectively) and text layout to the engineer for approval which will be positioned as directed by the engineer and removing the same on completion of the works or as instructed by the E-I-C. Sheeting will be made of encapsulated lens with retro-reflective type and messages/ borders will be screen printed. The text shall mention among others the name of the project, name of the implementing agency, cost of the project, completion time, name of the contractor etc.	sqm	Length-1.8m Width 1.2m Area volume 2.160m ² No. of bridge 1 Total quantity of works 1*2.16m ² = 2.16m ² .	18508.52	39,978.40
3	Supplying and providing of first aid box with necessary materials/medicine (hygienic gown, thermometer, adhesive dressings, antiseptic solutions, bandages, cotton balls or swabs, emergency blanket, gloves, hand sanitizer,	each	2	17836	35,672.00

Sl no.	Description of item	Unit	Quantity/ Area	Unit price	Total amount
	ice pack, saline etc). All complete as per direction of Engineer-in - charge.				
4	Mobilization and cleaning site before commencing actual physical work and during contract period and demobilization after completion of the works under contract to be accepted by the Engineer-in-charge. This work shall also cover cleaning and clearing, cutting or filling, dressing the project area on and in the ground to an extent that all the events of works of the project can be executed smoothly in a working environment with a particular attention on safety and security in all respects, and to stockpile the end outcome to a place for disposal agreed by the Engineer-in-charge, where, payments are to be based on ground area determined by the Engineer-in-charge and be proportionate to the percentage progress of work under contract as a whole in all respects and approved by the Engineer-in-charge.	sqm	Length 20m width 10m Area 200m ² No of items per bridge 2. Total qty per bridge 200*2= 400m ² .	235.40	94,160.00
5	Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men.	each	2	14172.16	28,344.32
6	Marble Name Plate: Supplying, fitting and fixing 18mm thick marble Name plate including cost of materials, labour, form work, engraving neatly the approved Sample given by the engineer etc. complete as per drawings and direction of the Engineer-in-charge.	sqm	2	9343.42	18,686.84
7	Drinking Water Facilities: Providing continuous adequate drinking water supply at worksite and site office as well by installing necessary tube-well/s where applicable or any other means depending on local situation, also providing essential arrangement for storing drinking water by supplying portable best quality water tank equivalent to Gazi/Padma of adequate capacity depending on the number of users, including supplying 1 (one) no. best quality water filter of minimum capacity 30 liters with necessary kits, etc. all complete as per satisfaction and direction of the Engineer-in-charge,	Ls	1	20000	20,000.00

Sl no.	Description of item	Unit	Quantity/ Area	Unit price	Total amount
	all relevant goods and equipment under this item shall be property of the contractor and payment will be made after 100% completion of the contract successfully.				
8	Control of Air Pollution (Dust Suppression): Maintaining, carrying out proper and efficient measures wherever and as often as necessary to reduce dust nuisance, and to prevent dust which has originated from contractor's activities/ operations at the worksite and site office, including sprinkling water on aggregates/unpaved roads at least three times a day or more depending on the atmospheric conditions, including keeping necessary covering/protection on stockpiled fine aggregates to reduce dust nuisance during natural air blowing, all complete like emission of dust into the atmosphere shall be strictly controlled during manufacture, handling, storage of concrete, road aggregates, and to be used such methods and equipment as are necessary for collection and disposal, or prevention, of dust during these operations means of eliminating atmospheric discharges of dust as per requirement and carrying out air quality test as PM10, PM25, SPM, NOx, Sox as per instruction of Engineer-in-charge. Payment will be made after 100% completion of the contract successfully.	Ls	1	10000	10,000.00
9	Personal Protection Equipment for Workers: Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket for construction workers made of 100% polyester waterproof fabric, fluorescent yellow/orange/green/red/blue or pantone color, (ii) suitable hand protection gloves for construction work of Flexible/ durable/ excellent puncture resistance working gloves with PVC palm and T/C drill	Ls	1	250000	2,50,000.00

Sl no.	Description of item	Unit	Quantity/ Area	Unit price	Total amount
	back, pasted cuff, palm liner and fit properly and be reasonably comfortable to wear, (iii) appropriate foot protection shoes having impact-resistant toes and heat-resistant soles that will protect the feet against hot working surfaces, (iv) best quality safety helmets of ABS shell, tough, lightweight, durable which will be able to resist penetration by objects, absorb the shock of a blow and water-resistant and slow burning with available four-six-point adjustable suspension for shock-absorbing, slotted sides to accommodate accessories, such as face shields, ear muffs (v) suitable eye protection goggles to protect against specific workplace hazards, fit properly and be reasonably comfortable to wear, provide unrestricted vision and movement, including instructing workers to wear strictly during working time and reviewing periodically, updating, evaluating the effectiveness of PPE and maintaining, replacing worn or damaged PPE etc. all complete as per requirement and full satisfaction of Engineer-in-charge. Payment will be made after 100% completion of the contract successfully.				
10	Painting the vertical end faces of posts, wheel guard, railing, rail post, parapet wall, kilometer post, road name plate, guide post, traffic signs, etc. in two coats with best quality synthetic enamel paint of approved make and brand of different shades over a coat of priming, applying one vertical and one horizontal coat for each coat and successive coat is to be applied after drying up of previous coat by brush/roller/spray, including cleaning and washing the surface, rubbing and mending good damages as necessary and necessary scaffolding, etc. all complete in all respect as direction of the Engineer-in-charge. Rate is inclusive of cost of all materials, labour and all incidental charges in this connection. Two coats over a prime coat for new concrete surface.	sqm	289.31	246.38	1,36,016.54
Subtotal Bill: Environmental Safety and Enhancement Works					1168701.10

Appendix-04: Environmental and Social Monitoring Plan (ESMP Implementation and Monitoring Framework)

Environmental and social monitoring for the proposed sub-project has been incorporated into the Environmental and Social Management Framework (ESMF). The detailed Environmental and Social Monitoring Plan, including monitoring parameters, indicators, responsible institutions, the frequency of monitoring during the pre-construction, construction, and operation phases, and the reporting line, is presented here. A mid-term third-party environmental audit may be conducted during implementation to independently assess compliance with the ESMP and World Bank Environmental and Social Standards (ESS1–ESS10).

Monitoring stage	Monitoring Indicator	Method of Verification	Frequency	Responsibility	Reporting Line
1. Monitoring During Pre-Construction Phase	Site-specific ESMP approved before mobilization	Approved ESMP document	Once (Before mobilization)	PIU	PIU → PSC → WB
	Baseline environmental condition (visual record, nearby water condition) documented	Baseline checklist & photos	Once	Contractor (verified by D&SC)	Contractor → D&SC → PIU
	Appointment of EHS Supervisor	Appointment letter	Once	Contractor	Contractor → D&SC
	OHS Plan, Emergency Response Plan (ERP) prepared	Approved plan copies	Once	Contractor	Contractor → D&SC → PIU
	Waste Management Plan prepared	Approved WMP	Once	Contractor	Contractor → D&SC
	Traffic Management Plan prepared	Approved TMP	Once	Contractor	Contractor → D&SC
	ESMP summary disclosed in Bengali at Union Parishad & site	Disclosure photos & record	Once before works	PIU	PIU → WB
2. Monitoring During Construction Phase	A. Environmental Monitoring				
	Indicator	Standard / Target	Monitoring Frequency	Responsibility	Reporting Line
	General ESMP compliance (%)	100% compliance	Weekly	D&SC	D&SC → PIU
	PM10 / Dust control	No visible excessive dust; water	Daily visual; weekly record	Contractor	Contractor → D&SC

		sprinkling ≥2 times/day			
	Noise Level	Within DoE standard (Daytime ≤ 75 dB(A) for commercial/mixed areas)	Monthly or during piling	Contractor (verified by D&SC)	Contractor → D&SC → PIU
	pH of discharge water	6.5–8.5	Monthly (if water discharge occurs)	Contractor	Contractor → D&SC
	TSS in runoff	Within DoE surface water standard	Monthly (during piling/concreting)	Contractor	Contractor → D&SC
	Installation of silt traps & bunds	100% installed where required	Weekly inspection	D&SC	D&SC → PIU
	Oil & lubricant storage with secondary containment	100% compliance	Weekly	D&SC	D&SC → PIU
	Construction waste segregated & disposed at approved site	Disposal records maintained	Weekly	Contractor	Contractor → D&SC
	Obstruction of canal flow	No blockage observed	Weekly	D&SC	D&SC → PIU
	Bird disturbance (if observed Nov–Feb)	No active piling during high congregation	Seasonal (Nov–Feb)	D&SC	D&SC → PIU
B. Occupational Health & Safety Monitoring					
	Indicator	Target	Frequency	Responsibility	Reporting Line
	Workers provided PPE	100% PPE use	Daily	Contractor	Contractor → D&SC
	Toolbox meetings conducted	At least 1/week	Weekly	Contractor	Contractor → D&SC
	OHS incident reporting	100% incidents recorded within 24 hrs	As needed	Contractor	Contractor → D&SC → PIU
	First-aid station functional	Fully equipped	Weekly inspection	D&SC	D&SC → PIU

	Labor camp sanitation & hygiene	Clean, adequate toilets & waste bins	Weekly	D&SC	D&SC → PIU
	No child or forced labor	Zero tolerance	Monthly verification	PIU	PIU → WB
	C. Community Health & Safety Monitoring				
	Indicator	Target	Frequency	Responsibility	Reporting Line
	Site barricading & signage installed	100% coverage	Weekly	D&SC	D&SC → PIU
	Safe pedestrian diversion pathway	Functional & safe	Weekly	D&SC	D&SC → PIU
	Traffic management implementation	No major accident	Weekly	D&SC	D&SC → PIU
	Spill incidents affecting canal/agri land	Zero major spill	Continuous	Contractor	Contractor → D&SC
	D. Stakeholder & GRM Monitoring				
	Indicator	Target	Frequency	Responsibility	Reporting Line
	GRM register maintained	Updated regularly	Monthly review	PIU	PIU → PSC
	Grievances resolved within timeline	10–15 days (as per tier)	Monthly tracking	PIU	PIU → WB
	Community consultation during construction	At least 1 meeting/quarter	Quarterly	PIU	PIU → WB
3. Post-Construction / Operation Phase Monitoring	Indicator	Target	Frequency	Responsibility	
	Site restoration completed	100% cleared & restored	Once after completion	D&SC	
	Waste cleared from site	No residual debris	Once	D&SC	
	Bridge safety features (railings, guideposts, signage) installed	100% installed	Once before handover	D&SC	
	Canal flow unobstructed	No blockage	Once after completion	PIU	
	Final community feedback	Documented	Once before closure	PIU	

Reporting Hierarchy: Contractor → D&SC → PIU (LGED) → World Bank

The D&SC will prepare a Monthly report on Environmental and Social Compliance and submit it to the PIU. The PIU will review and transmit the Monthly Environmental and Social Compliance Report to the World Bank as part of the project's regular safeguard reporting obligations.



Government of The People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Co-operatives
Local Government Engineering Department (LGED)

Host and FDMN Enhancement of Lives through
Infrastructure Improvement Project (HELP)



ENVIRONMENTAL AND SOCIAL SCREENING REPORT

Of the Sub-project:

Construction of 56.00m RCC Girder Bridge on Char Ishwer Kazir Bazar to Jahajmara Katakhal road Via Wapda Bari road at Ch: 5150m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364081)

Under the Package No. **HELP-NOA/BR-1**

Funded by:



Government of the People's Republic of Bangladesh & World Bank

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ACRONYMS

BOQ	Bill of Quantities
BPDB	Bangladesh Power Development Board
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
DPHE	Department of Public Health Engineering
EA	Environmental Assessment
EC	Electrical Conductivity
E-I-C	Engineer-in-Charge
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESF	Environmental and Social Framework
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standards
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
HBB	Herring Bone Bond
HELP	Host and FDMN Enhancement of Lives through Infrastructure Improvement Project
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
MPSC	Multi-purpose Community and Service Center
MoLGRD&C	Ministry of Local Government, Rural Development and Cooperatives
MoRTB	Ministry of Road Transport and Bridges
MoPEMR	Ministry of Power, Energy and Mineral Resources
NDRCC	National Disaster Response Coordination Center
OHS	Occupational Health and Safety
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Pre-Stressed Concrete
PSC	Project Steering Committee
RCC	Reinforced Cement Concrete
RHD	Roads and Highways Department
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Bank

1. INTRODUCTION

1.1 Project Background

Since 2017, Bangladesh has been hosting nearly one million Displaced Rohingya Population (DRP) who fled violence in Myanmar. Most of this population resides in 33 densely populated camps in Ukhiya and Teknaf upazilas of Cox's Bazar district. At the same time, approximately 30,000 have been voluntarily relocated to Bhasan Char, an isolated island in Noakhali District. This unprecedented humanitarian influx has placed immense pressure on the host communities, infrastructure, essential services, and the surrounding environment in a region already characterized by socio-economic vulnerabilities.

The FDMNs now outnumber host populations in affected areas by a ratio of approximately 2:1, contributing to crowding in local markets, overburdening social service systems, escalating environmental degradation, and heightening risks during disasters. In response to these complex challenges, the Government of Bangladesh (GoB), with support from the World Bank has initiated the Host and FDMN Enhancement of Lives through Infrastructure Improvement Project (**HELP**). The project aims to improve access to basic services and enhance disaster and climate resilience of DRP (Displaced Rohingya Population) and host communities. HELP builds on lessons learned from the ongoing **Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) and its additional financing**, which have been supporting emergency response, resilient infrastructure and institutional strengthening in Cox's Bazar since 2019.

HELP proposes a multi-sectoral development approach focusing on critical needs such as water supply, sanitation, renewable energy, shelter upgrades, solid and fecal waste management and the improvement of road connectivity. The project also emphasizes disaster risk reduction, climate-resilient infrastructure, and institutional capacity building. It targets the high-priority gaps identified through annual needs assessments and field consultations, with particular attention to vulnerable groups including female-headed households, persons with disabilities, and those residing in disaster-prone areas.

The project scope encompasses a range of integrated infrastructure interventions aimed at improving resilience, accessibility, and service delivery for both the DRP and host communities. Key activities include the construction of new multi-purpose disaster shelters to provide enhanced protection during natural calamities, as well as the improvement and repair of existing shelters to ensure they meet disaster-resilience standards. The project also involves the development of road communication infrastructure, including the construction and rehabilitation of roads, bridges, and culverts to improve connectivity and access to essential services. In addition, various community-level facilities will be developed or upgraded, such as internal roads, drainage systems, hat-bazar (local markets), footpaths, firefighting systems, lightning protection devices, and solar-powered street lighting contributing to safer and more inclusive living environments.

The project is jointly implemented by four government agencies LGED, DPHE, RHD, and BPDB under the Ministry of Local Government, Rural Development and Cooperatives (MoLGRD&C), the Ministry of Road Transport and Bridges (MoRTB), and the Ministry of Power, Energy and Mineral Resources (MoPEMR). The project comprises four components, covering resilient water and sanitation services, climate-resilient infrastructure and energy, institutional capacity strengthening, and emergency

response. Under Component 2, LGED is undertaking key infrastructure development including rural roads and bridges to ensure improved connectivity and disaster preparedness.

The objective of the Project is to improve access to basic services and enhance disaster and climate resilience of the the FDMN and host communities through:

- Supporting improved access to basic services, climate-resilient infrastructure, and disaster and emergency response services;
- Improving Road interventions for essay access to essential services;
- Reducing vulnerability to accidental fire;
- Strengthening disaster preparedness and response through construction of multipurpose disaster shelters, provision of key equipment, and disaster risk management trainings at the community level;
- Improving Renewable and sustainable energy infrastructure in camps and for host community;
- Strengthening the GoB's capacity to provide essential services and address the needs of the host communities and the DRP, including risks to disasters and climate change;
- Reducing poverty in the project area

This Environmental and Social Screening Report has been prepared to assess potential environmental and social risks and impacts associated with the proposed interventions for constructing a bridge at Hatia Upazila of Noakhali District under HELP. It provides a preliminary evaluation of the biophysical and socio-economic settings of the project areas and identifies key issues that require special consideration or mitigation. The report serves as a guiding tool for environmentally and socially sound project implementation in compliance with national regulations and the World Bank Environmental and Social Framework (ESF).

1.2 Rationale of Site Selection for bridge under the project

LGED is responsible for development and management of local infrastructure including rural roads, bridges, culverts, waterways, markets, river jetties and others in order to contributing to socioeconomic development of the rural community and overall reducing poverty in the country. It is also developing, maintaining and managing transport, trading and small-scale water resources infrastructure at the local level with ensuring LGI and community participation and taking care of environmental and social issues. In 2013, Government of Bangladesh (GoB) has adopted a Rural Roads and Bridges Maintenance Policy with an objective to develop a sustainable rural transport system through appropriate maintenance management to provide safe operation of vehicles and to ensure necessary funding for their maintenance establishing a comprehensive and reliable inventory of roads, bridges and culverts across the country.

The onsite investigation confirms the presence of an existing old and deteriorated bridge at the proposed location over the Surjomukhi Khal. The existing structure has become functionally inadequate and structurally distressed, posing safety risks to pedestrians, light vehicles, and goods-carrying traffic. Its poor condition hampers smooth movement and disrupts daily connectivity for surrounding communities, thereby adversely affecting local livelihoods and access to essential services.

The local economy in the catchment area is primarily dependent on fishing, agriculture, small-scale trading, and market-based activities, particularly those linked to Surjomukhi Bazar and adjacent ghats. These livelihood activities require reliable, climate-resilient, and all-weather transportation infrastructure to ensure safe movement of people and timely transportation of goods to nearby markets, landing points, and service centers. People living in and across the areas also need to have access to nearby educational, health, employment and other services, which for this proposed bridge would act as a lifeline for the entire community

As the project is intended to strengthen the Government of Bangladesh systems to improve access to basic services and climate-resilient infrastructure of the host communities, constructing a bridge at the proposed point would resuscitate the communication, trade and service delivery system between Burir Char union and other parts of the Hatiya Upazila, which has been at risk now with the use of the dilapidated existing bridge structure.

The approach of this project also includes undertaking design, construction, rehabilitation or expansion of rural bridges in phases based on site-specific requirement and availability and allocation of resources. Accordingly, the proposed site for **Construction of 56.00m RCC Girder Bridge on Char Ishwer Kazir Bazar to Jahajmara Katakali road Via Wapda Bari road at Ch: 5150m** is required to be implemented in order to remove the existing barrier (e.g., presence of Khal/river on this point) to the local communication system and service delivery through this specific place, and expedite the socioeconomic activities in/around the place.

Project activities will largely be on existing available lands, preferably of government owned.

1.3 Background of the Work Package

HELP (Host and FDMN Enhancement of Lives through Infrastructure Improvement Project) is a World Bank-supported project that aims to assist the Government of Bangladesh in responding to the continued humanitarian and development challenges posed by the presence of the Forcibly Displaced Myanmar Nationals (FDMNs) and their impact on host communities. The project seeks to improve access to basic services, and enhance disaster and climate resilience in both Cox's Bazar and Noakhali district.

The Hatiya Upazila faces persistent development challenges common to remote coastal regions. The local host communities experience constraints related to inadequate road connectivity, limited access to markets and essential services, and high vulnerability to natural hazards such as flooding, tidal surges, and cyclones. Seasonal inundation and poor crossing facilities over local canals further restrict mobility, particularly during the monsoon period, affecting daily commuting, emergency response, and economic activities. In response to these challenges, the HELP Project focuses on strengthening resilient and inclusive infrastructure that directly benefits the local population. The proposed bridge under this sub-project is intended to improve year-round connectivity, enhance access to services and livelihoods, and reduce disaster-related risks for communities in Sunner Char and surrounding villages of Burir Char Union, Hatiya Upazila.

Under this specific work package of the HELP project, four (4) bridges are planned to be constructed across three different union of Hatia Upazila- Charking, Burirchar and Chanondi. These bridges aim to strengthen the rural road communication network by improving access to essential services such as health, education, markets, and disaster shelters. The improved infrastructure is expected to support both the mobility of the local communities and the efficiency of service delivery, especially in remote or underserved areas of the district. This report focuses specifically on the Construction of 56.00m RCC Girder Bridge on Char Ishwer Kazir Bazar to Jahajmara Katakhal road Via Wapda Bari road at Ch: 5150m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364081). The bridge will replace an existing structurally weak bridge that has been heavily affected by long-term usage. Once implemented, the sub-project is expected to substantially improve local and regional connectivity by ensuring safe and reliable movement of people, vehicles, and goods. The improved bridge infrastructure will facilitate access to nearby markets, ghats, educational and health facilities, and support key livelihood activities such as fishing, agriculture, and small-scale trade. In addition, the proposed bridge will enhance the resilience of surrounding communities by maintaining year-round connectivity during adverse weather conditions, including monsoon flooding and tidal influences.

The catchment area of this sub-project is predominantly inhabited by local community members, particularly from the surrounding villages of North Rehanian, Sunner char, South Rehanian, Moddham Rehanian in Sunner Char Union of Hatia Upazila, Noakhali District. Although the broader Noakhali district continues to experience the impacts of the ongoing displacement crisis, the selected location for this bridge has been prioritized based on field-level needs assessments, community consultations, and its strategic importance for improving local accessibility, enhancing disaster resilience, and supporting economic activities especially those related to fishing, agriculture, and small-scale trade.

The objective of this Environmental and Social Screening Report is to evaluate the environmental and social settings of the proposed bridge construction site under this work package, identify potential impacts both positive and adverse and recommend appropriate mitigation, enhancement, and management measures. This screening ensures that all interventions align with national regulatory requirements and the World Bank's Environmental and Social Framework (ESF), while promoting environmentally sustainable and socially inclusive development.

1.4 Fundamentals of Work Package Components

It is crucial to acknowledge the proposed infrastructure component under Work Package- HELP-NOA/BR-1 in order to conduct an effective screening and verification process aligned with the World Bank's Environmental and Social Framework (ESF) as well as the project's Environmental and Social Management Framework (ESMF). Accordingly, detailed information of the proposed sub-project under this package has been outlined in Table 1.4.1, with a location-specific overview map of Hatia Upazila presented in Figure 1.4.1.

The proposed sub-project will follow standardized construction features and safety protocols, including but not limited to:

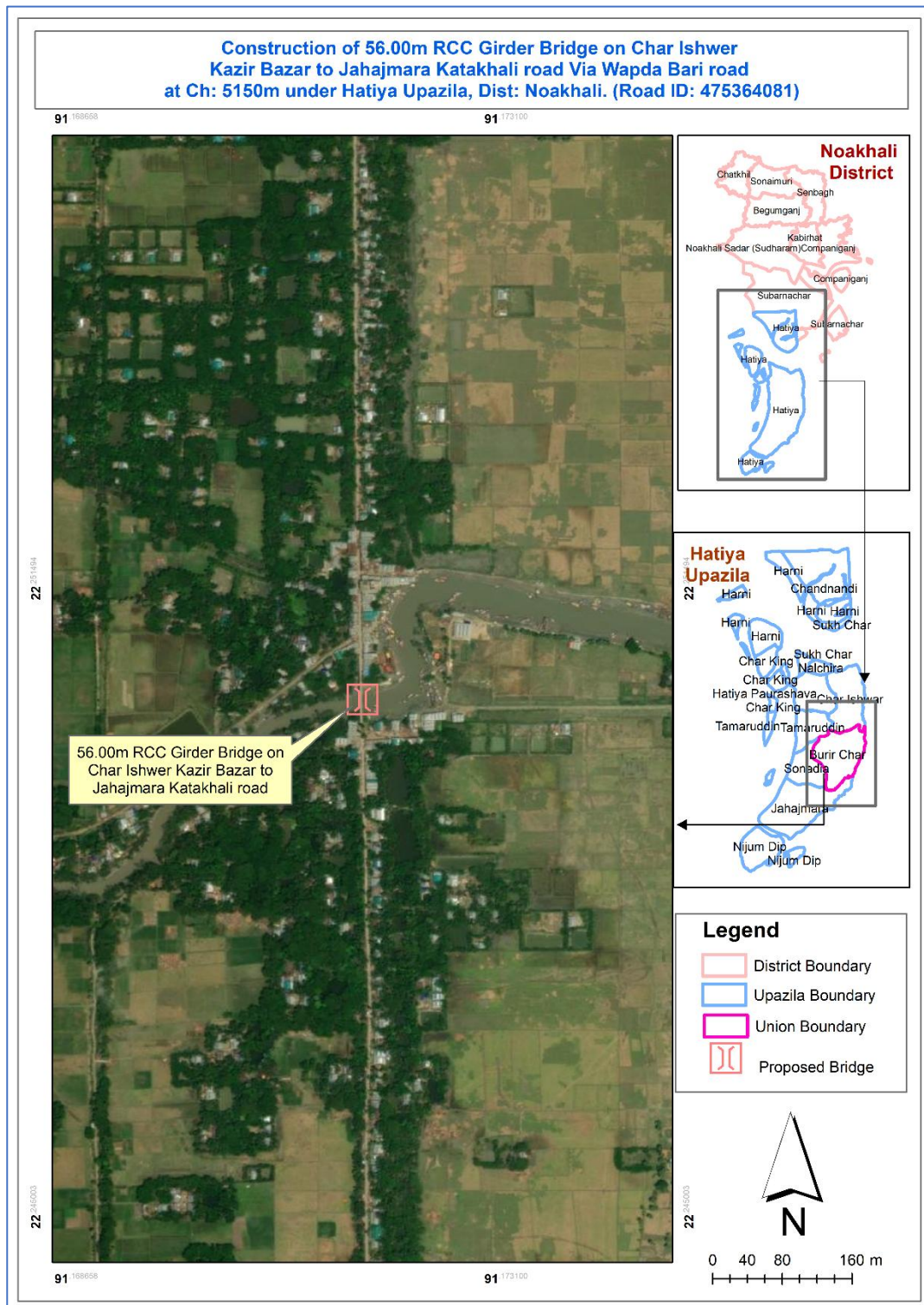
1. Construction of a Semi-Pucca Field Office, fully equipped with essential office furniture, computers with printing equipment, sanitary and electrical facilities, water supply arrangements and necessary tools and equipment for engineering supervision. The site office will ensure heat resistance, damp-proofing, and proper ventilation as directed by the Engineer-in-Charge (E-I-C).

2. Installation of Temporary Diversion Bridge (2m wide bamboo structure) as directed by the Engineer-in-Charge (E-I-C) to maintain uninterrupted movement for local communities during construction activities, ensuring minimal disruption to daily life.
3. Full Construction of Bridge Structures including foundation, substructure, and superstructure as per the approved design and technical drawings, along with all related fittings and fixtures.
4. Provision and Installation of Safety Features, such as painted vertical end faces of posts, wheel guards, railing systems, parapet walls, bilingual nameplates (in Bengali and English), guideposts, traffic signage, and kilometer markers.
5. Backfilling Behind Abutments and Retaining Structures with selected granular material, followed by proper compaction using approved machinery like plate compactors.
6. Construction of Approach Roads on both ends of the bridge, ensuring connectivity in compliance with LGED specifications and site conditions.
7. Placement of RCC Guideposts (1.70m long), positioned as per standard drawings and safety regulations.
8. Health, Safety, and Environmental Safeguards, including maintaining first-aid boxes at site and office, displaying safety notices, deploying environmental and social safeguard personnel for continuous monitoring, implementing dust suppression through water sprinkling, erecting health and safety signage, and organizing two rounds of safety and ESHS training for Upazila Engineers and Contractors before and after commencement of works.

Table 1.4.1: Basic Featured Information of component [Sources of data: Field survey, 2025, LGED]

Sl o.	Component's name	Upazila	Union	Distance from Upazila HQ	Primary Catchment area	Name of the river/ canal	Prop osed lengt h (m)	Carri age Widt h (m)	Estimat ed Footpri nt (Sqm)	GPS coordinat e	Constru ction Period
1	Construction of 56.00m RCC Girder Bridge on Char Ishwer Kazir Bazar to Jahajmara Katakhal road Via Wapda Bari road at Ch: 5150m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364081).	Hatia	Sunne r Char	8km	Catchment villages are North Rehanian, Sunner char, South Rehanian, Moddhom Rehanian	Surjom ukhi Khal	56	7.3	408.8	22.25025 1, 91.17161 4	2 years

Though the bridge was initially planned to be 60 m in length, after detailed survey in the area the length has been replanned to 56 m. Therefore, the total footprint area for the bridge is 408.8 sq.m.



2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology and Approach

Public participation and community consultation have been taken up as an integral part of environmental and social assessment process of the project. As part of the impact assessment, participatory public consultation was conducted in areas of concern for proposed bridges by the field level staffs and consultants from PIU. The consultation meeting was attended by different social groups representing local inhabitants of different age groups, social class and occupations. Among the participants, some will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases. In order to serve our screening process, relevant items placed towards the audience to discuss and troubleshoot confusing or worrying matters regarding the proposed interventions under the package work. Impacts in regards to environment, socio-economic matters during pre-construction, construction and post construction phases and the provision for project Grievance Redress Mechanism along with its applicability have been put forth. Possible mitigation measures and relevant needs have turned out during these sessions as well. Moreover, their comprehension as a stakeholder has been up lifted in light of project guidelines.



However, public consultation is a living process as the types of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution processes are more likely to differ with time. Thus, consultation with different parties or stakeholders will be continued throughout the sub-projects' implementation period and records of resolutions, whatsoever and wherever possible, will be kept in writing at the site and made available on any enquiries or requests by all parties concerned.

2.2 Issues and Recommendations raised by the Participants in regards to component interventions

After facilitating the consultation sessions with a warm and informed manner at Surjomukhi bazar near the proposed site, the participants and stakeholders drifted delightfully with the sessions and pointed out many which have been taken into account for further inclusion in design, estimation and formulation of ESMP. During the period of consultation, environmental and social issues and their relevant impacts for the infrastructure development work such as bridge improvement or maintenance were discussed. The advantages and possible nuisance that may emerge during the sub-project activities were also revealed. The participants expected that none of the interventions would worsen their living conditions, social cohesion surrounding environment and they requested

for adopting all measures to reduce/avoid both environmental and social risks during the implementation phase. Participants were also informed of the structure and redressing procedure under project Grievance Redress Mechanism (GRM).

Table 2.2.1: Consultation Meetings Summary

Meeting No.	Date	Venue	Main Participant Groups	No. of Participants	Remarks (If any)
1.	26 November, 2025	Surjomukhi Bazar	Host Community	21	Discussions focused on the importance of the bridge for local accessibility and safety. Participants emphasized the urgent need for a new bridge due to the deteriorated condition of the existing one.

Note: Here, Meeting number column corresponds with Serial Number column in Table 2.2.2

Some key issues discussed during the consultation are summarized in the table (Table 2.2.2) below, reflecting participants' inputs relevant to the specific components of the proposed intervention. The consultation meeting summary, attendance sheet, and photographs from the meeting held at Surjomukhi bazar near the proposed site are provided in Table 2.2.1, Annexure-01, and Annexure-02, respectively.

Table 2.2.2: Issues and Recommendations raised by the Participants

Sl. No.	Component's name under HELP-NOA/BR-1	Issues raised and discussed	Recommendations and Comments
1.	Construction of 56.00m RCC Girder Bridge on Char Ishwer Kazir Bazar to Jahajmara Katakhal road Via Wapda Bari road at Ch: 5150m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364081).	•They are very much concerned with absence of reliable path route over the Dhara Khal. •Existing RCC Bridge is old, structurally weak, and prone to accidents. •The existing RCC bridge is a critical infrastructure asset that significantly supports the local population's livelihood and economic well-being. It is particularly vital for fishing, agriculture, and small-scale trade, as it facilitates and governs nearly all of their economic activities. •Lack of accessibility in case of emergency exits. •They cannot carry the dead on this (existing) weak structure in times of grief •Heavy vehicle movement and long-term use have accelerated the deterioration of the existing	•Representatives participating in the discussions assured the local people that the dilapidated RCC bridge will be replaced by a longer and stronger bridge structure, which will strongly support local life and livelihoods and increase connectivity and accessibility to various services and amenities. •The bridge has been planned to redesign to change its length and width so that non-motorized vehicles can easily use the structure due to the smooth slope, and accessibility under the structure remains Uninterrupted. •The bridge design should consider highest water level thereby ensuring it is not submerging or affected by mass water flow during rainy seasons. Appropriate diversion should be placed during the construction period as alternative pathway. •The bridge should use corrosion-resistant materials and protective coatings suitable for saline environments. •The participants have expressed their greater interest in this intervention and believe this will surely bring security and prosperity for the entire catchment dwellers.

Sl. No.	Component's name under HELP-NOA/BR-1	Issues raised and discussed	Recommendations and Comments
		bridge, affecting safety and durability. •Possible dust and noise pollution during the construction works. •Safety of children and adults at the sites during construction works. Involving local people as a priority in implementation works as far as possible. •Local community wish to have a better drainage system along with the Bridge in order to allow waters from high grounds to find an uninterrupted pathway, not causing weak establishment to wash away. Moreover, from a conservation stand point, it will protect the top soil for future growth. •The construction work will include dismantling the current RCC bridge in order to make space for the new RCC Grider Bridge. •Participants recommended the construction of a durable RCC bridge with proper drainage and design standards to withstand heavy traffic and reduce future structural damage, along with regular maintenance after completion.	•Construction site safety should be ensured to avoid any mishaps or accidents during the working periods. •They considered small lumbering and suggested tree plantation initiatives. • local community will be given preference in engaging to construction works; however, technical labors will be welcome outside the local area. Priority for jobs should also consider women. • Alternate pathway should be facilitated during the construction near or around existing structure. •Since the bridge is on running canal (Surjomukhi Khal), the intervention will invite water pollution on moderate level. However, preventive actions and measures should be taken to keep the surface water quality from degrading more than it is. •Participants, made certain that they will provide surveillance over raw materials and material storage area. •They have also ascertained that the selected site is free from any events related to resettlement and major environmental impacts. The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be of short duration, yet proper management/conservative options should be adopted. • Proper drainage system will be embedded with the bridge as well as the bridge-approach. • Dismantling of bridge will be undertaken with optimum caution and care to avoid any potential risk to the people and resources. • They also requested regular maintenance of approach roads and bridge surface to ensure durability. •They also suggested to include dedicated pedestrian walkway and strong side railings for enhanced safety.

3. ENVIRONMENTAL AND SOCIAL SURVEY AND SCREENING

3.1. Objective of the Survey and Screening

The primary purpose of the survey and screening is to identify potential risks and impacts associated with the sub-project, assess their significance, and propose appropriate mitigation and management measures to ensure compliance with the ESF along with the project ES compliance documents. The screening process also considers the cumulative and residual impacts of the intervention within the context of the local physical, biological, and socio-economic environment.

To achieve a comprehensive understanding of the environmental and social baseline and the possible implications of the proposed works, detailed field investigations were carried out for the sub-project site within the Project Influence Area (PIA). The screening process included direct observation, stakeholder consultations and the use of the Environmental and Social Screening Format (ESSF), aligned with the Environmental and Social Management Framework (ESMF) developed for the HELP project.

Screening results, impact identification, and mitigation guidance have been summarized and compiled in **Appendix-1**, with site-specific details and supporting documentation. This integrated approach ensures early identification of risks and supports the development of appropriate mitigation and enhancement measures for sustainable project implementation.

The subsequent sections outline the survey findings including important features and establishment within the PIA, along with potential environmental and social impacts that may arise due to the proposed sub-project interventions within a half-kilometer radial distance around the project site. This Environmental and Social Screening has been conducted in accordance with the requirements of the World Bank's Environmental and Social Framework (ESF), particularly focusing on the relevant Environmental and Social Standards (ESSs).

3.2 Important features/establishments around the PIA

The proposed bridge sub-project has undergone a thorough review to identify Environmental and Social resources and baseline conditions, potential environmental and socio-economic risks that may arise during construction and future operation. To accurately assess these concerns, a Project Influence Area (PIA) with a 0.5-kilometer radius surrounding the bridge site was considered during the screening process. Each issue was evaluated on a case-by-case basis without generalization, ensuring site-specific factors were properly addressed. Sensitive environmental and social findings, if any, were carefully noted, and appropriate mitigation or minimization measures were recommended to manage these risks throughout the project lifecycle. In addition, opportunities for enhancing both environmental and social conditions, as well as incorporating monitoring initiatives, have been outlined and integrated into the Environmental and Social Management Plan (ESMP) and its corresponding budget. The contractor's role in addressing identified impacts has been clearly defined, and all assessments and proposed interventions were conducted in full compliance with the Environmental and Social Management Framework (ESMF) of the HELP project.

Initial screening process is conducted through direct involvement of PIU in the influence area of the proposed component, which allows to raise significant questions and ideas towards participants. In combination of both field walk-through and inputs of audience, a register of existing features is formed. The following table describes the important features under Project Influence Area.

Additional spatial understanding is supported through a hand-sketched map provided in Appendix-01.

Table 3.2.1: Important features under Project Influence Area

Sl. No.	Component's name	Direction	Important features/ establishment (approx. distance from the proposed site)
1.	Construction of 56.00m RCC Girder Bridge on Char Ishwer Kazir Bazar to Jahajmara Katakhal road Via Wapda Bari road at Ch: 5150m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364081).	North	Surjomukhi Bazar (30m), Haji Samshul Haque Talimul Quran Madrasa (80m), Pond (100m), Pond (100m Northeast), Graveyard (150m)
		South	Haji Nurullah jame mosque (50m), Aska bazar (40m), Pond (100m Southwest), Pond (80m), Graveyard (100m), Household (100m)
		East	Aska bazar Ghat (40m), Household (140m), Pond (100m)
		West	Agriculture field (80m)

Field Survey, 2025

3.3 Major Findings

The Environmental and Social Screening has revealed an integrated overview of site-specific environmental and social conditions of the proposed sub-project. These findings offer valuable insight into the interaction between the sub-project components and their surrounding biophysical and socio-economic settings. While many sub-projects are found to be aligned with the characteristics of their respective locations, the nature, magnitude, and extent of impacts vary based on topography, ecological sensitivity, surrounding land use, and community dependency.

The analysis confirms that while some impacts such as temporary disruptions during construction, generation of noise and dust, and minor vegetation clearance are commonly anticipated, several site-specific concerns were identified for the proposed 56.00m RCC Girder Bridge on Char Ishwer Kazir Bazar to Jahajmara Katakhal road Via Wapda Bari road at Ch: 5150m. These include the proximity of the site to fishing activities, surrounding agricultural land, small-scale trade centers such as Surjomukhi Bazar, and the Surjomukhi Khal, all of which support local livelihoods and require careful management during construction to avoid temporary disruption. Furthermore, social vulnerabilities were noted, including community access requirements, safety of pedestrians during construction and potential short-term impacts on market access and daily movement.

The screening has also identified both direct and indirect risks that may arise if not appropriately mitigated. Findings indicate that with suitable mitigation measures as proposed in the ESMF and site-specific Environmental and Social Management Plans (ESMPs) most risks are manageable under ESS1 (Assessment and Management of Environmental and Social Risks and Impacts), and relevant associated standards such as ESS4 (Community Health and Safety), ESS2 (Labor and Working Conditions), and ESS10 (Stakeholder Engagement and Information Disclosure).

A summary of the significant environmental and social issues identified during the screening process, along with associated potential impacts, is presented in Table 3.3.1. These findings provide critical input for developing context-specific mitigation strategies and highlight areas requiring enhanced monitoring and community engagement during project implementation. None of the activities fall in the E&S exclusion list attached to the project ESMF.

Table 3.3.1: Concerning environmental and social issues relating to each proposed subproject and influence area

	Key Environmental & Social Findings	Anticipated Impacts / Concerns
ESS1: Assessment and Management of Environmental and Social Risks and Impacts	The proposed site is not located within any ecologically critical or environmentally sensitive area. However, the Surjomukhi Khal flows directly beneath the proposed bridge alignment and represents the notable surface water feature within the project area. Surrounding land use is predominantly rural in nature, consisting of agricultural land, small shops, bazar, ponds, and scattered households, with no critical habitats identified within the immediate project influence area.	Will not cause any severe negative effects to the area's environmental settings, nor to important ecological features.
	The proposed sub-project targets an existing old concrete bridge over the Surjomukhi canal, which has deteriorated over time due to prolonged use.	Replacing a concrete bridge with an identical one at the same location necessitates the removal of the existing bridge, which may result in waste production, harm water quality and minor air pollution due to dust and airborne particles less than PM ₁₀ .
	Environmental and social screening conducted; moderate risks identified.	Manageable with appropriate mitigation measures.
	Heavy vehicular movement and future construction activities may cause air, noise, and water pollution.	Construction and demolition activities may lead to localized dust, air pollution, and runoff contamination; these impacts are short-term, site specific and can be effectively managed through water sprinkling, dust control, noise barriers and proper site drainage.
	No fish farming activities or ecologically sensitive habitats were identified within the immediate vicinity of the proposed bridge site. Vegetation coverage in the surrounding area is limited and mainly consists of scattered trees, roadside vegetation, and homestead greenery. The adjacent land use is predominantly characterized by agricultural fields, local bazar areas, ponds, mosques, madrasas, and nearby residential households. These features play an important role in supporting local livelihoods, social interaction, and daily community activities. Therefore require careful management during construction to avoid temporary disturbance or environmental nuisance.	Will not cause any severe negative effects to the environmental settings of the area nor important environmental features. Air and noise pollution may occur during the construction period due to construction activities and the transportation of materials. In some cases, accidents may happen due to unauthorized entry into the construction site. These impacts are short-term, site-specific, and within a small scale and manageable by mitigation measures.
	Construction activities and the establishment of labor camps, along with associated facilities and services, may lead to adverse environmental and social impacts if not properly managed.	Noise pollution from piling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge (in labor camp), will more likely to take place. Strain on local resources such as water, sanitation and electricity. Health and hygiene risk due to overcrowding or poor camp management. Social tension with nearby communities may arise if laborers' behavior or camp facilities are not adequately supervised.

	Earth excavation work will be involved during the piling.	Consequently, air, noise and dust pollution will be occurred within a small-scale during the construction period only.
	Chemical spills or improper disposal of construction waste materials due to lack of workers' training and misconduct of contractor's safety initiatives. Kitchen and labor camp waste may be generated during construction period.	Soil and water can be further eroded and polluted.
	Vibration effects generated from piling, drilling, or other construction works	May trigger harmful disturbances to local faunal species.
	A functional Grievance Redress Mechanism (GRM) must be in place to ensure community feedback, transparency, and accountability in managing environmental and social risks during project implementation.	Lack of an effective GRM may lead to unresolved community complaints, misinformation, reduced stakeholder trust, and potential conflict or resistance during project implementation. However, the project's three-level GRM structure comprising Local, Project, and Ministry-level committees offers a systematic approach to resolve such issues in a timely, transparent, and inclusive manner.
ESS2: Labor and Working Conditions	Local workers may be hired; labor influx is not anticipated. No child or forced labor permitted.	Low risk of labor-community tension or burden on local infrastructure; reduced potential for social conflict.
	OHS risks during pile-driving and construction works.	Injury risk for laborers.
	Safe working conditions, personal protective equipment (PPE), and sanitation facilities must be ensured at site.	Risk of injury or health hazards if workers lack PPE or safety supervision. Potential spread of illness if hygiene and sanitation facilities are inadequate.
	Risk of accidents during demolition of old structure or pile-driving and construction phase; proper training and labor code compliance are required.	Risk of falls, tool-related injuries, or exposure to noise and dust without safety training. Possibility of non-compliance with national labor standards or World Bank EHS guidelines.
	Labor camps must comply with EHS guidelines. Inadequate ventilation, poor lighting and overcrowded conditions can disrupt normal living standards, increase the risk of disease transmission and negatively impact workers' health and well-being.	Risk of poor living conditions, waste mismanagement, health and hygiene issues, or community tension if camps are not properly managed.
ESS3: Resource Efficiency and Pollution Prevention and Management	Dust from earthwork, vehicle movement, and material handling during the construction period may cause air pollution.	Site specific, short-term, can be controlled by regular sprinkling and covered transport
	Construction works will involve chemical usages (Cementitious Chemicals as Ordinary Portland Cement, Fly Ash, Slag Cement, and Lubricants & Fuels as Diesel, engine oil, hydraulic oil) and preparation of on-site add-ons to the bridge that will generate scraps and residues. Use of concrete, cement and machinery used oil/grease during construction may lead to runoff polluting nearby salt fields and canals.	short-term water pollution may occur during the construction period due to the use of concrete, cement, and other construction materials. Runoff from the work site may enter the Surjomukhi khal, potentially causing localized deterioration of surface water quality if not properly managed. Such impacts are expected to be temporary and site-specific. The risk can be effectively minimized through the implementation of proper drainage arrangements, use of silt traps, controlled concrete works, and timely cleanup of construction residues.

	Noise from piling and construction machinery.	Potential hearing risks and stress for laborers and local residents exposed to prolonged noise. Limited to working hours and local area, can be reduced by timing and barriers.
	Construction waste, including debris from dismantling of old bridge and packaging materials, waste from labor camps, must be handled with designated waste management plan.	Potential soil and water contamination may occur due to improper handling or disposal of solid and construction waste near the project site and adjacent Surjomukhi khal. Accumulation of unmanaged waste could pose health and safety risks to workers and nearby communities. To prevent such impacts, all solid and construction waste should be properly segregated, temporarily stored in designated areas, and regularly transported to approved disposal or landfill sites under the supervision of the contractor.
ESS4: Community Health and Safety	The construction zones must be barricaded; signage and awareness campaigns to minimize risks to pedestrians and vehicles. Participants recommended dedicated pedestrian walkways and strong railings to enhance community safety.	Increased risk of accidents and injuries to pedestrians, especially children and elderly, due to unprotected construction zones. Obstruction or confusion for local traffic and pedestrians in the absence of proper signage and temporary pathways. Community dissatisfaction if safety measures are not visibly in place. Unsafe movement near deep excavation or elevated bridge structures during construction. Proper use of signage and barricades may ensure the construction site's safety.
	Use of heavy machinery during construction may result in significant dust and noise emissions. Runoff containing oil, grease, or cement slurry may enter nearby agriculture land, ponds and khal, potentially affecting community health and livelihoods.	Air pollution from dust and emissions can affect nearby residents. Noise pollution may disturb local communities. Water pollution may occur due to runoff of oil, grease, fuel residues, or cement slurry from construction activities, which could enter the adjacent Surjomukhi khal and nearby ponds, temporarily affecting surface water quality and local use, harming aquatic life and reducing water usability. These impacts are short-term, site-specific and within a small area and manageable by mitigation measure.
ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	No land acquisition required; construction is within the existing right of way.	Temporary access disruptions during construction can be mitigated by providing alternative access during construction. Vehicles. A Memorandum of Understanding (MoU) should be signed with the landowner in cases where private or community land is temporarily required for storing construction materials or setting up labor camps.

ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	No critical natural habitats within 500m. The surrounding area is characterized by rural settlement features, including agricultural land, local markets (Aska Bazar and Surjomukhi bazar), shops, ponds, mosques, and scattered homesteads. The Surjomukhi Canal flows beneath the bridge alignment and functions as a local drainage channel with tidal influence, but it does not support any ecologically sensitive habitats or protected biodiversity features.	Some features are located near the proposed sites, where dust and noise pollution may cause impacts. These impacts are expected to be negative but short-term, site-specific, and reversible with appropriate mitigation measures. Other features are situated at relatively greater distances, where significant disturbance is not anticipated. To minimize any potential impacts, strict construction site management practices should be enforced, including limiting work to daytime hours, applying water-sprinkling at least twice daily around the site, installing proper fencing around the working area, and ensuring safe storage of construction materials.
ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	No Indigenous or Small Ethnic Communities found in project influence area.	Not applicable.
ESS8: Cultural Heritage	No known cultural or archaeological sites identified within project site.	Not applicable.
ESS9: Financial Intermediaries	Not applicable as project does not involve financial intermediaries.	Not applicable.
ESS10: Stakeholder Engagement and Information Disclosure	Consultations were conducted with local host community members and relevant stakeholders at proposed bridge locations. On 26 November 2025, a meeting was held with 21 participants at Surjomukhi Bazar near the proposed subproject site, where participants emphasized the urgent need for a new bridge to address transport difficulties and safety risks due to the deteriorated condition of the existing structure.	Participants anticipated support for the project and emphasized the importance of safety features and pollution control. The feedback collected underscores the need for continued stakeholder engagement during implementation, including maintaining a functional grievance redress mechanism (GRM), accessible communication channels and a transparent complaint registry to ensure inclusive and responsive project delivery.

The navigability of canals and community safety remain critical considerations during both the construction and operational phases of the bridge subproject. As per good environmental and social practice, and consistent with World Bank Environmental and Social Standards (ESS4 and ESS6), no construction or structural intervention over waterways should impede the free and safe passage of local water transport. During construction, temporary arrangements must be ensured so that local communities can continue crossing canals from alternative access points without disruption.

Safety during the operation phase is equally important. Measures such as the installation of reflective guideposts, visible signage, and proper lighting for vehicles and pedestrians approaching the bridge are essential and must be integrated into the construction phase planning. These elements significantly enhance commuter and pedestrian safety and should be reflected in the engineering design and budget estimations.

Furthermore, to minimize environmental degradation and offset potential negative impacts, a comprehensive set of site-specific mitigation measures will be adopted in addition to standard construction practices. These will follow the Environmental and Social Management Plan (ESMP) and the relevant national codes of practice, ensuring compliance with the requirements outlined in the Environmental and Social Management Framework (ESMF).

3.4 Climate Change Impact

3.4.1 General Consideration

Noakhali is one of the most climate-sensitive coastal districts of Bangladesh, characterized by low-lying terrain, tidal floodplains, and extensive char (island) formations. Due to its geographical position along the Bay of Bengal, the district is highly exposed to climate change impacts, including frequent cyclones, tidal surges, saline water intrusion, coastal flooding, and unpredictable rainfall patterns. National climate vulnerability assessments, as well as recent reports from the World Bank¹ and the IPCC², indicate that the coastal belt of Bangladesh will experience increasing climatic stresses, including stronger cyclonic storms, prolonged monsoon rainfall, higher temperatures, and rising sea levels, in the coming decades. Such conditions threaten infrastructure, agricultural production, water supply systems, communication networks, and human settlements.

The overall climatic condition of Noakhali is becoming more unpredictable, with intense rainfall events, prolonged waterlogging, changes in seasonal patterns, and increased heat stress already reported³. Communities in vulnerable unions regularly face tidal flooding during monsoon and post-monsoon seasons, and salinity intrusion is gradually affecting southern coastal upazilas such as Subarnachar and Hatiya. Although inland areas are less saline, they remain exposed to cyclonic winds and heavy rainfall. In this context, rural road bridges play a vital role in enhancing climate resilience by ensuring uninterrupted connectivity during extreme weather events such as floods, cyclones, and tidal surges. Strengthening the structural integrity and climate resilience of the proposed bridge is essential to maintain safe access for local communities, support emergency response and evacuation, and safeguard livelihoods during and after climate-induced hazards.

3.4.2 Site Specific Consideration

The proposed RCC girder bridge is located within a rural coastal setting of Hatiya Upazila, Noakhali District. Although the bridge site is not directly adjacent to the open sea, it lies within a low-lying coastal plain that is regularly influenced by cyclonic wind, heavy monsoon rainfall, tidal fluctuations, and storm surges. The bridge crosses the Surjomukhi Khal, which flows from east to west and experiences tidal flow, particularly during high tides and the monsoon season. As a result, the surrounding areas are periodically exposed to increased water levels and flow velocity.

Field observations and community consultations indicate that the khal remains a flowing channel and therefore does not cause prolonged waterlogging near the bridge approaches. However, seasonal high tides and intense rainfall can temporarily affect the canal banks and approach roads, leading to erosion, surface damage, and access difficulties.

Site specific climate change impacts are often not so easy to measure or deduce plausibly while the site is confined to a narrow strip of roadways only, and associated mitigation or offsetting measures are really hard to plot on the same tiny impact areas, though an overall set of measures are often considered in practical aspect. The proposed bridge will incorporate enhanced structural strength, appropriate foundation design, adequate drainage arrangements, and durable construction

¹ https://climateknowledgeportal.worldbank.org/sites/default/files/country-profiles/16813-WB_Bangladesh%20Country%20Profile-WEB.pdf

² <https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg2-chapter6-1.pdf>

³ https://doe.portal.gov.bd/sites/default/files/files/doe.portal.gov.bd/page/936c9ced_0267_48bf_87d0_4e0c43168cf0/2024-05-14-11-21-17bcdcf2bceffea77921c54c689a50367.pdf

materials. These interventions are essential to ensure long-term functionality of the bridge, maintain uninterrupted connectivity during extreme weather events, and enhance the resilience of local communities that rely on this route for daily movement, emergency access, and livelihood activities.

4. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

4.1 General

The anticipated environmental and social impacts of the proposed sub-project are primarily construction-related and considered to be temporary, site-specific, and manageable. These impacts can be effectively addressed through the adoption of good engineering practices, good housekeeping, better *in-situ* construction materials management, standard environmental controls, and adherence to World Bank Environmental and Social Standards (ESS1–ESS10), especially those related to health, safety protocols, and pollution prevention.

Contractors must adhere to implement the Environmental and Social Management Plan (ESMP) as part of their contractual obligations. This includes regular implementation of dust control measures, such as water spraying at least twice daily, proper solid waste management, noise control and site demarcation to ensure minimal disturbance to surrounding communities and environment of the sub-project sites. Given the close proximity of the proposed bridge site to Surjomukhi Khal flowing beneath the bridge, nearby Surjomukhi and Aska bazars within 30-40 m, religious institutions including Haji Nurullah Jame Mosque at approximately 50 m and Haji Samshul Haque Talimul Quran Madrasa at about 80 m, ponds located within 80-100 m, agricultural land at around 80 m, and residential households within 100-140m, extra caution must be needed to prevent runoff of construction materials, cement slurry, oil, or debris from entering these environmentally and economically sensitive zones. Further construction related activities that may result in adverse impacts on the surrounding environment of the sub-project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance.

In addition, all site workers, engineers, and Contractor's staffs must receive training on occupational health and safety (OHS), good practice construction works, code of conduct, efficient labor camp management, labor management procedure, emergency response, and environmental best practices and relevant awareness building sessions will also be conducted, and records of all those training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects of this proposed construction work are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

The sub-project specific mitigation and monitoring measures have been outlined in the respective ESMP in Appendix-2, which guides pre-construction, construction, and post-construction phases. With proper implementation of these measures, the proposed infrastructure intervention is expected to deliver long-term social and economic benefits to the host communities, with minimal residual environmental impact.

4.2 Cost of Environmental and social Enhancement Works in BOQ

In consideration to the aforementioned environmental impacts and their mitigation measures for the proposed construction activities, a set of items are included in the BOQ for every sub-project. The estimated cost to implement the ESMP is shown in Appendix-3.

5. CONTRACTOR AND LABOR MANAGEMENT

Most of the workers for this subproject will come from the local community, who share a common socio-economic, cultural, religious, and demographic background. Based on consultations with local stakeholders, it is anticipated that only a small portion of skilled labor may need to be hired from outside the project area, depending on availability. Therefore, the likelihood of internal conflicts among workers is expected to be minimal. It is estimated that approximately 20 laborers will be engaged during the construction phase, comprising 4 skilled (25%) and 16 unskilled (75%) workers, generating around 10,800 active working man-days (as detailed in Table- 5.1).

Although female participation in rural construction work is traditionally low, higher involvement of women is expected in this sub-project. Nonetheless, if female participation remains limited, the contractor must still conduct mandatory GBV (Gender-Based Violence) awareness training for all workers prior to the commencement of construction to mitigate risks of harassment, discrimination, or hostile behavior at the worksite.

The contractor's area will include the working zone surrounding the construction site, materials stacking and storage area, labor shed, and office space ideally located within or adjacent to the proposed Sub project location premises/boundaries for better coordination and monitoring. Contractor will be strictly instructed to maintain cleanliness at the worksite by ensuring waste, debris and dust are regularly cleared and that all bulk construction materials such as sand, stone chips, and steel are stored properly and covered with plastic. Experiences from ongoing LGED projects in Hatia indicate a shortage of skilled labor, which has contributed to delays in some cases. In this sub-project, LGED anticipates that general and non-technical labor will be sufficiently available locally, with only specific technical expertise needing to be sourced from outside if required. It is expected that the scale of labor influx will remain manageable and will not pose significant risks of social tension or GBV during the construction period.

Table 5.1: Subproject-wise number of labor and total active working days

Sl no	Package Number	Name of Subproject	Total Space of proposed Construction (Square meters)	Tentative per day labor (No)	Days	Total active working days
01	HELP-NOA/BR-1	Construction of 56.00m RCC Girder Bridge on Char Ishwer Kazir Bazar to Jahajmara Katakhal road Via Wapda Bari road at Ch: 5150m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364081).	408.8	20	540	10,800
Grand Total =				20	540	10,800

6. GRIEVANCE REDRESS MECHANISM (GRM)

In accordance with the Environmental and Social Management Framework (ESMF) of the HELP project, a robust and accessible Grievance Redress Mechanism (GRM) has been established to address project-related grievances from host communities, workers and other stakeholders. A structured and inclusive Grievance Mechanism (GM) has been established to ensure timely and effective resolution of complaints arising from project activities in the host communities. Since LGED is the Implementing Agency (IA), the grievance redress structure has been designed to operate across three levels local (Upazila), Project Implementation Unit (PIU) and Project Steering Committee (PSC) to address concerns efficiently and equitably.

Local Level GRC

At the local level, a Grievance Redress Committee (GRC) is formed in each Upazila where LGED has subproject activities. The GRC is chaired by the Upazila Engineer from LGED (or a nominated official by the Project Director if required), serving as the Convener. The Environmental Specialist and/or Social Specialist from the PIU, depending on the nature of the complaint, act as the Member-Secretary and remain common across all local GRCs under LGED. The committee also includes an Environmental and/or Social Specialist from the Supervision Firm appointed by LGED, a representative from the respective Union Parishad (preferably female if the complainant is female), and a community representative such as a teacher, NGO staff member, or a local individual nominated by the complainant. Specialists for these roles are expected to be hired within 3 to 6 months of project effectiveness. All grievances at the local level must be heard and resolved within 10 working days of receipt. Complaints related to LGED activities will be received at the office of the respective Upazila Engineer.

PIU-level GRC

If a complaint cannot be resolved at the local level, it is escalated to the PIU-level GRC. This committee is chaired by the Project Director of LGED and includes the Social and Environmental Specialists from the PIU as Member-Secretaries. It also includes a local government representative either the same individual from the local level hearing or another as appropriate (must be female if the complainant is female) and a community representative, preferably the same individual who participated at the local level. The PIU-level GRC is responsible for reviewing unresolved grievances and delivering a decision within 15 working days. In addition, the Social or Environmental Specialist at the PIU, with assistance from the local GRC's Member-Secretary, will conduct regular visits to subproject sites to engage with communities and affected persons, and to document any new concerns, suggestions, or complaints in the GRM register.

PSC-level GRC

For grievances that remain unresolved at the PIU level, the matter is further referred to the PSC-level GRC, which represents the final tier of grievance resolution. This committee is led by a representative of the Secretary from the relevant ministry, serving as the Convener, with the Project Director of LGED acting as the Member-Secretary. The PSC-level GRC is required to make a final decision on such grievances within a maximum of four weeks. Any resolution reached at any level of the grievance process that is agreed upon by the aggrieved party is considered binding on LGED and will be implemented accordingly.

This multi-tiered GM structure under LGED ensures that all grievances from host community members are addressed in a fair, inclusive, and transparent manner. It fosters accountability and

trust in project implementation while upholding the World Bank's Environmental and Social Standard 10 (ESS10) on stakeholder engagement and information disclosure.

7. INSTITUTIONAL ARRANGEMENT

LGED, through the Project Implementation Unit (PIU), will have overall responsibility for environmental and social risk management through implementation of ESMP and compliance with the World Bank's Environmental and Social Framework (ESF). The PIU's ES team comprising of a Sr. Environmental Consultant, a Sr. Social Development Consultant, and a Gender Specialist will oversee ESMP implementation including functional operation of Grievance Redress system, review monitoring reports from the D&S Consultant, and coordinate reporting to the World Bank. The Design and Supervision Consultant (D&SC) will provide day-to-day site supervision, verify contractor's compliance with ESMP requirements along with taking prime actions in the progress of grievance redressal and advise corrective actions wherever required. The Contractor will be responsible for on-site implementation of all mitigation measures, including occupational health and safety (OHS), waste management, environmental protection and grievance management. Coordination among PIU of LGED, D&SC, and the Contractor will be ensured through regular supervision, reporting, and redressal mechanisms.

Institutional Roles and Responsibilities Table (Recommended for ESMP)

Institution / Entity	Key Roles and Responsibilities
LGED Project Implementation Unit (PIU)	• Oversee environmental and social risk management framework and activities
	• Review and approve site-specific ESMPs
	• Monitor implementation through field inspections
	• Manage and supervise GRM at the project level
	• Approve E&S documents and corrective actions
	• Report ESMP performance to the World Bank
PIU Environmental & Social Specialists	• Technical supervision of ESMP implementation
	• Review contractor's E&S compliance plans and related records.
	• Conduct site visits and compliance audits
	• Provide guidance on ESS compliance and required corrective actions
	• Leads capacity-building and training sessions for consultants and contractors.
	• Review and approve periodic monitoring reports and submit to the Project Director for sending them to the WB.
Design & Supervision Consultant (D&SC)	• Provides full-time, site-level supervision of ESMP implementation.
	• Verifies that mitigation measures are integrated into physical construction activities.
	• Verify contractor compliance with mitigation measures
	• Maintains detailed monitoring checklists, incident logs, and photographic records.
	• Support PIU in Compliance reporting.

Construction Contractor		• Executes all mitigation measures defined in the approved ESMP.
		• Prepare site-specific plans (OHS, waste, traffic, labor camp, etc.) and implement the same.
		• Ensure PPE use, safety training, and daily toolbox meetings
		• Appoints a designated EHS Supervisor to manage site-level compliance and reporting.
Grievance Redress Committees (3-tier GRM)		• Receives, registers, and investigates grievances from workers and the community.
		• Ensures a transparent, culturally appropriate, and timely resolution process.
		• Coordinate with PIU and local administration

8. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

Monitoring is a critical component under the Host and FDMN Enhancement of Lives through Infrastructure Improvement Project (HELP) to ensure that environmental and social mitigation and enhancement measures outlined in the Environmental and Social Management Plan (ESMP) are effectively implemented and that their intended benefits are realized over time. The Environmental and Social Management Framework (ESMF) of the HELP Project provides a detailed monitoring mechanism, assigning responsibilities to all relevant parties directly involved in or overseeing the construction and implementation of sub-projects.

Several tiers of monitoring responsibilities have been established under the HELP Project. At the implementation level, contractors are required to ensure that environmental and social risks are effectively minimized throughout the construction period. This includes implementing adequate Occupational Health and Safety (OHS) measures for both workers and surrounding host communities. Contractors must assign site managers and safeguard supervisors (or equivalent personnel) to supervise daily implementation of the ESMP. These personnel are responsible for ensuring environmental protection both on and off-site and for preventing damage or nuisance to individuals, public and private property, and surrounding features or institutions. Pollution, noise, and other detrimental effects arising from construction operations must be strictly controlled. In addition to implementing the ESMP, contractors are also responsible for preparing and executing specific management plans, such as drainage management, traffic management and emergency preparedness and response, where required. Proper implementation of these plans, along with timely site decommissioning and restoration, must be ensured. The detailed Environmental and Social Monitoring Plan, including monitoring parameters, indicators, responsible institutions, and frequency of monitoring during pre-construction, construction, and operation phases, is presented in Appendix-4.

The first tier of supervision is led by the Design and Supervision Consultant (D&SC) firm. Once the contractors are mobilized, safeguard consultants from the D&SC and the Resident Engineer are tasked with ensuring contractor compliance with the ESMP and with the application of good engineering practices at the site. This includes strict enforcement of OHS measures. The D&SC is responsible for preparing regular monitoring reports based on field-level supervision and findings.

At the second tier, the Project Implementation Unit (PIU) will play a key role in overall monitoring. The PIU will have dedicated environmental and social safeguard specialists who will conduct frequent field visits to assess ESMP implementation. These specialists, in coordination with the

Executive Engineer's Office in Noakhali district and Upazila Engineers' Office in the respective upazila, will ensure strong site-level oversight. The PIU safeguard team will also ensure that all contractor staff and other relevant personnel receive adequate initial and ongoing training on environmental and social safeguards. Moreover, the PIU will verify proper site cleaning and reclamation upon completion of construction and recommend necessary corrective or punitive measures if any non-compliance is observed.

At the highest tier, the Ministerial Project Steering Committee (PSC), chaired by the Senior Secretary/Secretary of the Local Government Division (LGD), Ministry of LGRD&C, will provide strategic oversight of monitoring activities. In collaboration with the PIU, the PSC will ensure that environmental and social safeguard training is provided to all relevant project staff and that implementation at the field level aligns with national policies and the World Bank's Environmental and Social Framework (ESF). This structured multi-tiered monitoring approach under HELP will help ensure that the construction of the RCC bridge at Hatia Upazila is environmentally and socially responsible, and aligned with sustainable development objectives.

9. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are fully implemented, there will be no significant negative environmental or social impacts related to the selection, design, construction, and operation of the proposed sub-project. In fact, the recommended mitigation and enhancement measures will lead to significant benefits, improving both the environmental quality and the social well-being of the local communities. The project will contribute to enhanced infrastructure, improved livelihoods and better access to essential services, ultimately benefiting both the host communities and the displaced populations. Major improvements in quality of life, communication and socio-economic influences will be ensured once the scheme is in operation.

Overall, the screening study can be summarized as follows:

- The communities will receive large benefits in terms of quality of life, particularly with better reach of services and goods.
- The short-term negative impacts that may come by the way of air quality, noise, solid waste, occupational health & safety during the construction period, that need to be minimized through the management plan.
- The project will create employment for those who live in the vicinity of the construction site and will provide them a short-term economic gain.
- A comprehensive Environmental and social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from these Subproject activities.
- Detail cost estimation for incorporating ESMP has been shown in Appendix-3. This budget can change due to change of market prices and if the project implementation period extends.

Implementation of this Sub-project will have large positive impacts to the communities in terms of improved infrastructural transportation & communication facilities, which would eventually develop the socio-economic condition of the catchment areas. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Annexure-01: Attendance of consultation meetings for the sub-project

Host and FDMN Enhancement of Lives through Infrastructure Improvement Project (HELP)
Local Government Engineering Department (LGED)
Public Consultation Participants List
Focus Group Discussion

সময় : ২.৩০ তারিখ : ২৬/১১/২০২৫

উপ-প্রকল্প/কমপোনেন্ট এর নাম : Construction of 56.00m RCC Girder Bridge on Char Ishwer Kazir Bazar to Jahajmara Katakhal road Via Wapda Bari road at Ch: 5150m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364081).

মত বিনিময় স্থান : মুখ্যমুখী বাজার, হাতিয়া উপজেলা : হাতিয়া জেলা : নোয়াখালী

ইউনিয়ন : মুখ্যমুখী ওয়ার্ড নং : ০৩ ডাকঘর : মুখ্যমুখী উপজেলা : হাতিয়া জেলা : নোয়াখালী

সাব প্রকল্প নং : HELP-NOA/BR-1 ২২.২৫০২৫১
৩১.১৭১৬১৭

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর / টিপসই
০১	মো: ইয়াহা ইদ্রিস রিহান-মোহাম্মদ-৩৩, ৩৬	৫৮	পুরুষ	শুন্সুর চর	শুন্সুর চর
০২	মো: আব্দুল হেফাজ	৪০	পুরুষ	"	মো: আব্দুল হেফাজ
০৩	মো: হুসাইন হেফাজ	৪৫	পুরুষ	"	মো: হুসাইন হেফাজ
০৪	মো: তানবীর হেফাজ	২৫	"	"	তানবীর
০৫	মো: হুমায়ূন	২৪	"	"	মো: হুমায়ূন
০৬	মো: আমজাদুল হক	২৪	"	"	আমজাদুল হক
০৭	মো: আব্বাস হক	৬৭	"	"	আব্বাস হক
০৮	মো: জিয়া	২২	"	"	জিয়া
০৯	মো: দিদার	৩৩	"	"	দিদার
১০	মো: মোহাম্মদ হুমায়ূন	২৪	"	"	মোহাম্মদ হুমায়ূন
১১	মো: মুহাম্মদ	২৮	"	"	মো: মুহাম্মদ
১২	মো: আব্বাস হুমায়ূন	৬৫	"	"	আব্বাস হুমায়ূন
১৩	মো: আমজাদ হুমায়ূন	৬২	"	"	আমজাদ হুমায়ূন
১৪	আব্বাস হুমায়ূন	৪৮	"	"	আব্বাস হুমায়ূন
১৫	মো: আব্বাস হুমায়ূন	৬৫	"	"	আব্বাস হুমায়ূন
১৬	মো: আব্বাস হুমায়ূন	৪৮	"	"	আব্বাস হুমায়ূন
১৭	আব্বাস	২৫	"	"	আব্বাস
১৮	আব্বাস হুমায়ূন	৪৮	"	"	আব্বাস হুমায়ূন

Annexure-02: Sub-project location pictures



Figure: Present condition of the proposed location for Attendance of consultation meeting for 56.00m RCC Girder Bridge on Char Ishwer Kazir Bazar to Jahajmara Katakali road Via Wapda Bari road at Ch: 5150m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364081)

Appendix-1: Environmental and Social Screening Form for examining sub-project

Environmental Screening Form

Work Package Description Form:

Name of component: Construction of 56.00m RCC Girder Bridge on Char Ishwer Kazir Bazar to Jahajmara Katakhal road Via Wapda Bari road at Ch: 5150m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364081).

Package no: HELP-NOA/BR-1

Implementing Agency/Agencies: Local Government Engineering Department (LGED)

Estimated total cost of sub-project (in Taka): As per LGED rate schedule

Estimated construction period duration: 18-24 months

Estimated Operation and Maintenance period (life of sub-project): Project design life is more than 15 (Fifteen) years but Government policies will determine the period for sub-projects to operate in the areas.

District: Noakhali

Sub-District: Hatia

Union: Burir Char

Name of Community/Local Area: Surjomukhi Bazar near bridge location

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.):

One RCC Bridge will be constructed replacing an existing concrete bridge. There are some activities for RCC bridge construction such as Earth cutting and filling for foundation, Back filling and approach road construction, Brick soling work, CC work, RCC work, Rod cutting, bending and binding and Shuttering work.

Estimated footprint / land area for this sub-project is 408.80 sq. meter

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.):

The proposed sub-project is located along the Char Ishwer Kazir Bazar to Jahajmara Katakhal Road via Wapda Bari Road (Road ID: 475364081), crossing over Surjomukhi Khal under Burir Char Union of Hatiya Upazila, Noakhali District. The bridge alignment lies within Sunnerchar village of Burirchar Mouja. The Surjomukhi Khal flows generally in an east–west direction and functions as a local drainage and water conveyance channel for the surrounding area.

The existing land use around the proposed bridge site is predominantly rural and mixed-use, consisting of agricultural land, small water bodies (ponds), local bazar areas, religious institutions, and scattered residential households. A dilapidated bridge structure currently exists at the same location, which has become unsafe for vehicular and pedestrian movement and poses risks to local communities.

Important surrounding features within the immediate vicinity include Surjomukhi Bazar (approximately 30 m to the north), Haji Nurullah Jame Mosque (about 50 m to the south), Aska Bazar and Aska Bazar Ghat (around 40 m to the south and east respectively), Haji Samshul Haque

Talimul Quran Madrasa (approximately 80 m to the north), several ponds within 80–100 m, graveyards within 100–150 m, agricultural fields within about 80 m, and nearby residential households.

The bridge serves as a vital transport link for surrounding catchment villages including North Rehanía, Moddham Rehanía, South Rehanía, Sunnerchar, Uttor Rehanía, Bordil, Kalirchar, Jahajmara, Char Ishwer, and Oskhali. The total catchment population is estimated at approximately 29,300 people, who rely on this route for daily commuting, agricultural transport, fishing activities, small-scale trade, and access to local markets and services. The presence of Surjomukhi Khal and nearby community facilities necessitates careful environmental and social management during construction. Currently, no other important environmental feature is found within the proposed sub-project location.

The proposed Sub-project of RCC Bridge is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction of the sub projects.

Types of waste to be generated during construction and operation phase:

During construction period solid waste will be generated due to demolition of an old bridge and later construction of a new bridge on the same place. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic etc. Negligible amount of plastic. Human wastes might be generated in labor camps.

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions:

The following activities for PSC bridge construction are:

- Earth cutting and filling for the foundation
- Backfilling and approach road construction
- Brick soling work
- CC work
- RCC work
- Rod cutting, bending and binding
- Shuttering work

For bridge safety,

- Color painting on rallying
- Traffic safety guide post for approach
- Safety measures will be taken within the construction

Others,

- Any bridge side is not on private land.
- Alternative diversion will be provided for traffic movement and not disturbing of water flow or flora and fauna

• Mainly on very small canals and dispersed land will be necessary for water drainage For livelihood, • No private land will be used • No shifting of any structure will be needed
Sub-project Location: The proposed sub-project involves the construction of a 56.00 m RCC Girder Bridge on the Char Ishwer Kazir Bazar to Jahajmara Katakhal Road via Wapda Bari Road (Road ID: 475364081) at chainage Ch: 5150 m, under Hatiya Upazila of Noakhali District. The bridge will be constructed over the Surjomukhi Khal, which flows generally from east to west and serves as a local drainage and tidal water channel. Administratively, the project site falls within Sunnerchar village of Burir Char Union, under Hatiya Upazila. The geographic coordinates of the proposed bridge location are 22.250251° N latitude and 91.171614° E longitude. The site is located at an approximate distance of 8 km from the Hatiya Upazila headquarters. The bridge is expected to serve a catchment population of approximately 29,300 people, comprising 14,200 males and 15,500 females, across several surrounding villages, including North Rehanian, Moddhom Rehanian, South Rehanian, Sunnerchar, Uttor Rehanian, Bordil, Kalirchar, Jahajmara, Char Ishwer, and Oskhal. The structure is widely used for pedestrian movement, non-motorized transport, small vehicles, and community-level commercial activities, particularly linked with bazar-centered trade and agricultural transport.
Land ownership Government Land
Expected construction period: 18-24 months
Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas and historical or cultural assets): Please also explain any analysis on alternative location was conducted: The project intervention area for the proposed sub-project covers the footprint of the existing old and dilapidated bridge over Surjomukhi Khal, including the immediate construction zone required for demolition of the old structure and construction of the new 56.00 m RCC Girder Bridge. The intervention area will remain confined to the existing bridge alignment and right-of-way to avoid additional land take or disturbance to surrounding properties. The project influence area has been considered as an approximate 500-meter radius around the proposed bridge site. Within the influence area, several community, environmental, and cultural features were identified: • Surjomukhi Bazar is located approximately 30 m to the north, serving as an important local commercial center. • Haji Samshul Haque Talimul Quran Madrasa is situated about 80 m to the north. • Haji Nurullah Jame Mosque is located around 50 m to the south. • Aska Bazar lies approximately 40 m to the south, while Aska Bazar Ghat is located about 40

m to the east of the bridge site.

- Residential households are present within 100 m to the south and 140 m to the east.
- Several ponds are located within 80–100 m in the northeast, northwest, and southwest directions.
- Agricultural land is present at an approximate distance of 80 m from the site.
- Graveyards are located at distances of approximately 100 m to the south and 150 m to the north.

The Surjomukhi Khal, flowing generally from east to west, passes directly beneath the proposed bridge and functions as a local drainage and tidal water channel. No ecologically critical habitats, protected areas, or environmentally sensitive areas are located within the influence zone.

Based on field observations and stakeholder consultations, no historical or archaeological sites were identified within the project influence area. While mosques, madrasa, graveyards, and bazar areas are present nearby, no permanent disturbance is anticipated, as construction activities will be localized, temporary, and managed through appropriate mitigation measures under the ESMP.

Section B: Environmental Screening

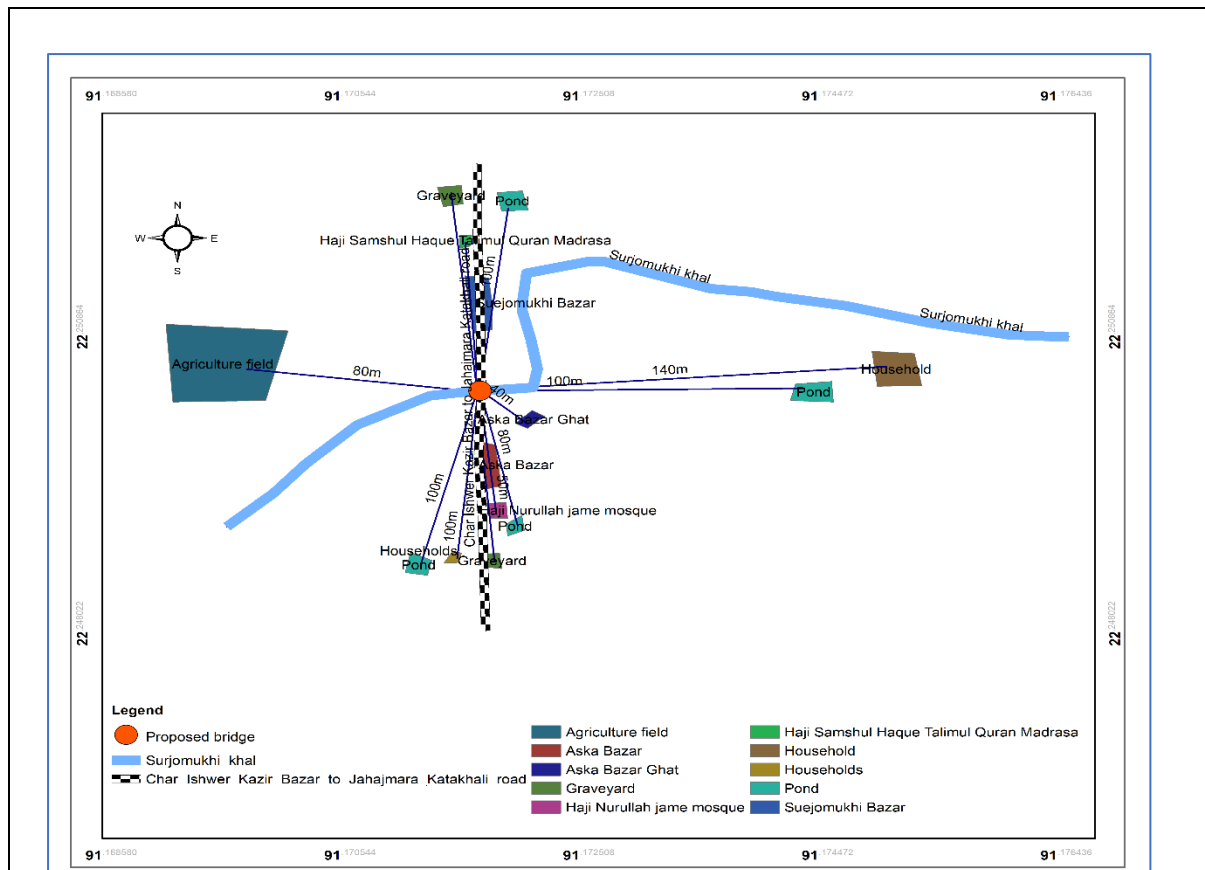
B.1: Environmental feature of sub-project location

Description of cultural properties (if applicable, including distance from site):

The proposed sub-project site is located on an open area along the existing road alignment, and no residential households or permanent agricultural land fall directly within the construction footprint. The surrounding land use within the immediate vicinity is a mix of local bazar areas, ponds, scattered households, religious institutions, and agricultural fields, reflecting a typical rural-semi-commercial setting of Hatiya Upazila.

Within the surrounding area, Surjomukhi Bazar is located approximately 30 m to the north, while Aska Bazar lies about 40 m to the south, indicating moderate commercial activity near the site. Haji Nurullah Jame Mosque is situated around 50 m to the south, and Haji Samshul Haque Talimul Quran Madrasa is located approximately 80 m to the north. Several ponds are present within 80–100 m in different directions, and agricultural land is observed at an approximate distance of 80 m from the bridge location. Scattered residential households are located within 100–140 m of the site.

The proposed bridge crosses Surjomukhi Khal, which flows generally from east to west and serves as a local drainage and tidal water channel. No major environmentally sensitive areas, industrial facilities, or protected sites were identified near the sub-project location. The sketch of the surrounding features are given below. A diagram showing the major features around and apparent distances (in parentheses) from the proposed construction site is given below.



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas within the proposed site, except for the several ponds present within 80–100 m in different directions, and agricultural land is observed at an approximate distance of 80 m from the bridge location. Construction and demolition activities may lead to dust and runoff contamination to the agricultural land and nearby ponds; These impacts are short-term, site-specific and can be effectively managed through proper water sprinkling and site drainage. The proposed bridge will be replaced with an existing old concrete structure, crossing over Surjomukhi Khal.

Those will not be affected by the construction works, as the activities will be carried out over existing concrete bridge and necessary preventive and mitigation measures will be followed during the entire construction period.

(1) potential impacts on remaining forests in/around camps Yes/No

N/A

(2) Other issues:

N/A

Baseline air quality and noise levels:

Air Quality

Site-specific baseline ambient air quality monitoring was not conducted for this sub-project. However, baseline conditions have been assessed based on secondary information drawn from relevant environmental studies, monitoring reports, and previous coastal and rural infrastructure project documents implemented in Noakhali District, including Hatiya Upazila. These sources indicate that the ambient air quality in rural coastal areas such as Hatiya is generally good due to the absence of major industrial activities, low traffic density, and the predominance of open

agricultural land and water bodies.

According to DoE Continuous Air Monitoring Station (CAMS) data for nearby coastal districts, concentrations of gaseous pollutants such as sulfur dioxide (SO₂), nitrogen dioxide (NO₂), and carbon monoxide (CO) typically remain well within the Bangladesh National Ambient Air Quality Standards in rural and semi-rural settings. Previous environmental assessments for LGED road and bridge projects in Noakhali report indicative 24-hour average concentrations of SO₂ ranging from 5-15 µg/m³ and NO₂ ranging from 10-25 µg/m³, while CO concentrations remain below 1.5 mg/m³⁴.

Particulate matter (PM₁₀ and PM_{2.5}) levels in Hatiya Upazila are generally moderate but may increase seasonally during the dry period due to wind-driven dust, movement of light vehicles, and unpaved rural roads. Secondary data from past LGED and World Bank-supported project EIAs indicate PM₁₀ concentrations in the range of 80-140 µg/m³ and PM_{2.5} concentrations between 35-60 µg/m³ during peak dry months, with occasional short-term exceedances of 24-hour standards⁵. Such exceedances are typically localized, temporary, and reversible.

Field observations at the proposed bridge site in Hatiya confirm low background pollution levels, limited vehicular movement, and the absence of nearby industrial emission sources. Therefore, the baseline air quality conditions at the site are generally acceptable and representative of rural coastal environments. Construction activities may temporarily increase dust and vehicle-related emissions, particularly during earthworks and material transport; however, these impacts are expected to be short-term and manageable through standard mitigation measures such as water spraying, covering of materials, and controlled vehicle movement.

Noise Levels

Baseline noise monitoring was not carried out at the project site. However, secondary information from DoE noise surveys, LGED environmental reports, and field observations indicates that ambient noise levels in Hatiya Upazila are generally low to moderate and consistent with rural and semi-rural land use patterns⁶. Indicative noise levels reported in previous studies conducted in rural Noakhali range from 45 to 55 dB(A) during the daytime and from 38 to 45 dB(A) during nighttime.

These levels generally comply with the permissible limits prescribed under the DoE Noise Pollution (Control) Rules, which set standards of 55 dB(A) for daytime and 45 dB(A) for nighttime in rural and residential areas⁷. Existing noise sources in the project influence area are limited to

⁴ Local Government Engineering Department (LGED) (2020). Environmental Impact Assessment Reports for Rural Infrastructure Projects in Noakhali District. LGED, Dhaka.

⁵ Local Government Engineering Department (LGED) (2018). Environmental Assessment and Environmental Management Framework for Rural Roads and Bridges Projects in Coastal Bangladesh. LGED, Ministry of Local Government, Rural Development and Cooperatives, Dhaka.

⁶ Department of Environment (DoE) (2025). Noise Pollution (Control) Rules, 2025. Ministry of Environment, Forest and Climate Change, Government of the People's Republic of Bangladesh, Dhaka.

Local Government Engineering Department (LGED) (2020). Environmental Impact Assessment Reports for Rural Infrastructure Projects in Noakhali District. LGED, Dhaka.

⁷ Department of Environment (DoE) (2025). Noise Pollution (Control) Rules, 2025. Ministry of Environment, Forest and Climate Change, Government of the People's Republic of Bangladesh, Dhaka.

light vehicular traffic, local market activities, and occasional agricultural operations. No continuous or high-intensity noise-generating sources were identified near the proposed bridge site.

During construction, temporary increases in noise levels may occur due to the operation of construction machinery and vehicles. Such impacts are expected to be localized, intermittent, and time-bound, and can be effectively mitigated through scheduling works during daytime hours, maintaining equipment in good condition, and providing appropriate personal protective equipment (PPE) for workers.

Baseline soil quality:

Site-specific soil quality was not conducted for the proposed bridge site at the screening stage. However, baseline soil conditions have been assessed using secondary information. Hatiya Upazila is located within the coastal floodplain of Bangladesh and is characterized by young alluvial and tidal floodplain soils, primarily consisting of silty clay to clay loam textures. These soils are generally fertile but moderately to highly saline, particularly during the dry season due to tidal influence and saline water intrusion⁸. Soil pH in the area typically ranges from 6.5 to 8.0, indicating neutral to slightly alkaline conditions, which are common in coastal deltaic environments.

Electrical Conductivity (EC) values of soils in Hatiya vary seasonally and spatially, with moderate salinity (4–8 dS/m) commonly observed in surface soils during the dry season, while salinity levels reduce significantly during the monsoon due to rainfall and freshwater flushing. Organic matter content is generally low to moderate (1–2%), reflecting frequent sediment deposition, tidal action, and limited biomass retention in cultivated and open areas.

Available secondary data indicate that concentrations of heavy metals such as lead (Pb), cadmium (Cd), chromium (Cr), and arsenic (As) in soils of Hatiya Upazila are generally within permissible limits for rural and agricultural land use, with no evidence of industrial contamination⁹. Iron content in soil is naturally high due to alluvial sediment characteristics, but this is not considered a constraint for construction activities.

The proposed bridge site is located over an active canal corridor, with no agricultural activity within the immediate construction footprint. Agricultural land is present near the site but outside the direct construction area. No evidence of contaminated land, waste dumping, or previous industrial activity was observed during field observation.

Construction activities may temporarily disturb topsoil and increase the risk of localized soil contamination from fuel, lubricants, cement slurry, and construction debris if not properly managed. However, such impacts are expected to be temporary, localized, and reversible, provided that appropriate ESMP measures such as controlled material storage, spill prevention, proper waste handling, and site restoration are effectively implemented.

Landslide potential (high/medium/low, with explanation):

⁸ SRDI (2018). Soil Salinity Status of Bangladesh. Soil Resources Development Institute, Ministry of Agriculture.

⁹ DoE (2022). Environmental Quality Standards and Monitoring Report. Department of Environment, Bangladesh.

N/A (the sub-project will be constructed in a plain land)

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):

Surface Water Quality

Site-specific baseline surface water quality was not conducted for the proposed bridge site. However, baseline conditions have been assessed using secondary information from the different Department and World Bank-funded projects previously implemented in Hatiya and adjacent coastal upazilas of Noakhali District.

Surface water bodies in Hatiya Upazila mainly consist of tidal canals (khals), ponds, and estuarine channels connected to the Meghna River system. Secondary water quality monitoring data indicate that surface water pH values generally range between 7.0 and 8.2, reflecting neutral to slightly alkaline conditions typical of coastal tidal systems. Total Dissolved Solids (TDS) in surface water show seasonal variation, with values typically ranging from 1,500 to 5,000 mg/L, increasing during the dry season due to tidal influence and salinity intrusion.

Iron (Fe) concentrations in surface water are generally low to moderate, commonly recorded between 0.3 and 1.0 mg/L, which is within acceptable limits for surface water but not suitable for direct drinking without treatment¹⁰. Fecal coliform contamination has been reported in canals and ponds, particularly near settlements and markets, with counts often exceeding 1,000 MPN/100 ml, indicating contamination from domestic wastewater and open sanitation practices¹¹. As a result, surface water in Hatiya is mainly used for washing, bathing, and limited household purposes, rather than for potable use.

The canal at the proposed bridge site is a tidal watercourse with regular flow and flushing action. No stagnant water or chronic waterlogging was observed during field reconnaissance, suggesting a reduced risk of prolonged pollution accumulation at the site.

Groundwater Quality

Groundwater is the primary source of drinking water in Hatiya Upazila and is accessed mainly through shallow and deep tube wells. According to DPHE and BWDB groundwater quality surveys, shallow aquifers (typically less than 200 feet deep) in Hatiya are often affected by salinity and iron, whereas deeper aquifers (generally 600–800 feet deep) provide comparatively better quality water¹². Secondary data indicate that groundwater pH values typically range from 6.8 to 7.5, remaining within acceptable limits for drinking water. TDS concentrations in shallow groundwater may exceed 2,000 mg/L in saline-prone zones, particularly during the dry season, while deep groundwater sources usually show TDS levels below 1,000 mg/L¹³.

Iron (Fe) concentrations in groundwater are a known concern in Hatiya, with reported values ranging from 1.0 to 5.0 mg/L, exceeding the Bangladesh drinking water standard of 0.3–1.0 mg/L

¹⁰ DoE (2022). Environmental Quality Standards and Monitoring Report. Department of Environment, Bangladesh.

¹¹ LGED (2019). Environmental Assessment Report for Rural Roads and Bridges in Noakhali District. Local Government Engineering Department.

¹² DPHE (2020). Groundwater Quality Monitoring Report for Coastal Districts. Department of Public Health Engineering, Bangladesh. BWDB (2021). Hydrological and Water Quality Assessment of Coastal Zone of Bangladesh. Bangladesh Water Development Board.

¹³ BWDB (2021). Hydrological and Water Quality Assessment of Coastal Zone of Bangladesh. Bangladesh Water Development Board.

in many shallow tube wells. Fecal coliform contamination in groundwater is generally low, especially in deep tube wells, provided that proper well construction and sanitary protection measures are maintained.

Overall, groundwater quality in the project influence area is considered acceptable for domestic use when sourced from deep aquifers.

Status of wildlife movement:

N/A (None of the information was found about the wildlife movement in or across the area)

State of forestation:

The proposed bridge site is located in a rural coastal setting of Hatiya Upazila, where no natural forest, reserved forest, or protected forest area exists within the project intervention area or within a 500-meter project influence area. The surrounding landscape is predominantly characterized by agricultural land, rural settlements, local markets, and scattered homestead vegetation.

Vegetation in the vicinity mainly consists of common roadside and homestead tree species and other locally planted trees, along with shrubs and grasses. These trees are primarily associated with private homesteads, agricultural boundaries, and market areas rather than organized forest cover.

Field verification confirms that the construction work will not require clearing of forest land or removal of any significant tree cover. Only minor trimming of roadside vegetation, if required for construction safety or access, may be necessary and can be managed through routine site management practices.

Summary of water balance analysis (For water supply scheme only): N/A

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable):

The proposed bridge is located at chainage (CH) 5150m on Char Ishwer Kazir Bazar to Jahajmara Katakhal road Via Wapda Bari road. It is possible to carry the construction materials on this road to the construction site.

Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction:

No tubewell or fresh water sources are present at the proposed location, as there are no known permanent residents in the immediate vicinity. In order to make a sustainable management to usage of water for construction works two numbers of tubewells should be installed. The cost of installation of the tube wells are included into the civil works item, therefore is not repeated in ESMP budget.

Electricity is available at the site.

Toilet facilities are not available near this location. To be used by the workers/contractor's staffs during the construction period toilet will need preparation for both male and another for female.

Possible location of labor camps:

On the north side of the selected site, or can be placed near the location of sub-project site.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): Some of the raw materials for bridge construction are steel, concrete, stone, asphalt, water, bamboo & wood. Other materials include iron, timber, aluminum, rubber and other joint materials, and electro-mechanical equipment used in construction.
Identification of access road for transportation (Yes/No): Yes. The proposed bridge is located at chainage (CH) 5150m on Char Ishwer Kazir Bazar to Jahajmara Katakhal road Via Wapda Bari road. It is possible to carry the construction materials on this road to the construction site. It passes from east to west.
Location identification for raw material storage: On the north side of the proposed sub-project. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Solid waste: An existing concrete bridge will be demolished and the new RCC bridge will be constructed here. So, construction debris and other solid wastes will be generated both during the demolition and construction periods. Type: woods-bamboo, copper wires, concrete, iron, plastic, tin, etc. Quantity: Nearly 10 metric ton of solid waste, including demolition materials will be produced.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): Solid waste: Iron, concrete, metal, drywall, wood, plastic, rubber, copper wires, excavated soils etc. Quantity: It is difficult to give exact figures of construction waste produced on a typical construction site. However, in order to approximate the quantity, it is estimated that nearly 7 kg of waste would be generated each working day, which are mainly construction wastes. Some plastic, paper and organic waste will be generated from the use of workers, though a very negligible amount- half a kilogram a day maximum. Wastes from food and kitchen (biodegradable organic waste) will be generated at an amount of 2 kg per day in the labor camp. Liquid waste: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 6 kg per day, which would be reduced in weight in course of time.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): Type: i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) concretes vii) Bamboo & wood from mobilized materials and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction. Quantity: It is difficult to give exact figures of construction waste produced on a typical construction site.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: There is no soil land or major vegetation cover on the right-of-way for the sub-project. No other placement as waste dumps or equipment is targeted in any vegetation cover as well.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) Low: No borrow pit or quarries will be required to dig out during the construction period in or

around/ adjacent to the sub-project area. During construction period one or two water reservoir may be constructed due to construction activities. But all those will be completely demolished and cleared out, once the construction period is over.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) The proposed sub-project involves the construction of a 56.00 m RCC Girder Bridge on the Char Ishwer Kazir Bazar to Jahajmara Katakhal Road via Wapda Bari Road (Road ID: 475364081) at chainage Ch: 5150 m, under Hatiya Upazila of Noakhali District. The bridge will be constructed over the Surjomukhi Khal, which flows generally from east to west and serves as a local drainage and tidal water channel. however it is not subject to any modification. On the other hand, during construction period, water quality may be disturbed due to dust deposition and concrete and cement usage. The runoff from work site may enter the present canal which will be acute in degree and short in period.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low: The site is free from any significant aquatic ecosystems or habitats of endangered species. There are some terrestrial flora species around the project site, which will not be affected by the works. Life cycle or movement of some terrestrial living species (fauna) (i.e. Insects - ant, bees, earthworm, reptiles, birds etc.) might be disturbed for the time being, but with very less impact indeed. So, overall potential effect is very low or absent for this specific sub project.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: N/A
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) N/A
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impact on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: No
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) No
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) No
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no possibility of stagnant water bodies remaining for encouraging mosquito breeding and other disease vectors during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project:

Construction or implementation of a bridge project substantially contributes to the development of the project areas. It surely improves the communication network, reduces the transport time, increases the trade and business in/around the areas, and ensures access to better living conditions with amenities, better educational and job opportunities and health facilities. Thus, the direct and indirect impacts on economic development in the project areas would be enormous by this sub-project.

Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description)

No significant modification to the water channel is anticipated. The khal itself functions as a seasonal waterway and is not classified as a wetland or marsh. Surrounding areas are primarily small-scale trade, residential structures, water bodies, and agricultural land, but not dependent on the khal for drainage; therefore, no such effect can be anticipated.

Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description)

There are no protected areas in or around project sites, and no known areas of ecological interest.

Activities leading to landslides, slumps, slips and other mass movements in road cuts:

The entire sub-project component area is nearly flat; thus, no such type of impacts is anticipated.

Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation)

No.

Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:

During operation period, traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred, primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to the bad condition of the access road and unsafe driving through it.

High = Likely to cause long-term impacts or over large area (> 1 sq km); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1 sq km); Low = Likely to cause little, short-term damage and over small area (< 0.5 sq km)

Section C: Social Screening

C.1 General Labor Influx Screening

Key Screening questions	Aspects to Consider
Will the project potentially involve an influx of workers to the project location, and will the influx be considered significant for the local community?	How many foreign and local workers will be needed for the remaining period of the project, with what skill set? Answer: The project will not require any foreign workers for the remaining construction period. The contractors will hire all skilled and unskilled labor locally. For the bridge construction, the project will need about 10 skilled workers and 20 unskilled workers. Skilled workers, such as masons, carpenters, and steel fixers, will come from nearby areas based on the technical needs of the bridge construction. Since the bridge will be constructed within a host community area, and local skilled and unskilled labor is willingly available, the project will prioritize hiring from the local community. This

Key Screening questions	Aspects to Consider
	approach will not only support local livelihoods but also promote stronger community ownership of the project. ✓ Can the project hire workers from the local workforce? Answer: Yes, the project can hire workers from the local workforce. Both skilled and unskilled laborers will be recruited from nearby communities. The availability of local workers is sufficient to meet the project's labor demands. ✓ What is the size and skill level of the existing local workforce? Answer: Based on consultations with local stakeholders, most of the required workforce both skilled and unskilled is available within the project area. However, if specialized skills are needed for specific technical activities, the contractors may need to hire a limited number of skilled workers from outside the immediate locality. Overall, the local workforce is capable of supporting the construction activities under the project. ✓ If the skill level of the local workforce does not match the needs of the project, can they be trained within a reasonable timeframe to meet project requirements? Answer: Unskilled labor is readily available in the project area. If the skill level of the local workforce does not fully meet project requirements, the contractors can provide on-the-job training to upgrade their skills within a reasonable timeframe. This approach will enable the project to utilize local labor effectively while enhancing their technical capacity for bridge construction activities. ✓ How will the workers be accommodated? Will they commute or reside on site or outside of the camp? If so, what size of camp will be required? Answer: Most of the workforce will be hired from the local community, and they will commute daily from their own homes; therefore, they will not require accommodation at the construction site. However, skilled workers who may be sourced from outside the project area will require temporary accommodation near the site. Contractors will establish temporary labor sheds to house these external workers. The size of the labor camp will depend on the number of outside skilled workers needed, but it will be designed to comply with Environmental, Health, and Safety (EHS) guidelines to ensure proper living conditions, sanitation, and worker safety.

Key Screening questions	Aspects to Consider
Is the project located in a rural or remote area?	✓ What is the size of local population in the project area? Answer: The size of the local population in the project area is approximately 29,300 people, including both male and female residents. This estimate is based on information collected during community consultation meetings held at the subproject site. ✓ What is the size of the host Rohingya community? Answer: N/A ✓ Is the project located / being carried out in an area that is not usually frequented by outsiders? Answer: The project is located in an area that is usually frequented by outsiders, including traders, farmers, students, and daily commuters from nearby villages. ✓ What is the frequency and extent of contact between the local community and outsiders? Answer: Daily ✓ Are there sensitive environmental conditions that need to be considered? Answer: Yes, there are sensitive environmental conditions that need to be carefully considered during the implementation of the project. In addition to general construction activities, the demolition of the existing old bridge may also generate significant dust, noise, debris, and vibrations, which could impact nearby small-scale trade, residential structures, water bodies, and agricultural land, pedestrians, and other sensitive establishments located within close vicinity to the site. To minimize these impacts, the construction site must be properly fenced to contain dust dispersion and reduce noise pollution, thereby safeguarding local residents and pedestrians. Dust suppression measures, such as water spraying at least twice daily, must be implemented throughout the construction and demolition periods. High-noise activities should be considered during less sensitive hours to minimize disturbance to nearby communities. Furthermore, all machinery and equipment should be properly maintained to control noise levels. Careful debris management during the dismantling of the old bridge will also be essential to prevent contamination of surrounding agricultural land and nearby water bodies.
Based on the socioeconomic, cultural, religious and demographic qualities of the	✓ Is it likely that the incoming workers and the local community come from a shared socio-economic, cultural, religious or demographic background?

Key Screening questions	Aspects to Consider
local community, Rohingya population and the incoming workers, is there a possibility that their presence or interaction with the local community could create adverse impacts?	Answer: Most of the workforce is expected to come from the local host community. A small percentage of skilled workers may be hired from outside the project area if required. The local workforce and the incoming workers generally share a common socio-economic, cultural, religious, and demographic background, which is expected to support smooth integration at the work sites. Since this subproject is located in the host community area and will not involve Rohingya workers, the risk of conflict due to cultural or social differences is considered low. However, contractors must still take precautionary measures, such as awareness training on social behavior, code of conduct enforcement, and community engagement, to prevent misunderstandings and ensure a harmonious working environment. ✓ What is the level of existing resources, and will the incoming workers use or create competition for these resources? Answer: The existing local resources, such as water supply, food, basic health services, and transportation facilities, are limited compared to the size of the local population. Although workers will be hired from the local community, a small number of incoming skilled workers from outside may create additional pressure on local resources. This could lead to a temporary increase in the demand for basic commodities and may cause price hikes in local markets during the construction period. ✓ What is the expected duration of the incoming workers' presence in the community? Answer: One year but it may be extended. ✓ Given the characteristics of the local community, are there any specific adverse impacts that may be anticipated? Answer: Yes, considering the characteristics of the local community, some specific adverse impacts may be anticipated during the construction phase. These include: • Temporary price hikes in local markets due to increased demand for goods and services from workers. • Pressure on water supply and sanitation facilities,

Key Screening questions	Aspects to Consider
	particularly if labor camps are not properly managed. • Movement disruption for local vehicles and pedestrians around the construction sites due to road blockages and heavy machinery operation. However, no significant religious or cultural barriers are anticipated, as both the local community and the incoming workforce largely share a similar socio-cultural background.
Consultation with Community People	✓ Has the project authority and contractors conducted any consultation meetings with the community people and Rohingya population? Answer: The project authority has already conducted several consultation meetings with the local community during the environmental and social screening stage. Community opinions, concerns, and suggestions were received with great respect and consideration. After the finalization of the contractor, additional consultation meetings will be organized by the contractor in coordination with the project authority to ensure continued community engagement and address any new concerns during the construction phase. ✓ Are local people aware about the labors? Answer: Local community members are well aware of the engagement of local laborers in the project activities. However, they currently have limited knowledge regarding the potential involvement of outside skilled workers. ✓ Has the project authority involved the local community with the project? Answer: Yes, the project authority has actively involved the local community throughout the site selection and screening stages. Several formal consultation meetings and informal discussions were conducted at the proposed bridge location and with the local community. Community members shared their views, concerns, and expectations, which were carefully considered.

Involuntary restrictions on land use or on access to legally designated parks and protected areas

Effects	Yes	No	Not Known	Remarks
10. Will people lose access to natural resources, communal facilities and services?		✓		People's access to communal facilities and services will not be affected by the project.
11. If land use is changed, will it have an adverse impact on social and economic activities?		✓		No scope to change site location.
12. Will access to land and resources owned communally or by the state be restricted?		✓		No
Information on Displaced Persons:				
Any estimate of the likely number of persons that will be displaced by the Project? ☒ No ☐ Yes If yes, approximately how many? N/A				
Are any of them poor, female-heads of households, or vulnerable to poverty risks? ☒ No ☐ Yes				
Are any displaced persons from indigenous or ethnic minority groups? ☒ No ☐ Yes				
During Screening, project authority will conduct consultation with the primary and secondary stakeholders and provide their observations in the following sections (13 to 18)				
13: Who are the stakeholders of the project? Answer: The stakeholders of the project include a wide range of individuals and institutions connected to the sub-project areas. They are: • Local community members • Households and shopkeepers located on both sides of the project roads • Students and guardians from nearby educational institutions • Religious leaders and teachers • Local elected representatives (Union Parishad members, Ward members) • Local administration officials • Implementing agency (LGED) and relevant supporting agencies • Workers and laborers engaged in project construction activities • Community-Based Organizations (CBOs) • Local NGOs • Local traders				
14: What social and cultural factors affect the ability of stakeholders to participate or benefit from the proposed policy or project? Answer: There are no significant social or cultural factors that would restrict stakeholders' ability to participate in or benefit from the proposed project. The project area maintains a socially				

cohesive and culturally conducive environment, which supports broad community participation and equal access to project benefits. Stakeholders, including local residents, traders, students, and vulnerable groups, are expected to benefit positively from the improved infrastructure and services. The project's inclusive approach ensures that participation opportunities are available to all community members without discrimination.

15: Are project objectives consistent with their needs, interests and capacity?

Answer: Yes, the project objectives are highly consistent with the needs, interests, and capacities of the stakeholders. Community consultations and FGD during field visits clearly indicated strong local support for the project.

16: What will be the impact of the project or sub-project on the various stakeholders, especially women and vulnerable groups?

Answer: The construction of the proposed bridges will have a significantly positive impact on various stakeholders, particularly women, children, elderly people and other vulnerable groups. Improved transportation infrastructure will ensure **easier and safer mobility**, allowing women and vulnerable populations to travel more conveniently between villages, markets, schools and health care facilities.

Access to hospitals and emergency services will become faster, which is crucial for women, elderly, and persons with disabilities. School-going children will also benefit through **safer, uninterrupted access to educational institutions**. Overall, the project will enhance social inclusion, reduce travel time, promote economic opportunities, and contribute to an improved quality of life for all segments of the local population.

17: What social risks might affect project or sub-project success?

Answer: Several social risks could potentially affect the success of the sub-projects if not properly managed. These risks include:

- **Minor conflicts** may arise between local community members and incoming skilled laborers, particularly if there are differences in behaviour or competition over local resources.
- **Temporary price hikes** of essential commodities in local markets (hat-bazar) due to increased demand from workers.
- **Risk of engagement in anti-social activities** by a few incoming workers, which could challenge local social norms and community harmony.
- **Noise and dust pollution** may be generated during construction activities, which may disturb schoolchildren, elderly residents, and other vulnerable groups living close to the project sites.

18: Has the project authority or any other organizations conducted any consultations with the affected community or people? If yes. Please provide a summary.

Answer: Yes, the project authority has conducted several consultation meetings with the potentially affected communities and other stakeholders. During the site selection phase, LGED officials organized discussions with local community members, Union Parishad representatives,

local elites, school teachers, and civil society organizations to gather feedback regarding the construction of the proposed bridges.

Additionally, during the environmental and social screening process, the PIU Consultant of LGED conducted community consultations to inform local people about the project objectives, construction activities, potential impacts, and safeguard measures.

The key feedback and observations from the consultations include:

- During the consultation meeting and FGD, Community members strongly supported the construction of the bridges, they would enhance connectivity between economically complementary areas, boosting local trade and labor movement.
- Farmers and small scale traders expressed that the improved communication network would allow them to receive fair prices for their commodities and reduce transportation costs.
- Transportation systems would become easier, faster, and more reliable, saving time and reducing daily hardships for local residents.
- The construction of the bridges is expected to encourage the growth of local businesses and industries, stimulating the rural economy.
- Land value in the surrounding areas is likely to increase as accessibility improves.
- Improved road connectivity will enable quicker access to upazila and district-level hospitals, ensuring better healthcare facilities for the local population.
- The attendance and enrollment rates of school-going children are expected to rise due to safer and more convenient travel routes.
- The bridges will also strengthen the communication network by acting as vital links within the rural transportation system.

Section D: Environmental Screening Summary of the Work Package

Main Environmental & Social Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
				Indicators	Frequency
Sub-project Interventions					
Construction of a RCC Bridge (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention, the overall score is low	- Limiting earthworks and artificial bank reinforcement should be avoided as far as possible; - Bridge soffit (The bottom part of the bridge) levels and flood spans should be at least 1 metre above the maximum known flood level to allow floating debris to pass freely through the structure; - Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; - The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. - The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. - Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. - The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. - Storage of fuel, chemicals, equipment and construction materials so as to minimize the risk of soil contamination or water pollution; - Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water.	Contractor, environmental specialist of PIU and D&SC	Visual monitoring result of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Throughout the time during the construction period.

		• Monitor water quality according to the environmental management plan. • Phasing of construction work to minimize disturbance to wildlife at sensitive times of year, such as during the breeding season or when young are being raised; • Use of techniques to minimize compaction of soil, such as restricting access during wet conditions, and using protective boarding and low-ground pressure machinery. If necessary, soil should be carefully removed and stored for subsequent reinstatement; • Access roads should avoid riparian zones and should be built using appropriate construction materials.			
Pre-construction Phase					
Site planning (i.e. Labor camp, construction of material storage area etc.)	Under the sub-project intervention, the overall score is low.	• The proposed sub-project is targeted at existing old concrete bridges over local running canal. The construction area over this canal needs to be covered so that the water cannot receive debris and dust from the demolition and construction work. • Construction camp and material storage area should be located at the site & approved by the Environmental Specialist of D&SC. • The proposed bridge is located along an existing road section that serves regular vehicular and pedestrian traffic; therefore, any labor camp or temporary construction facility must be established at a suitable off-road location to ensure that traffic flow and public movement are not disrupted and that road safety is maintained throughout the construction period.	Contractor, environmental specialist of PIU and D&SC	Water quality test results. Location of stockpiles and labor shed.	Prior to the start of Construction works.
Loss of land / and other physical assets	No adverse impact will be generated.	• No land acquisition will be required as RCC bridge will be constructed in own existing alignment, which is entirely Government land.	Safeguard team of PIU, PSC and D&SC	Number of Complaints. Check Grievance register.	Ensure regular supervision and Monitoring

		• No additional land will be required to construct the RCC bridge due to both sides of the canal being government vacant property as well as LGED roads. • The local community has been agreed to provide space beside the bridge construction site to keep the construction materials during construction work. • There is no physical asset affected by the intervention of the sub-project (bridge). In case of any grievance from a neighboring household, emergency consultation will be conducted to resolve the issue through the project GRC.		Resolutions against the grievances.	based on compliance.
Loss of livelihood	No impact may be generated.	• Contractor need to engage local labor as priority (both skilled and unskilled) at their construction work. • Women laborers should get priority at the time of labor recruitment. • During construction work social safeguard compliance shall be maintained properly by the contractor.	PIU, Contractor, Safeguard team of PIU, PSC and D&SC	Labor wages payroll. Interview with labor. Frequent visit by D&SC and PIU personnel	Monthly basis
Stakeholders Engagement	Under the sub-project intervention, the overall score is low.	• One community-level consultation meeting has already been conducted with the relevant stakeholders. The meeting aimed to gather feedback, ensure local participation and inform the community about the project scope and potential impacts. • Moving forward, additional consultation sessions will be held as needed to ensure inclusive stakeholder engagement throughout the project lifecycle. • All safeguard documents will be disclosed to the stakeholders prior to the commencement of construction works. • All the stakeholders will be made aware of the Grievance Redress Mechanism (GRM) and their active participation will be ensured through representation in the Grievance Redress Committee (GRC).	PIU, Contractor, Safeguard team of PIU, PSC and D&SC	List of participants in consultation and GRC. Disclosure records of safeguard documents. Feedback and grievances are recorded and addressed. Level of awareness on GRM among stakeholders.	Weekly basis

Material storage area for construction (Creating dust/ air pollution, Spillage of liquid/ hazardous substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, children, animals, etc.)	Under the sub-project intervention, the overall score is low.	- The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures. - Proper procedure for stockpiling/ storage of construction materials at the site will be proposed by the contractor & approved by the Environmental Specialist of D&SC. - Proper covering of dust producing materials with polythene sheet, - Proper fencing around the storage area in order to be secure, to minimize the risk of crime and to be safe from access by outsiders, children, animals, etc. - Spills/ hazardous substances should be disposed of at the site proposed by the contractor & approved by the Environmental Specialist of D&SC to avoid soil/ water contamination.	Contractor, environmental specialist of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage
Demolishing of an existing structure	Under the sub-project intervention, the overall score is Medium	- Water spraying at the demolition site - Fencing / Installing barriers should be shield from dust and aggregates - Avoid usage of machines/equipment with extra noise; - Do not accumulate and burn waste at the site - Carry out demolition activities in stages, give adequate notice and information of activities to the adjoining stakeholders - It needs to Identify proper location to dispose of solid waste from demolition and other activities in consultation with respective bodies - Make mandatory the use of safety gears (helmets, safety belts, masks, gloves and boot) by workers depending on nature of work. - Further guidance on demolition works and wastes management is given in appendix 2, below the ESMP table, to be followed by the contractor.	Contractor, environmental specialist of PIU and D&SC	List of selected sites; Identified sources of materials.	During Design Stage

Setting up of labor camp (Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention, the overall score is low.	- Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. - No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. - Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. - Construction of sanitary latrine with septic tank for both male and female workers and staffs. - Construction of the first tube well for drinking water and providing water filters for further ensuring access to the safe drinking water. - Provision of waste bins/ cans, where appropriate; and litter is to be collected daily. - Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site pre-approved by the Environmental Specialist of D&SC. - Camp and working areas are to be kept clean and tidy at all times.	Contractor, environmental specialist of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Construction works
Accidents	Under the sub-project intervention, the overall score is low.	- Provision of standard safety protocol. - Providing training on Environmental health and safety to the labors and associated field staffs is the responsibility of Upazila Engineer & Contractors. - Training should be scheduled twice, once before starting the construction & another in the middle of construction period. - Safety & protection gears, first aid box etc. should be available in the site during construction period.	Contractor, environmental specialist of PIU and D&SC	Complaints from community; Complaints from the labors and associated field staffs; Regular inspection of materials transport vehicles.	Before and during the construction phase
Construction Phase					
Site Preparation: Soil	Under the	Construction facilities including material are to be placed at	Contractor,	Presence and	Monthly,

Erosion; Alteration of natural drainage	sub-project intervention, the overall score is low.	least 30 meters distance from bridge construction area in order to minimize impacts on water bodies and natural flow paths. - Any disruption of socially sensitive areas with regard to human habitation and areas of cultural significance will be avoided. - Retaining wall need to construct that structure retain (holds back) any material (usually earth) and prevents it from sliding or eroding away. - Ensured diversion / alternative bamboo made bridge for considering the bi-cycle, and Rickshaw movement, pedestrian and other transportation etc. - The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	environmental & Social specialist of PIU and D&SC	adequacy of retaining structures. - Functionality of the temporary bamboo bridge. - Visual evidence of erosion or drainage issues. - Community complaints on disruption.	Immediate follow-up after heavy rainfall or erosion events.
Increase in diversion road accidents	Under the sub-project intervention, the overall score is low.	- The contractor will prepare a response plan to accidents, it will ensure the victim to receive quick treatment. - The movement of heavy machinery and equipment shall be restricted to diversion or temporary bridge. - Proper signage to be displayed at diversion. - Road diversions and closures to be informed well in advance to the local community. - Local community will be trained on traffic management and awareness	Construction Contractor, Safeguard team of PIU and D&SC	- Traffic and Road Conditions. - Accident and incident logs. - Number and visibility of traffic signage.	- Weekly inspections by D&SC - Daily monitoring by contractor - Monthly review by PIU Safeguard team - Immediate review after any accident or complaint.
Quality construction work of the RCC bridge	Under the sub-project intervention, the overall	Respected community deserving quality construction works (side by side with the construction engineers and Design and Supervision Consultant)	Construction Contractor, Environmental & Social Consultant	Community feedback should be acknowledged and addressed regarding	Daily supervision by D&SC. Weekly progress review

	score is low.		of PIU and D&SC	construction quality. ❑ Material quality test results. ❑ Ensure timely rectification of any construction defects.	by PIU.
Safety during construction of the RCC bridge	Under the sub-project intervention, the overall score is low.	• An unauthorized person entry to the proposed site should restrict strictly and ensure proper storage and control of hazardous materials on site. • Child labors are not allowed for any kind of activities • Site shall be secured by fencing and ridge (if needed). • Ensuring that clear safety policies and procedures are in place and strictly enforced is essential, as is regular inspection and maintenance of all workplace equipment. • Awareness building program will be taken on social safety matters through imparting training from the project before commencement. At the same time, compliance should be ensured by the contractors.	Construction Contractor, Environmental & Social Consultant of PIU and D&SC	❑ Regular inspection and maintenance records of machinery and safety gear. ❑ Register/Documents on social safety matters Checking stock register of personal protective equipment (PPE)	
Noise Impacts	Under the sub-project intervention, the overall score is low.	• Avoid high noise making activities during after daylights. • Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times. • Avoid using of construction equipment producing excessive noise at night. • Ear protection devices for the workers & site staffs should be	Contractor, environmental specialist of PIU and D&SC	Number of complaints from stakeholders, use of silencers in noise-producing equipment and sound barriers, Noise Level	Weekly

		available in site during construction period.		following decibel meter (dB)	
Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related pollutants which will affect people who live and work near the sites. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	Under the sub-project intervention, the overall score is low.	• Damp down exposed soil and any sand stockpiled on site by spraying with water during dry weather. • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of water sprinklers and dust extraction systems shall be provided at all stone crushers (if these establishments are being setup exclusively for the subproject). • Limiting speed of construction vehicles in work sites to maximum of 20 km/h. • Regular monitoring of air quality.	Contractor, environmental specialist of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive receptors, Heavy equipment and pollution control devices, Maintain records	Monthly
Biodiversity (There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	Under the sub-project intervention, the overall score is low.	• Prohibit employees from cutting trees for firewood. • If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna. • Construction works should be limited or be finished before the fish breeding period (springtime esp. Bangla months of Baishakh and Jaishtha/ April and May, when the water warms up and the daylight lengthens), and restoration of	Contractor, environmental specialist of PIU and D&SC	If tree cutting is required, to be determined during Design stage, Numbers of complaints from sensitive receptors.	Monthly

		sites (with removal of any hindrance or cofferdam, etc.) is imperatively necessary to protect the fish species.			
Workers' health and safety	Under the sub-project intervention, the overall score is low.	• Prevent excessive noise; • Construction staffs are to make use of the facilities provided for them (e.g., fires for cooking); • No fires permitted on site except if needed for the construction works; • Staff must be trained to operate equipment. • Availability and access to first-aid equipment and medical supplies. • Ensure the presence and use of safety gear at site: Ear protection devices, Goggles, Illuminating jackets, Masks, Gloves, Helmets, Uniforms etc., • Ensure adequate supply of drinking water. • Sanitation facilities for male & female workers separately.	Contractor, environmental specialist of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of walkway signage, and metal sheets placed at project location;	Monthly
Labour Base Camp: Conflicts with the local residents	Low impact may be generated.	• An alternate arrangement for fuel wood, heating and cooking should be arranged for the labors at labor camp. • Awareness building about nutrition, disaster risk resilience or mitigation, adoption of clean energy for cooking; and prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • To be ensured adequate sanitation facilities in the labour camps. • Treated water will be made available at site for labour drinking purpose. • Adequate accommodation arrangements for labour and code of conduct to be disclosed through consultation and	Contractor, environmental & Social specialist of PIU and D&SC	Checking use of resources by labor. Document checking of awareness building activities. Physical Checking. Grievance register. Interview with local community.	Daily site visit

		FGD.			
Post-Construction Phase					
Construction clean-up (Damage due to debris, spoils, excess construction materials, and after-effect water test)	Under the sub-project intervention, the overall score is low.	- Remove all spoils, wreckage, rubbish or temporary structures which are no longer required; - All affected structures rehabilitated/compensated; - The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up; - All imported materials are to be removed and the area shall be re-vegetated as per the specification that forms part of this document; - The contractor must arrange the cancellation of all temporary services;	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory; camp has been restored to pre project conditions. Water test before handover of the project to check water quality for severe modification (if any).	After the completion of Works
Odor& waste disposal	Under the issue, the overall score is low.	Use bin covers and/or tarpaulins during transport of wastes.	Contractor monitored by Consultant and PIU	Complaints from communities	Site inspection daily / weekly basis.
Vegetation	Under the issue the overall score is low.	After construction work, all structures need to be removed and the area shall be topsoiled and re-grassed using the guidelines set out in the re-vegetation specification that forms part of the bidding document.	Contractor monitored by Consultant and PIU	The worksite is restored to its original conditions.	Over the completion of Works
Traffic Accidents	The low impact may be generated during construction even some	- Clear diversion/bridge markings and signage. - Diversion Road design to ensure traffic speed is not hazardous given slopes of the diversion. - Recording and reporting of accident incidents to local police station. - Annual reporting of accident figures to PSC.	PIU, PSC, LGED and Local Governance institution	No. of the accident took place. Marking and signage of road. Record of the Police Station and PSC. Newspaper	Monthly basis

	times after construct ion				
The sub-projects are expected to be sustainable	Low	The safeguard issues and maintenance of the RCC bridge taken care of by the concerned Union Parishad and Upazila Parishad for sustainability.	LGED, Union Council and Upazila Parishad	Evidence of routine inspection and maintenance activities; community feedback on bridge condition.	Bi-annually
Traffic movement and economic enhancement		- LGED expecting that after completion of RCC bridge traffic movement will be increased, diverted traffic will be generated, lives and livelihood of people will be improved of the catchment area. - The important places will be well-connected. - People will enjoy improved facilities for connecting both side canal local school, college and other educational institution.	PIU, PSC, LGED and the Local Governance institution	- Community feedback. - Number of connected routes. - Increase in traffic volume. - Economic activity (shops, transport).	Quarterly, post-construction assessment

* Overall Impact Score: High = Likely to cause long-term E&S impacts; Medium = Likely to cause temporary impacts; Low = Likely to cause little, short-term impacts

Recommendation for further environmental and social assessment and/or site-specific environmental and social management plan: Yes

**If yes, please specify what assessments/plans would be required.*

Appendix-2: Environmental and Social Management Plan (ESMP)

ESMP for Construction of 56.00m RCC Girder Bridge on Char Ishwer Kazir Bazar to Jahajmara Katakhal road Via Wapda Bari road at Ch: 5150m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364081).

Package no: HELP-NOA/BR-1:

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-construction Stage			
Loss of land / and other physical assets	- No land acquisition is required within this sub-project activity so, there is no mitigation measures according to this impact. - The subproject will be constructed on Government land.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Loss of livelihood	Under this subproject, there is no scope of negative impact on livelihoods of the people of catchment area.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Stakeholders Engagement	- All the project stakeholders will be consulted - Separate community-level consultation meeting with the potentially affected HHs - Consultation meeting with the nearby local community about the project objectives and scope of works - People living in the nearby community and members of LGED Upazila will be involved with the GRM	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Loss of right to access	- In case of unavoidable circumstances, alternative access will be provided. - Proposed bridges will be well demarcated and accessibly paved.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Site Preparation: Soil Erosion; Alteration of natural drainage	- Construction facilities including materials are to be placed at least 10 m (32 ft) distance from any water body in order to minimize impacts on water bodies and natural flow paths. - Minimize cut & fill operations; the site clearing and grubbing operations should be limited to specific locations only. - The existing slope and natural drainage pattern on the site should not be significantly altered. - The contractor shall ensure that site preparation activities do not lead to disruption of activities of the camp settlers and host community.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction stage			
Noise from construction works	- Construction activities will be finished at day time within 06:00 PM. Proper measures will be taken to avoid any disturbances. - All Personal Protective Equipment (PPE) shall be available at site before starting any kind of construction works.	Contractor	Environmental Consultant of PIU, PSC
Dust	Construction machinery shall be properly maintained to minimize exhaust emissions of CO, particulate matter (SPM, PM2.5, PM 10) and Hydrocarbons.	Contractor	Environmental Consultant of PIU, PSC

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	- Provision of using water sprinklers to dust control. - Construction materials should be covered properly while carrying in vehicles to the site. - Vehicle movement will be controlled on haul roads/access roads for limiting dust generation.		
Safety Issues	- Unauthorized entry to the site area is completely prohibited and the site will be properly fenced with a single entry, for this purpose. - It will be ensured that proper training and guidance are provided on general and occupational health and safety to Contractors' personnel and labors forces, and records of training sessions are to be kept at site. - All kinds of Child labor will be completely prohibited.	Contractor	Environmental Consultant of PIU, PSC
Traffic Management	- Contractors will discuss with traffic management authorities and take site specific traffic management measures to avoid congestion and any unwanted incidents or accidents. - Road signs and speed ramps are to be placed at strategic locations.	Contractor	Environmental Consultant of PIU, PSC

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction work starts.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Increase in road accidents	• Maintain safety measures during the movement and operation of heavy machineries and equipment. • Vehicular movement is to be controlled near sensitive locations, viz. schools, colleges, hospitals, child friendly centers, etc. identified along designated vehicular transportation routes. • Local community will be trained up about traffic management and awareness.	Contractor	Environmental Consultant of PIU, PSC
Labor Base Camp: Conflicts with the local residents	• Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment,	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labor camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation.		
Construction runoff, sediment, cement slurry, and wastewater may enter the adjacent canal during earthworks, piling, and concreting activities, potentially causing temporary deterioration of surface water quality and increased turbidity. Improper management of construction materials and spoil may obstruct natural drainage and affect local water flow. Additionally, tidal influence in the canal during high tide may cause backflow, which could	• Install temporary silt traps, sedimentation pits and perimeter earthen bunds around excavation areas and material storage zones. • Earthworks, piling, and concreting activities shall be carefully managed to prevent direct discharge of construction runoff, cement slurry, wastewater, or debris into the canal. • Ensure proper drainage management to prevent direct discharge of cement slurry, oil-contaminated water or construction runoff into	Contractor (implementation of mitigation measures and monitoring); Design & Supervision Consultant (technical verification and guidance)	PIU (Environmental & Social Specialists); Design & Supervision Consultant

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
interact with construction activities and influence local hydrology as well as the long-term durability of bridge substructures if not adequately addressed.	the canal. • Monitor pH and Total Suspended Solids (TSS) of any construction-phase discharge water at regular intervals. • Regular site inspections shall be conducted, particularly during the monsoon season, to ensure effective functioning of erosion and sediment control measures. • Works within or near the canal shall be scheduled, where feasible, during low-flow periods to minimize turbidity and disturbance to natural flow.		
Temporary disturbance to local biodiversity, including small terrestrial fauna and common bird species present in surrounding rural and agricultural landscapes; potential short-term alteration of aquatic habitat conditions and natural water flow in the canal during construction.	• Conduct site-specific assessment of aquatic and ecological conditions prior to construction • Monitor bird activity, particularly during migratory season (November–February) • Avoid or limit piling, demolition, and other high-disturbance activities during peak migratory periods where feasible • Restore disturbed areas after construction • Construction works should be limited or be finished before the fish breeding period (springtime esp. Bangla months of Baishakh and Jaishtha/ April and May, when the water warms up and the daylight lengthens), and restoration of sites (with removal of any hindrance or cofferdam, etc.) is imperatively necessary to	Contractor	PIU and Supervision Consultant

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	protect the fish species.		
Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting construction works in order to provide a better sanitation facility to the workers and staffs. • Working areas are kept clean and tidy at all times. • Construction site is to be checked for spills of substances i.e. chemical, oil, paint, etc. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed of at waste disposal areas and/ or at the site. • The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in a stack yard and sold to local recyclers. • Hazardous waste viz. waste oil etc. will be collected and stored in the paved and bounded area and subsequently sold to authorized recyclers.	Contractor	Environmental Consultant of PIU, PSC
Health & Safety Risks: • The potential for exposure to safety events	• All construction equipment will be properly inspected timely and kept fit for purpose.	PIU & Contractor	Environmental Consultant as well as

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	- The risk assessment will be prepared time to time for all types of work activities on site. - Proper Signpost at any slippery areas will be ensured in construction site. - Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. - This sub project will have Proper communicative Emergency Response Plan (ERP) with all parties, to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. - All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. - Provision to first aid box in sub-project areas will be ensured. - Proper Emergency evacuation response plan will exist in sub-project area. - All equipment will be available suitably		Social Development and Gender Specialists of PIU, PSC

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	(safety, size, power, efficiency, ergonomics, cost, user acceptability etc.) in sub-project site, the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight/make aware of the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. • Adequate quantities of drinking water will be available at all sites, on different locations within the site. • Ensure to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Contractor must ensure that all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used. • Establish emergency response procedures, including fire, accident, and medical emergencies.		

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	• Display emergency contact charts at site offices and work areas. • Maintain OHS incident reporting and accident logbooks. • Conduct regular toolbox meetings and refresher safety training for all workers.		
Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE. • Oil interceptors or drip trays can be used in vehicle parking areas, and are inspected and cleaned regularly;	Contractor	Environmental Consultant of PIU/D&SC, PSC
Operation Stage			
Maintenance of assets, properties and equipment	• Periodic maintenance of Bridge structure and seasonal conditions has to be carried out.	LGED	UNO, Upazila Chairman of Upazila Parishad
Decommissioning			
The impacts are similar to those listed in construction stage: • Pollution from waste materials • Health & Safety risks to workers and local community	• Proper measures of mitigation and monitoring to minimize or reduce the environmental and social impacts during decommissioning are anticipated to be similar to those identified for the construction phase.	Contractor	Environmental Consultant of PIU/D&SC, XEN of the respected district, PSC.

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	Third party monitoring of air quality as well as on receiving land and water bodies, may be undertaken, if the condition of those compartments seems to be significantly worse.		

Demolition and Waste Management Plan:

Demolition Plan:

The purpose of this Demolition Plan is to ensure the safe, environmentally sound, and socially responsible removal of the existing dilapidated bridge structure prior to the construction of the proposed RCC Girder Bridge. The plan aims to prevent environmental pollution, ensure worker and community safety, and minimize disruption to local movement and livelihoods. The scope of demolition works includes the removal of the existing concrete deck slab and girders, dismantling of damaged abutments and substructures as required, extraction and segregation of reinforcement steel, and clearing of debris from the canal and adjacent approach areas. All demolition activities will be confined within the existing bridge footprint and right-of-way.

Demolition Phase	Demolition Technique	Methodology
Pre-Demolition phase	Structural Assessment & Method Statement	- Detailed structural assessment of the old bridge condition. - Identify weak sections, reinforcement exposure, and deterioration level. - Confirm load positions and dismantling sequence.
	Site Preparation	- Demarcation and barricading of the demolition zone. - Signboards, warning signs, and safety instructions in Bangla. - Installation of temporary crossing facilities (if needed), e.g.: Temporary wooden planks for pedestrians, - Alternate route notification for vehicles

	Utility and Service Disconnection	• Confirm absence of underground utilities. • Disconnect or reroute any drainage pipes, electricity poles, or telecom cables if nearby.
	Worker Safety Orientation	• Conduct safety training and toolbox meeting before demolition. • Ensure all workers receive PPE: helmets, gloves, safety boots, masks, goggles, life jackets (for water-edge work).
Demolition phase	Demolition Technique	• Manual and mechanical combination method to minimize vibration and protect nearby features. Steps include: • Removal of railings, parapet walls, and footpaths (manual). • Breaking RCC deck slab using small hydraulic breakers. • Cutting reinforcement bars using gas cutter. • Sequential removal of girders using crane or excavator. • Demolition of piers and abutments after girder removal. • Extraction of old piles (if required); otherwise, trim piles below ground level.
	Vibration & Noise Control	• Use low-vibration hydraulic breakers. • Avoid nighttime demolition. • Install temporary noise barriers near households.
	Water Protection Measures	• Silt traps placed near the canal edge. • Tarpaulin sheets under deck demolition to prevent debris falling into water. • Immediate collection of debris from any accidental drop.

Environmental Compliance	Dust & Air Quality Control	• Install temporary debris containment systems (e.g., netting or catch platforms) to prevent falling debris into the khal. • Avoid dumping any demolition waste into the canal. • Implement waste segregation at source (concrete, steel, other materials). • Reuse suitable concrete rubble as sub-base or backfilling material where technically feasible. • Transport non-reusable waste to an approved disposal site with authorization from LGED and the respective authority. • Apply water spraying to control dust during dismantling. • Prohibit washing of equipment directly in or near the khal.
	Oil, Fuel, Hazardous Material, and Waste Management	• Demolition waste includes: RCC debris, Steel rods, Brick/earth materials, Packaging waste • Waste Handling Measures: Segregate waste at source. • Recyclable steel rods sold to authorized recyclers. • Concrete debris reused as road sub-base (if suitable) or disposed of at LGED-approved disposal site. • Hazardous waste (oil, lubricants) stored in spill-proof containers and handed over to DoE-approved handlers. • Store fuels and lubricants in a designated area with secondary containment (bundled platform or drip trays). • Keep spill kits available at the site at all times. • Prohibit refueling or oil changing near the khal or ponds.
	Water Quality Protection	• Prevent concrete slurry, cement dust, oil, and debris from entering the canal. • Collect all water used in demolition activities in settling pits.

Occupational Health & Safety (OHS)	Worker Health and Safety	• Provide Personal Protective Equipment (PPE) such as helmets, gloves, masks, safety boots, and harnesses. • Ensure trained personnel handle cutting and dismantling works. • Conduct toolbox safety meetings before commencement of demolition. • Prohibit child labor and ensure compliance with national labor laws and WB standards.
Traffic and Community Management	Traffic Diversion	• Prepare temporary detour route with signage. • Coordinate with community and local leaders.
	Community Safety Measures	• Inform local residents 3-5 days before demolition. • Restrict community access near the demolition zone. • Provide alternative pedestrian routes as needed. • Install proper barricades and warning signage around the demolition zone.
Demolition Completion and Site Clearance		• Remove all debris from site. • Level the ground and prepare substructure area for new bridge foundation. • Restore access roads and pathways. • Conduct final environmental cleanup.

Waste Management Plan:

The Waste Segregation and Reuse Plan is to ensure environmentally sound management of construction and demolition waste generated during the dismantling of the existing bridge and construction of the proposed RCC bridge. The plan aims to minimize waste generation, promote reuse and recycling, prevent soil and water pollution, and ensure compliance with relevant regulations.

Waste Type	Source of Waste	Potential Impacts / Concerns	Management, Segregation & Reuse Measures	Institutional Responsibility	Supervision & Monitoring
Concrete debris and rubble	Demolition of existing bridge structure	Obstruction of drainage, soil and water pollution, visual nuisance	Segregate at source; crush and reuse as sub-base, embankment fill, or approach road material subject to	Contractor	LGED PIU & D&SC Consultant

			LGED approval		
Steel reinforcement and metal scraps	Dismantling of old bridge and construction activities	Injury risk, improper disposal	Store separately; sell or hand over to authorized scrap dealers/recyclers	Contractor	LGED PIU & D&SC Consultant
Excavated soil and spoil	Foundation excavation and earthworks	Sedimentation of nearby canals, land degradation	Reuse for site leveling, slope protection, or embankment filling; excess disposed at approved sites	Contractor	D&SC Consultant
Packaging materials (cement bags, plastics, timber)	Construction material handling	Littering, clogging of drainage	Collect separately; reuse where possible; recycle or dispose of at approved facilities	Contractor	LGED PIU & D&SC Consultant
Domestic solid waste	Labor camps and work sites	Health hazards, vector breeding	Provide covered bins; daily collection; disposal at LGED/Local Authority approved sites	Contractor	PIU, D & SC Consultant & Local Authority
Used oil, grease, lubricants	Equipment maintenance and refueling	Soil and water contamination, fire hazard	Store in sealed containers with secondary containment; hand over to licensed recyclers; prohibit dumping	Contractor	LGED PIU & D&SC Consultant
Oil-contaminated rags and containers	Machinery operation and maintenance	Hazardous exposure, pollution	Collect in labeled containers; dispose through approved hazardous waste handlers	Contractor	D&SC Consultant
Mixed non-recyclable waste	Construction activities	Environmental pollution	Transport to DoE/LGED-approved landfill sites; maintain disposal records	Contractor	LGED PIU & D&SC Consultant

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Appendix-3: Cost of Environmental Mitigation and Enhancement Works in BOQ

In consideration to the above-mentioned environmental and social impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

SI no.	Description of item	Unit	Quantity/ Area	Unit price	Total amount
1	Erection and maintenance of semi-permanent site office and removal of the same after completion of work in accordance with the conditions of contract. In addition to the office required for own use, the contractor shall provide and maintain furnished site office for the use of Engineer-incharge and his staff. The site office must have tiles floor, adequate foundation, brick walls, false ceiling of gypsum board and all windows are to be glazed, shuttered and provided with steel grill. Outside and inside wall surface are to be painted on plaster acceptable to the Engineer-incharge. The site office shall be maintained in a secure condition by the contractor until the completion of the contract and shall be provided with electricity, water supply, wash rooms and sewerage facilities. All doors shall be fitted with approved locks and windows shall be provided with screen/blinds. Before construction the contractor shall submit plans and drawings showing proposed details and location for the site office, including foundations, access roads, shades, layout of electrical and water supply and hard standings there for the approval of Engineer-incharge. The Engineer-incharge may require revision of the plans prior to giving approval for construction. The contractor shall also submit detailed proposed furniture, fittings and other items of equipment and plant to the Engineer-in-charge for approval. These items shall be of the standard quality suitable for site. The office, complete with furnishings, fittings, access roads and hard standings shall be ready for occupation by the Engineer-in-charge within 28 days of the date when the contractor first occupies the site. The contractor shall provide day and night guards and an attendant for the field office. At the end of the contract all materials, equipment and plant, furniture, fittings recovered from dismantling the office and removing access road will be the	job	1	535843	5,35,843.00

Sl no.	Description of item	Unit	Quantity/ Area	Unit price	Total amount
	property of the contractor. No interim payment shall be certified unless engineer's office with required facilities are constructed and accepted by the Engineer-in-charge. (This is a time related item; proportionate payment for this item shall be made distributing in each bill on the basis of percentage progress of the whole works under contract) Engineer's site office of minimum 38 sqm plinth area with providing necessary facilities including office furniture, 24000 BTU air cooler, umbrella, crookeries, water purifier, PC with monitor, uninterruptible power supply (UPS), laserjet printer (minimum 20 ppm), LED flood light fittings(Halogen) for sight security etc.				
2	Project Profile Signboard: Providing and fixing of typical project profile signboard as per direction of E-I-C, to be placed at a suitable place of the site including submission of proposals for the materials & size of the signboards (recommended size: 1800mm x 1200 mm with 2 nos. 75mm dia. MS post, outer & inner frames of board shall be 50mm x 50mm x 5mm & 25mm x 25mm x 5 mm respectively) and text layout to the engineer for approval which will be positioned as directed by the engineer and removing the same on completion of the works or as instructed by the E-I-C. Sheeting will be made of encapsulated lens with retro-reflective type and messages/ borders will be screen printed. The text shall mention among others the name of the project, name of the implementing agency, cost of the project, completion time, name of the contractor etc.	sqm	Length-1.8m Width 1.2m Area volume 2.160m ² No. of bridge 1 Total quantity of works 1*2.16m ² = 2.16m ² .	18508.52	39,978.40
3	Supplying and providing of first aid box with necessary materials/medicine (hygienic gown, thermometer, adhesive ressing, antiseptic solutions, bandages, cotton balls or swaps, emergency blanket, gloves, hand sanitizer, ice pack, saline etc). All complete as per direction of Engineer-in - charge.	each	2	17836	35,673.00
4	Mobilization and cleaning site before commencing actual physical work and during contract period and demobilization after completion of the works under contract to be accepted by the Engineer-in-charge. This work shall also cover cleaning and clearing, cutting or filling, dressing the project area on and in the ground to an extent that all the events of works of the project can be executed smoothly in a working environment with a particular attention on safety and security in all respects, and to stockpile the end	sqm	Length 25m width 10m Area 250m ² No of items per bridge 2. Total qty per bridge 250*2=	235.40	1,17,700.00

Sl no.	Description of item	Unit	Quantity/ Area	Unit price	Total amount
	outcome to a place for disposal agreed by the Engineer-in-charge, where, payments are to be based on ground area determined by the Engineer-in-charge and be proportionate to the percentage progress of work under contract as a whole in all respects and approved by the Engineer-in-charge.		500m ² .		
5	Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men.	each	2	14172.16	28,344.32
6	Marble Name Plate: Supplying, fitting and fixing 18mm thick marble Name plate including cost of materials, labour, form work, engraving neatly the approved Sample given by the engineer etc. complete as per drawings and direction of the Engineer-in-charge.	sqm	2	9343.42	18,686.84
7	Drinking Water Facilities: Providing continuous adequate drinking water supply at worksite and site office as well by installing necessary tube-well/s where applicable or any other means depending on local situation, also providing essential arrangement for storing drinking water by supplying portable best quality water tank equivalent to Gazi/Padma of adequate capacity depending on the number of users, including supplying 1 (one) no. best quality water filter of minimum capacity 30 liters with necessary kits, etc. all complete as per satisfaction and direction of the Engineer-in-charge, all relevant goods and equipment under this item shall be property of the contractor and payment will be made after 100% completion of the contract successfully.	Ls	1	20000	20,000.00
8	Control of Air Pollution (Dust Suppression): Maintaining, carrying out proper and efficient measures wherever and as often as necessary to reduce dust nuisance, and to prevent dust which has originated from contractor's activities/ operations at the worksite and site office, including sprinkling water on aggregates/unpaved roads at least three times a day or more depending on the atmospheric conditions, including keeping necessary covering/protection on stockpiled fine aggregates to reduce dust nuisance during natural air blowing, all complete like emission of dust into the atmosphere shall be strictly controlled during manufacture, handling,	Ls	1	12000	12,000.00

Sl no.	Description of item	Unit	Quantity/ Area	Unit price	Total amount
	storage of concrete, road aggregates, and to be used such methods and equipment as are necessary for collection and disposal, or prevention, of dust during these operations means of eliminating atmospheric discharges of dust as per requirement and carrying out air quality test as PM10, PM25, SPM, NOx, Sox as per instruction of Engineer-in-charge. Payment will be made after 100% completion of the contract successfully.				
9	Personal Protection Equipment for Workers: Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket for construction workers made of 100% polyester waterproof fabric, fluorescent yellow/orange/green/red/blue or pantone color, (ii) suitable hand protection gloves for construction work of Flexible/ durable/ excellent puncture resistance working gloves with PVC palm and T/C drill back, pasted cuff, palm liner and fit properly and be reasonably comfortable to wear, (iii) appropriate foot protection shoes having impact-resistant toes and heat-resistant soles that will protect the feet against hot working surfaces, (iv) best quality safety helmets of ABS shell, tough, lightweight, durable which will be able to resist penetration by objects, absorb the shock of a blow and water-resistant and slow burning with available four-six-point adjustable suspension for shock-absorbing, slotted sides to accommodate accessories, such as face shields, ear muffs (v) suitable eye protection goggles to protect against specific workplace hazards, fit properly and be reasonably comfortable to wear, provide unrestricted vision and movement, including instructing workers to wear strictly during working time and reviewing periodically, updating, evaluating the effectiveness of PPE and maintaining, replacing worn or damaged PPE etc. all complete as per requirement and full satisfaction of Engineer-in-charge. Payment will be made after 100% completion of the contract successfully.	Ls	1	250000	2,50,000.00
10	Painting the vertical end faces of posts, wheel guard, railing, rail post,	sqm	354.064	246.38	87,234.29

Sl no.	Description of item	Unit	Quantity/ Area	Unit price	Total amount
	parapet wall, kilometer post, road name plate, guide post, traffic signs, etc. in two coats with best quality synthetic enamel paint of approved make and brand of different shades over a coat of priming, applying one vertical and one horizontal coat for each coat and successive coat is to be applied after drying up of previous coat by brush/roller/spray, including cleaning and washing the surface, rubbing and mending good damages as necessary and necessary scaffolding, etc. all complete in all respect as direction of the Engineer-in-charge. Rate is inclusive of cost of all materials, labour and all incidental charges in this connection. Two coats over a prime coat for new concrete surface.				
Subtotal Bill: Environmental Safety and Enhancement Works					11,45,459.85

Appendix-4: Environmental and Social Monitoring Plan (ESMP Implementation and Monitoring Framework)

Environmental and social monitoring for the proposed sub-project has been incorporated into the Environmental and Social Management Framework (ESMF). The detailed Environmental and Social Monitoring Plan, including monitoring parameters, indicators, responsible institutions, the frequency of monitoring during the pre-construction, construction, and operation phases, and the reporting line, is presented here. A mid-term third-party environmental audit may be conducted during implementation to independently assess compliance with the ESMP and World Bank Environmental and Social Standards (ESS1–ESS10).

Monitoring stage	Monitoring Indicator	Method of Verification	Frequency	Responsibility	Reporting Line
1. Monitoring During Pre-Construction Phase	Site-specific ESMP approved before mobilization	Approved ESMP document	Once (Before mobilization)	PIU	PIU → PSC → WB
	Baseline environmental condition (visual record, nearby water condition) documented	Baseline checklist & photos	Once	Contractor (verified by D&SC)	Contractor → D&SC → PIU
	Appointment of EHS Supervisor	Appointment letter	Once	Contractor	Contractor → D&SC
	OHS Plan, Emergency Response Plan (ERP) prepared	Approved plan copies	Once	Contractor	Contractor → D&SC → PIU
	Waste Management Plan prepared	Approved WMP	Once	Contractor	Contractor → D&SC
	Traffic Management Plan prepared	Approved TMP	Once	Contractor	Contractor → D&SC
	ESMP summary disclosed in Bengali at Union Parishad & site	Disclosure photos & record	Once before works	PIU	PIU → WB
2. Monitoring During Construction Phase	A. Environmental Monitoring				
	Indicator	Standard / Target	Monitoring Frequency	Responsibility	Reporting Line
	General ESMP compliance (%)	100% compliance	Weekly	D&SC	D&SC → PIU
	PM10 / Dust control	No visible excessive dust; water	Daily visual; weekly record	Contractor	Contractor → D&SC

		sprinkling ≥2 times/day			
	Noise Level	Within DoE standard (Daytime ≤ 75 dB(A) for commercial/mixed areas)	Monthly or during piling	Contractor (verified by D&SC)	Contractor → D&SC → PIU
	pH of discharge water	6.5–8.5	Monthly (if water discharge occurs)	Contractor	Contractor → D&SC
	TSS in runoff	Within DoE surface water standard	Monthly (during piling/concreting)	Contractor	Contractor → D&SC
	Installation of silt traps & bunds	100% installed where required	Weekly inspection	D&SC	D&SC → PIU
	Oil & lubricant storage with secondary containment	100% compliance	Weekly	D&SC	D&SC → PIU
	Construction waste segregated & disposed at approved site	Disposal records maintained	Weekly	Contractor	Contractor → D&SC
	Obstruction of canal flow	No blockage observed	Weekly	D&SC	D&SC → PIU
	Bird disturbance (if observed Nov–Feb)	No active piling during high congregation	Seasonal (Nov–Feb)	D&SC	D&SC → PIU
B. Occupational Health & Safety Monitoring					
	Indicator	Target	Frequency	Responsibility	Reporting Line
	Workers provided PPE	100% PPE use	Daily	Contractor	Contractor → D&SC
	Toolbox meetings conducted	At least 1/week	Weekly	Contractor	Contractor → D&SC
	OHS incident reporting	100% incidents recorded within 24 hrs	As needed	Contractor	Contractor → D&SC → PIU
	First-aid station functional	Fully equipped	Weekly inspection	D&SC	D&SC → PIU

	Labor camp sanitation & hygiene	Clean, adequate toilets & waste bins	Weekly	D&SC	D&SC → PIU
	No child or forced labor	Zero tolerance	Monthly verification	PIU	PIU → WB
	C. Community Health & Safety Monitoring				
	Indicator	Target	Frequency	Responsibility	Reporting Line
	Site barricading & signage installed	100% coverage	Weekly	D&SC	D&SC → PIU
	Safe pedestrian diversion pathway	Functional & safe	Weekly	D&SC	D&SC → PIU
	Traffic management implementation	No major accident	Weekly	D&SC	D&SC → PIU
	Spill incidents affecting canal/agri land	Zero major spill	Continuous	Contractor	Contractor → D&SC
	D. Stakeholder & GRM Monitoring				
	Indicator	Target	Frequency	Responsibility	Reporting Line
	GRM register maintained	Updated regularly	Monthly review	PIU	PIU → PSC
	Grievances resolved within timeline	10–15 days (as per tier)	Monthly tracking	PIU	PIU → WB
	Community consultation during construction	At least 1 meeting/quarter	Quarterly	PIU	PIU → WB
3. Post-Construction / Operation Phase Monitoring	Indicator	Target	Frequency	Responsibility	
	Site restoration completed	100% cleared & restored	Once after completion	D&SC	
	Waste cleared from site	No residual debris	Once	D&SC	
	Bridge safety features (railings, guideposts, signage) installed	100% installed	Once before handover	D&SC	
	Canal flow unobstructed	No blockage	Once after completion	PIU	
	Final community feedback	Documented	Once before closure	PIU	

Reporting Hierarchy: Contractor → D&SC → PIU (LGED) → World Bank

The D&SC will prepare a Monthly report on Environmental and Social Compliance and submit it to the PIU. The PIU will review and transmit the Monthly Environmental and Social Compliance Report to the World Bank as part of the project's regular safeguard reporting obligations.



Government of The People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Co-operatives
Local Government Engineering Department (LGED)

Host and FDMN Enhancement of Lives through
Infrastructure Improvement Project (HELP)



ENVIRONMENTAL AND SOCIAL SCREENING REPORT

Of the Sub-project:

Construction of 120.15m RCC Girder Bridge on Thanar Hat-Champa Ghat road at Ch: 2200m
under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364103)

Under the Package No. **HELP-NOA/BR-1**

Funded by:



Government of the People's Republic of Bangladesh & World Bank

February 2025

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ACRONYMS

BOQ	Bill of Quantities
BPDB	Bangladesh Power Development Board
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
DPHE	Department of Public Health Engineering
EA	Environmental Assessment
EC	Electrical Conductivity
E-I-C	Engineer-in-Charge
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESF	Environmental and Social Framework
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standards
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
HBB	Herring Bone Bond
HELP	Host and FDMN Enhancement of Lives through Infrastructure Improvement Project
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
MPSC	Multi-purpose Community and Service Center
MoLGRD&C	Ministry of Local Government, Rural Development and Cooperatives
MoRTB	Ministry of Road Transport and Bridges
MoPEMR	Ministry of Power, Energy and Mineral Resources
NDRCC	National Disaster Response Coordination Center
OHS	Occupational Health and Safety
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Pre-Stressed Concrete
PSC	Project Steering Committee
RCC	Reinforced Cement Concrete
RHD	Roads and Highways Department
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Bank

1. INTRODUCTION

1.1 Project Background

Since 2017, Bangladesh has been hosting nearly one million Displaced Rohingya Population (DRP) who fled violence in Myanmar. Most of this population resides in 33 densely populated camps in Ukhiya and Teknaf upazilas of Cox's Bazar district. At the same time, approximately 30,000 have been voluntarily relocated to Bhasan Char, an isolated island in Noakhali District. This unprecedented humanitarian influx has placed immense pressure on the host communities, infrastructure, essential services, and the surrounding environment in a region already characterized by socio-economic vulnerabilities.

The FDMNs now outnumber host populations in affected areas by a ratio of approximately 2:1, contributing to crowding in local markets, overburdening social service systems, escalating environmental degradation, and heightening risks during disasters. In response to these complex challenges, the Government of Bangladesh (GoB), with support from the World Bank has initiated the Host and FDMN Enhancement of Lives through Infrastructure Improvement Project (**HELP**). The project aims to improve access to basic services and enhance disaster and climate resilience of DRP (Displaced Rohingya Population) and host communities. HELP builds on lessons learned from the ongoing **Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) and its additional financing**, which have been supporting emergency response, resilient infrastructure and institutional strengthening in Cox's Bazar since 2019.

HELP proposes a multi-sectoral development approach focusing on critical needs such as water supply, sanitation, renewable energy, shelter upgrades, solid and fecal waste management and the improvement of road connectivity. The project also emphasizes disaster risk reduction, climate-resilient infrastructure, and institutional capacity building. It targets the high-priority gaps identified through annual needs assessments and field consultations, with particular attention to vulnerable groups including female-headed households, persons with disabilities, and those residing in disaster-prone areas.

The project scope encompasses a range of integrated infrastructure interventions aimed at improving resilience, accessibility, and service delivery for both the DRP and host communities. Key activities include the construction of new multi-purpose disaster shelters to provide enhanced protection during natural calamities, as well as the improvement and repair of existing shelters to ensure they meet disaster-resilience standards. The project also involves the development of road communication infrastructure, including the construction and rehabilitation of roads, bridges, and culverts to improve connectivity and access to essential services. In addition, various community-level facilities will be developed or upgraded, such as internal roads, drainage systems, hat-bazar (local markets), footpaths, firefighting systems, lightning protection devices, and solar-powered street lighting contributing to safer and more inclusive living environments.

The project is jointly implemented by four government agencies LGED, DPHE, RHD, and BPDB under the Ministry of Local Government, Rural Development and Cooperatives (MoLGRD&C), the Ministry of Road Transport and Bridges (MoRTB), and the Ministry of Power, Energy and Mineral Resources (MoPEMR). The project comprises four components, covering resilient water and sanitation services, climate-resilient infrastructure and energy, institutional capacity strengthening, and emergency

response. Under Component 2, LGED is undertaking key infrastructure development including rural roads and bridges to ensure improved connectivity and disaster preparedness.

The objective of the Project is to improve access to basic services and enhance disaster and climate resilience of the the FDMN and host communities through:

- Supporting improved access to basic services, climate-resilient infrastructure, and disaster and emergency response services;
- Improving Road interventions for essay access to essential services;
- Reducing vulnerability to accidental fire;
- Strengthening disaster preparedness and response through construction of multipurpose disaster shelters, provision of key equipment, and disaster risk management trainings at the community level;
- Improving Renewable and sustainable energy infrastructure in camps and for host community;
- Strengthening the GoB's capacity to provide essential services and address the needs of the host communities and the DRP, including risks to disasters and climate change;
- Reducing poverty in the project area

This Environmental and Social Screening Report has been prepared to assess potential environmental and social risks and impacts associated with the proposed interventions for constructing a bridge at Hatia Upazila of Noakhali District under HELP. It provides a preliminary evaluation of the biophysical and socio-economic settings of the project areas and identifies key issues that require special consideration or mitigation. The report serves as a guiding tool for environmentally and socially sound project implementation in compliance with national regulations and the World Bank Environmental and Social Framework (ESF).

1.2 Rationale of Site Selection for bridge under the project

LGED is responsible for development and management of local infrastructure including rural roads, bridges, culverts, waterways, markets, river jetties and others in order to contributing to socioeconomic development of the rural community and overall reducing poverty in the country. It is also developing, maintaining and managing transport, trading and small-scale water resources infrastructure at the local level with ensuring LGI and community participation and taking care of environmental and social issues. In 2013, Government of Bangladesh (GoB) has adopted a Rural Roads and Bridges Maintenance Policy with an objective to develop a sustainable rural transport system through appropriate maintenance management to provide safe operation of vehicles and to ensure necessary funding for their maintenance establishing a comprehensive and reliable inventory of roads, bridges and culverts across the country.

The onsite investigation confirms that no existing bridge structure is present at the proposed location over Bakbor Khal under Hatiya Upazila, Noakhali District. Currently, local people cross the canal using temporary or informal arrangements, which are unsafe and unreliable, particularly during the monsoon season. The absence of a permanent bridge structure limits safe and uninterrupted communication between communities located on both sides of the canal.

The local economy in the project influence area largely depends on fishing, small-scale business activities in nearby bazaars, and agricultural production. These livelihood activities require climate-resilient and sustainable transport infrastructure to ensure smooth movement of goods and services to local trading centers such as Thanar Hat, Champa Ghat Bazar, and other commercial hubs within Hatiya Upazila. In addition, residents from surrounding villages including Adorshogram, Purbo Rasulpur, Kazir Tek, and Alinagar require reliable access to education, healthcare, employment opportunities, and other essential public services. In this regard, the proposed bridge will serve as a critical lifeline for the broader community.

The project aims to strengthen the Government of Bangladesh systems to improve access to basic services and climate-resilient infrastructure for local communities. Construction of the proposed 120.15m RCC Girder Bridge at this location will establish a safe, durable, and all-weather connectivity between Chanondi Union and other parts of Hatiya Upazila. By removing the physical barrier created by Bakbor Khal at this crossing point, the project will significantly enhance transportation efficiency, socioeconomic activities, and service delivery in the surrounding areas.

Project activities will largely be on existing available lands, preferably of government owned.

1.3 Background of the Work Package

HELP (Host and FDMN Enhancement of Lives through Infrastructure Improvement Project) is a World Bank-supported project that aims to assist the Government of Bangladesh in responding to the continued humanitarian and development challenges posed by the presence of the Forcibly Displaced Myanmar Nationals (FDMNs) and their impact on host communities. The project seeks to improve access to basic services, and enhance disaster and climate resilience in both Cox's Bazar and Noakhali district.

The Hatia Upazila faces persistent development challenges common to remote coastal regions. The local host communities experience constraints related to inadequate road connectivity, limited access to markets and essential services, and high vulnerability to natural hazards such as flooding, tidal surges, and cyclones. Seasonal inundation and poor crossing facilities over local canals further restrict mobility, particularly during the monsoon period, affecting daily commuting, emergency response, and economic activities. In response to these challenges, the HELP Project focuses on strengthening resilient and inclusive infrastructure that directly benefits the local population. The proposed bridge under this sub-project is intended to improve year-round connectivity, enhance access to services and livelihoods, and reduce disaster-related risks for communities in Adorsogram and surrounding villages of Charking Union, Hatia Upazila.

Under this specific work package of the HELP project, four (4) bridges are planned to be constructed across three different union of Hatia Upazila- Charking, Burirchar and Chanondi. These bridges aim to strengthen the rural road communication network by improving access to essential services such as health, education, markets, and disaster shelters. The improved infrastructure is expected to support both the mobility of the local communities and the efficiency of service delivery, especially in remote or underserved areas of the district. This report focuses specifically on the Construction of 120.15m RCC Girder Bridge on Thanar Hat-Champa Ghat road at Ch: 2200m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364103). Once implemented, this sub-project is expected to significantly

improve transport connectivity across Bakbor Khal, facilitate the safe and efficient movement of goods, services, and people, and enhance the resilience of local communities, including those living and working in the surrounding agricultural and bazar areas of Chanondi Union, Hatiya Upazila.

Local community members predominantly inhabit the catchment area of this sub-project, including surrounding villages and market centers such as Adorshogram, Purbo Rasulpur, Kazir Tek, Alinagar, Champa Ghat Bazar, Thanar Hat, Bhumihin Bazar, Bangla Bazar, Thana Hat, and Abu Syed Bazar under Chanondi Union of Hatiya Upazila, Noakhali District. The selected location of the proposed 120.15 m RCC Girder Bridge on Thanar Hat-Champa Ghat Road has been prioritized based on field-level needs assessments and community consultations. Its strategic importance lies in improving local road connectivity, ensuring safe and reliable access to markets, educational and religious institutions, and essential service centers, enhancing disaster resilience in this flood and cyclone prone coastal setting, and supporting the socio-economic activities of the surrounding rural and semi-urban communities.

The objective of this Environmental and Social Screening Report is to evaluate the environmental and social settings of the proposed bridge construction site under this work package, identify potential impacts both positive and adverse and recommend appropriate mitigation, enhancement, and management measures. This screening ensures that all interventions align with national regulatory requirements and the World Bank's Environmental and Social Framework (ESF), while promoting environmentally sustainable and socially inclusive development.

1.4 Fundamentals of Work Package Components

It is crucial to acknowledge the proposed infrastructure component under Work Package HELP-NOA/BR-1 to conduct an effective screening and verification process aligned with the World Bank's Environmental and Social Framework (ESF) as well as the project's Environmental and Social Management Framework (ESMF). Accordingly, detailed information of the proposed sub-project under this package has been outlined in Table 1.4.1, with a location-specific overview map of Hatia Upazila presented in Figure 1.4.1.

The proposed sub-project will follow standardized construction features and safety protocols, including but not limited to:

1. Construction of a Semi-Pucca Field Office, fully equipped with essential office furniture, computers with printing equipment, sanitary and electrical facilities, water supply arrangements and necessary tools and equipment for engineering supervision. The site office will ensure heat resistance, damp-proofing, and proper ventilation as directed by the Engineer-in-Charge (E-I-C).
2. Installation of Temporary Diversion Bridge (2m wide bamboo structure) as directed by the Engineer-in-Charge (E-I-C) to maintain uninterrupted movement for local communities during construction activities, ensuring minimal disruption to daily life.
3. Full Construction of Bridge Structures including foundation, substructure, and superstructure as per the approved design and technical drawings, along with all related fittings and fixtures.
4. Provision and Installation of Safety Features, such as painted vertical end faces of posts, wheel guards, railing systems, parapet walls, bilingual nameplates (in Bengali and English), guideposts, traffic signage, and kilometer markers.
5. Backfilling Behind Abutments and Retaining Structures with selected granular material, followed by proper compaction using approved machinery like plate compactors.

6. Construction of Approach Roads on both ends of the bridge, ensuring connectivity in compliance with LGED specifications and site conditions.
7. Placement of RCC Guideposts (1.70m long), positioned as per standard drawings and safety regulations.
8. Health, Safety, and Environmental Safeguards, including maintaining first-aid boxes at site and office, displaying safety notices, deploying environmental and social safeguard personnel for continuous monitoring, implementing dust suppression through water sprinkling, erecting health and safety signage, and organizing two rounds of safety and ESHS training for Upazila Engineers and Contractors before and after commencement of works.

Table 1.4.1: Basic Featured Information of component [Sources of data: Field survey, 2025, LGED]

Sl no .	Component's name	Upazila	Union	Distance from Upazila HQ	Primary Catchment area	Name of the river/ canal	Prop osed length (m)	Carr iage Wid th (m)	Estima ted Footpr int (Sq.m)	GPS coordina te	Constru ction Period
1	Construction of 120.15m RCC Girder Bridge on Thanar Hat-Champa Ghat road at Ch: 2200m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364103)	Hatia	Chanondi	28Km	Adarsha gram, Purbo Rasulpur, Kazir tek, Alinagar	Bakbor khal	120.15	7.3	877.09	22.526803, 91.105235	2 years

Though the bridge was initially planned to be 90 m in length, after detailed survey in the area the length has been replanned to 120.15 m. Therefore, the total footprint area for the bridge is 877.09 sq.m.

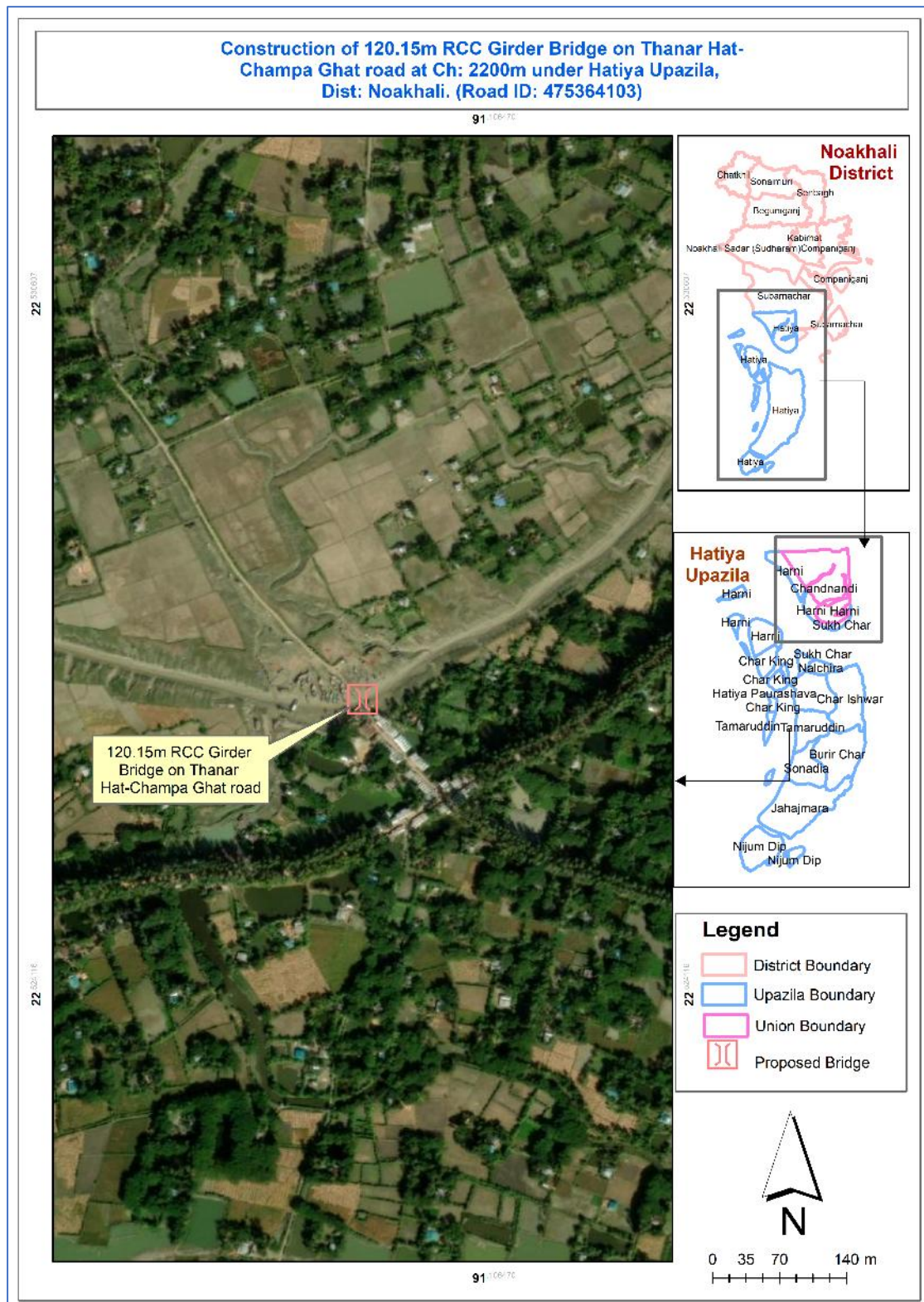


Figure 1.4.1: Map illustrating bridge location in the proposed Upazila

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology and Approach

Public participation and community consultation have been taken up as an integral part of environmental and social assessment process of the project. As part of the impact assessment, participatory public consultation was conducted in areas of concern for proposed bridges by the field level staffs and consultants from PIU. The consultation meeting was attended by different social groups representing local inhabitants of different age groups, social class and occupations. Among the participants, some will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases. In order to serve our screening process, relevant items placed towards the audience to discuss and troubleshoot confusing or worrying matters regarding the proposed interventions under the package work. Impacts in regards to environment, socio-economic matters during pre-construction, construction and post construction phases and the provision for project Grievance Redress Mechanism along with its applicability have been put forth. Possible mitigation measures and relevant needs have turned out during these sessions as well. Moreover, their comprehension as a stakeholder has been up lifted in light of project guidelines.



Figure 2.1.1 Consultation events taking place at sites

However, public consultation is a living process as the types of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution processes are more likely to differ with time. Thus, consultation with different parties or stakeholders will be continued throughout the sub-projects' implementation period and records of resolutions, whatsoever and wherever possible, will be kept in writing at the site and made available on any enquiries or requests by all parties concerned.

2.2 Issues and Recommendations raised by the Participants in regards to component interventions

After facilitating the consultation sessions with a warm and informed manner at Champa ghat bazar near the proposed site, the participants and stakeholders drifted delightfully with the sessions and pointed out many which have been taken into account for further inclusion in design, estimation and formulation of ESMP. During the period of consultation, environmental and social issues and their relevant impacts for the infrastructure development work such as bridge improvement or maintenance were discussed. The advantages and possible nuisance that may emerge during the sub-project activities were also revealed. The participants expected that none of the interventions

would worsen their living conditions, social cohesion surrounding environment and they requested for adopting all measures to reduce/avoid both environmental and social risks during the implementation phase. Participants were also informed of the structure and redressing procedure under project Grievance Redress Mechanism (GRM).

Table 2.2.1: Consultation Meetings Summary

Meeting No.	Date	Venue	Main Participant Groups	No. of Participants	Remarks (If any)
1.	27 November, 2025	Champa ghat bazar	Host Community	23	Discussions focused on the importance of the bridge for local accessibility and safety. Participants emphasized the urgent need for a new bridge due to the deteriorated condition of the existing one.

Some key issues discussed during the consultation are summarized in the table (Table 2.2.2) below, reflecting participants' inputs relevant to the specific components of the proposed intervention. The consultation meeting summary, attendance sheet, and photographs from the meeting held at Champa ghat bazar near the proposed site are provided in Table 2.2.1, Annexure-01, and Annexure-02, respectively.

Table 2.2.2: Issues and Recommendations raised by the Participants

Sl. No.	Component's name under HELP-NOA/BR-1	Issues raised and discussed	Recommendations and Comments
1.	Construction of 120.15m RCC Girder Bridge on Thanar Hat-Champa Ghat road at Ch: 2200m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364103)	•They are very much concerned with absence of reliable path route over the Dhara Khal. •No existing RCC bridge is available at the proposed crossing point over Bakbor Khal, resulting in limited and unsafe connectivity between the two sides of the canal. •The proposed bridge will serve as a critical infrastructure asset to support the local population's livelihood and economic activities. It will be particularly important for traders, local residents, pedestrians, vehicular movement, and fishermen, as it will facilitate regular transportation, access to markets, and movement of agricultural and fishery products across the canal. •Lack of accessibility in case of emergency exits.	•Representatives participating in the discussions assured the local people that the proposed RCC bridge will be longer and stronger bridge structure, which will strongly support local life and livelihoods and increase connectivity and accessibility to various services and amenities. •The proposed bridge has been designed with adequate length and proper geometric alignment to ensure smooth slope transitions, allowing easy movement of both motorized and non-motorized vehicles. The design also ensures uninterrupted water flow and accessibility beneath the structure throughout the year. •The bridge design should consider highest water level thereby ensuring it is not submerging or affected by mass water flow during rainy seasons. Appropriate diversion should be placed during the construction period as alternative pathway. •The bridge should use corrosion-resistant materials and protective coatings suitable for saline environments. •The participants have expressed their greater interest

Sl. No.	Component's name under HELP-NOA/BR-1	Issues raised and discussed	Recommendations and Comments
		• Due to the absence of a permanent bridge structure over Bakbor Khal, heavy vehicles and regular traffic movement face significant constraints, especially during adverse weather conditions, which affects safety and reliable transportation. • In emergencies, including medical emergencies or funeral processions, the lack of a stable and durable crossing structure creates serious hardship for the local community. • Possible dust and noise pollution during the construction works. • Safety of children and adults at the sites during construction works. Involving local people as a priority in implementation works as far as possible. • Local community wish to have a better drainage system along with the Bridge in order to allow waters from high grounds to find an uninterrupted pathway, not causing weak establishment to wash away. Moreover, from a conservation stand point, it will protect the top soil for future growth. • Participants recommended construction of a durable RCC bridge with proper drainage and design standards to withstand heavy traffic and reduce future structural damage, along with regular maintenance after completion.	for this intervention and believe this will surely bring security and prosperity for the entire catchment dwellers. • Construction site safety should be ensured to avoid any mishaps or accidents during the working periods. • They considered small lumbering and suggested tree plantation initiatives. • local community will be given preference in engaging to construction works; however, technical labors will be welcome outside the local area. Priority for jobs should also consider women. • Alternate pathway should be facilitated during the construction near or around existing structure. • As the proposed bridge is located over the flowing Bakbor Khal, the intervention will invite water pollution on moderate level. However, preventive actions and measures should be taken to keep the surface water quality from degrading more than it is. • Participants, made certain that they will provide surveillance over raw materials and material storage area. • They have also ascertained that the selected site is free from any events related to resettlement and major environmental impacts. The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be of short duration, yet proper management/conservative options should be adopted. • Proper drainage system will be embedded with the bridge as well as the bridge-approach. • They also requested regular maintenance of approach roads and bridge surface to ensure durability. • They also suggested to include dedicated pedestrian walkway and strong side railings for enhanced safety.

3. ENVIRONMENTAL AND SOCIAL SURVEY AND SCREENING

3.1. Objective of the Survey and Screening

The primary purpose of the survey and screening is to identify potential risks and impacts associated with the sub-project, assess their significance, and propose appropriate mitigation and management measures to ensure compliance with the ESF along with the project ES compliance documents. The screening process also considers the cumulative and residual impacts of the intervention within the context of the local physical, biological, and socio-economic environment.

To achieve a comprehensive understanding of the environmental and social baseline and the possible implications of the proposed works, detailed field investigations were carried out for the sub-project site within the Project Influence Area (PIA). The screening process included direct observation, stakeholder consultations and the use of the Environmental and Social Screening Format (ESSF), aligned with the Environmental and Social Management Framework (ESMF) developed for the HELP project.

Screening results, impact identification, and mitigation guidance have been summarized and compiled in **Appendix-1**, with site-specific details and supporting documentation. This integrated approach ensures early identification of risks and supports the development of appropriate mitigation and enhancement measures for sustainable project implementation.

The subsequent sections outline the survey findings including important features and establishment within the PIA, along with potential environmental and social impacts that may arise due to the proposed sub-project interventions within a half-kilometer radial distance around the project site. This Environmental and Social Screening has been conducted in accordance with the requirements of the World Bank's Environmental and Social Framework (ESF), particularly focusing on the relevant Environmental and Social Standards (ESSs).

3.2 Important features/establishments around the PIA

The proposed bridge sub-project has undergone a thorough review to identify Environmental and Social resources and baseline conditions, potential environmental and socio-economic risks that may arise during construction and future operation. To accurately assess these concerns, a Project Influence Area (PIA) with a 0.5-kilometer radius surrounding the bridge site was considered during the screening process. Each issue was evaluated on a case-by-case basis without generalization, ensuring site-specific factors were properly addressed. Sensitive environmental and social findings, if any, were carefully noted, and appropriate mitigation or minimization measures were recommended to manage these risks throughout the project lifecycle. In addition, opportunities for enhancing both environmental and social conditions, as well as incorporating monitoring initiatives, have been outlined and integrated into the Environmental and Social Management Plan (ESMP) and its corresponding budget. The contractor's role in addressing identified impacts has been clearly defined, and all assessments and proposed interventions were conducted in full compliance with the Environmental and Social Management Framework (ESMF) of the HELP project.

Initial screening process is conducted through direct involvement of PIU in the influence area of the proposed component, which allows to raise significant questions and ideas towards participants. In combination of both field walk-through and inputs of audience, a register of existing features is formed. The following table describes the important features under Project Influence Area.

Additional spatial understanding is supported through a hand-sketched map provided in Appendix-01.

Table 3.2.1: Important features under Project Influence Area

Sl. No.	Component's name	Direction	Important features/ establishment (approx. distance from the proposed site)
1.	Construction of 120.15m RCC Girder Bridge on Thanar Hat-Champa Ghat Road at Ch: 2200m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364103)	North	Agricultural land- 250m
		South	Shops-30m, Champer Ghat school- 170m, Ponds- 70m, 90m & 100m, Mosque- 70m
		East	Bakbor khal, households- 150m, Agricultural land- 130m
		West	Bakbor khal, households- 130m

Field Survey, 2025

3.3 Major Findings

The Environmental and Social Screening has revealed an integrated overview of site-specific environmental and social conditions of the proposed sub-project. These findings offer valuable insight into the interaction between the sub-project components and their surrounding biophysical and socio-economic settings. While many sub-projects are found to be aligned with the characteristics of their respective locations, the nature, magnitude, and extent of impacts vary based on topography, ecological sensitivity, surrounding land use, and community dependency.

The analysis indicates that while common construction-related impacts such as temporary disruption to pedestrian movement, generation of noise and dust, and minor vegetation clearance are anticipated, several site-specific concerns have been identified for the proposed 120.15 m RCC Girder Bridge on Thanar Hat–Champa Ghat Road at Ch: 2200m under Hatiya Upazila, Noakhali District. The bridge will be constructed over Bakbor Khal, which flows from west to east and functions as an active drainage channel with seasonal tidal influence. The site is located in close proximity to Champa Ghat Bazar, roadside shops (approximately 30 meters to the south), a mosque (70 meters to the south), Champa Ghat School (170 meters to the south), ponds, agricultural land, and nearby residential households, resulting in high pedestrian and local traffic movement. During construction, short-term impacts may arise related to community access, pedestrian safety, localized drainage management, and access to bazar and religious institutions. These impacts are expected to be temporary in nature and can be effectively managed through appropriate safety measures, and environmental mitigation actions outlined in the ESMP.

The screening has also identified both direct and indirect risks that may arise if not appropriately mitigated. Findings indicate that with suitable mitigation measures as proposed in the ESMF and site-specific Environmental and Social Management Plans (ESMPs) most risks are manageable under ESS1 (Assessment and Management of Environmental and Social Risks and Impacts), and relevant associated standards such as ESS4 (Community Health and Safety), ESS2 (Labor and Working Conditions), and ESS10 (Stakeholder Engagement and Information Disclosure).

A summary of the significant environmental and social issues identified during the screening process, along with associated potential impacts, is presented in **Table 3.3.1**. These findings provide critical input for developing context-specific mitigation strategies and highlight areas requiring enhanced monitoring and community engagement during project implementation. None of the activities fall in the E&S exclusion list attached to the project ESMF.

Table 3.3.1: Concerning environmental and social issues relating to each proposed subproject and influence area

	Key Environmental & Social Findings	Anticipated Impacts / Concerns
ESS1: Assessment and Management of Environmental and Social Risks and Impacts	The proposed bridge site is not located within any ecologically sensitive or protected area. The Bakbor canal, which flows beneath the proposed bridge alignment, functions as a local tidal flow channel. Surrounding land use is predominantly rural in nature, consisting of agricultural land, small shops, ponds, and scattered households, with no critical habitats identified within the immediate project influence area.	Overall environmental and social risks are expected to be low and site-specific. Potential concerns include temporary disturbance to local canal during construction, localized water quality impacts from construction runoff if not properly managed, and short-term nuisance to nearby households, shops, and community facilities due to noise, dust, and movement of construction vehicles. No long-term or irreversible environmental or social impacts are anticipated if appropriate mitigation measures are implemented.
	The proposed sub-project involves the new construction of a RCC Girder Bridge over Bakbor Khal, where no permanent concrete bridge structure currently exists. Over time, the absence of a durable crossing at this location has constrained safe movement of people and goods, particularly during the monsoon season, highlighting the need for a climate-resilient bridge at this point.	Since no existing bridge will be demolished, demolition-related waste impacts are not anticipated. Only standard construction-related impacts such as dust generation, minor air emissions, and temporary water quality risks may occur, which can be effectively managed through ESMP measures.
	Environmental and social screening conducted; moderate risks identified.	Manageable with appropriate mitigation measures.
	Heavy vehicular movement and future construction activities may cause air, noise, and water pollution.	Construction activities may lead to localized dust, air pollution, and runoff contamination; these impacts are short-term, site specific and can be effectively managed through water sprinkling, dust control, noise barriers and proper site drainage.
	No fish farming activities or ecologically sensitive habitats were identified within close proximity to the proposed bridge site. Vegetation cover in the surrounding area is limited and mainly consists of scattered trees and homestead vegetation. The adjacent land use is predominantly agricultural, along with shops, ponds, and residential structures. These surrounding features support local livelihoods and community activities and therefore require careful management during construction to avoid temporary disturbance or environmental nuisance.	Will not cause any severe negative effects to the environmental settings of the area nor important environmental features. Air and noise pollution may occur during the construction period due to construction activities and the transportation of materials. In some cases, accidents may happen due to unauthorized entry into the construction site. These impacts are short-term, site-specific, and within a small scale and manageable by mitigation measures.

	Construction activities and the establishment of labor camps, along with associated facilities and services, may lead to adverse environmental and social impacts if not properly managed.	Noise pollution from piling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge (in labor camp), will more likely to take place. Strain on local resources such as water, sanitation and electricity. Health and hygiene risk due to overcrowding or poor camp management. Social tension with nearby communities may arise if laborers' behavior or camp facilities are not adequately supervised.
	Earth excavation work will be involved during the piling.	Consequently, air, noise and dust pollution will be occurred within a small-scale during the construction period only.
	Chemical spills or improper disposal of construction waste materials due to lack of workers' training and misconduct of contractor's safety initiatives. Kitchen and labor camp waste may be generated during construction period.	Soil and water can be further eroded and polluted.
	Vibration effects generated from piling, drilling, or other construction works	May trigger harmful disturbances to local faunal species.
	A functional Grievance Redress Mechanism (GRM) must be in place to ensure community feedback, transparency, and accountability in managing environmental and social risks during project implementation.	Lack of an effective GRM may lead to unresolved community complaints, misinformation, reduced stakeholder trust, and potential conflict or resistance during project implementation. However, the project's three-level GRM structure comprising Local, Project, and Ministry-level committees, offers a systematic approach to resolve such issues in a timely, transparent, and inclusive manner.
ESS2: Labor and Working Conditions	Local workers may be hired; labor influx is not anticipated. No child or forced labor permitted.	Low risk of labor-community tension or burden on local infrastructure; reduced potential for social conflict.
	OHS risks during pile-driving and construction works.	Injury risk for laborers.
	Safe working conditions, personal protective equipment (PPE), and sanitation facilities must be ensured at site.	Risk of injury or health hazards if workers lack PPE or safety supervision. Potential spread of illness if hygiene and sanitation facilities are inadequate.
	As the proposed sub-project involves new construction without demolition of any existing bridge structure, demolition-related accident risks are not anticipated. However, risks of occupational accidents may arise during pile-driving, foundation works, girder installation, and other construction activities.	Risk of falls, tool-related injuries, or exposure to noise and dust without safety training. Possibility of non-compliance with national labor standards or World Bank EHS guidelines. Proper safety training, use of Personal Protective Equipment (PPE), and strict compliance with Labor Management Procedures (LMP) and national labor regulations are required to ensure worker health and safety.
	Labor camps must comply with EHS guidelines. Inadequate ventilation, poor lighting and overcrowded conditions can disrupt normal living standards, increase the risk of disease transmission and negatively impact workers' health and well-being.	Risk of poor living conditions, waste mismanagement, health and hygiene issues, or community tension if camps are not properly managed.

ESS3: Resource Efficiency and Pollution Prevention and Management	Dust from earthwork, vehicle movement, and material handling during the construction period may cause air pollution.	Site specific, short-term, can be controlled by regular sprinkling and covered transport
	Construction works will involve chemical usages (Cementitious Chemicals as Ordinary Portland Cement, Fly Ash, Slag Cement, and Lubricants & Fuels as Diesel, engine oil, hydraulic oil) and preparation of on-site add-ons to the bridge that will generate scraps and residues. Use of concrete, cement and machinery used oil/grease during construction may lead to runoff polluting nearby salt fields and canals.	Short-term water pollution may occur during the construction period due to the use of concrete, cement, and other construction materials. Runoff from the work site may enter the present khal, potentially causing localized deterioration of surface water quality if not properly managed. Such impacts are expected to be temporary and site-specific. The risk can be effectively minimized through the implementation of proper drainage arrangements, use of silt traps, controlled concrete works, and timely cleanup of construction residues.
	Noise from piling and construction machinery.	Potential hearing risks and stress for laborers and local residents exposed to prolonged noise. Limited to working hours and local area, can be reduced by timing and barriers.
	Construction waste, including surplus earth materials, concrete debris, packaging materials, and waste generated from labor camps, will need to be properly managed through a designated Waste Management Plan.	Improper management of construction and camp-generated waste may lead to soil and surface water contamination, particularly due to the presence of nearby agricultural land and Bakbor Khal. Uncontrolled disposal of solid waste could also create health hazards for workers and adjacent communities through odor, vector breeding, and environmental degradation.
ESS4: Community Health and Safety	The construction zones must be barricaded; signage and awareness campaigns to minimize risks to pedestrians and vehicles. Participants recommended dedicated pedestrian walkways and strong railings to enhance community safety.	Increased risk of accidents and injuries to pedestrians, especially children and elderly, due to unprotected construction zones. Obstruction or confusion for local traffic and pedestrians in the absence of proper signage and temporary pathways. Community dissatisfaction if safety measures are not visibly in place. Unsafe movement near deep excavation or elevated bridge structures during construction. Proper use of signage and barricades may ensure the construction site's safety.
	The use of heavy machinery during construction activities may result in temporary increases in dust and noise levels in the surrounding area. Additionally, runoff containing construction materials such as oil, grease, fuel residues, or cement slurry may enter the Bakbor khal if not properly managed. Such runoff could affect local water quality and cause temporary nuisance to nearby households, shops, agricultural land, and community users of the canal, with potential implications for community health and daily activities.	Air pollution from dust and emissions can affect nearby residents. Noise pollution may disturb local communities. Water pollution due to runoff of oil, grease, or cement slurry may contaminate the nearby agricultural land and khal, harming aquatic life and reducing water usability. These impacts are short-term, site-specific, within a small area, and manageable through mitigation measures.

ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlemen	No land acquisition required; construction is within the existing right of way.	Temporary access disruptions during construction can be mitigated by providing alternative access during construction. Vehicles. A Memorandum of Understanding (MoU) should be signed with the landowner in cases where private or community land is temporarily required for storing construction materials or setting up labor camps.
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	No critical natural habitats were identified within a 500-meter radius of the proposed 120.15m RCC Girder Bridge site at Chandoli union under Hatiya Upazila. The surrounding area is characterized by rural settlement features, including agricultural land, shops, ponds, mosques, and scattered homesteads. The Bakbor Khal flows beneath the bridge alignment and functions as a local drainage channel with tidal influence, but it does not support any ecologically sensitive habitats or protected biodiversity features.	Some features are located near the proposed sites, where dust and noise pollution may cause impacts. These impacts are expected to be negative but short-term, site-specific, and reversible with appropriate mitigation measures. Other features are situated at relatively greater distances, where significant disturbance is not anticipated. To minimize any potential impacts, strict construction site management practices should be enforced, including limiting work to daytime hours, applying water-sprinkling at least twice daily around the site, installing proper fencing around the working area, and ensuring safe storage of construction materials.
ESS7: Indigenous Peoples/Sub- Saharan African Historically Underserved Traditional Local Communities	No Indigenous or Small Ethnic Communities found in project influence area.	Not applicable.
ESS8: Cultural Heritage	No known cultural or archaeological sites identified within project site.	Not applicable.
ESS9: Financial Intermediaries	Not applicable as project does not involve financial intermediaries.	Not applicable.
ESS10: Stakeholder Engagement and Information Disclosure	Consultations were conducted with local host community members and relevant stakeholders at proposed bridge locations. On 27 November 2025, a meeting was held with 23 participants at Champa Ghat Bazar, where participants emphasized the urgent need for a new bridge to address transport difficulties and safety risks due to the deteriorated condition of the existing structure.	Participants anticipated support for the project and emphasized the importance of safety features and pollution control. The feedback collected underscores the need for continued stakeholder engagement during implementation, including maintaining a functional grievance redress mechanism (GRM), accessible communication channels and a transparent complaint registry to ensure inclusive and responsive project delivery.

The navigability of canals and community safety remain critical considerations during both the construction and operational phases of the bridge subproject. As per good environmental and social practice, and consistent with World Bank Environmental and Social Standards (ESS4 and ESS6), no

construction or structural intervention over waterways should impede the free and safe passage of local water transport. During construction, temporary arrangements must be ensured so that local communities can continue crossing canals from alternative access points without disruption.

Safety during the operation phase is equally important. Measures such as the installation of reflective guideposts, visible signage, and proper lighting for vehicles and pedestrians approaching the bridge are essential and must be integrated into the construction phase planning. These elements significantly enhance commuter and pedestrian safety and should be reflected in the engineering design and budget estimations.

Furthermore, to minimize environmental degradation and offset potential negative impacts, a comprehensive set of site-specific mitigation measures will be adopted in addition to standard construction practices. These will follow the Environmental and Social Management Plan (ESMP) and the relevant national codes of practice, ensuring compliance with the requirements outlined in the Environmental and Social Management Framework (ESMF).

3.4 Climate Change Impact

3.4.1 General Consideration

Noakhali is one of the most climate-sensitive coastal districts of Bangladesh, characterized by low-lying terrain, tidal floodplains, and extensive char (island) formations. Due to its geographical position along the Bay of Bengal, the district is highly exposed to climate change impacts, including frequent cyclones, tidal surges, saline water intrusion, coastal flooding, and unpredictable rainfall patterns. National climate vulnerability assessments, as well as recent reports from the World Bank¹ and the IPCC², indicate that the coastal belt of Bangladesh will experience increasing climatic stresses, including stronger cyclonic storms, prolonged monsoon rainfall, higher temperatures, and rising sea levels, in the coming decades. Such conditions threaten infrastructure, agricultural production, water supply systems, communication networks, and human settlements.

The overall climatic condition of Noakhali is becoming more unpredictable, with intense rainfall events, prolonged waterlogging, changes in seasonal patterns, and increased heat stress already reported³. Communities in vulnerable unions regularly face tidal flooding during monsoon and post-monsoon seasons, and salinity intrusion is gradually affecting southern coastal upazilas such as Subarnachar and Hatiya. Although inland areas are less saline, they remain exposed to cyclonic winds and heavy rainfall. In this context, rural road bridges play a vital role in enhancing climate resilience by ensuring uninterrupted connectivity during extreme weather events such as floods, cyclones, and tidal surges. Strengthening the structural integrity and climate resilience of the proposed bridge is essential to maintain safe access for local communities, support emergency response and evacuation, and safeguard livelihoods during and after climate-induced hazards.

3.4.2 Site Specific Consideration

The proposed RCC girder bridge is located within a rural coastal setting of Hatiya Upazila, Noakhali District. Although the bridge site is not directly adjacent to the open sea, it lies within a low-lying coastal plain that is regularly influenced by cyclonic wind, heavy monsoon rainfall, tidal fluctuations, and storm surges. The bridge crosses the Bakbor Khal, which extends from the west to east and experiences tidal flow, particularly during high tides and the monsoon season. As a result, the surrounding areas are periodically exposed to increased water levels and flow velocity.

Field observations and community consultations indicate that the khal remains a flowing channel and therefore does not cause prolonged waterlogging near the bridge approaches. However, seasonal high tides and intense rainfall can temporarily affect the canal banks and approach roads, leading to erosion, surface damage, and access difficulties.

Site specific climate change impacts are often not so easy to measure or deduce plausibly while the site is confined to a narrow strip of roadways only, and associated mitigation or offsetting measures are really hard to plot on the same tiny impact areas, though an overall set of measures are often considered in practical aspect. The proposed bridge will incorporate enhanced structural strength, appropriate foundation design, adequate drainage arrangements, and durable construction

¹ https://climateknowledgeportal.worldbank.org/sites/default/files/country-profiles/16813-WB_Bangladesh%20Country%20Profile-WEB.pdf

² <https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg2-chapter6-1.pdf>

³ https://doe.portal.gov.bd/sites/default/files/files/doe.portal.gov.bd/page/936c9ced_0267_48bf_87d0_4e0c43168cf0/2024-05-14-11-21-17bcdcf2bceffea77921c54c689a50367.pdf

materials. These interventions are essential to ensure long-term functionality of the bridge, maintain uninterrupted connectivity during extreme weather events, and enhance the resilience of local communities that rely on this route for daily movement, emergency access, and livelihood activities.

4. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

4.1 General

The anticipated environmental and social impacts of the proposed sub-project are primarily construction-related and considered to be temporary, site-specific, and manageable. These impacts can be effectively addressed through the adoption of good engineering practices, good housekeeping, better *in-situ* construction materials management, standard environmental controls, and adherence to World Bank Environmental and Social Standards (ESS1–ESS10), especially those related to health, safety protocols, and pollution prevention.

The contractor shall be fully responsible for implementing the Environmental and Social Management Plan (ESMP) as an integral part of the contractual obligations for the construction of the proposed RCC girder bridge over the Bakbor Khal in Hatiya Upazila, Noakhali. All construction activities must be carried out in compliance with the approved ESMP to minimize adverse environmental and social impacts on the surrounding communities and environmental features.

During construction, the contractor shall regularly implement dust control measures, including water spraying on exposed surfaces and access roads at least twice daily or as required. Proper solid waste management practices shall be followed through segregation, safe storage, and disposal of construction and domestic waste at approved locations. Noise control measures, such as maintaining equipment in good condition and restricting high-noise activities to daytime hours, shall be enforced. The construction site shall be clearly demarcated using barricades, signage, and safety tape to ensure public safety and minimize disturbance to nearby households, shops, and community facilities.

Given the close proximity of the proposed bridge site to Bakbor Khal flowing beneath the structure, as well as nearby Champa Ghat Bazar and roadside shops (approximately 30 m to the south), a mosque (about 70 m to the south), Champa Ghat School (approximately 170 m to the south), ponds located within 70–100 m, surrounding residential households, and adjacent agricultural land within 130–250 m, special care shall be taken during construction activities.

Particular attention will be required to prevent runoff of construction materials, cement slurry, excavated soil, oil, grease, or debris into Bakbor Khal, nearby agricultural land, ponds, and other environmentally and economically sensitive zones. Construction materials shall be stored on raised and protected platforms, and appropriate measures such as silt traps, drainage control, and spill prevention arrangements shall be implemented to protect water quality. All construction-related activities with the potential to cause environmental or social impacts shall be closely monitored, and corrective mitigation measures shall be promptly applied with due care and diligence throughout the construction period.

In addition, all site workers, engineers, and Contractor's staffs must receive training on occupational health and safety (OHS), good practice construction works, code of conduct, efficient labor camp management, labor management procedure, emergency response, and environmental best practices and relevant awareness building sessions will also be conducted, and records of all those

training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects of this proposed construction work are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

The sub-project specific mitigation and monitoring measures have been outlined in the respective ESMP in Appendix-2, which guides pre-construction, construction, and post-construction phases. With proper implementation of these measures, the proposed infrastructure intervention is expected to deliver long-term social and economic benefits to the host communities, with minimal residual environmental impact.

4.2 Cost of Environmental and social Enhancement Works in BOQ

In consideration to the aforementioned environmental impacts and their mitigation measures for the proposed construction activities, a set of items are included in the BOQ for every sub-project. The estimated cost to implement the ESMP is shown in Appendix-3.

5. CONTRACTOR AND LABOR MANAGEMENT

Most of the workers for this subproject will come from the local community, who share a common socio-economic, cultural, religious, and demographic background. Based on consultations with local stakeholders, it is anticipated that only a small portion of skilled labor may need to be hired from outside the project area, depending on availability. Therefore, the likelihood of internal conflicts among workers is expected to be minimal. It is estimated that approximately 20 laborers will be engaged during the construction phase, comprising 4 skilled (25%) and 16 unskilled (75%) workers, generating around 10,800 active working man-days (as detailed in Table- 5.1).

Although female participation in rural construction work is traditionally low, higher involvement of women is expected in this sub-project. Nonetheless, if female participation remains limited, the contractor must still conduct mandatory GBV (Gender-Based Violence) awareness training for all workers prior to the commencement of construction to mitigate risks of harassment, discrimination, or hostile behavior at the worksite.

The contractor's area will include the working zone surrounding the construction site, materials stacking and storage area, labor shed, and office space ideally located within or adjacent to the proposed Sub project location premises/boundaries for better coordination and monitoring. Contractor will be strictly instructed to maintain cleanliness at the worksite by ensuring waste, debris and dust are regularly cleared and that all bulk construction materials such as sand, stone chips, and steel are stored properly and covered with plastic sheets to prevent environmental degradation. Experiences from ongoing LGED projects in Hatia indicate a shortage of skilled labor, which has contributed to delays in some cases. In this sub-project, LGED anticipates that general and non-technical labor will be sufficiently available locally, with only specific technical expertise needing to be sourced from outside if required. It is expected that the scale of labor influx will remain manageable and will not pose significant risks of social tension or GBV during the construction period.

Table 5.1: Subproject-wise number of labor and total active working days

Sl no	Package Number	Name of Subproject	Total Space of proposed Construction (Square meters)	Tentative per day labor (No)	Days	Total active working days
01	HELP-NOA/BR-1	Construction of 120.15m RCC Girder Bridge on Thanar Hat-Champa Ghat road at Ch: 2200m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364103)	877.09	20	540	10,800
Grand Total =				20	540	10,800

6. GRIEVANCE REDRESS MECHANISM (GRM)

In accordance with the Environmental and Social Management Framework (ESMF) of the HELP project, a robust and accessible Grievance Redress Mechanism (GRM) has been established to address project-related grievances from host communities, workers and other stakeholders. A structured and inclusive Grievance Mechanism (GM) has been established to ensure timely and effective resolution of complaints arising from project activities in the host communities. Since LGED is the Implementing Agency (IA), the grievance redress structure has been designed to operate across three levels local (Upazila), Project Implementation Unit (PIU) and Project Steering Committee (PSC) to address concerns efficiently and equitably.

Local Level GRC

At the local level, a Grievance Redress Committee (GRC) is formed in each Upazila where LGED has subproject activities. The GRC is chaired by the Upazila Engineer from LGED (or a nominated official by the Project Director if required), serving as the Convener. The Environmental Specialist and/or Social Specialist from the PIU, depending on the nature of the complaint, act as the Member-Secretary and remain common across all local GRCs under LGED. The committee also includes an Environmental and/or Social Specialist from the Supervision Firm appointed by LGED, a representative from the respective Union Parishad (preferably female if the complainant is female), and a community representative such as a teacher, NGO staff member, or a local individual nominated by the complainant. Specialists for these roles are expected to be hired within 3 to 6 months of project effectiveness. All grievances at the local level must be heard and resolved within 10 working days of receipt. Complaints related to LGED activities will be received at the office of the respective Upazila Engineer.

PIU-level GRC

If a complaint cannot be resolved at the local level, it is escalated to the PIU-level GRC. The Project Director of LGED chairs this committee and includes the Social and Environmental Specialists from the PIU as Member-Secretaries. It also includes a local government representative, either the same individual from the local-level hearing or another, as appropriate (must be female if the complainant is female), and a community representative, preferably the same individual who participated at the local level. The PIU-level GRC is responsible for reviewing unresolved grievances and delivering a decision within 15 working days. In addition, the Social or Environmental Specialist at the PIU, with assistance from the local GRC's Member-Secretary, will conduct regular visits to subproject sites to

engage with communities and affected persons, and to document any new concerns, suggestions, or complaints in the GRM register.

PSC-level GRC

For grievances that remain unresolved at the PIU level, the matter is further referred to the PSC-level GRC, which represents the final tier of grievance resolution. This committee is led by a representative of the Secretary from the relevant ministry, serving as the Convener, with the Project Director of LGED acting as the Member-Secretary. The PSC-level GRC is required to make a final decision on such grievances within a maximum of four weeks. Any resolution reached at any level of the grievance process that is agreed upon by the aggrieved party is considered binding on LGED and will be implemented accordingly.

This multi-tiered GM structure under LGED ensures that all grievances from host community members are addressed in a fair, inclusive, and transparent manner. It fosters accountability and trust in project implementation while upholding the World Bank's Environmental and Social Standard 10 (ESS10) on stakeholder engagement and information disclosure.

7. INSTITUTIONAL ARRANGEMENT

LGED, through the Project Implementation Unit (PIU), will have overall responsibility for environmental and social risk management through implementation of ESMP and compliance with the World Bank's Environmental and Social Framework (ESF). The PIU's ES team comprising of a Sr. Environmental Consultant, a Sr. Social Development Consultant, and a Gender Specialist will oversee ESMP implementation including functional operation of Grievance Redress system, review monitoring reports from the D&S Consultant, and coordinate reporting to the World Bank. The Design and Supervision Consultant (D&SC) will provide day-to-day site supervision, verify contractor's compliance with ESMP requirements along with taking prime actions in the progress of grievance redressal and advise corrective actions wherever required. The Contractor will be responsible for on-site implementation of all mitigation measures, including occupational health and safety (OHS), waste management, environmental protection and grievance management. Coordination among PIU of LGED, D&SC, and the Contractor will be ensured through regular supervision, reporting, and redressal mechanisms.

Institutional Roles and Responsibilities Table (Recommended for ESMP)

Institution / Entity	Key Roles and Responsibilities
LGED Project Implementation Unit (PIU)	• Oversee environmental and social risk management framework and activities
	• Review and approve site-specific ESMPs
	• Monitor implementation through field inspections
	• Manage and supervise GRM at the project level
	• Approve E&S documents and corrective actions
	• Report ESMP performance to the World Bank
PIU Environmental & Social Specialists	• Technical supervision of ESMP implementation
	• Review contractor's E&S compliance plans and related records.
	• Conduct site visits and compliance audits

	• Provide guidance on ESS compliance and required corrective actions • Leads capacity-building and training sessions for consultants and contractors. • Review and approve periodic monitoring reports and submit to the Project Director for sending them to the WB.
Design & Supervision Consultant (D&SC)	• Provides full-time, site-level supervision of ESMP implementation. • Verifies that mitigation measures are integrated into physical construction activities. • Verify contractor compliance with mitigation measures • Maintains detailed monitoring checklists, incident logs, and photographic records. • Support PIU in Compliance reporting.
Construction Contractor	• Executes all mitigation measures defined in the approved ESMP. • Prepare site-specific plans (OHS, waste, traffic, labor camp, etc.) and implement the same. • Ensure PPE use, safety training, and daily toolbox meetings • Appoints a designated EHS Supervisor to manage site-level compliance and reporting.
Grievance Redress Committees (3-tier GRM)	• Receives, registers, and investigates grievances from workers and the community. • Ensures a transparent, culturally appropriate, and timely resolution process. • Coordinate with PIU and local administration

8. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

Monitoring is a critical component under the Host and FDMN Enhancement of Lives through Infrastructure Improvement Project (HELP) to ensure that environmental and social mitigation and enhancement measures outlined in the Environmental and Social Management Plan (ESMP) are effectively implemented and that their intended benefits are realized over time. The Environmental and Social Management Framework (ESMF) of the HELP Project provides a detailed monitoring mechanism, assigning responsibilities to all relevant parties directly involved in or overseeing the construction and implementation of sub-projects.

Several tiers of monitoring responsibilities have been established under the HELP Project. At the implementation level, contractors are required to ensure that environmental and social risks are effectively minimized throughout the construction period. This includes implementing adequate Occupational Health and Safety (OHS) measures for both workers and surrounding host communities. Contractors must assign site managers and safeguard supervisors (or equivalent personnel) to supervise daily implementation of the ESMP. These personnel are responsible for ensuring environmental protection both on and off-site and for preventing damage or nuisance to individuals, public and private property, and surrounding features or institutions. Pollution, noise, and other detrimental effects arising from construction operations must be strictly controlled. In addition to implementing the ESMP, contractors are also responsible for preparing and executing

specific management plans, such as drainage management, traffic management and emergency preparedness and response, where required. Proper implementation of these plans, along with timely site decommissioning and restoration, must be ensured. The detailed Environmental and Social Monitoring Plan, including monitoring parameters, indicators, responsible institutions, and frequency of monitoring during pre-construction, construction, and operation phases, is presented in Appendix-4.

The first tier of supervision is led by the Design and Supervision Consultant (D&SC) firm. Once the contractors are mobilized, safeguard consultants from the D&SC and the Resident Engineer are tasked with ensuring contractor compliance with the ESMP and with the application of good engineering practices at the site. This includes strict enforcement of OHS measures. The D&SC is responsible for preparing regular monitoring reports based on field-level supervision and findings.

At the second tier, the Project Implementation Unit (PIU) will play a key role in overall monitoring. The PIU will have dedicated environmental and social safeguard specialists who will conduct frequent field visits to assess ESMP implementation. These specialists, in coordination with the Executive Engineer's Office in Noakhali district and Upazila Engineers' Office in the respective upazila, will ensure strong site-level oversight. The PIU safeguard team will also ensure that all contractor staff and other relevant personnel receive adequate initial and ongoing training on environmental and social safeguards. Moreover, the PIU will verify proper site cleaning and reclamation upon completion of construction and recommend necessary corrective or punitive measures if any non-compliance is observed.

At the highest tier, the Ministerial Project Steering Committee (PSC), chaired by the Senior Secretary/Secretary of the Local Government Division (LGD), Ministry of LGRD&C, will provide strategic oversight of monitoring activities. In collaboration with the PIU, the PSC will ensure that environmental and social safeguard training is provided to all relevant project staff and that implementation at the field level aligns with national policies and the World Bank's Environmental and Social Framework (ESF). This structured multi-tiered monitoring approach under HELP will help ensure that the construction of the RCC bridge at Hatia Upazila is environmentally and socially responsible, and aligned with sustainable development objectives.

9. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are fully implemented, there will be no significant negative environmental or social impacts related to the selection, design, construction, and operation of the proposed sub-project. In fact, the recommended mitigation and enhancement measures will lead to significant benefits, improving both the environmental quality and the social well-being of the local communities. The project will contribute to enhanced infrastructure, improved livelihoods and better access to essential services, ultimately benefiting both the host communities and the displaced populations. Major improvements in quality of life, communication and socio-economic influences will be ensured once the scheme is in operation.

Overall, the screening study can be summarized as follows:

- The communities will receive large benefits in terms of quality of life, particularly with better reach of services and goods.

- The short-term negative impacts that may come by the way of air quality, noise, solid waste, occupational health & safety during the construction period, that need to be minimized through the management plan.
- The project will create employment for those who live in the vicinity of the construction site and will provide them a short-term economic gain.
- A comprehensive Environmental and social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from these Subproject activities.
- Detail cost estimation for incorporating ESMP has been shown in Appendix-3. This budget can change due to change of market prices and if the project implementation period extends.

Implementation of this Sub-project will have large positive impacts to the communities in terms of improved infrastructural transportation & communication facilities, which would eventually develop the socio-economic condition of the catchment areas. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Annexure-01: Attendance of consultation meetings for sub-project

Host and FDMN Enhancement of Lives through Infrastructure
Improvement Project (HELP)
Local Government Engineering Department (LGED)
Public Consultation Participants List
Focus Group Discussion

সময় :

তারিখ :

উপ-প্রকল্প/কমপোনেন্ট এর নাম: Construction of 120.15m RCC Girder Bridge on Thanar Hat-Champa Ghat road at Ch: 2200m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364103).

মত বিনিময় স্থান : চম্পা ঘাট বাজার

ইউনিয়ন : চান্দী

ওয়ার্ড নং : ০৬/০৬

ডাকঘর : হাতিয়া বাজার

উপজেলা : হাতিয়া

জেলা : নোয়াখালী

সাব প্রকল্প নং: HELP-NOA/BR-1

22-526803

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

91-105235

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/চিহ্ন
১	ডাঃ মিয়া	৪৫	পুরুষ	মালাসোয়া	ডাঃ মিয়া
২	ডাঃ মিয়া	৪২	পুরুষ	মালাসোয়া	ডাঃ মিয়া
৩	ডাঃ মোঃ মোস্তাফিজ	৪৫	পুরুষ	পাটিল আদম	ডাঃ মোঃ মোস্তাফিজ
৪	মোঃ মোস্তাফিজ	৫৫	পুরুষ	আদম গ্রাম	মোঃ মোস্তাফিজ
৫	মোঃ মোস্তাফিজ	৫২	পুরুষ	আদম গ্রাম	মোঃ মোস্তাফিজ
৬	বাহার আমিন	৬০	৥	মুন্সুরাব	বাহার আমিন
৭	জাহেদ উদ্দিন	৫৬	৥	৥	জাহেদ উদ্দিন
৮	ডাঃ মোঃ মোস্তাফিজ	৫০	৥	পাটিল আদম	ডাঃ মোঃ মোস্তাফিজ
৯	ডাঃ মোঃ মোস্তাফিজ	৫২	৥	৥	ডাঃ মোঃ মোস্তাফিজ
১০	আবদুল হক	২০	৥	৥	আবদুল হক
১১	আবদুল হক	৫০	৥	৥	আবদুল হক
১২	ডাঃ দিদার উদ্দিন	৬৬	৥	৥	ডাঃ দিদার উদ্দিন
১৩	আবদুল হক	৬৫	৥	বুলালপুর	আবদুল হক
১৪	আবদুল হক	৬২	৥	আলিপুর	আবদুল হক
১৫	বাবুল	২৬	৥	৥	বাবুল
১৬	ডাঃ মোঃ মোস্তাফিজ	৪৬	৥	৥	ডাঃ মোঃ মোস্তাফিজ
১৭	ডাঃ মোঃ মোস্তাফিজ	৫০	৥	আদম গ্রাম	ডাঃ মোঃ মোস্তাফিজ
১৮	ডাঃ মোঃ মোস্তাফিজ	৬৫	৥	আদম গ্রাম	ডাঃ মোঃ মোস্তাফিজ

Annexure-02: Sub-project location pictures



Figure: Present condition of the proposed location for 120.15m RCC Girder Bridge on Thanar Hat-Champa Ghat road at Ch: 2200m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364103)

Appendix-1: Environmental and Social Screening Form for examining sub-project

Environmental Screening Form

Work Package Description Form:

Name of component: Construction of 120.15m RCC Girder Bridge on Thanar Hat-Champa Ghat road at Ch: 2200m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364103).

Package no: HELP-NOA/BR-1

Implementing Agency/Agencies: Local Government Engineering Department (LGED)

Estimated total cost of sub-project (in Taka): As per LGED rate schedule

Estimated construction period duration: 18-24 months

Estimated Operation and Maintenance period (life of sub-project): Project design life is more than 15 (Fifteen) years but Government policies will determine the period for sub-projects to operate in the areas.

District: Noakhali

Sub-District: Hatia

Union: Chanondi

Name of Community/Local Area: Champa Ghat Bazar

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.):

ne RCC Girder Bridge will be constructed at the proposed location over Bakbor Khal. There are some activities for RCC bridge construction such as Earth cutting and filling for foundation, Back filling and approach road construction, Brick soling work, CC work, RCC work, Rod cutting, bending and binding and Shuttering work.

Estimated footprint / land area for this sub-project is 877.09 sq. meter

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.):

The proposed sub-project site is located on the Thanar Hat-Champa Ghat Road at chainage 2200 m under Hatiya Upazila of Noakhali District (Road ID: 475364103). The bridge will be constructed over Bakbor Khal, which flows from west to east and functions as an active drainage channel with seasonal tidal influence. The canal serves as a natural water conveyance system and supports local drainage and limited water-based activities. Water generally flows continuously due to tidal exchange, reducing the risk of prolonged waterlogging.

The surrounding land use is predominantly mixed rural and commercial in character. Roadside shops are located approximately 30 meters to the south of the bridge site, along with tin-shed commercial structures and local trading points. Agricultural land is situated approximately 130 meters to the east and 250 meters to the north, while ponds are located within 70-100 meters to the south. Scattered residential households are present within 130-150 meters of the site. Several important community establishments are situated near the location, including a mosque (approximately 70 meters south) and Champa Ghat School (around 170 meters south). The presence of these facilities indicates the socio-economic importance of the area and the high level of daily pedestrian and vehicular movement.

The proposed bridge will serve as a vital connectivity point for people from surrounding villages and market centers, including Adorshogram, Purbo Rasulpur, Kazir Tek, Alinagar, Thanar Hat, and nearby bazar areas. The existing approach road is actively used by residents, traders, students, fishermen, and agricultural workers for daily commuting, transportation of goods, and access to markets and essential services.

No ecologically critical habitats or protected areas have been identified within the immediate vicinity of the site. However, Bakbor Khal itself is an important local environmental feature supporting drainage, tidal flow, and small-scale livelihood activities. Therefore, careful management of construction activities will be required to avoid obstruction of water flow, contamination of surface water, and disturbance to surrounding community features during implementation.

The proposed Sub-project of RCC Bridge is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction of the sub-project.

Types of waste to be generated during construction and operation phase:

During construction period, solid waste will be generated due to construction of a new bridge at the Proposed place. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic, etc. Negligible amount of plastic. Human waste might be generated in labor camps.

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions:

The following activities for PSC bridge construction are:

- Earth cutting and filling for the foundation
- Backfilling and approach road construction
- Brick soling work
- CC work
- RCC work
- Rod cutting, bending and binding
- Shuttering work

For bridge safety,

- Color painting on rallying
- Traffic safety guide post for approach
- Safety measures will be taken within the construction

Others,

- Any bridge side is not on private land.
- Alternative diversion will be provided for traffic movement without disturbing of water flow or flora and fauna
- Mainly on very small canals and dispersed land will be necessary for water drainage

For livelihood,

- No private land will be used

• No shifting of any structure will be needed
Sub-project Location: The proposed sub-project site is located on the Thanar Hat–Champa Ghat Road at chainage 2200 m under Hatiya Upazila of Noakhali District (Road ID: 475364103). The bridge will be constructed over Bakbor Khal, a canal flowing from west to east. Geographically, the bridge site falls within Chanondi Union under Hatiya Upazila. The surrounding villages and market centers that rely on this crossing for daily movement include Adorshogam, Purbo Rasulpur, Kazir Tek, Alinagar, and nearby bazar areas such as Champa Ghat Bazar and Thanar Hat. The bridge location is strategically important for improving local connectivity, linking rural settlements with market centers, educational institutions, religious establishments, and other service facilities. The GPS coordinates of the proposed bridge site are approximately 22.526803 N latitude and 91.105235 E longitude. The site is located approximately 28 km from the Hatiya Upazila headquarters.
Land ownership Government Land
Expected construction period: 18-24 months
Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas and historical or cultural assets): Please also explain any analysis on alternative location was conducted: The proposed sub-project is confined to the new bridge location over Bakbor Khal, where a 120.15 m RCC Girder Bridge will be constructed on the Thanar Hat–Champa Ghat Road under Hatiya Upazila of Noakhali District (Road ID: 475364103). Construction activities will be limited to the bridge footprint, abutments, piers, and immediate approach roads, thereby minimizing land take and physical disturbance. The influence area surrounding the bridge includes a mix of commercial, residential, and agricultural land uses typical of a rural market-cum-settlement zone. To the south, Roadside shops are located approximately 30 meters away, with a mosque about 70 meters south and Champa Ghat School around 170 meters south. Several ponds lie within 70–100 meters, while agricultural land extends approximately 130 meters east and 250 meters north, with scattered households situated 130–150 meters from the site. To the east, tin-shed shops and trees are located within 40 meters, while to the west, agricultural land extends about 100 meters from the site, tin-shed residential structures are around 80 meters away, and a pond is located roughly 150 meters from the proposed bridge. These surrounding features are typical of a rural market-cum-settlement area and are not considered environmentally sensitive or vulnerable to significant adverse impacts if standard mitigation measures are applied. No historical, archaeological, or nationally protected cultural heritage sites were identified within the 500 m influence area.

Section B: Environmental Screening

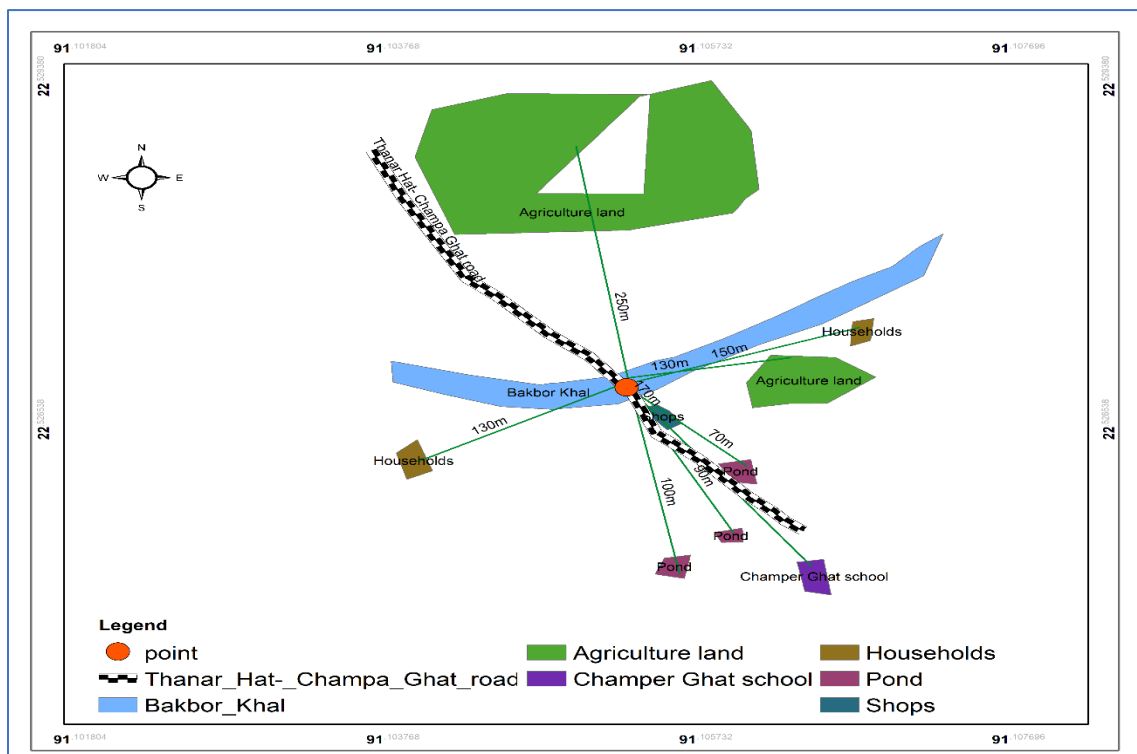
B.1: Environmental feature of sub-project location

Description of cultural properties (if applicable, including distance from site):

The proposed sub-project is located at chainage 2200 m on the Thanar Hat–Champa Ghat Road, where a new 120.15 m RCC Girder Bridge will be constructed over Bakbor Khal. No archaeological, historical, or nationally protected cultural heritage sites have been identified within or adjacent to the proposed bridge site. However, several locally important religious and community structures are present in the surrounding area. Notably, a mosque is located approximately 70 meters south of the proposed bridge site, and Champa Ghat School, which also functions as a local community institution, is situated about 170 meters south. Other smaller mosques and religious establishments are located within 80-150 meters of the site.

These religious establishments are actively used by the local community and are considered culturally significant at the local level. The proposed bridge construction will not require land acquisition from these sites, nor will it involve any physical alteration or relocation of cultural properties. With the implementation of appropriate construction management measures such as noise and dust control, restricted work during prayer times (where feasible), and clear site demarcation, no adverse impacts on cultural or religious practices are anticipated. The sketch of the surrounding features is given below.

A diagram showing the major features around and apparent distances (in parentheses) from the proposed construction site is given below.



Location of environmentally important and sensitive areas:

The proposed sub-project site is not located within any nationally designated environmentally sensitive area, protected area, ecologically critical area (ECA), forest reserve, or wildlife sanctuary. The bridge will be constructed over Bakbor Khal, which flows from west to east and experiences seasonal tidal flow. The canal functions as a local drainage and tidal water conveyance system and does not support any identified critical aquatic habitats.

The surrounding area is predominantly characterized by agricultural land and rural settlement features, with ponds, residential households, and market areas within 70-250 meters. The agricultural land surrounding the site, located approximately 130 meters to the east, 250 meters to the north, and 130-150 meters from household structures, is economically important for local livelihoods but is not classified as environmentally sensitive. No wetlands, mangroves, fish breeding grounds, or significant natural vegetation were identified within a 500-meter radius of the bridge site.

With proper implementation of erosion control, runoff management, and pollution prevention measures during construction, the sub-project is not expected to cause adverse impacts on environmentally important or sensitive areas. Potential short-term impacts, such as dust generation or runoff into nearby agricultural land or ponds, can be effectively managed through water sprinkling, proper site drainage, and controlled material handling.

Those will not be affected by the construction works, as the activities will be carried out over the existing concrete bridge, and necessary preventive and mitigation measures will be followed during the entire construction period.

(1) potential impacts on remaining forests in/around camps Yes/No

N/A

(2) Other issues:

No other issues identified.

Baseline air quality and noise levels:

Air Quality

Site-specific baseline ambient air quality monitoring was not conducted for this sub-project. However, baseline conditions have been assessed based on secondary information drawn from relevant environmental studies, monitoring reports, and previous coastal and rural infrastructure project documents implemented in Noakhali District, including Hatiya Upazila. These sources indicate that the ambient air quality in rural coastal areas such as Hatiya is generally good due to the absence of major industrial activities, low traffic density, and the predominance of open agricultural land and water bodies.

According to DoE Continuous Air Monitoring Station (CAMS) data for nearby coastal districts, concentrations of gaseous pollutants such as sulfur dioxide (SO₂), nitrogen dioxide (NO₂), and carbon monoxide (CO) typically remain well within the Bangladesh National Ambient Air Quality Standards in rural and semi-rural settings. Previous environmental assessments for LGED road and bridge

projects in Noakhali report indicative 24-hour average concentrations of SO₂ ranging from 5–15 µg/m³ and NO₂ ranging from 10–25 µg/m³, while CO concentrations remain below 1.5 mg/m³⁴.

Particulate matter (PM₁₀ and PM_{2.5}) levels in Hatiya Upazila are generally moderate but may increase seasonally during the dry period due to wind-driven dust, movement of light vehicles, and unpaved rural roads. Secondary data from past LGED and World Bank-supported project EIAs indicate PM₁₀ concentrations in the range of 80–140 µg/m³ and PM_{2.5} concentrations between 35–60 µg/m³ during peak dry months, with occasional short-term exceedances of 24-hour standards⁵. Such exceedances are typically localized, temporary, and reversible.

Field observations at the proposed bridge site in Hatiya confirm low background pollution levels, limited vehicular movement, and the absence of nearby industrial emission sources. Therefore, the baseline air quality conditions at the site are generally acceptable and representative of rural coastal environments. Construction activities may temporarily increase dust and vehicle-related emissions, particularly during earthworks and material transport; however, these impacts are expected to be short-term and manageable through standard mitigation measures such as water spraying, covering of materials, and controlled vehicle movement.

Noise Levels

Baseline noise monitoring was not carried out at the project site. However, secondary information from DoE noise surveys, LGED environmental reports, and field observations indicates that ambient noise levels in Hatiya Upazila are generally low to moderate and consistent with rural and semi-rural land use patterns⁶. Indicative noise levels reported in previous studies conducted in rural Noakhali range from 45 to 55 dB(A) during the daytime and from 38 to 45 dB(A) during nighttime.

These levels generally comply with the permissible limits prescribed under the DoE Noise Pollution (Control) Rules, which set standards of 55 dB(A) for daytime and 45 dB(A) for nighttime in rural and residential areas⁷. Existing noise sources in the project influence area are limited to light vehicular traffic, local market activities, and occasional agricultural operations. No continuous or high-intensity noise-generating sources were identified near the proposed bridge site.

During construction, temporary increases in noise levels may occur due to the operation of construction machinery and vehicles. Such impacts are expected to be localized, intermittent, and time-bound, and can be effectively mitigated through scheduling works during daytime hours, maintaining equipment in good condition, and providing appropriate personal protective equipment (PPE) for workers.

⁴ Local Government Engineering Department (LGED) (2020). Environmental Impact Assessment Reports for Rural Infrastructure Projects in Noakhali District. LGED, Dhaka.

⁵ Local Government Engineering Department (LGED) (2018). Environmental Assessment and Environmental Management Framework for Rural Roads and Bridges Projects in Coastal Bangladesh. LGED, Ministry of Local Government, Rural Development and Cooperatives, Dhaka.

⁶ Department of Environment (DoE) (2025). Noise Pollution (Control) Rules, 2025. Ministry of Environment, Forest and Climate Change, Government of the People's Republic of Bangladesh, Dhaka.

Local Government Engineering Department (LGED) (2020). Environmental Impact Assessment Reports for Rural Infrastructure Projects in Noakhali District. LGED, Dhaka.

⁷ Department of Environment (DoE) (2025). Noise Pollution (Control) Rules, 2025. Ministry of Environment, Forest and Climate Change, Government of the People's Republic of Bangladesh, Dhaka.

Baseline soil quality:

Site-specific soil quality was not conducted for the proposed bridge site at the screening stage. However, baseline soil conditions have been assessed using secondary information. Hatiya Upazila is located within the coastal floodplain of Bangladesh and is characterized by young alluvial and tidal floodplain soils, primarily consisting of silty clay to clay loam textures. These soils are generally fertile but moderately to highly saline, particularly during the dry season due to tidal influence and saline water intrusion⁸. Soil pH in the area typically ranges from 6.5 to 8.0, indicating neutral to slightly alkaline conditions, which are common in coastal deltaic environments.

Electrical Conductivity (EC) values of soils in Hatiya vary seasonally and spatially, with moderate salinity (4–8 dS/m) commonly observed in surface soils during the dry season, while salinity levels reduce significantly during the monsoon due to rainfall and freshwater flushing. Organic matter content is generally low to moderate (1–2%), reflecting frequent sediment deposition, tidal action, and limited biomass retention in cultivated and open areas.

Available secondary data indicate that concentrations of heavy metals such as lead (Pb), cadmium (Cd), chromium (Cr), and arsenic (As) in soils of Hatiya Upazila are generally within permissible limits for rural and agricultural land use, with no evidence of industrial contamination⁹. Iron content in soil is naturally high due to alluvial sediment characteristics, but this is not considered a constraint for construction activities.

The proposed bridge site is located over an active canal corridor (Bakbor Khal), with no agricultural activity within the immediate construction footprint. Agricultural land is present near the site but outside the direct construction area. No evidence of contaminated land, waste dumping, or previous industrial activity was observed during field observation.

Construction activities may temporarily disturb topsoil and increase the risk of localized soil contamination from fuel, lubricants, cement slurry, and construction debris if not properly managed. However, such impacts are expected to be temporary, localized, and reversible, provided that appropriate ESMP measures such as controlled material storage, spill prevention, proper waste handling, and site restoration are effectively implemented.

Landslide potential (high/medium/low, with explanation):

N/A (the sub-project will be constructed in a plain land)

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):

Surface Water Quality

Site-specific baseline surface water quality was not conducted for the proposed bridge site. However, baseline conditions have been assessed using secondary information from the different Department and World Bank-funded projects previously implemented in Hatiya and adjacent coastal upazilas of Noakhali District.

Surface water bodies in Hatiya Upazila mainly consist of tidal canals (khals), ponds, and estuarine channels connected to the Meghna River system. Secondary water quality monitoring data indicate

⁸ SRDI (2018). Soil Salinity Status of Bangladesh. Soil Resources Development Institute, Ministry of Agriculture.

⁹ DoE (2022). Environmental Quality Standards and Monitoring Report. Department of Environment, Bangladesh.

that surface water pH values generally range between 7.0 and 8.2, reflecting neutral to slightly alkaline conditions typical of coastal tidal systems. Total Dissolved Solids (TDS) in surface water show seasonal variation, with values typically ranging from 1,500 to 5,000 mg/L, increasing during the dry season due to tidal influence and salinity intrusion.

Iron (Fe) concentrations in surface water are generally low to moderate, commonly recorded between 0.3 and 1.0 mg/L, which is within acceptable limits for surface water but not suitable for direct drinking without treatment¹⁰. Fecal coliform contamination has been reported in canals and ponds, particularly near settlements and markets, with counts often exceeding 1,000 MPN/100 ml, indicating contamination from domestic wastewater and open sanitation practices¹¹. As a result, surface water in Hatiya is mainly used for washing, bathing, and limited household purposes, rather than for potable use.

The canal at the proposed bridge site is a tidal watercourse with regular flow and flushing action. No stagnant water or chronic waterlogging was observed during field reconnaissance, suggesting a reduced risk of prolonged pollution accumulation at the site.

Groundwater Quality

Groundwater is the primary source of drinking water in Hatiya Upazila and is accessed mainly through shallow and deep tube wells. According to DPHE and BWDB groundwater quality surveys, shallow aquifers (typically less than 200 feet deep) in Hatiya are often affected by salinity and iron, whereas deeper aquifers (generally 600–800 feet deep) provide comparatively better quality water¹². Secondary data indicate that groundwater pH values typically range from 6.8 to 7.5, remaining within acceptable limits for drinking water. TDS concentrations in shallow groundwater may exceed 2,000 mg/L in saline-prone zones, particularly during the dry season, while deep groundwater sources usually show TDS levels below 1,000 mg/L¹³.

Iron (Fe) concentrations in groundwater are a known concern in Hatiya, with reported values ranging from 1.0 to 5.0 mg/L, exceeding the Bangladesh drinking water standard of 0.3–1.0 mg/L in many shallow tube wells. Fecal coliform contamination in groundwater is generally low, especially in deep tube wells, provided that proper well construction and sanitary protection measures are maintained. Overall, groundwater quality in the project influence area is considered acceptable for domestic use when sourced from deep aquifers.

Status of wildlife movement:

N/A (None of the information was found about the wildlife movement in or across the area)

State of forestation:

The proposed bridge site is located in a rural coastal setting of Hatiya Upazila, where no natural forest, reserved forest, or protected forest area exists within the project intervention area or within a 500-meter project influence area. The surrounding landscape is predominantly characterized by

¹⁰ DoE (2022). Environmental Quality Standards and Monitoring Report. Department of Environment, Bangladesh.

¹¹ LGED (2019). Environmental Assessment Report for Rural Roads and Bridges in Noakhali District. Local Government Engineering Department.

¹² DPHE (2020). Groundwater Quality Monitoring Report for Coastal Districts. Department of Public Health Engineering, Bangladesh.

BWDB (2021). Hydrological and Water Quality Assessment of Coastal Zone of Bangladesh. Bangladesh Water Development Board.

¹³ BWDB (2021). Hydrological and Water Quality Assessment of Coastal Zone of Bangladesh. Bangladesh Water Development Board.

agricultural land, rural settlements, shops and scattered homestead vegetation.

Vegetation in the vicinity mainly consists of common roadside and homestead tree species and other locally planted trees, along with shrubs and grasses. These trees are primarily associated with private homesteads, agricultural boundaries, and market areas rather than organized forest cover.

Field verification confirms that the construction work will not require clearing of forest land or removal of any significant tree cover. Only minor trimming of roadside vegetation, if required for construction safety or access, may be necessary and can be managed through routine site management practices.

Summary of water balance analysis (For water supply scheme only): N/A

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable):

The proposed bridge is located at chainage (CH) 2200m on the Thanar Hat – Champa Ghat road under Hatiya Upazila. It is possible to carry the construction materials on this road to the construction site.

Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction:

No tubewell or fresh water sources are present at the proposed location, as there are no known permanent residents in the immediate vicinity. In order to make a sustainable management to usage of water for construction works two numbers of tubewells should be installed. The cost of installation of the tube wells are included into the civil works item, therefore is not repeated in ESMP budget.

Electricity is available at the site.

Toilet facilities are not available near this location. During the construction period, the toilet will need preparation for both male and female staff.

Possible location of labor camps:

On the south-east side of the proposed site, or can be placed near the location of sub-project site.

Requirement and type of raw materials (e.g. sand, stone, wood, etc.):

Some of the raw materials for bridge construction are steel, concrete, stone, asphalt, water, bamboo & wood. Other materials include iron, timber, aluminum, rubber and other joint materials, and electro-mechanical equipment used in construction.

Identification of access road for transportation (Yes/No):

Yes. The proposed bridge is located at chainage (CH) 2200m on Thanar Hat-Champa Ghat road under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364103) It is possible to carry the construction materials on this road to the construction site.

Location identification for raw material storage:

On the southeast side of the proposed sub-project. Material storage area must be well fenced and materials will be covered with tarpaulins.

Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from

old latrines, etc.):

Solid waste: The proposed sub-project involves the new construction of a 120.15 m RCC Girder Bridge over Bakbor Khal, and therefore no demolition waste will be generated. So, construction debris and other solid wastes will be generated during the construction periods.

Type: woods-bamboo, copper wires, concrete, iron, plastic, tin, etc.

Quantity: Nearly 5 metric ton of solid waste will be produced.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.):

Solid waste: Iron, concrete, metal, drywall, wood, plastic, rubber, copper wires, excavated soils etc.

Quantity: It is difficult to give exact figures of construction waste produced on a typical construction site. However, in order to approximate the quantity, it is estimated that nearly 7 kg of waste would be generated each working day, which are mainly construction wastes. Some plastic, paper and organic waste will be generated from the use of workers, though a very negligible amount- half a kilogram a day maximum. Wastes from food and kitchen (biodegradable organic waste) will be generated at an amount of 2 kg per day in the labor camp.

Liquid waste: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 6 kg per day, which would be reduced in weight in course of time.

Type and quantity of raw materials used (wood, bricks, cement, water, etc.):

Type: i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) concretes viii) Bamboo & wood from mobilized materials and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction.

Quantity: It is difficult to give exact figures of construction waste produced on a typical construction site.

Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards:

There is no soil land or major vegetation cover on the right-of-way for the sub-project. No other placement as waste dumps or equipment is targeted in any vegetation cover as well.

Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation)

Low: No borrow pit or quarries will be required to dig out during the construction period in or around/ adjacent to the sub-project area. During construction period one or two water reservoir may be constructed due to construction activities. But all those will be completely demolished and cleared out, once the construction period is over.

Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description)

Low: The proposed bridge site is located along the Thanar Hat-Champa Ghat Road in Hatiya Upazila, Noakhali District, crossing over Bakbor Khal, which flows from west to east. The khal functions as a natural drainage channel with regular tidal influence and is not subject to any realignment, diversion, or structural modification under the proposed sub-project. No alteration of the existing hydrological regime of the canal is anticipated during either the construction or operational phases.

However, during the construction period, temporary disturbances to surface water quality may occur due to site preparation activities, use of concrete and cement materials, and movement of

construction machinery. Dust deposition, accidental spillage of construction materials, or runoff from the work site during rainfall events may enter the Bakbor Khal. Such impacts are expected to be localized, short-term, and reversible in nature.

Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description)

Low: The site is free from any significant aquatic ecosystems or habitats of endangered species. There are some terrestrial flora species around the project site, which will not be affected by the works. Life cycle or movement of some terrestrial living species (fauna) (i.e. Insects - ant, bees, earthworm, reptiles, birds etc.) might be disturbed for the time being, but with very less impact indeed. So, overall potential effect is very low or absent for this specific sub project.

Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: N/A

Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description)

N/A

Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:

No traffic movement impact on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles:

No

Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description)

No

Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description)

No

Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation)

There is no possibility of stagnant water bodies remained for encouraging mosquito breeding and other disease vectors, during the operation phase.

Likely direct and indirect impacts on economic development in the project areas by the sub-project:

Construction or implementation of a bridge project substantially contributes to the development of the project areas. It surely improves the communication network, reduces the transport time, increases the trade and business in/around the areas, and ensures access to better living conditions with amenities, better educational and job opportunities and health facilities. Thus, the direct and indirect impacts on economic development in the project areas would be enormous by this sub-project.

Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes):(High/Medium/Low with description)

No significant modification to the water channel is anticipated. The khal itself functions as a seasonal

waterway and is not classified as a wetland or marsh. Surrounding areas are primarily small-scale trade, residential structures, water bodies, and agricultural land, but not dependent on the khal for drainage; therefore, no such effect can be anticipated.

Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description)

There are no protected areas in or around project sites, and no known areas of ecological interest.

Activities leading to landslides, slumps, slips and other mass movements in road cuts:

The entire sub-project component area is nearly flat; thus, no such type of impacts is anticipated.

Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation)

No.

Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:

During operation period, traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred, primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to the bad condition of the access road and unsafe driving through it.

High = Likely to cause long-term impacts or over large area (> 1 sq km); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1 sq km); Low = Likely to cause little, short-term damage and over small area (< 0.5 sq km)

Section C: Social Screening

C.1 General Labor Influx Screening

Key Screening questions	Aspects to Consider
Will the project potentially involve an influx of workers to the project location, and will the influx be considered significant for the local community?	How many foreign and local workers will be needed for the remaining period of the project, with what skill set? Answer: The project will not require any foreign workers for the remaining construction period. The contractors will hire all skilled and unskilled labor locally. For the bridge construction, the project will need about 10 skilled workers and 20 unskilled workers. Skilled workers, such as masons, carpenters, and steel fixers, will come from nearby areas based on the technical needs of the bridge construction. Since the bridge will be constructed within a host community area, and local skilled and unskilled labor is willingly available, the project will prioritize hiring from the local community. This approach will not only support local livelihoods but also promote stronger community ownership of the project. ✓ Can the project hire workers from the local workforce? Answer: Yes, the project can hire workers from the local workforce. Both skilled and unskilled laborers will be recruited from nearby communities. The availability of local workers is sufficient to meet the project's labor demands.

Key Screening questions	Aspects to Consider
	✓ What is the size and skill level of the existing local workforce? Answer: Based on consultations with local stakeholders, most of the required workforce both skilled and unskilled is available within the project area. However, if specialized skills are needed for specific technical activities, the contractors may need to hire a limited number of skilled workers from outside the immediate locality. Overall, the local workforce is capable of supporting the construction activities under the project. ✓ If the skill level of the local workforce does not match the needs of the project, can they be trained within a reasonable timeframe to meet project requirements? Answer: Unskilled labor is readily available in the project area. If the skill level of the local workforce does not fully meet project requirements, the contractors can provide on-the-job training to upgrade their skills within a reasonable timeframe. This approach will enable the project to utilize local labor effectively while enhancing their technical capacity for bridge construction activities. ✓ How will the workers be accommodated? Will they commute or reside on site or outside of the camp? If so, what size of camp will be required? Answer: Most of the workforce will be hired from the local community, and they will commute daily from their own homes; therefore, they will not require accommodation at the construction site. However, skilled workers who may be sourced from outside the project area will require temporary accommodation near the site. Contractors will establish temporary labor sheds to house these external workers. The size of the labor camp will depend on the number of outside skilled workers needed, but it will be designed to comply with Environmental, Health, and Safety (EHS) guidelines to ensure proper living conditions, sanitation, and worker safety.
Is the project located in a rural or remote area?	✓ What is the size of local population in the project area? Answer: The size of the local population in the project area is approximately 48,000 people, including both male and female residents. This estimate is based on information collected during community consultation meetings held at the subproject site. ✓ What is the size of the host Rohingya community? Answer: N/A

Key Screening questions	Aspects to Consider
	✓ Is the project located / being carried out in an area that is not usually frequented by outsiders? Answer: No. The proposed sub-project is located in an area that is regularly frequented by local residents and visitors. The bridge site is situated on Thanar Hat-Champa Ghat road, serving as an important access point for surrounding communities and market activities., which are actively used by traders, farmers, transport operators, and daily commuters from surrounding villages. The route serves as an important local connectivity corridor for movement of goods, access to markets, religious institutions, and social services. As a result, the area experiences regular human movement and interaction, and is not considered isolated or restricted to only local residents. ✓ What is the frequency and extent of contact between the local community and outsiders? Answer: Daily ✓ Are there sensitive environmental conditions that need to be considered? Answer: There are sensitive environmental and community features near the proposed bridge site that require careful consideration during construction. Construction activities may generate dust, noise, vibrations, and debris, which could affect nearby Champa Ghat Bazar, roadside shops, ponds, mosques, residential households, and pedestrians within the vicinity of the site. To minimize these impacts, the construction site will be properly fenced to contain dust and reduce noise exposure to nearby residents and pedestrians. Dust suppression measures, such as water spraying at least twice daily, will be implemented throughout the construction period. High-noise activities will be scheduled during less sensitive hours to reduce disturbance to surrounding communities, and all machinery and equipment will be maintained in good condition to control noise levels. Debris and construction materials will be carefully managed and stored in designated areas to prevent runoff into Bakbor Khal, nearby ponds, and agricultural land, thereby safeguarding environmental and socio-economic features in the area.
Based on the socioeconomic, cultural, religious and demographic qualities of the local community, Rohingya	✓ Is it likely that the incoming workers and the local community come from a shared socio-economic, cultural, religious or demographic background?

Key Screening questions	Aspects to Consider
population and the incoming workers, is there a possibility that their presence or interaction with the local community could create adverse impacts?	Answer: Most of the workforce is expected to come from the local host community. A small percentage of skilled workers may be hired from outside the project area if required. The local workforce and the incoming workers generally share a common socio-economic, cultural, religious, and demographic background, which is expected to support smooth integration at the work sites. Since this subproject is located in the host community area and will not involve Rohingya workers, the risk of conflict due to cultural or social differences is considered low. However, contractors must still take precautionary measures, such as awareness training on social behavior, code of conduct enforcement, and community engagement, to prevent misunderstandings and ensure a harmonious working environment. ✓ What is the level of existing resources, and will the incoming workers use or create competition for these resources? Answer: The existing local resources, such as water supply, food, basic health services, and transportation facilities, are limited compared to the size of the local population. Although workers will be hired from the local community, a small number of incoming skilled workers from outside may create additional pressure on local resources. This could lead to a temporary increase in the demand for basic commodities and may cause price hikes in local markets during the construction period. ✓ What is the expected duration of the incoming workers' presence in the community? Answer: One year but it may be extended. ✓ Given the characteristics of the local community, are there any specific adverse impacts that may be anticipated? Answer: Yes, considering the characteristics of the local community, some specific adverse impacts may be anticipated during the construction phase. These include: • Temporary price hikes in local markets due to increased demand for goods and services from workers. • Pressure on water supply and sanitation facilities,

Key Screening questions	Aspects to Consider
	particularly if labor camps are not properly managed. • Movement disruption for local vehicles and pedestrians around the construction sites due to road blockages and heavy machinery operation. However, no significant religious or cultural barriers are anticipated, as both the local community and the incoming workforce largely share a similar socio-cultural background.
Consultation with Community People	✓ Has the project authority and contractors conducted any consultation meetings with the community people and Rohingya population? Answer: The project authority has already conducted several consultation meetings with the local community during the environmental and social screening stage. Community opinions, concerns, and suggestions were received with great respect and consideration. After the finalization of the contractor, additional consultation meetings will be organized by the contractor in coordination with the project authority to ensure continued community engagement and address any new concerns during the construction phase. ✓ Are local people aware about the labors? Answer: Local community members are well aware of the engagement of local laborers in the project activities. However, they currently have limited knowledge regarding the potential involvement of outside skilled workers. ✓ Has the project authority involved the local community with the project? Answer: Yes, the project authority has actively involved the local community throughout the site selection and screening stages. Several formal consultation meetings and informal discussions were conducted at the proposed bridge location and with the local community. Community members shared their views, concerns, and expectations, which were carefully considered.

Involuntary restrictions on land use or on access to legally designated parks and protected areas

Effects	Yes	No	Not Known	Remarks

10. Will people lose access to natural resources, communal facilities and services?		√		People's access to communal facilities and services will not be affected by the project.
11. If land use is changed, will it have an adverse impact on social and economic activities?		√		No scope to change site location.
12. Will access to land and resources owned communally or by the state be restricted?		√		No
Information on Displaced Persons:				
Any estimate of the likely number of persons that will be displaced by the Project? ☒ No ☐ Yes If yes, approximately how many? N/A				
Are any of them poor, female-heads of households, or vulnerable to poverty risks? ☒ No ☐ Yes				
Are any displaced persons from indigenous or ethnic minority groups? ☒ No ☐ Yes				
During Screening, project authority will conduct consultation with the primary and secondary stakeholders and provide their observations in the following sections (13 to 18)				
13: Who are the stakeholders of the project? Answer: The stakeholders of the project include a wide range of individuals and institutions connected to the sub-project areas. They are: • Local community members • Households and shopkeepers located on both sides of the project roads • Students and guardians from nearby educational institutions • Religious leaders and teachers • Local elected representatives (Union Parishad members, Ward members) • Local administration officials • Implementing agency (LGED) and relevant supporting agencies • Workers and laborers engaged in project construction activities • Community-Based Organizations (CBOs) • Local NGOs • Local traders				
14: What social and cultural factors affect the ability of stakeholders to participate or benefit from the proposed policy or project? Answer: There are no significant social or cultural factors that would restrict stakeholders' ability to participate in or benefit from the proposed project. The project area maintains a socially cohesive and culturally conducive environment, which supports broad community participation and equal access to project benefits. Stakeholders, including local residents, traders, students, and				

vulnerable groups, are expected to benefit positively from the improved infrastructure and services. The project's inclusive approach ensures that participation opportunities are available to all community members without discrimination.

15: Are project objectives consistent with their needs, interests and capacity?

Answer: Yes, the project objectives are highly consistent with the needs, interests, and capacities of the stakeholders. Community consultations and FGD during field visits clearly indicated strong local support for the project.

16: What will be the impact of the project or sub-project on the various stakeholders, especially women and vulnerable groups?

Answer: The construction of the proposed bridges will have a significantly positive impact on various stakeholders, particularly women, children, elderly people and other vulnerable groups. Improved transportation infrastructure will ensure **easier and safer mobility**, allowing women and vulnerable populations to travel more conveniently between villages, markets, schools and health care facilities.

Access to hospitals and emergency services will become faster, which is crucial for women, elderly, and persons with disabilities. School-going children will also benefit through **safer, uninterrupted access to educational institutions**. Overall, the project will enhance social inclusion, reduce travel time, promote economic opportunities, and contribute to an improved quality of life for all segments of the local population.

17: What social risks might affect project or sub-project success?

Answer: Several social risks could potentially affect the success of the sub-projects if not properly managed. These risks include:

- **Minor conflicts** may arise between local community members and incoming skilled laborers, particularly if there are differences in behaviour or competition over local resources.
- **Temporary price hikes** of essential commodities in local markets (hat-bazar) due to increased demand from workers.
- **Risk of engagement in anti-social activities** by a few incoming workers, which could challenge local social norms and community harmony.
- **Noise and dust pollution** may be generated during construction activities, which may disturb schoolchildren, elderly residents, and other vulnerable groups living close to the project sites.

18: Has the project authority or any other organizations conducted any consultations with the affected community or people? If yes. Please provide a summary.

Answer: Yes, the project authority has conducted several consultation meetings with the potentially affected communities and other stakeholders. During the site selection phase, LGED officials organized discussions with local community members, Union Parishad representatives, local elites, school teachers, and civil society organizations to gather feedback regarding the

construction of the proposed bridges.

Additionally, during the environmental and social screening process, the PIU Consultant of LGED conducted community consultations to inform local people about the project objectives, construction activities, potential impacts, and safeguard measures.

The key feedback and observations from the consultations include:

- During the consultation meeting and FGD, Community members strongly supported the construction of the bridges, they would enhance connectivity between economically complementary areas, boosting local trade and labor movement.
- Local farmers, small traders, fishermen and transport operators expressed that the improved communication network would allow them to receive fair prices for their commodities and reduce transportation costs.
- Transportation systems would become easier, faster, and more reliable, saving time and reducing daily hardships for residents.
- The construction of the bridges is expected to encourage the growth of local businesses and industries, stimulating the rural economy.
- Land value in the surrounding areas is likely to increase as accessibility improves.
- Improved road connectivity will enable quicker access to upazila and district-level hospitals, ensuring better healthcare facilities for the local population.
- The attendance and enrolment rates of school-going children are expected to rise due to safer and more convenient travel routes.
- The bridges will also strengthen the communication network by acting as vital links within the rural transportation system.

Section D: Environmental Screening Summary of the Work Package

Main Environmental & Social Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
				Indicators	Frequency
Sub-project Interventions					
Construction of a RCC Bridge (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention, the overall score is low	- Limiting earthworks and artificial bank reinforcement should be avoided as far as possible; - Bridge soffit (The bottom part of the bridge) levels and flood spans should be at least 1 metre above the maximum known flood level to allow floating debris to pass freely through the structure; - Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; - The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. - The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. - Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. - The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. - Storage of fuel, chemicals, equipment and construction materials so as to minimize the risk of soil contamination or water pollution; - Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water.	Contractor, environmental specialist of PIU and D&SC	Visual monitoring result of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Throughout the time during the construction period.

Main Environmental & Social Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
				Indicators	Frequency
		- Monitor water quality according to the environmental management plan. - Phasing of construction work to minimize disturbance to wildlife at sensitive times of year, such as during the breeding season or when young are being raised; - Use of techniques to minimize compaction of soil, such as restricting access during wet conditions, and using protective boarding and low-ground pressure machinery. If necessary, soil should be carefully removed and stored for subsequent reinstatement; - Access roads should avoid riparian zones and should be built using appropriate construction materials.			
Pre-construction Phase					
Site planning (i.e. Labor camp, construction of material storage area etc.)	Under the sub-project intervention, the overall score is low.	- The proposed sub-project involves the construction of a new 120.15 m RCC Girder Bridge over Bakbor Khal. During construction, care must be taken to prevent debris, sediment, or other construction materials from entering the canal, in order to safeguard water quality and maintain the natural drainage function of the channel. - Construction camps, material storage, and equipment areas must be located within the site boundary and approved by the Environmental Specialist of D&SC to ensure proper environmental management. - As the bridge will be constructed along the Thanar Hat-Champa Ghat Road, which serves as an important local access route with regular pedestrian and vehicular traffic, any temporary labor camp or ancillary facilities must be carefully sited. The labor camp should be established at a	Contractor, environmental specialist of PIU and D&SC	Water quality test results. Location of stockpiles and labor shed.	Prior to the start of Construction works.

Main Environmental & Social Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
				Indicators	Frequency
		suitable off-road location to avoid obstruction of traffic or inconvenience to residents and road users.			
Loss of land / and other physical assets	No adverse impact will be generated.	• No land acquisition will be required as RCC bridge will be constructed in own existing alignment, which is entirely Government land. • No additional land will be required to construct the RCC bridge due to both sides of the canal being government vacant property as well as LGED roads. • The local community has been agreed to provide space beside the bridge construction site to keep the construction materials during construction work. • There is no physical asset affected by the intervention of the sub-project (bridge). In case of any grievance from a neighboring household, emergency consultation will be conducted to resolve the issue through the project GRC.	Safeguard team of PIU, PSC and D&SC	Number of Complaints. Check Grievance register. Resolutions against the grievances.	Ensure regular supervision and Monitoring based on compliance.
Loss of livelihood	No impact may be generated.	• Contractor need to engage local labor as priority (both skilled and unskilled) at their construction work. • Woman labor should get priority at the time of labor recruitment. • During construction work social safeguard compliance shall be maintained properly by the contractor.	PIU, Contractor, Safeguard team of PIU, PSC and D&SC	Labor wages payroll. Interview with labor. Frequent visit by D&SC and PIU personnel	Monthly basis
Stakeholders Engagement	Under the sub-project intervention, the overall score is low.	• One community-level consultation meeting has already been conducted with the relevant stakeholders. The meeting aimed to gather feedback, ensure local participation and inform the community about the project scope and potential impacts. • Moving forward, additional consultation sessions will be held as needed to ensure inclusive stakeholder engagement	PIU, Contractor, Safeguard team of PIU, PSC and D&SC	List of participants in consultation and GRC. Disclosure records of safeguard documents. Feedback and	Weekly basis

Main Environmental & Social Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
				Indicators	Frequency
		throughout the project lifecycle. - All safeguard documents will be disclosed to the stakeholders prior to the commencement of construction works. - All the stakeholders will be made aware of the Grievance Redress Mechanism (GRM) and their active participation will be ensured through representation in the Grievance Redress Committee (GRC).		grievances are recorded and addressed. Level of awareness on GRM among stakeholders.	
Material storage area for construction (Creating dust/ air pollution, Spillage of liquid/ hazardous substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, children, animals, etc.)	Under the sub-project intervention, the overall score is low.	- The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures. - Proper procedure for stockpiling/ storage of construction materials at the site will be proposed by the contractor & approved by the Environmental Specialist of D&SC. - Proper covering of dust producing materials with polythene sheet, - Proper fencing around the storage area in order to be secure, to minimize the risk of crime and to be safe from access by outsiders, children, animals, etc. - Spills/ hazardous substances should be disposed of at the site proposed by the contractor & approved by the Environmental Specialist of D&SC to avoid soil/ water contamination.	Contractor, environmental specialist of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage
Setting up of labor camp (Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/	Under the sub-project intervention, the overall score is low.	- Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. - No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist.	Contractor, environmental specialist of PIU and D&SC	Complaints from community; Regular inspection of waste management activity;	Prior to the start of Construction works

Main Environmental & Social Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
				Indicators	Frequency
environmental pollution; health hazard of workers due to poor quality drinking water)		- Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. - Construction of sanitary latrine with septic tank for both male and female workers and staffs. - Construction of the first tube well for drinking water and providing water filters for further ensuring access to the safe drinking water. - Provision of waste bins/ cans, where appropriate; and litter is to be collected daily. - Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site pre-approved by the Environmental Specialist of D&SC. - Camp and working areas are to be kept clean and tidy at all times.		Waste disposal record.	
Accidents	Under the sub-project intervention, the overall score is low.	- Provision of standard safety protocol. - Providing training on Environmental health and safety to the labors and associated field staffs is the responsibility of Upazila Engineer & Contractors. - Training should be scheduled twice, once before starting the construction & another in the middle of construction period. - Safety & protection gears, first aid box etc. should be available in the site during construction period.	Contractor, environmental specialist of PIU and D&SC	Complaints from community; Complaints from the labors and associated field staffs; Regular inspection of materials transport vehicles.	Before and during the construction phase
Construction Phase					
Site Preparation: Soil Erosion; Alteration of natural drainage	Under the sub-project intervention,	Construction facilities including material are to be placed at least 30 meters distance from bridge construction area in order to minimize impacts on water bodies and natural flow	Contractor, environmental & Social specialist	Presence and adequacy of retaining structures.	Monthly, Immediate follow-up after

Main Environmental & Social Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
				Indicators	Frequency
	the overall score is low.	paths. - Any disruption of socially sensitive areas with regard to human habitation and areas of cultural significance will be avoided. - Retaining wall need to construct that structure retain (holds back) any material (usually earth) and prevents it from sliding or eroding away. - Ensured diversion / alternative bamboo made bridge for considering the bi-cycle, and Rickshaw movement, pedestrian and other transportation etc. - The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	of PIU and D&SC	- Functionality of the temporary bamboo bridge. - Visual evidence of erosion or drainage issues. - Community complaints on disruption.	heavy rainfall or erosion events.
Increase in diversion road accidents	Under the sub-project intervention, the overall score is low.	- The contractor will prepare a response plan to accidents, it will ensure the victim to receive quick treatment. - The movement of heavy machinery and equipment shall be restricted to diversion or temporary bridge. - Proper signage to be displayed at diversion. - Road diversions and closures to be informed well in advance to the local community. - Local community will be trained on traffic management and awareness	Construction Contractor, Safeguard team of PIU and D&SC	- Traffic and Road Conditions. - Accident and incident logs. - Number and visibility of traffic signage.	- Weekly inspections by D&SC - Daily monitoring by contractor - Monthly review by PIU Safeguard team - Immediate review after any accident or complaint.
Quality construction work of the RCC bridge	Under the sub-project intervention,	Respected community deserving quality construction works (side by side with the construction engineers and Design and Supervision Consultant)	Construction Contractor, Environmental &	•Community feedback should be acknowledged and	Daily supervision by D&SC. Weekly

Main Environmental & Social Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
				Indicators	Frequency
	the overall score is low.		Social Consultant of PIU and D&SC	addressed regarding construction quality. •Material quality test results. •Ensure timely rectification of any construction defects.	progress review by PIU.
Safety during construction of the RCC bridge	Under the sub-project intervention, the overall score is low.	• An unauthorized person entry to the proposed site should restrict strictly and ensure proper storage and control of hazardous materials on site. • Child labors are not allowed for any kind of activities • Site shall be secured by fencing and ridge (if needed). • Ensuring that clear safety policies and procedures are in place and strictly enforced is essential, as is regular inspection and maintenance of all workplace equipment. • Awareness building program will be taken on social safety matters through imparting training from the project before commencement. At the same time, compliance should be ensured by the contractors.	Construction Contractor, Environmental & Social Consultant of PIU and D&SC	• Regular inspection and maintenance records of machinery and safety gear. • Register/Documents on social safety matters Checking stock register of personal protective equipment (PPE)	
Noise Impacts	Under the sub-project intervention,	• Avoid high noise making activities during after daylights. • Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be	Contractor, environmental specialist of PIU	Number of complaints from stakeholders, use of	Weekly

Main Environmental & Social Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
				Indicators	Frequency
	the overall score is low.	scheduled to avoid sensitive times. - Avoid using of construction equipment producing excessive noise at night. - Ear protection devices for the workers & site staffs should be available in site during construction period.	and D&SC	silencers in noise-producing equipment and sound barriers, Noise Level following decibel meter (dB)	
Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related pollutants which will affect people who live and work near the sites. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	Under the sub-project intervention, the overall score is low.	- Damp down exposed soil and any sand stockpiled on site by spraying with water during dry weather. - Use tarpaulins to cover soils, sand and other loose material when transported by trucks. - Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. - Arrangements to control dust through provision of water sprinklers and dust extraction systems shall be provided at all stone crushers (if these establishments are being setup exclusively for the subproject). - Limiting speed of construction vehicles in work sites to maximum of 20 km/h. - Regular monitoring of air quality.	Contractor, environmental specialist of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive receptors, Heavy equipment and pollution control devices, Maintain records	Monthly

Main Environmental & Social Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
				Indicators	Frequency
Biodiversity (There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	Under the sub-project intervention, the overall score is low.	- Prohibit employees from cutting trees for firewood. - If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. - Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna. - Construction works should be limited or be finished before the fish breeding period (springtime esp. Bangla months of Baishakh and Jaishtha/ April and May, when the water warms up and the daylight lengthens), and restoration of sites (with removal of any hindrance or cofferdam, etc.) is imperatively necessary to protect the fish species.	Contractor, environmental specialist of PIU and D&SC	If tree cutting is required, to be determined during Design stage, Numbers of complaints from sensitive receptors.	Monthly
Workers' health and safety	Under the sub-project intervention, the overall score is low.	- Prevent excessive noise; - Construction staffs are to make use of the facilities provided for them (e.g., fires for cooking); - No fires permitted on site except if needed for the construction works; - Staff must be trained to operate equipment. - Availability and access to first-aid equipment and medical supplies. - Ensure the presence and use of safety gear at site: Ear protection devices, Goggles, Illuminating jackets, Masks, Gloves, Helmets, Uniforms etc., - Ensure adequate supply of drinking water. - Sanitation facilities for male & female workers separately.	Contractor, environmental specialist of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of walkway signage, and metal sheets placed at project location;	Monthly
Labour Base Camp: Conflicts with the local residents	Low impact may be generated.	- An alternate arrangement for fuel wood, heating and cooking should be arranged for the labors at labor camp. - Awareness building about nutrition, disaster risk resilience	Contractor, environmental & Social specialist	Checking use of resources by labor. Document checking	Daily site visit

Main Environmental & Social Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
				Indicators	Frequency
		or mitigation, adoption of clean energy for cooking; and prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • To be ensured adequate sanitation facilities in the labour camps. • Treated water will be made available at site for labour drinking purpose. • Adequate accommodation arrangements for labour and code of conduct to be disclosed through consultation and FGD.	of PIU and D&SC	of awareness building activities. Physical Checking. Grievance register. Interview with local community.	
Post-Construction Phase					
Construction clean-up (Damage due to debris, spoils, excess construction materials, and after-effect water test)	Under the sub-project intervention, the overall score is low.	• Remove all spoils, wreckage, rubbish or temporary structures which are no longer required; • All affected structures rehabilitated/compensated; • The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up; • All imported materials are to be removed and the area shall be re-vegetated as per the specification that forms part of this document; • The contractor must arrange the cancellation of all temporary services;	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory; camp has been restored to pre project conditions. Water test before handover of the project to check water quality for severe modification	After the completion of Works

Main Environmental & Social Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
				Indicators	Frequency
				(if any).	
Odor& waste disposal	Under the issue, the overall score is low.	Use bin covers and/or tarpaulins during transport of wastes.	Contractor monitored by Consultant and PIU	Complaints from communities	Site inspection daily / weekly basis.
Vegetation	Under the issue the overall score is low.	After construction work, all structures need to be removed and the area shall be topsoiled and re-grassed using the guidelines set out in the re-vegetation specification that forms part of the bidding document.	Contractor monitored by Consultant and PIU	The worksite is restored to its original conditions.	Over the completion of Works
Traffic Accidents	The low impact may be generated during construction even some times after construction	- Clear diversion/bridge markings and signage. - Diversion Road design to ensure traffic speed is not hazardous given slopes of the diversion. - Recording and reporting of accident incidents to local police station. - Annual reporting of accident figures to PSC.	PIU, PSC, LGED and Local Governance institution	No. of the accident took place. Marking and signage of road. Record of the Police Station and PSC. Newspaper	Monthly basis
The sub-projects are expected to be sustainable	Low	The safeguard issues and maintenance of the RCC bridge taken care of by the concerned Union Parishad and Upazila Parishad for sustainability.	LGED, Union and Upazila Parishad	Evidence of routine inspection and maintenance activities; community feedback on bridge condition.	Bi-annually

Main Environmental & Social Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
				Indicators	Frequency
Traffic movement and economic enhancement		• LGED expecting that after completion of RCC bridge, traffic movement will be increased, diverted traffic will be generated, lives and livelihood of people will be improved of the catchment area. • The important places will be well-connected. • People will enjoy improved facilities for connecting both side canal local school, college and other educational institution.	PIU, PSC, LGED and the Local Governance institution	• Community feedback. • Number of connected routes. • Increase in traffic volume. • Economic activity (shops, transport).	Quarterly, post-construction assessment

* Overall Impact Score: High = Likely to cause long-term E&S impacts; Medium = Likely to cause temporary impacts; Low = Likely to cause little, short-term impacts

Recommendation for further environmental and social assessment and/or site-specific environmental and social management plan: Yes

**If yes, please specify what assessments/plans would be required.*

Appendix-2: Environmental and Social Management Plan (ESMP)

ESMP for Construction of 120.15m RCC Girder Bridge on Thanar Hat-Champa Ghat road at Ch: 2200m under Hatiya Upazila, Dist: Noakhali. (Road ID: 475364103)

Package no: HELP-NOA/BR-1:

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-construction Stage			
Loss of land / and other physical assets	- No land acquisition is required within this sub-project activity so, there is no mitigation measures according to this impact. - The subproject will be constructed on Government land.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Loss of livelihood	Under this subproject, there is no scope of negative impact on livelihoods of the people of catchment area.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Stakeholders Engagement	- All the project stakeholders will be consulted - Separate community level consultation meeting with the potentially affected HHs - Consultation meeting with nearby local community about the project objectives and scope of works - People living in nearby community and members of LGED Upazila will be involved with the GRM	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Loss of right to access	- In case of unavoidable circumstances, alternative access will be provided. - Proposed bridges will be well demarcated and accessibly paved.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Site Preparation: Soil Erosion; Alteration of natural drainage	Construction facilities including materials are to be placed at least 10 m (32 ft) distance	PIU & Contractor	Environmental Consultant of PIU, PSC

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	from any water body in order to minimize impacts on water bodies and natural flow paths. - Minimize cut & fill operations, the site clearing and grubbing operations should be limited to specific locations only. - The existing slope and natural drainage pattern on the site should not be significantly altered. - The contractor shall ensure that site preparation activities do not lead to disruption of activities of the camp settlers and host community.		
Construction stage			
Noise from construction works	- Construction activities will be finished at day time within 06:00 PM. Proper measures will be taken to avoid any disturbances. - All Personal Protective Equipment (PPE) shall be available at site before starting any kind of construction works.	Contractor	Environmental Consultant of PIU, PSC
Dust	- Construction machinery shall be properly maintained to minimize exhaust emissions of CO, particulate matter (SPM, PM2.5, PM 10) and Hydrocarbons. - Provision of using water sprinklers to dust control. - Construction materials should be covered properly while carrying in vehicles to the site.	Contractor	Environmental Consultant of PIU, PSC

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	Vehicle movement will be controlled on haul roads/access roads for limiting dust generation.		
Safety Issues	- Unauthorized entry to the site area is completely prohibited and the site will be properly fenced with a single entry, for this purpose. - It will be ensured that proper training and guidance are provided on general and occupational health and safety to Contractors' personnel and labors forces, and records of training sessions are to be kept at site. - All kinds of Child labor will be completely prohibited.	Contractor	Environmental Consultant of PIU, PSC
Traffic Management	- Contractors will discuss with traffic management authorities and take site specific traffic management measures to avoid congestion and any unwanted incidents or accidents. - Road signs and speed ramps are to be placed at strategic locations.	Contractor	Environmental Consultant of PIU, PSC
Conflicts with existing users due to the scarcity of resource base.	- A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. - If ground water is withdrawn, adequate	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	approvals from the appropriate department need to be collected before setting up bore wells. - Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. - Local community must be consulted before any construction work starts.		
Increase in road accidents	- Maintain safety measures during the movement and operation of heavy machineries and equipment. - Vehicular movement associated with construction activities will be carefully controlled along the designated transportation routes, particularly nearby mosques, shop areas and residential settlements located close to the project site. Speed restrictions, warning signage, and traffic management measures will be implemented to ensure the safety of pedestrians, local commuters, and vulnerable community members. - Local community will be trained up about traffic management and awareness.	Contractor	Environmental Consultant of PIU, PSC
Labor Base Camp: Conflicts with the local residents	Awareness building session will be undertaken about prevention of child abuse,	Contractor	Social Development Specialist and Gender

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labor camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation.		Specialist of PIU, PSC
Construction runoff, sediment, cement slurry, and wastewater may enter the adjacent canal during earthworks, piling, and concreting activities, potentially causing temporary deterioration of surface water quality and increased turbidity. Improper management of construction materials and spoil may obstruct natural drainage and affect local water flow. Additionally, tidal influence in the canal during	• Install temporary silt traps, sedimentation pits and perimeter earthen bunds around excavation areas and material storage zones. • Earthworks, piling, and concreting activities shall be carefully managed to prevent direct discharge of construction runoff, cement slurry, wastewater, or debris into the canal. • Ensure proper drainage management to prevent direct discharge of cement slurry, oil-	Contractor (implementation of mitigation measures and monitoring); Design & Supervision Consultant (technical verification and guidance)	PIU (Environmental & Social Specialists); Design & Supervision Consultant

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
high tide may cause backflow, which could interact with construction activities and influence local hydrology as well as the long-term durability of bridge substructures if not adequately addressed.	contaminated water or construction runoff into the canal. • Monitor pH and Total Suspended Solids (TSS) of any construction-phase discharge water at regular intervals. • Regular site inspections shall be conducted, particularly during the monsoon season, to ensure effective functioning of erosion and sediment control measures. • Works within or near the canal shall be scheduled, where feasible, during low-flow periods to minimize turbidity and disturbance to natural flow.		
Temporary disturbance to local biodiversity, including small terrestrial fauna and common bird species present in surrounding rural and agricultural landscapes; potential short-term alteration of aquatic habitat conditions and natural water flow in the canal during construction.	• Conduct site-specific assessment of aquatic and ecological conditions prior to construction • Monitor bird activity, particularly during migratory season (November–February) • Avoid or limit piling, and other high-disturbance activities during peak migratory periods where feasible • Restore disturbed areas after construction • Construction works should be limited or be finished before the fish breeding period (springtime esp. Bangla months of Baishakh and Jaishtha/ April and May, when the water warms up and the daylight lengthens), and restoration of sites (with removal of any hindrance or	Contractor	PIU and Supervision Consultant

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	cofferdam, etc.) is imperatively necessary to protect the fish species.		
Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting construction works in order to provide a better sanitation facility to the workers and staffs. • Working areas are kept clean and tidy at all times. • Construction site is to be checked for spills of substances i.e. chemical, oil, paint, etc. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed of at waste disposal areas and/ or at the site. • The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in a stack yard and sold to local recyclers. • Hazardous waste viz. waste oil etc. will be collected and stored in the paved and bounded area and subsequently sold to authorized recyclers.	Contractor	Environmental Consultant of PIU, PSC
Health & Safety Risks:	• All construction equipment will be properly	PIU & Contractor	Environmental

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
- The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. - Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	inspected timely and kept fit for purpose. - The risk assessment will be prepared time to time for all types of work activities on site. - Proper Signpost at any slippery areas will be ensured in construction site. - Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. - This sub project will have Proper communicative Emergency Response Plan (ERP) with all parties, to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. - All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. - Provision to first aid box in sub-project areas will be ensured. - Proper Emergency evacuation response plan will exist in sub-project area.		Consultant as well as Social Development and Gender Specialists of PIU, PSC

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	• All equipment will be available suitably (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.) in sub-project site, the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight/make aware of the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. • Adequate quantities of drinking water will be available at all sites, on different locations within the site. • Ensure to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Contractor must ensure that all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used. • Establish emergency response procedures, including fire, accident, and medical		

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	emergencies. • Display emergency contact charts at site offices and work areas. • Maintain OHS incident reporting and accident logbooks. • Conduct regular toolbox meetings and refresher safety training for all workers.		
Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE. • Oil interceptors or drip trays can be used in vehicle parking areas, and are inspected and cleaned regularly;	Contractor	Environmental Consultant of PIU/D&SC, PSC
Operation Stage			
Maintenance of assets, properties and equipment	• Periodic maintenance of Bridge structure and seasonal conditions has to be carried out.	LGED	UNO, Upazila Chairman of Upazila Parishad
Decommissioning			
The impacts are similar to those listed in construction stage: • Pollution from waste materials • Health & Safety risks to workers and local community	• Proper measures of mitigation and monitoring to minimize or reduce the environmental and social impacts during decommissioning are anticipated to be similar to those identified for the	Contractor	Environmental Consultant of PIU/D&SC, XEN of the respected district, PSC.

Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	construction phase. Third party monitoring of air quality as well as on receiving land and water bodies, may be undertaken, if the condition of those compartments seems to be significantly worse.		

Waste Management Plan:

The proposed 120.15 m RCC Girder Bridge over Bakbor Khal is a new construction project and does not involve demolition of any existing bridge or structure. Therefore, waste generation will be limited to construction-related activities. The Waste Segregation and Reuse Plan is to ensure environmentally sound management of construction waste generated from the construction of the proposed RCC bridge. The plan aims to minimize waste generation, promote reuse and recycling, prevent soil and water pollution, and ensure compliance with relevant regulations.

Sl. No.	Potential Waste Type / Source	Anticipated Impact	Mitigation Measures	Responsibility	Monitoring
1	Excavated soil from foundation and approach works	Uncontrolled dumping may block drainage or affect nearby agricultural land and canal	Reuse suitable soil for backfilling and site leveling; dispose excess spoil at approved locations; transport with covered trucks	Contractor	D&SC Environmental Specialist
2	Concrete residues, cement bags, packaging materials	Dust generation; littering; potential runoff into Bakbor Khal	Collect and store in designated area; prevent runoff into canal; dispose through approved waste collection system	Contractor	D&SC Environmental Specialist
3	Scrap steel, formwork (wood/bamboo), metal pieces	Site clutter; injury risk; improper disposal	Segregate reusable and recyclable materials; store safely; sell recyclable scrap to authorized vendors	Contractor	D&SC Environmental Specialist

4	Domestic waste from labor camp (food waste, plastic, etc.)	Odor, vector breeding, environmental contamination	Provide covered waste bins; ensure daily collection and disposal at approved site; prohibit open dumping	Contractor	D&SC Environmental Specialist
5	Used oil, lubricants, grease, oil-contaminated rags (from equipment maintenance)	Soil and water contamination if spilled	Store in leak-proof containers on impervious surface; prevent spillage; hand over to authorized recyclers; no disposal into soil or water bodies	Contractor	D&SC Environmental Specialist
6	Construction debris and miscellaneous waste	Pollution of nearby canal, ponds, market areas	Strict prohibition of dumping into Bakbor Khal, ponds, agricultural land, or roadside areas; regular site housekeeping	Contractor	D&SC Environmental Specialist

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Appendix-3: Cost of Environmental Mitigation and Enhancement Works in BOQ

In consideration to the above-mentioned environmental and social impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

SI no.	Description of item	Unit	Quantity/ Area	Unit price	Total amount
1	Erection and maintenance of semi-permanent site office and removal of the same after completion of work in accordance with the conditions of contract. In addition to the office required for own use, the contractor shall provide and maintain furnished site office for the use of Engineer-incharge and his staff. The site office must have tiles floor, adequate foundation, brick walls, false ceiling of gypsum board and all windows are to be glazed, shuttered and provided with steel grill. Outside and inside wall surface are to be painted on plaster acceptable to the Engineer-incharge. The site office shall be maintained in a secure condition by the contractor until the completion of the contract and shall be provided with electricity, water supply, wash rooms and sewerage facilities. All doors shall be fitted with approved locks and windows shall be provided with screen/blinds. Before construction the contractor shall submit plans and drawings showing proposed details and location for the site office, including foundations, access roads, shades, layout of electrical and water supply and hard standings there for the approval of Engineer-incharge. The Engineer-incharge may require revision of the plans prior to giving approval for construction. The contractor shall also submit detailed proposed furniture, fittings and other items of equipment and plant to the Engineer-in-charge for approval. These items shall be of the standard quality suitable for site. The office, complete with furnishings, fittings, access roads and hard standings shall be ready for occupation by the Engineer-in-charge within 28 days of the date when the contractor first occupies the site. The contractor shall provide day and night guards and an attendant for the field office. At the end of the contract all materials, equipment and plant, furniture, fittings recovered from dismantling the office and removing access road will be the	job	1	535843	5,35,843.00

Sl no.	Description of item	Unit	Quantity/ Area	Unit price	Total amount
	property of the contractor. No interim payment shall be certified unless engineer's office with required facilities are constructed and accepted by the Engineer-in-charge. (This is a time related item; proportionate payment for this item shall be made distributing in each bill on the basis of percentage progress of the whole works under contract) Engineer's site office of minimum 38 sqm plinth area with providing necessary facilities including office furniture, 24000 BTU air cooler, umbrella, crookeries, water purifier, PC with monitor, uninterruptible power supply (UPS), laserjet printer (minimum 20 ppm), LED flood light fittings(Halogen) for sight security etc.				
2	Project Profile Signboard: Providing and fixing of typical project profile signboard as per direction of E-I-C, to be placed at a suitable place of the site including submission of proposals for the materials & size of the signboards (recommended size: 1800mm x 1200 mm with 2 nos. 75mm dia. MS post, outer & inner frames of board shall be 50mm x 50mm x 5mm & 25mm x 25mm x 5 mm respectively) and text layout to the engineer for approval which will be positioned as directed by the engineer and removing the same on completion of the works or as instructed by the E-I-C. Sheeting will be made of encapsulated lens with retro-reflective type and messages/ borders will be screen printed. The text shall mention among others the name of the project, name of the implementing agency, cost of the project, completion time, name of the contractor etc.	sqm	Length-1.8m Width 1.2m Area volume 2.160m ² No. of bridge 1 Total quantity of works 1*2.16m ² = 2.16m ² .	18508.52	39,978.40
3	Supplying and providing of first aid box with necessary materials/medicine (hygienic gown, thermometer, adhesive ressing, antiseptic solutions, bandages, cotton balls or swabs, emergency blanket, gloves, hand sanitizer, ice pack, saline etc). All complete as per direction of Engineer-in - charge.	each	2	17836	35,673.00
4	Mobilization and cleaning site before commencing actual physical work and during contract period and demobilization after completion of the works under contract to be accepted by the Engineer-in-charge. This work shall also cover cleaning and clearing, cutting or filling, dressing the project area on and in the ground to an extent that all the events of works of the project can be executed smoothly in a working environment with a particular attention on safety and security in all respects, and to stockpile the end	sqm	Length 25m width 15m Area 375m ² No of items per bridge 2. Total qty per bridge 375*2=	235.00	1,76,550.00

Sl no.	Description of item	Unit	Quantity/ Area	Unit price	Total amount
	outcome to a place for disposal agreed by the Engineer-in-charge, where, payments are to be based on ground area determined by the Engineer-in-charge and be proportionate to the percentage progress of work under contract as a whole in all respects and approved by the Engineer-in-charge.		750m ² .		
5	Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men.	each	2	14172.16	28,344.32
6	Marble Name Plate: Supplying, fitting and fixing 18mm thick marble Name plate including cost of materials, labour, form work, engraving neatly the approved Sample given by the engineer etc. complete as per drawings and direction of the Engineer-in-charge.	sqm	2	9343.42	18,686.84
7	Drinking Water Facilities: Providing continuous adequate drinking water supply at worksite and site office as well by installing necessary tube-well/s where applicable or any other means depending on local situation, also providing essential arrangement for storing drinking water by supplying portable best quality water tank equivalent to Gazi/Padma of adequate capacity depending on the number of users, including supplying 1 (one) no. best quality water filter of minimum capacity 30 liters with necessary kits, etc. all complete as per satisfaction and direction of the Engineer-in-charge, all relevant goods and equipment under this item shall be property of the contractor and payment will be made after 100% completion of the contract successfully.	Ls	1	20000	20,000.00
8	Control of Air Pollution (Dust Suppression): Maintaining, carrying out proper and efficient measures wherever and as often as necessary to reduce dust nuisance, and to prevent dust which has originated from contractor's activities/ operations at the worksite and site office, including sprinkling water on aggregates/unpaved roads at least three times a day or more depending on the atmospheric conditions, including keeping necessary covering/protection on stockpiled fine aggregates to reduce dust nuisance during natural air blowing, all complete like emission of dust into the atmosphere shall be strictly controlled during manufacture, handling,	Ls	1	10000	15,000.00

Sl no.	Description of item	Unit	Quantity/ Area	Unit price	Total amount
	storage of concrete, road aggregates, and to be used such methods and equipment as are necessary for collection and disposal, or prevention, of dust during these operations means of eliminating atmospheric discharges of dust as per requirement and carrying out air quality test as PM10, PM25, SPM, NOx, Sox as per instruction of Engineer-in-charge. Payment will be made after 100% completion of the contract successfully.				
9	Personal Protection Equipment for Workers: Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket for construction workers made of 100% polyester waterproof fabric, fluorescent yellow/orange/green/red/blue or pantone color, (ii) suitable hand protection gloves for construction work of Flexible/ durable/ excellent puncture resistance working gloves with PVC palm and T/C drill back, pasted cuff, palm liner and fit properly and be reasonably comfortable to wear, (iii) appropriate foot protection shoes having impact-resistant toes and heat-resistant soles that will protect the feet against hot working surfaces, (iv) best quality safety helmets of ABS shell, tough, lightweight, durable which will be able to resist penetration by objects, absorb the shock of a blow and water-resistant and slow burning with available four-six-point adjustable suspension for shock-absorbing, slotted sides to accommodate accessories, such as face shields, ear muffs (v) suitable eye protection goggles to protect against specific workplace hazards, fit properly and be reasonably comfortable to wear, provide unrestricted vision and movement, including instructing workers to wear strictly during working time and reviewing periodically, updating, evaluating the effectiveness of PPE and maintaining, replacing worn or damaged PPE etc. all complete as per requirement and full satisfaction of Engineer-in-charge. Payment will be made after 100% completion of the contract successfully.	Ls	1	4,00,000	4,00,000.00
10	Painting the vertical end faces of posts, wheel guard, railing, rail post,	sqm	597.60	246.38	1,47,236.69

Sl no.	Description of item	Unit	Quantity/ Area	Unit price	Total amount
	parapet wall, kilometer post, road name plate, guide post, traffic signs, etc. in two coats with best quality synthetic enamel paint of approved make and brand of different shades over a coat of priming, applying one vertical and one horizontal coat for each coat and successive coat is to be applied after drying up of previous coat by brush/roller/spray, including cleaning and washing the surface, rubbing and mending good damages as necessary and necessary scaffolding, etc. all complete in all respect as direction of the Engineer-in-charge. Rate is inclusive of cost of all materials, labour and all incidental charges in this connection. Two coats over a prime coat for new concrete surface.				
Subtotal Bill: Environmental Safety and Enhancement Works					14,17,312.25

Appendix-04: Environmental and Social Monitoring Plan (ESMP Implementation and Monitoring Framework)

Environmental and social monitoring for the proposed sub-project has been incorporated into the Environmental and Social Management Framework (ESMF). The detailed Environmental and Social Monitoring Plan, including monitoring parameters, indicators, responsible institutions, the frequency of monitoring during the pre-construction, construction, and operation phases, and the reporting line, is presented here. A mid-term third-party environmental audit may be conducted during implementation to independently assess compliance with the ESMP and World Bank Environmental and Social Standards (ESS1–ESS10).

Monitoring stage	Monitoring Indicator	Method of Verification	Frequency	Responsibility	Reporting Line
1. Monitoring During Pre-Construction Phase	Site-specific ESMP approved before mobilization	Approved ESMP document	Once (Before mobilization)	PIU	PIU → PSC → WB
	Baseline environmental condition (visual record, nearby water condition) documented	Baseline checklist & photos	Once	Contractor (verified by D&SC)	Contractor → D&SC → PIU
	Appointment of EHS Supervisor	Appointment letter	Once	Contractor	Contractor → D&SC
	OHS Plan, Emergency Response Plan (ERP) prepared	Approved plan copies	Once	Contractor	Contractor → D&SC → PIU
	Waste Management Plan prepared	Approved WMP	Once	Contractor	Contractor → D&SC
	Traffic Management Plan prepared	Approved TMP	Once	Contractor	Contractor → D&SC
	ESMP summary disclosed in Bengali at Union Parishad & site	Disclosure photos & record	Once before works	PIU	PIU → WB
2. Monitoring During Construction	A. Environmental Monitoring				
	Indicator	Standard / Target	Monitoring Frequency	Responsibility	Reporting Line

Phase	General ESMP compliance (%)	100% compliance	Weekly	D&SC	D&SC → PIU
	PM10 / Dust control	No visible excessive dust; water sprinkling ≥2 times/day	Daily visual; weekly record	Contractor	Contractor → D&SC
	Noise Level	Within DoE standard (Daytime ≤ 75 dB(A) for commercial/mixed areas)	Monthly or during piling	Contractor (verified by D&SC)	Contractor → D&SC → PIU
	pH of discharge water	6.5–8.5	Monthly (if water discharge occurs)	Contractor	Contractor → D&SC
	TSS in runoff	Within DoE surface water standard	Monthly (during piling/concreting)	Contractor	Contractor → D&SC
	Installation of silt traps & bunds	100% installed where required	Weekly inspection	D&SC	D&SC → PIU
	Oil & lubricant storage with secondary containment	100% compliance	Weekly	D&SC	D&SC → PIU
	Construction waste segregated & disposed at approved site	Disposal records maintained	Weekly	Contractor	Contractor → D&SC
	Obstruction of canal flow	No blockage observed	Weekly	D&SC	D&SC → PIU
	Bird disturbance (if observed Nov–Feb)	No active piling during high congregation	Seasonal (Nov–Feb)	D&SC	D&SC → PIU
B. Occupational Health & Safety Monitoring					

Indicator	Target	Frequency	Responsibility	Reporting Line
Workers provided PPE	100% PPE use	Daily	Contractor	Contractor → D&SC
Toolbox meetings conducted	At least 1/week	Weekly	Contractor	Contractor → D&SC
OHS incident reporting	100% incidents recorded within 24 hrs	As needed	Contractor	Contractor → D&SC → PIU
First-aid station functional	Fully equipped	Weekly inspection	D&SC	D&SC → PIU
Labor camp sanitation & hygiene	Clean, adequate toilets & waste bins	Weekly	D&SC	D&SC → PIU
No child or forced labor	Zero tolerance	Monthly verification	PIU	PIU → WB
C. Community Health & Safety Monitoring				
Indicator	Target	Frequency	Responsibility	Reporting Line
Site barricading & signage installed	100% coverage	Weekly	D&SC	D&SC → PIU
Safe pedestrian diversion pathway	Functional & safe	Weekly	D&SC	D&SC → PIU
Traffic management implementation	No major accident	Weekly	D&SC	D&SC → PIU
Spill incidents affecting canal/agri land	Zero major spill	Continuous	Contractor	Contractor → D&SC
D. Stakeholder & GRM Monitoring				
Indicator	Target	Frequency	Responsibility	Reporting Line
GRM register maintained	Updated regularly	Monthly review	PIU	PIU → PSC
Grievances resolved within timeline	10–15 days (as per tier)	Monthly tracking	PIU	PIU → WB
Community consultation during construction	At least 1 meeting/quarter	Quarterly	PIU	PIU → WB

3. Post-Construction / Operation Phase Monitoring	Indicator	Target	Frequency	Responsibility	
	Site restoration completed	100% cleared & restored	Once after completion	D&SC	
	Waste cleared from site	No residual debris	Once	D&SC	
	Bridge safety features (railings, guideposts, signage) installed	100% installed	Once before handover	D&SC	
	Canal flow unobstructed	No blockage	Once after completion	PIU	
	Final community feedback	Documented	Once before closure	PIU	

Reporting Hierarchy: Contractor → D&SC → PIU (LGED) → World Bank

The D&SC will prepare a Monthly report on Environmental and Social Compliance and submit it to the PIU. The PIU will review and transmit the Monthly Environmental and Social Compliance Report to the World Bank as part of the project's regular safeguard reporting obligations.