ENVIRONMENTAL IMPACT ASSESSMENT OF FIFTY-TWO SILICA SAND QUARRIES IN THE MOULVIBAZAR DISTRICT



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ACRONYMS AND ABBREVIATIONS

AAQ	Ambient Air Quality
AOI	Area of Influence
AEZ	Agro-Ecological Zone
BBS	Bangladesh Bureau of Statistics
BIWTA	Bangladesh Inland Water Transport Authority
BMD	Bangladesh Meteorological Department
BMD	Bureau of Mineral Development
BOD	Biological Oxygen Demand
BRRI	Bangladesh Rice Research Institute
BWDB	Bangladesh Water Development Board
CO	Carbon Monoxide
COD	Chemical Oxygen Demand
DAE	Department of Agricultural Extension
DC	Deputy Commissioner
DEM	Digital Elevation Model
DG	Director General
GPS	Global Positioning System
DO	Dissolve Oxygen
DOE	Department of Environment
DOF	Department of Fisheries
DPHE	Department of Public Health Engineering
ECA	Environment Conservation Act /Ecological Critical Area
ECC	Environmental Clearance Certificate
ECR	Environmental Conservation Rules
EHS	Environment, Health and Safety
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
GHG	Green House Gas
GIIP	Good International Industry Practice
GIS	Global Information System
HAZMAT	Hazardous Material
IEE	Initial Environmental Examination
IESCs	Important Environmental and Social Components
IUCN	International Union for Conservation of Nature
KII	Key Informants Interview
KWh	Kilo Watt hour
LGED	Local Government Engineering Department

MOA	Ministry of Agriculture
MOEFCC	Ministry of Environment, Forest and Climate Change
MOFL	Ministry of Fisheries and Livestock
MOPEMR	Ministry of Power, Energy and Mineral Resources
MOWR	Ministry of Water Resources
NGO	Non-Government Organization
NOC	No Objection Certificate
NOx	Oxides of Nitrogen
PAP	Project Affected Person
PCM	Public Consultation Meeting
PPE	Personal Protective Equipment
PPM	Parts Per Million
RS	Remote Sensing
SCC	Site Clearance Certificate
SOx	Oxides of Sulfur
SPM	Suspended Particulate Matter
SRDI	Soil Resource Development Institute
TDS	Total Dissolved Solid
TOR	Terms of Reference
UFO	Upazila Fisheries Office
UNO	Upazila Nirbahi Officer
USEPA	United States Environmental Protection Agency

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

E-1 Introduction

The Bureau of Mineral Development (BMD) is a key government agency in Bangladesh, operating under the Energy and Mineral Resources Division of the Ministry of Power, Energy, and Mineral Resources. It is tasked with managing, regulating, and promoting the exploration, extraction, and utilization of the country's mineral resources, including natural gas, coal, limestone, hard rock, and clay. Established to support sustainable development, the Bureau oversees licensing, compliance monitoring, and the implementation of government policies to ensure environmentally responsible and economically beneficial sand extraction practices.

The Bureau of Mineral Development (BMD) is set to finalize the demarcation of 52 silica sand quarries under 6 upazila in Moulvibazar District (Sreemangal-29, Komolganj-07, Rajnagar-06, Kulaura-04, Borolekha-04 and Moulvibazar Sadar-02), an area renowned for its high-quality silica deposits. This initiative aims to ensure the sustainable extraction of this vital resource while adhering to environmental and geological considerations. The move aligns with the government's strategy to manage natural resources responsibly, support industrial growth, and bolster local economic activities.

E-2 EIA Process, Approach, and Methodology

Environmental Impact Assessment (EIA) is a systematic process that identifies and evaluates the potential impacts (positive and negative) that a proposed project may have on the physical, biological, and socio-economic environment. It identifies mitigation measures that need to be implemented in order to avoid, minimize, or reduce the negative impacts, and identifies measures to enhance positive impacts. The EIA is not fully a linear process, but one where several stages are carried out in parallel and where the assumptions and conclusions are revisited and modified as the project progresses. Section 1.5 provided additional detail regarding the key stages in this EIA process.

E-3 Project Legal Aspects

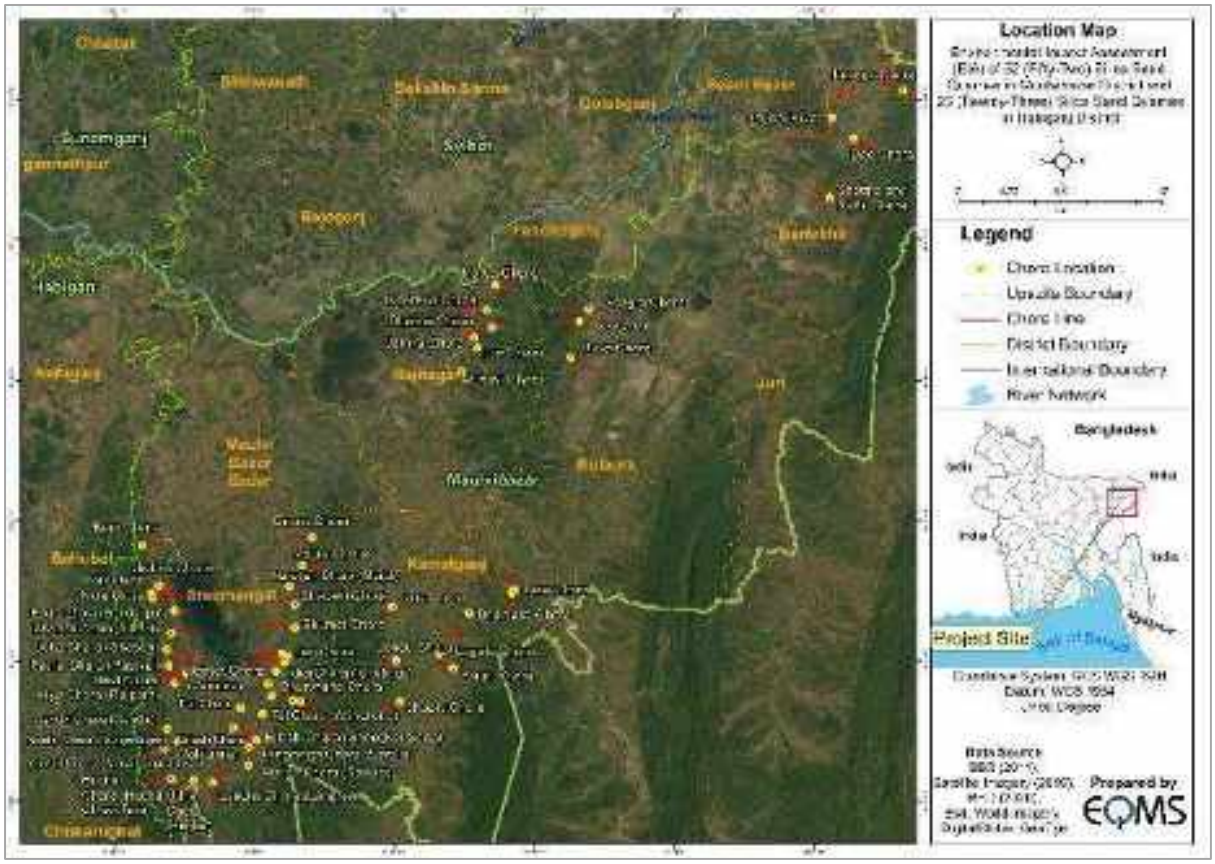
Relevant legislation, policies, and guidelines of Bangladesh have been considered in this EIA where they apply to the proposed Project. The majority relates to aspects surrounding procedure, environmental management, and environmental performance. Analysis of the legal aspects of the Project has shown that it is a permissible activity that requires clearance by DOE. DOE has issued a ToR for conducting an EIA. This EIA report has been prepared on the basis of the terms of reference provided by DOE. Regulatory requirements are incorporated in section 2 of this report.

The activities of sand extraction fall under the “Orange" category according to the Bangladesh Environment Conservation Rules (ECR) 2023. According to ECR 2023, the project requires IEE but after the consultation with the DOE head office for this sand quarry project, DOE decided to conduct an EIA study because the High Court has issued an order for all sand quarry projects required EIA study for getting approval from DOE and BMD following the DOE guideline. All applicable national legislation has been described under Chapter 2.

E-4 Project Description

There are 52 (fifty-two) silica sand quarries that are gazetted by the Government of Bangladesh and are located in six upazila in Moulvibazar District (Sreemangal-29, Komolganj-07, Rajnagar-06, Kulaura-04, Borolekha-04 and Moulvibazar Sadar-02). Figure 0-1 shows the location map of the project.

Figure 0-1: Location Map of the Sand Quarries



Source: EQMS, 2025

E-5 Description of the Existing Environment

The description of the existing environment provides the baseline case against which any potential impacts of the project can then be assessed. A 500-meter core impact area from the sand quarry and a 2 km buffer from the sand quarry for the main focus for the assessment of the existing environment and social impact assessment. The environmental aspects of the project area are presented, covering physical environments (i.e. soil, air quality, water quality, etc.) and biological environments (i.e. flora, fauna, and ecological aspects) are presented.

The baseline information was collected from both primary and secondary sources. Monitoring of ambient air and noise quality has been done and also surface, groundwater, soil samples, and sediment samples have been collected and analyzed.

E5.1 Physical Environment

Geology: According to the Geological Survey of Bangladesh (GSB), the proposed Project area falls in Valley Alluvium and Colluvium", "Dupi Tila Formation", "Marsh Clay and Peat" and "Dihing and Dupi Tila Formation".

Topography: Topographic features in the study area where the average elevation range is between -8m to 92 m.

Land Use/Cover: In the Study area, 2 km from both sides of the sand quarry, the predominant land use-land cover of the study area includes Aquaculture (0.44%), Brick Field (0.043%), Crop Land (39.102%), Low Land (6.485%), River (0.662%), Settlement with Homestead Vegetation (24.135%), Tea Garden (28.172%) and Waterbody (0.959%).

Soil: Soil of the study area is the “Mainly Deep Brown Soils on Low Hills”, “Surma Kusiyara Floodplain Soils”, “Peat”, “Deep and Shallow Brown Soils on Very Steep, High Hills Ranges” and “Gray Piedmond Soils”.

Hydrology and Drainage: The hydrological regime of the proposed project area is governed by the Surma River and the Kushiara River.

Meteorology:

Temperature: Based on the temperature recorded at Sreemangal Meteorological Station for the last 30 years (1992 to 2021), the highest average temperature reached 32.4°C in July 2018. The period from March to August is marked by continuous increases in temperatures. August is the hottest month of the year with an average maximum and minimum temperature (in August) of 32.8°C and 23.7°C, respectively. From September onwards, both the day and night temperatures decrease, and January is the coldest month with average monthly maximum and minimum temperatures of 25.1°C and 6.1°C, respectively.

Humidity: The monthly average relative humidity varies from 71.0% to 85.6% in the study area.

Rainfall: The average annual total rainfall at Chattogram Meteorological Station is about 3813 mm from 1992 to 2021.

E5.2 Environmental Quality

Air Quality: The ambient air quality monitoring was conducted at six locations (AQ-1 to AQ-10) under sunny conditions, with an 8-hour duration for SPM and CO, and 24-hour durations for $PM_{2.5}$, PM_{10}, SO^2, and NO_x. Results show that $PM_{2.5}$ concentrations ranged from 16.3 µg/m³ to 26.8 µg/m³, all within the limit of 65 µg/m³ as per the Air Pollution (Control) Rules, 2022. PM_{10} concentrations ranged from 35.2 µg/m³ and 41.8 µg/m³ significantly below the limit of 150 µg/m³. SO^2 and NO_x levels were also well below their respective limits of 80 µg/m³, while CO remained under 1 µg/m³, below the limit of 5 µg/m³.

Ambient Noise Levels: Ambient noise level monitoring was conducted in twenty-five locations. The majority of the residential areas (NL1 to NL25, except NL10 and NL19) have noise levels within the Bangladesh Standard for both day and night. The Leq (equivalent continuous noise level) readings during the day range from 41.28 dBA to 54.63 dBA, and during the night, they range from 38.03 dBA to 43.52 dBA. The highest recorded Leq day and night values within residential areas are 54.63 dBA (NL9) and 43.52 dBA (NL9), respectively. These values are within acceptable limits but are on the higher side. NL10, classified as an industrial area, exceeds the noise levels permissible for residential areas but remains within industrial area standards. The Leq day and night values are 63.42 dBA and 54.67 dBA, respectively. These values are within the Bangladesh standard (75/70 dBA). NL19, categorized as a mixed area, shows Leq day and night values of 68.42 dBA and 61.56 dBA, respectively. These values are within the Bangladesh standards (60/50 dBA) but are relatively high for nighttime noise exposure. Silent zones (NL13, NL18, NL24) generally show compliance with the standards. However, NL18 recorded a notably high Lmax value of 79.8 dBA, indicating occasional noise disturbances that could affect the tranquility of these zones.

Surface Water Quality: Ten samples were collected and analyzed in the EQMS lab. The analysis of water quality parameters across six monitoring locations (SWQ1–SWQ10) revealed variations in physical and chemical characteristics. Overall, while most parameters complied with national standards, turbidity, pH, and nitrate levels exceeded permissible limits in certain locations, indicating potential water quality concerns that may require mitigation measures.

The water quality of the canal water and river water sample reveals that it is usable for all purposes as per ECR 2023-Schedule 2 (a).

Ground Water Quality: Ten samples were collected from the study area. Overall, while most parameters complied with national standards, concerns were noted regarding high color levels and low

pH values, suggesting potential groundwater quality issues that may require further assessment and treatment.

Soil Quality: Ten samples were collected from the study area and analyzed. The pH values ranged from 3.3 to 4.32, indicating acidic soil conditions, which may affect nutrient availability and crop growth. Electrical conductivity (EC) values varied between 0.38 dS/cm and 0.55 dS/cm, suggesting that the soil has low salinity levels. Potassium (K) concentrations ranged from 100 mg/kg to 125 mg/kg, while phosphorus (P) levels varied from 5.0 mg/kg to 8.0 mg/kg. Zinc (Zn) concentrations were recorded between 0.45 mg/kg and 0.8 mg/kg, and copper (Cu) levels ranged from 0.18 mg/kg to 0.25 mg/kg, both of which are within acceptable limits for soil health. Iron (Fe) content varied between 48 mg/kg and 60 mg/kg, while manganese (Mn) levels ranged from 14.5 mg/kg to 17.0 mg/kg, both within typical ranges for soil. Lead (Pb) concentrations were low, ranging from 0.05 mg/kg to 0.06 mg/kg, indicating minimal contamination. Organic matter content ranged from 1.8 mg/kg to 2.6 mg/kg, suggesting moderate fertility. The soil texture across all monitoring locations was identified as sandy loam, which generally provides good drainage but may need organic amendments to improve nutrient retention. Overall, while the soil quality showed moderate levels of nutrients, the acidic pH suggests potential challenges for agricultural productivity, which may require pH adjustment and additional soil management practices.

Sediment Quality: Ten samples were collected from the study area and analyzed. The pH values ranged from 4.44 to 5.26, indicating slightly acidic to near-neutral conditions, which are generally suitable for maintaining nutrient availability and aquatic ecosystem stability. Electrical conductivity (EC) values varied between 0.48 dS/cm and 0.6 dS/cm, suggesting that the sediment has low to moderate salinity levels. Potassium (K) concentrations ranged from 150 mg/L to 180 mg/L, while phosphorus (P) levels varied from 7.5 mg/L to 10.2 mg/L. Zinc (Zn) concentrations were recorded between 0.5 mg/L and .75 mg/L, and copper (Cu) levels ranged from 0.22 mg/L to 0.3 mg/L, both of which are within acceptable limits for sediment health. Iron (Fe) content varied between 48 mg/L and 56 mg/L, while manganese (Mn) levels ranged from 12.0 mg/L to 14.0 mg/L, both within typical ranges for sediment. Lead (Pb) concentrations were low, ranging from 0.03 mg/L to 0.06 mg/L, indicating minimal contamination. Organic matter content ranged from 2.0 mg/L to 3.0 mg/L, suggesting moderate fertility. Overall, the sediment quality showed adequate levels of essential nutrients, with pH conditions that may slightly limit nutrient availability in some locations. Proper monitoring and sediment management practices may be required to maintain optimal ecological balance.

E5.3 Biological Environment

Bio-ecological Zone: The project site falls under the three Bio-ecological Zones namely ‘4d. Surma-Kushiyara Floodplain, 5a. Haor Basin, and 9b. Sylhet Hills’ (Atlas of Bio-ecological Zones of Bangladesh

Climate Change: According to the climatic sub-regions of Bangladesh, the project area is in the North-Eastern Region.

Natural Disaster:

Floods: The project area is categorized into different flood-prone zones: Not Flood Prone zones, others in Moderate River Flooding zones, and some in Moderate Tidal Surge zones.

Earthquake: The proposed project area falls under a seismic coefficient of 0.28 and 0.36, the seismic zone of the project sites is in Zone 3 and Zone 4.

Cyclone: The project site is in the North-Eastern part of Bangladesh which lies in the no-risk zone in terms of cyclonic events.

E-6 Socio-economic Environment

The social and economic aspects of the Project area (i.e. demographics, employment, cultural aspects, etc.) are presented. In the 2 km study area, a total number of 32,93,974 population are living in 6,09,128

households of the study area. The average household size is 5.4 and the sex ratio is 96.6. All the population will be impacted indirectly along with positive (Job opportunities, Income generation activities, etc.) and negative (dust generation from transportation vehicles, road accidents in the approach road, etc.) consequences by the implementation of the Project.

E-7 Analysis of Potential Alternatives

The project has been considered and investigated for several alternatives to reduce the environmental and social impacts. The alternatives assessed were not limited to environmental and social aspects, but the assessment also included the technical aspects of different options.

The Project has considered alternatives in terms of design, and technology options. An analysis of these alternatives has been undertaken for the proposed Project including consideration of a no-Project scenario. Details of technical alternatives are given in section 6.

E-8 Impact Identification and Analysis

The potential impacts of the proposed project on different environmental and social components are systematically identified for evaluation of significance.

Alongside the project benefits, there will be potential negative environmental impacts during sand extraction.

Impacts are classified as both positive and negative for the proposed project. Detail impacts of the proposed project for Ambient Air Quality, Ambient Noise Levels, Impact on Land Use, Impact on Agriculture, Water Quality, Soil Quality and Erosion, Waste Generation, Ecological Impacts, Impact on Traffic, Occupational Health and Safety and Community Health and Safety are given in chapter 7.

E-9 Environmental and Social Management Plan

The environment and social management plan have been developed for the proposed sand extraction project with an aim to avoid, reduce, and mitigate adverse environmental and social impacts and to propose enhancement measures. They are:

- Mitigation of possible adverse impacts;
- Monitoring of impacts (environmental and social) and mitigation measures during sand extraction of the proposed project.
- Institutional capacity building and training;

E9.1 Mitigation Measures

The environmental and social management plan (EMP) has been recommended to highlight the action procedures to avoid/minimize/control the impacts arising out of different projects. The EMP is elaborately described in Chapter-8 of this report.

E9.2 Monitoring Plan

In accordance with the EMP, an environmental and social monitoring plan has been developed and presented in Chapter 8.

E9.3 Institutional Setting and Implementation Arrangement

The contractor will monitor the implementation of these mitigation measures at the site. The DC office, BMD will monitor the EHS activities from the contractor.

E-10 Stakeholder consultation

During EIA, 14 KIIs have been conducted with the project-affected and interested stakeholders. During EIA, 11 FGDs with various groups including projected people who are going to be affected by the project directly or indirectly were conducted in different locations throughout the project's adjacent area. In the

FGDs, an effort was made to invite a wide range of stakeholders including farmers, businessmen, landowners, house owners, and other affected persons.

Outcomes from this consultation showed that the community was generally supportive of the proposed Project and that the community believed that the Project would bring some benefits to them and the local area. Such perceived benefits included the potential for local employment relating to the Project and the potential that infrastructure investment in the local area may occur as a result of the Project.

E-11 Emergency Response Plan

The Emergency Response Plan includes any measures that should be in place at all facilities to combat an emergency resulting from spills of flammable liquids (Oils), road accidents, flash floods due to heavy rain, landslides due to sand extraction, river bank, and canal erosion due to sand extraction.

E-12 Conclusion and Recommendation

The silica sand extraction project has been initiated by BMD at six upazila of Moulvibazar District. Site Clearance Certificate (SCC) and an Environmental Clearance Certificate (ECC) will be required for the sand extraction project in favor of BMD. This EIA study was conducted to get the ECC from DOE.

Based on the EIA, the government will generate revenue from sand extraction from the sand quarries. It's also assessed during EIA that the sand extraction from quarries also has positive impacts on the drainage system, agricultural lands, flash floods, employment, and biodiversity in the project area.

The EIA has identified that there are negligible to medium negative environmental and social impacts as a result of the project. However, this EIA has also determined that if comprehensive and effective management and mitigation measures are implemented as proposed, the negative impacts should be reduced to a non-significant level.

Findings and suggestions of the EIA study of the proposed project should be considered and implemented during sand extraction of the project with strong monitoring. Giving the income and employment opportunities for the local community for the project. The Environmental Management Plan (EMP) should be implemented for this project. Manual sand extraction for minimizing the environmental impacts over the excavator where applicable. Establishing Institutional arrangements with proper logistics and training for Environment, Health, and Safety during silica sand extraction.

CHAPTER 1
Introduction

1 INTRODUCTION

1.1 Background

The Bureau of Mineral Development (BMD) is a key government agency in Bangladesh, operating under the Energy and Mineral Resources Division of the Ministry of Power, Energy, and Mineral Resources. It is tasked with managing, regulating, and promoting the exploration, extraction, and utilization of the country's mineral resources, including natural gas, coal, limestone, hard rock, and clay. Established to support sustainable development, the Bureau oversees licensing, compliance monitoring, and the implementation of government policies to ensure environmentally responsible and economically beneficial mining and extraction practices.

BMD plays a vital role in conducting geological surveys, assessing resource potential, and fostering collaborations with international organizations and research institutions to adopt advanced technologies. With its efforts focused on balancing resource development and environmental sustainability, the Bureau is crucial for generating revenue, supporting industrial growth, and addressing challenges posed by climate change. It also emphasizes equitable resource sharing and community benefits while contributing to infrastructure and economic development in Bangladesh.

BMD is set to finalize the demarcation of fifty-two silica sand quarries under 6 upazila in Moulvibazar District an area renowned for its high-quality silica deposits. This initiative aims to ensure the sustainable extraction of this vital resource while adhering to environmental and geological considerations. The move aligns with the government's strategy to manage natural resources responsibly, support industrial growth, and bolster local economic activities.

EQMS Consulting Limited has been engaged by the BMD to conduct an Environmental Impact Assessment (EIA) for this project. This EIA has been prepared in order to fulfill the requirements and conditions of the Government of Bangladesh (GOB), including those issued by DOE in the Terms of Reference (TOR). This EIA report is intended for submission to DOE to get a Site Clearance Certificate (SCC) and an Environmental Clearance Certificate (ECC) for the Project.

1.2 Overview of the Project

The proposed project is located in the Moulvibazar District. The detailed areas included in sand extraction and leasing locations in Moulvibazar District are shown in Table 1-1.

Table 1-1: Detailed areas included in sand extraction and leasing locations in Moulvibazar District

Upazila	Quarry Name	Mouza Name	Area (in acres)
Sreemangal	Bhurbhuriya Chhara	Bhurbhuriya Chhara, Balishira Pahar, Rupshpur, Sungair	12.35
	Joinka Chara	Bhadauda	2.55
	Khai Chara	Bhadauda	5.44
		Ichhapur	
	Jag Chara (West Part)	Noagaon, Ichhapur	8.83
	Jag Chara (East Part)	Noagaon, Ichhapur	2.62
	Sumoi Chara	Sirajnagar, Lamua	2.20
	Shaon Chara	Kalapur, Bhagalpur	3.00

	Narayan Chara	Maizdihi	0.22
	Langlia Chara	Langlia Chara	2.80
	Udna Chara	Huglia	1.05
	Bilas Chara	Asidron	1.40
		Shankar Sena	
	Dingdinga Chara	Saitula	1.47
	Putia Chara	Saitula	1.88
	Noluya Chara	Khoajpur, Durganagar	2.37
	Huglia Chara	Huglia Chara Tea Garden	5.25
	Gandhi Chara	Gandhi Chara	2.60
	Amrail Chara	Amrail Chara Tea Garden	4.08
	Alia Chara	Rajpara	2.55
	Makri Chara	Rajpara	2.18
		Patrikul	
	Shuary Chara	Rajpara	0.69
	Patria Chara	Patrikul	3.87
	Jaita Chara	Shasan	3.01
		Bhunobir	
	Ichamati Chara	Bhimsi	1.47
	Boula Chara	Boula Chara, Gandhabpur	1.21
	Boro Chara	Shaharsri	2.58
	Mura Chara	Dakshin Pachawn	2.08
	Kali Chara	Dakshin Pachawn	1.45
	Jholom Chara	Jatrapasha, Dakshin Pachawn	1.66
	Fhul Chara	Asidron	0.47
Kamalganj	Longo Chara	Madhabpur, Kumrakapun	2.15
	Jhopla Chara	Madhabpur, Hiramati	1.70
	Jalia Chara	Rampasha, Badeubahata	0.96
	Kalachara (well known as Lagata Chara)	Gobindopur	1.08
	Dhamalia Chara	Dukkiner Pahar	2.27
	Dewra Chara	Shamshernagar Tea Garden	7.01
	Shun Chara	Shrinathpur, Tilakpur, Rameshwarpur	5.30
Rajnagar	Marua Chara	Lalapur, Nijgaon	8.76
	Kalamua Chara	Mukutpur, Uttarbhag	5.06
	Jamira Chara	Goyaspur, Chandbhag	2.33
	Har Chara	Dakkhinbhag	4.42

	Dhamai Chara	Chandbhag, Barodal	6.23
	Puranli Chara	Brahmanganj	0.74
Baralekha	Jalongha Chara	Kumarshail, Bhuga, Saypur, Sandopur, Kadampur	28.00
	Sunai River	Wahidpur, Itauri, Atua Maharani,	69.80
	Dewchara	Sujaul	3.75
	Satma o Rathi Chara	Gramtola	7.47
		Aaditere Mohal	
Kulauda	Dewchara	Keolakandi Paroi	4.80
	Buba Chara	Baburpul, Kalimabad	5.44
	Ghagda Chrara	Maijganj, Sripur	2.90
	Boro Chara	Jinnanagar	0.74
	Maijgaon		
Sadar	Deora Chara	Niteshwar	1.92
	Mourachara	Sahapur, Moulavi Tea Garden	3.18

Source: Bureau of Minerals Development

1.3 Scope of EIA Study

This report fulfills the requirements of the EIA under the ECR 2023 and has been prepared in accordance with the approved TOR (Appendix B) by the DOE. The detailed scope of the EIA study is outlined below:

- Development of an integrated project description of the project components including its sub-components, which are under the purview of the Project Proponent (PP).
- Development of a regulatory, policy, and administrative framework relevant to the Project;
- Assessment of baseline conditions (Physical, Biological, and Socio-economic Condition).
- Assessment of environmental quality (Air, Water, Noise, and Soil).
- Assessment of detailed ecological conditions in and around the project site.
- Identification, prediction, quantification, and evaluation of potential aspects and impacts of the proposed project on the environment.
- Formulation of an Environmental Management Plan and associated/specific mitigation plans for identified impacts.
- Mitigation measures and monitoring plan for effective implementation of mitigation measures of the project.
- Formulation of public and stakeholder consultation for the proposed project.
- Preparation of the EIA report based on DOE-approved TOR for obtaining ECC from the DOE, Bangladesh.

1.4 Applicable Reference Framework

The main environmental regulations in Bangladesh are the Environment Conservation Act (ECA) 1995 (amended 2000, 2002, 2007 and 2010) and Environment Conservation Rules (ECR) 2023. ECA 1995 provides the requirements for environmental protection, improvement of environmental standards, and control and abatement of environmental pollution.

ECR 2023 provides for the declaration of ecologically critical areas, categorization of industries and projects, and identified types of environmental assessments needed against respective categories of industries or projects. ECA 1995 and ECR 2023 outline the regulatory mechanism to protect the environment in Bangladesh.

1.5 Approach and Methodology

The approach and methodology are outlined based on information available about the proposed project, our previous experience of understanding similar kinds of projects, regulatory requirements in Bangladesh, and the requirements to meet the DOE standards.

1.5.1 Approach to the EIA

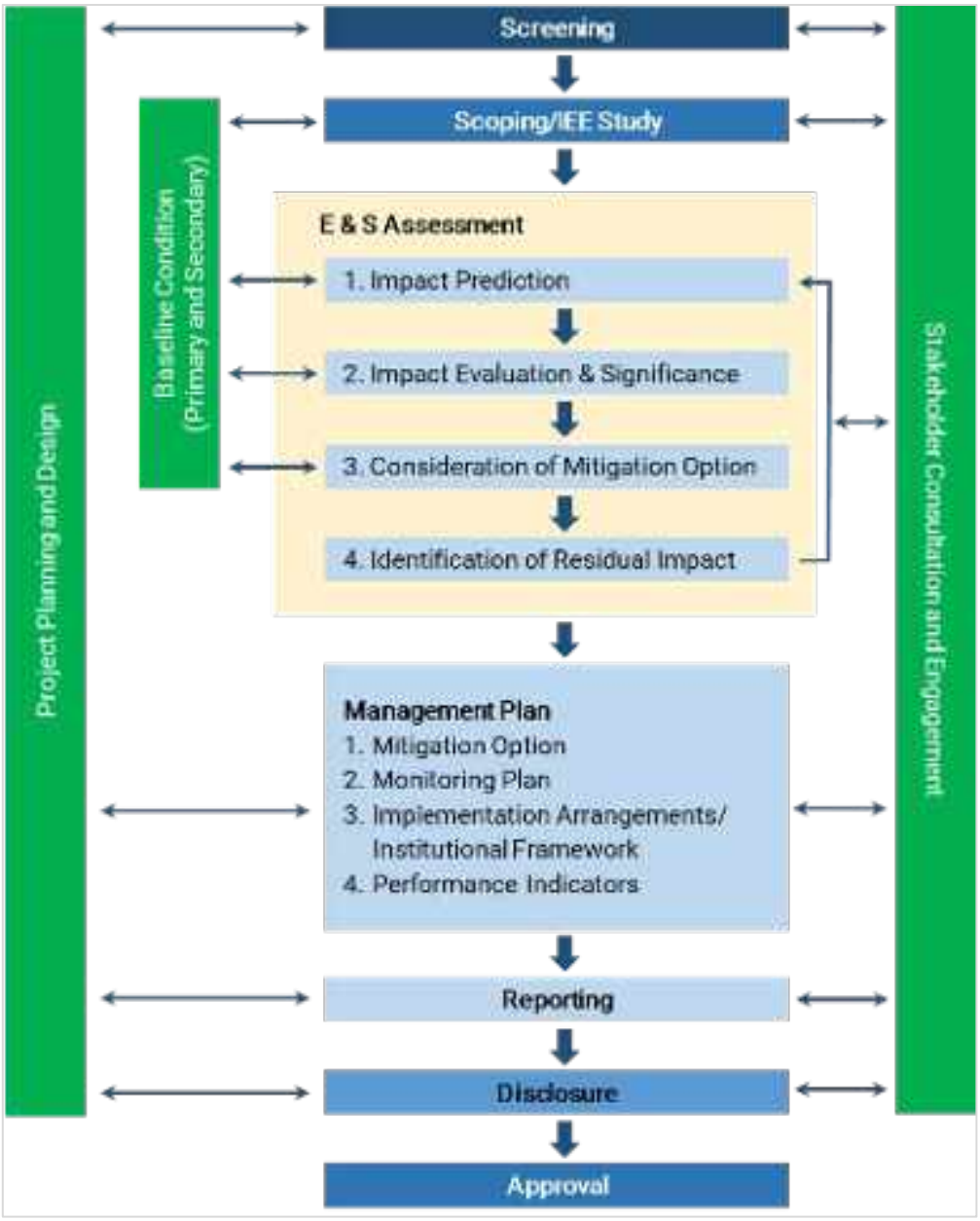
In order to attain the earlier mentioned scope of work, the studies were based on the review of the available project-related information including primary and secondary baseline environment and social data, prediction, and evaluation of impacts of significance. The following approach and methodology are proposed to complete the EIA study.

The EIA of the project will follow a systematic process of:

- **Screening Study:** The proposed project falls under the "Orange" Category as per the Environment Conservation Rules 2023, As this is an orange category project and listed 63 of the orange categories in the ECR 2023, this project requires IEE. After the consultation with the DOE head office for this sand quarry project, DOE decided to conduct an EIA study because the High Court has issued an order for all sand quarry projects to require an EIA study to get approval from DOE and BMD following the DOE guidelines therefore, would require ECC from the DOE based on EIA, carried out as per the approved terms of reference for the EIA study.
- Data Collection of **environmental and social baseline conditions** against which the assessment will be undertaken.
- **Consult with stakeholder** and integrate their views into the project design and mitigation.
- Systematically **predict and evaluate the positive and negative changes** in these baseline conditions.
- All impacts and benefits of the project should be documented and fully explained within the **EIA report**.
- **Identify the mitigation measures** that the client will take to avoid, reduce, remedy offset, or compensate for adverse impacts, and to provide or enhance benefits from the project.
- Develop an **Environmental Management Plan (EMP).**

The approach proposed for conducting the EIA for the selected project is presented in Figure 1-1.

Figure 1-1: Approach to the EIA



Source: EQMS

1.5.2 Methodology for the EIA

To attain the earlier mentioned scope of work, the EIA was based on the collection of primary and secondary baseline information, impact assessment, and delineation of EMP. The methodology that was followed to complete the EIA for the selected project is divided into the following tasks as presented in Table 1-2 and elaborated in subsequent sections.

Table 1-2: Tasks Undertaken for the EIA Study

Task Number	Task
Task-1	Kick-off Meeting and Team Mobilization
Task-2	Project Description
Task 3	Review of Legislation, Policy and Regulation

Task Number	Task
Task-4	Environmental and Social Baseline Conditions
Task 5	Consultation with Stakeholder
Task 6	Analysis of alternative
Task-7	Environmental Impact Assessment
Task 8	Emergency Response Plan
Task-9	Development of EMP
Task-10	Preparation of Draft EIA Report
Task-11	Preparation of Final EIA Report

1.5.2.1 Task-1: Kick-off Meeting and Team Mobilization

Immediately following the completion of the contract negotiation and contract signing, the proponent, together with the team leader completed all logistical arrangements. In accordance with the EQMS quality requirements, the project manager formalizes team briefing notes outlining the scope of work and outputs required from each of the team members. A kick-off meeting was held on December 01, 2024, with the officials of the client for understanding and major objectives of the project, project details, activities, current status, project milestones, legal requirements, scope, etc.

1.5.2.2 Task-2: Project Description

A section on the project description was prepared. This was developed to the level of detail needed to adequately understand potentially significant project impacts. This covered project location, road connectivity, brief information about sand quarry, project activities, workflow of sand extraction, project schedule, resource, and utility demand, and maps using appropriate scales. Also, identify components of key environmental indicators in physical, biological, and social environments.

1.5.2.3 Task-3: Review of Legislation, Policy, and Regulation

The study team reviewed all the applicable national rules, regulations, policies, and guidelines applicable for the proper implementation of the project. The relevant national acts, policies, rules, and strategies/plans pertaining to the project reviewed as part of the study include, but are not limited to, the following:

- Environmental Conservation Act 1995 and Amendments
- Environmental Conservation Rules 2023
- EIA Guidelines for Industries, 2021
- Noise Pollution (Control) Rules, 2006
- Air Pollution (Control) Rules, 2022
- Mines and Minerals (Control and Development) Act (1992) and Mines and Minerals Rules (2012)
- Ecologically Critical Areas (ECAs) Management Rules, 2016
- National Environmental Policy, 2018
- The National Forest Policy, 2016
- Environment Court Act, 2010
- National Biodiversity Strategy and Action Plan, 2004
- National Occupational Health and Safety Policy, 2013
- Bangladesh Labor Act, 2006 and amendment in 2013 and Labor Rules, 2015
- National Child Labor Elimination Policy, 2010
- National Water Policy, 1999

- Bangladesh Water Act, 2013 and Bangladesh Water Rules, 2018
- National River Protection Commission Act, 2013
- Solid Waste Management Rules, 2021
- Disaster Management Act, 2012
- Road Transport Act, 2018
- Biodiversity Act, 2017
- Wildlife (Conservation and Security) Act, 2012
- National Fisheries Policy, 1999

1.5.2.4 Task-4: Environmental and Social Baseline Conditions

An expert team from EQMS Consulting Limited was engaged to carry out environmental and social baseline data collection between December 2024 and January 2025. Socio-economic data collection and consultations with the local community and other government departments were conducted at the same time. Secondary data were collected from different government departments, local bodies, and through literature review, etc. All the data were compiled and compared with applicable standards where relevant and were presented in the EIA report.

1.5.2.5 Primary Baseline Data Collection

With the assistance of the client, EQMS has identified an accredited environmental laboratory of repute which was engaged in the analysis of the collected environmental quality samples on ambient air quality, surface water quality, groundwater quality, ambient noise level, sediment quality, and soil quality as per aspects detailed in Table 1-3.

Table 1-3: Primary Baseline Data for the EIA Study

S/N	Environmental Attribute	Locations	Frequency	Remarks
1	Ambient Air Quality	10 locations	Once during the baseline survey	Ambient air quality monitoring in and around the project site
2	Ambient Noise Quality	25 locations	Once during the baseline survey	According to Noise Pollution (Control) Rules, 2006, in and around the project site
3	Surface Water Quality	10 locations	Once during the baseline survey	Surface water from the study area
4	Groundwater Quality	10 locations	Once during the baseline survey	Groundwater samples from the study area
5	Soil Quality	10 locations	Once during the baseline survey	Soil samples from the study area
6	Sediment Quality	10 locations	Once during the baseline survey	Sediment samples from the study area
7	Flora and Fauna	Project Area of Influence	Once during the baseline survey	The ecological survey has been undertaken to assess the biodiversity aspects.
8	Socio-economic	Project Area of Influence	One-time survey	Mostly assessed through FGDs and available secondary information

S/N	Environmental Attribute	Locations	Frequency	Remarks
9	Public Consultation Meeting	Project site/near project site	Once during the Baseline survey	Local community including different occupational groups
10	Stakeholder Consultations	-	Once during the Baseline survey	All the stakeholders

1.5.2.5.1 Secondary Baseline Data Collection

Secondary data were collected from the following organizations like Bangladesh Meteorological Department (BMD), Bangladesh Bureau of Statistics (BBS), Bureau of Mineral Development (BMD), Bangladesh Agricultural Research Council (BARC), Geological Survey of Bangladesh (GSB), International Union for Conservation of Nature (IUCN), Space Research and Remote Sensing Organization (SPARRSO), Department of Agricultural Extension (DAE), Bangladesh Water Development Board (BWDB), Bangladesh Inland Water Transport Authority (BIWTA), and published Journals and Books for the following aspects.

A. Physical Environment

- Regional Setting
  - Physiography, Geomorphology, Land Use, Geology, Drainage, Hydrology, and Soil.
- Climate and Meteorology
  - Climatic Pattern, Ambient Temperature, Relative Humidity, Rainfall, and Regional Wind Patterns (Wind Speed and Direction).
- Hazard and Risks
  - Natural Hazards: Floods, Seismic Activities, Seasonal Storms and Cyclones, Tidal Surges, Droughts.

B. Socio-economic Environment

- Demographic Profile
- Education and Literacy
- Economic Activities and Livelihood Pattern
- Socio-economic Infrastructure and Indicators
  - Health Care Facilities,
  - Education Facilities,
  - Drinking-Water and Sanitation,
  - Transportation Facilities, and
  - Sites of Cultural/Archaeological Importance.

C. Ecology and Biodiversity

- IUCN Red List (2015)
- Flora and Fauna
- Biodiversity Condition
- Existing Terrestrial Ecosystem
- Aquatic Fauna and Vegetation

1.5.2.6 Task-5: Consultation with Stakeholder

Extensive consultations were conducted with key stakeholders, including the local community, and government departments/agencies during the field visit. Stakeholder consultation was completed with the intent of collecting baseline information on the environmental and social conditions and sensitivities, developing a better understanding of the potential impacts, informing the public of the proposed project, and to gain an understanding of the perspectives/concerns of the stakeholders. A summary of the stakeholder engagement process and the profile of the groups and their opinions have been given in Chapter 9 of the EIA report.

1.5.2.7 Task-6: Analysis of alternative

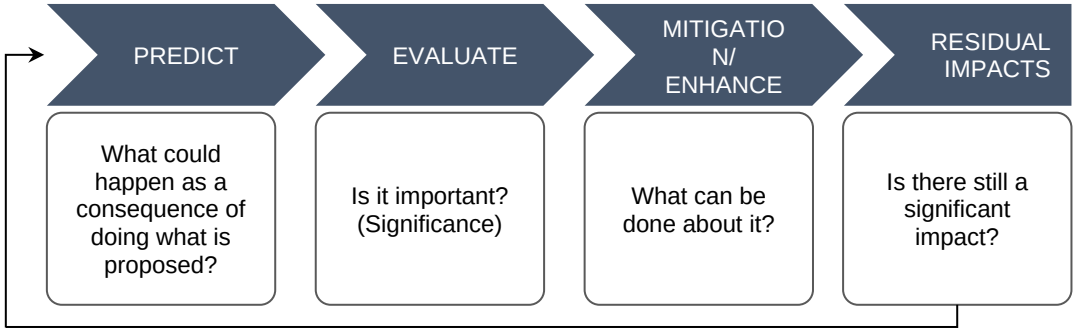
The proposed sand extraction project has been considered and investigated for several alternatives to reduce the environmental and social impacts. The alternatives assessed were not limited to environmental and social aspects, but the assessment also included the technical aspects of different sand extraction and sand transportation options and included consideration of a no-project scenario.

1.5.2.8 Task-7: Impact Assessment

The EIA evaluated potential impacts using a methodology based on the evaluation of the "significance" of identified issues and impacts on baseline parameters. Analysis of the baseline results and the incremental impacts of the project were assessed in accordance with the national standards for water as mentioned in the ECR 2023, Air Pollution (Control) Rules 2022, and Noise Pollution (Control) Rules.

The impact assessment covered the full project lifecycle, which included Quarrying phase activities. The impact assessment has involved the prediction, evaluation, and mitigation of impacts and the report on impacts including residual impacts. Impact prediction takes into account control measures that are part of the project sand extraction activities.

Figure 1-2: Impact Assessment Process for the EIA



The impacts were identified and quantified for intensity using matrix techniques and evaluated as Negligible, Low, Moderate, and High impacts on the environment and communities in the study area. Aspects that were considered in the impact assessment, during the Quarrying phase of the proposed project, land use, water quality (surface and ground), noise, ecology, waste, landscape, and visual, traffic, flood, and other natural disaster risks, sedimentation, and erosion, socio-economic, occupational and community health, and safety, etc.

The principal aim of this task was to identify and assess potential impacts on various environmental and social components due to the proposed project. Based on baseline data collected in the study area, information on the type and quantity of pollutants, and surveys of the study area, the EIA team identifies and predicts potential impacts due to the proposed project on the surrounding environment Quarrying phase of the project.

The key issue is to identify after collecting the baseline information. Each issue consists of components that on their own or in combination with each other, give rise to potential impacts, either positive or negative, from the project onto the environment or from the environment onto the project.

1.5.2.9 Task-8: Emergency Response Plan

An Emergency Response Plan (ERP) prepared for the sand extraction project includes information such as whom to notify, who should do what, potential emergencies, emergency management, and responsibility during an emergency.

1.5.2.10 Task-9: Development of EMP

Requirements and details of the mitigation measures for minimizing identified negative impacts and enhancement measures for increasing the benefit of positive impacts are suggested in the EMP for

implementation by the client during the Quarrying phase of the project. The EMP is comprised of the following aspects based on the impacts assessed for the project:

- Introduction to the purpose of the EMP;
- Institutional mechanism - roles and responsibilities for EMP implementation;
- Tentative cost for the implementation of the EMP;
- Summary of significant adverse impacts and potential hazards;
- Mitigation measures and control technologies, safeguards, etc. to minimize adverse impacts on physical, biological, and socio-economic environment, measures to minimize associated hazards and control the emergency; and
- The project monitoring program for effective implementation of the mitigation measures and ascertain the efficacy of the environmental management and hazard control systems in place.

This sets out the mitigation and management measures required during project implementation to avoid or reduce the environmental and/or social impacts, including developing the action plan in accordance with DOE requirements. A monitoring plan is included here, covering the type of monitoring to be done, responsible parties, schedule, standards to be used, resources, and tentative cost. Plans developed at this stage for air quality, noise level, soil quality and erosion, biodiversity, waste management, traffic, occupational health and safety, community health and safety, and water resources are provided in this EMP with a monitoring plan.

1.5.2.11 Tasks-10 and 11: Reporting - Draft and Final EIA Report

A draft EIA report was prepared upon completion of the above tasks as per the prescribed TOR given by the DOE and submitted to the client for providing their comments and suggestions.

Based on one set of consolidated comments from the client, the Draft EIA was finalized by the EIA team for submission to the DOE after completing the PCM with different stakeholders to get a Site Clearance Certificate (SCC) and an Environmental Clearance Certificate (ECC).

1.6 Limitation

The following are some of the limitations of the study:

- This study is limited to investigating and managing potential impacts associated with the activities of the Project, (the scope of which is described in Chapter 3 of this report). No assessment has been made for any future projects or activities that may arise beyond the current scope of the project as stated in this report. If or when any such developments are proposed, additional environmental (and social) impact assessment should be carried out at that stage in accordance with the legal requirements of Bangladesh.
- This study has been carried out by accessing data from a wide range of primary and secondary data. This includes reviewing literature, journals, reports, and other documents, which have been supplemented with primary field data collection.
- Assessment of the Project is limited by the quantity and quality of available data. Certain provisions in this EIA report assume reliance on conceptual design and technical information.
- If the project inclusion of new information, changing motivations, or any other reason, the results of any impact assessment or possible mitigation measures provided in this report may be inconsistent.

1.7 EIA Team

The composition of the EIA team is shown in Table 1-4.

Table 1-4: The EIA Team

S/N	Name	Position Assigned
1.	Md. Golam Mawla (Peng)	Team Leader
2.	Tauhidul Hasan	Environmental Specialist
3.	Dr. AHM Mustain Billah	Social Development Specialist
4.	SK Salahuddin Ahmmad	HSE Expert
5.	Dr. K. M. Mijanur Rahman	Ecologist
6.	A.B.M Anwar Haider	Hydrologist
7.	Md. Zahidul Islam	RS & GIS Expert

1.8 Structure of the Report

The EIA report has been prepared to meet the requirement of national policies to be approved by DOE. The report is divided into eleven chapters that follow the activities stipulated in the approved TOR of the EIA study. The outline of the present EIA is as under:

0. **Executive Summary:** provides an overview of the EIA report.
1. **Introduction:** describes the background of the study, brief description, scope of the study, approach and methodology, limitations, EIA study team combination, and structure of the report.
2. **Legislative, Regulation, and Policy Consideration:** covers all the legal provisions, including environmental and social laws, applicable to the project. The chapter also covers all the national standards applicable to the project.
3. **Project Description:** provides a detailed description of the proposed project comprising project justification, location, layout, and project components.
4. **Environmental Baseline:** covers the environmental baseline parameters on the physical environment (land use, topography, geology, physiography, geomorphology, agroecology, soil conditions, soil quality, natural hazards, meteorology, ambient air quality, ambient noise level, hydrology, drainage systems, surface water quality, and groundwater quality), biological environment, and socio-economic environment within the study area.
5. **Socio-Economic Environment:** covers the social parameters of the study area that includes the population and demography, economic condition of the people, social setup, and relevant public utilities enjoyed by the population to understand the impact of the project.
6. **Analysis of Potential Alternative:** covers the alternatives that can be considered for the project based on its need and available resources.
7. **Identification and Evaluation of Potential Impacts:** covers the detailed impact of the proposed project on different environmental components during the construction and operation phase of the project.
8. **Management Plan/Procedures:** covers a comprehensive EMP including recommendations for its implementation during the pre-construction, construction, and operation phase of the project. The EMP consists of the set of mitigation, management, monitoring, and institutional measures to be taken during the implementation of the proposed project to eliminate adverse environmental impacts, offset them, or reduce them to acceptable limits.
9. **Consultation with Stakeholders:** presents information disclosure, consultation, and participation, comprises public consultations and disclosures conducted in the study area.

10. **Emergency Response Plan:** contains information on possible natural and man-made disasters in the study area of the proposed project.
11. **Conclusion and Recommendations:** presents the conclusion and recommendations of the report.

CHAPTER 2

Legislative, Regulation, and Policy Consideration

2 LEGISLATIVE, REGULATION, AND POLICY CONSIDERATION

Environmental issues in Bangladesh are legislated by different sectoral policies and laws, such as those relating to land use, water and air pollution, toxic chemicals, noise, solid wastes, wildlife protection, forest conservation, environmental health and sanitation, and industry. The sectoral laws dealing with different environmental issues in Bangladesh were enacted at different periods, with many now being outdated and not able to control and manage present development needs. Moreover, the environmental concerns and priorities of the country have changed considerably in recent years. For environmental management in particular, the need for updating legislative requirements has been identified and is currently being undertaken by the DOE.

All proposed activities of BMD should be undertaken in full compliance with the existing GOB regulatory and legislative framework. As such, this section of the EIA report provides a review of the GoB statutory requirements most relevant to the proposed Project.

2.1 Legislative Approvals Requirements

The following set of acts and rules are essential to comply with in order to obtain a clearance certificate from the DOE.

Table 2-1: National Legal Provisions Applicable to the Proposed Project for Ensuring Environmental Protection

Act/Rules/ Law/Ordinance	Responsible Agency- Ministry/Authority	Key Features/Remarks	Applicability
Environment Conservation Act, 1995, and its amendments in 2000, 2002 and 2010	Ministry of Environment, Forest, and Climate Change	• Declaration of Ecologically Critical Areas (ECAs). • Obtaining Environmental Clearance Certificate (ECC). • Regulation for vehicles emitting smoke which is harmful to the environment. • Regulation of development activities from an environmental perspective. • Promulgation of standards for quality of air, water, noise, and soil for different areas and different purposes. • Promulgation of acceptable limits for discharging and emitting waste. • Formulating environmental guidelines relating to the control and mitigation of environmental pollution, conservation, & improvement of the environment.	**Applicable** - According to the Act, "no project shall be established or undertaken without obtaining an ECC from the DoE." Therefore, the act's provisions apply to all project intervention phases during the project life cycle.
Environment Conservation Rules, 2023	Ministry of Environment, Forest, and Climate Change	• Categorization of industries, development projects, and other activities on the basis of actual (for existing industries/development projects/activities) and anticipated (for proposed industries/development projects/activities) pollution load. The categories are green, yellow, orange, and red. • Procedure for obtaining site clearance and environmental clearance. • Standards for surface water (inland and coastal), drinking water, sewage discharge, and industrial effluents. • Setting out guidelines for the proper disposal of industrial effluents and requiring industries to have proper effluent management systems i.e., industrial effluent treatment plant, sewerage treatment plant, and mixed effluent treatment plan in place. • Requirements for undertaking initial environmental study and environmental impact assessment as well as formulating environmental management plan according to categories of industries/development projects/activities.	**Applicable** - as the proposed project falls under the "Orange" Category as per the Environment Conservation Rules 2023, As this is an orange category project and listed 63 of the orange category in the ECR 2023, this project requires IEE or EIA. After consultation with the DOE head office for this sand quarry project, DOE decided to conduct an EIA study. Additionally, the High Court has issued an order for all

Act/Rules/ Law/Ordinance	Responsible Agency-Ministry/Authority	Key Features/Remarks	Applicability
		• Procedure for damage claim by persons affected or likely to be affected due to polluting activities or activities causing hindrance to normal civic life. • Establishing the Department of Environment (DOE) as the regulatory authority responsible for enforcing the regulations and overseeing environmental protection efforts in Bangladesh. • Provision of listing of environmental consultants and specialists.	sand quarry projects that require an EIA study to get approval from DOE and BMD following the DOE guidelines. Besides, it is stipulated that environmental quality standards and other relevant requirements shall comply during the project life cycle.
Environment Court Act, 2010 and its amendment in 2019	Ministry of Environment, Forest, and Climate Change. Judiciary	• Establishment of one or more environmental courts in each district and one or more special magistrate courts in each district. • Also provides the jurisdictions of the environment court, the penalty for violating the court's order, a trial procedure in a special magistrate court, power of entry and search, a procedure for investigation, procedure, and power of the environment court, the authority of the environment court to inspect, appeal procedure and formation of the environment appeal court.	**Applicable** - the court has authority, under the act's provisions, over a trial for an offense or compensation under environmental law, imposing penalties for violation, etc.
Noise Pollution (Control) Rules, 2006	Ministry of Environment, Forest, and Climate Change	• The Rules have been established to manage noise-generating activities, which have the potential to impact the health & well-being of workers and the surrounding communities. • An area up to a radius of 100 meters around hospitals, educational institutions, offices, or similar types of institutions is designated as a silent area. The acceptable sound limit in the silent areas is 50 dB(A) for daytime and 40 dB(A) for nighttime. • Dwellings primarily occupy residential areas. The acceptable sound limit in residential areas is 55 dB(A) for daytime and 45 dB(A) for nighttime.	**Applicable** - the project will create noise within the project and surroundings. Incremental noise can impact human and terrestrial and aquatic species. Therefore, it requires complying with these rules.

Act/Rules/ Law/Ordinance	Responsible Agency-Ministry/Authority	Key Features/Remarks	Applicability
		• Mixed areas with a mix of residential, commercial & industrial land use. The acceptable sound limit in the mixed areas is 60 dB(A) for daytime and 50 dB(A) for nighttime. • Businesses and officers primarily occupy commercial areas. The acceptable sound limit in commercial areas is 70 dB(A) for daytime and 60 dB(A) for nighttime. • Industrial areas are used for industry or manufacturing. The acceptable sound limit in industrial areas is 75 dB(A) for daytime and 70 dB(A) for nighttime. • An area between 500 meters from the last limit of a residential area for construction-related activity, use of brick and stone crusher machine is prohibited, and operation of mixture machine and construction-related machinery and equipment are prohibited from 7 PM to 7 AM. • The guidelines say exceeding the maximum noise level in certain areas is a punishable offense.	
Air Pollution (Control) Rules 2022	Ministry of Environment, Forest, and Climate Change	• Aiming to protect environmental health, the government has published a new rule based on section 20 of The Bangladesh Environment Conservation Act, 1995. • The main objectives of this rule are to prevent, control, and reduce air pollution. • The government will appoint a director general who will be responsible for managing and maintaining the environmental issue. • The Rule specified several types of pollution such as pollution caused by factories, vehicles, construction, garbage, etc.	**Applicable** – During the quarrying phase of the project activities will create air pollution within the project boundary and surroundings. Air pollution can impact human and terrestrial faunal species.

Act/Rules/ Law/Ordinance	Responsible Agency-Ministry/Authority	Key Features/Remarks	Applicability
		• According to the new rule, there will be a committee that will impose damages and punishment for such pollution. • As stated by the rule, the government will give rewards to those who will protest against pollution and not cause any type of pollution.	
Balumhal and Soil Management Act, 2010	Inland Water Transport Authority	• The Inland Water Transport Authority Ordinance, 1958 (EP Ord. No. LXXV of 1958), the Mines and Mineral Resources (Control and Development) Act, 1992 (Act No. 39 of 1992), or any other Act or rules made thereunder or any other order, notification or direction, the provisions of this Act shall prevail in relation to the management of sand dunes and other matters connected therewith. • In some cases, sand or soil extraction is prohibited. • Special provisions regarding extraction of sand or soil from underground or riverbeds. • Excavation of sand or soil from privately owned land • Provisions regarding the export of sand or soil • Lease of Balumahal, etc.: All sand mahals shall be leased through open tender in the manner prescribed by rules. • There shall be a committee called the District Balumahal Management Committee in each district to assist the District Commissioner in all matters relating to the granting of leases under this Act.	**Applicable** – As the project are related with Balumhal and Soil. Goal of the project is extraction of the sand from Silica Sand Quarries in different parts of the project area.
Ecologically Critical Areas (ECAs) Management Rules, 2016	Ministry of Environment, Forest, and Climate Change	• The ECA Management Rule, 2016 has enabled the government to form a “National Committee” headed by the Secretary of MoEFCC. • To implement the decision of the Directorate, the District and Upazila committees may be formed. For the conservation and development of the ecologically critical area, one or more teams may be formed. The team's	**Not Applicable** – the project area does not fall under any ecologically critical area.

Act/Rules/ Law/Ordinance	Responsible Agency-Ministry/Authority	Key Features/Remarks	Applicability
		responsibility would be to implement the decision and planning of the Government to improve the Environment for Ecology. • The Rule also prohibited many activities and processes that are detrimental to the natural condition of habitat, tranquility, biodiversity, etc.	
Biodiversity Act, 2017	Ministry of Environment, Forest, and Climate Change	• The Act has enabled the government to form a "National Committee on Biodiversity." The functions of the committee are to conserve biodiversity, genetic biodiversity, identification of biodiversity-related important areas, heritage, etc. • In consultation with local communities and bodies and in coordination with concerned ministries or departments, the government is empowered to declare any place or area significant for its biological heritage as a “Biodiversity Heritage Site.” • Prohibiting the taking of activities that may have an adverse effect on endangered animals or organisms, etc. No person shall take any such activity, viz (a) adversely affect, or may affect endangered species; (b) adversely affect or may affect the environmental characteristics of the endangered ecological community; or (c) In accordance with the Ramsar Convention, the wetland may adversely affect or affect the environment and environmental characteristics of the declared area.	**Not Applicable** – as no gazetted endangered species is present in the project influence area.
Forests Act, 1927 and its amendment in 1982, 1989, 2000 and 2018	Ministry of Environment, Forest, and Climate Change	• The government can prohibit certain activities in the declared Reserved Forest area, causing any damage by negligence in felling any tree or cutting or dragging any timber, etc. • The act makes various provisions for the conservation of forests. • It defines the procedure to be followed for declaring an area to be a Reserved Forest, a Protected Forest, or a Village Forest.	**Not Applicable**

Act/Rules/ Law/Ordinance	Responsible Agency-Ministry/Authority	Key Features/Remarks	Applicability
		• It defines what a forest offense is, what acts are prohibited inside an RF, and penalties leviable on violation of the provisions of the act. • The act gives the government power to make any relevant rules to protect forests. • Guidelines for social forestry practice; and • Control and collection of timber and other forest products, and duties on those.	
Wildlife (Conservation and Security) Act, 2012	Ministry of Environment, Forest, and Climate Change	• Prohibition is related to capturing, killing, shooting, or trapping wildlife. No person shall hunt any wild animal without a license. • Determination of threatened flora and fauna in four (4) schedules. • Prohibitions, entry, and declaration procedure of protected areas (sanctuary, national park, community conservation area, safari park, eco-park, botanical garden, wild animal breeding center, landscape zone or corridor, buffer zone, core zone, special biodiversity conservation area, national heritage, memorial tree, sacred tree, and kunjaban, etc.). • No person, institution, or company shall establish or operate any industrial factory or brick field within 2 (two) kilometers from the boundary of a sanctuary.	**Not Applicable** - There are no protected areas within the project site and within AOI.
Protected Area Management Rules, 2017	Ministry of Environment, Forest, and Climate Change	• The legal basis for the management and co-management of forest-protected areas. • Structures, functions, and obligations of management of some of the protected areas, excluding safari parks, zoos, botanical gardens, private parks, and wildlife fertility centers from their application.	**Applicable** - The PA, Lawachara National Park and Rema Kalenga Wildlife Sanctury are 2 km from the sand quarry.

Act/Rules/ Law/Ordinance	Responsible Agency-Ministry/Authority	Key Features/Remarks	Applicability
		• The Rules have 33 sections and provide for a participatory co-management model consisting of forest-dependent communities, forest departments, civil administration, and civil society organizations. • The rules provide for financial benefits and income incentives to shareholders through participatory social forestry programs to be planted in buffer and landscape areas and eco-tourism.	
Bangladesh Water Act, 2013	Ministry of Water Resources	• Any infrastructure or landfilling activities over any natural watercourses, stopping the natural flow or creating obstacles, or diverting or attempting to divert the direction is strictly prohibited. • According to the provision of section 43, all the costs may be incurred for the removal of infrastructure or landfilling materials from the person liable for making infrastructure or carrying on landfilling activities. • Any area or any part of any land connected with water resources can be declared as a Water Stress Area. • Ensuring safe abstraction of water from aquifers & executive authority may subject to the lowest safe yield of surface and groundwater. • Any infrastructure shall not be established in the immediate premises of the flood control embankment and ensure the sustainability and protection of the control structure. • No person shall not store, preserve, or divert the water of any water source in any natural or artificial reservoir.	**Applicable** – as the project activities are involved with canals, rivers, and water bodies.
Bangladesh Water Rules, 2018	Ministry of Water Resources	• Provision of No Objection Certificate for the establishment of projects related to flood control and management project; surface water extraction, supply and use related project and part of the project; irrigation project using surface water; construction of hydraulic structures; water conservation	**Applicable** – as the project activities are involved with

Act/Rules/ Law/Ordinance	Responsible Agency-Ministry/Authority	Key Features/Remarks	Applicability
		project; flood-affected plain land and wetland development project; groundwater for industrial use; riverbank protection and river control; river excavation and dredging project; canal excavation and re-excavation project; fisheries development in surface water project; groundwater extraction, supply, & use related project & part of the project; and others project; • According to Clause-16 of the rules, a NOC should be taken from the DG of WARPO, District Committee/DC, Upazila Committee/UNO, and Union Committee/Chairman based on the total investment of the specific project.	canals, rivers, and water bodies.
National River Protection Commission Act, 2013	Ministry of Water Resources	• An act to establish a Commission for preventing illegal occupation of rivers, pollution of water and environment, pollution of rivers caused by industrial factories, illegal constructions, and various irregularities and ensuring multidimensional use of rivers for socio-economic development including restoration of the normal flow of rivers, proper maintenance thereof and making them navigable.	**Applicable** – as the project activities are involved with canals, rivers, and water bodies.
Protection and Conservation of Fish Act, 1950, and its amendment in 1982 and Rules, 1985	Ministry of Fisheries and Livestock	• The act was enacted to provide for the protection and conservation of fish. Under the Act, the Protection and Conservation of Fish Rules were adopted in 1985. • No person shall destroy or attempt to destroy any fish with explosives, gun, bow, and arrow in inland or coastal waters. During the Project intervention, it should be noted that if waste effluent is not treated, then it may cause significant damage to the local fishery and thus violate the provision of the law. • No person shall destroy or make any attempt to destroy any fish by poisoning of water or the depletion of fisheries by pollution, by trade effluents or otherwise in inland waters; and	**Not Applicable** - There is no designated fishing zone within the project study area.

Act/Rules/ Law/Ordinance	Responsible Agency- Ministry/Authority	Key Features/Remarks	Applicability
		• Protection and conservation of fish in government-owned water bodies.	
Acquisition and Requisition of Immovable Property Act (ARIPA), 2017	Ministry of Land	• Current GoB Act, relating to acquisition and requisition of land. • According to the law, the affected person will get an additional 200% of the assessed value for land and an additional 100% for structures, trees, crops, and other assets. • This law deals with the social and economic impacts of land acquisition.	**Not Applicable** -as the proposed project does not have any immovable property.
Fatal Accidents Act, 1855	Ministry of Law, Justice, and Parliamentary Affairs	• Provide compensation to families for loss occasioned by the death of a person caused by actionable wrong. It is mentioned in s.1 that whenever a wrongful act shall cause the death of a person, neglect or default, and the act, neglect or default is such as would (if death had not ensued) have entitled the party injured to maintain an action and recover damages in respect thereof, the party who would have been liable if death had not ensued shall be liable to an action or suit for damages, notwithstanding the death of the person injured, and although the death shall have been caused under such circumstances as an amount in law to a felony or other crime.	**Applicable** - as the proposed project has a provision for unlikely and accidental events that may cause fatal accidents.
The Penal Code, 1860	Ministry of Law, Justice, and Parliamentary Affairs	• Valid provisions related to pollution management, environment protection, and health and safety protection. Chapter XIV of the Penal Code provides offenses effective public health, safety, convenience, decency, and morals: • Section 277: Falling Water or Public Spring or Reservoir. • Section 278: Making Atmosphere Noxious to Health. • Section 284: Negligent Conduct concerning Poisonous Substance. • Section 285: Negligent Conduct concerning Fire or Combustible Matter; and • Section 286: Negligent Conduct concerning Explosive Substance.	**Applicable** - The proposed project has a provision for pollution impact on the surrounding environment.

Act/Rules/ Law/Ordinance	Responsible Agency-Ministry/Authority	Key Features/Remarks	Applicability
The Factories Act, 1965, and the Factories Rules, 1979 Bangladesh Labor Act, 2006 and amendments 2009, 2010, 2013 and 2018 Bangladesh Labor Rules, 2015	Department of Labor/Department for Inspection of Factories and Establishment/ Ministry of Labor and Employment	• Pertains to the occupational rights and safety of factory workers and the provision of a comfortable work environment and reasonable working conditions. • Provides health, safety, and well-being to the workforce during the project life cycle. • Children under 18 years are not allowed to be employed during the project life cycle. • Safety precautions regarding explosive or inflammable dust/gas, protection of eyes, protection against fire, work with cranes and other lifting machinery, and lifting of excessive weight. • Safety measures like appliances of first aid, maintenance of safety record books, rooms for children, housing facilities, medical care, group insurance, etc. • No building, wall, chimney, bridge, tunnel, road, gallery, stairway, ramp, floor, platform, staging, or other structure, whether a permanent or temporary character, shall be constructed, situated, or maintained in any factory in such a manner as to cause risk of bodily injury (Rule 38) of factory rules 1979, etc.	**Applicable** - as it provides the workforce's health, safety, and well-being during the project life cycle. Besides, it also stipulated that children under 18 years are not allowed to be employed during the project life cycle; therefore, this law must be complied with.
National 3R Strategy for Waste Management, 2010	Department of Environment	• The concept of this strategy is minimizing waste impacts in terms of quantity or ill effects by reducing the number of waste products with simple treatments and recycling the waste by using them as resources to produce the same or modified products. The principle of “3R” is stated as reducing waste, reusing, and recycling resources and products. • Reducing means choosing to use items with care to reduce the amount of waste generated.	**Applicable** - This strategy is applicable for the project for the management of waste (i.e., solid waste) to minimize/reduce environmental, social, and economic problems.

Act/Rules/ Law/Ordinance	Responsible Agency-Ministry/Authority	Key Features/Remarks	Applicability
		• Reusing involves the repeated use of items or parts of items that still have usable aspects. • Recycling means the use of waste itself as a resource. • It suggests ISO 14001 or any other EMS structure which is significant for developing strategies relevant to the industry and its social and environmental setting. ISO 14001 is increasingly important in international trade.	
Solid Waste Management Rules 2021	Department of Environment	• When recovering resources from waste, the principles of management that consider the waste hierarchy, such as the 3Rs, segregation, and reduction, must be followed at all stages from waste generation to the final disposal. • Responsibilities of waste generators, consumers, and users: Dispose of waste in accordance with the regulations of authorities including local government; Dispose of waste separately; Do not dump, store, or burn waste outdoors. • Responsibilities of manufacturers (*not defined) and importers of products: Collect non-biodegradable products such as glass, plastic, polyethylene, multi-layered packaging, bottles, and cans from consumers and recycle or dispose of them if appropriate; Determine work plans and implementation procedures for recycling and disposal; Ensure that Extended Producer Responsibility (EPR) is properly implemented; Submit an annual report to the Department of Environment (DoE) on the amount of plastic recycled; Raise public awareness of proper waste management. • Any violation of the above provisions shall be subject to imprisonment for not more than two years or a fine not exceeding 200,000 Taka (BDT), or both. The Regulations also include provisions for the treatment of solid waste such as composting and energy recovery.	**Applicable** - This rule is applicable for the project for the management of waste (i.e., solid wastes) to minimize/reduce environmental, social, and economic problems.

Act/Rules/ Law/Ordinance	Responsible Agency- Ministry/Authority	Key Features/Remarks	Applicability
Antiquities Act, 1968 and Antiquities Preservation Rules, 1986	Department of Archaeology, Ministry of Cultural Affairs	• No person shall deal in antiquities except under and in accordance with a license granted by the Director. • No person shall remove any object of the immovable protected antiquity. • No person shall damage, alter, deface, or imperil immovable protected antiquity. • Any person preserving or storing any kind of movable antiquity without a license shall produce it to the Director on demand for verification of the source of its possession.	**Not Applicable** - No archaeological and cultural sites are on the project site.

Source: Different Laws and Regulations of GoB

2.1.1 Relevant Policies

Other relevant policies in Bangladesh and their key features and applicability to the subject project are detailed in Table 2-2.

Table 2-2: Policies and Plans Relevant to the Project

Policy/Plans	Responsible Agency- Ministry/Authority	Key Features	Applicability
National Environment Policy, 2018	Ministry of Environment, Forest, and Climate Change	• Encourage collection and promotion of low carbon emission technology in the country. • Identifying and controlling all types of environmental pollution and degradation activities. • Ensure sustainable, long-term, and environmentally friendly use of all-natural resources.	**Applicable** - as the proposed project has the likeliness of having an impact on the surrounding environment

Policy/Plans	Responsible Agency-Ministry/Authority	Key Features	Applicability
		• To take PPP for the development of the environment. • Maintain and streamline environmental policies and strategies, among other policy strategies, in the interest of sustainable development. • Ensure the EIA and SEA are in all necessary sectors. • Act to reduce poverty through environmental protection. • Strengthen observations on proper compliance with environmental laws and regulations.	
National Forest Policy, 2016	Bangladesh Forest Department/ Ministry of Environment, Forest, and Climate Change	• Manage all existing forests, wildlife, and other forestry resources, adhering to the principles of sustainable management and climate resilience. • Enrich degraded forest areas and enhance land areas under forest/ tree cover. • Produce various goods and ecosystem services to benefit Bangladesh's present and future generations.	**Naot Applicable**
Mines and Minerals (Control and Development) Act (1992) and Mines and Minerals Rules (1968)	Energy and Mineral Resources Division	• The Mines and Minerals (Control and Development) Act provides a framework for the control and development of mines and mineral resources in Bangladesh, with natural gas exploration and extraction also being included within this framework. Under the Act and in accordance with the Rules, the Bangladesh Government grants prospecting licenses, mining leases, or facilities to preserve and develop mineral resources in the country. A "prospecting license" is required to prospect on any site for minerals or mineral resources for the purpose of developing these resources through mining/extraction. The power to grant mining leases and licenses is vested in the Bangladesh Bureau of Mineral Development (BMD).	**Applicable:** As the proposed project activities will extract the sand from different gazetted locations of Moulvibazar District.

Policy/Plans	Responsible Agency-Ministry/Authority	Key Features	Applicability
National Water Policy, 1999	Ministry of Water Resources	• Protection and prevention of the natural environment for ensuring sustainable development. • Minimize disruption to the natural aquatic environment in streams and water channels. • Water development plans will not interrupt fish movement and will make adequate provisions in control structures for allowing fish migration and breeding. • Water development projects should cause minimal disruption to navigation and, where necessary, adequate mitigation measures should be taken. • Full consideration of environmental protection, restoration, and enhancement measures consistent with NEMAP and the NWMP. • Ensure adequate upland flow in water channels to preserve the coastal estuary ecosystem threatened by the intrusion of salinity from the sea.	**Applicable** – The project proponent should minimize water pollution and minimize disruption of the aquatic environment and navigation system in the adjacent water body.
National Fisheries Policy, 1999	Ministry of Fisheries and Livestock	• Provide provisions for the protection and conservation of fish in freshwater and brackish water bodies. • Preservation, management, and exploitation of fisheries resources in inland open water. • Fish cultivation and management in inland closed water. • Prawn and fish cultivation in coastal areas. • Preservation, management, and exploitation of sea fishery resources. • Conserve fish breeding grounds and habitats, and • promote fisheries development and conservation in all water bodies.	**Not Applicable** - There is no designated fishing zone within the project study area.

Policy/Plans	Responsible Agency-Ministry/Authority	Key Features	Applicability
National Agriculture Policy, 2018	Ministry of Agriculture	• Ensure food security and socio-economic development through the productivity of crops, boosting production and raising farmers' income, diversifying crops, producing safe foods, and developing a marketing system, profitable agriculture & use of natural resources. • Increasing food availability, rights, and purchasing power by increasing crop productiveness and production. • Discourage the use of agricultural land for non-agricultural work to ensure sustainable food security. • Soil, water, flora, fauna, and overall environmental conservation and effective use initiative adoption;	**Applicable** - the project activities may affect the agricultural land.
National Land Use Policy, 2001	Ministry of Land	• Resisting the current trend of alarmingly declining, the total amount of agricultural land used to produce adequate food for a growing population for a variety of reasons. • To prevent arbitrary use of land. • To formulate guidelines for the maximum use of land according to the natural differences in different parts of the country. • In the case of land acquisition for urbanization and development projects or any other purpose, to ensure its best use by acquiring the least amount of land and to avoid the acquisition of excess land as required. • Arranging for the preservation of such lands, especially government Khas lands, which may be required in the future for various development activities. • To ensure that the use of land is compatible with the natural environment.	**Not Applicable** -

Policy/Plans	Responsible Agency-Ministry/Authority	Key Features	Applicability
		• Making the best use of land to alleviate poverty and increase employment; and • To play a helpful role in preventing the increase in the number of landless.	
National Occupational Health and Safety Policy, 2013	Department for Inspection of Factories and Establishment/ Ministry of Labor and Employment	• Necessary measures to ensure workplace safety and health protection considering international Conventions/Declarations/ Recommendations/ Instruments. • Review and updating of all laws relating to Occupational Health and Safety (OHS). • Inclusion of OHS issues in the policies and programs of all related Ministries and agencies. • Establish labor courts in the industrial zone so the workers and trade unions can have easy access to the courts for implementing the mandatory provisions of OHS. • Impose mandatory terms and conditions upon construction agencies to follow the OHS policies during govt. Run construction works; and • To ensure maximum safety standards during construction and implement all standards and regulations in an internal safety environment.	**Applicable** - as the policy pertains to the occupational rights and safety of workers and has the provision of a comfortable work environment and reasonable working conditions for all employees.

2.2 International Agreements and Obligations

Bangladesh is a signatory to a number of international conventions of environmental importance, a number of which have some relevance to the Project.

2.2.1 Agenda 21 of the Rio Convention

Under Principle 17 of the Rio Convention, developments should be subjected to an environmental impact assessment. The Project complies with this Convention by providing a detailed impact assessment for the proposed survey.

2.2.2 Convention on Biodiversity (1992)

The signatories of this convention have made a commitment to protect biodiversity through funding and appropriate management. The main objectives are the conservation of biological diversity, the sustainable use of the components of biological diversity, and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. Mitigation measures will be recommended to reduce any potential impacts on biodiversity as a result of the proposed survey, in line with the requirements of this convention.

2.2.3 Convention on the Conservation of Migratory Species of Wild Animals (1979)

Also known as the Bonn Convention, this agreement aims to conserve terrestrial, marine, and avian migratory species throughout their range. Bonn Parties strive towards strictly protecting these animals, conserving or restoring the places where they live, mitigating obstacles to migration, and controlling other factors that might endanger them. The detailed impact assessment will identify the presence of any migratory species and proposed mitigation strategies to reduce potential impacts, if any, on such species, as a result of the proposed works.

2.2.4 Ramsar Convention on Wetlands (1971)

This agreement is an intergovernmental treaty that certifies the commitments of its member countries to maintain the ecological character of their Wetlands of International Importance as well as to plan for the "wise use", or sustainable management, of all of the wetlands in their territories. A large wetland, listed as a Ramsar wetland under this convention – Hail Hoar. No major wetland falls within the catchment area.

2.2.5 United Nations Framework for Convention on Climate Change (1992)

Also known as the Kyoto Protocol, this convention aims for the "stabilization and reconstruction of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system". Bangladesh is a signatory to the Protocol and thus the Project is being undertaken in line with the Bangladesh Government's strategies for greenhouse gas planning for the country.

2.3 Administrative Setup Related to the Environment in Bangladesh

The MOEFCC is the nodal agency in the administrative structure of the GOB, for overseeing all environmental matters relating to national environmental policy and regulatory issues in the country. The MOEFCC oversees the activities of the following technical/ implementing agencies:

- Department of Environment (DOE)
- Forest Department (FD)

2.3.1 Department of Environment (DOE)

The DOE has been placed under the MOEFCC as its technical wing and is statutorily responsible for the implementation of the ECA, 1995. The principal activities of the DoE are:

- Defining EIA procedures and issuing environmental clearance permits the latter being the legal requirement before the proposed Project can be implemented.
- Providing advice or taking direct action to prevent degradation of the environment.
- Pollution control, including the monitoring of effluent sources and ensuring mitigation of environmental pollution.
- Setting the quality standards for environmental parameters.
- Declaring ECAs, where the ecosystem has been degraded to a critical state.
- Review and evaluation of IEEs and EIAs prepared for projects in Bangladesh.

2.3.2 Procedure for obtaining ECC from DOE, Bangladesh

The applicability of environmental clearance and the process in Bangladesh is described in Figure 2-1. The EIA process consists of three stages, screening and project description, approval of TOR, and detailed EIA:

- Projects categorized as Green and Yellow require no IEE or EIA but need a project description. However, the proponent has to submit an application in a prescribed format along with specified documents.
- Projects categorized as Orange require IEE for environmental clearance and in some cases, EIA may be required. IEE to be submitted to the DOE along with an application in a prescribed format and other specified documents; and
- Red category projects require EIA. A project description is required for TOR approval. An EIA is required for location clearance and for environmental clearance.

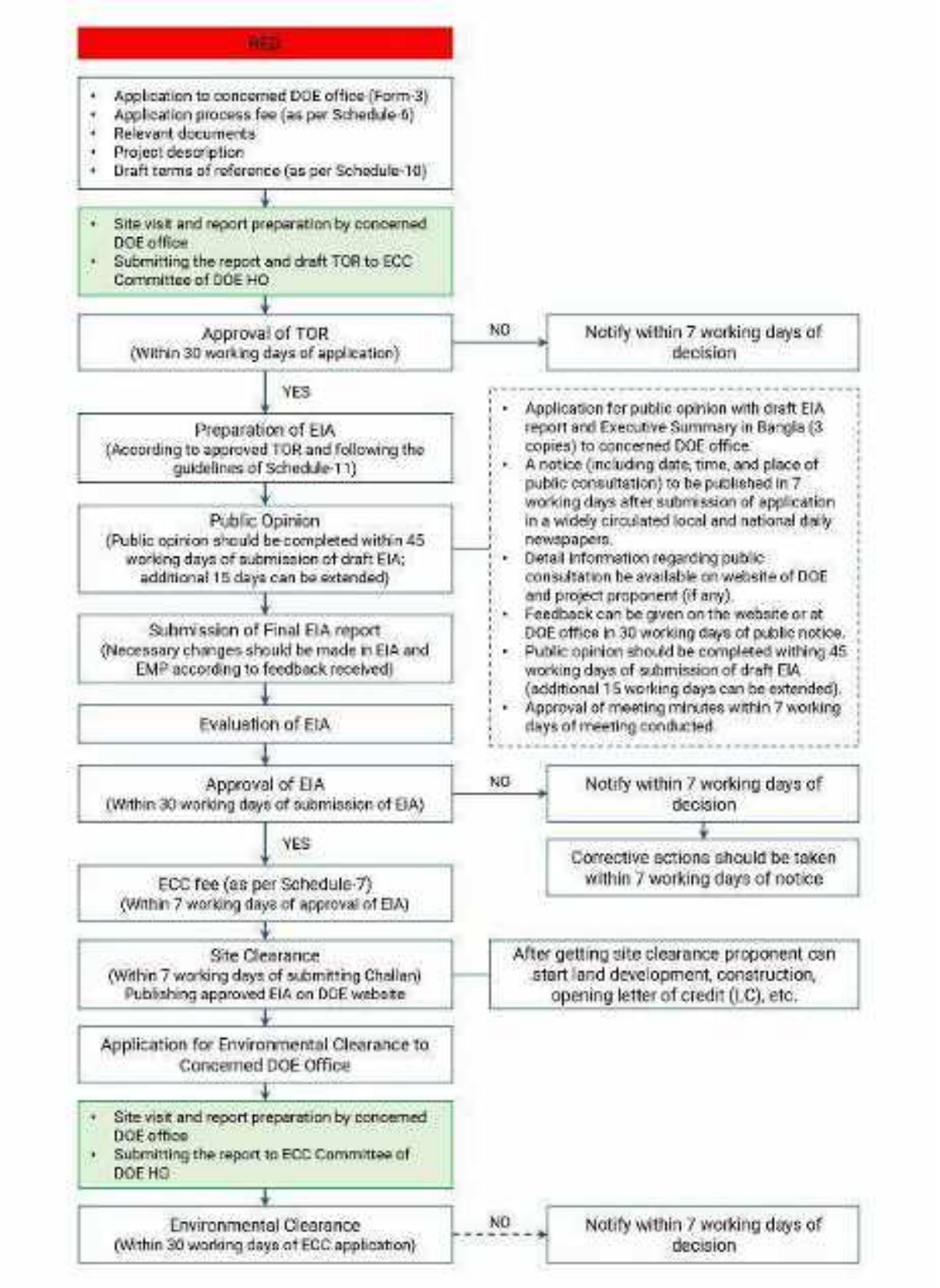
On 5 March 2023, Environment Conservation Rules, 2023 had been promulgated, and among them, specific rules relating to mandatory requirements for a certain project to obtain Environmental Clearance, which in turn requires Environmental Assessment Studies to be conducted and the report submitted along with different other papers and information for consideration of DOE to award the environmental clearance. According to the Schedule-1 of ECR 2023, the proposed Project falls under the following categories.

Table 2-3: Components of the Project with DOE Reference and Requirement

Components	Category	Reference	Requirement
All Quarry Project	Orange	Schedule -1 (Sl. 63 under orange category)	Environmental Impact Assessment (EIA); After the consultation with the DOE head office for this sand quarry project, DOE decided to conduct an EIA study because the High Court has issued an order for all sand quarry projects to require an EIA study to get approval from DOE and BMD following the DOE guideline.

The process of obtaining an Environmental Clearance Certificate for the proposed project is outlined in Figure 2-1.

Figure 2-1: DOE Environmental Clearance Procedure for Proposed Sand Quarry Project



Source: ECR 2023

CHAPTER 3
Project Description

3 PROJECT DESCRIPTION

3.1 Introduction

BMD plays a vital role in conducting geological surveys, assessing resource potential, and fostering collaborations with international organizations and research institutions to adopt advanced technologies. With its efforts focused on balancing resource development and environmental sustainability, the Bureau is crucial for generating revenue, supporting industrial growth, and addressing challenges posed by climate change. It also emphasizes equitable resource sharing and community benefits while contributing to infrastructure and economic development in Bangladesh.

The Detailed areas included in sand extraction and leasing locations in Moulvibazar District are shown in Appendix J:.

3.2 Objectives of the Project

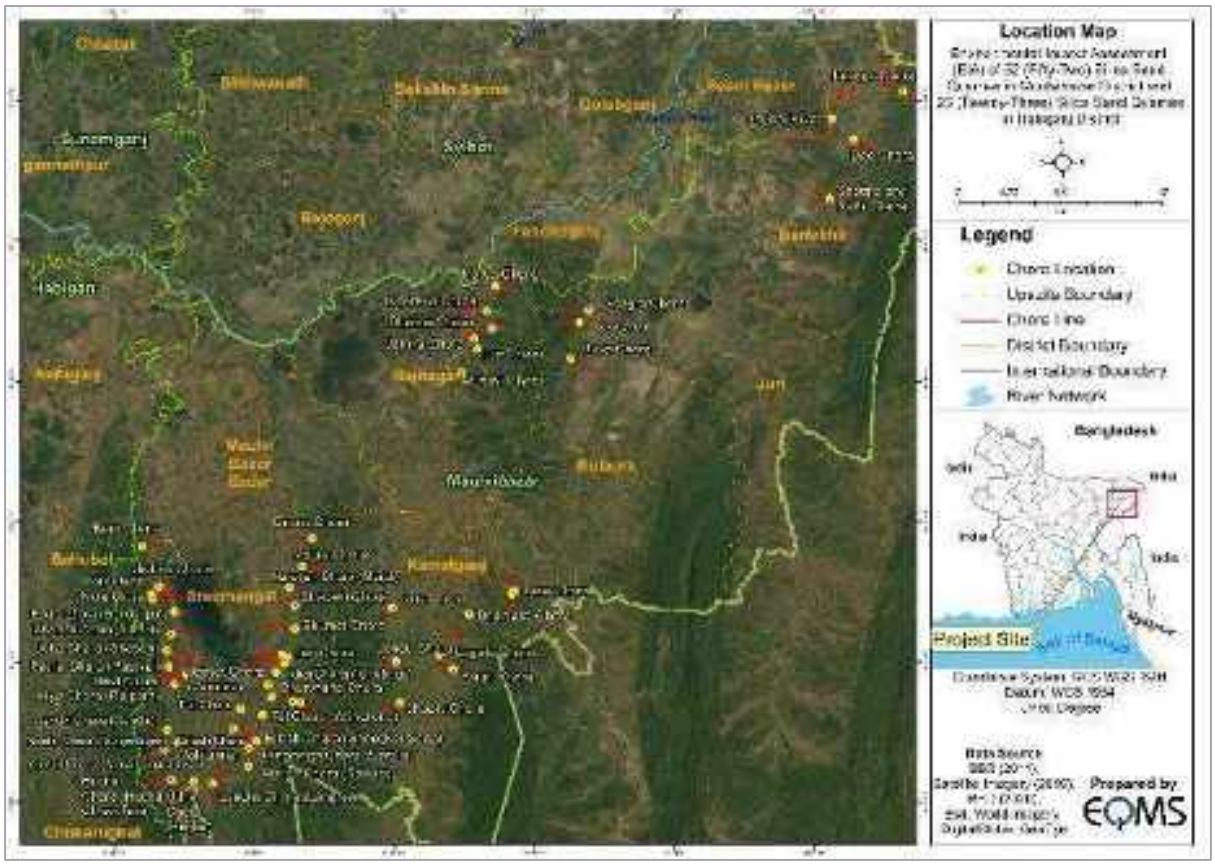
BMD initiated this sand extraction project to ensure the sustainable extraction of this vital resource while adhering to environmental and geological considerations. The move aligns with the following benefits of the project.

- The government's strategy is to manage natural resources responsibly.
- Support industrial growth, and bolster local economic activities.
- Financial Contribution to government as revenue will be generated from the project.
- The removal of primary natural sand resources from the natural environment (river, canal, and water body) for extracting valuable silica sand for subsequent processing.
- Maintaining proper navigation in the river of the project area.
- Increasing water flow in the river and canal by exacting silica sands from the river and canal bed which are deposited each year.
- Reducing the deposition of the sands on the agricultural lands beside the river and canal bank.
- Managing flash floods by increasing the water retention in the rivers, canals, and water bodies.
- If the sands are deposited regularly and not extracted those sands there is a chance of river and canal water flow diversion from the actual flow channel.
- River engineering – for flood control, navigability, and maintaining water intake points.

3.3 Location of the Project Area

The 52 silica sand quarries are located in multiple upazilas, including Sreemangal, Komolganj, Rajnagar, Kulaura, Borolekha and Moulvibazar Sadar of Moulvibazar District of Bangladesh. The region is bordered by neighboring districts such as, Sylhet to the North, and Habiganj to the West, India to the East and India to the South. The area features a mix of agricultural land, tea gardens, rubber gardens, forested regions, and rural settlements, with a network of roads connecting the upazila headquarters to nearby towns and districts. Figure 3-1 shows the sand quarry locations map of the proposed project.

Figure 3-1: Location Map of the Proposed Project with Chora Location



Source: EQMS, 2024

3.4 Gazzeted Lands from the Government of Bangladesh for this Project

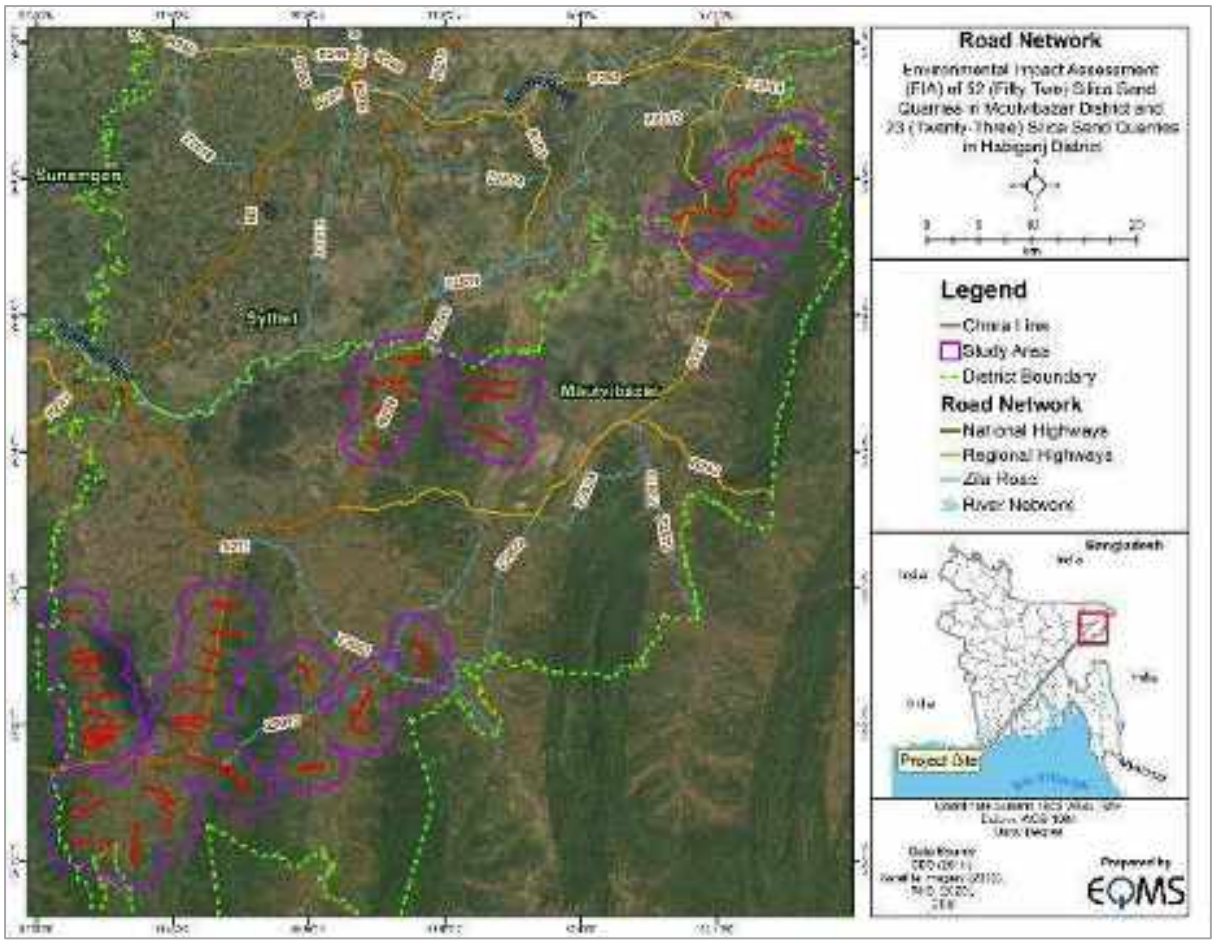
The project encompasses an approximate total area of 260 acres, distributed across 74 mouzas which are gazette by the Government of Bangladesh. All of the lands are government-owned khash lands. So, there is no accusation of lands as these lands are government-owned land.

The gazette land (sand quarry) will be used for the primary stockpile before distribution or transportation after sand extraction. So, there are no extra land requirements for the project for the stockpile.

3.5 Road Connectivity of the Proposed Project

Silica sands will be extracted from the rivers, canals, and water bodies from the fifty-two-sand quarry. After extortion of the sands, it will stockpile on the sand quarry site. From the fifty-two-sand quarry site, sand will be transported via human-driven and tractor-driven vans. The human-driven and tractor-driven van will use the earthen roads at the village level. After reaching the Union level road, the track will be used for transportation. This project will use existing union, upazila, district, and national highways for sand transportation purposes. The nearest national highways are the Dhaka - Sylhet highway (N2), Moulvibazar-Sylhet (N208), Sreemangal-Moulvibazar-Beanibazar (R281) and Moulvibazar to Sreemangal (N211). So, there is no need for road construction. Figure 3-2 shows the access road condition of the proposed project.

Figure 3-2: Access Road Condition of the Proposed Project



Source: EQMS, 2024

3.6 Sand Extraction Process

Sand extraction activities in rivers, canals, and water bodies are frequently carried out using manual and mechanical techniques. The use of manual techniques and mechanical techniques depends on the location and size of the sand quarry and the cost of the methods. Both extraction processes have positive and negative in terms of location, cost, and volume of sand in the quarry. EIA team proposed manual extraction where manually suitable and mechanical where mechanically suitable. In the alternative analysis chapter, both options were evaluated.

3.6.1 Manual Sand Extraction

This involves physically removing sand from surfaces using tools such as shovels, spades, bags, boats, trollers, and other carrying tools.

Step 1: The sand extractor will carry their sand extraction tools to the project site by using local transport, boats, and trollers.

Step 2: The sand extractor will use shovels and spade for digging or removal of sand from the river, canal, and water body bed. After digging, extracted sand will be transported by human-driven tools, boats, and trollers for pilling the sands beside the sand quarry. Figure 3-3 shows the typical sand extraction process in Bangladesh.

Figure 3-3: Typical sand extraction process in Bangladesh



Typical sand extraction process



Typical stockpile of sand



Typical stockpile of sand

Step 3: Human-driven van, tractor-driven van, boat, and troller will be used for the transportation of sand from the sand pile to the village level or union-level road for distribution. From the union level, trucks and trollers will be used for the transportation of sand to the market or national level for further use and process. Figure 3-4 shows the typical sand transportation system in Bangladesh.

Figure 3-4: Typical sand transportation system



Typical troller for sand transportation



Typical tractor-driven van for sand transportation



Typical truck for transportation to market and national level

Step 4: After the completion of sand extraction, the sand extractor will leave the sand quarry with its tools and machinery. The contractor will manage the solid waste from the quarry site before leaving the sand quarry.

3.6.2 Mechanical Techniques

Step 1: The sand extractor will carry their sand extraction tools, and excavator to the project site where accessible of excavator for large volumes of sand extraction by using local transport and boats, trollers.

Step 2: The sand extractor excavator for digging or removal of sand from the river, or canal bed. After digging, extracted sand will be transported by human-driven tools, boats, and trollers for pilling the sands beside the sand quarry. Figure 3-5 shows the typical sand extraction process in Bangladesh by using an excavator.

Figure 3-5: Typical sand extraction process in Bangladesh by using the excavator



Typical picture of excavator for sand extraction

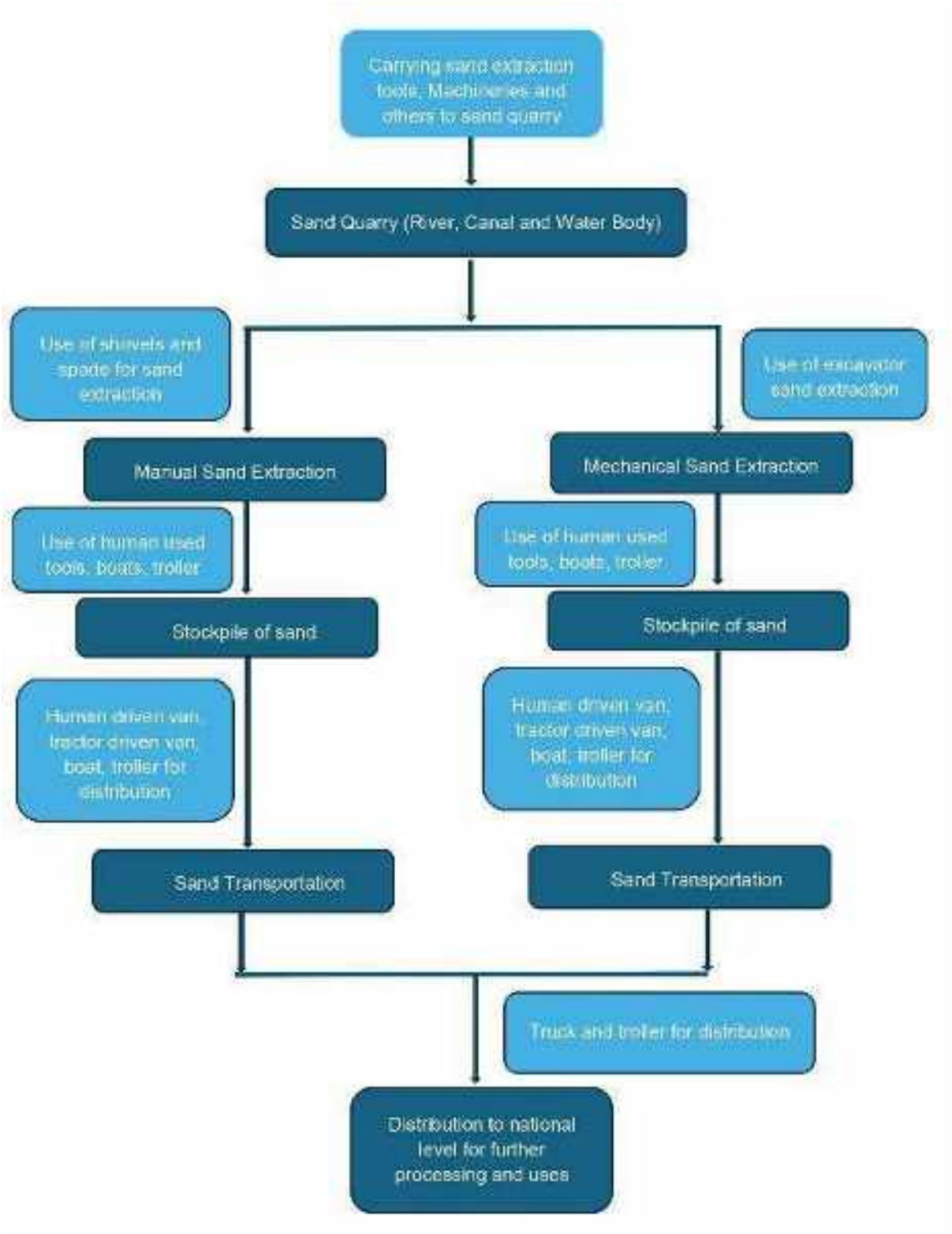
Step 3: Human-driven van, tractor-driven van, boat, and troller will be used for the transportation of sand from the sand pile to the village level or union-level road for distribution. From the union level, trucks and trollers will be used for the transportation of sand to the market or national level for further use and process. Figure 3-4 shows the typical sand transportation system in Bangladesh.

Step 4: After the completion of sand extraction, the sand extractor will leave the sand quarry with its tools, excavator, and machinery. The contractor will manage the solid waste from the quarry site before leaving the sand quarry.

3.7 Process Flow Diagram of Sand Extraction

The process flow diagram prepared for the proposed sand extraction is given in Figure 3-6.

Figure 3-6: Process flow for the proposed sand quarry project



Source: EQMS, 2024

3.8 Description of the project activities

During the quarrying of silica sand extraction, various activities will be conducted systematically to ensure efficient operation and minimal environmental disruption. The BMD, DC office, and contractors will be involved in different activities of the project.

The contractors of the sand extraction will work during the daytime 7.00 am to 6 pm to minimize the environmental and social impacts of the project for 8 hours shift.

The BMD and DC office are government bodies for maintaining the sand extraction project. Their activities are as follows.

- Assuming the total sand volume for tendering
- Preparing the tender documents for the contractor
- Selection and awarding of the contract to the contractor
- Monitoring all the sand extraction activities

Activities for Contractors:

The contractors will be involved in the following activities during sand quarries.

- Mobilization of personnel, materials, and equipment.
- Sand excavation and extraction work.
- Transportation of sand for stockpiling.
- Transportation of sand from Stockpiling to the distribution channel.
- Equipment and machinery operation in the quarry site.
- Maintenance and replacement of tools, vehicles, and equipment.
- Use of utilities like water, fuel, etc.
- Monitoring mitigation measures for environmental and social impact.
- Disposal and management of solid and liquid wastes.
- Traffic Management during sand transportation

3.9 Project Cost

The BMD and DC office are government bodies involved in the sand extraction project. Both the BMD and DC offices will work together to prepare tender documents for the contractor as the silica sand will be sold to the contractor to generate national revenue and manage environmental and social issues. The main cost of the project is preparing and managing tender documents, managing environmental and social issues, permission from different government organizations (e.g., DOE), and field visits for proper management of the projects for each year. The cost is not fixed for this project. The estimated cost of the project is about 2 crores for each year which includes all BMD and DC office expenses.

3.10 Project Schedule and timeline

Since sand quarries are natural sources where sand is regularly deposited, this project followed a yearly calendar for silica sand extraction. The BMD will annually publish a gazette for the leasing of silica sand quarries designated for sand extraction. DC office is the main authority for publishing the tender documents for yearly leasing after getting approval from BMD. Generally, the DC office publishes the tender in April of each year for giving leasing. The awarded bidder will be responsible for extracting sand as specified in the respective gazette.

3.11 Resources and Utilities Demand

3.11.1 Water

The domestic water demand for the project will be fulfilled through the nearest surface water source, most likely quarry water, while the drinking water requirements will be met by groundwater, as arranged by the contractor.

3.11.2 Electricity

Sand extraction from the quarry may require a portable energy supply due to the remote location and the variable extraction points. Consequently, the contractor will utilize a modern diesel engine to provide the required power if required.

3.11.3 Waste Management

During the bidding process, the contractor shall submit a Waste Management Plan for consideration. Upon securing the contract, the contractor shall be responsible for ensuring full compliance with the approved Waste Management Plan. The BMD authority will evaluate and monitor the implementation of the Waste Management Plan to ensure adherence to regulatory standards.

3.11.4 Manpower Requirements

For sand extraction purposes, manpower will be provided by the contractor. The number of manpower will vary for locations and availability of the silica sands. Generally, a team of 20-30 workers will be required for sand extraction in a location.

CHAPTER 4

Environmental Baseline

4 ENVIRONMENTAL BASELINE

The baseline conditions define the physical and biological conditions that prevail in the project study area. It includes information on receptors and resources that were identified during the field visit as having the potential to be affected by the project, as well as having an impact on the sustainability of the project.

This chapter provides an overview of environmental baseline conditions within the project area and its surroundings, including topography conditions, geological conditions, climate and meteorology, air, water and quality, noise, land use, and biodiversity. This information is to assess the quality of the existing environment as well as to assess potential impacts caused by the project in both construction and operation phases and to provide mitigation measures and monitoring programs to reduce adverse impacts.

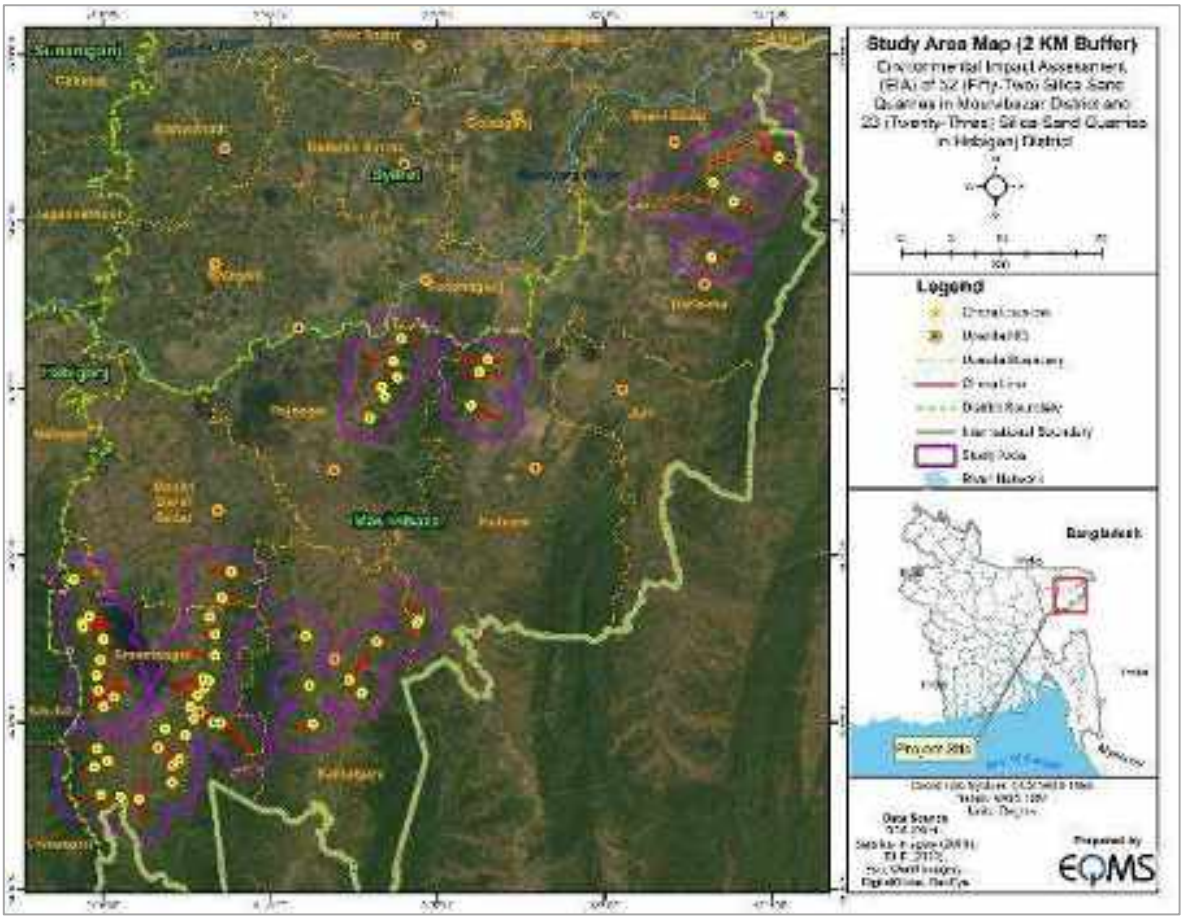
4.1 Study Area

The study area for the EIA encompasses 52 silica sand quarries located within the Moulvibazar District of Bangladesh. The sand quarries occupy different lengths and widths in the six upazilas of Moulvibazar District. The study area was selected based on the length and width of the sand quarry, project activities, and the impact of the project. The study area map is shown in Figure 4-1.

4.1.1 Area of Influence (AOI)

For the EIA study, the team considered a 500-meter core area on both sides of each quarry and a 2-kilometer buffer area considering the impacts and activities of the project. Figure 4-1 shows the Area of Influence (AOI) of the study area.

Figure 4-1: Study Area Map



Source: EQMS, 2025

4.2 Land Use

Land use inventories are an essential component in land resource evaluation and environmental studies due to the changing nature of land use patterns. The land use study for the proposed project location and its 2 km buffer area from both sides of the sand quarries were undertaken with the following objectives:

- To study the land use in the 2 km from both sides of the sand quarry of the project areas of the proposed project site and provide inputs for environmental planning of the proposed project by analyzing the existing land use scenario; and
- To establish the existing baseline scenario using a GIS database for incorporation of thematic information on the different physical features including water bodies, homestead vegetation, agricultural land, etc.

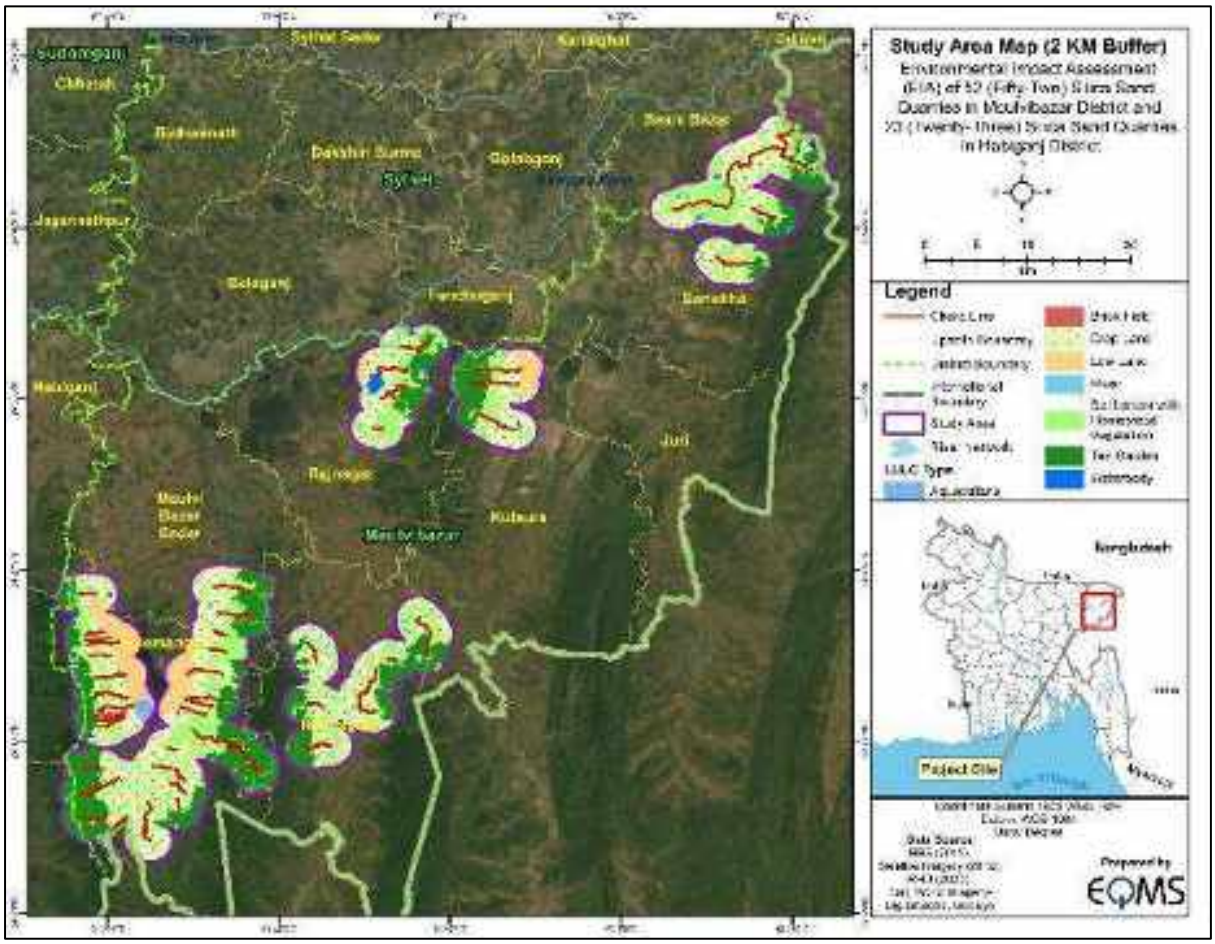
4.2.1 Land Use Interpretation of the Study Area

The predominant land use-land cover of the study area includes Aquaculture, Brick Fields, Crop Land, Low Land, Rivers, Settlement with Homestead Vegetation, Tea Garden, and Waterbody. The land use of the study area of Moulvibazar District is presented in Table 4-1 and Figure 4-2.

Table 4-1: Land Use Pattern of the Study Area

Type	Area (sq Km)	Percentage
Aquaculture	3.32	0.441
Brick Field	0.32	0.043
Crop Land	294.56	39.102
Low Land	48.85	6.485
River	4.99	0.662
Settlement with Homestead Vegetation	181.81	24.135
Tea Garden	212.22	28.172
Waterbody	7.22	0.959
Total	**753.33**	**100.00**

Figure 4-2: Land Use Map of the Study Area



Source: GIS Mapping and Interpretation of Satellite imagery by EQMS

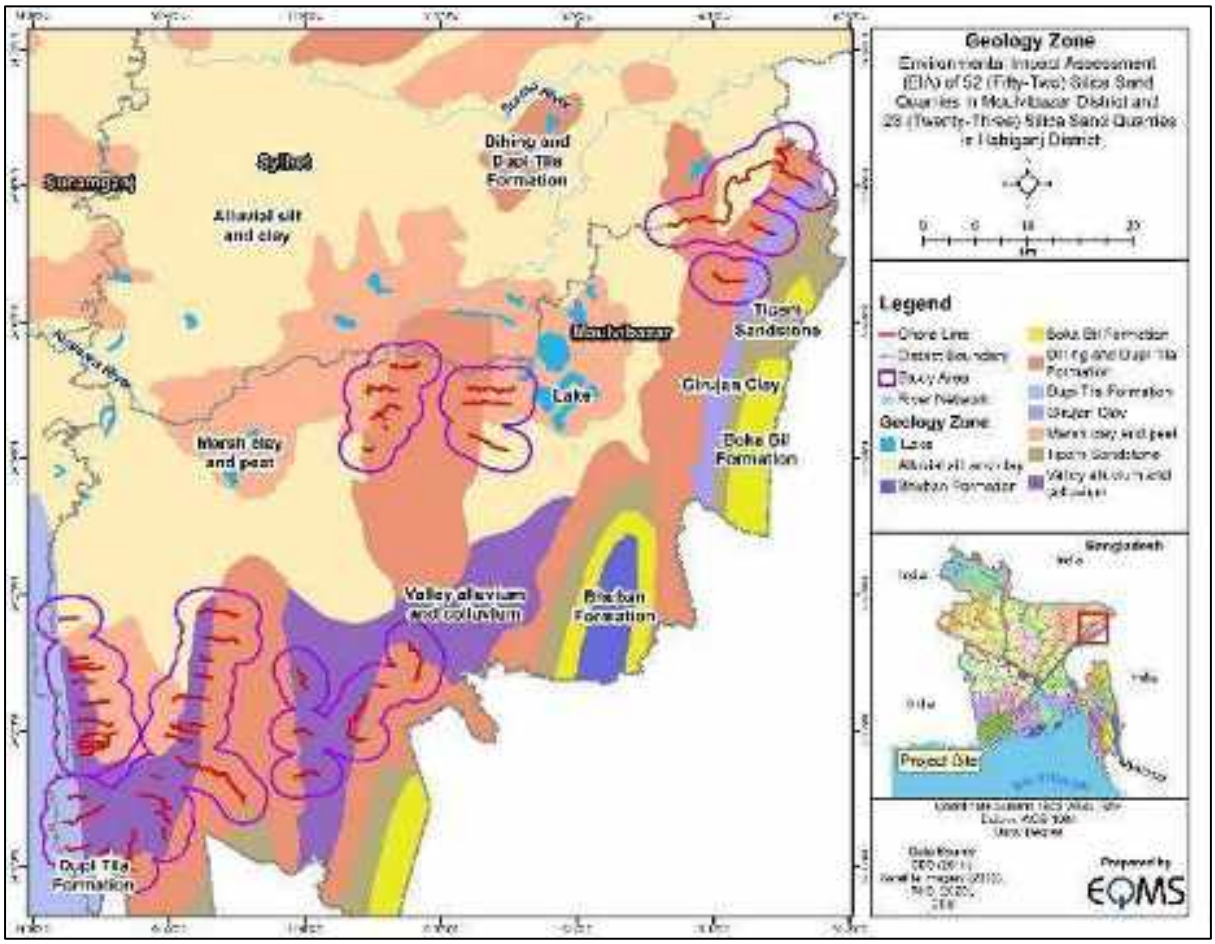
4.3 Physical Environment

4.3.1 Geology

The geology profile of Bangladesh is reflective of the country's location, as Bangladesh is a riverine country. The geological evolution of Bangladesh is related to the uplift of the Himalayan mountains and the outbuilding of deltaic landmass by major River systems having their origin in the uplifted Himalayas. This geology is mostly characterized by the rapid subsidence and filling of a basin in which a huge thickness of deltaic sediments was deposited as a mega delta built out and progressed towards the south. The floodplains of the Ganges, the Brahmaputra (Jamuna), and the Meghna Rivers cover approximately 40% of Bangladesh.

According to the Geological Survey of Bangladesh (GSB), the proposed project area falls in geological unit of "**Valley Alluvium and Colluvium**", "**Dupi Tila Formation**", "**Marsh Clay and Peat**" and "**Dihing and Dupi Tila Formation**". The geological formations of the project study area are shown in **Figure** 4-3.

Figure 4-3: Geology of the Study Area



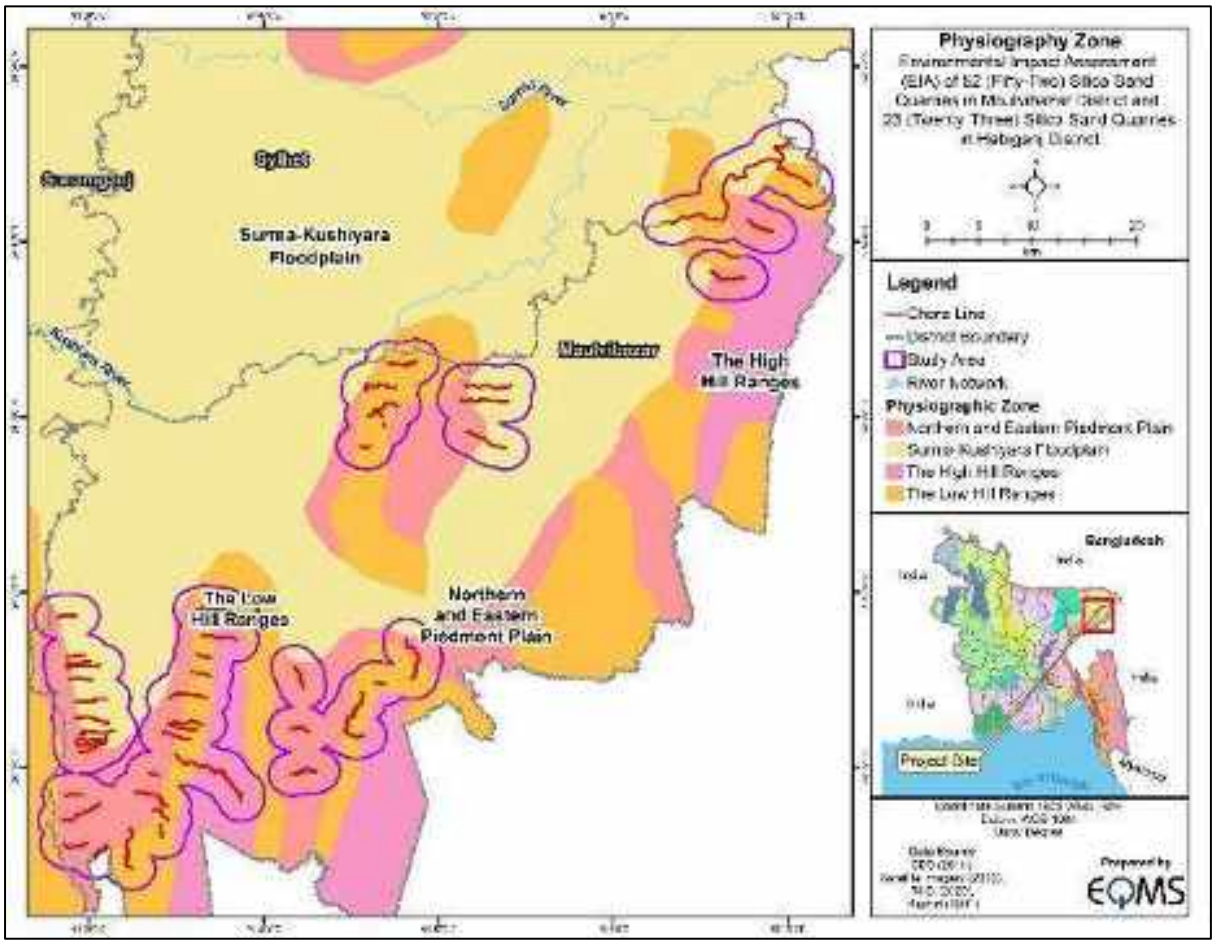
Source: GSB, 1991

4.3.2 Physiography

Physiography is the form of the earth's surface. In Bangladesh, this may be classified into three distinct physiographic regions (a) floodplains, (b) terraces, and (c) hills. Each physiographic region has unique distinguishing characteristics. The three main physiographic regions can be further subdivided into 24 sub-regions and 54 units.

According to the Physiography of Bangladesh, the proposed project area falls under the physiographic unit of "**The Low Hill Ranges**", "**The High Hill Ranges**" "**Northern and Eastern Piedmont Plain**" and "**Surma-Kushiyara Floodplain**". The physiographic sub-region is shown in Figure 4-4.

Figure 4-4: Physiography of the study area



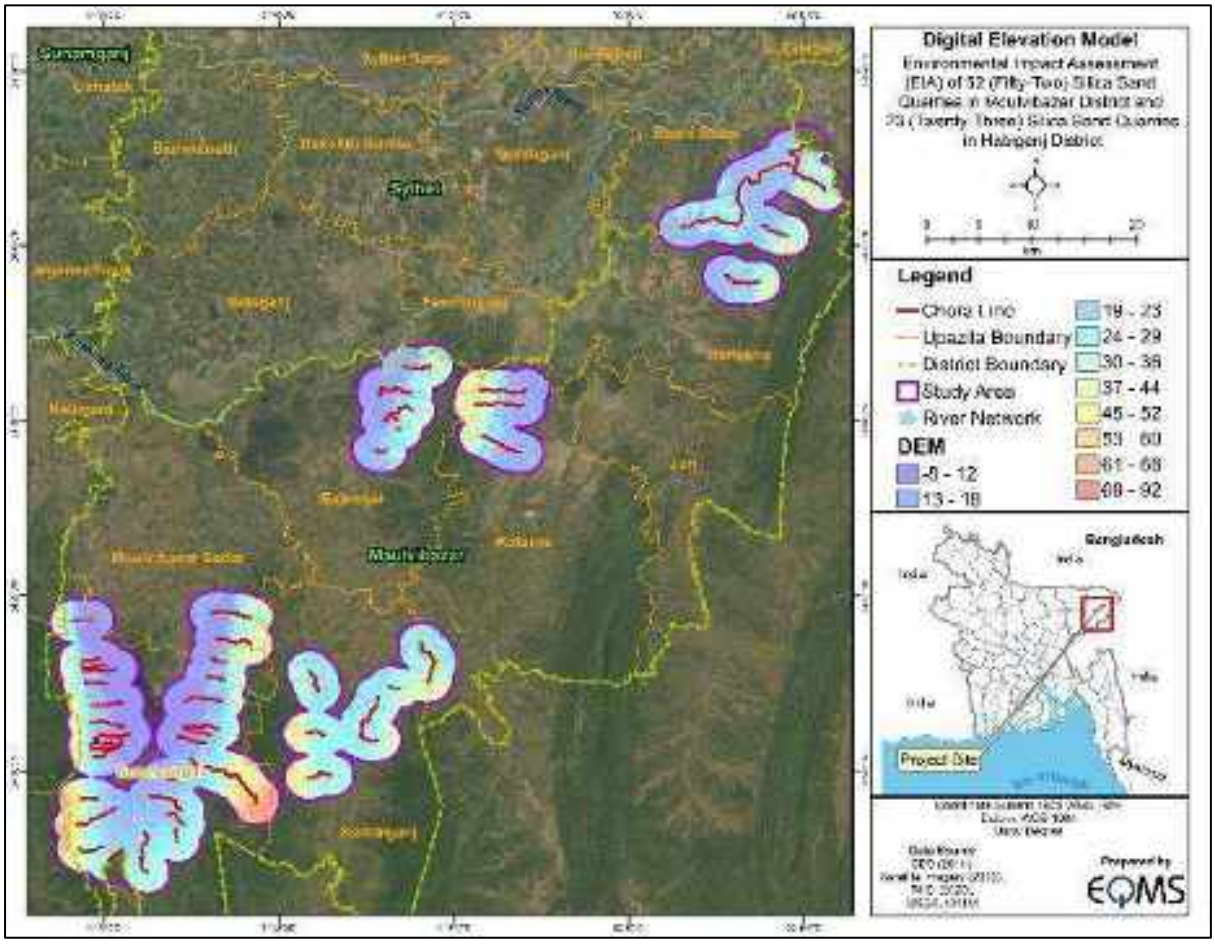
Source: Rashid, 1991

4.3.3 Topography

The overall landscape of Bangladesh can be divided into three broad categories based on topography, physical features, and geological history (Brammer 1996). These are Hills, Terraces, and Floodplain.

The study area falls in the Northeastern part of Bangladesh. Below Figure 4-5 shows the detailed topographic features in the study area where the average elevation range is between -8 to 92 m.

Figure 4-5: Topography of the study area



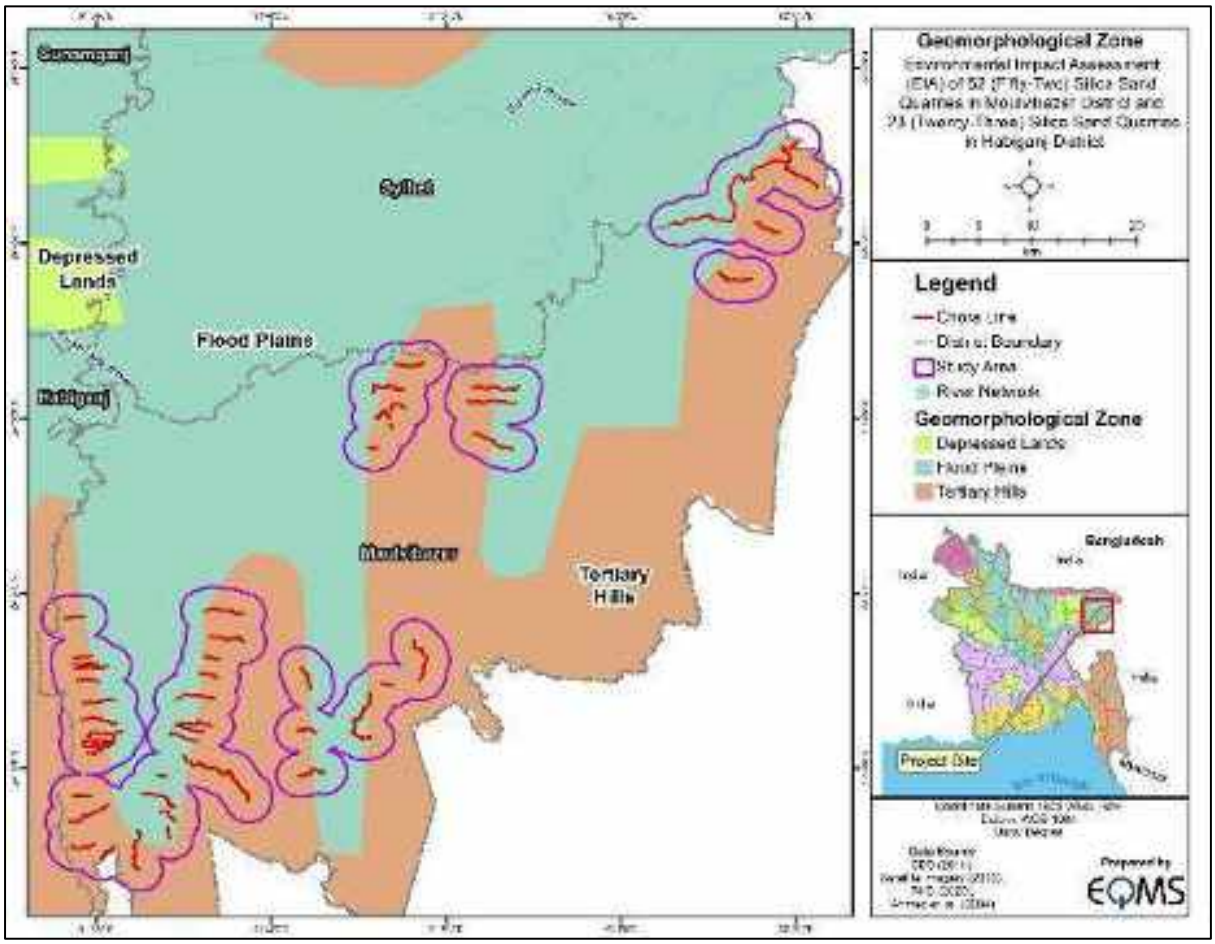
Source: USGS Earth Explorer

4.3.4 Geomorphology

There are three geomorphologic divisions of Bangladesh according to its soil formation. These are a) Tertiary Hills, b) Pleistocene Uplands, and c) Holocene Plains (Deltaic Plain).

According to the geomorphology of Bangladesh, the proposed project area falls under the Holocene Plains unit of "**Depressed Land**", **"Flood Plains"** and "**Tertiary Hills"**. The geomorphology of the study area is presented in Figure 4-6.

Figure 4-6: Geomorphology of the study area

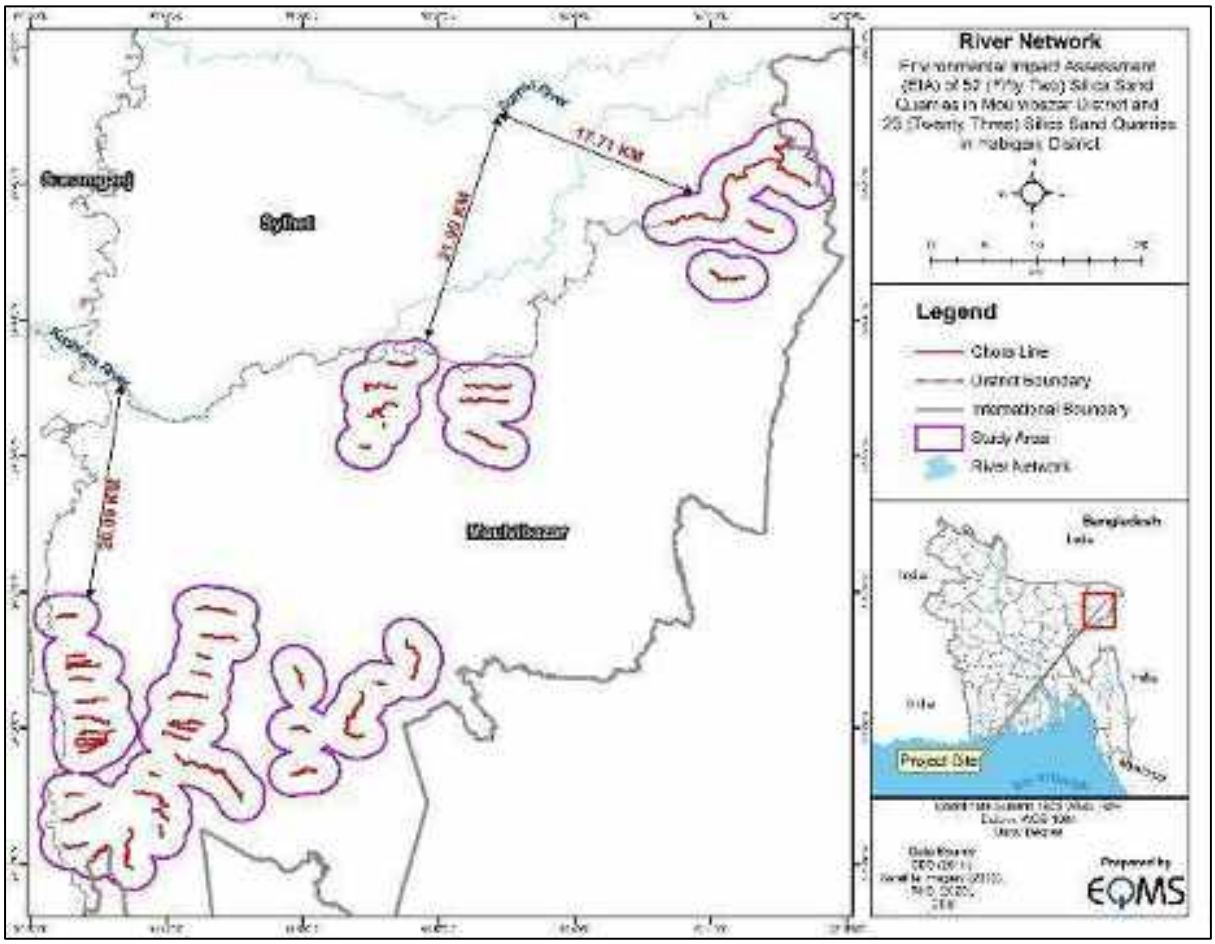


Source: Ahmed et. al., 2004

4.3.5 Hydrology and River Network

The project sites don't have major water bodies within the project study area. The study area consists of some small ponds. The closest river is the Kushiara River is located about 2 Km North and the Surma River located about 17.71 Km North of the project location. During the monsoon, these pond areas become fulfilled by rainwater. The following Figure 4-7 shows the map of the Hydrology and Drainage of the study area.

Figure 4-7: Hydrology and River Network of the study area



Source: EQMS, 2023

The fifty-two Choras are located in Sreemangal, Kamalganj, Rajnagar, Baralekha, Kulaura, and Sadar Upazila of Moulvibazar District in Sylhet. The hydrological baseline conditions and their environmental impacts have been discussed below. All silica quarry rivers (Choras) eventually flow into nearby river or haors or similar types of low lands or wetlands, including Hail Haor, Baikka Beel, and Hakaluki Haor, which support diverse ecological and hydrological functions.

4.3.5.1 Hydrologic Conditions of The Chora in Sreemangal Upazila

Most of the Choras in Sreemangal Upazila originate from the western hill slopes and tea garden areas. These Choras in Sreemangal are hydrologically linked with the Bijna River, Hail Haor, and Baikka Beel type wetlands. The Bijna River flows through the Hail Haor and Baikka Beel in Sreemangal Upazila, ultimately draining into the Hail Haor. These Choras flow from the western hill slopes toward the Bijna River or Hail Haor, passing through agricultural lands, tea gardens, forests, and some village settlements. Additionally, these Choras serve as drainage pathways for flash floods during the monsoon season. The water levels vary in these chora from 4.8 – 5.5 meter (MSL), and the water courses carries sediments and flood water in the direction of West-east (those located at the hillshed tea garden) and East-west (those located at the hillshed of Lawachara National Park).

4.3.5.2 Hydrologic Conditions of The Chora in Kamalganj Upazila

The Choras in Kamalganj Upazila originates from the hilly regions of Lawachara National Park, Adampur Forest Beat, and Hum-Hum Tea Garden. These Choras drain into low-lying haor lands and lake areas, acting as natural drainage pathways during flash floods. Seasonally, they contribute floodwater to haors, beels, and agricultural lands. These Choras hold substantial amounts of sand and

rock debris, making them an important source of silica deposits. The water levels vary in these chora from 14.42 – 15.80 meter (MSL), and the water courses carries sediments and flood water in the direction of hillshed to low land area like Haors.

4.3.5.3 Hydrologic Conditions of The Chora in Rajnagar Upazila

In Rajnagar Upazila, the Choras originate from the eastern hilly tea forest gardens and are hydrologically connected to the Pukhuri Beel, Kushiyara River, and seasonally flooded agricultural lands. These Choras function as monsoonal flood drainage routes, carrying water from hill forests downstream into the Kushiyara River or adjacent low-lying wetlands such as beels and haors. The water levels vary in these chora from 1.5 – 2.6 meter (MSL), and the water courses carries sediments and flood water in the direction of East-west.

4.3.5.4 Hydrologic Conditions of The Chora in Baralekha Upazila

The Choras in Baralekha Upazila include Jalongha Chora, Sunai River, Dew Chora, Satma, and Rathi Chora, which originate from local highland forest area. These Choras are hydrologically connected to low-lying haor areas and eventually flow into rivers such as the Longai and Kushiyara River. They contain significant silica deposits and receive annual sediment loads of rock debris, sand, and mud from upstream sources within Bangladesh and India. The water levels vary in these chora from 5.6 – 6.1 meter (MSL), and the water courses carries sediments and flood water in the direction of East-west.

4.3.5.5 Hydrologic Conditions of The Chora in Kulaura Upazila

The Dew Chora, Buba Chora, Ghagda Chora, and Boro Chora originate from the Kulaura tea hill gardens, hill forest ranges, and local upstream channels. These Choras are hydrologically linked to local beels and rivers and receive significant sand deposits from annual monsoonal flooding and runoff. They also play a crucial role in flood drainage within the region. The water levels vary in these chora from 6.5 – 8.5 meter (MSL), and the water courses carries sediments and flood water in the direction of West-East.

4.3.5.6 Hydrologic Conditions of The Chora in Sadar Upazila

The Deora Chora and Moura Chora are hydrologically connected to Hail Haor and nearby low-lying agricultural lands that experience seasonal flooding. These Choras contain large silica sand deposits and act as drainage pathways for monsoonal floodwaters. The water levels vary in these chora from 4.5 – 5.8 meter (MSL), and the water courses carries sediments and flood water in the direction of East-West.

4.3.6 Soils

Most of the soils within Bangladesh are alluvial (rather than colluvial) in origin and have been deposited over time by the various river networks that drain into the Bay of Bengal. However, this has not created uniformity of soil types and physio-chemical soil characteristics can vary considerably based on factors such as age, relief, biological activity, parent material, and anthropogenic influences.

In general, most of the soils within the country, particularly those found within alluvial floodplains, share the following broad characteristics (Brammer, 1996 and Rashid, 1991):

- Moderately fertile to fertile.
- Clay to loam structure (including sandy loams).
- Slightly to moderately acidic; and
- Relatively deep (often around 4 km including underlying shale/sandstone layers)

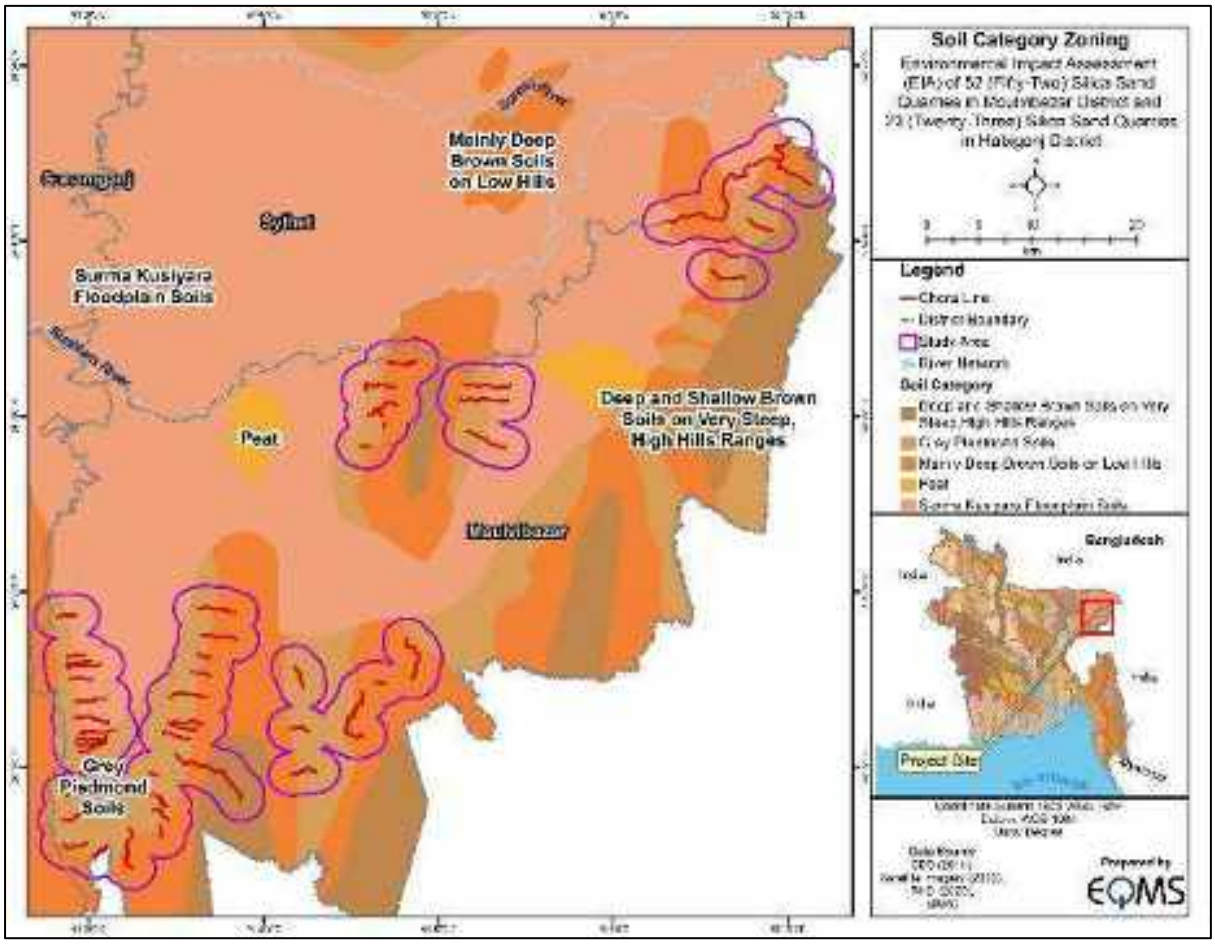
Another unique characteristic of alluvial soils in Bangladesh is their rapid rate of formation, which is primarily attributed to the significant deposition of sediments as well as the warm, humid climate.

Regarding soil formation, two distinct conditions occur in Bangladesh: alternating seasonal wet or inundated and dry conditions, as prevalent in most of the floodplain areas, and intermittently wet or

moist or dry conditions, as on the upland areas of hills and terraces. This is due to the variation of agro-climatic parameters in different seasons. The soil formation process differs significantly between floodplain, hill, and uplifted terraces. The project site falls under the floodplain ranges. The SRDI has identified about 500 soil series in Bangladesh and FAO-UNDP has identified 21 different general soil types based on the diagnostic horizons and diagnostic properties of the soil (FAO-UNDP, 1998).

The major types of soil reported from the study area include the "**Mainly Deep Brown Soils on Low Hills**", "**Surma Kusiyara Floodplain Soils"**, "**Peat**", "**Deep and Shallow Brown Soils on Very Steep, High Hills Ranges**" and "**Gray Piedmond Soils**" which are described below and depicted in Figure 4-8.

Figure 4-8: Soil Category Map of the Study Area



Source: SRDI

4.3.7 Meteorology

Bangladesh is located in the tropical monsoon region and its climate is characterized by high temperatures, heavy rainfall, often excessive humidity, and fairly marked seasonal variations. From the climatic point of view, four distinct seasons[1] can be recognized in Bangladesh.

- Pre-Monsoon Hot Season (March to May) – Characterized by the highest temperatures of the year–up to 36°C. Certain rainfall may occur, with tropical cyclones occasionally affecting coastal areas.

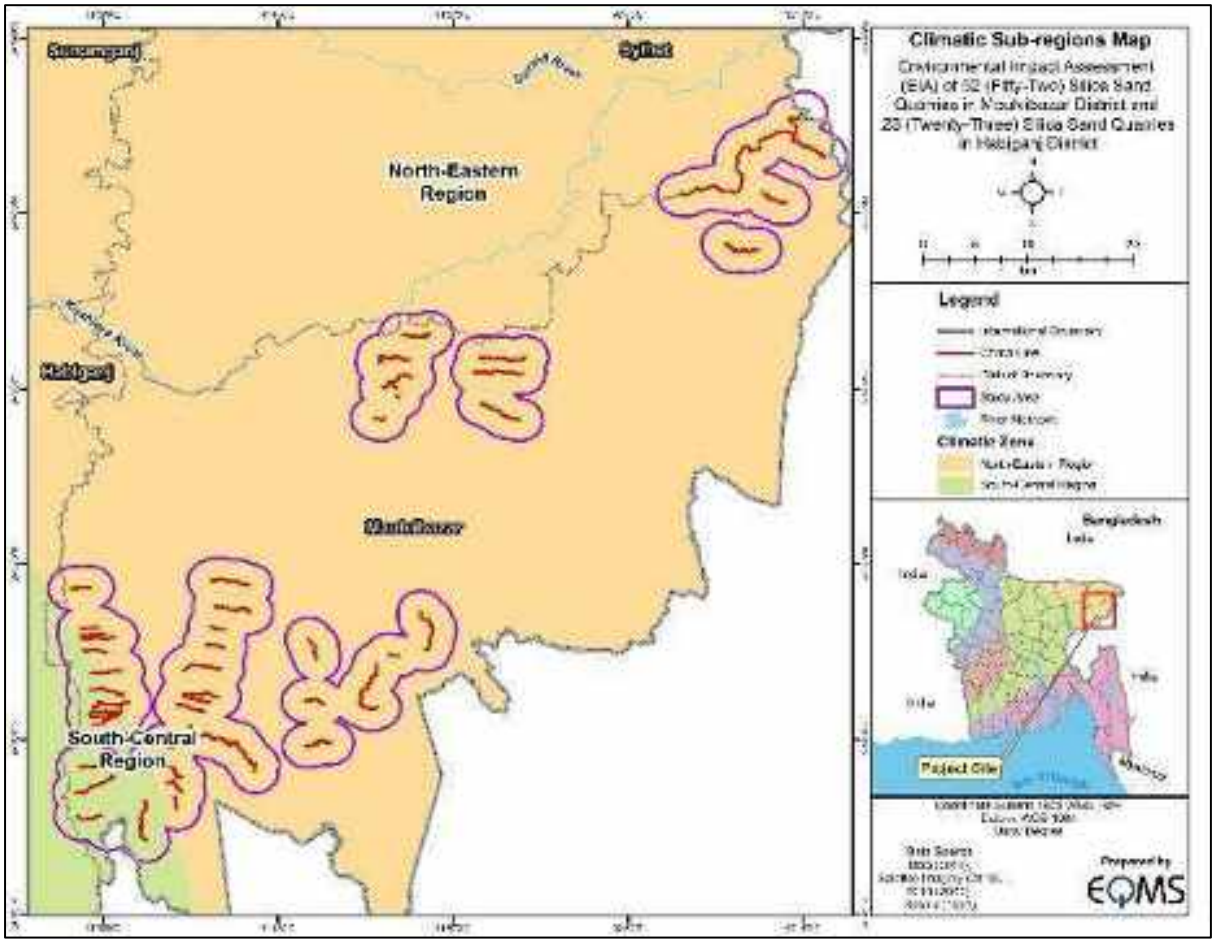
[1] Brammer, H. (1996). *The Geography of the Soils of Bangladesh*. University Press Limited, Dhaka, Bangladesh.

- Rainy Monsoon Season (June to September) – Period of highest rainfall (up to 80% of the annual rainfall), humidity, and cloud cover. Increased rain and cloud cover generally cause a small reduction in mean daily temperatures.
- Post-Monsoon Season (October to November) – Temperature remains hot and humid, though cloud cover decreases in this season. Limited tropical thunderstorms may still, particularly in coastal areas.
- Cool Dry Winter Season (December to February) – Coolest time of the year with mean minimum temperatures falling below 10°C in some areas. Reduced humidity and cloud cover. Rainfall is scarce.

Despite the general predictability of the seasons in Bangladesh, local conditions may still vary widely across the country. As such, Bangladesh can be divided into seven climatic sub-zones based on differences in a range of factors including rainfall, temperature, evapotranspiration, and local seasonality (Rashid, 1991).

According to the climatic sub-regions of Bangladesh, the proposed project area is located in the North-Eastern Region. The climatic sub-regions of the study area are shown in Figure 4-9. The climatic data for the study area was obtained from the Bangladesh Meteorological Department (BMD).[2]

Figure 4-9: Climatic Sub-regions of the Study Area



Source: Data from Rashid, H. E. 1991[3] and map prepared by EQMS

[2] Bangladesh Meteorological Department is the authorized Government organization for all meteorological activities in Bangladesh. It maintains a network of surface and upper air observatories, radar and satellite stations, agro-meteorological observatories, geomagnetic and seismological observatories, and meteorological telecommunication system.

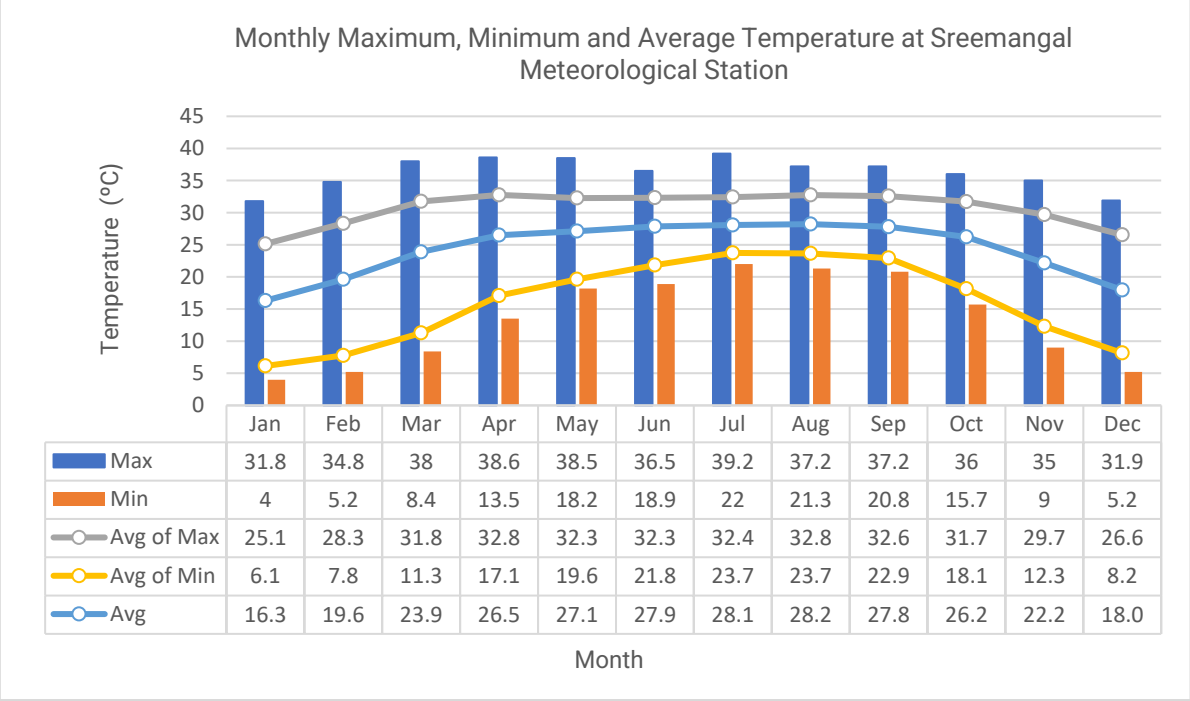
[3] Rashid, H. E. (1991). *Geography of Bangladesh*. University Press Limited, Dhaka.

There is no meteorology station in Moulvibazar District. The nearest meteorological station to the proposed project site is at Sreemangal Meteorological Station which is located in Moulvibazar District.

4.3.7.1 Temperature

According to Sreemangal Meteorological Station, the lowest average temperature recorded in the past 30 years, was in January 2013 (8.5°C). The highest average temperature reached 32.4°C in July 2018. The period from March to August is marked by continuous increases in temperatures. August is the hottest month of the year with an average maximum and minimum temperature (in August) of 32.8°C and 23.7°C, respectively. From September onwards, both the day and night temperatures decrease, and January is the coldest month with average monthly maximum and minimum temperatures of 25.1°C and 6.1°C, respectively. The monthly variation of the maximum, minimum, and average temperature at Sreemangal Meteorological Station (1992 to 2021) is shown in Figure 4-10.

Figure 4-10: Monthly Maximum, Minimum, and Average Temperatures



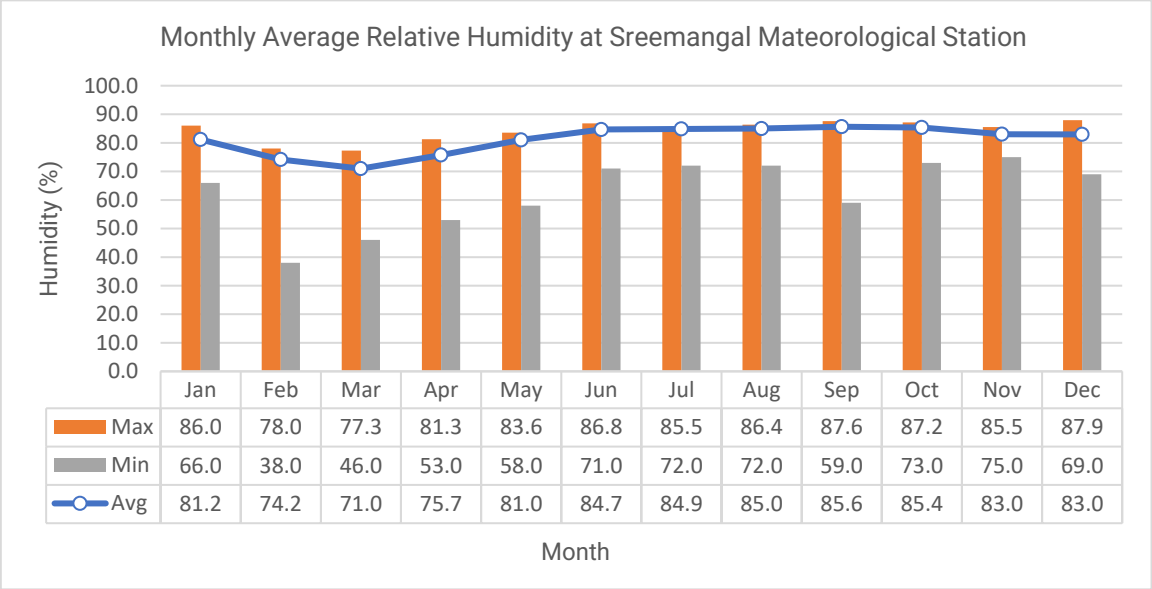
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	31.8	34.8	38	38.6	38.5	36.5	39.2	37.2	37.2	36	35	31.9
Min	4	5.2	8.4	13.5	18.2	18.9	22	21.3	20.8	15.7	9	5.2
Avg of Max	25.1	28.3	31.8	32.8	32.3	32.3	32.4	32.8	32.6	31.7	29.7	26.6
Avg of Min	6.1	7.8	11.3	17.1	19.6	21.8	23.7	23.7	22.9	18.1	12.3	8.2
Avg	16.3	19.6	23.9	26.5	27.1	27.9	28.1	28.2	27.8	26.2	22.2	18.0

Source: Bangladesh Meteorological Department (BMD)

4.3.7.2 Humidity

Due to the heavy rainfall and proximity to the Bay of Bengal, the humidity levels in Bangladesh. Relative humidity in Sreemangal Meteorological Station is generally above 75% throughout the year except in the months of February and March. The monthly average relative humidity varies from 71.0% to 85.6% with average humidity at 81.0%. Humidity remains higher in the monsoon (June to September) season and comparatively lower in the winter season. The month of March is the driest with the relative humidity around 71%. The monthly average relative humidity at the Sreemangal Meteorological Station is shown in **Figure** 4-11.

Figure 4-11: Monthly Average Relative Humidity



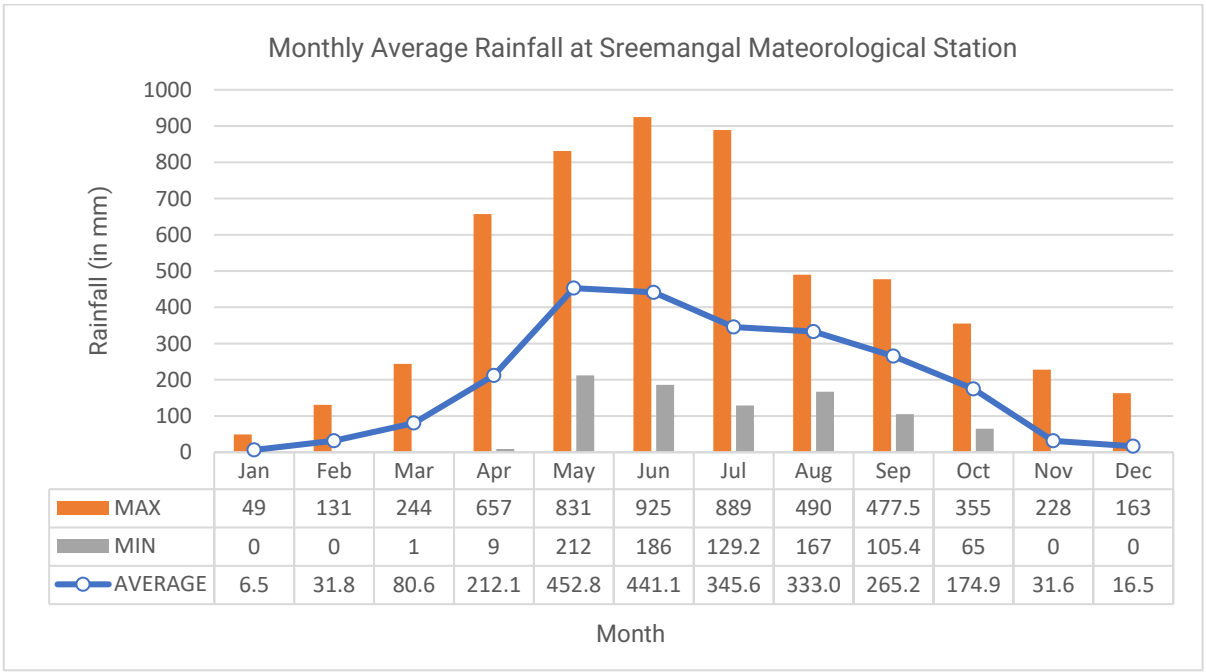
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	86.0	78.0	77.3	81.3	83.6	86.8	85.5	86.4	87.6	87.2	85.5	87.9
Min	66.0	38.0	46.0	53.0	58.0	71.0	72.0	72.0	59.0	73.0	75.0	69.0
Avg	81.2	74.2	71.0	75.7	81.0	84.7	84.9	85.0	85.6	85.4	83.0	83.0

Source: Bangladesh Meteorological Department (BMD)

4.3.7.3 Rainfall

The annual rainfall based on rainfall data recorded at Sreemangal Meteorological Station for the last 30 years (1992 to 2021) is 3813 mm. Annual rainfall shows considerable variability from year to year. The rainfall also varies considerably within a year (Figure 4-12) with 93% of rainfall occurring within the seven months from April to October. The highest rainfall is recorded in June (925.0 mm). An insignificant amount of rainfall has also been recorded in winter (November to February).

Figure 4-12: Monthly Average Rainfall



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MAX	49	131	244	657	831	925	889	490	477.5	355	228	163
MIN	0	0	1	9	212	186	129.2	167	105.4	65	0	0
AVERAGE	6.5	31.8	80.6	212.1	452.8	441.1	345.6	333.0	265.2	174.9	31.6	16.5

Source: Bangladesh Meteorological Department (BMD)

4.3.8 Natural Hazards/Disaster

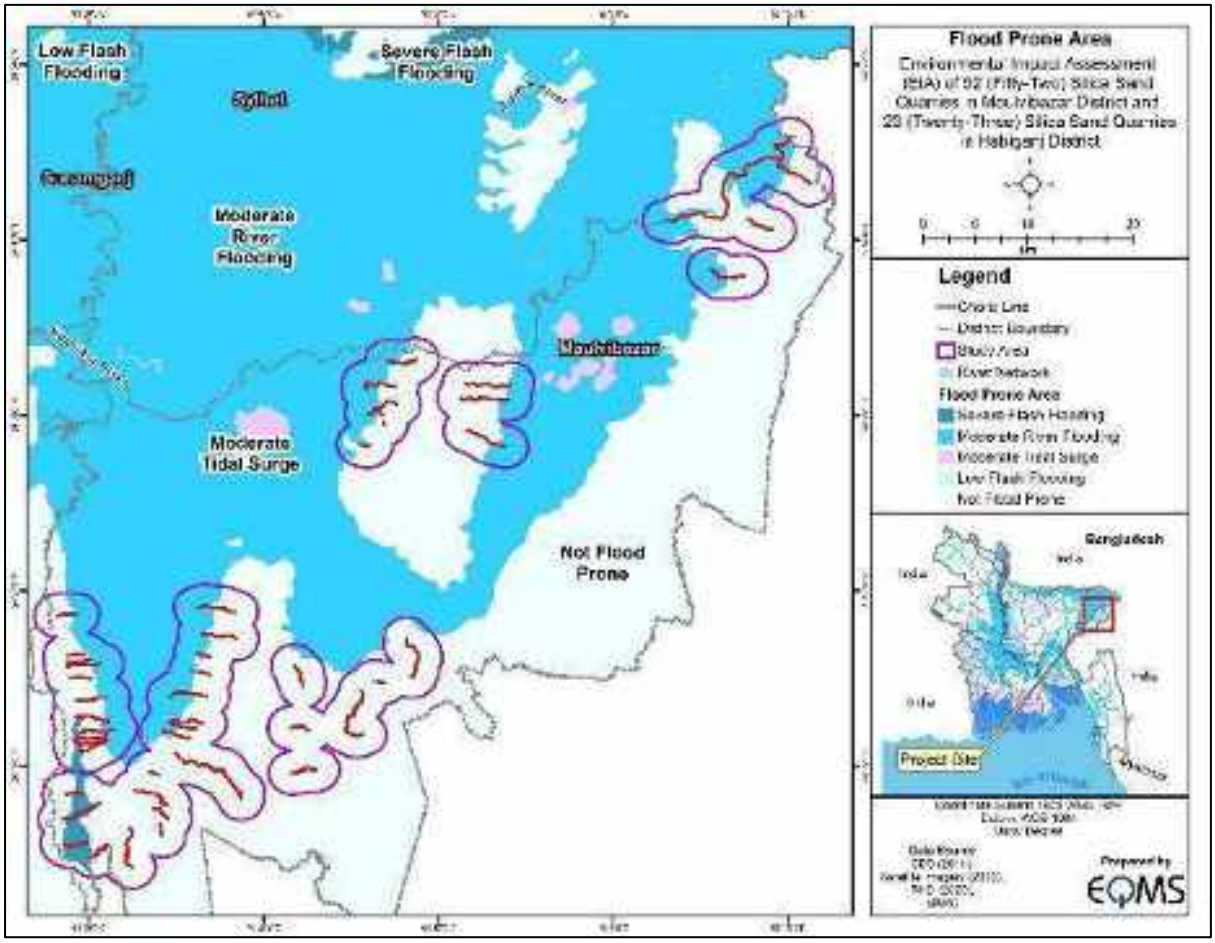
4.3.8.1 Floods

Every year about one-fifth of Bangladesh undergoes flooding during the monsoon season. A flood season in Bangladesh may start as early as May and can continue until November.

Floods in Bangladesh can be divided into three categories; (i) monsoon floods – seasonal, increase slowly and decrease slowly, inundate vast areas, and cause huge loss of life and property; (ii) flash floods from sudden torrential flows, following a brief intense rainstorm or the bursting of natural or manmade dam or level; and (iii) tidal flood – duration, is generally 3-6 m, prevents inland flood drainage.

Figure 4-13 shows the flood-affected areas of Bangladesh. According to this, the project areas are distributed across various Upazilas within the Moulvibazar District, encompassing a range of environmental conditions. Specifically, these areas are categorized into different flood-prone zones: some fall within Not Flood Prone zones, others in Moderate River Flooding zones, and some in Moderate Tidal Surge zones. Additionally, certain areas are located in mixed zones that combine characteristics of these three categories.

Figure 4-13: Flood Map of Bangladesh showing the project study areas



Source: BARC

4.4 Environmental Quality

4.4.1 Ambient Air Quality

The objective of the ambient air quality monitoring program was to establish the baseline ambient air quality in the study area. The study area predominantly features a rural landscape, with villages

interspersed among homestead plantations, agricultural lands, and forest vegetation. There are no major emission sources in the study area. The primary sources of air emissions include road dust, black smoke from diesel engine vehicles, and domestic heating and cooking.

4.4.1.1 Monitoring Location

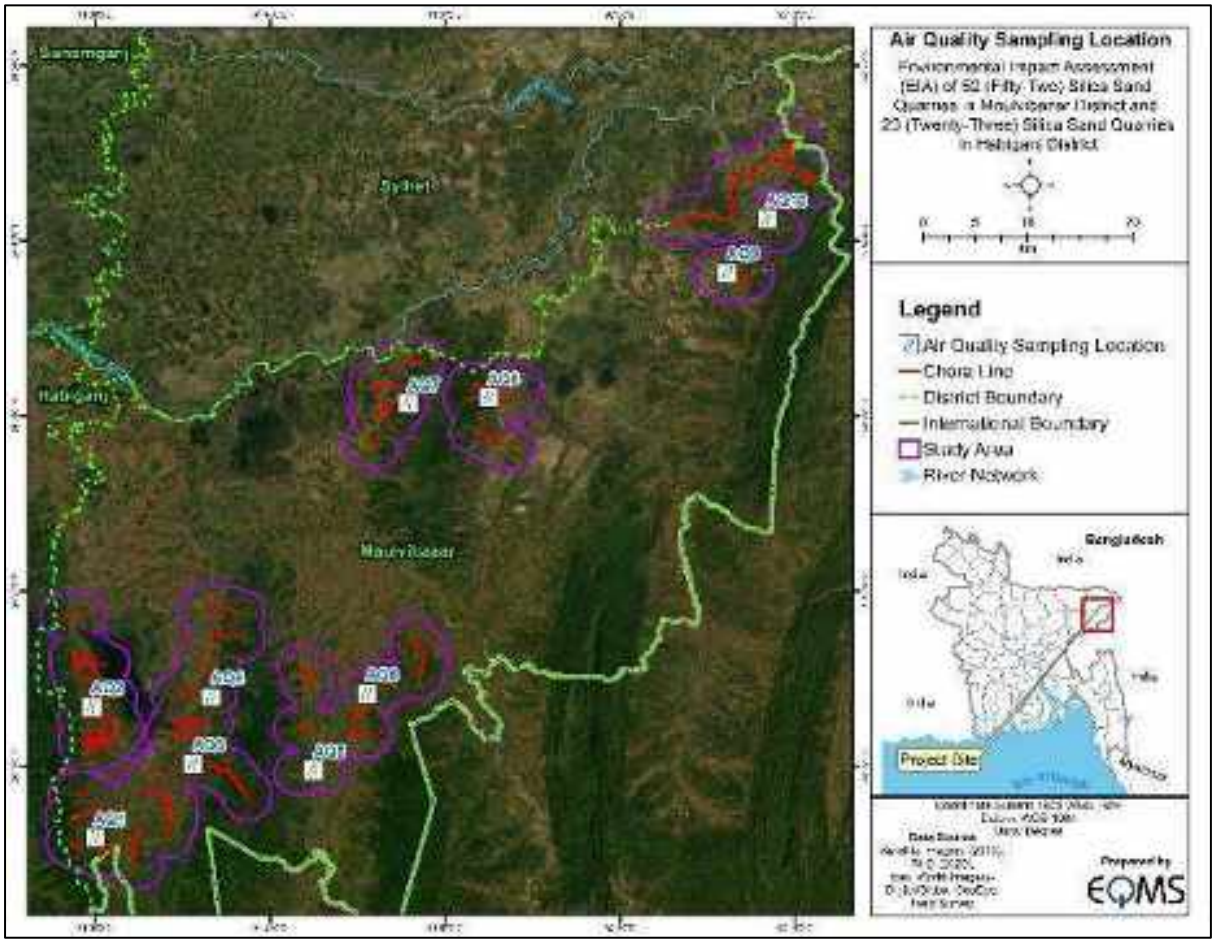
To evaluate the current air quality in the 52 Silica sand quarry's locations, Ten Ambient Air Quality Monitoring Station was established within a 500 Meter surrounding the project site. Details of the ambient air quality monitoring locations are presented in **Table** 4-2 and **Figure** 4-14. The photographs of ambient air quality monitoring are presented in Appendix E-1.

Table 4-2: Ambient Air Quality Monitoring Locations

Code	Monitoring Location	GPS Coordinates
AQ1	Huglia Chara, Tea Garden, Sreemangal	24°14'18"N; 91°38'58"E
AQ2	Narayan Shil, Bourshir, Sreemangal,	24°21'03"N; 91°38'50"E
AQ3	In side of BTCL Office, Sreemangal,	24°18'08"N; 91°44'03"E
AQ4	Amin Mia, East Siraj Nagar, Sreemangal,	24°21'34"N; 91°44'60"E
AQ 5	Jhoblapar, Madhabpur, Komolganj,	24°17'47"N; 91°50'15"E
AQ 6	Mojamel Vila, Kadampur,Komolganj,	24°21'44"N; 91°52'58"E
AQ 7	Md, Akter Hossain, Borodal Uttor bag,Rajnagar	24°36'38"N; 91°55'06"E
AQ8	Tulapur, Gov: Primary School, Kulaura,	24°36'56"N; 91°59'13"E
AQ 9	Bichora Bazar, Barlekha,	24°43'22"N; 92°11'31"E
AQ 10	Md, Shahid Hossain, Pachpara, Barlekha,	24°46'06"N; 92°13'33"E

Source: Field Survey by EQMS, Jan 2025

Figure 4-14: Ambient Air Quality Monitoring Location Map



Source: Field Survey by EQMS Team, Jan 2025

4.4.1.2 Ambient Air Quality Monitoring Results

The summary of the ambient air quality results is presented in **Table** 4-3.

Table 4-3: Summary of Ambient Air Quality Monitoring Results

Sl#	Code	GPS Location	Ambient Air pollution concentration in µg/m^3					
			SPM	$PM_{2.5}$	PM_{10}	SO_2	NO_2	CO
1	AQ-1	24°14'18"N; 91°38'58"E	68.7	21.5	37.2	10.7	18.2	0.59
2	AQ-2	24°21'03"N; 91°38'50"E	64.2	17.3	36.5	11.6	16.4	0.56
3	AQ-3	24°18'08"N; 91°44'03"E	76.4	25.6	40.7	13.8	17.3	0.83
4	AQ-4	24°21'34"N; 91°44'60"E	63.5	17.9	35.2	10.3	15.7	0.61
5	AQ-5	24°17'47"N; 91°50'15"E	79.2	23.2	41.8	14.1	17.9	0.84
6	AQ-6	24°21'44"N; 91°52'58"E	67.6	19.4	41.5	11.7	19.3	0.72
7	AQ-7	24°36'38"N; 91°55'06"E	65.8	16.3	38.4	11.4	18.5	0.64

Sl#	Code	GPS Location	Ambient Air pollution concentration in µg/m³					
			SPM	$PM_{2.5}$	PM_{10}	SO_2	NO_2	CO
8	AQ-8	24°36'56"N; 91°59'13"E	77.4	26.8	40.9	12.5	16.6	0.76
9	AQ-9	24°43'22"N; 92°11'31"E	67.1	17.4	40.3	10.6	16.9	0.67
10	AQ-10	24°46'06"N; 92°13'33"E	70.3	23.7	39.8	12.2	17.9	0.71
Duration (hours)			**8**	**24**	**24**	**24**	**24**	**8**
Weather Condition			Sunny					
Air Pollution (Control) Rules, 2022			**-**	**65**	**150**	**80**	**80**	**5**

Source: Field Measurement and Laboratory Analysis by EQMS, Jan 2025

4.4.1.3 Interpretation of Ambient Air Quality Results

Concentration of Suspended Particulate Matter (SPM)

The 8-hourly SPM concentration in ambient air in the project study areas were recorded 63.5 µg/m³. to 79.2 µg/m³. SPM level of the Project study areas was reported below the Air Pollution (Control) Rules, 2022 Standard of Bangladesh.

Concentration of Particulate Matter ($PM_{2.5}$)

The 24-hourly $PM_{2.5}$ concentration in ambient air in the project study areas were recorded 16.3 µg/m³ to 26.8 µg/m³. $PM_{2.5}$ level at monitoring location was reported below the Air Pollution (Control) Rules, 2022 Standard of Bangladesh.

Concentration of Particulate Matter (PM_{10})

The 24-hourly PM_{10} concentration in ambient air in the project study areas were 35.2 µg/m³ to 41.8 µg/m³. PM_{10} level at monitoring location was reported below the Air Pollution (Control) Rules, 2022 Standard of Bangladesh.

Concentration of Sulphur Dioxide (SO_2)

The 24-hourly SO_2 concentration in ambient air in the project study area was recorded as 10.3 µg/m³ to 12.5 µg/m³. SO_2 level at monitoring location was reported below the Air Pollution (Control) Rules, 2022 Standard of Bangladesh.

Concentration of Oxides of Nitrogen (NO_2)

The 24-hourly NO_x concentration in ambient air in the project study area was recorded as 15.7 µg/m³ to 19.3 µg/m³. NO_x level at monitoring location was reported below the Air Pollution (Control) Rules, 2022 Standard of Bangladesh.

Concentration of Carbon Monoxide (CO)

The 8-hourly CO concentration was recorded at the project study area 0.5 to 0.8 ppm. CO concentrations are reported low at the monitoring location while comparing with the Air Pollution (Control) Rules, 2022 Standard of Bangladesh (5 ppm).

4.4.2 Ambient Noise Quality

The purpose of ambient noise level measurement was to determine sound intensity at the monitoring locations. These locations are chosen in such way that a representative data could be recorded all over the area.

4.4.2.1 Ambient Noise Monitoring Locations

Noise levels were recorded at twenty-five (25) locations in the study area during the monitoring period. The details of noise monitoring locations are presented in Table 4-4 and depicted in Figure 4-15. The photographs of ambient noise monitoring are presented in Appendix E-2.

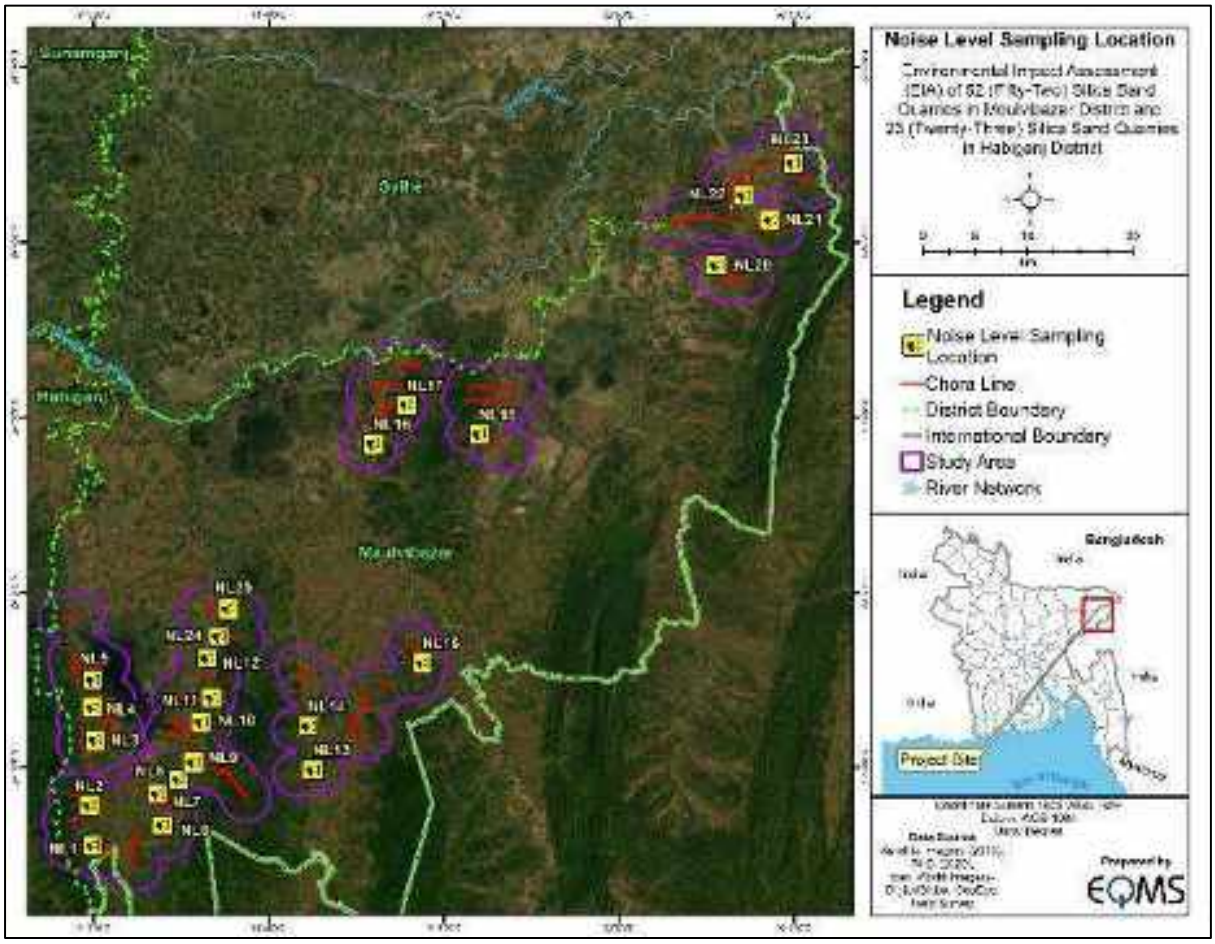
Table 4-4: Ambient Noise Monitoring Locations

Code	Monitoring Locations	GPS Coordinate
NL-1	Belel Hossain, Huglia, Tiputila, Sreemangal, Moulvibazar	24°13'59"N; 91°38'56"E
NL-2	Gandhi Chara,15 No Model Word Sreemangal, Moulvibazar	24°16'02"N; 91°38'47"E
NL-3	Anower Ahmed, Patrikul, Bhunabir, Sreemangal, Moulvibazar	24°19'24"N; 91°39'04"E
NL-4	Hupanda house, Bhunabir, Sreemangal, Moulvibazar	24°21'04"N; 91°38'55"E
NL-5	Jamal Mia house, Bourshir, Sreemangal, Moulvibazar	24°22'28.48"N; 91°38'56.12"E
NL6	Kamal Mia, Janaura, Rajnagar, Moulvibazar	24°15'01"N; 91°42'32"E
NL7	Md, Sardagar, Futki, Laharpur, Moulvibazar	24°16'38"N; 91°42'16"E
NL8	Babul Mia, Rajnagar,Gazipur,Moulvibazar	24°17'22"N; 91°43'23"E
NL9	Iqbal Hossain house, Jalabad Road, Sreemangal, Moulvibazar	24°18'14"N; 91°44'07"E
NL10	Helthyl Chojee Food & Beverage Ltd	24°20'18.40"N; 91°44'30.98"E
NL11	Momin Mia,East Siraj Nagar, Sreemangal, Moulvibazar	24°21'34"N; 91°45'04"E
NL12	Hazi Md, Sofi Mia, Masdihi Sreemangal, Moulvibazar	24°23'36"N; 91°44'51"E
NL 13	2 No Madhabpur Gov: Primary School, Komolganj, Moulvibazar	24°17'51.24"N; 91°50'15.93"E
NL 14	Ronjid Mondal,Longu para,Komolganj,Moulvibazar	24°20'6.38"N; 91°50'0.85"E
NL 15	Anik Mia, West Billpar, Somsherpur, Barlekha, Moulvibazar	24°23'21"N; 91°55'54"E
NL 16	Tuslif Mia, 5 No Word Brohman, Rajnagar, Moulvibazar	24°34'36.84"N; 91°53'22.35"E
NL 17	Md, Akter Hossain,Borodal Uttor bag,Rajnagar,Moulvibazar	24°36'37"N; 91°55'05"E
NL18	Baramchal School & College, Mohohal, Baramchal, Kulaura, Moulvibazar	24°35'7.42"N; 91°58'48.52"E
NL 19	Selim Bember, College, Barlekha, Moulvibazar	24°42'44"N; 92°11'44"E
NL 20	Abdur Nur, Rangauti, Barlekha, Moulvibazar	24°43'48"N; 92°11'01"E
NL 21	Md, Rayhan Mia, Barlekha, Moulvibazar	24°46'07"N; 92°13'48"E
NL 22	Kobira, Nisbahadorpur, Barlekha, Moulvibazar	24°47'22"N; 92°12'25"E

Code	Monitoring Locations	GPS Coordinate
NL 23	Md.Liton Mia,Korumpur, Shahabazpur, Barlekha, Moulvibazar	24°49'03"N; 92°14'57"E
NL 24	Rannagaryan Tea Garden, ,12 No Kessnagar,Moulvibazar	24°24'43"N; 91°45'25"E
NL 25	Md, Bolu Mia, Mokam Bazar,12 No Kessnagar, Moulvibazar	24°26'08"N; 91°45'55"E

Source: Field Survey by EQMS Team, Jan 2025

Figure 4-15: Ambient Noise Monitoring Location Map



Source: Field Survey by EQMS Team, Jan 2025

4.4.2.2 Ambient Noise Monitoring Results

The recorded ambient noise levels in the study area are summarized in **Table** 4-5.

Table 4-5: Ambient Noise Level in the Study Area

Code	Noise Level (dBA)				Locations Settings	*Bangladesh Standard	
	Leq_{Day}	Leq_{Night}	L_{max}	L_{min}		Day	Night
NL1	47.38	42.56	72.3	32.7	Residential Area	55	45
NL2	45.74	41.32	70.6	31.4	Residential Area	55	45
NL3	47.92	40.21	74.5	31.2	Residential Area	55	45

Code	Noise Level (dBA)				Locations Settings	*Bangladesh Standard	
	Leq_{Day}	Leq_{Night}	L_{max}	L_{min}		Day	Night
NL4	50.12	40.82	73.8	32.5	Residential Area	55	45
NL5	46.17	39.22	67.3	30.8	Residential Area	55	45
NL6	45.88	39.56	66.7	31.4	Residential Area	55	45
NL7	43.61	38.45	67.4	30.9	Residential Area	55	45
NL8	48.45	40.68	72.7	31.5	Residential Area	55	45
NL9	54.63	43.52	80.2	32.3	Residential Area	55	45
NL10	63.42	54.67	84.6	35.9	Industrial Area	75	70
NL11	45.31	38.56	65.9	30.8	Residential Area	55	45
NL12	44.12	38.03	64.7	31.2	Residential Area	55	45
NL13	43.34	39.18	73.5	31.7	Silent Zone	50	40
NL14	52.81	42.23	76.8	32.5	Residential Area	55	45
NL15	48.57	41.28	75.3	32.2	Residential Area	55	45
NL16	50.35	42.58	75.6	32.5	Residential Area	55	45
NL17	44.84	38.91	68.5	30.8	Residential Area	55	45
NL18	44.57	40.12	79.8	32.3	Silent Zone	50	40
NL19	68.42	61.56	84.5	34.2	Mixed Area	60	50
NL20	47.81	40.32	72.3	31.6	Residential Area	55	45
NL21	51.64	39.88	73.4	32.5	Residential Area	55	45
NL22	50.73	40.36	74.6	31.6	Residential Area	55	45
NL23	52.47	40.23	77.8	32.4	Residential Area	55	45
NL24	41.28	38.64	66.4	31.7	Silent Zone	50	40
NL25	50.13	42.78	70.5	31.2	Residential Area	55	45

Source: Field Survey by EQMS Team, Jan 2025

4.4.2.3 Interpretation of Ambient Noise Level Results

Table 4-5 shows the summary findings of Leq Day and Leq Night calculation in all monitoring locations. Noise levels were monitored continuously for 24 hours at each location. As per the Noise Pollution (Control) Rules, 2006, daytime is defined as 06:00 AM to 09:00 PM, while nighttime extends from 09:00 PM to 06:00 AM. The monitoring locations were classified into silent zones, residential zones, mixed zones, commercial zones, and industrial zones based on these regulations.

The majority of the residential areas (NL1 to NL25, except NL10 and NL19) have noise levels within the Bangladesh Standard for both day and night. The Leq (equivalent continuous noise level) readings during the day range from 41.28 dBA to 54.63 dBA, and during the night, they range from 38.03 dBA to 43.52 dBA. The highest recorded Leq day and night values within residential areas are 54.63 dBA (NL9) and 43.52 dBA (NL9), respectively. These values are within acceptable limits but are on the higher side. NL10, classified as an industrial area, exceeds the noise levels permissible for residential areas but remains within industrial area standards. The Leq day and night values are 63.42 dBA and 54.67 dBA, respectively. These values are within the Bangladesh standard (75/70 dBA). NL19, categorized as a mixed area, shows Leq day and night values of 68.42 dBA and 61.56 dBA, respectively. These values are within the Bangladesh standards (60/50 dBA) but are relatively high for nighttime noise exposure. Silent zones (NL13, NL18, NL24) generally show compliance with the standards. However, NL18

recorded a notably high Lmax value of 79.8 dBA, indicating occasional noise disturbances that could affect the tranquility of these zones.

4.4.3 Water Quality

Water sampling and analysis were undertaken to understand the overall baseline water quality characteristics of the surface and groundwater in the study areas. Samples were taken from representative selected surface water bodies and groundwater sources representing the study area.

4.4.3.1 Surface Water Sampling Locations

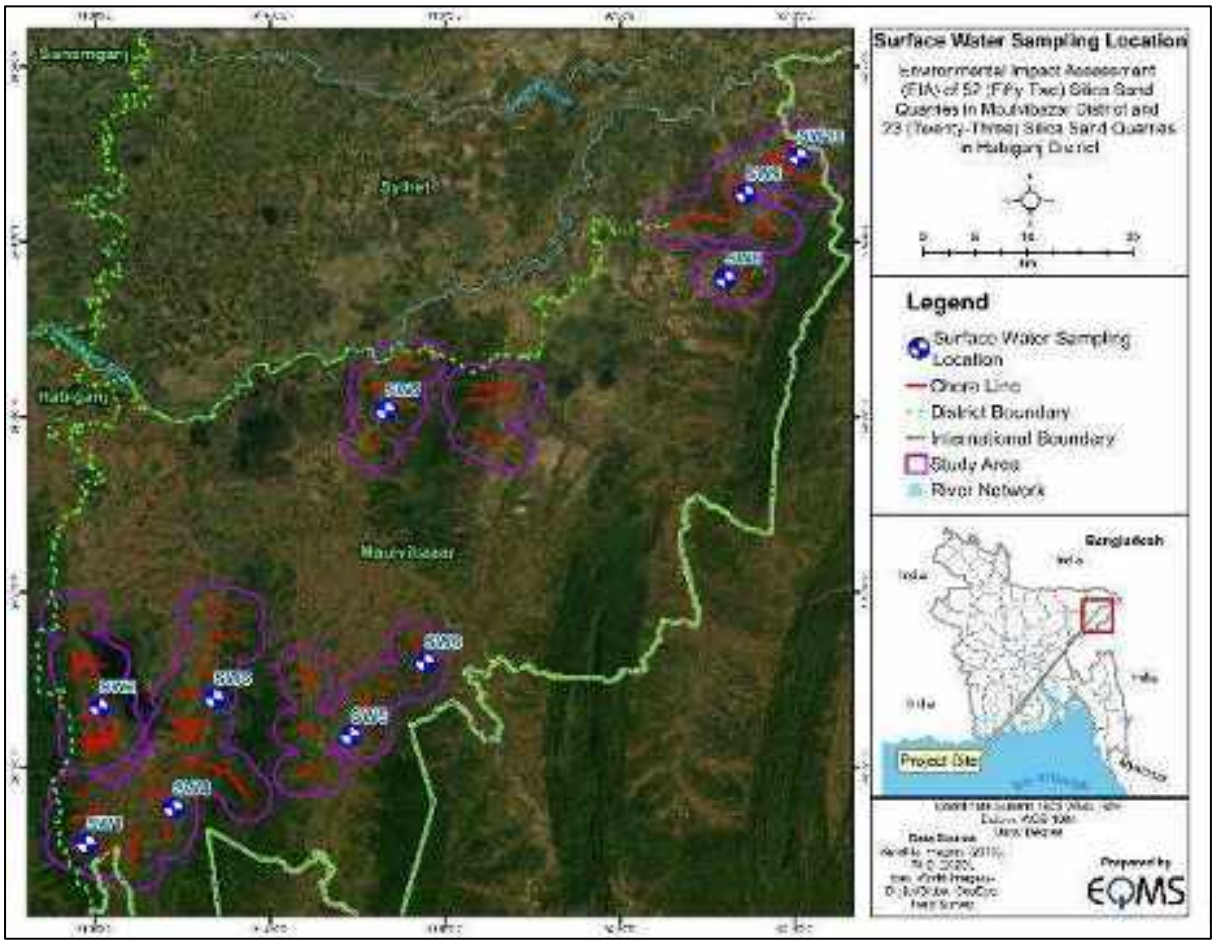
The surface water sample was collected from the nearby canal, pond, and river. Ten surface water samples were collected during the monitoring period. Details of the surface water monitoring location is presented in **Table** 4-6 and **Figure** 4-16**.** The photographs of the sampling are presented in Appendix E-3.

Table 4-6: Details of Surface Water Sampling Location

Code	Location	GPS Coordinate
SW1	Huglia Chara, Tea Garden, Sreemangal, Moulvibazar	24°14'04"N; 91°38'32"E
SW2	Moyes Sarkar,Sorkar Bari, Eshani Para, Sreemangal, Moulvibazar	24°21'04"N; 91°39'14"E
SW3	Shumoi Chara, Sreemangal, Moulvibazar	24°21'32"N; 91°45'09"E
SW4	Pond,Shibpur, Shajahan, Near Kalimondir, Moulvibazar	24°15'52.59"N; 91°43'1.60"E
SW 5	Lagata Chora, Kadampur,Komolganj,Moulvibazar	24°19'35"N; 91°52'10"E
SW 6	West Billpar, Somsherpur, Barlekha, Moulvibazar	24°23'23"N; 91°55'58"E
SW 7	Pond Near Yasin Ali, Kazi hates, Rajnagar, Moulvibazar	24°36'20"N; 91°53'56"E
SW 8	Md, Jahed Ali, Aditomohal, Barlekha, Moulvibazar	24°43'07"N; 92°11'25"E
SW 9	Kobira, Nisbahadorpur, Barlekha, Moulvibazar	24°47'27"N; 92°12'27"E
SW 10	Md, Molik Mia, Nowagram,Shahabazpur,Barlekha, Moulvibazar	24°49'24"N; 92°15'10"E

Source: Field Survey by EQMS Team, Jan 2025

Figure 4-16: Surface Water Sampling Location



Source: Field Survey by EQMS Team, Jan 2025

4.4.3.2 Surface Water Results

The analyzed results for surface water were compared to Bangladesh Standards (ECR, 2023). Results of inland surface water analysis are presented in Table 4-7.

Table 4-7: Surface Water Results

Parameter	Unit	Analysis Method	SWQ1	SWQ2	SWQ3	SWQ4	SWQ5	SWQ6	SWQ7	SWQ8	SWQ9	SWQ10	Bangladesh Standards*
Temperature	°C	Ion electrode method	24.7	24.0	24.6	24.7	24.2	24.3	24.4	24.0	24.6	24.5	--
Electric Conductivity	µS/cm	Ion electrode method	110	590	60	60	140	60	90	370	70	120	--
Turbidity	NTU	Turbidimetric Photoelectric Method	56.8	2.1	1.4	77.3	12.8	28.7	3.2	38.4	36.7	16.2	--
pH		Ion electrode method	3.05	5.74	5.15	4.66	5.62	4.70	4.85	5.68	3.89	4.95	6 - 9
DO	mg/L	Ion electrode method	6.0	4.9	6.1	4.2	6.2	5.4	5.1	5.9	6.0	5.4	≥5
BOD5 (at 20°C)	mg/L	Ion electrode method	25.2	14.7	1.83	1.5	11.3	8.34	2.88	15.6	15.3	18.3	≤6
COD	mg/L	USEPA 410.4 approved method followed by Photometric analysis	84	49	6.1	5.0	37.1	27.8	9.6	52	51	61	50
Iron	mg/L	EPA Phenantroline method followed by Photometric analysis	3.32	2.80	1.2	1.0	1.4	1.9	1.1	1.3	2.6	1.9	--

Chloride	mg/L	Mercury (II) thiocyanate Method	6.0	12	2.4	2.5	9.0	7.2	3.0	8.2	2.4	3.4	250
Nitrate	mg/L	Cadmium Reduction	2.8	4.7	2.5	2.1	1.7	1.2	1.9	1.1	1.3	1.0	10
Salinity	ppt	Ion Electrode method	0.05	0.25	0.02	0.02	0.05	0.02	0.03	0.17	0.02	0.05	--
TDS	mg/L	Ion electrode method	60	310	30	30	70	30	50	190	30	60	1000
Total Suspended Solid (TSS)	mg/L	EPA Method 160.2	65	68	64	72	68	70	65	71	70	74	100

Source: Laboratory Analysis by EQMS laboratory

* Bangladesh Environment Conservation Rules (ECR), 2023, Schedule-2 (Standards for Inland Surface Water)

4.4.3.3 Interpretation of Surface Water Results

The recorded temperature across all sampling points (SWQ1 to SWQ10) ranges between 24.0°C and 24.7°C. These values are consistent and fall within a typical range for surface water bodies in the region.

EC values vary significantly across the sampling points, with the lowest being 60 µS/cm (SWQ3, SWQ4, SWQ6) and the highest being 590 µS/cm (SWQ2). These differences could be indicative of varying levels of dissolved ions in different water bodies.

Turbidity levels show high variability, ranging from 1.4 NTU (SWQ3) to 77.3 NTU (SWQ4). High turbidity levels, such as those in SWQ4, SWQ8, and SWQ9, suggest significant particulate matter presence, which could impact aquatic life and water quality.

BOD5 levels range from 1.5 mg/L (SWQ4) to 25.2 mg/L (SWQ1). Most sampling points exceed the Bangladesh standard of ≤6 mg/L, indicating organic pollution and potential stress on aquatic organisms due to high microbial activity.

COD levels range from 5.0 mg/L (SWQ4) to 84 mg/L (SWQ1). Several points exceed the Bangladesh standard of 50 mg/L, suggesting the presence of significant amounts of organic and inorganic pollutants.

TDS levels range from 30 mg/L (SWQ3, SWQ4, SWQ6, SWQ9) to 310 mg/L (SWQ2). All values are well within the Bangladesh standard of 1000 mg/L, indicating acceptable levels of dissolved substances.

The water quality of the canal water sample reveals that it is usable for all purposes as per ECR 2023-Schedule 2 (a).

4.4.3.4 Groundwater Sampling Locations

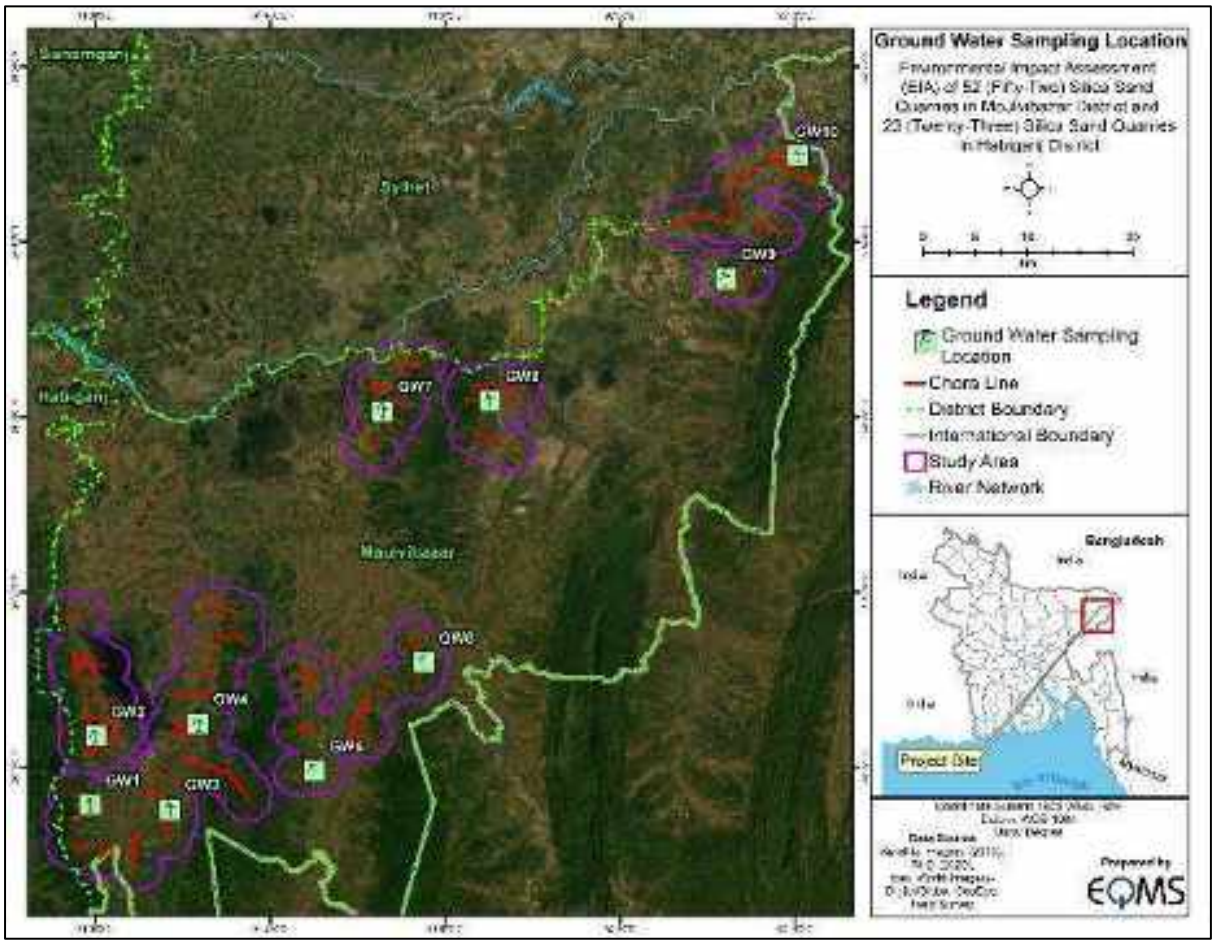
Groundwater samples were collected from ten (10) representatives of selected groundwater sources close to the project site during the monitoring period (January 2025). Details of the groundwater quality monitoring location is depicted in **Table** 4-8 and **Figure** 4-17**.** The photographs of groundwater quality monitoring are presented in Appendix E-4.

Table 4-8: Details of Groundwater Sampling Location

Code	Location	GPS Coordinate
GW1	Ronju Das, Gandhi Chara,15 No Model Word Sreemangal, Moulvibazar	24°16'04"N; 91°38'46"E
GW2	Mayna Master, Patrikul, Bhunabir, Sreemangal, Moulvibazar	24°19'35.98"N; 91°39'1.64"E
GW3	Ful Mia, Shajahan, Moulvibazar	24°15'50"N; 91°42'52"E
GW4	Akis Mia, Esobpur, Sreemangal, Moulvibazar	24°20'13"N; 91°44'19"E
GW 5	Jhoblapar,Madhabpur, Komolganj,Moulvibazar	24°17'47.94"N;91°50'14.82"E
GW 6	West Billpar Jame Mosque, Somsherpur, Barlekha, Moulvibazar	24°23'22.32"N;91°55'54.98"E
GW 7	Md, Mojay Mia, Kazi hate, Munsi, Rajnagar, Moulvibazar	24°36'19"N; 91°53'48"E
GW8	Md, Haris Mia,Dakhin Batera Baramchal, Kulaura, Moulvibazar	24°36'50"N; 91°59'18"E
GW 9	Md, Taher Mia, Aditomohal, Barlekha, Moulvibazar	24°43'06"N; 92°11'27"E
GW 10	Barlekha, Moulvibazar	24°49'24"N; 92°15'10"E

Source: Field Survey by EQMS Team, Jan 2025

Figure 4-17: Groundwater Sampling Location Map



Source: Field Survey by EQMS Team, Jan 2025

4.4.3.5 Groundwater Results

The analyzed results for groundwater were compared to Bangladesh Standards (ECR, 2023). Results of groundwater analysis are presented in Table 4-9

Table 4-9: Ground Water Results

Parameter	Unit	Analysis Method	GW1	GW2	GW3	GW4	GW5	GW6	GW7	GW8	GW9	GW10	Bangladesh Standards*
Temperature	^{o}C	Ion electrode method	24.2	24.1	24.5	24.8	24.3	24.3	24.8	24.8	24.3	24.3	20-30
EC	µS/cm	Ion electrode method	320	280	140	160	80	60	100	270	180	130	--
Color	PCU	Colorimetric Platinum Cobalt method	13	31	23	19	12	23	14	11	7	17	15
pH		Ion electrode method	6.35	6.19	5.31	5.61	4.89	4.66	5.15	5.86	5.40	4.77	6.5 – 8.5
DO	mg/L	Ion electrode method	6.3	6.8	6.7	5.8	6.6	6.9	5.9	6.1	5.3	7.5	--
Arsenic	ppm	Modified Gutzeit method	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.05
Alkalinity	mg/L	Colorimetric Method	17	3.2	7.8	5.6	146	130		7	11	189	--
Iron	mg/L	EPA Phenantroline method	0.9	1.3	0.7	1.9	0.07	0.08	1.1	1.2	1.6	0.06	0.3 – 1.0

		followed by Photometric analysis											
Potassium	mg/L	Turbidimetric tetraphenylborate	3.9	4.2	3.0	4.2	4.1	3.8	4.7	3.8	3.5	3.9	
Sulfate	mg/L	Turbidimetric	6.1	4.7	4.8	5.2	3.8	3.9	4.9	5.3	6.2	4.1	
Chloride	mg/L	Mercuric nitrate method followed by titrimetric method	12	18	12	18	9	18	9	6	12	11	150 – 600
Chromium	mg/L	D1687-92 Diphenylcarbohydrozide method	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.05
T. Hardness	mg/L	Titrometric method by EDTA	45	27	9	15	12	14	6	6	9	13	
TDS	mg/L	Ion electrode method	160	140	70	0.31	40	30	50	140	90	70	1000

Source: EQMS laboratory

** According to Schedule-2, Rule 31 (Kha) of Environmental Conservation Rules, Amendment 2023, Government of Bangladesh.*

4.4.3.6 Interpretation of Ground Water Results

The recorded temperature across all sampling points (GW1 to GW10) ranges between 24.1°C and 24.8°C. These values are consistent and fall within the Bangladesh standard range of 20-30°C.

EC values vary across the sampling points, with the lowest being 60 µS/cm (GW6) and the highest being 320 µS/cm (GW1). These variations indicate different levels of dissolved ions present in groundwater.

pH values range from 4.66 (GW6) to 6.35 (GW1). Several points are below the Bangladesh standard range of 6.5 – 8.5, indicating slightly acidic conditions, which may require attention to prevent corrosive effects on infrastructure and potential health risks.

DO levels range from 5.3 mg/L (GW9) to 7.5 mg/L (GW10). These levels are indicative of good water quality in terms of oxygen content, supporting aerobic aquatic life.

Sulfate concentrations vary between 3.8 mg/L (GW5) and 6.2 mg/L (GW9), all within acceptable limits, indicating no significant sulfate contamination.

Chloride levels range from 6 mg/L (GW8) to 18 mg/L (GW2, GW4, GW6). These values are well within the Bangladesh standard range of 150 – 600 mg/L, suggesting minimal chloride contamination.

TDS levels range from 0.31 mg/L (GW4) to 160 mg/L (GW1), well below the Bangladesh standard of 1000 mg/L, indicating acceptable levels of dissolved substances in groundwater.

The water quality of the ground water samples reveals that it is usable for all purposes as per ECR 2023-Schedule 2.

4.4.4 Soil Quality

Soil quality is the ability of soil to perform functions that are essential to people and the environment. Soils support plant growth, recycle dead material, regulate, and filter water flows, support buildings and roads, and provide habitat for many plants and animals. Depending on the land use, many of these functions occur simultaneously. Soil quality assessments go beyond measuring degradation (erosion, compaction, or contamination) to focus on these soil functions and the processes that create them.

The SRDI has identified about 500 soil series in Bangladesh and FAO-UNDP has identified 21 different general soil types based on the diagnostic horizons and diagnostic properties of the soil (FAO-UNDP, 1998). According to the classification, four types of soil classes; Mainly deep brown soils on low hills, Grey Piedmont Soils, Peat Soils, and Noncalcareous Dark Grey Floodplain Soils are found within the buffer area of the project site.

4.4.4.1 Soil Sampling Location

Ten (10) representative samples were collected from near the project site areas. The details of the soil monitoring are presented in Table 4-10 and Figure 4-18. The photographs of soil sampling are presented in Appendix E-5.

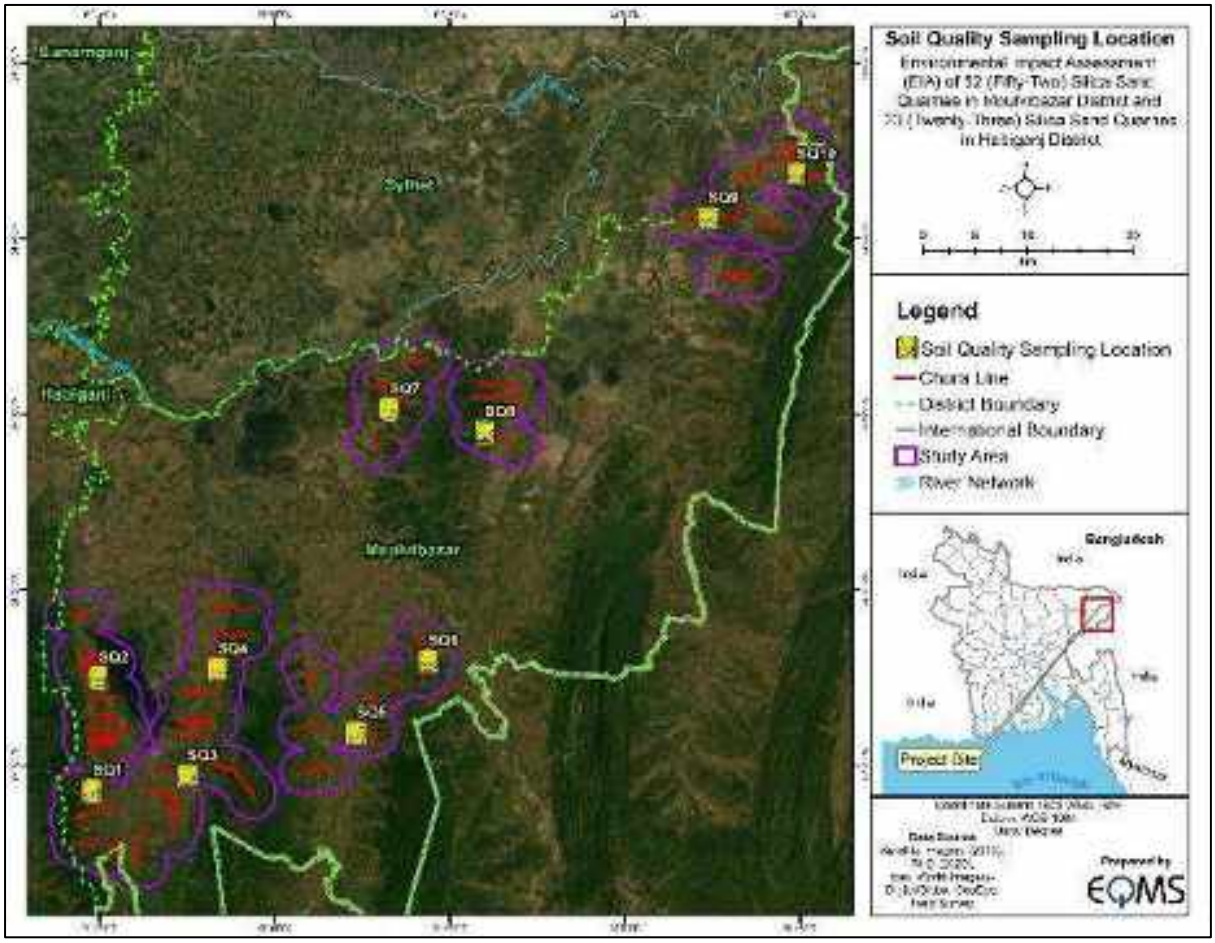
Table 4-10: Soil Sampling Locations

Sample ID	Location	GPS Cordinator
SQ1	Gandhi Chara,Kalimondir, Patrikul, Bhunabir, Sreemangal, Moulvibazar	24°16'39"N;91°38'37"E
SQ2	Bourshir, Sreemangal, Moulvibazar	24°22'26.39"N; 91°38'54.87"E
SQ3	Rajnagar, Gazipur, Moulvibazar	24°17'24"N; 91°43'30"E
SQ4	Pagalpur, Sreemangal, Moulvibazar	24°22'53"N; 91°45'03"E
SQ 5	Kadampur, Komolganj, Moulvibazar	24°19'36.38"N; 91°52'10.39"E

Sample ID	Location	GPS Cordinator
SQ 6	West Billpar, Somsherpur, Barlekha, Moulvibazar	24°23'19"N; 91°55'53"E
SQ7	Kazi hate, Munsi, Rajnagar, Moulvibazar	24°36'14"N; 91°53'54"E
SQ8	Near Sree Darga Mondir, Mohohal, Baramchal, Kulaura, Moulvibazar	24°35'4.34"N; 91°58'47.71"E
SQ 9	Wahidpur, Gov: Primary School, Wahidpur, Nisbahadorpur, Barlekha, Moulvibazar	24°46'02"N; 92°10'17"E
SQ 10	Saypur, Kuarpar, Shahabazpur, Barlekha, Moulvibazar	24°48'17"N; 92°14'51"E

Source: Field Survey by EQMS Team, Jan 2025

Figure 4-18: Soil Sampling Location Map



Source: Field Survey by EQMS Team, January 2025

4.4.4.2 Soil Quality Results

The following Table 4-11 shows the analysis result of the soil sample.

Table 4-11: Result of Soil Sample

Testing Specification	Unit	Test Result										Dutch Soil Standards 2000
		SQ1	SQ2	SQ3	SQ4	SQ5	SQ6	SQ7	SQ8	SQ9	SQ10	
pH	--	4.2	3.87	4.32	3.8	3.91	3.3	3.62	3.47	3.99	3.85	5
EC	dS/cm	0.5	0.42	0.55	0.4	0.45	0.38	0.42	0.4	0.5	0.48	--
Potassium (K)	mg/L	120	110	130	105	115	100	115	108	125	120	--
Phosphorous (P)	mg/L	7.5	6	8	5.8	6.5	5	6.5	5.8	7.5	6.8	--
Zinc (Zn)	mg/L	0.7	0.5	0.8	0.45	0.6	0.45	0.6	0.5	0.7	0.65	140
Copper (Cu)	mg/L	0.25	0.2	0.3	0.18	0.22	0.18	0.2	0.19	0.25	0.22	36
Iron (Fe)	mg/L	50	55	48	57	52	60	55	58	50	52	--
Manganese (Mn)	mg/L	15	16	14.5	16.5	15.2	17.0	16	16.5	15	15.2	--
Lead (Pb)	mg/L	0.05	0.06	0.04	0.06	0.05	0.06	0.05	0.05	0.04	0.04	85
Organic Matter	mg/L	2.4	2.1	2.6	2	2.2	1.8	2	1.9	2.4	2.3	--
Texture		Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	--

Source: Laboratory Analysis by EQMS Laboratory, January 2025

4.4.4.3 Interpretation of Soil Quality Results

The analysis of soil quality across ten monitoring locations (SQ-1 to SQ-10) revealed variations in physical and chemical properties. The pH values ranged from 3.3 to 4.32, indicating acidic soil conditions, which may affect nutrient availability and crop growth. Electrical conductivity (EC) values varied between 0.38 dS/cm and 0.55 dS/cm, suggesting that the soil has low salinity levels. Potassium (K) concentrations ranged from 100 mg/kg to 125 mg/kg, while phosphorus (P) levels varied from 5.0 mg/kg to 8.0 mg/kg. Zinc (Zn) concentrations were recorded between 0.45 mg/kg and 0.8 mg/kg, and copper (Cu) levels ranged from 0.18 mg/kg to 0.25 mg/kg, both of which are within acceptable limits for soil health. Iron (Fe) content varied between 48 mg/kg and 60 mg/kg, while manganese (Mn) levels ranged from 14.5 mg/kg to 17.0 mg/kg, both within typical ranges for soil. Lead (Pb) concentrations were low, ranging from 0.05 mg/kg to 0.06 mg/kg, indicating minimal contamination. Organic matter content ranged from 1.8 mg/kg to 2.6 mg/kg, suggesting moderate fertility. The soil texture across all monitoring locations was identified as sandy loam, which generally provides good drainage but may need organic amendments to improve nutrient retention. Overall, while the soil quality showed moderate levels of nutrients, the acidic pH suggests potential challenges for agricultural productivity, which may require pH adjustment and additional soil management practices.

4.4.5 Sediment Quality

Sediment quality refers to the ability of sediment to support ecological functions and maintain environmental health. Sediments play a crucial role in aquatic ecosystems by providing a habitat for organisms, acting as a reservoir for nutrients and contaminants, and influencing water quality through chemical and biological interactions. The composition and characteristics of sediment affect its ability to support aquatic life, regulate water flow, and influence the transport and fate of pollutants in aquatic environments.

Sediment quality assessments go beyond measuring sediment accumulation and erosion; they also consider chemical, physical, and biological properties that determine its impact on the surrounding environment. Key factors in sediment quality evaluation include grain size distribution, organic matter content, heavy metal concentration, and nutrient levels. In Bangladesh, sediment characteristics vary significantly based on geographical and hydrological conditions. The country's river systems, including the Ganges, Brahmaputra, and Meghna, transport and deposit vast amounts of sediment annually, shaping floodplains and deltaic regions. According to geological and environmental classifications, sediments in the 2 km buffer area of the project site primarily consist of fine alluvial deposits and organic-rich silts, which influence soil fertility, water retention, and aquatic biodiversity.

4.4.5.1 Sediment Sampling Locations

The detail of the sediment sampling location is presented in **Table** 4-12 and the sampling location map is shown in **Figure** 4-19. The photograph of the sediment sample collection is shown in Appendix E-6**.**

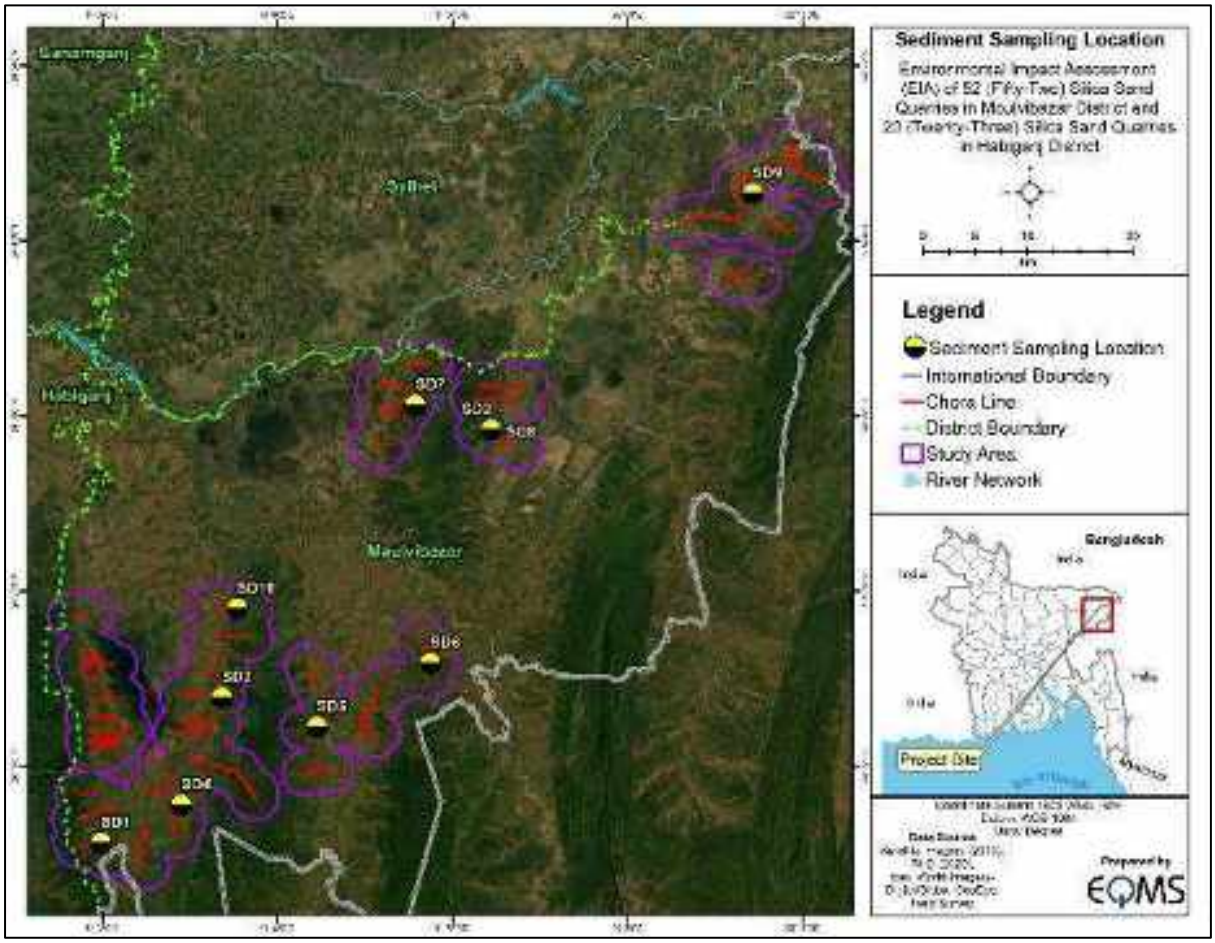
Table 4-12: Sediment Sampling Location

Sample ID	Location	GPS Coordinators
SD 1	Huglia Chara, Tea Garden, Sreemangal, Moulvibazar	24°14'04"N; 91°38'55"E
SD 2	Shumoi Chara, Sreemangal, Moulvibazar	24°21'32"N; 91°45'09"E
SD 3	Bori Chara, Ujanpara, Madabpur, Baramchal, Kulaura, Moulvibazar	24°35'18"N; 91°58'59"E
SD 4	Bilash Chora, Shejahenpur, Sreemangal, Moulvibazar	24°15'60"N; 91°43'03"E
SD 5	Longu Chora, Longupara, Komolganj, Moulvibazar	24°20'01"N; 91°50'02"E
SD 6	West Billpar, Somsherpur, Barlekha, Moulvibazar	24°23'18"N; 91°55'52"E

Sample ID	Location	GPS Coordinators
SD 7	Dhamai Chora, Borodal Uttor bag, Rajnagar, Moulvibazar	24°36'33.73"N;91°55'5.92"E
SD 8	Baramcha, Moulvi Bazar	24°35'18"N; 91°58'59"E
SD 9	Kobira, Nisbahadorpur, Barlekha, Moulvibazar	24°47'27"N; 92°12'27"E
SD 10	Deora Chara, Mokam Bazar,12 No Kessnagar, Moulvibazar	24°26'07"N; 91°45'56"E

Source: Field Survey by EQMS Team, Jan 2025

Figure 4-19: Sediment sampling location map



Source: Field Survey by EQMS Team, 2025

4.4.5.2 Sediment Quality Results

The analysis result of the sediment sample is given in Table 4-13.

Table 4-13: Result of Sediment Sample

Testing Specification	Unit	Test Result										land application of contaminated soil, USEPA, 2001
		SD1	SD2	SD3	SD4	SD5	SD6	SD7	SD8	SD9	SD10	
pH	--	5.07	4.49	4.85	4.4	4.96	5.21	5.26	4.96	4.65	5.01	--
EC	dS/cm	0.6	0.55	0.58	0.54	0.59	0.55	0.58	0.52	0.48	0.53	--
Potassium (K)	mg/L	175	160	170	155	165	170	180	160	150	165	--
Phosphorous (P)	mg/L	9.5	8	8.8	7.5	9	9.8	10.2	8.5	7.5	9	--
Zinc (Zn)	mg/L	0.7	0.6	0.65	0.55	0.68	0.7	0.75	0.6	0.5	0.65	400
Copper (Cu)	mg/L	0.28	0.25	0.27	0.22	0.26	0.28	0.3	0.25	0.22	0.26	175
Iron (Fe)	mg/L	52	50	51	48	52	55	56	53	50	54	--
Manganese (Mn)	mg/L	13.8	12	13	11.5	13.5	13.5	14	12	10.5	12.8	--
Lead (Pb)	mg/L	0.05	0.04	0.05	0.04	0.05	0.06	0.05	0.04	0.03	0.05	120
Organic Matter	mg/L	2.7	2.2	2.5	2	2.6	2.8	3	2.5	2	2.6	--

Source: Laboratory Analysis by EQMS Laboratory, 2025

4.4.5.3 Interpretation of Sediment Quality Results

The analysis of sediment quality across six monitoring locations (SD-1 to SD-10) revealed variations in physical and chemical properties. The pH values ranged from 4.44 to 5.26, indicating slightly acidic to near-neutral conditions, which are generally suitable for maintaining nutrient availability and aquatic ecosystem stability. Electrical conductivity (EC) values varied between 0.48 dS/cm and 0.6 dS/cm, suggesting that the sediment has low to moderate salinity levels. Potassium (K) concentrations ranged from 150 mg/L to 180 mg/L, while phosphorus (P) levels varied from 7.5 mg/L to 10.2 mg/L. Zinc (Zn) concentrations were recorded between 0.5 mg/L and .75 mg/L, and copper (Cu) levels ranged from 0.22 mg/L to 0.3 mg/L, both of which are within acceptable limits for sediment health. Iron (Fe) content varied between 48 mg/L and 56 mg/L, while manganese (Mn) levels ranged from 12.0 mg/L to 14.0 mg/L, both within typical ranges for sediment. Lead (Pb) concentrations were low, ranging from 0.03 mg/L to 0.06 mg/L, indicating minimal contamination. Organic matter content ranged from 2.0 mg/L to 3.0 mg/L, suggesting moderate fertility. Overall, the sediment quality showed adequate levels of essential nutrients, with pH conditions that may slightly limit nutrient availability in some locations. Proper monitoring and sediment management practices may be required to maintain optimal ecological balance.

4.5 Biological Environment

4.5.1 Bio-ecological Zones of the Study Area

In the context of physiographic and biological diversity, IUCN has classified Bangladesh into Twenty-Five (25) Bio-Ecological Zones[4]. The Project AOI (the team considered a 500-meter core area on both sides of each quarry and a 2-kilometer buffer area considering the impacts and activities of the project) falls under the three Bio-ecological Zones namely ‘4d. Surma-Kushiyara Floodplain, 5a. Haor Basin, and 9b. Sylhet Hills’ (Atlas of Bio-ecological Zones of Bangladesh. IUCN, 2002 Appendix G-7:)

4.5.2 Terrestrial Ecosystem

Terrestrial habitat includes agriculture habitat, homestead plantation, Tea Garden, Rubber Garden and Roadside Plantations (Appendix G-8:). The habitats present in the AOI are modified in nature. Review of published literature, KI, FGD and discussion with local people were also carried out to collect information regarding the flora and fauna species found in the proposed project AOI. KIIs, FGDs and Consultations in the Study area are shown in Appendix F-1:

4.5.2.1 Terrestrial Flora

A total of Fifty-Six (56) terrestrial floral species were recorded under Twenty-Eight (28) families from the field visit and secondary literature review (0). The most abundant families are Fabaceae (06), followed by Arecaceae (05) and Myrtaceae and Moraceae each including four (04) plant species. Some photographs of tree species observed in the AOI have been presented in Appendix G-9:).

4.5.2.2 Terrestrial Fauna

Herpetofauna (Amphibians & Reptiles)

A total of Ten (10) species of amphibians belonging to five (5) families and Nineteen (19) species of reptiles belonging to ten (10) families were listed from the project area based on primary and secondary data (Appendix G-2:). The highest number of amphibians (3 species) dominated in the study area belonging to the family Dicroglossidae. On the other hand, the highest number of reptilian species (5 species) were recorded under the Colubridae family.

[4] Nishat, A., S.M.I. Huq, S.P. Barua, A.H.M.A. Reza and A.S.M. Khan. 2002. Bio-ecological Zones of Bangladesh. The World Conservation Union (IUCN), Dhaka, Bangladesh. 141 pp.

All the amphibian species are included in the Bangladesh Wildlife (Conservation and Security) Act, 2012 in Schedule-II and Least Concerned species. Three (3) Near Threatened (NT) reptile species such as Bengal Monitor Lizard (*Varanus bengalensis*), Monitor Lizard (*Varanus salvator)* and Spectacled Cobra (*Naja naja)* were found in the study area (IUCN Bangladesh Red-list (2015) and Global IUCN Red-list status (Version 2024-2). Photoplate of observed Herpetofauna species are presented in Appendix G-10:

Avifauna

A total of Fifty-Six (56) species of birds under Thirty-two (32) families were recorded where the highest number of birds belong to the family Ardeidae (5 species). All bird species are Least Concern (LC), according to the IUCN Red List of Threatened Species of Bangladesh, 2015, and Global IUCN Red List Status (Version 2024-2). Detailed checklist and photo plate of the avian species are presented in Appendix G-3: and Appendix G-11:

Migratory Birds

Nine (09) Species of terrestrial and aquatic associated migratory birds were also observed in the AOI. All the Migratory birds are classified as Least Concern (LC) according to IUCN Red List of Bangladesh, 2015 and Global IUCN Red List (Version 2024-2). A photo plate and a checklist of some observed shore birds have been provided in Appendix G-12: and Appendix G-6:

Terrestrial Mammal

Sixteen (16) terrestrial mammal species belonging to nine (9) families were reported in the AOI from primary survey and consultation (Appendix G-4:). Most of these species are categorized as Least Concern (LC) on both the IUCN Red List of Bangladesh (2015) and the Global IUCN Red List of Threatened Species (Version 2024-2). However, exceptions include Phayre's Langur (*Trachypithecus phayrei*), which is Critically Endangered (CR) locally and Endangered (EN) globally; Capped Langur (*Trachypithecus pileatus*), classified as Endangered (EN) locally and Vulnerable (VU) globally; Fishing cat (*Prionailurus viverrinus*), classified as Endangered (EN) both locally and globally and Rhesus Macaque (*Macaca mulatta*), listed as Vulnerable (VU) locally but Least Concern (LC) globally. A Photoplate of Terrestrial mammals has been presented in Appendix G-13:

4.5.3 Aquatic Ecosystem

Aquatic ecosystems perform many important environmental functions, such as recycling nutrients, purifying water, attenuating floods, recharging groundwater, and providing habitats for wildlife. The Aquatic ecosystem within the AOI comprises mainly some stream or Chora, stagnant waterbodies, riverine habitat and lentic waterbodies (Ponds). Different types of aquatic habitats within the AOI have been presented in Appendix G-14:

4.5.3.1 Fisheries Resources (Ichthyofauna)

A total of Sixteen (16) species (Appendix G-5:) of captured fish under 12 families and 3 species of crustaceans under one (01) family were recorded from the Chora during the survey. All the recorded fish species are categorized as Least Concern (LC) except the three species of Near Threatened (NT) Bheda (*Nandus nandus*) and Tara Baim (*Macrognathus aculeatus*) and Puiya (*Lepidocephalichthys irrorata*) is Vulnerable according to the IUCN Red list of Bangladesh (2015). However, all the recorded captured fish species are mostly found during the rainy season. The highest number of fish species are observed from the Channidae, Bagridae, Cyprinidae and Mastacembelidae (2 species), while other families have a single representation. A photo plate of different fish and prawn species observed from the study area is presented in Appendix G-15:

During the field visit, fishing activity was very minimal in this season in the project area. Chora fishing is mainly observed in the nearby portion of the waterbodies where the Chora drains. For instance, few Choras are situated adjacent to the Hail haor and Hakaluki Haor and branches of Kushiyara River of

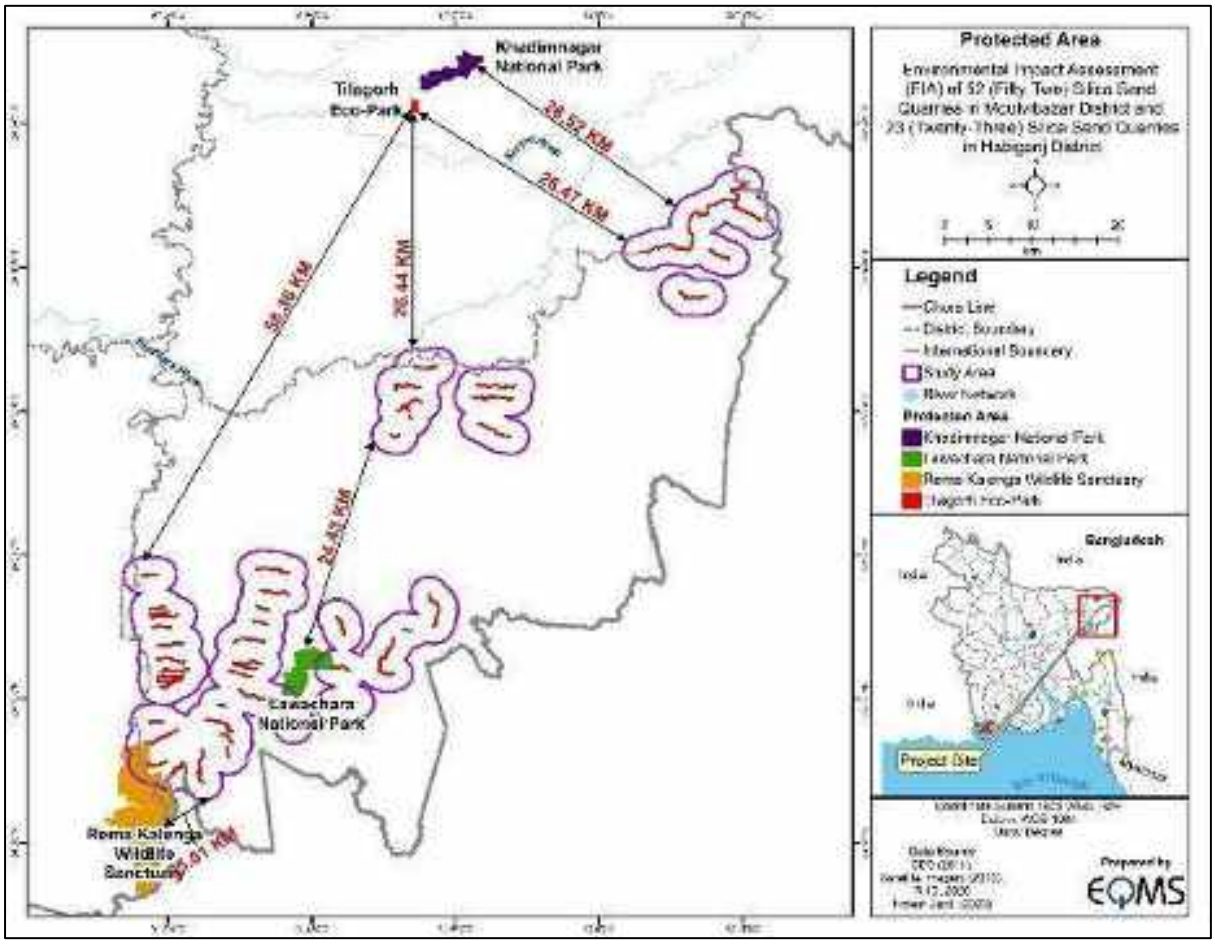
the Moulvibazar district. The presence of very few fishing gears observed in the Chora during the survey period. In addition, there are many ponds that are used as fish culture for business purposes. Fisheries survey, consultation with local people and Upazila Fisheries Officer of respective upazilas of Moulvibazar district is presented in Appendix F-2:.

4.6 Ecological Sensitive Areas

4.6.1 Protected Areas (PAs)

The different categories of PAs in Bangladesh defined by the Wildlife (Conservation and Security) Act, 2012 are Wildlife Sanctuaries, National Park, Safari Park, Eco Park, Botanical Garden, Wild Animal Breeding Center, Special Biodiversity Conservation Area, National Heritage, Memorial Tree, Sacred, Tree, and Kunjaban. There are fifty-three (53) PAs in total according to the Forest Department Website (January 2025) in Bangladesh which are managed by the Bangladesh Forest Department. The closest Protected Area is Rema Kalenga Wildlife Sanctury which touched the 2 km buffer area boundary from the sand quarry. The distance from the sand quarry is about 2 km and touched the 2 km buffer area boundary from the Lawachara National Park. These Protected Areas and their respective aerial distances from the project area are illustrated in Figure 4-20.

Figure 4-20: Map of nearest Protected Areas of the Project Area

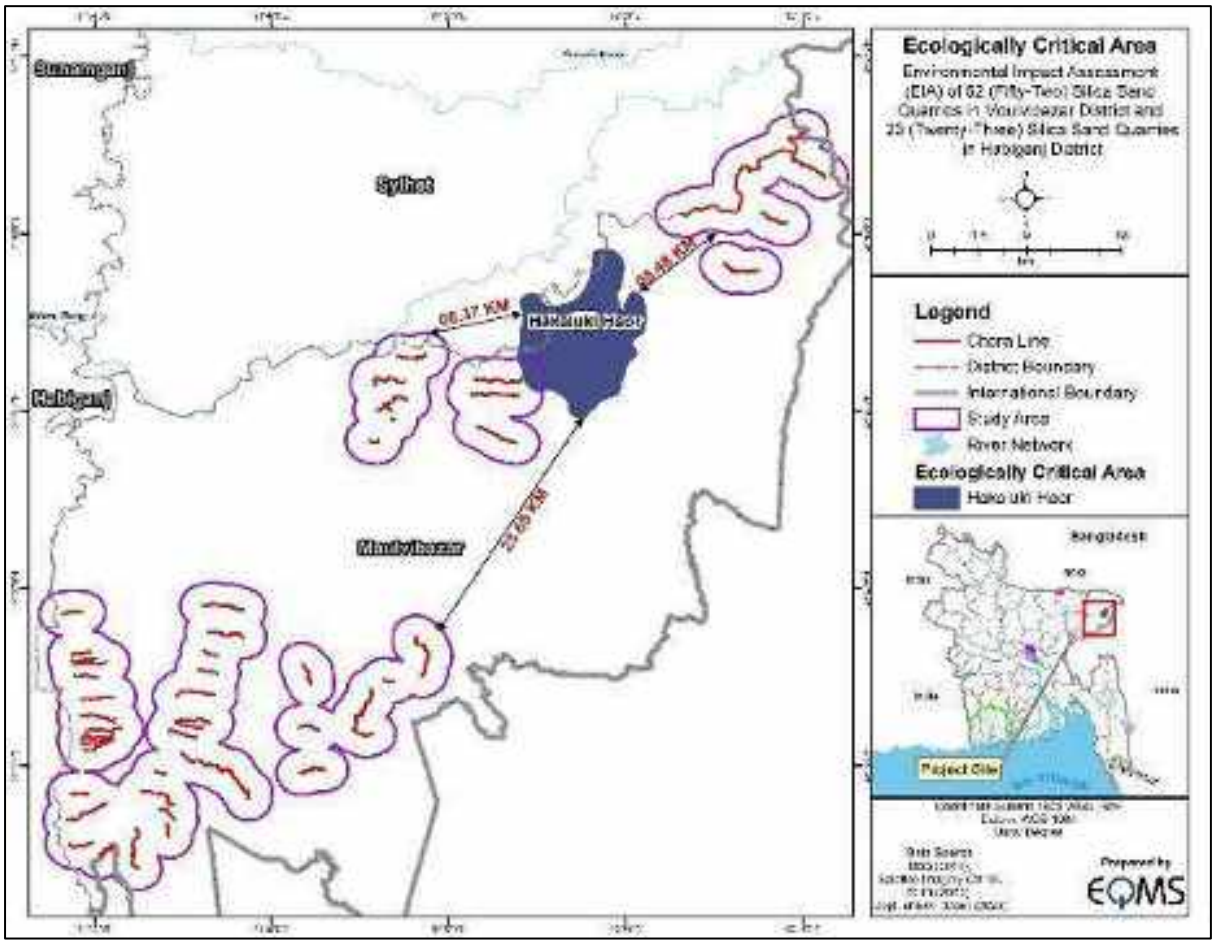


Source: GIS and RS Department, EQMS, January 2025

4.6.2 Ecologically Critical Areas (ECAs)

The Ministry of Environment, Forest and Climate Change (MOEFCC) has designated thirteen (13) areas as Ecologically Critical Areas (ECAs). The closest ECA is Hakaluki Haor which touched the 2 km buffer area boundary from the sand quarry. Figure 4-20 shows the ECA map of the proposed project.

Figure 4-21: Location Map of ECA from Project AOI

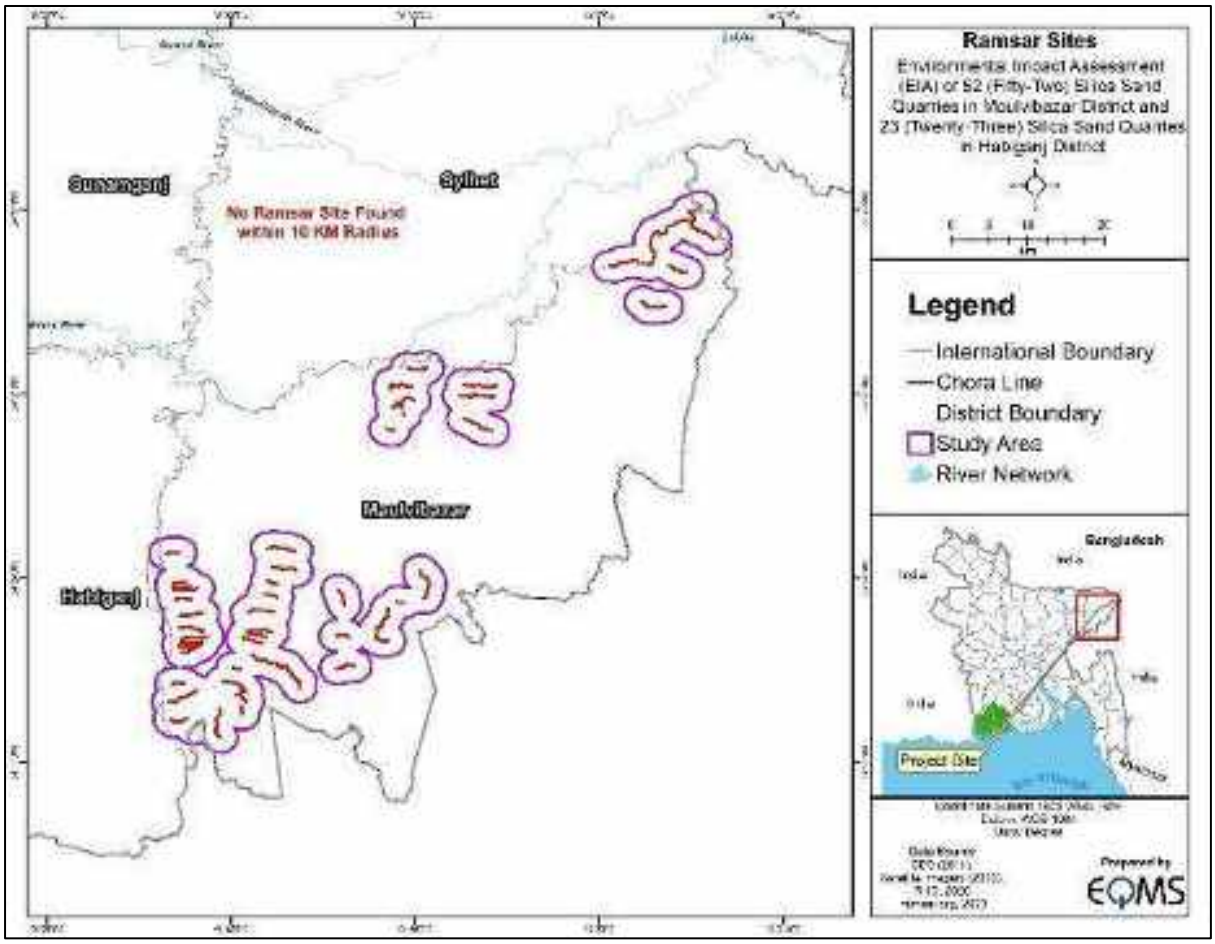


Source: GIS and RS Department, EQMS, January 2025

4.6.3 Ramsar Sites

A Ramsar site is a wetland site designated to be of international importance under the Ramsar Convention. Bangladesh currently has two (2) sites designated as Wetlands of International Importance (Ramsar Sites) with a combined surface area of 611,200 hectares: the Sundarbans Reserved Forest and Tanguar Haor. However, there is no Ramsar site within the study area. Figure 4-22 shows the location of Ramsar Sites.

Figure 4-22: Location Map of Ramsar Sites from Project AOI



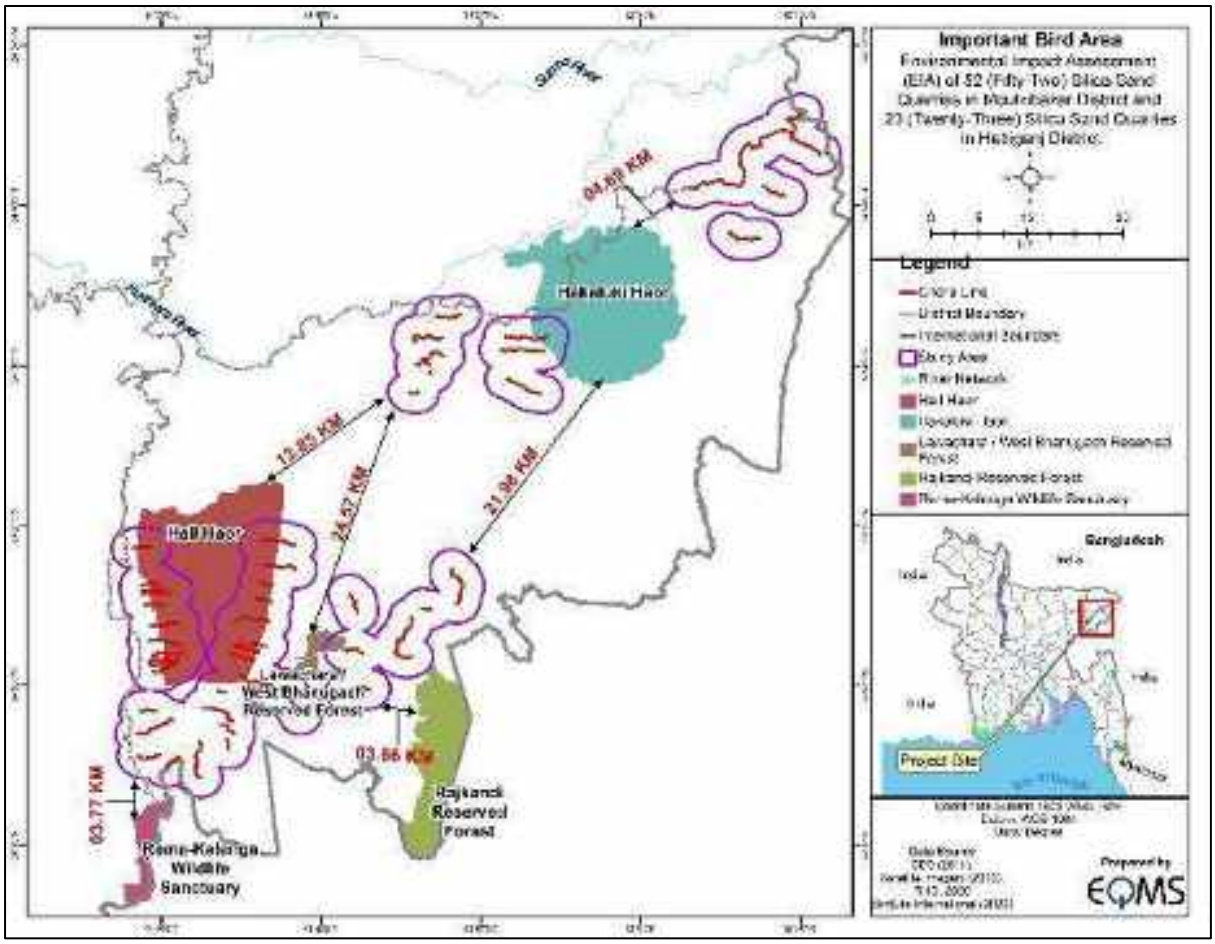
Source: GIS and RS Department, EQMS, January 2025

4.6.4 Important Bird and Biodiversity Areas (IBAs)

According to BirdLife International (2024), there are twenty (20) Important Bird & Biodiversity Areas (IBAs) in Bangladesh[5]. The Important Bird and Biodiversity Areas (IBA) are Hakaluki Haor and Hail Haor which touched the 2 km buffer area boundary from the sand quarry. Rajkandi Reserve Forest and Lawachara West Banugacha Reserve Forest also touched the 2 km buffer area boundary from the sand quarry. The locations and aerial distances of these IBAs from the project site are illustrated in Figure 4-23.

[5]BirdLife International (2025) Important Bird Areas factsheet: Jamuna-Brahmaputra River. Downloaded from http://www.birdlife.org on 10/002/2025.

Figure 4-23. Important Bird and Biodiversity Area (IBA) near the Project Site



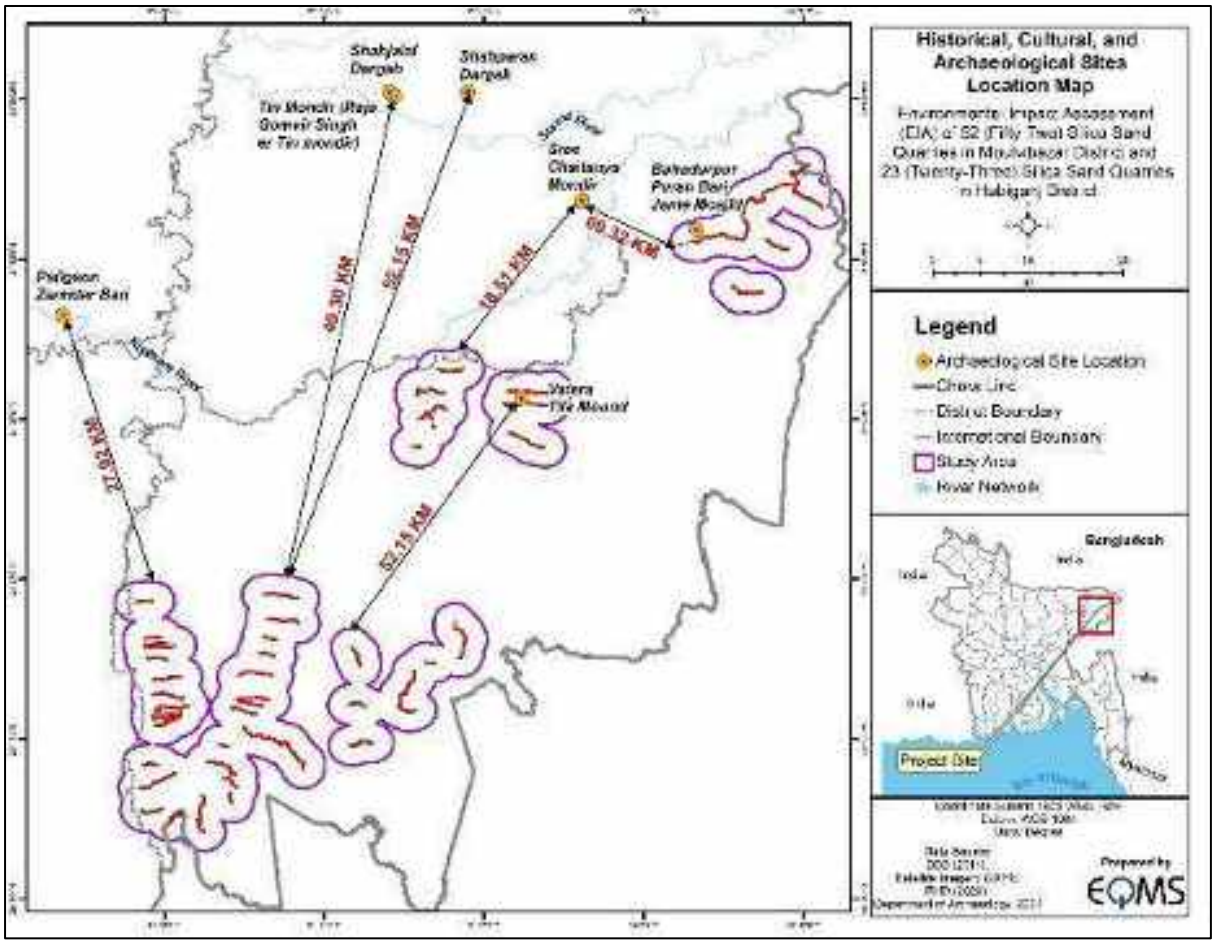
Source: BirdLife International (2025)

4.7 Cultural Resources

4.7.1 Archaeology

There are no significant archaeological and historical structures in and around the project site. The archaeological sites are Bahadurpur Puran Bari Jame Mosjid Jomider Bari and Vatera Tila Mound which are inside 2km buffer area. The distance and location of the archaeological site from the project location are depicted in Figure 4-24.

Figure 4-24: Archaeological Site of the Study Area



Source: Department of Archaeology

CHAPTER 5

Socio-economic Environment

5 SOCIO-ECONOMIC ENVIRONMENT

5.1 Socio-economic Environment

The socio-economic conditions of the people of the project area in 2011 will provide sound reference and assess probable socio-economic impact of the proposed interventions. This will enable us to compare the changes and impacts of the project interventions in present. The socio-economic baseline scenario describes the socio-economic characteristics of project area based on secondary data which was collected during Population and Housing Census of 2011. The socio-economic characteristics include administrative area, demographic, household size, education, occupation, housing, employment opportunity, access to water and sanitation status etc.

5.1.1 Administrative Area and Location

The proposed "52 Silica Sand Quarries in Moulvibazar" project is located in the Moulvibazar under Sylhet division. Based on the assessment of the project, its surroundings, and its area of influence, the social study will focus on a 500-meter core area and extend up to 2 kilometers on both sides of the sand quarries. **Table** 5-1 shows the study area of the project across Upazilas, Districts and Divisions.

Table 5-1: Administrative Boundary of the Study Area

Division	District	Upazila
Sylhet	Habiganj	Bahubal
		Nabiganj
		Chunarughat
	Sylhet	Balaganj
		Beani Bazar
		Fenchuganj
	Maulvibazar	Barlekha
		Kamalganj
		Kulaura
		Maulvi Bazar Sadar
		Rajnagar
		Sreemangal

The project study area lies within the administrative boundaries of Twelve (12) Upazilas across three districts—Habiganj, Moulvibazar, and Sylhet—located within the Sylhet divisions.

5.1.2 Demography

In the study area, there are about 6,09,128 households with a total population of 32,93,974 that might be influenced by the implementation of the proposed project. The average sex ratio[6] is 96.6 whereas the national average sex ratio is slightly higher (99.7[7]). The average household size is 5.4 which is

[6] The sex ratio is the ratio of males to females in a population. (Source: Wikipedia)

[7] Population and Housing Census, BBS, 2011

higher than the national average household size (4.4[8]). The demography of the study area is shown in the following **Table** 5-2**.**

Table 5-2: Demography of the Study Area

District	Upazila	Total Pop	Total HHs	Avg. HH size	Sex Ratio
Habiganj	Bahubal	1,97,997	37,334	5.3	98
	Nabiganj	3,45,179	61,770	5.6	97
	Chunarughat	3,02,110	61,132	4.9	95
Sylhet	Balaganj	3,20,227	54,246	5.9	97
	Beani Bazar	2,53,616	42,119	6	96
	Fenchuganj	1,04,741	18,859	5.5	95
Moulvibazar	Barlekha	2,57,620	44,192	5.8	93
	Kamalganj	2,59,130	51,895	5	97
	Kulaura	3,60,195	66,465	5.4	95
	Maulvi Bazar Sadar	3,42,468	62,881	5.4	101
	Rajnagar	2,32,666	43,070	5.4	95
	Sreemangal	3,18,025	65,165	4.9	100
Total		**32,93,974**	**6,09,128**	**5.4**	**96.6**

Source: Population and Housing Census, BBS, 2011

5.1.2.1 Ethnic Composition

Based on the 2011 Population and Housing Census, the ethnic composition data from the study area shows a total of 22,952 households with an ethnic population of 1,07,313 individuals, almost evenly split between males (53,386) and females (53,927). The Monda ethnic group is the most populous, with 26,845 members, followed by Sawntal (13,424) and Orao (6,890). A notable number of individuals 60,154 are categorized as 'Others', indicating a presence of diverse but less numerous ethnic groups. The following **Table** 5-3 indicates the various ethnic composition of the project study area.

Table 5-3: Ethnic Profile of the Study Area

Upazila	HH	Ethnic Population			Ethnic Population in main groups			
		Total	Male	Female	Monda	Sawntal	Orao	Others
Bahubal	1,732	8,268	4,225	4,043	341	1,368	72	6,487
Nabiganj	1,40	694	342	352	0	0	0	694
Chunarughat	8,701	39,286	19,589	19,697	8,088	3,157	1,668	26,373
Balaganj	2	9	3	6	9	0	0	0
Beani Bazar	6	15	10	5	12	0	0	3
Fenchuganj	168	872	437	435	0	0	0	872
Barlekha	1,270	6,370	3,193	3,177	487	1,813	867	3,203
Kamalganj	5,114	23,134	11,082	12,052	15,672	1,046	916	5,500

[8] Population and Housing Census, BBS, 2011

Kulaura	2,159	11,804	5,984	5,820	375	4,311	341	6,777
Maulvi Bazar Sadar	321	1,613	824	789	1,071	14	56	472
Rajnagar	372	1,788	896	892	55	50	174	1,509
Sreemangal	2,967	13,460	6,801	6,659	735	1,665	2,796	8,264
Total	**22,952**	**1,07,313**	**53,386**	**53,927**	**26,845**	**13,424**	**6,890**	**60,154**

Source: Population and Housing Census, BBS, 2011

5.1.3 Public Utilities

5.1.3.1 Water Supply

At the project study area, the major source of drinking water is tube-well, where about 78.5% population use tube-well water. About 4.7% people have access to tap water. Other 16.8% people have access to other sources of drinking water. An overview is depicted in below **Table** 5-4.

Table 5-4: Sources of Drinking Water in the Study Area

Upazila	Number of HHs	Source of Drinking Water (%)		
		Tap	Tube-well	Other
Bahubal	37,334	0.5	91.3	8.2
Nabiganj	61,770	1.1	80.7	18.2
Chunarughat	61,132	3	85.4	11.6
Balaganj	54,246	2.1	68.6	29.3
Beani Bazar	42,119	8.6	82.1	9.2
Fenchuganj	18,859	12.6	81	6.4
Barlekha	44,192	2.7	67.9	29.4
Kamalganj	51,895	2.5	76	21.5
Kulaura	66,465	3.8	71.1	25.1
Maulvi Bazar Sadar	62,881	11.7	77.3	11
Rajnagar	43,070	1.3	82.6	16.2
Sreemangal	65,165	6.5	77.8	15.8
Total	**6,09,128**	**4.7**	**78.5**	**16.8**

Source: Population and Housing Census, BBS, 2011

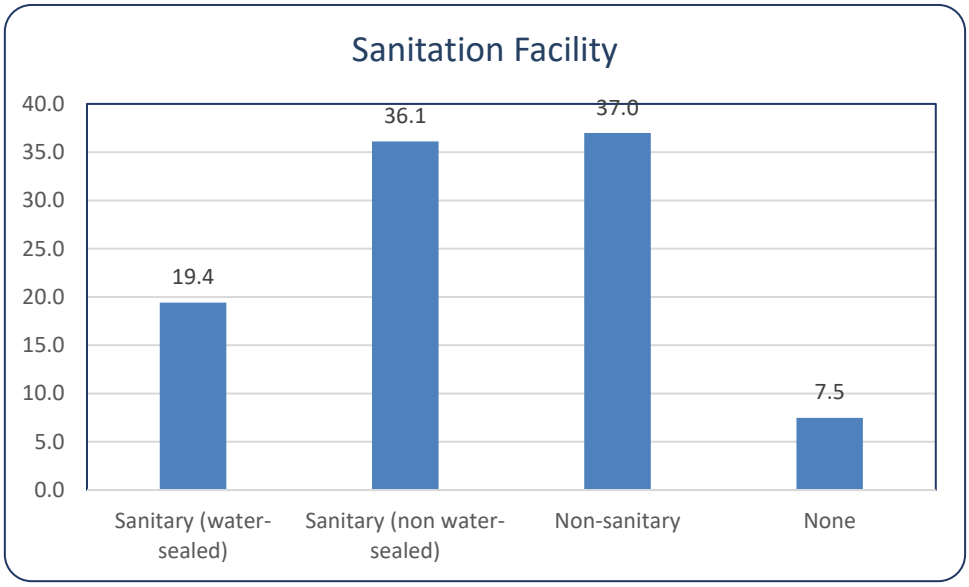
5.1.3.2 Electricity

Electricity is an important indicator for measuring quality of life. In the study area, on average 52.2% of households have grid electricity connections.

5.1.3.3 Sanitation

In the study area, households that use water-sealed sanitary latrine and non-water-sealed sanitary latrine facility are 19.4% and 36.1% respectively. Whereas around 37.0% households avail non-sanitary facilities. The rest 7.5% households have no access to hygienic latrine facilities. The following **Figure** 5-1 shows sanitation facility of the project area.

Figure 5-1: Sanitation Facility in the Study Area



Source: Population and Housing Census, BBS, 2011

5.1.3.4 Health Care Facility

According to the District Statistics (2011), there are 50 Private Hospitals in Twelve (12) Upazilas with 209 MBBS/FCPS doctors in the study area. Also, 61 diagnostic centers are found in the proposed study area. Following **Table** 5-5 shows the healthcare facility of the project area.

Table 5-5 Health Care Facility

Upazila	Private Hospital	Diagnostic	MBBS/FCPS
Bahubal	0	1	9
Nabiganj	0	3	13
Chunarughat	13	3	15
Balaganj	1	5	42
Beani Bazar	3	5	24
Fenchuganj	0	2	6
Barlekha	1	4	29
Kamalganj	1	2	10
Kulaura	6	6	12
Maulvi Bazar Sadar	22	23	32
Rajnagar	0	1	5
Sreemangal	3	6	12
Total	**50**	**61**	**209**

Source: District Statistics Census, BBS, 2011

5.1.4 Economy and Employment

Agriculture, comprising crop cultivation, fisheries, direct farming, sharecropping, agricultural laborers, and so on, is the most common source of employment in the study area, according to the Population and Housing Census (2011). Agriculture employs approximately 67.4% males and 42.9% females. Furthermore, a sizable proportion of the study area's population (24.9% male and 38.6% female) is employed in the service sector. In addition, the industrial sector employs 7.7% male and 18.5% female. The following Table 5-6 shows the employment status of the project area.

Table 5-6: Employment status of the Study Area

Upazila	Population Aged 7+, not attending school but employed			Field of Activity					
				Agriculture		Industry		Service	
	Total	Male	Female	Male	Female	Male	Female	Male	Female
Bahubal	26,937	23,476	3,461	84.4	67.3	6.0	18.0	9.6	14.7
Nabiganj	39,400	36,879	2,521	76.8	31.5	5.2	11.9	18.0	56.6
Chunarughat	39,771	31,270	8,501	81.9	85.4	4.0	4.0	14.1	10.6
Balaganj	28,829	27,064	1,765	69.7	30.8	3.5	3.1	26.8	66.1
Beani Bazar	17,145	15,408	1,737	55.1	20.9	10.8	9.3	34.0	69.8
Fenchuganj	8,959	7,825	1,134	58.7	34.0	8.1	31.0	33.3	34.9
Barlekha	2,223	18,488	3,735	57.4	26.5	10.2	30.5	32.3	42.9
Kamalganj	31,903	23,718	8,185	57.4	31.4	11.1	29.6	31.6	39.0
Kulaura	35,827	30,351	5,476	78.3	63.3	8.3	19.0	13.3	17.6
Maulvi Bazar Sadar	31,214	28,201	3,013	53.0	28.9	5.7	3.4	41.3	67.7
Rajnagar	24,163	20,196	3,967	71.6	35.8	11.5	43.3	16.9	21.0
Sreemangal	43,100	31,357	11,743	64.6	58.9	7.7	18.3	27.7	22.7
Total	**3,29,471**	**2,94,233**	**55,238**	**67.4**	**42.9**	**7.7**	**18.5**	**24.9**	**38.6**

Source: Population and Housing Census, BBS, 2011

CHAPTER 6
Analysis of Alternatives

6 ANALYSIS OF POTENTIAL ALTERNATIVES

The project has been considered and investigated for several alternatives to reduce the environmental and social impacts. The alternatives assessed were not limited to environmental and social aspects, but the assessment also included the technical aspects of different sand extraction and sand transportation options.

An analysis of these alternatives has been undertaken for the proposed project including consideration of a no-Project scenario. The no-go option, or no sand extraction for the proposed project, is based on the supposition that the project won't proceed. No environmental or social repercussions would be caused by this choice of location or neighborhood.

6.1 No Project Scenario

From a purely physical environmental point of view, the “do-nothing” is preferable to any project implementation, since it would avoid the creation of any of the adverse impacts associated with the project. But sand extraction is important for keeping the water flow channel in the river and canal properly. If the sand extraction in the sand quarries (located in the river, canal, and water body) of the proposed locations is prohibited then there is a change of sand filling in the adjacent agricultural land, and water flow in the river and canal will be diverted. It is concluded that the “No build” alternative is unacceptable and the potential socio-economic benefits of implementation of such a project far outweigh the adverse impacts which are minor and temporary and can be controlled and minimized to an acceptable level.

6.2 Suitability of the Site

All the fifty-two silica sand quarries in the Moulvibazar District have been gazette by the Government of Bangladesh. So, the locations of the Sand Quarries are fixed for the proposed project. There is no alternative analysis in terms of locations as locations are gazette by the Government of Bangladesh.

The following matter is considered for the proposed project.

Available Land Area: All the lands are government-owned khas land.

Existing Land Use: Currently, the lands are barren land (low water bodies, rivers, and canals).

Approach Road: The Silica Sand Quarries are accessible through river ways and some Silica Sand Quarries are accessible via earthen roads and pavement roads.

6.3 Alternative Technologies

To avoid or minimize the impacts resulting from the activities of the project, BMD authority is expected to adopt appropriate technological design, improvements or adjustments, and policies including good sand extraction practices. There are two conventional ways of sand extraction practices for this project.

- Manual sand extraction
- Using an excavator for sand extraction

Option	Positive	Negative
Manual sand extraction	• Easy to follow • No need for fuel-run machinery for extraction • Less environmental impact	• Sands extraction is human dependent • Time-consuming practices • Not suitable for large-scale sand extraction

Option	Positive	Negative
	• Suitable for small-scale sand quarries	• May impact human health
Using an excavator for sand extraction	• Suitable for large-scale sand quarries • Time shaving practice • Accessible in the shallow water body • Cost-effective	• Need technical knowledge for operator • Higher environmental impact • Need of fuel for machinery for extraction • Not suitable for small-scale sand extraction • Not accessible in the middle of rivers, canals, and ponds where has depth water body

After analyzing the two methods of sand extraction for the proposed project, manual sand extraction is more convenient than mechanical extraction. The study team preferred manual sand extraction for the proposed project but if the sand volume is higher and accessible for the sand excavators then the sand extractors can use mechanical methods as well.

6.4 Silica Sand Transportation

The transportation options depend on the silica sand quarry locations. There are two alternative ways of transportation of the silica sand, they are

- River network
- Local road network

Option	Positive	Negative
River network	• Easy to use • Less environmental impact • Suitable both for large-scale and small-scale sand quarries • Low-cost option • Can transport huge volumes of sand at a time	• It depends on the navigation of the riverways. • Not suitable in shallow riverways
Local road network	• Suitable for large-scale and small-scale sand quarries • Time-saving practice and faster transport	• Not accessible in the water body • High-cost practice • Higher environmental impact • May impact agricultural land for earthen road • Damage to local roads due to truck movement • Accident risk for the local community • Traffic congestion in local road

After analyzing the two methods of sand transportation for the proposed project, a river network is preferable where applicable. If the river network is not suitable for any location, the local road network will be used for sand transportation. So, both options will be applicable to this project.

CHAPTER 7

Identification and Evaluation of Potential Impacts

7 IDENTIFICATION AND EVALUATION OF POTENTIAL IMPACTS

Assessment of potential impacts is based on activities that will be involved in the implementation of the project, nature, and extent of the proposed activities, and the present environmental setting of the project area.

7.1 Impact Assessment Methodology

7.1.1 Impact Evaluation

7.1.1.1 Nature of the Impact

The nature of the impact will be primarily defined as positive or negative and then will be categorized as direct and indirect. An assessment of the potential impact will be made on the lifecycle of the project or activities (quarrying phase).

The terminology used in this report to define the nature of an impact is presented below.

- **Positive:** an impact that is considered to represent an improvement on the baseline condition or introduces a positive change.
- **Negative:** an impact that is considered to represent an adverse change from the baseline condition or introduces a new undesirable factor.
- **Direct impact:** impacts that can be directly and distinctly attributed to environmental and social parameters.
- **Indirect impact:** impacts that may be associated with a particular impact on a certain environmental or social parameter (not part of the project or activities).

7.1.1.2 Assessing Significance

Once the nature of the impact has been identified, significance was determined for potential positive or negative impacts. For the assessment, impact significance is determined by considering the consequences and probability of the impact occurring. The impact consequence is a function of impact geographical extent, duration, severity, and reversibility. The criteria used by the consultant to determine impact significance are summarized in the following sections.

A. Geographical Extent of Impact

This indicates the spatial area that may be affected by the project activities or its associated facilities (Table A).

Table -A: Geographical extent of impact

Extent	Description
Project Site	Potential E&S impacts area covers only at or within the project site/boundary.
Local	Potential E&S impacts area extends not only to the project site/boundary but also its immediate surrounding areas.
Regional	Potential E&S impacts area extends to the immediate surrounding areas along with adjacent areas.
Provincial	Potential E&S impacts area extends to the regional to provincial scale as determined by administrative boundaries, and habitat type.
National/Transboundary	Potential E&S impacts area extends to the national/transboundary level. Nationally important environmental resources or a nationally important area will be affected. Impact is also considered not only at the national level but also in

Extent	Description
	neighboring countries. Internationally important resources such as areas protected by international conventions will be affected.

B. Duration of Impacts

Duration: this measures the lifetime/existence/continuation of the impact (Table B).

Table -B: Duration of Impact

Duration	Description
Temporary	Potential E&S impacts are anticipated to be intermittent/occasional.
Short Term	Potential E&S impact duration is limited time, or impacts are anticipated to be of short duration (less than 3 years).
Medium Term	Potential E&S impact duration is medium or will continue after the construction period but stop/discontinue/cease within a tenure of 3-10 years.
Long term	Potential E&S impact duration will continue for more than 10 years, or the entire operational life of the project, but cease when the project stops operation.
Permanent	Potential E&S impacts that will cause a permanent change in the affected receptor or resource, remain after the operational life of a project.

C. Severity of Impacts

This is the degree to which the project affects or changes the environment; it includes a measure of the reversibility of impacts (Table C).

Table -C: Severity of Impact

Severity	Description
Negligible	Changes due to potential E&S impact are minor, not visible/noticeable, natural functioning of the environment is not affected.
Low	Natural functioning of the environment is minimally affected. Natural, cultural, and social functions and processes can be reversed to their original state if mitigation measures are taken.
Moderate	Environment remarkably distorted/ disturbed/ impacted, still functions, if in a modified way. Negative impacts cannot be fully reversed.
High	Cultural and social functions and processes distorted/disturbed/impacted - potentially ceasing to function temporarily.
Very High	Natural, cultural, and social functions and processes are permanently stopped/discontinued, and valued, important, sensitive, or vulnerable systems or communities are substantially affected. Negative impacts cannot be reversed.

D. Reversibility of Impacts

This is the degree to which the project will cause a loss of resources that are recoverable (Table D).

Table -D: Reversibility of Impact

Reversibility	Description
Reversible	Potential E&S impact affects the environment in such a way that natural functions and ecological processes can regenerate naturally. Communities can adapt with relative ease and maintain pre-impact livelihoods.

Reversibility	Description
Recoverable	Resources can be restored with effort. The affected environment is altered but natural functions and ecological processes may continue or recover with human input. Able to adapt with some difficulty and maintain pre-impact livelihoods but only with a degree of support or intervention.
Irreversible	There is no potential for replacing a particularly vulnerable resource that will be impacted. Natural functions or ecological processes are altered to the extent that it will permanently cease. Affected communities will not be able to adapt to changes and continue to maintain pre-impact livelihoods.

E. Probability of Impacts

This is the likelihood or the chance that the impact will occur (Table E).

Table -E: Probability of Impact

Probability	Description
Improbable	Under normal conditions, no potential E&S impact is anticipated.
Low	The probability of the impact occurring is low due to its design or historical experience.
Medium	There is a distinct probability of the impact occurring.
High	It is most likely that the impact will occur.
Definite	The impact will occur regardless of any prevention measures.

G. Consequence

The consequence of the impact is derived from factors including geographical extent, duration, severity, and reversibility. The consequence is calculated as ***geographical extent + duration + Severity + Reversibility.***

H. Significance

The significance of an impact was rated by combining the consequences of the impact and the probability of occurrence ***(i.e., Significance of Environmental/Social Impact = Consequence x Probability).*** The maximum value that can be obtained is 100 significance points (Table F).

Table -F: Impact Significance Definitions

Score	Significance Definitions	Negative Ratings	Positive Ratings
>25	An impact of negligible E&S impact significance is where a resource will not be affected in any way by a particular activity, or the predicted effect is deemed to be negligible or indistinguishable from natural background levels.	Negligible	Negligible
26 - 49	An impact of low significance is one where an effect will be experienced, but the impact magnitude is sufficiently small and for negative impacts, well within accepted standards, and/or the receptor is of low sensitivity.	Low	Low
50 - 75	An impact of moderate significance is one where an effect will be within accepted limits and standards. The impact on the receptor will be noticeable and the normal functioning altered, but the baseline condition prevails, albeit in a modified state. The	Moderate	Moderate

Score	Significance Definitions	Negative Ratings	Positive Ratings
	emphasis for moderate impacts is on demonstrating that the negative impact has been reduced to a level that is as low, or positive impacts enhanced as far as reasonably practicable. This does not necessarily mean that "moderate" impacts have to be reduced to "low" impacts, but that moderate impacts are being managed effectively and efficiently to not exceed accepted standards. In the same way, moderate positive impacts may not be able to be enhanced to have high positive impacts.		
76 - 100	An impact of high significance is one where an effect will exceed the accepted limit or standard, or large-magnitude impacts occur to highly sensitive resources. An impact with high significance will completely modify the baseline conditions.	High	High

7.1.2 Residual Impact Evaluation

Once mitigation is declared, the next step in the impact assessment process is to assign residual impact significance. This is essentially a repeat of the impact assessment steps discussed above, considering the assumed implementation of the additional declared mitigation measures.

7.2 Impact Identification

The potential impacts have been identified through a systematic process whereby the activities (both planned and unplanned) associated with the project have been considered with respect to their potential to interact with environmental and social resources or receptors.

The interaction matrix enables a methodical identification of the potential interactions each project activity may have on the range of resources/receptors within the area of influence i.e., the study area of the project. The interaction matrix for the project activities and likely impacted resources/receptors is presented in Table 7-1.

Table 7-1: Impact Matrix of Fifty-Two Silica Sand Quarries in the Moulvibazar District

Project Activities	Potential Impacts																											
	Physical Resources											Biological Resources				Socio-economic Resources								Community Health						
	Air Quality	Noise	Vibration	Surface water quality	Groundwater resource	Groundwater quality	Soil resources	Sediment quality	Land use	Drainage pattern	Aesthetics	Vegetation/forest cover	Wildlife	Aquatic fauna	Protected areas	Demographic (incl. Physical displacement)	Economy and livelihood	Occupational health and safety	Employment	Infrastructure and service	Cultural resources	Education and skills	Agriculture/cash crops	Public transportation	Communicable/non-communicable disease	Vector-borne disease	Sexually transmitted disease	Healthcare/recreational facilities	Vulnerable groups	Seismicity
Mobilization of personnel, materials, and equipment	√	√					√										√	√	√				√						
Influx of labour																	√	√	√						√	√				
Sand excavation and extraction works	√	√		√			√			√				√				√												
Transportation of sand for stockpiling	√	√					√										√	√					√							
Transportation of sand from Stockpiling to the distribution channel	√	√					√										√						√	√						
Equipment and machinery	√	√																√												

Project Activities	Potential Impacts																												
	Physical Resources											Biological Resources				Socio-economic Resources								Community Health						
	Air Quality	Noise	Vibration	Surface water quality	Groundwater resource	Groundwater quality	Soil resources	Sediment quality	Land use	Drainage pattern	Aesthetics	Vegetation/forest cover	Wildlife	Aquatic fauna	Protected areas	Demographic (incl. Physical displacement)	Economy and livelihood	Occupational health and safety	Employment	Infrastructure and service	Cultural resources	Education and skills	Agriculture/cash crops	Public transportation	Communicable/non-communicable disease	Vector-borne disease	Sexually transmitted disease	Healthcare/recreational facilities	Vulnerable groups	Seismicity
operation in the quarry site																													
Use of utilities like water, fuel, etc	√			√			√							√				√											
Maintenance and replacement of tools, vehicles, and equipment	√	√																√					√						
Disposal and management of solid, liquid, and hazardous wastes.				√			√							√				√					√	√	√				
Traffic Management during sand transportation	√	√																√					√						

7.2.1 Positive Impacts

7.2.1.1 Employment Opportunities

The overall impacts on the employment opportunity arising during the quarrying phase due to the proposed project are likely to be direct to the local community and sand extraction workers.

- Local people will get employment opportunities due to the project's quarrying and operational works.
- Increased movements due to project activities will give a chance to local transport to earn more money due to the project activities.
- Local unemployed people may start small businesses near the project site to improve their living standards.

Therefore, the significance of impacts on employment opportunities from quarrying activities during the project quarrying phase is evaluated to be **Negligible** mentioned in Table 7-2**.** With the enhancement measures the significance of the impact will be **Negligible**.

Table 7-2: Significance of impacts on livelihood from quarrying activities and enhancement measure

	Extent	Duration	Intensity	Reversibility	Probability	Significance
Without Enhancement Measures	Local	Short-term	Low	Reversible	Low	Negligible
Enhancement Measures	Local people should get preference during the recruitment process.					
	Extent	Duration	Intensity	Reversibility	Probability	Significance
With Enhancement Measures	Local	Short-term	Low	Reversible	Low	Negligible

7.2.1.2 Economic Enhancement

The overall impacts on the employment opportunity arising during the quarrying phase due to the proposed project are likely to be direct to the local community and sand extraction workers.

- The local economy will be enhanced by creating opportunities for business enhancement.
- Local real estate infrastructure and businessmen will benefit from the availability of the sand.
- The project will help the government to generate revenue.

Therefore, the significance of impacts on economic enhancement from quarrying activities during the project quarrying phase is evaluated to be **Negligible** mentioned in **Table** 7-3. With the enhancement measures the significance of the impact will be **Negligible**.

Table 7-3: Significance of impacts on livelihood from quarrying activities and enhancement measure

	Extent	Duration	Intensity	Reversibility	Probability	Significance
Without Enhancement Measures	Local	Short-term	Low	Reversible	Low	Negligible
Enhancement Measures	Buy materials and services from local businesses to enhance the economy.					
	Extent	Duration	Intensity	Reversibility	Probability	Significance

With Enhancement Measures	Local	Short-term	Low	Reversible	Low	Negligible

7.2.1.3 Impact on Aquatic Ecosystem

In the quarrying phase, properly managed sand quarries can offer several positive impacts on the aquatic ecosystem. The sources of the positive imnpacts are as follows.

- Improved Water Flow Management
- Habitat Restoration
- Controlled Siltation & Sediment Management
- Increased Water Retention & Recharge

Fish populations and aquatic flora of the Chora and waterbodies where the Chora drains.

Properly regulated silica sand extraction can lead to the maintenance and enhancement of the natural drainage system, ensuring that hill streams (Chora) continue to function effectively. Implementing erosion control measures can help maintain the natural sediment balance, preventing excessive siltation that could otherwise harm aquatic habitats.

As water bodies refill, they can create new aquatic habitats that support biodiversity, offering breeding and feeding grounds for fish and other aquatic species. The restoration of water flow and the reduction of aquatic macrophyte clogging could improve water quality and oxygen levels, benefiting both aquatic plants and animals. Over time, the re-established water bodies could also support local fisheries, improving sustainable fishing practices and contributing to the overall health of the aquatic ecosystem.

Therefore, the significance of impacts on aquatic ecosystems from quarrying activities during the project quarrying phase is evaluated to be Negligible mentioned in Table 7-4. With the enhancement measures the significance of the impact will be Low.

Table 7-4: Significance of impacts on aquatic ecosystem from quarrying activities and enhancement measure

	Extent	Duration	Intensity	Reversibility	Probability	Significance
Without Enhancement Measures	Project Site	Temporary	Low	Reversible	Unlikely	Negligible
Enhancement Measures	• Sand lifting prevents sedimentation to maintain the natural structure of Chora consequently prevents sedimentation in the waterbodies where they fall. • Excavating sand helps to maintain the regular and natural flow of water in the Chora which is also important for the availability of water in the waterbodies where they drain. • Excavating sand for the quarries encourages water clotting • Sand excavation improves the nutrient transportation through the Chora and destinated waterbodies.					
	Extent	Duration	Intensity	Reversibility	Probability	Significance
With Enhancement Measures	Local	Short-term	Low	Recoverable	Medium	Low

7.2.1.4 Water Resources

Sand extraction activities in the Choras of Sreemangal, Kamalganj, Rajnagar, Baralekha, Kulaura and Sadar Upazilas in the Moulvibazar District of Sylhet are expected to yield positive environmental benefits for the local water resource systems. Controlled sand extraction will help reduce flood risks

and mitigate excessive sediment deposition by increasing the flow capacity of streams, thereby preventing localized flooding during heavy rainfall. This process will aid in the restoration of natural flow paths, ensuring efficient drainage and reducing waterlogging caused by altered flow patterns.

Additionally, sand extraction will help prevent excessive sedimentation in downstream rivers, wetlands, lakes, and Haors, preserving their ecological balance. Furthermore, controlled extraction will contribute to reducing channel migration and erosion, stabilizing stream banks, and promoting a more balanced sediment transport system.

The potential impacts of sand extraction in the concerned Choras of Moulvibazar District will influence both abiotic and biotic environments. Abiotic receptors such as rivers and streams, floodplains and wetlands (haors, lakes, and reservoirs), riverbanks and channel morphology, and groundwater recharge areas may be affected by extraction activities.

Additionally, infrastructure and the built environment, such as bridges, roads, and flood embankments, will benefit from reduced sedimentation and enhanced stability.

The potential direct positive impacts from the sand extraction activities in the Choras will be as follows:

- Restores natural flow capacity, reducing flood and waterlogging risks.
- Prevents downstream siltation in wetlands, haors, lakes, and rivers.
- Enhances surface water flow and reduces the risk of channel migration.
- Stabilizes riverbanks, protecting nearby agricultural lands, tea gardens, forest lands, and village settlements.
- Reduces stagnant water, minimizing health risks like waterborne diseases.
- Supports the replenishment of aquifers, ensuring sustainable water availability.

Given the project's geographic extent and the temporary nature of its impacts, the severity remains negligible over time, with a low probability under the 'Without Enhancement Measures' condition. However, after implementing the 'With Enhancement Measures' condition, the impact assessment based on the impact matrix indicates a ***'Definite'*** impact, signifying a ***'High'*** level of significance for the following Choras:

- In **Sreemangal** Upazila: Bhurbhuriya, Joinka, Khai, Jag Chora (West Part), Jag Chora (East Part), Sumoi, Sumoi, Shaon, Narayan, Langlia, Udna, Bilas, Dingdinga, Putia, Noluya, Gandhi, Amrail, Alia, Makri, Shuary, Patria, Jaita, Ichamati, Boula, Kali, Jholom and Boro Chora will impose positive impacts.
- In **Kamalganj** Upazila: Longo, Jhopla, Jalia, Kala (well known as Lagata Chora), Dhamalia, Dewra, and Shun Chora will impose positive impacts.
- In **Rajnagar** Upazila: Marua, Kalamua, Jamira, Har, Dhamai, Puranli Chora will impose positive impacts.
- In **Baralekha** Upazila: Jalongha, Sunai, Dew, Satma and Rathi Chora will impose positive impacts.
- In **Kulaura** Upazila: Dew Chora, Buba, Ghagda, and Boro Chora will impose positive impacts.
- In **Sadar** Upazila: Deora, and Moura Chora will impose positive impacts.

The overall impact significance and analysis under "*without enhancement measures*" and "*with enhancement measures*" have been presented in Table 7-5. The overall impact matrix shows "***High***" impact significance in terms of positive environmental impacts by the sand extraction activities.

Table 7-5: Significance of positive impacts on water resources from sand extraction activities and enhancement measures

	Extent	Duration	Intensity	Reversibility	Probability	Significance

Without Enhancement Measures	Project Site	Temporary	Negligible	Reversible	Low	Negligible
Enhancement Measures	• Ensuring optimal sediment removal rates to maintain streamflow capacity and prevent over-extraction by contractor • Controlling extraction near riverbanks • Scheduling seasonal extraction (Yearly and depends on sediment deposition)					
	Extent	Duration	Intensity	Reversibility	Probability	Significance
With Enhancement Measures	Provincial	Medium-term	Very High	Irreversible	Definite	High

7.2.1.5 Soil and Agricultural

Sand extraction activities will also enhance soil fertility and land productivity by minimizing sand deposition on agricultural lands along both banks, thereby improving crop yields because if the sands are deposited in the river, canal, ponds, and low water body each year then there has a change to deposited sand in the surrounding agricultural lands which will affect cultivation.

The overall impact significance and analysis under "*without enhancement measures*" and "*with enhancement measures*" have been presented in Table 7-6. Therefore, the significance of impacts on soil and agriculture from quarrying activities during the project quarrying phase is evaluated to be Negligible mentioned in Table 7-6. With the enhancement measures the significance of the impact will be Low.

Table 7-6: Significance of positive impacts on soil and agriculture from sand extraction activities and enhancement measures

	Extent	Duration	Intensity	Reversibility	Probability	Significance
Without Enhancement Measures	Local	Short-term	Low	Recoverable	Low	Negligible
Enhancement Measures	• Preventing sand deposition on nearby agricultural lands by yearly sand extraction from sand quarries. • Enforcing Buffer Zones – Maintaining a minimum 10–20m buffer from riverbanks to prevent erosion from agricultural land.					
	Extent	Duration	Intensity	Reversibility	Probability	Significance
With Enhancement Measures	Local	Short-term	Moderate	Recoverable	Medium	Low

7.2.2 Negative Impacts

7.2.2.1 Air Quality

Based on the project description and typical quarrying methods both manual sand extraction and using an excavator for sand extraction, impacts on air quality during sand extraction could arise from the following activities and conditions:

- Dust generation during the manual sand extraction from the project area
- Dust generation during the manual sand transportation for stockpile
- Wheel loader for excavating sand, loading the screener, and screening building stockpiles.
- Dust generation during the operation of sand extraction machinery.
- Loading truck trays from stockpiles.

- Traffic traversing unsealed worked areas and road surfaces.

Surrounding local communities and sand quarry workers are the receptors of air pollution.

The main potential direct impact of the proposed quarry operations as it relates to air quality is dust emissions. The dust has the potential to affect the health of workers, the resident population and vegetation.

Therefore, the significance of impacts on air quality from quarrying activities during the sand extraction is evaluated to be Negligible mentioned in **Table** 7-7. With the mitigation measures the significance of the impact will be Negligible.

Table 7-7: Significance of impacts on air quality from quarrying activities and mitigation measures

	Extent	Duration	Intensity	Reversibility	Probability	Significance
Without Mitigation Measures	Local	Short-term	Low	Reversible	High	Negligible
Mitigation Measures	• Ensure that equipment e.g., excavator is properly maintained so as to reduce air emissions. • Haul trucks must maintain speeds of 15 km/h or less. • Drop distances between buckets, screener decks, and truck trays will be kept to a minimum. • Trucks carrying silica sand off-site will have covers fitted.					
	Extent	Duration	Intensity	Reversibility	Probability	Significance
With Mitigation Measures	Local	Short-term	Low	Reversible	Low	Negligible

7.2.2.2 Noise Quality

Based on the project description and typical quarrying methods both manual sand extraction and using an excavator for sand extraction, impacts on noise quality during quarrying could arise from the following activities and conditions:

- Use of excavation machinery like front-end loaders, excavators, and backhoes.
- Movement of silica sand by trucks and trollers.

Surrounding local communities and sand extraction workers are the receptors of the noise pollution.

The main potential direct impact from the proposed quarry operations relates to noise from vehicle movement, haul trucks, and excavators may have a potential negative impact on surrounding residents.

Therefore, the significance of impacts on noise quality from quarrying activities is evaluated to be Negligible mentioned in Table 7-8. With the mitigation measures the significance of the impact will be Negligible.

Table 7-8: Significance of impacts on noise quality from quarrying activities and mitigation measures

	Extent	Duration	Intensity	Reversibility	Probability	Significance

Without Mitigation Measures	Local	Temporary	Low	Reversible	High	Negligible
Mitigation Measures	• Reduce unnecessary revving of vehicular engines • Use equipment that has low noise emissions as stated by the manufacturers. • Workers operating equipment that generates noise should be equipped with noise protection. • Avoid nighttime activities. People are more aware of vibration in their homes during the nighttime hours. Work hours will be from 7.00 am to 6 pm for 8 hours shift.					
	Extent	Duration	Intensity	Reversibility	Probability	Significance
With Mitigation Measures	Local	Temporary	Low	Reversible	Medium	Negligible

7.2.2.3 Soil Quality and Erosion

The proposed sand extraction project may affect the soil quality and erosion of the project area. The potential source of impact on soil quality could arise due to spillage of fuel, lubricant, solid waste, and sand from the storage site. River bank and canal bank erosion may arise during the sand extraction due to an increase in the depth of the water body.

The soil strata have higher permeability, thus allowing contamination at greater depth. Storm water run-off from the contaminated area can pollute the downstream soil and water quality of the receiving water body. The soil characteristics of the native soil may also be changed due to sand deposition during transportation and stockpiling. If the depth of sand extraction is higher than the changes of erosion on the banks of the water body will be higher.

Therefore, the significance of impacts on soil quality and erosion from quarrying activities during the sand extraction is evaluated to be Moderate mentioned in **Table** 7-9. With the mitigation measures the significance of the impact will be Negligible.

Table 7-9: Significance of impacts on noise quality from quarrying activities and mitigation measures

	Extent	Duration	Intensity	Reversibility	Probability	Significance
Without Mitigation Measures	Local	Long-term	High	Recoverable	High	Moderate
Mitigation Measures	• Implement a regular maintenance program for all equipment and machinery to prevent fuel spillage or leakage during sand extraction activities. • Manage spills of soil contaminants using standard engineering practices. • Use of spill or drip trays to contain spills and leaks, and use of spill control kits to clean small spills and leaks. • Training labor for waste disposal in designated areas and use of sanitation facilities. • Waste management measures should include provisions to contain and dispose of quarrying wastes, prohibit waste discharge on the ground, and practice recycling as far as practicable. • Sand extraction depth must be maintained at 1 to 10 meters as required for reducing erosion and must maintain proper slope.					

	• Enforcing Buffer Zones – Maintaining a minimum 10–20m buffer from riverbanks to prevent erosion.					
	Extent	Duration	Intensity	Reversibility	Probability	Significance
With Mitigation Measures	Local	Medium-term	Low	Recoverable	Low	Negligible

7.2.2.4 Biodiversity

7.2.2.4.1 Impact on Terrestrial Flora

The potential source of impact on the terrestrial ecosystem during the quarrying phase of the project is air. Terrestrial flora adjacent to the project area is the receptor.

During this phase, the transportation of Quarrying equipment (e.g., excavators, self-loaders) and vehicular movement within the project area may impact terrestrial flora. The primary concern is dust deposition on plant surfaces, which can disrupt essential physiological processes such as photosynthesis, and respiration, and potentially inhibit plants. However, the baseline study conducted in the project area did not identify any threatened terrestrial plant species.

Considering these factors, the impact on the terrestrial ecosystem due to the Quarrying activities can be assessed as low in Table 7-10.

Table 7-10: Significance of impacts on terrestrial ecosystem from quarrying activities and mitigation measure

	Extent	Duration	Intensity	Reversibility	Probability	Significance
Without Mitigation Measures	Local	Short-term	Moderate	Recoverable	Medium	Low
Mitigation Measures	• Regularly spray water on roads, extraction sites, and stockpiles to reduce dust emissions. • Cover transported sand and operation equipment with tarps to prevent dust release, and ensure vehicles are cleaned regularly to reduce dust dispersal.					
	Extent	Duration	Intensity	Reversibility	Probability	Significance
With Mitigation Measures	Local	Short-term	Low	Recoverable	Low	Negligible

7.2.2.4.2 Impact on Terrestrial Fauna

The potential sources of impact on the terrestrial ecosystem during the quarrying phase of the project are as follows:

- Air, Noise, and Oil spill.
- An influx of labor force; and
- Transportation of sand, equipment, and vehicle (Truck and Trawler) by road.

Terrestrial faunal species viz. terrestrial mammals and herpetofauna in the project adjacent area are the receptors.

Sand extraction activities, along with the handling and transportation of sand may affect terrestrial wildlife in the project vicinity. These activities generate noise and air pollution, which can disturb natural wildlife movement patterns.

Considering these factors, the impact on the terrestrial ecosystem due to the Quarrying activities can be assessed as low in Table 7-11.

Table 7-11: Significance of impacts on terrestrial ecosystem from quarrying activities and mitigation measure

	Extent	Duration	Intensity	Reversibility	Probability	Significance
Without Mitigation Measures	Local	Short-term	Moderate	Recoverable	Medium	Low
Mitigation Measures	• Regularly spray water on roads, extraction sites, and stockpiles to reduce dust emissions. • Cover transported sand and operation equipment with tarps to prevent dust release, and ensure vehicles are cleaned regularly to reduce dust dispersal. • Ensure that machinery and equipment are modern and well-maintained to minimize noise generation and prevent oil leakage. • Operate heavy machinery, like excavators, during the daytime and minimize use at night.					
	Extent	Duration	Intensity	Reversibility	Probability	Significance
With Mitigation Measures	Local	Short-term	Low	Recoverable	Low	Negligible

7.2.2.4.3 Impact on Aquatic Flora

The impact on aquatic flora during the study period was minimal, as no significant aquatic plants were observed. While some water clotting occurred during the monsoon season, it did not negatively affect the aquatic flora. While some water clotting occurred during the monsoon season, it did not negatively affect the aquatic flora.

7.2.2.4.4 Impact on Aquatic Fauna

During the study period, fishing activities in chara and stagnant water bodies within the sand quarries were minimal, as most of the quarries were dry. KIIs and Stakeholder consultations revealed that fishing is limited due to the clogging of water bodies. Historically, some local residents engaged in fishing during the rainy season primarily for personal consumption. However, improper management, accidental oil spillage, and wastewater disposal from sand extraction activities have the potential to pollute surface water.

Therefore, the significance of impacts on aquatic ecosystems due to the quarrying activities phase is evaluated to be Low mentioned in Table 7-12.

Table 7-12: Significance of impacts on aquatic ecosystem from quarrying activities and mitigation measure

	Extent	Duration	Intensity	Reversibility	Probability	Significance
Without Mitigation Measures	Local	Short-term	Moderate	Recoverable	Medium	Low
Mitigation Measures	• Ensure that vehicles and equipment are regularly maintained to prevent oil spillage. • Movement in chora should be limited to avoid water turbidity					
	Extent	Duration	Intensity	Reversibility	Probability	Significance
With Mitigation Measures	Local	Short-term	Low	Recoverable	Low	Negligible

7.2.2.5 Waste Generation

The main type of solid waste (e.g., packaging of machinery, shovels, spades, bags, and other carrying tools that may abandoned) is likely to be generated during quarrying activities in the project site. Other wastes that will be generated include waste from foods and packaging materials littered by workers.

The sand extraction activities can be carried along with canals, water bodies, and rivers flowing in the proximity of the project area. Solid waste can also contaminate haors, rivers, canals, etc. in the proximity of the activity. The improper management of the above wastes may have potentially adverse impacts on the environment in the absence of appropriate mitigation measures.

Therefore, the significance of the impacts of waste generated from sand extraction activities during the quarrying is evaluated to be Negligible in Table 7-13.

Table 7-13: Impacts Due to Waste Generation

	Extent	Duration	Intensity	Reversibility	Probability	Significance
Without Mitigation Measures	Local	Temporary	Low	Reversible	Medium	Negligible
Mitigation Measures	• Properly store and manage hazardous materials, ex: fuel, during sand extraction activities. • Dispose of food waste and packaging materials littered by workers must be maintained properly With temporary storage in the bins and then disposed of at designated landfill areas. • Workers will be strictly instructed about the random disposal of any waste generated from the sand extraction activity. Arrangements will be made to collect and prevent littering by workers on site.					
	Extent	Duration	Intensity	Reversibility	Probability	Significance
With Mitigation Measures	Local	Temporary	Low	Reversible	Low	Negligible

7.2.2.6 Traffic

There will be movement of sand extraction materials, machinery, sand, and manpower during the quarrying phase. The vehicle movements that will be required during the quarrying phase of the project will arise from the following main activities:

- The delivery of the equipment and materials for the sand extraction activities.
- The daily movements of personnel to and from the worksite.
- Transportation of silica sand from the project site to the distribution channel.

Based on the field observation, there existed a substantial number of heavy vehicles moving along the road. Additional silica sand transportation vehicles, equipment, and manpower may impact the traffic of the project area.

The traffic movement during the quarrying phase is likely to be occasional and very low. Therefore, the significance of impacts of traffic from sand extraction activities during quarrying is evaluated to be Negligible in Table 7-14.

Table 7-14: Impacts on Transportation

	Extent	Duration	Intensity	Reversibility	Probability	Significance
Without Mitigation Measures	Local	Temporary	Low	Reversible	Medium	Negligible
Mitigation Measures	• Vehicles used for sand extraction activities shall move along the already existing roads as far as possible. • Avoiding peak hours for heavy vehicle movement where possible. • Silica Sand transport shall be totally enclosed with an impervious sheet before traveling on public roads. • No overloading is done shall be ensured. • Enforcing speed limits. Speed restrictions on vehicles entering and leaving the site. • All vehicles shall be instructed to follow traffic norms strictly.					
With Mitigation Measures	Local	Temporary	Low	Reversible	Low	Negligible

7.2.2.7 Occupational Health and Safety

Based on the project description and typical quarrying methods both manual sand extraction and using an excavator for sand extraction, impacts on occupational health and safety during the quarrying phase could arise from the following activities and conditions:

- Inhalation of fine silica dust leads to respiratory illnesses.
- Risk of accidents and injuries from equipment use.
- Cut injury by using sand extraction tools e.g. shovels, spades

Sand-extracting workers are affected by occupational health and safety issues.

The main potential direct impact from the proposed quarry operations relates to dust has the potential to affect the health of the resident population. Workers will be exposed to medium noise and dust levels during quarry operations if use an excavator.

Therefore, the significance of impacts on occupational health and safety from quarrying activities during the project phase is evaluated to be moderately mentioned in **Table** 7-15. With the mitigation measures the significance of the impact will be Negligible.

Table 7-15: Significance of impacts on occupational health and safety from quarrying activities and mitigation measures

	Extent	Duration	Intensity	Reversibility	Probability	Significance
Without Mitigation Measures	Project Site	Temporary	Moderate	Recoverable	Medium	Negligible
Mitigation Measures	• Establish facilities for drinking water, sanitation, and cooking to promote good hygiene practices. • Minimize the exposure of workers to high noise sources through noise control measures, such as the use of scheduling noisy operations during off-peak hours. • Provide appropriate personal protective equipment (PPE), hand gloves, and safety shoes, for workers to ensure their safety during operational tasks for controlling cut injury.					

	Extent	Duration	Intensity	Reversibility	Probability	Significance
With Mitigation Measures	Project Site	Temporary	Low	Recoverable	Low	Negligible

7.2.2.8 Community Health and Safety

Based on the project description and typical quarrying methods, impacts on Community Health and Safety during the Quarrying phase could arise from the following activities and conditions:

- Increased vehicle movement can increase the risk of accidents and injuries.
- The security and safety of local people became temporarily vulnerable.

Surrounding local communities closest to the operations, experiencing the highest levels of dust, and noise are the receptors of this impact.

The overall impacts on Community Health and Safety during the quarrying phase due to the proposed project are likely to be direct to the local community.

Therefore, the significance of impacts on community health and safety from quarrying activities during the project quarrying phase is evaluated to be **Low** mentioned in **Table** 7-16. With the mitigation measures the significance of the impact will be **Negligible**.

Table 7-16: Significance of impacts on impacts on community health and safety during quarrying activities and mitigation measure

	Extent	Duration	Intensity	Reversibility	Probability	Significance
Without Mitigation Measures	Local	Short-term	Moderate	Recoverable	Medium	Low
Mitigation Measures	• Reduce unnecessary revving of vehicular engines • Use equipment that has low noise emissions as stated by the manufacturers. • Avoid nighttime activities. People are more aware of vibration in their homes during the nighttime hours. Work hours will be from 7.00 am to 6:00 pm for 8 hours shift. • Haul trucks must maintain speeds of 15 km/h or less. • Trucks carrying silica sand off-site will have covers fitted.					
	Extent	Duration	Intensity	Reversibility	Probability	Significance
With Mitigation Measures	Local	Short-term	Low	Recoverable	Low	Negligible

7.2.2.9 Water Resources

Based on the project description and sand extraction methods, certain Choras named **"Huglia Chora"**, **"Mura Chora"**, and **"Fhul Chora"** in Sreemangal Upazila of Moulvibazar District may experience negative environmental impacts due to various activities and conditions during the sand quarrying phase. The negative impacts due to specific activities have been identified as follows:

- Large-scale open-pit extraction directly from riverbeds and floodplains leads to excessive sediment removal.
- Large extraction of sand from deeper layers of the riverbed disrupts natural sediment balance.
- Extracting sand directly from active river channels disturbs water flow and sediment transport processes.
- Mining near critical infrastructures like bridges, culverts, roads, and embankments can weaken foundation stability and enhance scouring.

- Sand extraction from the riverbanks and adjacent floodplains without proper planning can cause severe land degradation.
- Mining rates that exceed natural sediment replenishment will lead to long-term geomorphological changes.
- Improper disposal of mining waste and sediments can cause blockages in natural drainage.

The potential negative impacts of sand extraction in the study Choras of Moulvibazar District will affect both abiotic and biotic environments. The abiotic environment, including hydrological and geological systems, may experience disruptions in riverbanks and channel morphology, surface water quality, groundwater table, and recharge areas. Additionally, infrastructure and built environments, such as bridges, roads, flood embankments, and drainage systems, could be impacted by the extraction activities. The impacts on the biotic environment are given in the biodiversity section.

The main potential direct negative impacts from the sand extraction activities in the choras will be:

- Riverbank erosion and instability
- Altering natural water courses, lowering riverbeds
- Increased turbidity and reduced water quality
- Waterlogging and increased risk of localized flash floods
- Failure of flood control structures and local scouring
- Landslides and riverbank collapsing
- Loss of agricultural land

Due to the localized and short-term nature of the impact, the severity remains low, with the effects being recoverable over time. The overall probability assessment, based on the impact matrix, indicates a **"Low"** impact, implying **"Negligible"** significance for the following Choras:

- In **Sreemangal** Upazila: Huglia Chora, Mura Chora, and Fhul Chora will have the negative impacts.

Only three (3) Choras in Sreemangal Upazila will have the negative impacts, no negative impacts might arise due to sand extraction activities in the Choras of Kamalganj, Rajnagar, Baralekha, Kulaura and Sadar Upazila. The overall impact significance and analysis under "*without mitigation measures*", and "*with mitigation measures*" has been presented in the Table 7-17. For both cases, the impact matrix shows "***Negligible***" in terms of the significance of the impact.

Table 7-17: Significance of impacts on water resources from sand extraction activities and mitigation measures

	Extent	Duration	Intensity	Reversibility	Probability	Significance
Without Mitigation Measures	Local	Short-term	Low	Recoverable	Low	Negligible
Mitigation Measures	• Identification of specific areas for sand extraction that do not destabilize riverbanks will have to be taken into account for sand quarrying management. • Limiting extraction depth and volume – Avoiding excessive excavation that weakens banks and alters flow dynamics. o For the Joinka, Khai, Sumoi, Narayan, Noluya, Huglia, Gandhi, Amrail, Shuary, Ichamati, Boula, Jholom, and Fhul Chora in Sreemangal Upazila: depth should be 3-4 meters. The depth for all the other chora can be 5-6 meters. o All the choras in Kamalganj Upazila: depth should be 5-6 meters. o All the choras in Rajnagar Upazila: depth should be 5-6 meters.					

	- o All the choras in Baralekha Upazila: depth should be 5-6 meters. - o All the choras in Kulaura Upazila: depth should be 2-3 meters. - o All the choras in Sadar Upazila: depth should be 5-6 meters - Enforcing Buffer Zones – Maintaining a minimum 10–20m buffer from riverbanks to prevent erosion. - Using mechanical excavation instead of hydraulic dredging to avoid heavy bank erosion. - Maintaining an excavation plan for a long reach to scale-downing the turbidity near the excavation area. - Depth Monitoring – Restricting excavation depth to avoid over-extraction. - Alternating Extraction Sites – Implementing rotational extraction to allow natural sediment replenishment. - Minimum Flow Requirements – Maintaining environmental and ecological flow to support aquatic ecosystems. - Prohibiting sand extraction within 200 meters of bridges, roads, and embankments in the large rivers or Chora areas. - Strengthening government oversight and imposing heavy fines for illegal sand extraction. - Riverbank Protection Programs – Introducing afforestation initiatives to restore vegetation cover for some large rivers/choras. - Sediment Budget Analysis – Conducting hydrological studies to ensure sustainable extraction rates before each year's sand quarrying phase and BMD does this each year. - Restrict Extraction During Low-Flow Periods – Enforcing a seasonal sand extraction ban in the dry season. - Establishing designated solid waste disposal areas away from water bodies and maintaining 20-50 clearance from the river Bankline area. - Water quality monitoring during the sand extraction.					
With Mitigation Measures	Project Site	Temporary	Low	Reversible	Low	Negligible

CHAPTER 8

Management Plan/Procedures

8 MANAGEMENT PLAN/PROCEDURES

8.1 Introduction

The main purpose of the Environmental Management Plan (EMP) is to identify project-specific actions that will be undertaken by the project authority for mitigation of the specific impacts identified in the proposed project. These actions will be incorporated into the project management system and integrated into the implementation at various stages of project development. The EMP describes both generic good practice measures and site-specific measures, the implementation of which is aimed at mitigating the potential impact associated with the project activity.

8.2 Objectives of the Environmental Management Plan

The main objective of the EMP is to warrant that the development in an identified particular study area needs to be entangled with judicious utilization of non-renewable resources and to ensure that the stress/load on the ecosystem is within its permissible assimilative capacity i.e., its' carrying capacity. In the above context, assimilative capacity refers to the maximum amount of pollution load that can be discharged into the environment without affecting the designated use of various environmental attributes and is governed by dilution, dispersion, and removal due to physicochemical and biological processes. An effective EMP ensures that these environmental requirements and objectives are satisfied during all phases of the project. The long-term objectives of the EMP for all the environmental attributes are as follows:

- To comply with all the regulations/applicable laws stipulated by the DOE;
- To create good working conditions for employees;
- To encourage and achieve the highest performance and response from individual employees and contractors;
- To plan out the complete strategy to take care of stakeholder engagement;
- Budgeting and allocation of funds for environmental management;
- Continuous development and search for innovative technologies for a cleaner and better future environment; and
- To contribute significantly to sustainable development.
- To provide a system for incorporating the Project EIA outcomes into the construction process;
- To establish relevant systems and processes that will support compliance with applicable legislation as well as BMD’s guideline;
- To detail construction monitoring, reporting, and auditing requirements;
- To identify environmentally sensitive areas to assist the construction team in avoiding and/or reducing potential impacts;
- To incorporate the environmental mitigation measures into a comprehensive framework to facilitate the application of appropriate environmental management throughout the Project;
- To provide a tool to assist in tracking compliance with environmental obligations; and
- To clarify areas of responsibility during Project activities

8.3 Environmental Mitigation/Enhancement Measures

8.3.1 Quarrying Phase

The possible environmental impacts during the quarrying phase have been already identified and assessed in Chapter 7 of this EIA report. For mitigating the possible environmental impacts, mitigation/enhancement measures for the quarrying phase are proposed in Table 8-1.

Table 8-1: Environmental Management Plan During Quarrying

Affected Aspect	Potential Impacts	Proposed Mitigation/Enhancement Measures	Responsibility		Budget
			Implementation	Supervision	
Positive Impact					
Employment Opportunities	Impact on Livelihood	• Local people should get preference during the recruitment process.	Appointed contractor	Department of Labour (DOL) and DC office	--
Economic Enhancement	Impact on Economic	• Buy materials and services from local businesses to enhance the economy.	Appointed contractor	DC Office and Economic Relations Division (ERD)	--
Aquatic Ecosystem	Impacts on aquatic ecosystem	• Excavating sand for the quarries encourages water clotting	Appointed contractor	Department of Environment (DOE)	--
Water Resources	Reduce flood risks Prevent excessive sedimentation in downstream rivers, wetlands, lakes, and Haors Reducing channel migration and erosion	• Ensuring optimal sediment removal rates to maintain streamflow capacity and prevent over-extraction by contractor • Controlling extraction near riverbanks • Scheduling seasonal extraction (Yearly and depends on sediment deposition)	Appointed contractor	Department of Environment (DOE)	5,000
Soil and Agricultural	Land Degradation	• Preventing sand deposition on nearby agricultural lands by yearly sand extraction from sand quarry • Enforcing Buffer Zones – Maintaining a minimum 10–20m buffer from riverbanks to prevent erosion from agricultural land	Appointed contractor	Department of Environment (DOE)	5,000

Affected Aspect	Potential Impacts	Proposed Mitigation/Enhancement Measures	Responsibility		Budget
			Implementation	Supervision	
Negative Impact					
Air Quality	Dust generation and Exhaust emissions	• Ensure that equipment e.g. excavator is properly maintained so as to reduce air emissions. • Haul trucks must maintain speeds of 15 km/h or less. • Drop distances between buckets, screener decks, and truck trays will be kept to a minimum. • Trucks carrying silica sand off-site will have covers fitted.	Appointed contractor	Department of Environment (DOE)	5,000
Noise	Increased ambient noise	• Reduce unnecessary revving of vehicular engines • Use equipment that has low noise emissions as stated by the manufacturers. • Workers operating equipment that generates noise should be equipped with noise protection. • Avoid nighttime activities. People are more aware of vibration in their homes during the nighttime hours. Work hours will be from 7.00 am to 6:00 pm for 8 hours shift.	Appointed contractor	Department of Environment (DOE)	5,000
Soil Quality and Erosion	Soil contamination Soil erosion	• Implement a regular maintenance program for all equipment and machinery to prevent fuel spillage or leakage during sand extraction activities. • Manage spills of soil contaminants using standard engineering practices. • Use of spill or drip trays to contain spills and leaks, and use of spill control kits to clean small spills and leaks. • Training labor for waste disposal in designated areas and use of sanitation facilities. • Waste management measures should include provisions to contain and dispose of quarrying wastes, prohibit waste discharge on the ground, and practice recycling as far as practicable.	Appointed contractor	Department of Environment (DOE)	--

Affected Aspect	Potential Impacts	Proposed Mitigation/Enhancement Measures	Responsibility		Budget
			Implementation	Supervision	
		• Sand extraction depth must be maintained at 1 to 10 meters as required for reducing erosion and must maintain proper slope. • Enforcing Buffer Zones – Maintaining a minimum 10–20m buffer from riverbanks to prevent erosion.			
Biodiversity	Impact on Terrestrial Flora	• Regularly spray water on roads, extraction sites, and stockpiles to reduce dust emissions. • Cover transported sand and operation equipment with tarps to prevent dust release, and ensure vehicles are cleaned regularly to reduce dust dispersal.	Appointed contractor	Department of Environment (DOE)	3,000
	Impact on Terrestrial Fauna	• Regularly spray water on roads, extraction sites, and stockpiles to reduce dust emissions. • Cover transported sand and operation equipment with tarps to prevent dust release, and ensure vehicles are cleaned regularly to reduce dust dispersal. • Ensure that machinery and equipment are modern and well-maintained to minimize noise generation and prevent oil leakage. • Operate heavy machinery, like excavators, during the daytime and minimize use at night.			
	Impact on Aquatic Flora Impact on Aquatic Fauna	• Ensure that vehicles and equipment are regularly maintained to prevent oil spillage.			
Waste Generation	Solid Waste and Liquid Waste	• Properly store and manage hazardous materials, ex: fuel, during sand extraction activities.	Appointed contractor	Department of Environment (DOE)	3,000

Affected Aspect	Potential Impacts	Proposed Mitigation/Enhancement Measures	Responsibility		Budget
			Implementation	Supervision	
		• Dispose of food waste and packaging materials littered by workers must be maintained properly with temporary storage in the bins and then disposed of at designated landfill areas. • Workers will be strictly instructed about the random disposal of any waste generated from the sand extraction activity. Arrangements will be made to collect and prevent littering by workers on site.			
Traffic	Disturbance to existing road users through an increase in road traffic	• Vehicles used for sand extraction activities shall move along the already existing roads as far as possible. • Avoiding peak hours for heavy vehicle movement where possible. • Silica Sand transport shall be totally enclosed with an impervious sheet before traveling on public roads. • No overloading is done shall be ensured. • Enforcing speed limits. Speed restrictions on vehicles entering and leaving the site. • All vehicles shall be instructed to follow traffic norms strictly	Appointed contractor	Bangladesh Road Transport Authority (BRTA) and Local Authority (Police Department)	--
Occupational Health and Safety	Occupational Health and Safety	• Establish facilities for drinking water, sanitation, and cooking to promote good hygiene practices. • Minimize the exposure of workers to high noise sources through noise control measures, such as the use of scheduling noisy operations during off-peak hours. • Provide appropriate personal protective equipment (PPE), hand gloves, and safety shoes, for workers to ensure their safety during operational tasks for controlling cut injury.	Appointed contractor	Department of Environment (DOE)	15,000

Affected Aspect	Potential Impacts	Proposed Mitigation/Enhancement Measures	Responsibility		Budget
			Implementation	Supervision	
Community Health and Safety	Community Health and Safety	• Reduce unnecessary revving of vehicular engines • Use equipment that has low noise emissions as stated by the manufacturers. • Avoid nighttime activities. People are more aware of vibration in their homes during the nighttime hours. Work hours will be from 7.00 am to 6:00 pm for 8 hours shift. • Haul trucks must maintain speeds of 15 km/h or less. • Trucks carrying silica sand off-site will have covers fitted.	Appointed contractor	Ministry of Health and Family Welfare (MOHFW) and Community Health Workers	3,000
Water Resources	• Surface water and groundwater • Drainage System • River bank Erosion	• Identification of specific areas for sand extraction that do not destabilize riverbanks will have to be taken into account for sand quarrying management. • Limiting extraction depth and volume – Avoiding excessive excavation that weakens banks and alters flow dynamics. o For the Joinka, Khai, Sumoi, Narayan, Noluya, Huglia, Gandhi, Amrail, Shuary, Ichamati, Boula, Jholom, and Fhul Chora in Sreemangal Upazila: depth should be 3-4 meters. The depth for all the other chora can be 5-6 meters. o All the choras in Kamalganj Upazila: depth should be 5-6 meters. o All the choras in Rajnagar Upazila: depth should be 5-6 meters. o All the choras in Baralekha Upazila: depth should be 5-6 meters. o All the choras in Kulaura Upazila: depth should be 2-3 meters. o All the choras in Sadar Upazila: depth should be 5-6 meters. • Enforcing Buffer Zones – Maintaining a minimum 10–20m buffer from riverbanks to prevent erosion.	Appointed contractor	Department of Environment (DOE)	10,000

Affected Aspect	Potential Impacts	Proposed Mitigation/Enhancement Measures	Responsibility		Budget
			Implementation	Supervision	
		• Using mechanical excavation instead of hydraulic dredging to avoid heavy bank erosion. • Maintaining an excavation plan for a long reach to scale-downing the turbidity near the excavation area. • Depth Monitoring – Restricting excavation depth to avoid over-extraction. • Alternating Extraction Sites – Implementing rotational extraction to allow natural sediment replenishment. • Minimum Flow Requirements – Maintaining environmental and ecological flow to support aquatic ecosystems. • Prohibiting sand extraction within 200 meters of bridges, roads, and embankments in the large rivers or Chora areas. • Strengthening government oversight and imposing heavy fines for illegal sand extraction. • Riverbank Protection Programs – Introducing afforestation initiatives to restore vegetation cover for some large rivers/choras. • Sediment Budget Analysis – Conducting hydrological studies to ensure sustainable extraction rates before each year's sand quarrying phase and BMD does this each year. • Restrict Extraction During Low-Flow Periods – Enforcing a seasonal sand extraction ban in the dry season. • Establishing designated solid waste disposal areas away from water bodies and maintaining 20-50 clearance from the river Bankline area. • Water quality monitoring during the sand extraction.			
				Grand Total	**54,000**

8.4 Environmental Monitoring Plan

The effectiveness of the various mitigation measures described will be monitored through a well-defined environmental monitoring program. This will be done by direct measurement of parameters related to environmental quality, emissions, discharges, etc. An environmental monitoring program is important as it provides useful information on the following aspects:

- It helps to verify the predictions on the environmental impacts presented in this study.
- It helps to indicate warnings of the development of any alarming environmental situations, and thus, provides opportunities for adopting appropriate control measures.

The monitoring program in different areas of the environment, outlined in the next few sections, has been based on the findings of the impact assessment studies, described earlier.

8.4.1 Monitoring Plan

The proposed environmental monitoring plan can be incorporated into the sand extraction project. The following Table 8-2 presents the environmental monitoring plan for the project with a budget.

Table 8-2: Environmental Monitoring Plan

Aspect	Proposed Monitoring Parameters	Number and location of sampling stations	Frequency of Monitoring	Responsible Party	Implementing Agency	Budget
Air Quality	SPM, PM_{10}, $PM_{2.5}$, SOx, NOx, CO	1 location of each quarry site	During quarry	Contractor	BMD	3,000
Noise	L_{day}	1 location of each quarry site	During quarry	Contractor	BMD	1,000
Soil	pH, texture, NH4+, total P, heavy metals, Organic Matter	1 location of each quarry site	During quarry	Contractor	BMD	8,000
Groundwater quality	pH, DO, BOD, COD, TDS, Lead, Hg, Fe	1 location of each quarry site	During quarry	Contractor	BMD	9,000
Surface Water Quality	DO, BOD, EC, Turbidity, TDS, pH, AS, Fe, Total Hardness, Chloride, FC	1 location of each quarry site	During quarry	Contractor	BMD	9,000
Sediments Quality	As per baseline data	1 location of each quarry site	During quarry	Contractor	BMD	8,000
					Grand Total	**38,000**

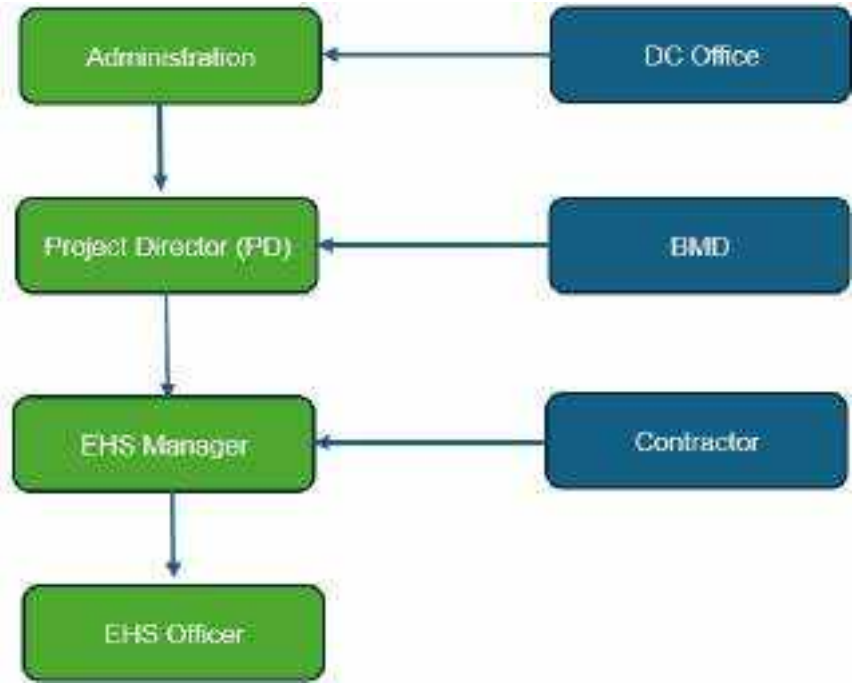
8.5 Budget Plan for Environmental Mitigation Measures and Monitoring

The contractor will allocate a separate budget for environmental mitigation, monitoring, analysis and reporting, verification monitoring, and capacity building. The estimated budget for environmental monitoring for each sand quarry is 38,000 BDT per year and the environmental mitigation measure is 54,000 BDT per year.

8.6 Institutional Setting and Implementation Arrangement

The effective implementation and operation of the EMP depends on the regular monitoring of environmental and social components in the proposed project area. During the sand extraction of the project, the Environment, Health, and Safety manager of the contractor will be responsible for the implementation of the EMP, and the project developer's staff, specifically the EHS officer, will supervise the implementation of these mitigation measures by the contractors at the site. The flow diagram showing the institutional arrangement for the implementation of the EMP during the construction and operation period is presented in Figure 8-1.

Figure 8-1: Organogram of the EMP Implementation



Source: BMD, 2025

CHAPTER 9
Consultation with Stakeholders

9 CONSULTATION WITH STAKEHOLDERS

9.1 Introduction

This chapter presents all the stakeholders identified and consulted and elaborates on the key issues and concerns raised by these stakeholders during the EIA study. Stakeholders were identified during the EIA study. Views from the general public, local political leaders, surrounding institutions, communities, and development partners who are interested in and/or would be potentially affected by the proposed project were consulted through interviews and public consultation meetings. The stakeholder consultations were held to ensure that interested and affected parties were informed of the project. The consultations allowed stakeholders to present their views concerning the proposed project. Recording stakeholders' views and preferences was essential to inform the identification of impacts and drawing up effective mitigation measures that are presented in this report.

9.2 Scope and Specific Objectives

Stakeholders are defined as "persons or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project and/or the ability to influence its outcome, either positively or negatively"[9].

The broad objective of the stakeholder engagement and involvement process is to provide authorities, as well as interested and affected stakeholders with the opportunity to identify issues, concerns, and opportunities regarding the proposed project and to address key stakeholder concerns during the preparation of the EIA for the project. Specific objectives for stakeholder consultations are as follows:

- To address relevant issues including those perceived as being important by other sectoral agencies, public bodies, local communities, affected groups and others.
- To improve information flows between proponents and different stakeholders, improving understanding of a project.
- To identify important environmental and social characteristics or mitigation opportunities.
- To ensure that the magnitude and significance of impacts has been assessed properly.
- Improves the acceptability and quality of mitigation and monitoring process.

9.3 Identification of Stakeholders

The stakeholder identification is one of the most important processes throughout the project life cycle and documenting relevant information regarding their interests in the project, independencies, influence, and potential impact on the project. Stakeholders vary in terms of the degree of interest, influence and control they have over the project. While those stakeholders who have a direct impact on or are directly impacted by the project are known as Primary Stakeholders, those who have an indirect impact or are indirectly impacted are known as Secondary Stakeholders. Identification of stakeholder was carried out by EQMS in discussion with BMD. Keeping in mind the nature of the project and its setting, the stakeholders have been identified and listed in Table 9-1.

Table 9-1: Identification of stakeholders

S/N	Stakeholder Group/Category	Key Stakeholders	Description of the Stakeholder Profile
Primary Stakeholders			

[9] IFC. (2007). *Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets*. International Finance Corporation.

S/N	Stakeholder Group/Category	Key Stakeholders	Description of the Stakeholder Profile
1	Project Affected Persons (PAPs)	• Impacted stream Users	• Stream user who used to stream for his livelihood
2	Institutional Stakeholders	• Regulatory Authorities • Local Administration-Union Parishad	• This stakeholder group comprises of regulatory authorities at the district and national level that are responsible for various permits and licenses pertaining to the project.
Secondary Stakeholders			
5	Local Community	• Local community residing near the stream location	• This stakeholder group comprises of the community residing near the vicinity of the sand quarries area. • This group is expecting to be indirectly impacted by the sand mining activities but may be indirectly impacted.
6	Institutional Stakeholders	• Department of Agriculture • Department of Fisheries • Forest Department • Department of Public Health and Engineering	• This stakeholder groups comprises of expert on different sector for providing inputs and information which are crucial for designing and project implementation.

9.4 Stakeholder Mapping

Stakeholder Mapping is a process of examining the relative influence that different individuals and groups have over a project as well as the influence of the project over them. The purpose of a stakeholder mapping is to:

- Study the profile of the stakeholders identified and the nature of the stakes.
- Understand each group's specific issues, concerns as well as expectations from the project that each group retains.
- Gauge their influence on the project.

Based on this understanding, the stakeholders are categorized into High Influence/ Priority, Medium Influence/Priority and Low Influence/Priority. The stakeholders who are categorized as high influence are those who have a high influence over the project or are likely to be heavily impacted by the project activities and are thus high up on the project proponent's priority list for engagement and consultation.

Similarly, the stakeholders categorized as medium influence are those who have a moderate influence over the project or even though they are to be impacted by the project, it is unlikely to be substantial and these stakeholders are thus neither high nor low in the project proponent's list for engagement. On the other hand, the stakeholders with low influences are those who have a minimal influence on the

decision-making process or are to be minimally impacted by the project and are thus low in the project proponent's engagement list.

9.5 Approach and Methodology for Stakeholder Mapping and Analysis

The approach adopted for mapping and analyzing involves mapping of the key stakeholders (directly and indirectly) and assessing their significance, influence, and impact on the project. The methodology adopted is described below:

The significance of a stakeholder group is categorize considering the magnitude of impact (type, extent, duration, scale, frequency) or degree of influence (power, proximity) of a stakeholder group and urgency/likelihood of the impact/influence associated with the particular stakeholder group in the project context. The magnitude of stakeholder impact/influence is assessed by taking the power/responsibility of the stakeholder group and is categorized as negligible, small, medium, and large. The Urgency or likelihood of the impact on/influence by the stakeholder is assessed in a scale of low, medium, and high. The overall significance of the stakeholder group is assessed as per the matrix provided in Table 9-2.

Table 9-2: Stakeholder mapping matrix

		Sensitivity/Vulnerability/Important Resource/Receptor		
		Low	**Medium**	**High**
Magnitude of Impacts	Negligible	Negligible	Negligible	Negligible
	Small	Negligible	Minor	Moderate
	Medium	Minor	Moderate	Urgent
	Large	Moderate	Urgent	Urgent

The following section provides brief profiles of the various stakeholders in the project as discussed in the previous sub section along with their degree of influence. The details are provided in Table 9-3.

Table 9-3: List of identified key project stakeholders

Stakeholders	Category of Stakeholder	Brief Profile	Impact[10]	Influence[11]	Basis of Influence Rating
Project Management					
Bureau of Mineral Development	Primary	• Bureau of Mineral Development is the primary project proponent who owns a controlling stake of 100% in the project.	Low	High	- The primary project proponents. - Responsible for all the project-related risks and impact liabilities. - Primary financial beneficiaries. - Responsible for the entire project-related risks and impact liabilities.
Community					
Local Community	Primary	• Primarily includes the adjacent community to the project site.	High	Low	- The project will bring development to the area. - Improvement in infrastructure in the area. - Increase of employment opportunities and preference in the job. - Business or economic conditions, access to health facilities, and education will be improved.
Fisher	Primary	• Fishers in the area are primarily engaging in small-scale fishing in the stream.	Low	Low	- No major impact on overfishing and the cycle. - Low scale for self-consumption and selling.

[10] How much does the project impact them? (Low, Medium, High).

[11] How much influence do they have over the project? (Low, Medium, High)

Stakeholders	Category of Stakeholder	Brief Profile	Impact[10]	Influence[11]	Basis of Influence Rating
Local workers and laborers	Primary	• Laborers and workers were recruited from the area of influence mostly during the sand mining of the stream.	High	Medium	- Responsible for undertaking mostly un-skill and semiskilled based work during the sand mining of the stream.
Regulatory/Administrative Authorities and Agencies					
Department of Environment (DOE), Bangladesh	Primary	• The Department of Environment (DOE) is the primary government regulatory authority for environmental protection in Bangladesh.	Low	High	- Government Regulatory agency to provide Environmental Clearance (EC) to the project based on evaluation and approval of the Environmental Impact Assessment (EIA) study. - Responsible for monitoring the project's Environmental compliance throughout the project lifecycle. - High influence and high interest.
Department of Agriculture	Secondary	• Department of Agriculture is responsible for agricultural development.	Low	High	- No major influence on project-related activities. - Influence can be increased if the project authority engages with the dept. for any purpose.
Department of Fisheries	Secondary	• DOF is responsible for fisheries development, conservation, and maintenance of the fish sanctuary.	Low	Medium	- No major influence on project-related activities. - Influence can be increased if the project proponent engages directly with the implementation of the proposed project.
Department of Public Health Engineering	Secondary	• Local governmental agency responsible for implementation of	Low	Medium	- Interest level is low with low Influence level.

Stakeholders	Category of Stakeholder	Brief Profile	Impact[10]	Influence[11]	Basis of Influence Rating
		governmental public heath activities.			
Other Regulatory and Permitting Authorities	Primary	-	Low	Medium	- Primary involvement during the pre-construction, construction, and operation phases.
Political Administration					
Local Govt. authority (Upazila/Union)	Secondary	• Elected representative of people at Upazila/ Union level for a fixed tenure, i.e., Upazila Chairman or UP Chairman.	Low	Medium	- The key linkage between the community and the project proponent. - Upazila or Union is the only authority for trade licenses within their jurisdiction. - Low interest with high influence.
Ward leaders and local representatives	Primary	• An elected representative at ward level for a fixed tenure, i.e., Ward Councilor or Ward Member.	Low	Low	- Issuance of no objection certificate as the representative of the local level representative. - Plays an important role in providing public opinion and sentiment on the project. - Empowered to provide consent and authorization for the establishment of the project on behalf of the community.
Other Institutional Stakeholders Groups					
Local NGOs, Community and Social Welfare Groups (CSWG)	Secondary	• Microfinance agencies, social welfare groups, and charitable organizations working in the area.	Low	Low	- No major involvement in the project as of today. - Possible inclusion during future stages of the project with respect to project-related community welfare activities. - Can play a rule of advisory for welfare and other factors that drives labor welfare.

Stakeholders	Category of Stakeholder	Brief Profile	Impact[10]	Influence[11]	Basis of Influence Rating
Printed and Electronic Media	Secondary	-	Low	Medium	- Public watchdog on the project-related activities. - Positive vibes and reporting are important. - Sometimes needs to collaborate with them. - No major influence on the project.

9.6 Information Disclosure, Consultation, and Participation

The stakeholders consulted include local people, community in the vicinity of the project area, local elected representatives and other external stakeholders such as government officials. The details of consultations held with issues raised or discussed and suggestions provided by the respective stakeholders are well noted and incorporated in the EIA report.

A combination of mixed methods of information disclosure and consultation process was adopted at this stage. The method selected for consultation was basically designed keeping in mind the profile of the stakeholders, type of information desired and level of engagement required. In each consultation session, the consultant introduced themselves, introduced the project and the purpose of engagement with the respective stakeholder.

The methods used in the consultation process were:

- Individual or Key Informant Interview (KII)
- Public Consultation Meeting (PCM)
- Focus Group Discussion (FGDs)

The consultation and information disclosure were held in a free and fair environment giving prior information about the same to the stakeholders. On all occasions the date, time and venue of the consultation was decided by the stakeholders keeping in view their prior engagement and availability.

9.6.1 Communication Methods

Stakeholder engagement becomes a successful exercise when proper and participatory communicative methods are used. This ensures that the stakeholders are kept engaged and well informed of the project's development at every stage. A combination of communicative methods is usually used to engage with the stakeholders. To determine which option is best suited to the various stakeholders, a benefits analysis of each option has been carried out. The communicative methods are:

- General Information consisting of the project’s various activities, the operation stage, and impacts that might arise shall be made available for stakeholders.
- In addition to this, a host of tools and techniques also be adapted to engage with the stakeholders in a transparent and accountable manner.

Below a list of the tools and techniques adopted are mentioned:

9.6.1.1 Individual and Key Informant Interview (KII)

Individual and KII techniques have been used to disclose the information regarding this project during EIA study. During EIA study, 14 KIIs have been conducted with the relevant authorities.

9.6.1.2 Focus Group Discussion (FGDs)

FGDs are important when gauging with a group of stakeholders on issues related to the project activities. FGD has been used to understand the needs, perceptions, and concerns of the group. The discussion also gave space for the members to voice their concerns and suggestions. During EIA study, 11 FGDs with various groups and affected people were conducted.

Table 9-4: Details of consultations held for the project

Date	Stakeholder Details	Details of Participants	Upazila	Issues Discussed/Raised	Response/Suggestions Made
23.12.2024	Department of Public Health and Engineering	Saiful Islam Sub Assistant Engineer	Sreemangal	• Sources of drinking water in the project site • Current groundwater depth at the proposed project site • Groundwater quality, specifically looking for arsenic contamination • Potential impact of the proposed project on groundwater resources • Suggestions, comments, or opinions to be considered during the implementation of the proposed project	• Sources of drinking water in the area are mainly deep tube well (700 ft). • Current groundwater depth is 600-700 ft for deep tube-well where the available water level is 10-12 ft. • Minimize environmental damage by using advanced extraction and processing technologies.
23.12.2024	Department of Forest	Tajul Islam Junior Wildlife Officer	Sreemangal	• Is there any designated forest area/protected area/national park/wildlife sanctuary in the proposed project site? • Available flora and fauna species in the project site • Any suggestion or comment or opinion that needs to be considered during the implementation of the proposed project?	• Habitat loss and deforestation pose risks to local flora and fauna. • Soil erosion and sedimentation of nearby water bodies are potential consequences. • Establish buffer zones to protect sensitive forest ecosystems from direct impacts. • Ensure local community participation and transparent communication regarding project impacts and benefits.
23.12.2024	Department of Agriculture	Uzzal Sutradhar Extension Officer	Sreemangal	• Details about the project land • Description about the major crops, cropping pattern of the upazila • Anticipated impacts of the proposed project	• Total agriculture land of the Upazila is 33531 ha, whereas 6190 ha is single crop, 9324 ha is double crop, 5681 ha is triple crop land, and 170 ha is quadruple land.

Date	Stakeholder Details	Details of Participants	Upazila	Issues Discussed/Raised	Response/Suggestions Made
				• Suggestions or recommendations.	• Dominant cropping pattern in the area is Fallow-Aush-Aman • Wage rate in agricultural labor varies from season to season 700-800 tk. • Common agricultural products are Paddy, and vegetables such as radish, brinjal, cucumber etc. • Must monitor the activates to mitigate the environmental haphazard. • Chora water is the vital source of irrigation during dry season and for robi crops. Maintaining the flow and depth is important for irrigation. Sand quarrying will be positive for agriculture unless it is the use of land erosion.
23.12.2024	Department of Fisheries		Sreemangal	• Any envisaged impacts on the aquatic pollution due to the silica sand qurraying. • Presence of a protected area or designated fish sanctuary within a 2 KM radius of the project • Fish species present in the chora • Critical and endangered fish species, • Suggestions, comments, and opinions to be considered during the implementation of the project	• The Fisheries Department is basically responsible for technology transfer and ensuring that all government regulations are followed, and schemes are implemented. • The primary fishing point located is Chora, Baikka beel and Hail Haor and several marshlands. • Puiya (*Lepidocephalichthys irrorata*) is the vulnerable species found in Chora and various types of native fishes including Baim,

Date	Stakeholder Details	Details of Participants	Upazila	Issues Discussed/Raised	Response/Suggestions Made
					Gutum, Taki, Koi, Punti shrimp etc. are the noteworthy fishes found in the Chora • Fishermen use traditional methods for fishing • Many types of fish are gradually becoming endangered • There is Baikka Beel sanctuary in the project area, but quarrying might be positive unless no pollutant carried during the quarrying. • Positive about the projects as sand quarrying will increase the Chora depth and recommended that quarrying should not hamper the natural fisheries resources specially.
24.12.2024	Department of Public Health and Engineering	Md Mohosin Sub Assistant Engineer	Kulaura	• Sources of drinking water in the project site • Current groundwater depth at the proposed project site • Groundwater quality, specifically looking for arsenic contamination • Potential impact of the proposed project on groundwater resources • Suggestions, comments, or opinions to be considered during the implementation of the proposed project	• Sources of drinking water in the area are mainly deep tube well (600-650 ft). • Current groundwater depth is 600-700 ft for deep tube-well

Date	Stakeholder Details	Details of Participants	Upazila	Issues Discussed/Raised	Response/Suggestions Made
	Department of Agriculture	Ranjit Kumer Chnadra Plant Production Officer	Kulaura	• Details about the project land • Description about the major crops, cropping pattern of the upazila • Anticipated impacts of the proposed project • Suggestions or recommendations.	• Dominant cropping pattern in the area is Fallow-Aush-Aman • Common agricultural products are Paddy, and vegetables such as radish, brinjal, cucumber etc. • Chora water is the vital source of irrigation during dry season and for robi crops.
24.12.2024	Department of Fisheries		Kulaura	• Any envisaged impacts on the aquatic pollution due to the silica sand qurraying. • Presence of a protected area or designated fish sanctuary within a 2 KM radius of the project • Fish species present in the chora • Critical and endangered fish species, • Suggestions, comments, and opinions to be considered during the implementation of the project	• Ensuring that all government regulations are followed, and schemes are implemented. • There is no major primary fishing in the project area unless several marshlands. Chora have limited fisheries mainly in rainy season. • Various types of native fishes including Baim, Gutum, Taki, Koi, Punti shrimp etc. are the noteworthy fishes found in the Chora • Positive about the projects as sand quarrying will increase the Chora depth
26.12.2024	Department of Agriculture	Md Enamul Haque Upazila Officer	Rajnagar	• Details about the project land • Description about the major crops, cropping pattern of the upazila • Anticipated impacts of the proposed project • Suggestions or recommendations.	• Dominant cropping pattern in the area is Fallow-Aush-Aman • Common agricultural products are Paddy, and vegetables such as radish, brinjal, cucumber etc.

Date	Stakeholder Details	Details of Participants	Upazila	Issues Discussed/Raised	Response/Suggestions Made
					• Increased sediment runoff into Chora water may reduce its capacity to store water for irrigation. • Maintaining the flow and depth is important for irrigation. • Excessive excavation can alter the natural flow patterns of Chora water, negatively impacting irrigation during critical crop growth stages.
	Department of Fisheries	Amal Kanti Sham Upazila Fisheries Officer	Rajnagar	• Any envisaged impacts on the aquatic pollution due to the silica sand qurraying. • Presence of a protected area or designated fish sanctuary within a 2 KM radius of the project • Fish species present in the chora • Critical and endangered fish species, • Suggestions, comments, and opinions to be considered during the implementation of the project	• The is no primary fishing point located in the project area but several marshlands in rainy season. • various types of native fish including Baim, Gutum, Taki, Koi, Punti shrimp etc. are the noteworthy fishes found in the Chora • Many types of fish are gradually becoming endangered • Positive about the projects as sand quarrying will increase the Chora depth and recommended that quarrying should not hamper the natural fisheries resources specially.
29.12.2024	Department of Forest	Pritom Barua ACF, Rajkandi Range	Kamolganj	• Designated forest area within the region	• Silica sand extraction can provide significant economic benefits to the local economy

Date	Stakeholder Details	Details of Participants	Upazila	Issues Discussed/Raised	Response/Suggestions Made
				• Suggestions, comments, or opinions to be considered during the implementation of the proposed project	• Conduct a comprehensive EIA to assess the potential environmental impacts on the Rajkandi forest and nearby ecosystems before commencing any quarrying operations. • Adopt best practices such as controlled extraction to minimize soil erosion, sedimentation, and groundwater contamination. Avoid encroachment on sensitive or ecologically critical areas within the Rajkandi range.
29.12.2024	Department of Fisheries		Kamolganj	• Any envisaged impacts on the aquatic pollution due to the silica sand qurraying. • Presence of a protected area or designated fish sanctuary within a 2 KM radius of the project • Fish species present in the chora • Critical and endangered fish species, • Suggestions, comments, and opinions to be considered during the implementation of the project	• The primary fishing point located is Chora, Dhalai river and several marshlands. • Puiya (*Lepidocephalichthys irrorata*) is the vulnerable species found in Chora in river and various types of native fishes including Baim, Gutum, Taki, Koi, Punti shrimp etc. are the noteworthy fishes found in the Chora • Fishermen use traditional methods for fishing • Positive about the projects as sand quarrying will increase the Chora depth and recommended that quarrying should not hamper the natural fisheries resources specially.

Date	Stakeholder Details	Details of Participants	Upazila	Issues Discussed/Raised	Response/Suggestions Made
30.12.2024	Department of Agriculture	Anjan Bhattacharjo Head Assistant Officer	Borolekha	• Details about the project land • Description about the major crops, cropping pattern of the upazila • Anticipated impacts of the proposed project • Suggestions or recommendations.	• Total agriculture land of the Upazila is 12672 ha, whereas 4860 ha is single crop, 5142 ha is double crop, 1365 ha is triple crop land. • Dominant cropping pattern in the area is Fallow-Fallow-Aman which is 20% • Common agricultural products are Paddy, and vegetables such as radish, brinjal, cucumber etc. • Chora water is the vital source of irrigation during dry season and for robi crops.
30.12.2024	Department of Fisheries		Borolekha	• Any envisaged impacts on the aquatic pollution due to the silica sand qurraying. • Presence of a protected area or designated fish sanctuary within a 2 KM radius of the project • Fish species present in the chora • Critical and endangered fish species, • Suggestions, comments, and opinions to be considered during the implementation of the project	• The primary fishing point located is Chora, and Hakaluki Haor and several marshlands. • Puiya (*Lepidocephalichthys irrorata*) is the vulnerable species found in Chora and various types of native fishes including Baim, Gutum, Taki, Koi, Punti shrimp etc. are the noteworthy fishes found in the Chora • Fishermen use traditional methods for fishing • Many types of fish are gradually becoming endangered • There is Hakaluki sanctuary in the project area, but quarrying might be

Date	Stakeholder Details	Details of Participants	Upazila	Issues Discussed/Raised	Response/Suggestions Made
					positive unless no pollutant carried during the quarrying. • Positive about the projects as sand quarrying will increase the Chora depth and recommended that quarrying should not hamper the natural fisheries resources specially.
31.12.2024	Department of Agriculture	Jalal Uddin Sarkar District Training Officer	Mouluvibazar Sadar	• Details about the project land • Description about the major crops, cropping pattern of the upazila • Anticipated impacts of the proposed project • Suggestions or recommendations.	• Chora water is the vital source of irrigation during dry season and for robi crop. Maintaining the flow and depth is important for the irrigation. Sand quarrying will be positive for agriculture unless it is the use of land erosion.
31.12.2024	Department of Fisheries		Mouluvibazar Sadar	• Any envisaged impacts on the aquatic pollution due to the silica sand quarrying. • Presence of a protected area or designated fish sanctuary within a 2 KM radius of the project • Fish species present in the chora • Critical and endangered fish species, • Suggestions, comments, and opinions to be considered during the implementation of the project	• The Fisheries Department is basically responsible for technology transfer and ensuring that all government regulations are followed, and schemes are implemented. • various types of native fishes including Baim, Gutum, Taki, Koi, Punti shrimp etc. are the noteworthy fishes found in the Chora • Fishermen use traditional methods for fishing

9.7 Focus Group Discussion

9.7.1 Focus Group Discussion (FGDs)

FGDs are important when gauging with a group of stakeholders on issues related to the project activities. During EIA study, 11 FGDs with various groups of people those who are going to be affected by the project directly or indirectly was conducted in different location throughout the project adjacent area. Table 9-5 shows the details of FGD Participants and Table 9-6 findings of the FGD.

Table 9-5 Details of FGD Participants

Date	Group Details	Number of Participants			Location
		Male	Female	Total	
18.12.2024	Farmer Community	6	-	6	Sreemangal
20.12.2024	Tea Garden Labor Community	0	6	6	Sreemangal
21.12.2024	Business Community	5	1	6	Kulaura
22.12.2024	Tea Garden Labor	6	-	6	Kulaura
23.12.2024	Farmer Community	9	-	9	Rajnagar
24.12.2024	Fisherman Community	6	-	6	Rajnagar
26.12.2024	Labor Community	8	-	8	Kamalganj
27.12.2024	Business Community	7	-	7	Kamalganj
29.12.2024	Farmer Community	5	-	5	Borolekha
30.12.2024	Fisherman Community	6	-	6	Borolekha
31.12.2024	Business Community	9	-	9	Moluvibazar Sadar

9.7.1.1 Findings of the FGD

Table 9-6 Details of Focus Group Discussion

Issues Discussed	Participant's Opinions, comments, and Suggestions	Response to Questions/Action Point
General perception	The participants expressed both positive and negative perceptions regarding the proposed silica sand quarry project in Moluvibazar District. However, most of them are in favor of the proposed project.	Concerns regarding the project will be taken into consideration.
Potential Problems	People were particularly concerned about how the project might have an adverse impact on the air, noise level, and water in the area. They noted that the Baikka Bill and Hakaluki Haors, as well as other nearby water sources, are already in poor condition, and additional pollution from the project could make it worse. Key worries included dust from sand sourcing and transportation, noise from heavy machinery, and the risk of contaminating water supplies.	Proper mitigation measures will be taken and impacts due to the project will be monitored regularly.

Issues Discussed	Participant's Opinions, comments, and Suggestions	Response to Questions/Action Point
	They said it is important to regularly check air, noise, and water quality at every stage of the project to protect the environment and fix problems quickly.	
Concerns Raised by Local People	Participants raised several critical issues and concerns regarding the project. These included: • Protecting Sensitive Areas: They asked that places like houses, schools, religious sites (temples and mosques), and natural habitats be avoided during the project. • Fishing Zone: They were worried about the Baikka Bill and Hakaluki Haors, which are already suffering from water logging. • Wildlife Safety: They pointed out the area's rich wildlife, including migrant birds, and feared that the project could disturb habitats and harm animals if not managed carefully. • Sand Collection Protocols: They said it is important to follow strict rules when sourcing sand, especially in sensitive areas.	Protection of Haors and Bills, wildlife, and sensitive areas, with mitigation plan.
Employment Status, Percentage of Employment/ Unemployment	People recognized that the project could create jobs for locals, especially during the planning and building stages. They hoped it would offer work for skilled, semi-skilled, and unskilled workers, helping to reduce unemployment in the area.	Opportunities for the locals will be given as a priority based on their education and skill level.
Social Concerns and Challenges	During the different stages of the project, the locals might feel unsecured due to labor influx in the areas. As well as community health issues will be one of another challenges.	A grievance box will be placed at the quarrying site and within the community so that the local people can raise key issues raised due to the project activities in the community.

9.8 Public Consultation Meeting

Five Public Consultation Meetings (PCMs) were conducted as part of the Environmental Impact Assessment (EIA) study to gather stakeholder opinions, local concerns, and recommendations regarding the proposed project.

The first Public Consultation Meeting (PCM) was conducted at Mirjapur High School, Mirjapur Bazar under Sreemangal Upazila on 29 September 2025 at 11:30 am, with participation from 62 stakeholders including local residents, community leaders, teachers, farmers, businesspersons, and government representatives. During the consultation, participants discussed the potential environmental and socio-economic impacts of the proposed project. Many participants expressed positive opinions regarding employment generation, local economic growth, and improvement of communication and business opportunities. However, some concerns were also raised regarding possible environmental pollution, dust generation, traffic movement, and impacts on local agricultural activities. Overall, the participants considered that the expected benefits of the project would outweigh the potential negative impacts if appropriate mitigation measures are implemented.

The second Public Consultation Meeting was held at the Kamolgang Upazila Conference Room on 6 May 2026 at 10:30 am, where 25 participants attended the consultation session. Stakeholders appreciated the project for its potential contribution to regional development, increased employment opportunities, and enhancement of local economic activities. At the same time, participants expressed concerns regarding environmental management, waste disposal, noise generation, and occupational health and safety issues during quarrying phases. The concerns and recommendations raised by the stakeholders were documented and considered for inclusion in the Environmental Management and Monitoring Plan (EMMP) of the EIA study.

The third Public Consultation Meeting was conducted at the Rajnagar Upazila Conference Room on 6 May 2026 at 3:30 pm with participation from 26 stakeholders. The meeting involved discussions with local residents, public representatives, and government officials regarding the anticipated impacts and benefits of the project. Participants highlighted the potential positive impacts such as employment creation, business expansion, and improved socio-economic conditions in the area. However, several participants also raised concerns regarding possible impacts on nearby settlements, environmental pollution, transportation issues, and public safety. Despite these concerns, the overall response toward the project remained favorable due to the anticipated long-term economic and social benefits.

The fourth Public Consultation Meeting took place at the Kulaura Upazila Conference Room on 12 May 2026 at 11:00 am, attended by 21 participants. During the meeting, stakeholders shared their views on the potential environmental and social implications of the project. Many participants supported the project because of its expected contribution to local development, employment opportunities, and enhancement of business activities in the region. At the same time, concerns were raised regarding environmental degradation, dust and noise pollution, and the need for proper environmental monitoring during project implementation. Participants emphasized the importance of adopting adequate mitigation measures to minimize adverse environmental impacts.

The fifth Public Consultation Meeting was held at the Barlekha Upazila Conference Room on 12 May 2026 at 3:00 pm with participation from 27 stakeholders. The consultation session provided an opportunity for local stakeholders to express their opinions, concerns, and recommendations regarding the project. Participants generally welcomed the project due to its expected positive contribution to socio-economic development, local employment generation, and improvement of infrastructure and business opportunities. Nevertheless, concerns were also expressed regarding environmental pollution, traffic congestion, and public health and safety issues. Overall, the consultation findings indicated that the majority of stakeholders supported the project, considering that the positive socio-economic benefits would be greater than the potential adverse impacts, provided that effective environmental management measures are implemented properly.

Photographs of the Public Consultation Meetings (PCMs) conducted in Sreemangal, Kamolgang, Rajnagar, Kulaura, and Barlekha Upazilas are incorporated in Annex I of this EIA report.

The detailed meeting minutes of the five Public Consultation Meetings (PCMs), including participant lists, key discussion points, stakeholder opinions, concerns, and recommendations, are incorporated in Annex I of this EIA report.

CHAPTER 10
Emergency Response Plan

10 EMERGENCY RESPONSE PLAN

10.1 Emergency Response Plan

An Emergency Response Plan (ERP) is a written document, which is required for an organization according to occupational health safety standards and must be displayed at every job site with a certain number of employees (usually five to ten). An emergency response plan also includes information such as whom to notify, who should do what, and the location of emergency stock.

The Emergency Response Plan includes any measures that should be in place at all facilities to combat an accident resulting from road accident during sand transportation, any health hazard during sand extraction especially severe extremes of temperature (cold or hot) cut injury, etc., flash flood due to heavy rain during sand extraction, landslide due to sand extraction and erosion due to sand extraction.

10.1.1 Purpose

This Emergency Response Plan has been developed to provide an organizational and procedural framework for the management of emergencies in the sand extraction project. The purpose of an ERP is to facilitate and organize employer and employee actions during workplace emergencies. Well-developed emergency plans and proper employee training (such that employee understands their roles and responsibilities within the plan) will result in fewer and less severe employee injuries and less structural damage to the facility during emergencies.

10.1.2 Scope

This Emergency Response Plan covers those designated actions managers and employees must take to ensure employees and community safety from technological and natural hazards as well as other emergencies. This plan includes first aid, emergency escape procedures, and emergency activities.

10.1.3 Objectives

In general, the objectives of a plan describe what we expect to achieve by a plan. An emergency plan specifies the aim and procedures for handling sudden or unexpected situations. For the Emergency Response Plan some select outstanding objectives are given below-

1. To identify the various types of natural, manmade, and technological disasters and hazards, that may impact the project;
2. The consequence of these hazards in the project;
3. To propose some necessary action plan for minimizing the worst situations;
4. To conduct safety operations to save lives and properties;
5. To build up awareness among employees to prevent fatalities and injuries;
6. To ensure the duty of management to take emergency action in a short time;
7. To find out the means are available to stop or prevent the situation;
8. To ensure Occupational Health & Safety.

10.1.4 Potential Emergencies

Any incident affecting the entire sand extraction area, which may place life and property in a disaster and hazard, is considered an emergency. Various kinds of emergencies are as follows:

1. **Technological hazards that may arise during sand extraction**
    - Spills of flammable liquids (Oils) from transportation vehicles, excavators and troller
    - Crash or collision during sand transportation and excavation by excavator
2. **Natural hazards that may arise during sand extraction**

- Flash Flood due to heavy rain
- Landslide due to sand extraction
- River bank, and canal erosion due to sand extraction

10.1.5 Emergency Procedure

The Safety Operating Procedure of Emergency Response Plan means executing the systematic operation of any Emergency, which can occur inside the project area.

Based on these events, the required actions are determined.

1. First aid for employees and community
2. Initiate rescue operation
3. Evacuate danger zone
4. Call for external aid
5. Fight against the hazard

The final consideration is a list and the location of resources needed:

1. First aid box
2. Mobile and rescue equipment and tools
3. Trained personnel from worker

Any employee noticing the emergency shall report to their manager to take initiatives for managing the emergency.

10.1.6 Emergency Communication

In an emergency, one needs to communicate with the manager to inform hazard nature, affected persons/materials quantity, location, etc. The person should report activity to emergency responders when they arrive on the scene.

- Notify the emergency according to its degree to contractors, BMD, and DC office;
- Availability of medical equipment e.g. First Aid
- The effective rescue operation to save lives and properties;
- No need to overcrowd in incident area;

10.1.7 Activities Due to Emergency

The following activities will follow during an emergency.

- Stop work immediately and vacate the workplace.
- The facility should provide first aid attendants as well as medical equipment suitable for the people if any injury took place during the incident and quickly react to give maximum medical facility.
- When the incident place has been evacuated a head count shall be done by the manager accounting for all.

10.1.8 Record Keeping

Record keeping of any incident shows the required steps that need to be taken and the weakness of the previous incident. The contractor will keep the records of any emergency and will submit them to the BMD and DC offices. For proper recordkeeping need to maintain some regular procedures as:

- Emergency Response Plan
- Emergency training records to the employee from the contractor
- Keeping records for any emergency

10.1.9 Emergency Response for Spills of Flammable Liquids (Oils)

The following activities will be done in case of spills of flammable liquids (Oils).

- Employ absorbent pads, cloths, or spill kits to soak up the spill and prevent it from spreading.
- If possible, use sand, dirt, or absorbent material to create a barrier around the spill.
- If the spill is ongoing, take measures to stop the leak or source of the spill.
- Collect and contain the cleanup residues and place them into heavy-duty poly bags, plastic buckets, or other containers.
- All used absorbent materials should be placed in heavy-duty poly bags, which are then sealed, labeled, and disposed of through hazardous waste management by a contractor.

10.1.10 Emergency Response for Natural Hazards

10.1.10.1 Flash Flood

The following activities will follow in case of flash floods due to heavy rain.

- Evacuate the people from the flooded area and send them to a safe area.
- The switch of the power supply from the affected area is needed.
- Remove all types of obstructions from the drainage system.
- In cases of any accident in human life, please call the first aid team and get medical attention as soon as possible.
- Call the local fire brigade through the communication system in case of a worst or out-of-control situation.
- In case of flood polyethylene and sandbags are to protect against adverse effects.

10.1.10.2 Landslide Due to Sand Extraction

The following activities will follow in case of landslides due to sand extraction.

- Evacuate the people from the landslide and send them to a safe area.
- Listen and watch for rushing water, mud, or unusual sounds for new landslides.
- Checking new cracks appear in riverbanks or canals.
- Avoid river valleys and low-lying areas during times of danger.
- Check for injured and trapped persons near the slide, without entering the direct slide area.
- In cases of any accident in human life, please call the first aid team and get medical attention as soon as possible.
- Call the local fire brigade through the communication system in case of a worst or out-of-control situation.

10.1.10.3 River Bank and Canal Erosion Due to Sand Extraction

The following activities will be done in case of river bank and canal erosion due to sand extraction.

- Stop all sand extraction activities.
- Checking new cracks appear in riverbanks or canals.
- Giving protection in river banks and canals by using concrete bags and Geobags in extreme cases.

Chapter 11
Conclusion and Recommendation

11 CONCLUSION AND RECOMMENDATIONS

The silica sand extraction project has been initiated by BMD. An Environmental Clearance Certificate (ECC) will be required for the sand extraction project in favor of BMD. This EIA study was conducted to get the ECC from DOE. This EIA presents a comprehensive assessment of the potential impacts associated with the project. The EIA also identifies and develops specific management and mitigation measures to address each potential impact. Residual risks have then been assessed and quantified to determine the potential effectiveness of the proposed management and mitigations, focusing on reducing the significance of the identified potential impact.

It's also assessed during EIA that the sand extraction from quarries also has positive impacts on drainage systems, agricultural lands, flash floods, employment, and biodiversity in the project area.

The EIA has identified that there are negligible to medium negative environmental and social impacts as a result of the project. However, this EIA has also determined that if comprehensive and effective management and mitigation measures are implemented as proposed, the negative impacts should be reduced to a non-significant level.

Based on the analysis conducted in this environmental and social assessment, it is concluded that overall, the project will result in positive socio-economic benefits because the government will produce revenue from sand extraction from the sand quarries and the negative environmental impacts that have been identified are mostly short-term and localized in nature, and can be minimized adequately through manual sand extraction and excavator sand extraction process, and appropriate application of mitigation measures, monitoring and regular supervision of implementation.

The following recommendations are made based on EIA that should be considered for achieving the goal of minimum environmental and social impact and maximum benefits:

- Findings and suggestions of the EIA study of the proposed project should be considered and implemented in the sand extraction project with strong monitoring.
- Manual sand extraction for minimizing the environmental impacts over the excavator where applicable.
- Income and employment opportunities for the local community.
- The Environmental Management Plan (EMP) should be implemented during sand extraction.
- Establishing Institutional arrangements with proper logistics and training for Environment, Health, and Safety for the sand extraction project.

APPENDIX

APPENDIX A: REFERENCES

Appendix A: References

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Appendix B: Approved TOR for the Study

Government of the People's Republic of Bangladesh
Department of Environment
পরিবেশ ভবন, ই-১৬, আগারগাঁও, শের-ই-বাংলা নগর,
ঢাকা-১২০৭
www.doe.gov.bd

Date: 14/07/2025

Record No: 22.02.5800.336.071.027.25.1

Subject: Approval of Terms of Reference (ToR) for the EIA of the Fifty Two Silica Sand Quarries in Moulvibazar District

Reference: 28.07.0000.000.005.66.0005.19.194; Dated: 19.05.2025

With reference to the subject mentioned above, the Department of Environment hereby gives approval of the Terms of Reference (ToR) for the Environmental Impact Assessment (EIA) of the **Fifty Two Silica Sand Quarries in Moulvibazar District,** subject to fulfilling the following terms and conditions:

I. The project authority shall conduct a comprehensive Environmental Impact Assessment (EIA) considering the overall activity of the said project in accordance with the ToR submitted to the Department of Environment (DoE). The EIA study shall be conducted as per the provisions laid down in the Environmental Conservation Rules, 2023.

II. The EIA report shall be prepared in accordance with the guidelines provided in Schedule-11 and Rules-15, 16 of the ECR, 2023.

III. Multidisciplinary experts are required in the study team to prepare the EIA report.

IV. Consultation with Stakeholders/Public Consultation should be done in accordance with Rule 16 of the Environmental Conservation Rules, 2023.

V. The project authority shall submit the EIA report to the Head Office of DoE in Dhaka.

VI. Without approval of the EIA report by the Department of Environment, the project authority shall not make any land and infrastructure development.

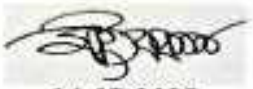
14-07-2025
Masud Iqbal Md Shameem
Director
222218342
direc@doe.gov.bd

Director (Mine and Minerals) (Routine Charge), Bureau of Minerals Development (BMD), 153, Pioneer Road, Segunbagicha, Dhaka.

Record Number: 22.02.5800.336.071.027.25.1/1 (1) Date: 14/07/2025

A Copy for has been sent consideration and necessary (if applicable) action :

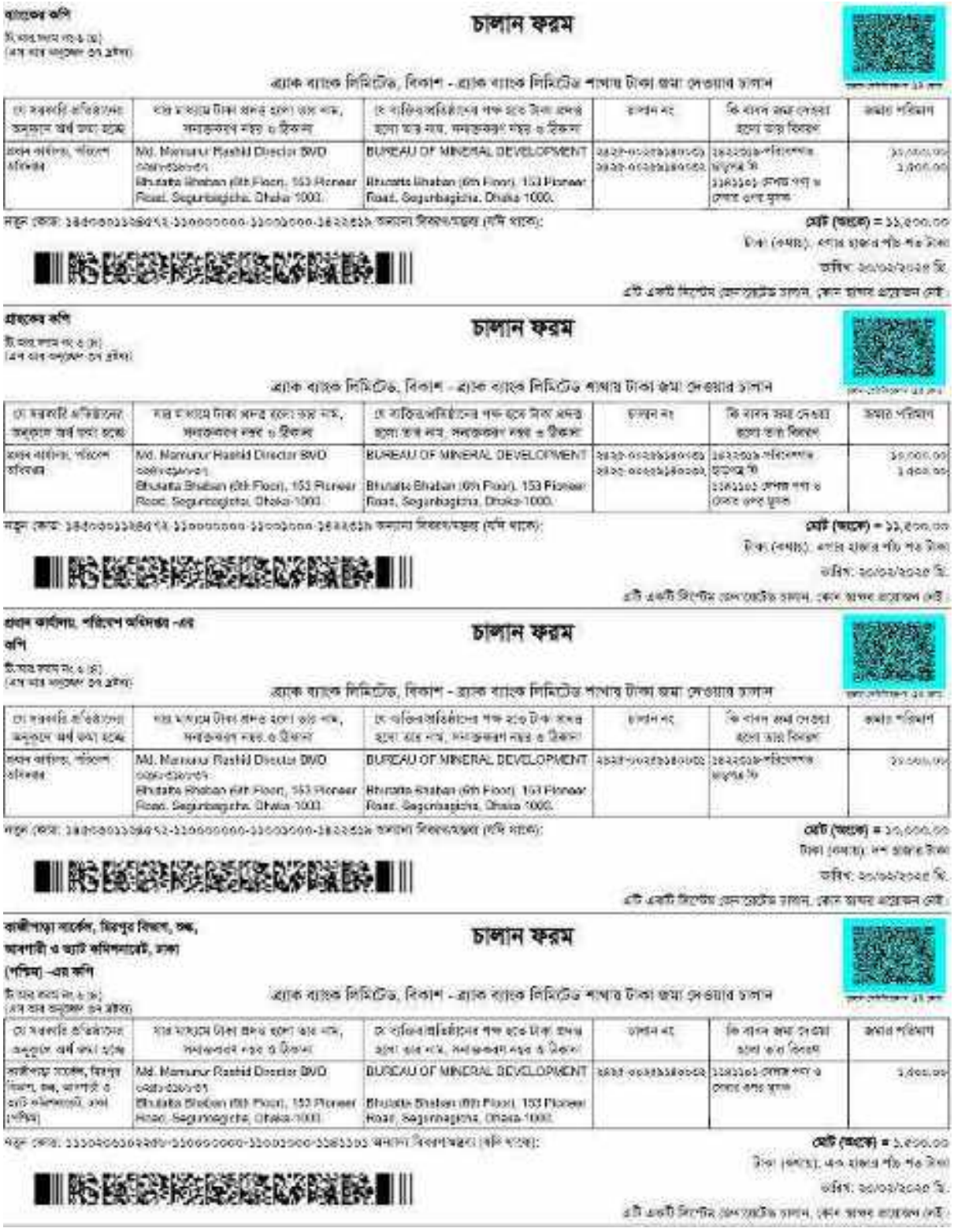
1. Assistant Director, Department of Environment, Moulvibazar District Office, Moulvibazar.



14-07-2025
Masud Iqbal Md Shameem
Director

Appendix C: No Objection Certificate (NOC) from Local Authority

Appendix D: Challan Copy



চালান ফরম

ব্র্যাক ব্যাংক লিমিটেড, বিকাশ - ব্র্যাক ব্যাংক লিমিটেড শাখায় টাকা জমা দেওয়ার চালান

Md. Mamunur Rashid Director BVD Bhutatta Bhaban (6th Floor), 153 Pioneer Road, Segunbagicha, Dhaka-1000.	BUREAU OF MINERAL DEVELOPMENT Bhutatta Bhaban (6th Floor), 153 Pioneer Road, Segunbagicha, Dhaka-1000.				

চালান ফরম

ব্র্যাক ব্যাংক লিমিটেড, বিকাশ - ব্র্যাক ব্যাংক লিমিটেড শাখায় টাকা জমা দেওয়ার চালান

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চালান ফরম

ব্র্যাক ব্যাংক লিমিটেড, বিকাশ - ব্র্যাক ব্যাংক লিমিটেড শাখায় টাকা জমা দেওয়ার চালান

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চালান ফরম

ব্র্যাক ব্যাংক লিমিটেড, বিকাশ - ব্র্যাক ব্যাংক লিমিটেড শাখায় টাকা জমা দেওয়ার চালান

Md. Mamunur Rashid Director BVD Bhutatta Bhaban (6th Floor), 153 Pioneer Road, Segunbagicha, Dhaka-1000.	BUREAU OF MINERAL DEVELOPMENT Bhutatta Bhaban (6th Floor), 153 Pioneer Road, Segunbagicha, Dhaka-1000.				

Appendix E: Photographs of the Monitoring Location

Appendix E-1: Photographs of Ambient Air Quality Monitoring



AQ-1: Huglia Chara, Tea Garden, Sreemangal



AQ-2: Narayan Shil, Bourshir, Sreemangal



AQ-3: In side of BTCL Office, Sreemangal



AQ-4: Amin Mia, East Siraj Nagar, Sreemangal



AQ-5: Jhoblapar, Madhabpur, Komolganj



AQ-6: Mojamel Vila, Kadampur,Komolganj



AQ-7: Md, Akter Hossain,Borodal Uttor bag,Rajnagar



AQ-8: Tulapur, Gov: Primary School, Kulaura



AQ-9: Bichora Bazar, Barlekha



AQ-10: Md, Shahid Hossain, Pachpara, Barlekha

Appendix E-2: Photographs of Ambient Noise Monitoring



NL-1: Belal Hossain's House, Huglia, Tiputila, Sreemangal, Moulvibazar



NL-2: Gandhi Chara, 15 No Model Word Sreemangal, Moulvibazar



NL-3: Anower Ahmed's House, Patrikul, Bhunabir



NL-4: Hupanda's House, Bhunabir, Sreemangal, Moulvibazar



NL-5: Jamal Mia's House, Bourshir, Sreemangal, Moulvibazar



NL-6: Kamal Mia's House, Janaura, Rajnagar, Moulvibazar



NL-7: Sardagar's House, Futki, Laharpur, Moulvibazar



NL-8: Babul Mia's House, Rajnagar, Gazipur, Moulvibazar



NL-9: Iqbal Hossain's House, Jalabad Road, Sreemangal, Moulvibazar



NL-10: Helthyl Chojee Food & Beverage Ltd



NL-11: Momin Mia's, East Siraj Nagar, Sreemangal, Moulvibazar



NL-12: Hazi Md. Sofi Mia's House, Masdihi Sreemangal, Moulvibazar



NL-13: 2 No Madhabpur Gov: Primary School, Komolganj, Moulvibazar



NL-14: Ronjid Mondal's House, Longu para, Komolganj, Moulvibazar



NL-15: Anik Mia's House, West Billpar, Somsherpur, Barlekha, Moulvibazar



NL-16: Tuslif Mia's House, 5 No Word Brohman



NL-17: Akter Hossain's House, Borodal Uttor bag, Rajnagar, Moulvibazar



NL-18: Baramchal School & College, Mohohal, Baramchal, Kulaura, Moulvibazar



NL-19: Selim Member College, Barlekha, Moulvibazar



NL-20: Abdur Nur's House, Rangauti, Barlekha, Moulvibazar



NL-21: Rayhan Mia's House, Barlekha, Moulvibazar



NL-22: Kobira, Nisbahadorpur, Barlekha, Moulvibazar



NL-23: Liton Mia's House, Korumpur, Shahabazpur, Barlekha, Moulvibazar



NL-24: Rannagaryan Tea Garden, 12 No Kessnagar, Moulvibazar



NL-25: Bolu Mia's House, Mokam Bazar, 12 No Kessnagar, Moulvibazar

Appendix E-3: Photographs of Surface Water Sampling



SW-1: Huglia Chara, Tea Garden, Sreemangal, Moulvibazar



SW-2: Moyes Sarkar,Sorkar Bari, Eshani Para, Sreemangal, Moulvibazar



SW-3: Shumoi Chara, Sreemangal, Moulvibazar



SW-4: Pond,Shibpur, Shajahan, Near Kalimondir, Moulvibazar



SW-5: Lagata Chora, Kadampur, Komolganj, Moulvibazar



SW-6: West Billpar, Somsherpur, Barlekha, Moulvibazar



SW-7: Pond Near Yasin Ali, Kazi hate, Rajnagar, Moulvibazar



SW-8: Md, Jahed Ali,Aditomohal, Barlekha, Moulvibazar



SW-9: Kobira, Nisbahadorpur, Barlekha, Moulvibazar



SW-10: Md, Molik Mia, Nowagram, Shahabazpur, Barlekha, Moulvibazar

Appendix E-4: Photographs of Ground Water Sampling



GW-1: Ronju Das, Gandhi Chara,15 No Model Word Sreemangal, Moulvibazar



GW-2: Mayna Master, Patrikul, Bhunabir, Sreemangal, Moulvibazar



GW-3: Ful Mia, Shajahan, Moulvibazar



GW-4: Akis Mia, Esobpur, Sreemangal, Moulvibazar



GW-5: Jhoblapar, Madhabpur, Komolganj, Moulvibazar



GW-6: West Billpar Jame Mosque, Somsherpur, Barlekha, Moulvibazar



GW-7: Md, Mojay Mia, Kazi hate, Munsi, Rajnagar, Moulvibazar



GW-8: Md, Haris Mia, Dakhin Batera Baramchal, Kulaura, Moulvibazar



GW-9: Md, Taher Mia, Aditomohal, Barlekha, Moulvibazar



GW-10: Barlekha, Moulvibazar

Appendix E-5: Photographs of Soil Sampling



SQ-1: Gandhi Chara, Kalimondir, Patrikul, Bhunabir, Sreemangal, Moulvibazar



SQ-2: Bourshir, Sreemangal, Moulvibazar



SQ-3: Rajnagar, Gazipur, Moulvibazar



SQ-4: Pagalpur, Sreemangal, Moulvibazar



SQ-5: Kadampur, Komolganj, Moulvibazar



SQ-6: West Billpar, Somsherpur, Barlekha, Moulvibazar



SQ-7: Kazi hate, Munsi, Rajnagar, Moulvibazar



SQ-8: Near Sree Darga Mondir, Mohohal, Baramchal, Kulaura, Moulvibazar



SQ-9: Wahidpur, Gov: Primary School, Wahidpur, Nisbahadorpur, Barlekha, Moulvibazar



SQ-10: Saypur, Kuarpar, Shahabazpur, Barlekha, Moulvibazar

Appendix E-6: Photographs of Sediment Sampling



SD-1: Huglia Chara, Tea Garden, Sreemangal, Moulvibazar



SD-2: Shumoi Chara, Sreemangal, Moulvibazar



SD-3: Bori Chara, Ujanpara, Madabpur, Baramchal, Kulaura, Moulvibazar



SD-4: Bilash Chora, Shejahenpur, Sreemangal, Moulvibazar



SD-5: Longu Chora, Longupara, Komolganj, Moulvibazar



SD-6: West Billpar, Somsherpur, Barlekha, Moulvibazar



SD-7: Dhamai Chora, Borodal Uttor bag, Rajnagar, Moulvibazar



SD-8: Baramcha, Moulvi Bazar



SD-9: Kobira, Nisbahadorpur, Barlekha, Moulvibazar



SD-10: Deora Chara, Mokam Bazar,12 No Kessnagar, Moulvibazar

Appendix F: Photographs of the KII and FGD

Appendix F-1: KII, FGD and Consultation in the Study area.



KII with Sub Assistant Land Officer, Ashidron Union, Sreemongol



KII in Land Office, Kamalganj



KII with Sub Assistant Land Officer, Kulaura



KII with forest officer, Kulaura, Moulvibazar



KII with forest officer, Baralekha



KII with Forest Officer, Kamalganj



KII in Upzilla Agriculture officer, Baralekha



KII with Upzilla Agriculture officer, Sreemongol



KII in Upzilla Agriculture officer, Moulvibazar Sadar



KII with Sub Assistant Engineer (DPHE), Sreemangal



KII with Sub Assistant Engineer (DPHE), Moulvibazar Sadar



FGD with local people, Baralekha

Source: EQMS Field Survey, December 2024 & January 2025

Appendix F-2: KII, FGD, Consultation and Market Survey for fisheries study in the Study area



KII with Senior Upzilla Fisheries officer, Sreemongol



KII with Upzilla Fisheries officer, Rajnagar



KII with Upzilla Fisheries officer, Kamalganj



Informal Consultation in BoulaChora, Sreemongol



Fish drying near Chora



Fish Market Survey at Baralekha



Push net fishing near Chora



Fishing with Majic net in Chora



Fishing with push net in Chora

Source: EQMS Field Survey, December 2024 & January 2025

Appendix F-3: Focus Group Discussion (FGD) in Study Area



FGD with Farmer Community, Sreemangal



FGD with Tea Garden Labor Community, Sreemangal



FGD with Business Community, Kulaura



FGD with Tea Garden Labor, Kulaura



FGD with Farmer Community, Rajnagar



FGD with Fisherman Community, Rajnagar



FGD with Labor Community, Kamalganj



FGD with Business Community, Kamalganj



FGD with Farmer Community, Borolekha



FGD with Fisherman Community, Borolekha



FGD with Business Community, Mouluvibazar

Appendix F-4: KIIs in Study Area



KII with Nazir, Upazila Land Officer, Sreemangal



KII with Land Officer, Ashidron Union Parishad, Sreemangal



KII with Upazila Agriculture Officer, Sreemangal



KII with Sub Assistant Engineer, DPHE, Sreemangal



KII with Upazila Fisheries Officer, Sreemangal



KII with Upazila Fisheries Officer, Sreemangal



KII with Upazila Fisheries Officer, Rajnagar



KII with Upazila Land Officer, Rajnagar



KII with Upazila DPHE Officer, Rajnagar



KII with Upazila Agricultural Officer, Rajnagar



KII with Upazila Fisheries Officer, Kamalganj



KII with ACF, Rajkandi Range, Kamalganj



KII with Upazila Agriculture Officer, Kamalganj



KII with Upazila Agriculture Officer, Kulaura



KII with Upazila Fisheries Officer, Kulaura



KII with DPHE officer, Kulaura



KII with Upazila Land Officer, Borolekha



KII with Upazila DPHE Officer, Borolekha



KII with Upazila Fisheries Officer, Borolekha



KII with Upazila Land Officer, Borolekha





KII with Upazila Agriculture Officer, Mouluvibazar Sadar



KII with Farm Supervisor, BTRI

KII with Upazila Fisheries Officer, Mouluvibazar Sadar



KII with Junior Wildlife Officer, Forest Department, Sreemangal

Appendix G: Biodiversity

Appendix G-1: Checklist of Terrestrial Floral (Tree) Species Recorded within the AoI

SL No.	Local Name	Common Name	Scientific name	Family	Uses	Abundance	Core Area	Buffer Area
1.	Aam	Mango	*Mangifera indica*	Anacardiaceae	Fruit	VC	√	√
2.	Akashmoni	Acacia	*Acacia auriculiformis*	Fabaceae	Timber	C	√	√
3.	Amra	Hog plum	*Spondius pinnata*	Anacardiaceae	Fruit	VC	√	√
4.	Arjun	Arjun tree	*Terminalia arjuna*	Combretaceae	Medicinal	C	√	√
5.	Ata	Custard apple	*Annona reticulata*	Annonaceae	Fruit	VC	√	√
6.	Badorlathi	Golden shower	*Cassia fistula*	Caesalpiniaceae	Aesthetic	C	√	√
7.	Bansh	Bamboo	*Bambusa sp.*	Poaceae	Timber	VC	√	√
8.	Bel	Bael	*Aegle marmelos*	Rutaceae	Fruit	C	√	√
9.	Bet	Rattan palm	*Clamus gibbsianus*	Arecaceae	Timber	C	√	√
10.	Bilati gab	Velvet apple	Diospyros discolor	Ebenaceae	Fruit	C	√	√
11.	Bokul	Spanish cherry	*Mimusops elengi*	Sapotaceae	Medicinal	C	√	√
12.	Boroi	Indian Jujube	*Ziziphus mauritiana*	Rhamnaceae	Fruit	VC	√	√
13.	Bot	Ficus	*Ficus benghalensis*	Moraceae	Aesthetic	C	√	√
14.	Cha	Tea	*Camellia sinensis*	Theaceae	Making tea, medicinal use	C	√	√
15.	Chalta	Elephant apple	*Dillenia indica*	Dilleniaceae	Fruit	VC	√	√
16.	Chatim	Backboard tree	*Alstonia scholaris*	Apocynaceae	Medicinal	R	√	√
17.	Dalim	Pomegranate	*Punica granatum*	Punicaceae	Fruit	C	√	√
18.	Debdaru	False ashoka	*Polyalthia longifolia*	Annonaceae	Aesthetic	C	√	√
19.	Deshi Gab	Gaub tree	*Diospyros malabarica*	Ebenaceae	Fruit	C	√	√
20.	Dumur	Indian fig tree	*Ficus racemosa*	Moraceae	Medicinal	R	√	√
21.	Eucalyptus	Eucalyptus	*Eucalyptus citriodora*	Myrtaceae	Timber	VC	√	√

SL No.	Local Name	Common Name	Scientific name	Family	Uses	Abundance	Core Area	Buffer Area
22.	Haritaki	Chebulic myrobalan	*Terminalia chebula*	Combretaceae	Medicinal	R	√	√
23.	Hijol	Mango-pine	*Barringtonia acutangula*	Lecythidaceae	Timber	R	√	√
24.	Jam	Java Plum	*Syzygium cumini*	Myrtaceae	Fruit	VC	√	√
25.	Jambura	Pomelo	*Citrus maxima*	Rutaceae	Fruit	C	√	√
26.	Jamrul	Wax apple,	*Syzygium samarangense*	Myrtaceae	Fruit	C	√	√
27.	Jarul	Queen's Flower	*Lagerstroemia speciosa*	Lythraceae	Aesthetic	C	√	√
28.	Kalo Koroi	Lebbek tree	*Albizia lebbeck*	Fabaceae	Timber	VC	√	√
29.	Kamranga	Star fruit	Averrhoa carambola	Oxalidaceae	Fruit	C	√	√
30.	Kath Badam	Indian Almond	*Terminalia catappa*	Combretaceae	Fruit	C	√	√
31.	Kathal	Jackfruit	*Artocarpus heterophyllus*	Moraceae	Fruit	VC	√	√
32.	Khejur	Indian date	*Phoenix sylvestris*	Arecaceae	Fruit	VC	√	√
33.	Khoksa/Kakdumur	Hairy pig	*Ficus hispida*	Moraceae	Aesthetic	VC	√	√
34.	Kodom	Burflower-tree	*Neolamarckia cadamba*	Rubiaceae	Timber	C	√	√
35.	Krishnochura	Royal poinciana	*Delonix regia*	Caesalpiniaceae	Aesthetic	C	√	√
36.	Lebu	Lemon	Citrus sp.	Rutaceae	Fruit	VC	√	√
37.	Lichu	Lychee	*Litchi chinensis*	Sapindaceae	Fruit	C	√	√
38.	Madar	Indian coral tree	*Erythrina variegata*	Fabaceae	Aesthetic	R	√	√
39.	Mahogony	Mahogoni	*Swietenia mahagoni*	Meliaceae	Timber	VC	√	√
40.	Narikel	Coconut	*Cocos nucifera*	Arecaceae	Fruit	VC	√	√
41.	Neem	Neem	*Azadirachta indica*	Meliaceae	Medicinal	C	√	√
42.	Palash	Sacred Tree	*Butea monosperma*	Fabaceae	Medicinal	C	√	√
43.	Pepe	Papaya	*Carica papaya*	Caricaceae	Fruit	VC	√	√
44.	Peyara	Guava	*Psidium guajava*	Myrtaceae	Fruit	VC	√	√

SL No.	Local Name	Common Name	Scientific name	Family	Uses	Abundance	Core Area	Buffer Area
45.	Pitali	False White Teak	*Trewia nudiflora*	Euphorbiaceae	Timber	C	√	√
46.	Raintree	Raintree	*Samanea saman*	Fabaceae	Timber	VC	√	√
47.	Rubber	Rubber tree	*Hevea brasiliensis*	Euphorbiaceae	Resin	C	√	√
48.	Sada Koroi	White Siris	*Albizia procera*	Fabaceae	Timber	VC	√	√
49.	Sajna	Drumstick tree	*Moringa oleifera*	Moringaceae	fruit	C	√	√
50.	Segun	Teak	*Tectona grandis*	Verbenaceae	Timber	C	√	√
51.	Shofeda	Sapodilla	*Achras zapota*	Sapotaceae	Fruit	VC	√	√
52.	Supari	Areca palm	*Areca catechu*	Arecaceae	Fruit	VC	√	√
53.	Taal	Palm	*Borassus flabellifer*	Arecaceae	Fruit	VC	√	√
54.	Tejpata	Malabar leaf	*Cinnamomum tamala*	Lauraceae	Medicinal	R	√	√
55.	Tetul	Tamarind	*Tamarindus indica*	Caesalpiniaceae	Fruit	C	√	√
56.	Toon tree	Toon	*Toona ciliata*	Meliaceae	Medicinal	C	√	√

Source: EQMS Field Survey, December 2024 & January 2025

* VC = Very Common, C= Common, R= Rare

Appendix G-2: List of Herpetofauna species recorded in the Study Area

Sl No	Family	Common Name	Local Name	Scientific Name	IUCN Red List of Bangladesh, 2015*	IUCN Red List Version 2022-1**	Wildlife conservation and security Act, 2012	Core Area	Buffer Area
Amphibians									
1.	Bufonidae	Asian Common Toad	Kuno Bang	*Duttaphrynus melanostictus*	LC	LC	Schedule II	√	√

2.	Microhylidae	Berdmore's Narrowmouthed Frog	Cheena Bang	*Microhyla berdmorei*	LC	LC	Schedule II	√	√
3.		Ornate Narrow-mouthed Frog	China Beng	*Microhyla ornata*	LC	LC	Schedule II	√	√
4.	Dicroglossidae	Indian Bullfrog	Kola Beng	*Hoplobatrachus tigerinus*	LC	LC	Schedule II	√	√
5.		Indian Skipper Frog	Katkati Bang	*Euphlyctis cyanophlyctis*	LC	LC	Schedule II	√	√
6.		Indian Green Pond Frog	Sobuj Bang	*Euphlyctis hexadactylus*	LC	LC	Schedule II	√	√
7.	Rhacophoridae	Tree Frog	Dui-dagi Gecho Bang	*Chiromantis vittatus*	LC	LC	Schedule II	√	√
8.		Common Tree Frog	Dorakata Gecho Bang	*Polypedates leucomystax*	LC	LC	Schedule II	√	√
9.	Ranidae	Common Green Frog	Shobuj Bang	*Hylarana erythraea*	LC	LC	Schedule II	√	√
10.		Two-striped Grass Frog	Gash Bang	*Hylarana taipehensis*	LC	LC	Schedule II	√	√
Reptiles									
1.	Gekkonidae	Common House Gecko	Pati tiktiki	*Hemidactylus frenatus*	LC	LC	Schedule II	√	√
2.		Tokay Gecko	Tokkhak	*Gekko gecko*	LC	LC	Schedule II	√	√
3.		House Lizard	Choto Tiktiki	*Hemidactylus bowringii*	LC	LC	Schedule II	√	√
4.	Agamidae	Common Garden Lizard	Rokto Chusha	*Calotes versicolor*	LC	LC	Schedule II	√	√
5.	Scincidae	Indian Mabuya	Achil	*Eutropis carinata*	LC	LC	Schedule II	√	√
6.		Common Garden Skink	Anjon	*Lampropholis guichenoti*	LC	LC	Schedule II	√	√
7.	Varanidae	Bengal Monitor Lizard	Gui shap	*Varanus bengalensis*	NT	NT	Schedule II	√	√
8.		Monitor Lizard	Gui Shap	*Varanus salvator*	NT	NT	Schedule I	√	√
9.	Colubridae	Checkered Keelback	Dhora shap	*Xenochrophis piscator*	LC	LC	Schedule I	√	√
10.		Indian Rat Snake	Daraj shaap	*Ptyas mucosa*	LC	LC	Schedule I	√	√

11.		Copper-headed Trincate Snake	Dudraj Shap	*Coelognathus radiatus*	LC	LC	Schedule I		√
12.		Common Wolf Snake	Gharginni Shap	*Lycodon aulicus*	LC	LC	Schedule I		√
13.		Striped Keelback	Dhora Shap	*Amphiesma stolatum*	LC	LC	Schedule I	√	√
14.	Homalopsidae	Common Smooth Water Snake	Painna Shap	*Enhydris enhydris*	LC	LC	Schedule I	√	√
15.	Typhlopidae	Diard's Blindsnake	Dumukha Shap	*Argyrophis diardii*	LC	LC	-	√	√
16.	Elapidae	Banded Krait	Shangkhini	*Bungarus fasciatus*	LC	LC	Schedule II	√	√
17.		Spectacled Cobra	Gokhra Shap	*Naja naja*	NT	NT	-	√	√
18.	Geoemydidae	Indian Roofed Turtle	Kori kaitta	*Pangshura tecta*	LC	LC	Schedule I	√	√
19.	Trionychidae	Spotted Flapshell	Sundi Kachim	*Lissemys punctata*	LC	LC	Schedule II		√

Source: EQMS Field Survey, December 2024 & January 2025

*IUCN Bangladesh. 2015. Red List of Bangladesh Volume 4: Reptiles and Amphibians; LC=Least Concern; NT=Near Threatened; NE=Not Evaluated

**IUCN 2025. The IUCN Red List of Threatened Species. Version 2024-2. (https://www.iucnredlist.org/)

Appendix G-3: List of Terrestrial Avifaunal species found in Study Area

Sl No	Common Name	Local Name	Scientific Name	Family	IUCN Red List Status		Wildlife (Conservation and Security) Act 2012	Core Area	Buffer Area
					Local*	Global**			
1.	Asian Koel	Kokil	*Eudynamys scolopaces*	Cuculidae	LC	LC	Schedule II	√	√
2.	Asian Pied Starling	Go Shalik	*Sturnus contra*	Sturnidae	LC	LC	Schedule I	√	√
3.	Bank Myna	Gang Shalik	*Acridotheres ginginianus*	Sturnidae	LC	LC	Schedule I	√	√
4.	Barn Swallow	Pati Ababil	*Hirundo rustica*	Hirundinidae	LC	LC	Schedule II	√	√
5.	Baya Weaver	Babui	*Ploceus philippinus*	Ploceidae	LC	LC	Schedule I	√	√

Sl No	Common Name	Local Name	Scientific Name	Family	IUCN Red List Status		Wildlife (Conservation and Security) Act 2012	Core Area	Buffer Area
					Local *	Global**			
6.	Black Drongo	Kala Fingey	*Dicrurus macrocercus*	Cuculidae	LC	LC	Schedule II	√	√
7.	Black hooded Oriole	Kalomatha Benebou	*Oriolus xanthornus*	Oriolidae	LC	LC	Schedule II	√	√
8.	Black Kite	Bhubon Chil	*Milvus migrans*	Accipitridae	LC	LC	Schedule II	√	√
9.	Black naped Monarch	Kalo Katkatia	*Hypothymis azurea*	Monarchidae	LC	LC	Schedule I	√	√
10.	Black-rumped Flameback	Sonali kaththokra	*Dinopium benghalense*	Picidae	LC	LC	Schedule II	√	√
11.	Blue-throated Barbet	Nil-gola Basonti Baori	*Psilopogon asiaticus*	Megalaimidae	LC	LC	Schedule I	√	√
12.	Brahminy Kite	Shonkho Chil	*Haliastur indus*	Accipitridae	LC	LC	Schedule II	√	√
13.	Bronzed Drongo	Fingey	*Dicrurus aeneus*	Dicruridae	LC	LC	Schedule I	√	√
14.	Bronze-winged jacana	Jolpipi	*Metopidius indicus*	Jacanidae	LC	LC	Schedule I	√	√
15.	Brown Shrike	Badami Koshai	*Lanius cristatus*	Laniidae	LC	LC	Schedule II	√	√
16.	Cattle Egret	Go Boga	*Bubulcus ibis*	Ardeidae	LC	LC	Schedule II	√	√
17.	Chestnut Munia	Pora Munia	*Lonchura atricapilla*	Estrildidae	LC	LC	-	√	√
18.	Chestnut-tailed starling	Kath Shalik	*Sturnia malabarica*	Sturnidae	LC	LC	Schedule II	√	√
19.	Common Hoopoe	Pati Hudhud	*Upupa epops*	Upupidae	LC	LC	Schedule I	√	√
20.	Common Iora	Fotikjol	*Aegithina tiphia*	Aegithinidae	LC	LC	Schedule II	√	√
21.	Common King Fisher	Chhoto Maachranga	*Alcedo atthis*	Accipitridae	LC	LC	Schedule II	√	√
22.	Common Myna	Salik/Bhat Salik	*Acridotheres tristis*	Sturnidae	LC	LC	Schedule II	√	√
23.	Common Sandpiper	Pati Batan	*Actitis hypoleucos*	Scolopacidae	LC	LC	Schedule II	√	√
24.	Common Tailorbird	Tuntuni	*Orthotomus sutorius*	Cisticolidae	LC	LC	Schedule II	√	√

Sl No	Common Name	Local Name	Scientific Name	Family	IUCN Red List Status		Wildlife (Conservation and Security) Act 2012	Core Area	Buffer Area
					Local *	Global**			
25.	Coppersmith Barbet	Chhoto Basanta Bauri	*Psilopogon haemacephalus*	Megalaimidae	LC	LC	Schedule II	√	√
26.	Crested Serpent Eagle	Tila Nag-eegol	*Spilornis cheela*	Accipitridae	LC	LC	Schedule I	√	√
27.	Eurasian collared dove	Dhobol Ghughu	*Streptopelia decaocto*	Columbidae	LC	LC	Schedule I	√	√
28.	Fulvous-breasted Woodpecker	Batabi Kathkurali	*Dendrocopos macei*	Picidae	LC	LC	Schedule II	√	√
29.	Great Egret	Majhari Bok	*Casmerodius albus*	Ardeidae	LC	LC	Schedule II	√	√
30.	Greater Coucal	Boro Kubo	*Centropus sinensis*	Cuculidae	LC	LC	Schedule I	√	√
31.	Green bee-eater	SuiChora	*Merops orientalis*	Meropidae	LC	LC	Schedule II	√	√
32.	House Crow	Pati Kak	*Corvus splendens*	Corvidae	LC	LC	-	√	√
33.	House Sparrow	Pati choroi	*Passer domesticus*	Passeridae	LC	LC	Schedule II	√	√
34.	Indian Pond Heron	Kani Bok	*Ardeola grayii*	Ardeidae	LC	LC	Schedule I	√	√
35.	Indian Roller	Bangla Neelkanto	*Coracias benghalensis*	Coracidae	LC	LC	Schedule I	√	√
36.	Intermediate Egret	Majhari Bok	*Ardea intermedia*	Ardeidae	LC	LC	Schedule I	√	√
37.	Large-billed Crow	Dar Kak	*Corvus macrorhynchos*	Corvidae	LC	LC	-	√	√
38.	Lesser Whistleing Duck	Pati Sorali	*Dendrocygna javanica*	Anatidae	LC	LC	Schedule I	√	√
39.	Little Cormorant	Choto Pankowri	*Microcarbo niger*	Phalacrocoracidae	LC	LC	Schedule II	√	√
40.	Little Egret	Choto boga	*Egretta garzetta*	Ardeidae	LC	LC	Schedule II	√	√
41.	Long-tailed Shrike	Badami Koshai	*Lanius schach*	Laniidae	LC	LC	Schedule II	√	√

Sl No	Common Name	Local Name	Scientific Name	Family	IUCN Red List Status		Wildlife (Conservation and Security) Act 2012	Core Area	Buffer Area
					Local *	Global**			
42.	Oriental Magpie Robin	Doel	*Copsychus saularis*	Muscicapidae	LC	LC	Schedule II	√	√
43.	Plain Prinita	Nirol Prina	*Prinia inornata*	Cisticolidae	LC	LC	Schedule II	√	√
44.	Purple Sunbird	Niltuni	*Cinnyris asiaticus*	Nectarinidae	LC	LC	Schedule I	√	√
45.	Purple Swamphen	Beguni Kalem	*Porphyrio porphyrio*	Rallidae	LC	LC	Schedule I	√	√
46.	Red Turtle Dove	Lal Rajghughu	*Streptopelia tranquebarica*	Columbidae	LC	LC	Schedule I	√	√
47.	Red-vented Bulbul	Bangla bulbul	*Pycnonotus cafer*	Pycnonotidae	LC	LC	Schedule II	√	√
48.	Red-whiskered Bulbul	Sipahi Bulbul	*Pycnonotus jocosus*	Pycnonotidae	LC	LC	Schedule I	√	√
49.	Rufous Treepie	Harichacha	*Dendrocitta vagabunda*	Corvidae	LC	LC	Schedule II	√	√
50.	Spotted Dove	Tila Ghughu	*Streptopelia chinensis*	Columbidae	LC	LC	Schedule I	√	√
51.	Striated Grassbird	Dagi Ghashpakhi	*Megalurus palustris*	Sylvidae	LC	LC	Schedule I	√	√
52.	Tricoloured Munia	Shyamsundar	*Lonchura malacca*	Estrildidae	LC	LC	Schedule I	√	√
53.	White -bellied Munia	Dhola Komor Munia	*Lonchura leucogastra*	Estrildidae	LC	LC	-	√	√
54.	White Wagtail	Khonjon	*Motacilla alba*	Motacillidae	LC	LC	Schedule II	√	√
55.	White-breasted Kingfisher	Dhola gola Machranga	*Halcyon smyrnensis*	Alcedinidae	LC	LC	Schedule II	√	√
56.	Wood Sandpiper	Balu Batan	*Tringa glareola*	Scolopacidae	LC	LC	Schedule II	√	√

Source: EQMS Field Survey, December 2024 & January 2025

*IUCN Bangladesh. 2015. Red List of Bangladesh Volume 3: Birds; LC=Least Concern, NT=Near Threatened

**IUCN 2025. The IUCN Red List of Threatened Species. Version 2024-2. (https://www.iucnredlist.org/)

Appendix G-4: List of Mammalian species recorded in the Study Area

Sl No	Common Name	Local Name	Scientific Name	Family	IUCN Red List Status		Wildlife Conservation and Security Act, 2012	Core Area	Buffer Area
					Local*	Global**			
1	Lesser Bandicoot Rat	Dhari Idur	*Bandicota bengalensis*	Muridae	LC	LC	Schedule III	√	√
2	Pallas's Squirrel	Lalche-buk Kathbirali	*Callosciurus erythraeus*	Sciuridae	LC	LC	-	√	√
3	Irrawaddy Squirrel	Kathbirali	*Callosciurus pygerythrus*	Sciuridae	LC	LC	Schedule I	√	√
4	Golden Jackal	Pati-Siyal	*Canis aureus*	Canidae	LC	LC	Schedule I	√	√
5	Jungle Cat	Choto Ban Biral	*Felis chaus*	Felidae	LC	LC	Schedule I	√	√
6	Rhesus Macaque	Banor, Bandor	*Macaca mulatta*	Cercopithecidae	VU	LC	-	√	√
7	Common Indian Field Mouse	Metho Idur	*Mus booduga*	Muridae	LC	LC	Schedule III	√	√
8	House Mouse	Nengti Idur	*Mus musculus*	Muridae	LC	LC	Schedule III	√	√
9	Indian pipistrelle	Chamchika	*Pipistrellus coromandra*	Vespertilionidae	LC	LC	Schedule I	√	√
10	Fishing Cat	Mechho Biral/ Mechho Bagh	*Prionailurus viverrinus*	Felidae	EN	EN	Schedule I	√	√
11	Indian Fruit Bat	Badur	*Pteropus giganteus*	Pteropodidae	LC	LC	Schedule I	√	√
12	Common House Rat	Idur	*Rattus rattus*	Muridae	LC	LC	Schedule III	√	√
13	House shrew	Chika	*Suncus murinus*	Soricidae	LC	LC	-	√	√

Sl No	Common Name	Local Name	Scientific Name	Family	IUCN Red List Status		Wildlife Conservation and Security Act, 2012	Core Area	Buffer Area
					Local*	Global**			
14	Phayre's langur	Chosmapora Hanuman	*Trachypithecus phayrei*	Cercopithecidae	CR	EN	-	√	√
15	Capped Langur	Mukhpora Hanuman	*Trachypithecus pileatus*	Cercopithecidae	EN	VU	-	√	√
16	Small Indian Mongoose	Choto beji	*Urva auropunctata*	Herpestidae	LC	LC	Schedule I	√	√

Source: EQMS Field Survey, December 2024 & January 2025

*IUCN Bangladesh. 2015. Red List of Bangladesh Volume 2: Mammals; LC=Least Concern, NT= Near Threatened

**IUCN 2025. The IUCN Red List of Threatened Species. Version 2024-2. (https://www.iucnredlist.org/)

Appendix G-5: Fish and Crustacean Species are Recorded Within Project AOI

SL No	Local Name	Common Name	Scientific Name	Family	IUCN Red List Status		Core Area	Buffer Area
					Local*	Global**		
Fish								
1.	Bajari Tengra	Tengara Catfish	*Mystus tengara*	Bagridae	LC	LC	√	√
2.	Bele	Freshwater Goby	*Glossogobius giuris*	Gobiidae	LC	LC	√	√
3.	Bheda	Mottled Nandus	*Nandus nandus*	Nandidae	NT	LC	√	√
4.	Gol chanda	Indian Glassy Fish	*Parambassis ranga*	Ambassidae	LC	LC	√	√
5.	Guchi Baim	Barred Spiny Eel	*Macrognathus pancalus*	Mastacembelidae	LC	LC	√	√
6.	Gulsha Tengra	Bleeker's Mystus	*Mystus bleeker*	Bagridae	LC	LC	√	√
7.	Jat Punti	Spotfin Swamp Barb	*Puntius sophore*	Cyprinidae	LC	LC	√	√
8.	Kanpona	Blue panchax	*Aplocheilus panchax*	Aplocheilidae	LC	LC	√	√
9.	Kholisa	Stripled gourami	*Trichogaster fasciata*	Osphronemidae	LC	LC	√	√

SL No	Local Name	Common Name	Scientific Name	Family	IUCN Red List Status		Core Area	Buffer Area
					Local*	Global**		
10.	Koi	Climbing Perch	*Anabas testudineus*	Anabantidae	LC	DD	√	√
11.	Mola	Mola Carplet	*Amblypharyngodon mola*	Cyprinidae	LC	LC	√	√
12.	Puiya	Loktak Loach	*Lepidocephalichthys irrorata*	Cobitidae	VU	LC	√	√
13.	Shing	Stinging Catfish	*Heteropneustes fossilis*	Heteropneustidae	LC	LC	√	√
14.	Shol	Snakehed Murrel	*Channa striatus*	Channidae	LC	LC	√	√
15.	Taki	Spotted Snakehead	*Channa punctatus*	Channidae	LC	LC	√	√
16.	Tara Baim	One-stripe Spiny eel	*Macrognathus aculeatus*	Mastacembelidae	NT	LC	√	√
Crustacean								
17.	Chatka Chingri	Monsoon River Prawn	*Macrobrachium malcolmsonii*	Palaemonidae	LC	LC	√	√
18.	Dimua Icha	Dimua River Prawn	*Macrobrachium villosimanus*	Palaemonidae	LC	LC	√	√
19.	Sada Icha	Prawn	*Macrobrachium sp.*	Palaemonidae	LC	LC	√	√

Source: EQMS Field Survey, December 2024 & January 2025

*IUCN Bangladesh. 2015. Red List of Bangladesh Volume 5: Freshwater Fishes;

**IUCN 2025. The IUCN Red List of Threatened Species. Version 2024-2. (https://www.iucnredlist.org/)

Status Code: LC=Least Concern, CR= Critically Endangered, NT=Near Threatened; VU=Vulnerable, EN= Endangered; CR=Critically Endangered, NE=Not Evaluated, DD=Data Deficient

Appendix G-6: Observed Migratory Bird Species in AOI

Sl No	Family	Common Name	Local Name	Scientific name	Migratory Status	IUCN Red List of Bangladesh, 2015*	IUCN Red List Version 2024-2**	Core Area	Buffer Area
1.	Scolopacidae	Wood Sandpiper	Bon Batan	*Tringa glareola*	Winter Visitor	LC	LC		√
2.	Charadriidae	Little Ringed Plover	Choto Nothjiria	*Charadrius dubius*	Winter Visitor	LC	LC		√
3.	Charadriidae	Grey-headed Lapwing	Metemath a Titi	*Vanellus cinereus*	Winter Visitor	LC	LC		√
4.	Ciconiidae	Asian Openbill	Samkhol	*Anastomus oscitans*	Local Migratory	LC	LC	√	√
5.	Laniidae	Brown Shrike	Badami Koshai	*Lanius cristatus*	Winter and passage migrant	LC	LC	√	√
6.	Motacillidae	Grey Wagtail	Metey Khonjon	*Motacilla cinerea*	Winter Visitor	LC	LC		√
7.	Motacillidae	White Wagtail	Khonjon	*Motacilla alba*	Summer Visitor	LC	LC	√	√
8.	Podicipedidae	Little Grebe	Choto Duburi	*Tachybaptusruficollis*	Winter Visitor	LC	LC		√
9.	Rallidae	Eurasian Coot	Kalo Koot	*Fulica atra*	Winter Visitor	LC	LC		√

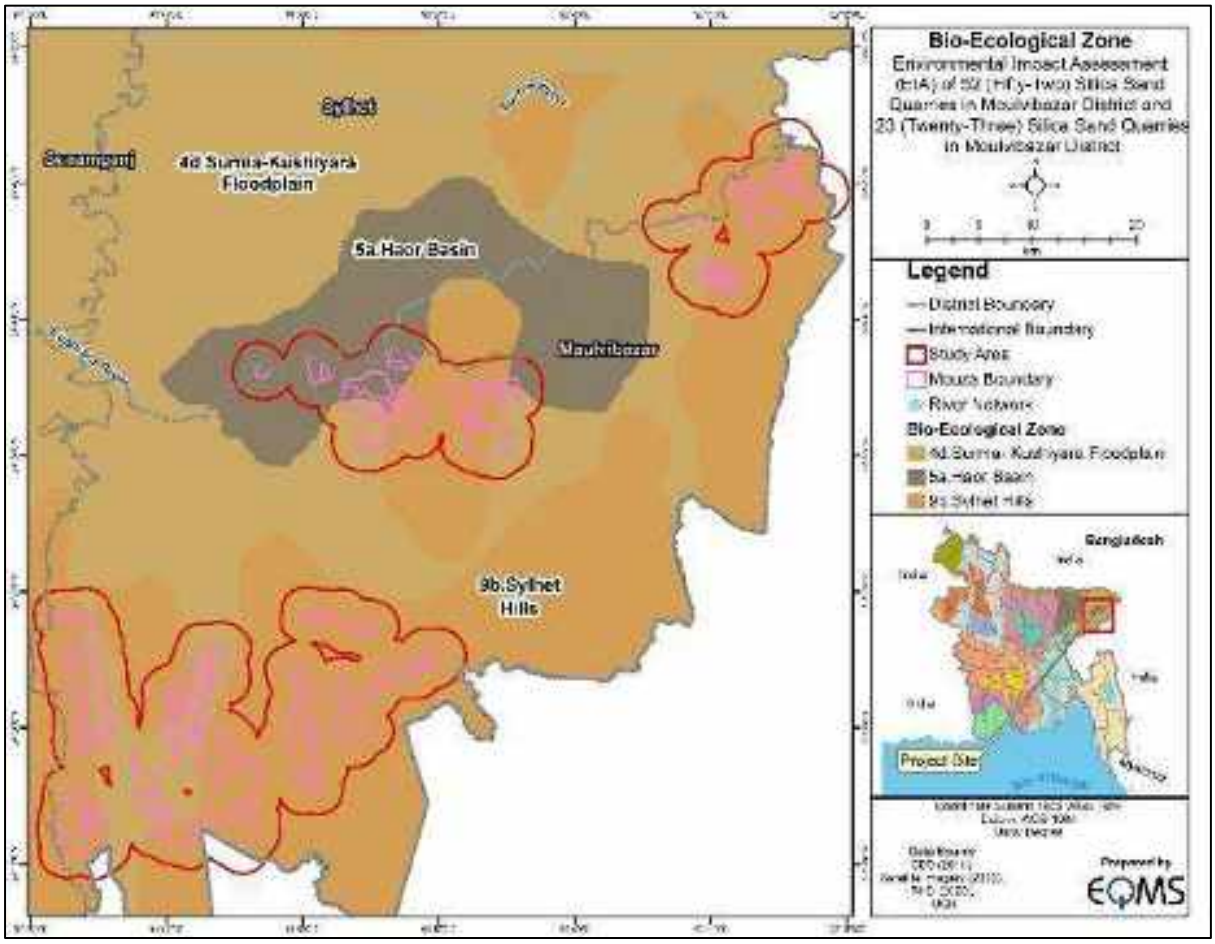
Source: EQMS Field Survey, December 2024 & January 2025

*IUCN Bangladesh. 2015. Red List of Bangladesh Volume 3: Birds;

**IUCN 2025. The IUCN Red List of Threatened Species. Version 2024-2. (https://www.iucnredlist.org/)

Status Code: LC=Least Concern, CR= Critically Endangered, NT=Near Threatened; VU=Vulnerable, EN= Endangered; CR=Critically Endangered, NE=Not Evaluated, DD=Data Deficient

Appendix G-7: Bio-ecological Zones Map of the Project Area



Source: IUCN, 2002

Appendix G-8: Photographs of Different Types of Terrestrial Habitats



Tea Garden



Homestead Vegetation



Agricultural Land



Roadside Plantation



Rubber garden



Riparian Vegetation



Fallow land

Source: EQMS Field Survey, December 2024 & January 2025

Appendix G-9: Photographs of Floral Species within the Study Area



Hairy pig (*Ficus hispida*)



Chebulic myrobalan (*Terminalia chebula*)



Tea (*Camellia sinensis*)



Mahogoni (*Swietenia mahagoni)*



Hijol (*Barringtonia acutangula*)



Indian Jujube (*Ziziphus mauritiana)*



Rubber (*Delonix regia*)



Pitali (*Trewia nudiflora*)



Date palm (*Phoenix dactylifera*)



Coconut (*Cocos nucifera*)



Bet (*Clamus gibbsianus*)



Chatim (*Alstonia scholaris*)



Bamboo (*Bambosa sp.*)



Kodom (*Neolamarckia cadamba*)



Toon tree (*Toona ciliata*)

Source: EQMS Field Survey, December 2024 & January 2025

Appendix G-10: Herpetofauna Species observed in project AoI



Common green frog (*Hylarana erythraea*)



Indian Mabuya (*Eutropis carinata*)



Checkered Keelback (*Xenochrophis piscator*)

Source: EQMS Field Survey, December 2024 & January 2025

Appendix G-11: Some Observed Avifauna Species within Project AOI



Striated Grassbird *(Megalurus palustris)*



Little Egret *(Egretta garzetta)*



Little Cormorant *(Microcarbo niger)*



Intermediate Egret (*Ardea intermedia*)



Greater Coucal *(Centropus sinensis)*



Rufous treepie (*Dendrocitta vagabunda*)



Purple Swamphen *(Porphyrio porphyrio)*



Green bee-eater (*Merops orientalis)*



Brahminy Kite (*Haliastur indus*)



Red-whiskered Bulbul (*Pycnonotus jocosus*)



Cattle Egret (*Bubulcus ibis*)



Baya Weaver (*Ploceus philippinus*)



Crested Serpent Eagle (*Spilornis cheela*)



Lesser Whistling Duck (*Dendrocygna javanica*)



Common Hoopoe (*Upupa epops*)

Source: EQMS Field Survey, December 2024 & January 2025

Appendix G-12: Pictures of Migratory Birds recorded from the AoI



Grey-headed Lapwing (*Vanellus cinereus*)



Asian Openbill (*Anastomus oscitans*)



Wood Sandpiper (*Tringa glareola*)



Little Grebe (*Tachybaptus ruficollis*)



Little Ringed Plover (*Charadrius dubius*)



Brown Shrike *(Lanius cristatus)*



Eurasian Coot (*Fulica atra*)



Grey Wagtail (*Motacilla cinerea*)

Source: EQMS Field Survey, December 2024 & January 2025

Appendix G-13: Observed Terrestrial Mammal species in the Project AOI



Rhesus Macaque (*Macaca mulatta*)



Irrawaddy Squirrel (*Callosciurus pygerythrus*)



Small Indian Mongoose (*Urva auropunctata*)



Pallas's Squirrel (*Callosciurus erythraeus*)

Source: EQMS Field Survey, December 2024 & January 2025

Appendix G-14: Photographs of Different Types of Aquatic Habitats within project AOI





Stream or Chora





Aquaculture Pond



Dhalai River



Monu River



Baikka beel – a part of Hail Haor



Hail Haor

Source: EQMS Field Survey, December 2024 & January 2025

Appendix G-15: A photo plate of observed Fish and Crustaceans species in Project AoI



Gol chanda (*Parambassis ranga*)



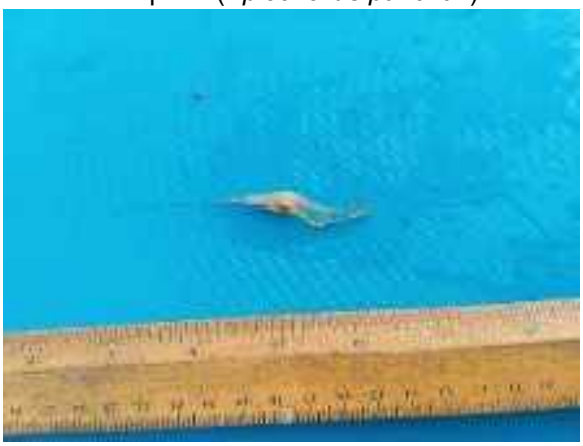
Jat Punti (*Puntius sophore*)



Kanpona (*Aplocheilus panchax*)



Taki (*Channa punctatus*)



Sada Icha (*Macrobrachium sp.*)



Koi (*Anabas testudineus*) with Punti

Source: EQMS Field Survey, December 2024 & January 2025

Appendix H: Laboratory Test Report

Ref: EQMS/Ambient Air Quality/ 20250127071

EQMS ENVIRONMENTAL LABORATORY

Monitoring Results of Ambient Air Quality

Project Name	:	Moulvibazar_EIA Study of 52 Silica sand Quarries_In Moulvibazar District
Monitoring Activity	:	Ambient Air Quality
Monitoring Personnel	:	Toffazzal Hossain, Consultant, EQMS Consulting Limited
Monitoring Location	:	AAQ1; Hajlo Chora Tea Garden, Sreemangal, Moulvibazar (24° 14'16"N 91°38'38"E) AAQ2; Narayan Shil's House, Boamhir, Sreemangal, Moulvibazar (24° 21'03"N 91°36'50"E) AAQ3; Inside of BTCL Office, Sreamangal, Moulvibazar (24° 18'08"N 91°44'03"E) AAQ4; Amin Mia's House, East Siraj Nagar, Sreemangal, Moulvibazar (24° 21'34"N 91°44'60"E) AAQ5; Jhoblapar, Madhabpur, Kamolganj,Moulvibazar (24° 17'47"N 91°50'15"E) AAQ6; Mojamel Vila, Kadampur, Komolganj, Moulvibazar (24° 21' 44"N 91°52'58"E) AAQ7; Akter Hossain's House, Borodal Uttor bag, Rajnagar, Moulvibazar (24°38'38"N 91°55'06"E) AAQ8; Nasir Mia's House, Hatipur, Baholul (24° 36'56"N 91°59'13"E) AAQ9; Bichora Bazar, Barlekha, Moulvibazar (24° 43'22"N 92° 11.31"E) AAQ10; Shahid Hossain's House, Pachpara, Barlekha, Moulvibazar (24° 46'06"N 92°13'33"E)
Monitoring Date	:	26.12.2024-01.01.2025
Reporting Date	:	23.01.2025

Ref: EQMS/Ambient Air Quality/ 2025012707

Description of Analysis :

Location	Ambient Air Pollutants Concentration (µg/m³)					CO (mg/m3)
	SPM	PM_{10}	$PM_{2.5}$	SO_2	NO_2	
AAQ1	68.7	37.2	21.5	10.7	13.2	0.58
AAQ2	64.2	36.5	17.3	11.6	16.4	0.56
AAQ3	76.4	40.7	25.6	13.8	17.3	0.83
AAQ4	63.5	35.2	17.9	10.3	15.7	0.61
AAQ5	79.2	41.8	23.2	14.1	17.9	0.84
AAQ6	67.6	41.5	19.4	11.7	19.3	0.72
AAQ7	65.8	38.4	16.3	11.4	18.5	0.64
AAQ8	77.4	40.9	26.8	12.5	16.6	0.76
AAQ9	67.1	40.3	17.4	10.6	16.9	0.67
AA10	70.3	39.8	23.7	12.2	17.9	0.71
Duration (hr.)	8	24	24	24	24	8
ECR, 1997 and amendment in 2005 Standard (Schedule-2)	200	150	65	365	-	10
Air Pollution (control) rules, 2022	-	150	65	80	80 (24 Hours)	5
IFC/WHO Standard	--	50	25	20	40 (Annual)	--
Method of Analysis Instrument Use: *Haz-Scanner™ HIM 6000*	*Light Scattering Nephelometer*	*Light Scattering Nephelometer*	*Light Scattering Nephelometer*	*High Sensitivity Electrochemical*	*High Sensitivity Electrochemical*	*High Sensitivity Electrochemical*

Note: Regular Checkup and calibration of the equipment are done by the manufacturers and EQMS Consulting Limited personnel to avoid error(s).
Legend: SPM -Suspended Particulate Matter, PM10 -Particulate Matter of a diameter of 10 micron or less, PM2.5 -Particulate Matter of a diameter of 2.5 micron or less, SO2 -Sulphur Di-Oxide, NO2 -Nitrogen Dioxide, CO - Carbon Monoxide

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Quality Manager
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EQMS Consulting Limited

Ref: EQMS/Noise Quality/ 20250127072

EQMS ENVIRONMENTAL LABORATORY

Monitoring Results of Ambient Noise Quality

Project Name	:	Moulvibazar_ EIA Study of 52 Silica sand Quarries_ In Moulvibazar District
Monitoring Activity	:	Noise Level
Monitoring Personnel	:	Syed Galib Shah, Assistant Consultant, EQMS Consulting Limited
Monitoring Location	:	NL1: Bokul Hossain's House, Huglia, Tipaila, Sreemangal, Moulvibazar (24°13'59"N 91°38'56"E) NL2: Gandhi Chara, 15 No Model Ward Sreemangal, Moulvibazar (24° 16'02"N 91°38'47"E) NL3: Anowar Ahmed's House, Patrikul, Bhunabir (24° 19'24"N 91°39'04"E) NL4: Hupanda's House, Bhunabir, Sreemangal, Moulvibazar (24° 21'04"N 91°38'55"E) NL5: Jamal Mia's House, Boursher, Sreemangal, Moulvibazar (24°22'38.46"N 91°38'56.12"E) NL6: Kamal Mia's House, Jasaura, Rajnagar, Moulvibazar (24° 15'01"N 91°42'32"E) NL7: Sardagar's House, Futo, Laharpur, Moulvibazar (24° 16'38"N 91°42'16"E) NL8: Babul Mia's House, Rajnagar, Gazipur, Moulvibazar (24° 17'22"N 91°43'23"E) NL9: Iqbal Hossain's House, Jalabad Road, Sreemangal,Moulvibazar (24°16'14"N 91°44'07"E) NL10: Helthyl Chojee Food & Beverage Ltd. (24°20'18.40"N 91°44'30.88"E) NL11: Momin Mia's, East Siraj Nagar, Sreemangal, Moulvibazar (24° 21'34"N 91°45'04"E) NL12: Haji Md. Sah Mia's House, Masdhi Sreemangal, Moulvibazar (24° 23'36"N 91°44'51"E) NL13: 2 No Mathabpur Govt Primary School, Komolganj,Moulvibazar (24°17'51.24"N 91°50'15.83"E) NL14: Ronjit Mondal's House, Langu para, Komolganj, Moulvibazar (24°20'8.38"N 91°50'0.85"E) NL15: Anik Mia's House, West Bilipar, Somsherpur, Barlekha, Moulvibazar (24° 23'21"N 91°55'54"E) NL16: Tunit Mia's House, 5 No Ward Brohman (24°24'36.84"N 91°53'22.35"E) NL17: Akter Hossain's House, Borodal Uttor hag, Rajnagar, Moulvibazar (24° 26'37"N 91°55'06"E)

NL18: Baramchal School & College, Mohohal, Baramchal, Kulaura, Moulvibazar (24°35'7.42"N 91°58'48.52"E)

NL19: Solim Member College, Barlekha, Moulvibazar (24° 42'44"N 92°11'44"E)

NL20: Abdur Nur's House, Rangauti, Barlekha, Moulvibazar (24° 43'48"N 92°11'01"E)

NL21: Rayhan Mia's House, Barlekha, Moulvibazar (24° 46'07"N 92°13'48"E)

NL22: Kobira, Nisbahederpar, Barlekha, Moulvibazar (24° 47'22"N 92°12'25"E)

NL23: Liton Mia's House, Konompur, Shekabazpur, Barlekha, Moulvibazar (24° 49'03"N 92°14'57"E)

NL24: Rannagoryan Tea Garden, 12 No Kesornagar, Moulvibazar (24° 26'43"N 91°48'25"E)

NL25: Bolu Mia's House, Mokam Bazar, 12 No Kesornagar, Moulvibazar (24° 26'08"N 91°45'55"E)

Monitoring Date : 25.12.2024-04.01.2025

Reporting Date : 28.01.2025

Description of Analysis :

Code	Noise Level (dBA)				Locations Settings	*Bangladesh Standard		**WHO/IFC Standard	
	$L_{eq,day}$	$L_{eq,night}$	L_{max}	L_{min}		Day	Night	Day	Night
NL1	47.38	42.56	72.3	32.7	Residential Area	55	45	55	45
NL2	45.74	41.32	70.6	31.4	Residential Area	55	45	55	45
NL3	47.92	40.21	74.5	31.2	Residential Area	55	45	55	45
NL4	50.12	40.82	73.8	32.5	Residential Area	55	45	55	45
NL5	46.17	39.22	67.3	30.8	Residential Area	55	45	55	45
NL6	45.88	39.56	68.7	31.4	Residential Area	55	45	55	45
NL7	43.61	38.45	67.4	30.9	Residential Area	55	45	55	45
NL8	48.45	40.88	72.7	31.6	Residential Area	55	45	55	45
NL9	54.63	43.52	80.2	32.3	Residential Area	55	45	55	45
NL10	63.42	54.87	84.6	35.9	Industrial Area	75	70	70	70
NL11	45.31	38.56	65.9	30.8	Residential Area	55	45	55	45
NL12	44.12	38.03	64.7	31.2	Residential Area	55	45	55	45
NL13	53.34	39.18	73.5	31.7	Silent Zone	50	40	55	45
NL14	52.81	42.23	76.8	32.5	Residential Area	55	45	55	45
NL15	48.57	41.28	75.3	32.2	Residential Area	55	45	55	45

Ref: EQMS/Noise Quality/ 20250127072

Code	Noise Level (dBA)				Locations Settings	*Bangladesh Standard		**WHO/IFC Standard	
	Leq_{day}	Leq_{night}	L_{max}	L_{min}		Day	Night	Day	Night
NL16	50.35	42.58	75.6	32.5	Residential Area	55	45	55	45
NL17	44.84	38.91	68.5	30.8	Residential Area	55	45	55	45
NL18	54.57	48.12	79.8	32.3	Silent Zone	50	40	55	45
NL19	68.42	61.58	84.5	34.2	Mixed Area	60	50	-	-
NL20	47.81	40.32	72.3	31.6	Residential Area	55	45	55	45
NL21	51.64	39.88	73.4	32.5	Residential Area	55	45	55	45
NL22	50.73	40.36	74.6	31.6	Residential Area	55	45	55	45
NL23	52.47	40.23	77.8	32.4	Residential Area	55	45	55	45
NL24	41.28	38.64	66.4	31.7	Silent Zone	50	40	55	45
NL25	50.13	42.78	70.5	31.2	Residential Area	55	45	55	45

The Bangladesh National Ambient Noise Standards have been taken from Schedule 4 (Standards for Sound of the Environment) Conservation Rules, 1997 amended October 7, 2006

†Guidelines values are for noise levels measured out of doors. Source: Guidelines for Community Noise, World Health Organization (WHO), 1999. As per IFC EHS noise level guidelines, Noise impacts should not exceed the levels presented in the above table

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Appendix I: Public Consultation Meeting (PCM)

Five PCMs Picture

PCM in Sreemangal Upazila, Moulvibazar on 29th September 2025




PCM in Kamalganj Upazila, Moulvibazar on 5th May 2026




PCM in Rajnagar Upazila, Moulvibazar on 5th May 2026




PCM in Kulaura Upazila, Moulvibazar on 12th May 2026




PCM in Berlekha Upazila, Moulvibazar on 12th May 2026




Meeting Minutes of Five PCMs

সিলিকা বালু কোয়ারী প্রকল্পের পরিবেশগত প্রভাব নিরূপণ (ইআইএ) এর জন্য

জনমত যাচাই সভা

স্থান: বড়লেখা উপজেলা পরিষদ সম্মেলন কক্ষ, উপজেলা: বড়লেখা, জেলা: মৌলভীবাজার



জনমত যাচাই সভার বিবরণী

১২ মে ২০২৬

EQMS CONSULTING LIMITED

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সিলিকা বালু কোয়ারী প্রকল্পের পরিবেশগত প্রভাব নিরূপণ (ইআইএ) এর জন্য জনমত যাচাই সভা

স্থান: বড়লেখা উপজেলা পরিষদ সম্মেলন কক্ষ, উপজেলা: বড়লেখা, জেলা: মৌলভীবাজার

কেন্দ্র: উপজেলা পরিষদ সম্মেলন কক্ষ, বড়লেখা, মৌলভীবাজার

তারিখ: ১২ মে ২০২৬ **সময়:** বিকাল ৩:০০ ঘটিকা হতে ৪:৩০ ঘটিকা

সভাপতি: মাহবুব আলম মাহবুব, উপজেলা নির্বাহী অফিসার, বড়লেখা, মৌলভীবাজার

বিশেষ অতিথি: কপন কুমার দাস, পরিবেশ অধিদপ্তর, মৌলভীবাজার

অতিথিবৃন্দ:

1. মোহাম্মদ মাসুক উন নবী, সহকারী পরিচালক, বিএমডি
2. নাজমা নাসিমা, সহকারী কমিশনার (ভূমি), বড়লেখা, মৌলভীবাজার
3. মিজবাহ উদ্দিন আকমল, সিনিয়র উপজেলা মৎস্য কর্মকর্তা, বড়লেখা উপজেলা
4. মো: মতলুবর হোসেন, উপজেলা কৃষি কর্মকর্তা, বড়লেখা, মৌলভীবাজার
5. মোহাম্মদ মুজিবুর রহমান, সাধারণ সম্পাদক, উপজেলা বিএনপি, বড়লেখা
6. অধ্যাপক আবুল শইস খান, সাংগঠনিক সম্পাদক, উপজেলা বিএনপি
7. হাফিজ উদ্দিন আহমদ, চেয়ারম্যান, উত্তর শাহবাজপুর ইউনিয়ন।
8. মোহাম্মদ ময়নুল হক, চেয়ারম্যান, দিঘলবাগপুরপুর ইউনিয়ন।
9. মো: আব্দুল আজিজ, ইউপি সদস্য, ৩ নং দক্ষিণ শাহবাজপুর।
10. সুনায়া আক্তার সুমি, প্যানেল চেয়ারম্যান, বড়লেখা সদর ইউনিয়ন।
11. আকাশ সিংহ, সাময়রত সহকারী, উপজেলা ভূমি অফিস, বড়লেখা।
12. অশিস কুমার সরকার, ইউনিয়ন ভূমি সহকারী কর্মকর্তা (ULAO), দক্ষিণভাগ ইউনিয়ন ভূমি অফিস।
13. স্থানীয় নেতৃবৃন্দ, সাংবাদিক ও সিলিকা বালু কোয়ারীর জনগণ।

১. ভূমিকা

জনমত যাচাই সভা হল এমন একটি প্রক্রিয়া যা জনসাধারণকে প্রকল্পের বিষয়ে তাদের মতামত উপস্থাপন এবং সংশ্লিষ্ট সিদ্ধান্ত গ্রহণের ক্ষেত্রে তাদের মন্তব্য/অভিমত বিবেচনা করার সুযোগ প্রদান করে থাকে। পরিবেশ সংরক্ষণ বিধিমালা ২০২৩ (বিধি ১৬) অনুযায়ী, খসড়া পরিবেশগত প্রভাব নিরূপণের অংশ হিসেবে প্রকল্পের পরিবেশগত প্রভাব এর বিষয়ে স্থানীয় জনগণের কাছে তথ্য উন্মুক্ত করার জন্য এবং সে বিষয়ে তাদের মতামত গ্রহণের জন্য এই জনমত যাচাই সভার আয়োজন করা হয়। বর্ণিত জনমত যাচাই সভাটি গত ১২ মে ২০২৬ তারিখে অনুষ্ঠিত হয়। সভায় উক্ত এলাকার বিভিন্ন প্রতিষ্ঠান ও অংশীজন থেকে মোট ২৭ জন প্রতিনিধি উপস্থিত ছিলেন।

২ কার্যপদ্ধতি

পরিবেশ সংরক্ষণ বিধিমালা ২০২৩ (বিধি ১৬ এর উপবিধি ২) অনুসারে, উক্ত জনমত যাচাই সভা আয়োজন করার অনুমতি প্রসঙ্গে খসড়া পরিবেশগত প্রভাব নিরূপণ প্রতিবেদন ও এর বাংলা সারসংক্ষেপসহ একটি আবেদনপত্র পরিবেশ অধিদপ্তরের প্রধান কার্যালয়ে দাখিল করা হয়েছিল এবং এর পরিপ্রেক্ষিতে পরিবেশ অধিদপ্তর কর্তৃক উক্ত সভায় উপস্থিতির জন্য একজন প্রতিনিধির মনোনয়ন দেয়া হয়। গত ২৩ এপ্রিল ২০২৬ তারিখে দৈনিক সংবাদ নামক বাংলাদেশের একটি জাতীয়

EQMS BMD

সংবাদপত্রে এবং দৈনিক সমাচার নামক একটি স্থানীয় সংবাদপত্রে উল্লেখিত জনমত যাচাই সভার বিজ্ঞপ্তি প্রকাশিত হয়। এছাড়াও, আমন্ত্রণপত্রের মাধ্যমে অংশীদারগণকে আমন্ত্রণ জানানো হয়।

৩. সভার উদ্বোধন

পবিত্র কুরআন তেলাওয়াত পাঠ এবং পরিচিত পর্বের মাধ্যমে আনুষ্ঠানিকভাবে জনমত যাচাই সভার কার্যক্রম শুরু করা হয়। এরপর মাহবুব আলম মাহবুব, উপজেলা নির্বাহী অফিসার, বড়লেখা, মৌলভীবাজার অংশগ্রহণকারীদের স্বাগত জানিয়ে সভা শুরু করেন। তিনি জানান, বর্তমানে সিলিকা বালুর কোয়ারীর ইজারাদার বন্ধ আছে। তিনি তাঁর বক্তব্যে উল্লেখ করেন যে, প্রকল্পের পরিবেশগত ও সামাজিক প্রভাব মূল্যায়নের অংশ হিসেবে এই জনমত যাচাই সভার আয়োজন করা হয়েছে। এই ধরনের সভার মাধ্যমে স্থানীয় জনগণের মতামত, পরামর্শ এবং উদ্বেগসমূহ সংগ্রহ করা অত্যন্ত গুরুত্বপূর্ণ, যাতে প্রকল্প বাস্তবায়নের সময় পরিবেশ সুরক্ষা এবং স্থানীয় জনগণের স্বার্থ যথাযথভাবে বিবেচনায় নেওয়া যায়। তিনি আরও বলেন, একটি প্রকল্পের ফলে এলাকার অর্থনৈতিক কর্মকাণ্ড বৃদ্ধি, কর্মসংস্থান সৃষ্টি এবং অবকাঠামোগত উন্নয়ন সম্ভব হলেও পরিবেশের ভারসাম্য রক্ষা করা সমানভাবে জরুরি। তাই প্রকল্পের পরিকল্পনা ও বাস্তবায়নের ক্ষেত্রে পরিবেশগত আইন, মানদণ্ড এবং প্রয়োজনীয় প্রশমন ব্যবস্থা যথাযথভাবে অনুসরণ করা হবে বলে তিনি আশাবাদ ব্যক্ত করেন। শেষে তিনি সকল অংশগ্রহণকারীকে সভায় সক্রিয়ভাবে অংশগ্রহণ করে গঠনমূলক মতামত প্রদান করার জন্য আহ্বান জানান এবং আশা প্রকাশ করেন যে সকলের সহযোগিতার মাধ্যমে প্রকল্পটি পরিবেশসম্মত ও টেকসইভাবে বাস্তবায়ন করা সম্ভব হবে।

৪. পরিবেশগত প্রভাব মূল্যায়নের খসড়া প্রতিবেদনের উপর উপস্থাপনা

ইকিউএমএস (EQMS) কনসালটিং লিমিটেডের কনসালটেন্ট এবং পরিবেশ বিশেষজ্ঞ জনাব ফাহিম উদ্দীন অংশগ্রহণকারীদের আনুষ্ঠানিক শুভেচ্ছা জানিয়ে উপস্থাপনা শুরু করেন। তিনি খসড়া পরিবেশগত প্রভাব নিরূপণ প্রতিবেদনের উপর নিম্নলিখিত বিষয়গুলি সম্পর্কে একটি উপস্থাপনা প্রদান করেন:

১. জনমতের উদ্দেশ্য
২. প্রকল্পের পটভূমি
৩. প্রকল্পের বর্ণনা
৪. প্রকল্প সংশ্লিষ্ট নমুনা নকশা
৫. পরিবেশগত বেসলাইন ডেটা
৬. পরিবেশগত এবং সামাজিক প্রভাব মূল্যায়ন
৭. পরিবেশ ব্যবস্থাপনা পরিকল্পনা
৮. পরিবেশ পর্যবেক্ষণ পরিকল্পনা
৯. উপসংহার এবং সুপারিশ।

জনমত যাচাই সভার উপস্থাপনা, উপস্থিতি শীট এবং জনমত যাচাই সভার ছবি পরিশিষ্ট- এ উপস্থাপন করা হয়েছে।

৫. মুক্ত আলোচনা এবং প্রতিক্রিয়া

উপস্থাপনার পরে, একটি প্রশ্নোত্তর পর্ব ও মুক্ত আলোচনা অনুষ্ঠিত হয়, যা টেবিল-১ এ উপস্থাপন করা হয়েছে। ইকিউএমএস কনসালটিং লিমিটেডের পরিবেশ বিশেষজ্ঞ জনাব ফাহিম উদ্দীন, বিএমডির পক্ষে জনাব মাসুক উল হাবীব, সহকারী পরিচালক, পরিবেশ অধিদপ্তর এর পক্ষে জনাব স্বপন কুমার দাশ প্রশ্নগুলোর উত্তর প্রদান করেন।

EQMS BMD

টেবিল ১- জনমত সভার প্রশ্ন উত্তর পর্বের বিবরণ

ক্রম নং	নাম ও পদবী	প্রশ্ন/মতামত (বিস্তারিত)	উত্তর/প্রতিক্রিয়া (বিস্তারিত)
১	বাবিক ভূঁইন আহমেদ, চেয়ারম্যান, উত্তর শাহজাহানপুর ইউনিয়ন	তিনি উল্লেখ করেন যে, বক্তব্যের উপস্থাপনার পিছনে তাহা ও নদীতে নির্মিতব্য যারে প্রাকৃতিকভাবে সিলিকা বালু প্রায় হচ্ছে, যা বর্তমানে প্রতিবিক্রিয়ায়ে উত্তোলনের কারণে পরিবেশগত জরুরিমা দেখা দেবে। তিনি বলেন, যদি সরকারিভাবে এসব স্থানে সিলিকা বালু মজুদ হিসাবে চোরাচালান করে দিনকতিকভাবে উত্তোলন করা হয়, তাহলে অদূরে উত্তোলন অঞ্চলে এবং সরকারি রাজস্ব বৃদ্ধি পাবে; তবে বালু উত্তোলনের সময় নদী ও তহবার স্বাভাবিক প্রবাহ যেন ব্যাহত না হয়, সে বিষয়ে বিশেষ গুরুত্ব দিতে হবে।	সভায় জানানো হয় যে, সরকার সিলিকা বালু মজুদসমৃদ্ধ এলাকা চিহ্নিত করে ইজারা দেওয়ার উদ্যোগ নিয়েছে। ইজারা দেওয়ার পূর্বে পরিবেশগত ছাড়পত্র নেওয়া বাধ্যতামূলক করা হয়েছে। ইজারা দেওয়ার পূর্বে পরিবেশগত প্রভাব মূল্যায়ন (EIA) ভিত্তিতে নীতিমালা ও নির্ধারিত পদ্ধতিতে বালু উত্তোলনের ব্যবস্থা গ্রহণ করা হবে, যাতে প্রাকৃতিক পানি প্রবাহ ও পরিবেশের ক্ষতি না হয়।
২	মোঃ কামরুল হাসান চৌধুরান, মিজানটুরকুল ইউনিয়ন	তিনি বলেন যে, স্থানীয় জনগণ দীর্ঘদিন ধরে অবৈধ বালু উত্তোলনের কারণে ভোগান্তির শিকার হচ্ছে। এতে পানি সহজ প্রবাহের সমস্যা প্রকাশের নজর এতিয়া হয়ে ফেতের বালু উত্তোলন করে যাচ্ছে, যার ফলে স্থানীয় জনগণ ও কৃষিজমি ক্ষতিগ্রস্ত হয়। তিনি দাবি করেন যে, সরকারিভাবে যাচ্ছ ইজারা দেওয়া হলে স্থানীয় জনগণের স্বার্থসংরক্ষণ নিশ্চিত হবে এবং প্রশাসনিক নিয়ন্ত্রণ বৃদ্ধি পাবে।	ইজারার আগামী হয় যে, ইজারা কার্যক্রম সম্পূর্ণ স্বচ্ছ ও প্রতিযোগিতামূলক পদ্ধতিতে পরিচালনা করা হবে। আবেদন উত্তোলন যাচে প্রশাসনিক নজরদারি জোরদার করা হবে এবং স্থানীয় প্রশাসনের অংশগ্রহণের মাধ্যমে একটি কার্যকর মনিটরিং ব্যবস্থা গড়ে তোলা হবে।
৩	মো: রাশেদ খানিক, ইউপি সদস্য, ৯ নং পশ্চিম শাহজাহানপুর	তিনি উল্লেখ করেন যে, উপজেলার প্রতিবেশ সম্পদ বিলিকা বালু সংগ্রহে যানবাহনের ব্যাপক অতায়াত সাক ও ধুলিপূর্ণ। এতে যানবাহনের মাধ্যমে কৃষি পরিবেশ কম হলে স্থানীয় সড়ক ক্ষতিগ্রস্ত হচ্ছে এবং দুর্ঘটনার ঝুঁকি বৃদ্ধি পাচ্ছে। তিনি সড়ক রক্ষণাবেক্ষণ এবং পরিবেশ রাখবেক্ষণার ওপর বিশেষ গুরুত্বারোপ করেন।	সভায় জানানো হয় যে, বালু পরিবহনের জন্য নির্দিষ্ট রুট নির্ধারণ করা হবে এবং ট্রাফিক ব্যবস্থাপনা পরিকল্পনা বাস্তবায়ন করা হবে। স্থানীয় সড়কের ক্ষয়ক্ষতি কমাতে প্রয়োজনীয় রক্ষণাবেক্ষণ ও সংস্কার কার্যক্রম পরিচালনা করা হবে। একইসাথে স্থানীয় জনগণের সদস্যদের নিয়মিত প্রয়োজনীয় নির্দেশনা প্রদান করা হবে।

EQMS

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সুধাংশু মোহন শুদ্ধি, পাবলেক (মোবাইল), ওয়েলিংটন সদন ইউনিয়ন	তিনি প্রশ্ন করেন যে, খনি ইজারা পরিবেশগত সমস্ত ধুলাবালি, শব্দদূষণ করতে খনিবাসীদের সংশ্লেষ থাকলে স্থানীয় অর্থনৈতিক উন্নয়নমূলক কাজে ব্যয় করা যাবে। বিশেষ করে স্কুল, কলেজগুলি ও শিক্ষকদের একটা পরিবেশগত ও সামাজিক সমাধান দেওয়া হতে পারে। তিনি খুশি নিয়ন্ত্রণ ও জনসাধারণের নিরিড় ইজারা দেওয়ার আগে জনসাধারণের সাথে আলোচনা করার আহ্বান জানান।	জবাবে জানানো হয় যে, খুশিগুলি নিয়মিত নিয়মিত পানি ছিটানো, রাস্তাঘাট ঠিক রাখার কথা নিয়মিত সমাজভূমির মধ্যে পরিবেশ কার্যক্রম পরিচালনা করা হবে। এছাড়া স্থানীয় জনগণের নিরাপত্তা নিশ্চিত করতে হবে। সকলগুলোর সকলগুলোকে বাসস্থ ও ট্রাফিক নিয়ন্ত্রণ ব্যবস্থা করার কথা বলা হবে।
৯	তিনি মতামত প্রদান করেন যে, অত্যন্ত উপজেলার মুন্সিগঞ্জীয়, অত্যন্ত গুরুত্ব পূর্ণ এলাকায় জলাশয় ভরাট, এগুলিপুরি ও সমতলী এলাকায় সুপারিশী, মুক্তাঞ্চল এলাকায় উপজেলা এলাকার খনিগুলি ও নদী ইজারা উন্মুক্তপথের পরিবেশ চিন্তিত বাস্তু রয়েছে। তিনি বিশেষভাবে উল্লেখ করেন যে, সেবাহত্যা সিলিকা বালু সেবাতারী হিসাবে যথেষ্ট সম্ভাবনাময় এবং পরিবেশগত ব্যবস্থাপনার মাধ্যমে এটি সরকারিভাবে ইজারা প্রদান করা যেতে পারে।	সংশ্লিষ্ট কর্তৃপক্ষ জানায় যে, উপজেলার মধ্য ও দলীয়ভোর সম্মানার্থে, পরিবেশগত সংবেদনশীলতা এবং সামাজিক প্রভাবসমূহ মূল্যায়নের জন্য প্রয়োজনীয় অর্থায়ন ও সম্ভাব্য পরিচালনা করা হবে। পরিবেশগত নিশ্চিতকল্প অনুসরণ করে সম্ভাব্য নিশ্চিত করা মহলসমূহের বিষয়ে পরবর্তী নিবন্ধে প্রদান করা হবে।
১০	মাননীয় কৃষ্ণার সরকার, ইউনিয়ন ভূমি সহকারী কর্মকর্তা (ULAO), দক্ষিণ শক্তিশালী ইউনিয়ন ভূমি অফিস	তিনি বলেন যে, সরকারিভাবে বালুমহল ইজারা প্রদান করা হলে রাজস্বখাতে নিয়মিত বৃদ্ধি পাবে এবং স্থানীয় উন্নয়নে অবদানকে হ্রাস পাবে। তবে তিনি সতর্ক করেন যে, অপরিকল্পিত উত্তোলনের ফলে মাটির ক্ষয়ক্ষতি প্রভাব করতে হবে পাশের এবং শ্রীমঙ্গলের ওপর কেন্দ্রিভাবে প্রকল্প পড়তে পারে।	সভায় জানানো হয় যে, ভূমিকার মিশ্রিক স্কীম ও অনুমোদিত এলাকার মধ্যেই বালু উত্তোলনের অনুমতি প্রদান করা হবে। পরিবেশ ব্যবস্থাপনা পরিকল্পনা (EMP) অনুযায়ী নিয়মিত পরিবেশগত মনিটরিং পরিচালনা করা হবে এবং প্রয়োজনীয় প্রশমন ব্যবস্থা গ্রহণ করা হবে।
১১	তিনি বলেন যে, নীতিমালা মেনে অনুমোদনের ক্ষেত্রে আগে স্থানীয়ভাবে নিশ্চিতভাবে গড়ে উঠেছে, যার ফলাফল সাধারণ জনগণ ও স্থল ব্যবসায়ীরা অভিযোগ করছে। তিনি অবহেলা ও জবাবদিহিতা নিশ্চিত করে ইজারা কার্যক্রম পরিচালনার দাবি জানান।	প্রকল্প কর্তৃপক্ষ জানায় যে, ইজারা আবেদনে অন্তর্ভুক্ত ও জনশুনানির নিশ্চিত করতে সাজানো নির্দিষ্ট ফরিম ও নির্দিষ্ট আবেদনপত্রে অনুসরণ করা হবে। অধিক উত্তোলন ও নিশ্চিতের নিরাপদে প্রশাসনিক তদারকি জোরদার করা হবে।

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৮	জনাব মোঃ আবুল কাশেম চৌধুরী, সাংসদীয় সদস্য, মৌলভীবাজার-১ নির্বাচনি এলাকা	তিনি উল্লেখ করেন যে, আমরা যারা স্থানীয় অধিবাসী তারা বালু উত্তোলন করলে নদীভাঙনের সম্ভাবনা বৃদ্ধি পেতে পারে এবং আশপাশের কৃষিজমি ও বসতবাড়ি ঝুঁকির মধ্যে পড়তে পারে। তিনি এ বিষয়ে দৃষ্টি রেখেই পরিবেশসম্মত ব্যবস্থা গ্রহণের পরামর্শ দেন।	জবাবে জানানো হয় যে, নদীভাঙন ও তীরক্ষয় রোধে ইতিমধ্যে ব্যবস্থা নেওয়া হয়েছে। তাছাড়া উত্তোলনের সীমা নির্ধারণ করা হবে। ঝুঁকিপূর্ণ এলাকায় বালু তোলা নিষিদ্ধ এবং নিয়মিত মনিটরিংয়ের মাধ্যমে সম্ভাব্য ঝুঁকি প্রতিরোধে ব্যবস্থা গ্রহণ করা হবে।
৯	বিকাশ ভূষণ সিনিয়র অফিসার, মৎস্য অধিদপ্তর, মৌলভীবাজার	তিনি পরামর্শ প্রদান করেন যে, মৃত্তা ও নদীতে বালু উত্তোলনের ফলে জলজ প্রাণী ও মৎস্যসম্পদের ওপর বিরূপ প্রভাব পড়তে পারে। বিশেষ করে হাওরাঞ্চল মৌসুমে অতিরিক্ত হলে মাছের প্রাকৃতিক আবাসস্থল ক্ষতিগ্রস্ত হওয়ার আশঙ্কা রয়েছে।	সভায় জানানো হয় যে, মৎস্যসম্পদ ও জলজ জীববৈচিত্র্য সংরক্ষণের জন্য পরিবেশগত বিধিনিষেধ অনুসরণ করা হবে। প্রকল্প মৌসুমে প্রয়োজনীয় নিয়ন্ত্রণমূলক পদক্ষেপ গ্রহণ এবং সংবেদনশীল এলাকায় উত্তোলন কঠিন ভাবে নিষিদ্ধ করার বিষয়টি বিবেচনা করা হবে।
১০	মোঃ মনোয়ার হোসেন, উপজেলা কৃষি কর্মকর্তা, বড়লেখা	তিনি বলেন যে, বালু উত্তোলন কার্যক্রমের ফলে কৃষিজমির উর্বরতা ও সিলগ্রেড ক্ষতিগ্রস্ত হওয়ার ঝুঁকি রয়েছে। এছাড়া ভারী যানবাহন চলাচলের কারণে দুষিবিনি সেচ ও যোগাযোগ ব্যবস্থায় বিঘ্ন হতে পারে। তিনি দুষিবিনি কৃষিজমি এবং অধিবাসীদের জন্য গ্রোগাজনীয় ক্ষতিপূরণের ব্যবস্থা রাখার পরামর্শ দেন।	জবাবে জানানো হয় যে, কৃষিজমির ক্ষতি হ্রাসকল্পে জন্য উপজেলে সংরক্ষণ, নির্দিষ্ট পরিসরের বেশি খনন এবং প্রয়োজনীয় সবুজ বেষ্টনী সহ করা হবে। অতিরিক্তভাবে জন্য উপযুক্ত ক্ষতিপূরণ এবং বিকল্প সহায়তা প্রদানের বিষয়টি বিবেচনার রাখা হবে।
১১	শ্রীমতী সেবাব্রত, সাংবাদিক ও সম্পাদক, দৈনিক পত্র, মৌলভীবাজার	অংশগ্রহণকারীরা আশঙ্কা প্রকাশ করেন যে, খননোত্তর উপজেলায় নিয়ন্ত্রণ ছাড়া নদীতে দীর্ঘদিন ধরে অবৈজ্ঞানিক বালু উত্তোলন হয়ে আসছে, যার ফলে মারকন্ড নদীর তলদেশ এবং পরিবেশগত ঝুঁকি বৃদ্ধি পাচ্ছে। তারা বিশেষভাবে জমাদারবাজার, কদমপুর ও সাহপুর এলাকার কথাও উল্লেখ করেন। এছাড়া, বাসিন্দাদের এলাকায় স্থানীয়দের, সুনামগঞ্জ এলাকার ক্ষতিগ্রস্ত এলাকার দৃষ্টান্ত তুলে ধরেন এবং প্রশাসন এলাকার মাটির ও বালি ব্যবহারে সঙ্কট দেখা দিতে পারে বলে উল্লেখ করেন।	সভায় জানানো হয় যে, সরকার নির্দিষ্ট কর্তৃপক্ষ প্রয়োজনীয় পরিবেশগত মূল্যায়ন, প্রশাসনিক যাচাই-বাছাই এবং অতিরিক্ত স্থানীয় মতামত করবে। পরিবেশসম্মত ও টেকসই ব্যবস্থাপনার মাধ্যমে বালু উত্তোলন নিশ্চিত করা হবে এবং কোথে অধিকম প্রতিরোধে কঠোর নজরদারি অব্যাহত থাকবে।

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৬. বিশেষ অতিথির বক্তব্য

কপন কুমার দাস, পরিবেশ অধিদপ্তর, মৌলভীবাজার, তাঁর বক্তব্যের শুরুতে অংশীজন পরামর্শ সভায় উপস্থিত সকল সরকারি কর্মকর্তা, জনপ্রতিনিধি, সাংবাদিক, স্থানীয় জনগণ এবং সংশ্লিষ্ট অংশীজনদের ধন্যবাদ জ্ঞাপন। তিনি বিশেষভাবে আয়োজক প্রতিষ্ঠানকে পরিবেশগত প্রভাব মূল্যায়ন (EIA) এর খসড়া প্রতিবেদন সুশৃঙ্খল ও অংশগ্রহণমূলকভাবে উপস্থাপনের জন্য ধন্যবাদ জ্ঞাপন করেন। তিনি বলেন, এ ধরনের অংশীজন পরামর্শ সভা পরিবেশগত প্রভাব মূল্যায়ন প্রক্রিয়ার একটি অত্যন্ত গুরুত্বপূর্ণ অংশ, কারণ এর মাধ্যমে স্থানীয় জনগণ, প্রশাসন এবং সংশ্লিষ্ট অংশীজনদের মতামত, উদ্বেগ ও সুপারিশ সরাসরি সংগ্রহ করা সম্ভব হয়। তিনি উল্লেখ করেন যে, রাজনগর উপজেলায় সম্ভাব্য সিলিকা বালু মহালসমূহ পরিবেশগতভাবে সংবেদনশীল এলাকায় অবস্থিত এবং এসব এলাকায় যেকোনো ধরনের বালু উত্তোলন কার্যক্রম পানি প্রবাহ, মাটির স্থিতিশীলতা, জীববৈচিত্র্য, কৃষিজমি এবং স্থানীয় জনগণের জীবন-জীবিকার ওপর প্রত্যক্ষ ও পরোক্ষ প্রভাব ফেলতে পারে।

তিনি আরও বলেন যে, অবৈধ ও অনিয়ন্ত্রিত বালু উত্তোলনের কারণে ইতোমধ্যে বিভিন্ন এলাকায় পরিবেশগত ভারসাম্য বিঘ্নিত হওয়ার ঝুঁকি তৈরি হয়েছে। তাই সরকার অনুমোদিত নীতিমালা অনুসরণ করে বৈজ্ঞানিক ও পরিবেশসম্মত পদ্ধতিতে কার্যক্রম পরিচালনা করা অত্যন্ত জরুরি। তিনি জোর দিয়ে বলেন যে, প্রকল্প বাস্তবায়নের পূর্বে যথাযথ পরিবেশগত প্রভাব মূল্যায়ন (EIA), পরিবেশ ব্যবস্থাপনা পরিকল্পনা (EMP) এবং পরিবেশ পর্যবেক্ষণ পরিকল্পনা (EMoP) প্রণয়ন ও বাস্তবায়ন নিশ্চিত করতে হবে। তিনি আরও উল্লেখ করেন যে, সম্ভাব্য সিলিকা বালু মহালসমূহে কার্যক্রম পরিচালনার ক্ষেত্রে প্রাকৃতিক পানি প্রবাহ, স্থানীয় জীববৈচিত্র্য, কৃষিজমি এবং বসতবাড়ির সুরক্ষা নিশ্চিত করতে প্রয়োজনীয় প্রশমন ব্যবস্থা গ্রহণ করতে হবে। একইসাথে পরিবেশ সংরক্ষণ আইন ও বিধিমালা অনুসরণ করে নিয়মিত পরিবেশগত মনিটরিং পরিচালনার ওপরও তিনি গুরুত্ব আরোপ করেন।

৭. সভাপতির বক্তব্য

মাহবুব আলম মাহবুব, উপজেলা নির্বাহী অফিসার, বড়লেখা, মৌলভীবাজার মতবিনিময় সভায় সভাপতির বক্তব্য প্রদানকালে বড়লেখা উপজেলার সম্ভাব্য সিলিকা বালু মহাল (কোয়ারী) ব্যবস্থাপনা, পরিবেশগত সুরক্ষা এবং সরকারিভাবে ইজারা কার্যক্রমের বিভিন্ন গুরুত্বপূর্ণ দিক তুলে ধরেন। তিনি বলেন, বড়লেখা উপজেলার বিভিন্ন ছড়া ও নদীতে প্রাকৃতিকভাবে সঞ্চিত সিলিকা বালু একটি মূল্যবান প্রাকৃতিক সম্পদ, যা সুষ্ঠু পরিকল্পনা, বৈজ্ঞানিক ব্যবস্থাপনা এবং পরিবেশসম্মত পদ্ধতিতে উত্তোলন করা গেলে সরকারের রাজস্ব আয় বৃদ্ধি পাবে এবং স্থানীয় অর্থনৈতিক কর্মকাণ্ড ও কর্মসংস্থানে ইতিবাচক ভূমিকা রাখবে। তবে তিনি জোর দিয়ে বলেন যে, পরিবেশগত ভারসাম্য রক্ষা, প্রাকৃতিক পানি প্রবাহের স্বাভাবিকতা বজায় রাখা এবং স্থানীয় জনগণের স্বার্থ সংরক্ষণকে সর্বোচ্চ গুরুত্ব দিয়ে কার্যক্রম পরিচালনা করতে হবে।

তিনি আরও উল্লেখ করেন যে, বড়লেখা উপজেলার কুমারসাইল, কলমপুর ও সাদুপুর এলাকার জলংগা ছড়া, ওয়াহিদপুর ও মহারাণী এলাকার সুরাইমলী, সুহাউল এলাকার সেওছড়া এবং গ্রামতলা এলাকার ঘাটমা ও রাতি ছড়াসহ সম্ভাব্য সিলিকা বালু মহালসমূহের বিষয়ে প্রয়োজনীয় কারিগরি সমীক্ষা, পরিবেশগত প্রভাব মূল্যায়ন (EIA) এবং প্রশাসনিক যাচাই-বাছাই সম্পন্ন করার পর পরবর্তী সিদ্ধান্ত গ্রহণ করা হবে। তিনি বিশেষভাবে উল্লেখ করেন যে, সেওছড়া সম্ভাব্য সিলিকা বালু কোয়ারী হিসেবে উপযোগী হলেও পরিবেশগত সংবেদনশীলতা বিবেচনায় অত্যন্ত সতর্কতার সাথে কার্যক্রম পরিচালনা করতে হবে। একইসাথে ঘাটমা ছড়া এলাকায় সম্ভাব্য নদীভাঙনের ঝুঁকির বিষয়টি গুরুত্বসহকারে মূল্যায়ন করা হবে এবং প্রয়োজনীয় প্রতিরোধমূলক ব্যবস্থা গ্রহণ করা হবে।

সভাপতি আরও বলেন যে, বড়লেখা উপজেলার অধিকাংশ সম্ভাব্য বালু মহাল এলাকায় যাতায়াতের রাস্তা সরু ও ঝুঁকিপূর্ণ হওয়ায় বালু পরিবহনের ক্ষেত্রে সড়ক ব্যবস্থাপনা ও তত্ত্বাবধান অত্যন্ত গুরুত্বপূর্ণ। তিনি আশ্বস্ত করেন যে, নির্দিষ্ট পরিবহন রুট নির্বাচন, ট্রাফিক ব্যবস্থাপনা পরিকল্পনা বাস্তবায়ন এবং স্থানীয় সড়কসমূহের প্রয়োজনীয় সংস্কার ও

EQMS BMD

রক্ষণাবেক্ষণের ব্যবস্থা গ্রহণ করা হবে। একইসাথে ধুলাবালি, শব্দদূষণ এবং ভারী যানবাহনের কারণে স্থানীয় জনগণের সম্ভাব্য ভোগান্তি কমানোর জন্য প্রয়োজনীয় নিয়ন্ত্রণমূলক ব্যবস্থা গ্রহণ করা হবে।

তিনি আরও উল্লেখ করেন যে, অবৈধ বালু উত্তোলন রোধে উপজেলা প্রশাসন কঠোর অবস্থানে থাকবে এবং সরকার অনুমোদিত নীতিমালা অনুসরণ করে স্বচ্ছ, জবাবদিহিমূলক ও পরিবেশসম্মত ইজারা ব্যবস্থা নিশ্চিত করা হবে। পরিবেশ ব্যবস্থাপনা পরিকল্পনা (EMP) এবং পরিবেশ পর্যবেক্ষণ পরিকল্পনা (EMoP) অনুযায়ী নিয়মিত মনিটরিং কার্যক্রম পরিচালনা করা হবে এবং স্থানীয় জনগণের মতামত, উদ্বেগ ও সুপারিশসমূহ গুরুত্বসহকারে বিবেচনায় নেওয়া হবে।

সভাপতি তাঁর বক্তব্যের শেষাংশে আশা প্রকাশ করেন যে, সংশ্লিষ্ট প্রশাসন, জনপ্রতিনিধি, স্থানীয় জনগণ এবং অন্যান্য অংশীজনদের সমন্বিত সহযোগিতার মাধ্যমে বড়লেখা উপজেলার সম্ভাব্য সিলিকা বালু মহালসমূহ পরিবেশসম্মত, টেকসই এবং সুশৃঙ্খল ব্যবস্থাপনার আওতায় আনা সম্ভব হবে।

৯. জনমত যাচাই সভার সারাংশ

প্রস্তাবিত সিলিকা বালু মহাল (কোয়ারী) প্রকল্পের পরিবেশগত ও সামাজিক প্রভাব মূল্যায়ন (EIA) কার্যক্রমের অংশ হিসেবে একটি খসড়া EIA প্রতিবেদন প্রস্তুত করা হয় এবং তা বড়লেখা উপজেলা পরিষদ সম্মেলন কক্ষে অনুষ্ঠিত অংশীজন পরামর্শ সভায় উপস্থাপন করা হয়। সভায় সরকারি বিভিন্ন দপ্তরের কর্মকর্তা, স্থানীয় জনপ্রতিনিধি, রাজনৈতিক ব্যক্তিবর্গ, সাংবাদিক, ইউনিয়ন পরিষদের সদস্য, ভূমি প্রশাসনের প্রতিনিধি, কৃষি ও মৎস্য বিভাগের কর্মকর্তাসহ সম্ভাব্য সিলিকা বালু মহাল এলাকার স্থানীয় জনগণ অংশগ্রহণ করেন। সভায় প্রকল্পের পটভূমি, উদ্দেশ্য, সম্ভাব্য সিলিকা বালু মহালের অবস্থান, পরিবেশগত ভিত্তি অবস্থা, সম্ভাব্য পরিবেশ ও সামাজিক প্রভাব এবং প্রস্তাবিত প্রশমন ব্যবস্থাসমূহ বিস্তারিতভাবে উপস্থাপন করা হয়।

আলোচনায় অংশগ্রহণকারীরা উল্লেখ করেন যে, বড়লেখা উপজেলার বিভিন্ন ছড়া ও নদী থেকে দীর্ঘদিন ধরে অনিয়ন্ত্রিত ও অবৈজ্ঞানিকভাবে সিলিকা বালু উত্তোলনের ফলে পরিবেশগত ও সামাজিক সমস্যা সৃষ্টি হচ্ছে। বিশেষভাবে কুমারসাইল, কলমপুর ও সাগরপুর এলাকার জলংগা ছড়া, ওয়াহিদপুর ও মহারানী এলাকার সুনইসাদী, সুজাউস এলাকার দেওছড়া এবং গ্রামজলা এলাকার ধইমা ও রাতি ছড়াসহ বিভিন্ন সম্ভাব্য এলাকায় অবৈধ উত্তোলনের কারণে প্রাকৃতিক পানি প্রবাহ ব্যাহত হওয়া, নদী ও ছড়ার তীরভাঙন, কৃষিজমির ক্ষতি, জীববৈচিত্র্যের ওপর বিরূপ প্রভাব এবং স্থানীয় অবকাঠামোর ঝুঁকি বৃদ্ধির বিষয়টি গুরুত্বের সাথে তুলে ধরা হয়। অংশগ্রহণকারীরা বিশেষভাবে মতামত দেন যে, দেওছড়া সিলিকা বালু কোয়ারী হিসেবে সম্ভাবনাময় এলাকা হলেও পরিবেশগত ভারসাম্য রক্ষা নিশ্চিত করে অত্যন্ত সতর্কতার সাথে কার্যক্রম পরিচালনা করতে হবে। একইসাথে ধইমা ছড়ায় বালু উত্তোলনের ফলে সম্ভাব্য নদীভাঙনের ঝুঁকির বিষয়টিও আলোচনায় গুরুত্ব পায়।

সভায় অংশগ্রহণকারীরা আরও উল্লেখ করেন যে, বড়লেখা উপজেলার অধিকাংশ সম্ভাব্য বালু মহাল এলাকায় যাতায়াতের রাস্তা সরু ও দুর্বল হওয়ায় ভারী যানবাহনের মাধ্যমে বালু পরিবহনের ক্ষেত্রে স্থানীয় সড়ক অতিরিক্ত হুমকির আশঙ্কা রয়েছে। তারা সড়ক রক্ষণাবেক্ষণ, ট্রাফিক ব্যবস্থাপনা, ধুলাবালি ও শব্দদূষণ নিয়ন্ত্রণ এবং স্থানীয় জনগণের নিরাপত্তা নিশ্চিত করার ওপর বিশেষ গুরুত্বারোপ করেন। একইসাথে কৃষিজমি সুরক্ষা, চলাচল জীববৈচিত্র্য সংরক্ষণ এবং সিদ্ধান্ত গ্রহণ প্রক্রিয়ায় স্থানীয় জনগণের অংশগ্রহণ নিশ্চিত করার বিষয়েও মতামত প্রদান করা হয়।

প্রকল্প কর্তৃপক্ষ সভায় উপস্থিত সকল অংশগ্রহণকারীর মতামত, উদ্বেগ ও সুপারিশ গুরুত্বের সাথে গ্রহণ করে এবং আশ্বস্ত করে যে, সিলিকা বালু উত্তোলন কার্যক্রম সম্পূর্ণভাবে বৈজ্ঞানিক ও নিয়ন্ত্রিত ব্যবস্থাপনার আওতায় পরিচালিত হবে। সম্ভাব্য মহালসমূহে বালু উত্তোলনের পূর্বে প্রয়োজনীয় পরিবেশগত প্রভাব মূল্যায়ন (EIA), হাইড্রোলজিক্যাল বিশ্লেষণ এবং সেডিমেন্ট মূল্যায়ন সম্পন্ন করা হবে, যাতে প্রাকৃতিক পানি প্রবাহ, নদীর স্থিতিশীলতা এবং পরিবেশগত ভারসাম্য বজায় থাকে। একইসাথে অবৈধ উত্তোলন বন্ধে জিরো টলারেন্স নীতি অনুসরণ, প্রশাসনিক নজরদারি বৃদ্ধি এবং আইনশৃঙ্খলা বাহিনীর সহায়তায় নিয়মিত মনিটরিং কার্যক্রম পরিচালনার বিষয়টি উল্লেখ করা হয়।

EQMS BMD

সভায় আরও জানানো হয় যে, সম্ভাব্য সিলিকা বালু মহাল এলাকার আশপাশে কৃষিজমি, বসতবাড়ি, সড়ক এবং গুরুত্বপূর্ণ অবকাঠামো সুরক্ষার জন্য প্রয়োজনীয় বাফার জোন নির্ধারণ করা হবে। বালু পরিবহনের জন্য নির্দিষ্ট রুট নির্বাচন, ট্রাফিক ব্যবস্থাপনা পরিকল্পনা বাস্তবায়ন, স্থানীয় সড়কের রক্ষণাবেক্ষণ এবং ধুলাবালি নিয়ন্ত্রণে নিয়মিত পানি ছিটানো ও কভারড ট্রাক ব্যবহারের ব্যবস্থা গ্রহণ করা হবে। কৃষিজমির ক্ষতি কমানোর জন্য উপসয়েল সংরক্ষণ, ক্ষতিগ্রস্তদের উপযুক্ত ক্ষতিপূরণ এবং বিকল্প জীবিকার সুযোগ সৃষ্টির বিষয়েও প্রতিশ্রুতি প্রদান করা হয়।

সভায় পরিবেশ ব্যবস্থাপনা পরিকল্পনা (EMP) এবং পরিবেশ পর্যবেক্ষণ পরিকল্পনা (EMoP)-এর গুরুত্ব বিশেষভাবে তুলে ধরা হয়। অংশগ্রহণকারীরা মত প্রকাশ করেন যে, যথাযথ পরিবেশগত মনিটরিং, নিয়মিত তদারকি এবং অংশগ্রহণমূলক ব্যবস্থাপনার মাধ্যমে সম্ভাব্য নেতিবাচক প্রভাবসমূহ কার্যকরভাবে নিয়ন্ত্রণ করা সম্ভব হবে। একইসাথে তথ্য প্রকাশে স্বচ্ছতা নিশ্চিত করা এবং পরামর্শক, স্থানীয় জনপ্রতিনিধি ও জনগণকে সম্পৃক্ত করে একটি অংশগ্রহণমূলক মনিটরিং ব্যবস্থা গড়ে তোলার ওপর গুরুত্ব আরোপ করা হয়।

বিশেষ অতিথিগণ তাদের বক্তব্যে উল্লেখ করেন যে, বড়লেখা উপজেলার সম্ভাব্য সিলিকা বালু মহালসমূহ পরিবেশগতভাবে সংবেদনশীল এলাকায় অবস্থিত হওয়ায় যেকোনো ধরনের বালু উত্তোলন কার্যক্রম প্রয়োজন সতর্কতা ও দায়িত্বশীলতার সাথে পরিচালনা করতে হবে। তারা EIA প্রক্রিয়ার গুরুত্ব তুলে ধরে বলেন যে, পরিবেশ সংরক্ষণ, জীববৈচিত্র্য রক্ষা এবং আইনগত কাঠামো অনুসরণ ছাড়া কোনো ধরনের উত্তোলন কার্যক্রম পরিচালনা করা উচিত হবে না।

সভাপতি তাঁর বক্তব্যে বলেন যে, প্রকল্প বাস্তবায়নের ক্ষেত্রে পরিবেশ সংরক্ষণ, সামাজিক নিরাপত্তা, স্থানীয় জনগণের স্বার্থ এবং প্রাকৃতিক সম্পদের টেকসই ব্যবস্থাপনাকে সর্বোচ্চ গুরুত্ব দেওয়া হবে। তিনি আশ্বস্ত করেন যে, প্রকল্পের প্রতিটি ধাপে পরিবেশগত মানদণ্ড অনুসরণ করা হবে এবং স্থানীয় জনগণের উত্থাপিত মতামত, উদ্বেগ ও সুপারিশসমূহ যথাযথভাবে বিবেচনায় নেওয়া হবে। উপজেলা প্রশাসনের নিয়মিত তদারকির মাধ্যমে প্রকল্পের ওপর মান ও পরিবেশগত সুরক্ষা নিশ্চিত করা হবে বলেও তিনি উল্লেখ করেন।

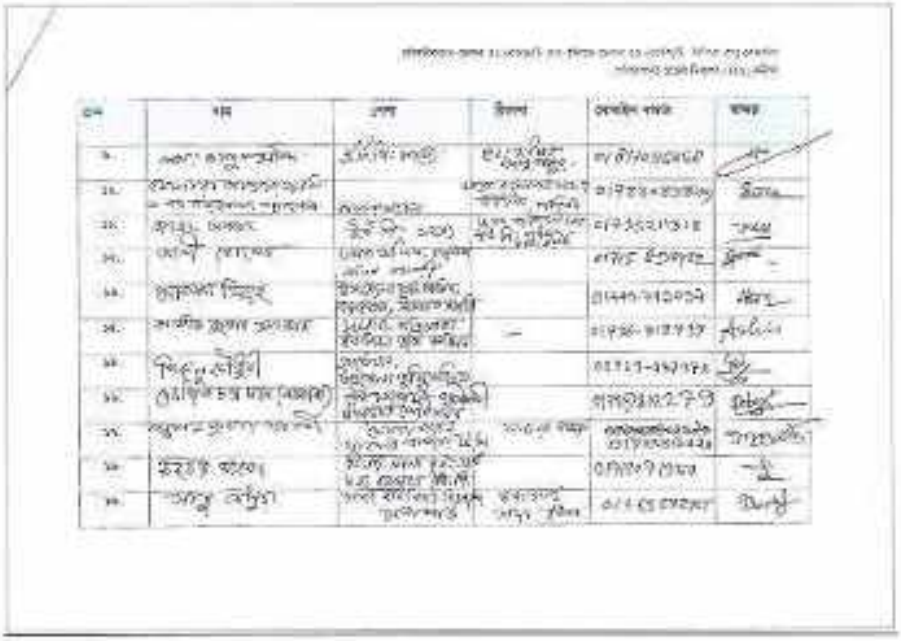
সার্বিকভাবে অংশগ্রহণকারীরা একমত হন যে, প্রস্তাবিত সিলিকা বালু মহালসমূহ যদি স্বচ্ছতা, যথাবিধিতা, পরিবেশসম্মত ব্যবস্থাপনা এবং স্থানীয় জনগণের সক্রিয় অংশগ্রহণ নিশ্চিত করে পরিচালিত হয়, তবে এটি অবৈধ বালু উত্তোলন নিয়ন্ত্রণ, সরকারি রাজস্ব বৃদ্ধি, পরিবেশ সংরক্ষণ এবং স্থানীয় অর্থনৈতিক উন্নয়নে গুরুত্বপূর্ণ ভূমিকা রাখতে সক্ষম হবে।

মোহাম্মদ মাসুক উন নবী সহকারী পরিচালক, বিএমডি ইমেইল: adgeophy@bomd.gov.bd মোবাইল: ০১৩৯২৭৮৮০৩	জহির উদ্দিন কনসালটেন্ট ইকিউএমএস কনসাল্টিং লিমিটেড ইমেইল: fakrul.uddin@eqms.com.bd মোবাইল: ০১৬৮৩০৩৪০৮	রুপম কুমার দাস পরিবেশ অধিদপ্তর মৌলভীবাজার জেলা কার্যালয় ইমেইল : sdi.doe.gov.bd@gmail.com মোবাইল : ০১৭১৫-৯৬২৫২৬

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জনমত যাচাই সভা

স্থান: কুলাউড়া উপজেলা পরিষদ সম্মেলন কক্ষ, উপজেলা: কুলাউড়া, জেলা: মৌলভীবাজার



জনমত যাচাই সভার বিবরণী

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স্থান: কুলাউড়া উপজেলা পরিষদ সম্মেলন কক্ষ, উপজেলা: কুলাউড়া, জেলা: মৌলভীবাজার

কেন্দ্র: উপজেলা পরিষদ সম্মেলন কক্ষ, কুলাউড়া, মৌলভীবাজার

তারিখ: ১২ মে ২০২৬ **সময়:** দুপুর ১১:০০ ঘটিকা হইতে ১২:৩০ ঘটিকা

সভাপতি: সানজিদা আক্তার, উপজেলা নির্বাহী অফিসার, কুলাউড়া, মৌলভীবাজার

বিশেষ অতিথি: স্বপন কুমার দাস, পরিবেশ অধিদপ্তর, মৌলভীবাজার

অতিথিবৃন্দ:

1. মোহাম্মদ মাসুক উল হাই, সহকারী পরিচালক, ডিএমটি
2. মোহাম্মদ আলিমুল ইসলাম, সহকারী কমিশনার (ভূমি), কুলাউড়া।
3. মোহাম্মদ জসীম উদ্দিন, উপজেলা কৃষি কর্মকর্তা, কুলাউড়া উপজেলা।
4. আজিজুল ইসলাম, সভাপতি, প্রেসক্লাব, কুলাউড়া উপজেলা।
5. মোহাম্মদ আব্দুল বাসিথ, চেয়ারম্যান, টিলাগাঁও ইউনিয়ন, কুলাউড়া।
6. নাজমুল বারী সোহেল, সাধারণ সম্পাদক, প্রেসক্লাব, কুলাউড়া উপজেলা।
7. মোহাম্মদ আবু মাসুদ, সিনিয়র উপজেলা মৎস্য কর্মকর্তা, কুলাউড়া উপজেলা।
8. সিরাজুল ইসলাম রাজন, ব্যবসায়ী, কুলাউড়া।
9. মোহাম্মদ মতিউর রহমান, ইউনিয়ন ভূমি অফিস, হাজীপুর, কুলাউড়া।
10. মো: মনসুর মিয়া, ইউপি সদস্য, ভাটেরা ইউনিয়ন।
11. শেখ সাইফুল ইসলাম পথি, ভারপ্রাপ্ত চেয়ারম্যান, ভাটেরা ইউনিয়ন। স্থানীয় নেতৃবৃন্দ, সাংবাদিক ও সিলিকা বালু কোয়ারীর জনগণ।

১. ভূমিকা

জনমত যাচাই সভা হল এমন একটি প্রক্রিয়া যা জনসাধারণকে প্রকল্পের বিষয়ে তাদের মতামত উপস্থাপন এবং সর্বশেষ সিদ্ধান্ত গ্রহণের ক্ষেত্রে তাদের মন্তব্য/অভিমত বিবেচনা করার সুযোগ প্রদান করে থাকে। পরিবেশ সংরক্ষণ বিধিমালা ২০২৩ (বিধি ১৬) অনুযায়ী, বস্তুত পরিবেশগত প্রভাব নিরূপনের অংশ হিসেবে প্রকল্পের পরিবেশগত প্রভাব এর বিষয়ে স্থানীয় জনগনের কাছে তথ্য উন্মুক্ত করার জন্য এবং সে বিষয়ে তাদের মতামত গ্রহণের জন্য এই জনমত যাচাই সভার আয়োজন করা হয়। বর্ণিত জনমত যাচাই সভাটি গত ১২ মে ২০২৬ তারিখে অনুষ্ঠিত হয়। সভায় উক্ত এলাকার বিভিন্ন প্রতিষ্ঠান ও অংশীজন থেকে মোট ২১ জন প্রতিনিধি উপস্থিত ছিলেন।

২ কার্যপদ্ধতি

পরিবেশ সংরক্ষণ বিধিমালা ২০২৩ (বিধি ১৬ এর উপবিধি ২) অনুসারে, উক্ত জনমত যাচাই সভা আয়োজন করার অনুমতি প্রসঙ্গে বসত্না পরিবেশগত প্রভাব নিরূপণ প্রতিবেদন ও এর বাংলা সারসংক্ষেপসহ একটি আবেদনপত্র পরিবেশ অধিদপ্তরের প্রধান কার্যালয়ে দাখিল করা হয়েছিল এবং এর পরিপ্রেক্ষিতে পরিবেশ অধিদপ্তর কর্তৃক উক্ত সভায় উপস্থিতির জন্য একজন প্রতিনিধির মনোনয়ন দেয়া হয়। গত ২৩ এপ্রিল ২০২৬ তারিখে দৈনিক সমকাল নামক বাংলাদেশের একটি জাতীয়

EQMS BMD

সংবাদপত্রে এবং দৈনিক সমাচার নামক একটি স্থানীয় সংবাদপত্রে উল্লেখিত জনমত যাচাই সভার বিজ্ঞপ্তি প্রকাশিত হয়। এছাড়াও, আমন্ত্রণপত্রের মাধ্যমে অংশীদারগণকে আমন্ত্রণ জানানো হয়।

৩. সভার উদ্বোধন

পবিত্র কুরআন তেলাওয়াত পাঠ এবং পরিচিত পর্বের মাধ্যমে আনুষ্ঠানিকভাবে জনমত যাচাই সভার কার্যক্রম শুরু করা হয় এরপর সানজিদা আক্তার, উপজেলা নির্বাহী অফিসার, কুলাউড়া, মৌলভীবাজার অংশগ্রহণকারীদের স্বাগত জানিয়ে সভা শুরু করেন। তিনি জানান, বর্তমানে সিলিকা বালুর যেমনীয় ইজারাদার বন্ধ আছে। তিনি তাঁর বক্তব্যে উল্লেখ করেন যে, প্রকল্পের পরিবেশগত ও সামাজিক প্রভাব মূল্যায়নের অংশ হিসেবে এই জনমত যাচাই সভার আয়োজন করা হয়েছে। এই ধরনের সভার মাধ্যমে স্থানীয় জনগণের মতামত, পরামর্শ এবং উদ্বেগসমূহ সংগ্রহ করা অত্যন্ত গুরুত্বপূর্ণ, যাতে প্রকল্প বাস্তবায়নের সময় পরিবেশ সুরক্ষা এবং স্থানীয় জনগণের স্বার্থ যথাযথভাবে বিবেচনায় নেওয়া যায়। তিনি আরও বলেন, একটি প্রকল্পের মাধ্যমে এলাকার অর্থনৈতিক কর্মকাণ্ড বৃদ্ধি, কর্মসংস্থান সৃষ্টি এবং অবকাঠামোগত উন্নয়ন সম্ভব হলেও পরিবেশের ভারসাম্য রক্ষা করা সমানভাবে জরুরি। তাই প্রকল্পের পরিকল্পনা ও বাস্তবায়নের ক্ষেত্রে পরিবেশগত আইন, মানদণ্ড এবং প্রয়োজনীয় প্রশমন ব্যবস্থা যথাযথভাবে অনুসরণ করা হবে বলে তিনি আশাবাদ ব্যক্ত করেন। শেষে তিনি সকল অংশগ্রহণকারীকে সভায় সক্রিয়ভাবে অংশগ্রহণ করে গঠনমূলক মতামত প্রদান করার জন্য আহ্বান জানান এবং আশা প্রকাশ করেন যে সকলের সহযোগিতার মাধ্যমে প্রকল্পটি পরিবেশসম্মত ও টেকসইভাবে বাস্তবায়ন করা সম্ভব হবে।

৪. পরিবেশগত প্রভাব মূল্যায়নের খসড়া প্রতিবেদনের উপর উপস্থাপনা

ইকিউএমএস (EQMS) কনসালটিং লিমিটেডের কনসালটেন্ট এবং পরিবেশ বিশেষজ্ঞ জনাব ফাহিম উদ্দীন অংশগ্রহণকারীদের আন্তরিক শুভেচ্ছা জানিয়ে উপস্থাপনা শুরু করেন। তিনি খসড়া পরিবেশগত প্রভাব নিরূপণ প্রতিবেদনের উপর নিম্নলিখিত বিষয়গুলি সম্পর্কে একটি উপস্থাপনা প্রদান করেন:

১. জনমতের উদ্দেশ্য
২. প্রকল্পের পটভূমি
৪. প্রকল্পের বর্ণনা
৫. প্রকল্প সংশ্লিষ্ট নমুনা নকশা
৬. পরিবেশগত বেসলাইন ডেটা
৭. পরিবেশগত এবং সামাজিক প্রভাব মূল্যায়ন
৮. পরিবেশ ব্যবস্থাপনা পরিকল্পনা
৯. পরিবেশ পর্যবেক্ষণ পরিকল্পনা
১০. উপসংহার এবং সুপারিশ।

জনমত যাচাই সভার উপস্থাপনা, উপস্থিতি শীট এবং জনমত যাচাই সভার ছবি পরিশিষ্ট- এ উপস্থাপন করা হয়েছে।

৫. মুক্ত আলোচনা এবং প্রতিক্রিয়া

উপস্থাপনার পরে, একটি প্রশ্নোত্তর পর্ব ও মুক্ত আলোচনা অনুষ্ঠিত হয়, যা টেবিল-১ এ উপস্থাপন করা হয়েছে। ইকিউএমএস কনসালটিং লিমিটেডের পরিবেশ বিশেষজ্ঞ জনাব ফাহিম উদ্দীন, বিএমডির পক্ষে জনাব মাসুক উল নবী, সহকারী পরিচালক, পরিবেশ অধিদপ্তর এর পক্ষে জনাব স্বপন কুমার নাথ প্রশ্নগুলোর উত্তর প্রদান করেন।

EQMS BMD

টেবিল ১- জনমত সভার প্রশ্ন উত্তর পর্বের বিবরণ

ক্রম নং	নাম ও পদবী	প্রশ্ন/মতামত (বিস্তারিত)	উত্তর/প্রতিক্রিয়া (বিস্তারিত)
১	মোহাম্মদ আনিসুল ইসলাম, সহকারী কমিশনার (ভূমি), কুলাউড়া	তিনি উল্লেখ করেন যে, কুলাউড়া উপজেলার বিভিন্ন স্থান ও খাসে মৌজিন হতে প্রত্নতাত্ত্বিকভাবে সিলিকা বালু জমা হচ্ছে, যা বর্তমানে বিভিন্ন স্থানে অনিবন্ধিতভাবে উত্তোলিত হচ্ছে। তিনি বলেন, স্বচ্ছপরিচালনে সরকার সিলিকা বালু মহালসমূহ চিহ্নিত করে নিয়মতান্ত্রিকভাবে ইজারা প্রদান করা হলে আরও উত্তোলন অনেকাংশে নিয়ন্ত্রণ করা সম্ভব হবে এবং সরকারের রাজস্ব আয়ও বৃদ্ধি পাবে। তিনি বিশেষভাবে কেওলাকান্দি ও পূবাই এলাকার উপজেলা, বাহুলপুর ও অলিনগরে এলাকার দূষণ দ্রুত, মহিষাগড় ও শ্রীপুর এলাকায় পাথর দ্রুত এবং জিয়ানগর এলাকায় বড় ধরনের সম্ভাবনার তথ্য উল্লেখ করেন।	সভায় জানানো হয় যে, সভায় লিখিত বালু মহালসমূহের বিষয়ে প্রয়োজনীয় তদন্তিপত্তি সম্পন্ন, পরিবেশগত প্রভাব মূল্যায়ন (EIA) এবং ব্যবস্থাপনা ছাড়াই বন্ধের সম্পন্ন করার পর পরবর্তী সিদ্ধান্ত গ্রহণ করা হবে। সরকার নির্ধারিত নীতিমালা ও পরিবেশের নিয়মিমালা অনুসরণ করে ইতিত ও নিয়ন্ত্রিত পদ্ধতিতে বালু উত্তোলনের ব্যবস্থা গ্রহণ করা হবে।
২	মোহাম্মদ তৌফিল, উপজেলা কৃষি কর্মকর্তা, কুলাউড়া জঁ-মহাল	তিনি মতামত প্রদান করেন যে, অপরিকল্পিত বালু উত্তোলনের ফলে আশপাশের কৃষিজমির উর্বরতা, উপজেলা এবং সেচ ব্যবস্থার ওপর বিরূপ প্রভাব পড়তে পারে। বিশেষ করে ঘাসী ধানমাঠসহ সংলগ্ন এলাকায় প্রাথমি সফল ফসলি জমিতে পানি পরিবহন ব্যাহত হতে পারে। তিনি কৃষিজমি সুরক্ষা এবং অতিরিক্তভাবে বালু উত্তোলন বন্ধে যথাযথ পদক্ষেপ গ্রহণের দাবি জানান।	জানানো হয় যে, কৃষিজমির ক্ষতি পর্যায়ের জন্য ডিসট্রেস সংরক্ষণ, নিয়মিত পরিবহন করা ব্যবস্থা এবং হালকাকরণ। বাস্তবায়ন ব্যবস্থা গ্রহণ করা হবে। কৃষিজমি ও সেচ ব্যবস্থার ওপর প্রভাব কমানো লক্ষ্যে নদিবহন অর্থায়ন নিয়ন্ত্রিত ভাবে পরিচালনা করা হবে এবং প্রয়োজনীয় ক্ষেত্রে অতিরিক্ত পুনর্বাসিত ব্যবস্থা বিবেচনা করা হবে।
৩	আনিসুল ইসলাম, সভাপতি, প্রেসক্লাব, কুলাউড়া উপজেলা	তিনি প্রস্তাব করেন যে, পাথরিন এবং অথৈয় বালু উত্তোলনের কারণে স্থানীয়ভাবে নদীর গভীরতা ও প্রবাহপথ পরিবর্তিত হচ্ছে। তিনি উল্লেখ করেন যে, অতীতে বুধা ঘড়া হলেও কোথা বর্তমানে অনিয়ন্ত্রিত উত্তোলনের কারণে স্থানীয় জনগণ বাধা প্রদান করতে বাধ্য হচ্ছিল। তিনি	সভায় জানানো হয় যে, যৌথ বালু উত্তোলন যথে প্রশাসন তিলার নিয়ন্ত্রণ নীতি অনুসরণ করবে। ইজারা কার্যক্রম সম্পূর্ণ স্বচ্ছ ও প্রতিযোগিতামূলক পদ্ধতিতে পরিচালনা করা হবে এবং স্থানীয়

EQMS

BMD

		অংশগ্রহণমূলক সভায় একটি অংশগ্রহণমূলক প্রশাসনিক ব্যবস্থা নিশ্চিত করার আহ্বান জানান।	জলাধার ও পানিপ্রবাহের সংযুক্ত রাখে একটি অংশগ্রহণমূলক ব্যবস্থা গড়ে তোলা হবে।
৪	মোহাম্মদ আব্দুল খালিক, চেয়ারম্যান, ফিলাপাঁও ইউনিয়ন, কুলাউড়া	তিনি বলেন যে, খুব বড় এবং বড় উদ্যোগের পরিমাণ নির্ণয়ের বাস্তব মডেল হওয়ে এবং সঠিক বাস্তবায়নের মাধ্যমে একটা সরকারিভাবে ইজারা প্রদান করা হলে স্থানীয় অর্থনৈতিক কর্মকাণ্ডে ইতিবাচক প্রভাব পড়বে। তবে তিনি সতর্ক করেন যে, অতিরিক্ত উত্তোলনের আশায় স্থানীয় জনগণের মধ্যে বিরূপ প্রতিক্রিয়া সৃষ্টি হয়েছিল, যাতে কাম্যতে পরিবেশগত ও সামাজিক ব্যবস্থাপনার ওপর বিশেষ গুরুত্ব দিতে হবে।	জানানো হয় যে, সম্ভাব্য সিলিকা বালু মজলিসপুরে অনুমোদিত পরিমাণ সময় এবং বৈজ্ঞানিক পদ্ধতিতে বালু উত্তোলনের জন্যই প্রদান করা হবে। পরিবেশ ব্যবস্থাপনা পরিকল্পনা (EMP) এবং নিয়মিত পরিবেশগত মনিটরিংয়ের মাধ্যমে সম্ভাব্য নেতিবাচক প্রভাব নিয়ন্ত্রণ করা হবে।
৫	নাছরুল বারী সেখেল, সাধারণ সম্পাদক, ফেসকাপ, কুলাউড়া উপজেলা	তিনি মন্তব্যের প্রথমে বলেন যে, কালু পরিবহনের সময় ধুলাবালি, শব্দদূষণ এবং অন্যান্য দালানকোঠার আশেপাশে স্থানীয় জনগণের জীবনযাত্রা সীমিত হয়ে পড়ে। বিশেষ করে শিক্ষা প্রতিষ্ঠান, বাজার ও সম্প্রদায়ভিত্তিক অঞ্চলগুলোতে এসব প্রভাব বেশি অনুভূত হবে। তিনি খুনা নিয়মন এবং জনপ্রতিনিধিদের নিয়মিত তদারকি বিষয়ে কার্যকর ব্যবস্থা গ্রহণেরও দাবি জানান।	সভায় জানানো হয় যে, ধুলাবালি নিয়ন্ত্রণে নিয়মিত পানি ছিটানো, কভারড ট্রাক ব্যবহার এবং নির্দিষ্ট সময়সূচিতে মাটি পরিবহন কার্যক্রম পরিচালনা করা হবে। শব্দদূষণ হ্রাসে ব্যবস্থাপনা পরিকল্পনা প্রস্তুতের এবং স্থানীয় জনগণের নিকটস্থ প্রতিষ্ঠানে নিয়মিতভাবে কার্যকর ব্যবস্থা গ্রহণ করা হবে।
৬	মোহাম্মদ আব্দুল মালুন, সিলিকা উপজেলা মৎস্য কর্মকর্তা, কুলাউড়া উপজেলা	তিনি বলেন যে, খাদ্য থেকে বালু উত্তোলনের সময় জলজ প্রাণী ও মৎস্যসম্পদের ওপর বিরূপ প্রভাব পড়বে। বিশেষ করে মাছের প্রজনন মৌসুমে উত্তোলন কার্যক্রম পরিচালিত হলে প্রাকৃতিক আবাসস্থল ক্ষতিগ্রস্ত হওয়ার আশঙ্কা রয়েছে। তিনি জলজ প্রাণীবৈচিত্র্য সংরক্ষণের গুরুত্ব বিবেচনায় সরকারি প্রজনন অভয়াশ্রম ঘোষণার দাবি জানান।	জানানো হয় যে, মাননীয় সংসদ সদস্য ও জলজ প্রাণীবৈচিত্র্য রক্ষায় স্থানীয় কমিউনিটি অংশগ্রহণে অভয়াশ্রম ঘোষণা করা হবে। প্রজনন মৌসুমে উত্তোলন কার্যক্রম সীমিত রাখা এবং সংবেদনশীল এলাকায় নিয়ন্ত্রিত ব্যবস্থাপনা প্রচলনের বিষয়টি বিবেচনায় নেওয়া হবে।
৭	সিরাজুল ইসলাম রাজন, ব্যবসায়ী, কুলাউড়া	তিনি বলেন যে, সরকারিভাবে সিলিকা বালু মহাল ইজারা প্রদান করা হলে স্থানীয় ব্যবসা-বাণিজ্য ও কর্মসংস্থানের সুযোগ বৃদ্ধি পাবে। তবে তিনি জোর দিয়ে বলেন যে, মূল্য সংযোজনের অপ্রতুলতা দূর করতে হবে এবং	সভায় জানানো হয় যে, ইজারা কার্যক্রমে স্থানীয় ও জনপ্রতিনিধি সম্পৃক্ত করে একটি অংশগ্রহণমূলক ব্যবস্থা নিশ্চিত করা হবে এবং স্থানীয় জনগণ ও স্থায়ী উদ্যোক্তাদের অগ্রাধিকার সুযোগ সৃষ্টি করা হবে। অন্যান্য সিলিকেজ ও অনিয়ন্ত্রিত উত্তোলন প্রশাসনিক তদারকি জোরদার করা হবে।

EQMS BMD

		কোনো প্রকার ক্ষতিকর প্রভাব পড়তে না পারে, সে বিষয়ে প্রশাসনকে অবহিত করতে হবে।	
৮	মোছাম্মদ সুফিয়া বেগম ইউনিয়ন ভূমি অফিস, হাজীপুর, কুলাউড়া	ডিসি মহোদয় দেশ যে, কুলাউড়া উপজেলার পেশকার হিসেবে বালু উত্তোলনের জন্য ইপাবলী হতে এটি কুমার বছরের লিজ্জি সময়ের জন্য এবং লিজ্জি এলাকাগুলো হতে বালু উত্তোলন করা হচ্ছে। তিনি উল্লেখ করেন যে, বর্ষাকাল বা অতিরিক্ত পানি প্রবাহের সময় বালু উত্তোলন করলে পরিবেশগত ঝুঁকি সৃষ্টি পেতে পারে।	অবহিত করেন যে, মৌসুমি পানি প্রবাহ, ভারিভাবিতার অবক্ষ এবং পরিবেশগত সংবেদনশীলতা বিবেচনায় রেখে উত্তোলনের সময়সূচি নির্ধারণ করা হবে। এছাড়া পরিবেশগতভাবে ইংগিতপূর্ণ সময়ের মধ্যকে লিজ্জি পরিসরে বালু উত্তোলনের অনুমতি প্রদান করা হবে।
৯	মো: মনসুর মিয়া, ইউপি সদস্য, ভাটেরা ইউনিয়ন	তিনি উল্লেখ করেন যে, অপরিকল্পিত বালু উত্তোলনের ফলে স্থানীয় জনগণের সীমানা, যোগাযোগ ব্যবস্থা এবং কৃষিজমি ক্ষতির মধ্যে পড়তে পারে। তিনি স্থানীয় জনগণের মতামতকে অগ্রাধিকার দিয়ে কার্যক্রম পরিচালনার আহ্বান জানান।	সভায় জানানো হয় যে, স্থানীয় জনগণের মতামত ও উদ্বেগকে গুরুত্ব দিয়ে প্রকল্প বাস্তবায়ন করা হবে। একটি কার্যকর অভিযোগ গ্রহণ ও নিষ্পত্তি ব্যবস্থা (GRM) চালু করা হবে এবং নিয়মিত মনিটরিংয়ের মাধ্যমে সমস্যা দ্রুত নিয়ন্ত্রণ করা হবে।
১০	দেব সহিদুল ইসলাম পলি, অগ্রণী ডেভেলপমেন্ট ইউনিয়ন	তিনি বলেন যে, দীর্ঘদিন ধরে অবৈধ বালু উত্তোলনের কারণে এলাকার পরিবেশ ও সামাজিক ভিত্তিকীলতা ক্ষতিগ্রস্ত হচ্ছে। তিনি কথা প্রকাশ করেন যে, অনুমতিপ্রাপ্তে লিজ্জির ও পরিবেশসম্মত উপায়ে বালু উত্তোলন করা হলে স্থানীয় জনগণের সাথে দ্বন্দ্ব সৃষ্টি হবে এবং সুফল পাওয়া যাবে।	জানানো হয় যে, সরকার অনুমোদিত নীতিমালা অনুসরণ করে সব ও পরিবেশসম্মত উপায়ে বালু আহরণ করা হবে। প্রাকলনিক সমস্যাগুলি চিহ্নিতকরণ করা হবে এবং প্রয়োজন হলিয়ে অতিরিক্ত ব্যবস্থা গ্রহণ করা হবে।
১১	স্থানীয় কৃষক, সাংবাদিক ও সচেতন নিবাসী বালু ব্যবসায়ী প্রমুখ	অংশগ্রহণকারীরা সর্বসম্মতভাবে মতামত প্রকাশ করেন যে, কুলাউড়া উপজেলার বিভিন্ন স্থানে ও খাসে বৈধভাবে বালু উত্তোলন হয়ে আসছে, যার ফলে সরকার রাজস্ব হারাচ্ছে এবং পরিবেশগত ঝুঁকি বৃদ্ধি পাচ্ছে। তারা বিশেষভাবে মূল্য দাবি এবং সঠিক সঞ্চালনায় ভূমিকা বালু মহাল কিভাবে উন্নয়ন কাজে এবং সেগুলোকে লিজ্জির ও দৈনন্দিন বিভিন্নে ইজারা প্রদানের বিষয়ে ইতিবাচক মতামত ব্যক্ত করেন।	সভার জানানো হয় যে, সমাজ ভিত্তিক বালু মহালগুলোর বিষয়ে তথ্যভান্ডার পরিবেশগত মূল্যায়ন, প্রশাসনিক যাচাই-বাছাই এবং বাস্তবিক পরীক্ষা সম্পন্ন করা হবে। পরিবেশসম্মত ও টেকসই ব্যবস্থাপনার মাধ্যমে বালু উত্তোলন নিশ্চিত করা হবে এবং প্রয়োজন প্রতিক্ষেত্রে কর্তৃপক্ষ সমন্বয় করবে।

EQMS

BMD

৬. বিশেষ অতিথির বক্তব্য

স্বপন কুমার দাস, পরিবেশ অধিদপ্তর, মৌলভীবাজার, তাঁর বক্তব্যের শুরুতে অংশীজন পরামর্শ সভায় উপস্থিত সকল সরকারি কর্মকর্তা, জনপ্রতিনিধি, সংবাদিক, স্থানীয় জনগণ এবং সংশ্লিষ্ট অংশীজনদের আন্তরিক ধন্যবাদ জানান। তিনি বিশেষভাবে আয়োজক প্রতিষ্ঠানকে পরিবেশগত প্রভাব মূল্যায়ন (EIA) এর ওপর ভিত্তি প্রতিবেদন তথ্যসমৃদ্ধ ও সুশৃঙ্খলভাবে উপস্থাপনের জন্য ধন্যবাদ জ্ঞাপন করেন। তিনি বলেন, এ ধরনের অংশীজন পরামর্শ সভা পরিবেশগত প্রভাব মূল্যায়ন প্রক্রিয়ার একটি অত্যন্ত গুরুত্বপূর্ণ অংশ, কারণ এর মাধ্যমে স্থানীয় জনগণ, প্রশাসন এবং সংশ্লিষ্ট স্টেকহোল্ডারদের মতামত, উদ্বেগ ও সুপারিশ সরাসরি গ্রহণ করা সম্ভব হয়, যা ভবিষ্যৎ সিদ্ধান্ত গ্রহণে গুরুত্বপূর্ণ ভূমিকা পালন করে।

তিনি উল্লেখ করেন যে, কুলাউড়া উপজেলার সম্ভাব্য সিলিকা বালু মহালসমূহ— যেমন কেওলাকান্দি ও পূবাই এলাকার দেওছড়া, ধাতুরমুখ ও কলিমাবাদ এলাকার বুধা ছড়া, মইতলাঁও ও শ্রীপুর এলাকার বাগড়া ছড়া এবং জিয়াশ্রুত এলাকার বড় ছড়া— পরিবেশগতভাবে সংবেদনশীল এলাকায় অবস্থিত। এসব এলাকায় যেকোনো ধরনের বালু উত্তোলন কার্যক্রম পানি প্রবাহ, মাটির স্থিতিশীলতা, জীববৈচিত্র্য, কৃষিজমি এবং স্থানীয় জনগণের জীবন-জীবিকার ওপর প্রত্যক্ষ ও পরোক্ষ প্রভাব ফেলতে পারে বলে তিনি মত প্রকাশ করেন। তিনি বিশেষভাবে উল্লেখ করেন যে, বুধা ছড়ায় অতীতে অনিয়ন্ত্রিত বালু উত্তোলনের কারণে স্থানীয় জনগণের মধ্যে উদ্বেগ ও বিরূপ প্রতিক্রিয়ার সৃষ্টি হয়েছিল, যা ভবিষ্যতে কার্যক্রম পরিচালনার ক্ষেত্রে সতর্কতার সাথে বিবেচনা করা প্রয়োজন।

তিনি আরও বলেন যে, দেওছড়া সিলিকা বালু উত্তোলনের জন্য সম্ভাবনাময় হলেও এটি শুধুমাত্র বছরের নির্দিষ্ট সময়ের জন্য এবং নিয়ন্ত্রিত ব্যবস্থাপনার আওতায় পরিচালনা করা উচিত, যাতে প্রাকৃতিক পানি প্রবাহ ও পরিবেশগত ভারসাম্য বিঘ্নিত না হয়। তিনি জোর দিয়ে বলেন যে, অবৈধ ও অপরিকল্পিত বালু উত্তোলনের ফলে ইতোমধ্যে বিভিন্ন এলাকায় পরিবেশগত ঝুঁকি তৈরি হয়েছে, তাই সরকার অনুমোদিত নীতিমালা অনুসরণ করে বৈজ্ঞানিক ও পরিবেশসম্মত পদ্ধতিতে কার্যক্রম পরিচালনা করা অত্যন্ত জরুরি।

তিনি আরও উল্লেখ করেন যে, প্রকল্প বাস্তবায়নের পূর্বে যথাযথ পরিবেশগত প্রভাব মূল্যায়ন (EIA), পরিবেশ ব্যবস্থাপনা পরিকল্পনা (EMP) এবং পরিবেশ পর্যবেক্ষণ পরিকল্পনা (EMoP) প্রণয়ন ও বাস্তবায়ন নিশ্চিত করতে হবে। সম্ভাব্য সিলিকা বালু মহালসমূহে কার্যক্রম পরিচালনার ক্ষেত্রে প্রাকৃতিক পানি প্রবাহ, জলজ জীববৈচিত্র্য, কৃষিজমি, স্থানীয় যোগাযোগ ব্যবস্থা এবং বসতবাড়ির সুরক্ষার বিষয়টি সর্বোচ্চ গুরুত্বের সাথে বিবেচনা করতে হবে। একইসাথে তিনি নিয়মিত পরিবেশগত মনিটরিং, প্রশাসনিক তদারকি এবং পরিবেশ সংরক্ষণ আইন ও বিধিমালা কঠোরভাবে অনুসরণের ওপর গুরুত্ব আরোপ করেন।

তিনি তাঁর বক্তব্যের শেষাংশে আশা প্রকাশ করেন যে, সংশ্লিষ্ট প্রশাসন, স্থানীয় জনপ্রতিনিধি, গণমাধ্যম এবং স্থানীয় জনগণের সমন্বিত সহযোগিতার মাধ্যমে কুলাউড়া উপজেলার সম্ভাব্য সিলিকা বালু মহালসমূহ পরিবেশসম্মত, টেকসই এবং সুশৃঙ্খল ব্যবস্থাপনার আওতায় পরিচালিত হবে, যা একদিকে অবৈধ বালু উত্তোলন নিয়ন্ত্রণ করবে এবং অন্যদিকে পরিবেশ সংরক্ষণ ও স্থানীয় অর্থনৈতিক উন্নয়নে ইতিবাচক ভূমিকা রাখবে।

৭. সভাপতির বক্তব্য

সানজিদা আক্তার, উপজেলা নির্বাহী অফিসার, কুলাউড়া, মৌলভীবাজার মতবিনিময় সভায় সভাপতির বক্তব্য প্রদানকালে কুলাউড়া উপজেলার সম্ভাব্য সিলিকা বালু মহাল (কোয়ারী) ব্যবস্থাপনা, পরিবেশগত সুরক্ষা এবং সরকারিভাবে ইজারা কার্যক্রমের বিভিন্ন গুরুত্বপূর্ণ দিক তুলে ধরেন। তিনি বলেন, কুলাউড়া উপজেলার বিভিন্ন ছড়া ও খালে প্রাকৃতিকভাবে সঞ্চিত সিলিকা বালু একটি মূল্যবান প্রাকৃতিক সম্পদ, যা সুষ্ঠু পরিকল্পনা, বৈজ্ঞানিক ব্যবস্থাপনা এবং পরিবেশসম্মত পদ্ধতিতে উত্তোলন করা গেলে সরকারের রাজস্ব আয় বৃদ্ধি পাবে এবং স্থানীয় অর্থনৈতিক কর্মকাণ্ড ও কর্মসংস্থানে ইতিবাচক

EQMS BMD

ভূমিকা রাখবে। তবে তিনি জোর দিয়ে বলেন যে, পরিবেশগত ভারসাম্য রক্ষা, প্রাকৃতিক পানি প্রবাহের স্বাভাবিকতা বজায় রাখা এবং স্থানীয় জনগণের স্বার্থ সংরক্ষণকে সর্বোচ্চ গুরুত্ব দিয়ে কার্যক্রম পরিচালনা করতে হবে।

তিনি আরও উল্লেখ করেন যে, কুলাউড়া উপজেলার কেওলাকান্দি ও পারই এলাকার দেওছড়া, বাবুরপুর ও কালিমাবাদ এলাকার বুধা ছড়া, মইরগাঁও ও শ্রীপুর এলাকার ঝাপড়া ছড়া এবং জিঞ্জানপর এলাকার বড় ছড়াসহ সম্ভাব্য সিলিকা বালু মহালসমূহের বিষয়ে প্রয়োজনীয় কারিগরি সমীক্ষা, পরিবেশগত প্রভাব মূল্যায়ন (EIA) এবং প্রশাসনিক যাচাই-বাছাই সম্পন্ন করার পর পরবর্তী সিদ্ধান্ত গ্রহণ করা হবে। তিনি বিশেষভাবে উল্লেখ করেন যে, বুধা ছড়া এবং বড় ছড়া সিলিকা বালু উত্তোলনের জন্য অত্যন্ত সম্ভাবনাময় এলাকা হলেও অতীতে অনিয়ন্ত্রিত বালু উত্তোলনের কারণে স্থানীয় জনগণের মধ্যে উদ্বেগ সৃষ্টি হয়েছিল। তাই ভবিষ্যতে এসব এলাকায় কার্যক্রম পরিচালনার ক্ষেত্রে পরিবেশগত সংবেদনশীলতা ও স্থানীয় জনগণের স্বার্থকে সর্বোচ্চ গুরুত্ব দেওয়া হবে। একইসঙ্গে তিনি বলেন যে, দেওছড়া সম্ভাব্য সিলিকা বালু মহাল হিসেবে উপযোগী হলেও এটি শুধুমাত্র বছরের নির্দিষ্ট সময়ের জন্য এবং নিয়ন্ত্রিত ব্যবস্থাপনার আওতায় পরিচালনা করা প্রয়োজন, যাতে প্রাকৃতিক পানি প্রবাহ ও পরিবেশগত ভারসাম্য বজায় থাকে।

সভাপতি আরও বলেন যে, কুলাউড়া উপজেলার সম্ভাব্য বালু মহালসমূহে বালু পরিবহনের ক্ষেত্রে স্থানীয় সড়ক, গ্রামীণ যোগাযোগ ব্যবস্থা এবং জননিরাপত্তার বিষয়টি অত্যন্ত গুরুত্বপূর্ণ। তিনি আশ্বস্ত করেন যে, নির্দিষ্ট পরিবহন রুট নির্ধারণ, ট্রাফিক ব্যবস্থাপনা পরিকল্পনা বাস্তবায়ন এবং স্থানীয় সড়কসমূহের প্রয়োজনীয় সংস্কার ও রক্ষণাবেক্ষণের ব্যবস্থা গ্রহণ করা হবে। একইসাথে ধুলাবালি, শব্দদূষণ এবং ভারী যানবাহনের কারণে স্থানীয় জনগণের সম্ভাব্য ভোগান্তি কমানোর জন্য প্রয়োজনীয় নিয়ন্ত্রণমূলক ব্যবস্থা গ্রহণ করা হবে।

তিনি আরও উল্লেখ করেন যে, অবৈধ বালু উত্তোলন বন্ধে উপজেলা প্রশাসন কঠোর অবস্থানে থাকবে এবং সরকার অনুমোদিত নীতিমালা অনুসরণ করে স্বচ্ছ, জবাবদিহিমূলক ও পরিবেশসম্মত ইজারা ব্যবস্থা নিশ্চিত করা হবে। পরিবেশ ব্যবস্থাপনা পরিকল্পনা (EMP) এবং পরিবেশ পর্যবেক্ষণ পরিকল্পনা (EMoP) অনুযায়ী নিয়মিত মনিটরিং কার্যক্রম পরিচালনা করা হবে এবং স্থানীয় জনগণের মতামত, উদ্বেগ ও সুপারিশসমূহ গুরুত্বসহকারে বিবেচনায় নেওয়া হবে।

৯. জনমত যাচাই সভার সারাংশ

প্রস্তাবিত সিলিকা বালু মহাল (কোয়ারী) প্রকল্পের পরিবেশগত ও সামাজিক প্রভাব মূল্যায়ন (EIA) কার্যক্রমের অংশ হিসেবে একটি খসড়া EIA প্রতিবেদন প্রস্তুত করা হয় এবং তা কুলাউড়া উপজেলা পরিষদ সম্মেলন কক্ষে অনুষ্ঠিত অংশীজন পরামর্শ সভায় উপস্থাপন করা হয়। সভায় সরকারি বিভিন্ন দপ্তরের কর্মকর্তা, স্থানীয় জনপ্রতিনিধি, সাংবাদিক, ব্যবসায়ী, রাজনৈতিক ব্যক্তিবর্গ, ইউনিয়ন পরিষদের সদস্য, ভূমি প্রশাসনের প্রতিনিধি, কৃষি ও মৎস্য বিভাগের কর্মকর্তাসহ সম্ভাব্য সিলিকা বালু মহাল এলাকার স্থানীয় জনগণ অংশগ্রহণ করেন। সভায় প্রকল্পের পটভূমি, উদ্দেশ্য, সম্ভাব্য সিলিকা বালু মহালের অবস্থান, পরিবেশগত ভিত্তি অবস্থা, সম্ভাব্য পরিবেশ ও সামাজিক প্রভাব এবং প্রস্তাবিত প্রশমন ব্যবস্থাসমূহ বিস্তারিতভাবে উপস্থাপন করা হয়।

আলোচনায় অংশগ্রহণকারীরা উল্লেখ করেন যে, কুলাউড়া উপজেলার বিভিন্ন ছড়া ও খাল থেকে দীর্ঘদিন ধরে অনিয়ন্ত্রিত ও অবৈধভাবে সিলিকা বালু উত্তোলনের ফলে পরিবেশগত ও সামাজিক সমস্যা সৃষ্টি হচ্ছে। বিশেষভাবে কেওলাকান্দি ও পারই এলাকার দেওছড়া, বাবুরপুর ও কালিমাবাদ এলাকার বুধা ছড়া, মইরগাঁও ও শ্রীপুর এলাকার ঝাপড়া ছড়া এবং জিঞ্জানপর এলাকার বড় ছড়াসহ বিভিন্ন সম্ভাব্য এলাকায় অবৈধ উত্তোলনের কারণে প্রাকৃতিক পানি প্রবাহ ব্যাহত হওয়া, ছড়ার তীরভাঙন, কৃষিজমির ক্ষতি, জীববৈচিত্র্যের ওপর বিরূপ প্রভাব এবং স্থানীয় অবকাঠামোর ক্ষতি বৃদ্ধির বিষয়টি গুরুত্বের সাথে তুলে ধরা হয়। অংশগ্রহণকারীরা বিশেষভাবে মতামত দেন যে, বুধা ছড়া এবং বড় ছড়া সিলিকা বালু উত্তোলনের জন্য অত্যন্ত সম্ভাবনাময় এলাকা হলেও পূর্বে অনিয়ন্ত্রিত উত্তোলনের কারণে স্থানীয় জনগণের মধ্যে বিরূপ প্রতিক্রিয়া সৃষ্টি হয়েছিল। তারা উল্লেখ করেন যে, বুধা ছড়া সর্বশেষ ২০১৯ সালে ইজারা প্রদান করা হয়েছিল, তবে অতিরিক্ত ও অনিয়ন্ত্রিত বালু উত্তোলনের কারণে স্থানীয় গ্রামবাসী পরবর্তীতে কার্যক্রমে বাধা প্রদান করে। একইসাথে

EQMS BMD

দেওয়ড়াকে সম্ভাবনাময় সিলিকা বালু মহাল হিসেবে উল্লেখ করা হলেও পরিবেশগত ভারসাম্য রক্ষার স্বার্থে শুধুমাত্র বছরের নির্দিষ্ট সময়ের জন্য এবং সীমিত ও নিয়ন্ত্রিত ব্যবস্থাপনার আওতায় কার্যক্রম পরিচালনার ওপর গুরুত্ব আরোপ করা হয়।

সভায় অংশগ্রহণকারীরা আরও উল্লেখ করেন যে, কুলাউড়া উপজেলার অধিকাংশ সম্ভাব্য বালু মহাল এলাকায় যাতায়াতের রাস্তা সরু ও দুর্বল হওয়ায় ভারী যানবাহনের মাধ্যমে বালু পরিবহনের ক্ষেত্রে স্থানীয় সড়ক ও জনসাধারণের চলাচল ব্যাহত হওয়ার আশঙ্কা রয়েছে। তারা সড়ক রক্ষণাবেক্ষণ, ট্রাফিক ব্যবস্থাপনা, ধুলাবালি ও শব্দদূষণ নিয়ন্ত্রণ এবং স্থানীয় জনগণের নিরাপত্তা নিশ্চিত করার ওপর বিশেষ গুরুত্বারোপ করেন। একইসাথে কৃষিজমি সুরক্ষা, জলজ জীববৈচিত্র্য সংরক্ষণ এবং সিদ্ধান্ত গ্রহণ প্রক্রিয়ায় স্থানীয় জনগণের অংশগ্রহণ নিশ্চিত করার বিষয়েও মতামত প্রদান করা হয়।

প্রকল্প কর্তৃপক্ষ সভায় উপস্থিত সকল অংশগ্রহণকারীর মতামত, উদ্বেগ ও সুপারিশ গুরুত্বের সাথে গ্রহণ করে এবং আশ্বস্ত করে যে, সিলিকা বালু উত্তোলন কার্যক্রম সম্পূর্ণভাবে বৈজ্ঞানিক ও নিয়ন্ত্রিত ব্যবস্থাপনার আওতায় পরিচালিত হবে। সম্ভাব্য মহালসমূহে বালু উত্তোলনের পূর্বে প্রয়োজনীয় পরিবেশগত প্রভাব মূল্যায়ন (EIA), হাইড্রোলজিক্যাল বিশ্লেষণ এবং সেডিমেন্ট মূল্যায়ন সম্পন্ন করা হবে, যাতে প্রাকৃতিক পানি প্রবাহ, ছড়ার স্থিতিশীলতা এবং পরিবেশগত ভারসাম্য বজায় থাকে। একইসাথে অবৈধ উত্তোলন বন্ধে জিরো টলারেন্স নীতি অনুসরণ, প্রশাসনিক নজরদারি বৃদ্ধি এবং আইনশৃঙ্খলা বাহিনীর সহায়তায় নিয়মিত মনিটরিং কার্যক্রম পরিচালনার বিষয়টি উল্লেখ করা হয়।

সভায় আরও জানানো হয় যে, সম্ভাব্য সিলিকা বালু মহাল এলাকার আশপাশে কৃষিজমি, বসতবাড়ি, সড়ক এবং গুরুত্বপূর্ণ অবকাঠামো সুরক্ষার জন্য প্রয়োজনীয় বাফার জোন নির্ধারণ করা হবে। বালু পরিবহনের জন্য নির্দিষ্ট রুট নির্বাচন, ট্রাফিক ব্যবস্থাপনা পরিকল্পনা বাস্তবায়ন, স্থানীয় সড়কের রক্ষণাবেক্ষণ এবং ধুলাবালি নিয়ন্ত্রণে নিয়মিত পানি ছিটানো ও কভারড ট্রাক ব্যবহারের ব্যবস্থা গ্রহণ করা হবে। কৃষিজমির ক্ষতি কমানোর জন্য টপসয়েল সংরক্ষণ, ক্ষতিগ্রস্তদের উপযুক্ত ক্ষতিপূরণ এবং বিকল্প জীবিকার সুযোগ সৃষ্টির বিষয়েও প্রতিশ্রুতি প্রদান করা হয়।

সভায় পরিবেশ ব্যবস্থাপনা পরিকল্পনা (EMP) এবং পরিবেশ পর্যবেক্ষণ পরিকল্পনা (EMoP)-এর গুরুত্ব বিশেষভাবে তুলে ধরা হয়। অংশগ্রহণকারীরা মত প্রকাশ করেন যে, যথাযথ পরিবেশগত মনিটরিং, নিয়মিত তদারকি এবং অংশগ্রহণমূলক ব্যবস্থাপনার মাধ্যমে সম্ভাব্য নেতিবাচক প্রভাবসমূহ কার্যকরভাবে নিয়ন্ত্রণ করা সম্ভব হবে। একইসাথে তথ্য প্রকাশে স্বচ্ছতা নিশ্চিত করা এবং গণমাধ্যম, স্থানীয় জনপ্রতিনিধি ও জনগণকে সম্পৃক্ত করে একটি অংশগ্রহণমূলক মনিটরিং ব্যবস্থা গড়ে তোলার ওপর গুরুত্ব আরোপ করা হয়।

বিশেষ অতিথিগণ তাঁদের বক্তব্যে উল্লেখ করেন যে, কুলাউড়া উপজেলার সম্ভাব্য সিলিকা বালু মহালসমূহ পরিবেশগতভাবে সংবেদনশীল এলাকায় অবস্থিত হওয়ায় যেকোনো ধরনের বালু উত্তোলন কার্যক্রম অত্যন্ত সতর্কতা ও দায়িত্বশীলতার সাথে পরিচালনা করতে হবে। তাঁরা EIA প্রক্রিয়ার গুরুত্ব তুলে ধরে বলেন যে, পরিবেশ সংরক্ষণ, জীববৈচিত্র্য রক্ষা এবং আইনগত কাঠামো অনুসরণ ছাড়া কোনো ধরনের উত্তোলন কার্যক্রম পরিচালনা করা উচিত হবে না।

সভাপতি তাঁর বক্তব্যে বলেন যে, প্রকল্প বাস্তবায়নের ক্ষেত্রে পরিবেশ সংরক্ষণ, সামাজিক নিরাপত্তা, স্থানীয় জনগণের স্বার্থ এবং প্রাকৃতিক সম্পদের টেকসই ব্যবস্থাপনাকে সর্বোচ্চ গুরুত্ব দেওয়া হবে। তিনি আশ্বস্ত করেন যে, প্রকল্পের প্রতিটি ধাপে পরিবেশগত মানদণ্ড অনুসরণ করা হবে এবং স্থানীয় জনগণের উত্থাপিত মতামত, উদ্বেগ ও সুপারিশসমূহ যথাযথভাবে বিবেচনায় নেওয়া হবে। উপজেলা প্রশাসনের নিয়মিত তদারকির মাধ্যমে প্রকল্পের গুণগত মান ও পরিবেশগত সুরক্ষা নিশ্চিত করা হবে বলেও তিনি উল্লেখ করেন।

সার্বিকভাবে অংশগ্রহণকারীরা একমত হন যে, প্রস্তাবিত সিলিকা বালু মহালসমূহ যদি যথাযথ, দায়বদ্ধিহতা, পরিবেশসম্মত ব্যবস্থাপনা এবং স্থানীয় জনগণের সক্রিয় অংশগ্রহণ নিশ্চিত করে পরিচালিত হয়, তবে এটি অবৈধ বালু উত্তোলন নিয়ন্ত্রণ, সরকারি রাজস্ব বৃদ্ধি, পরিবেশ সংরক্ষণ এবং স্থানীয় অর্থনৈতিক উন্নয়নে গুরুত্বপূর্ণ ভূমিকা রাখতে সক্ষম হবে।

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উপসংহারে বলা যায় যে, অংশীজন পরামর্শ সভায় প্রাপ্ত মতামত, উদ্বেগ ও সুপারিশসমূহ যথাযথভাবে বিবেচনায় নিয়ে প্রস্তাবিত সিলিকা বালু মহাল (কোয়ারী) প্রকল্প বাস্তবায়নে করা হলে এটি পরিবেশগত ভারসাম্য রক্ষা, স্থানীয় জনগণের নিরাপত্তা ও জীবিকা সংরক্ষণ এবং টেকসই প্রাকৃতিক সম্পদ ব্যবস্থাপনার একটি কার্যকর উদাহরণ হিসেবে প্রতিষ্ঠিত হতে পারে বলে।

মোহাম্মদ মাহবুব উল হাই সহকারী পরিচালক, বিএমডি ইমেইল: adgeophy@bomd.gov.bd মোবাইল: ০১৭১৯২৭৯৫০৩	[illegible]	[illegible] পরিবেশ অফিসার মৌলভীবাজার জেলা কার্যালয় ইমেইল : skd.doe.gov.bd@gmail.com মোবাইল : ০১৭৩৪-৪৯২৫২০

অংশীজন মতবিনিময় সভার উপস্থিতির তালিকা



অংশীজন মতবিনিময় সভা

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অংশীজন মতবিনিময় সভার ছবি



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সিলিকা বালু কোয়ারী প্রকল্পের পরিবেশগত প্রভাব নিরূপণ (ইআইএ) এর জন্য

জনমত যাচাই সভা

স্থান: কমলগঞ্জ উপজেলা পরিষদ সম্মেলন কক্ষ, উপজেলা: কমলগঞ্জ, জেলা: মৌলভীবাজার



জনমত যাচাই সভার বিবরণী

৫ মে ২০২৬

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সিলিকা বালু কোয়ারী প্রকল্পের পরিবেশগত প্রভাব নিরূপণ (ইআইএ) এর জন্য জনমত যাচাই সভা

স্থান: কমলগঞ্জ উপজেলা পরিষদ সম্মেলন কক্ষ, উপজেলা: কমলগঞ্জ, জেলা: মৌলভীবাজার

কেন্দ্র: উপজেলা পরিষদ সম্মেলন কক্ষ, কমলগঞ্জ, মৌলভীবাজার

তারিখ: ৫ মে ২০২৬ **সময়:** সকাল ১০:৩০ ঘটিকা হতে দুপুর ১২:৩০ ঘটিকা

সভাপতি: মোঃ আসাদুজ্জামান, উপজেলা নির্বাহী অফিসার, কমলগঞ্জ, মৌলভীবাজার

বিশেষ অতিথি: তপন কুমার দাশ, পরিবেশ অধিদপ্তর, মৌলভীবাজার

অতিথিবৃন্দ:

1. রিয়াজ মাহমুদ, সহকারী কমিশনার (ভূমি), কমলগঞ্জ, মৌলভীবাজার
2. মোহাম্মদ মাসুক উন নবী, সহকারী পরিচালক, বিএমডি
3. অনন্ত কুমার রায়, উপজেলা কৃষি কর্মকর্তা, কমলগঞ্জ
4. নিয়াজ মোর্শেদ রাজু, চেয়ারম্যান, ৬ নং আলীনগর ইউনিয়ন
5. আহমিদ আলী, চেয়ারম্যান, ৮ নং মাধবপুর ইউনিয়ন
6. স্থানীয় নেতৃবৃন্দ, সাংবাদিক ও সিলিকা বালু কোয়ারীর জনগণ।

১. ভূমিকা

জনমত যাচাই সভা হল এমন একটি প্রক্রিয়া যা জনসাধারণকে প্রকল্পের বিষয়ে তাদের মতামত উপস্থাপন এবং সংশ্লিষ্ট সিদ্ধান্ত গ্রহণের ক্ষেত্রে তাদের মন্তব্য/অভিমত বিবেচনা করার সুযোগ প্রদান করে থাকে। পরিবেশ সংরক্ষণ বিধিমালা ২০২৩ (বিধি ১৬) অনুযায়ী, খসড়া পরিবেশগত প্রভাব নিরূপনের অংশ হিসেবে প্রকল্পের পরিবেশগত প্রভাব এর বিষয়ে স্থানীয় জনগনের কাছে তথ্য উন্মুক্ত করার জন্য এবং সে বিষয়ে তাদের মতামত গ্রহণের জন্য এই জনমত যাচাই সভার আয়োজন করা হয়। বর্ণিত জনমত যাচাই সভাটি গত ৫ মে ২০২৬ তারিখে অনুষ্ঠিত হয়। সভায় উক্ত এলাকার বিভিন্ন প্রতিষ্ঠান ও অংশীজন থেকে মোট ২৫ জন প্রতিনিধি উপস্থিত ছিলেন।

২ কার্যপদ্ধতি

পরিবেশ সংরক্ষণ বিধিমালা ২০২৩ (বিধি ১৬ এর উপবিধি ২) অনুসারে, উক্ত জনমত যাচাই সভা আয়োজন করার অনুমতি প্রসঙ্গে খসড়া পরিবেশগত প্রভাব নিরূপণ প্রতিবেদন ও এর বাংলা সারসংক্ষেপসহ একটি আবেদনপত্র পরিবেশ অধিদপ্তরের প্রধান কার্যালয়ে দাখিল করা হয়েছিল এবং এর পরিপ্রেক্ষিতে পরিবেশ অধিদপ্তর কর্তৃক উক্ত সভায় উপস্থিতির জন্য একজন প্রতিনিধির মনোনয়ন দেয়া হয়। গত ২৩ এপ্রিল ২০২৬ তারিখে দৈনিক সমকাল নামক বাংলাদেশের একটি জাতীয় সংবাদপত্রে এবং দৈনিক সমাচার নামক একটি স্থানীয় সংবাদপত্রে উল্লেখিত জনমত যাচাই সভার বিজ্ঞপ্তি প্রকাশিত হয়। এছাড়াও, আমন্ত্রণপত্রের মাধ্যমে অংশীজনগণকে আমন্ত্রণ জানানো হয়।

৩. সভার উদ্বোধন

পবিত্র কুরআন তেলাওয়াত পাঠ এবং পরিচিত পর্বের মাধ্যমে আনুষ্ঠানিকভাবে জনমত যাচাই সভার কার্যক্রম শুরু করা হয় এরপর মোঃ আসাদুজ্জামান, উপজেলা নির্বাহী অফিসার, কমলগঞ্জ, মৌলভীবাজার অংশগ্রহণকারীদের স্বাগত জানিয়ে সভা শুরু করেন। তিনি জানান, বর্তমানে সিলিকা বালুর কোয়ারীর ইজারাদার বন্ধ আছে। তিনি তাঁর বক্তব্যে উল্লেখ করেন

যে, প্রকল্পের পরিবেশগত ও সামাজিক প্রভাব মূল্যায়নের অংশ হিসেবে এই জনমত যাচাই সভার আয়োজন করা হয়েছে। এই ধরনের সভার মাধ্যমে স্থানীয় জনগণের মতামত, পরামর্শ এবং উদ্বেগসমূহ সংগ্রহ করা অত্যন্ত গুরুত্বপূর্ণ, যাতে প্রকল্প বাস্তবায়নের সময় পরিবেশ সুরক্ষা এবং স্থানীয় জনগণের স্বার্থ যথাযথভাবে বিবেচনায় নেওয়া যায়। তিনি আরও বলেন, একটি প্রকল্পের ফলে এলাকার আর্থনৈতিক কর্মকাণ্ড বৃদ্ধি, কর্মসংস্থান সৃষ্টি এবং অবকাঠামোগত উন্নয়ন সম্ভব হলেও পরিবেশের ভারসাম্য রক্ষা করা সমানভাবে জরুরি। তাই প্রকল্পের পরিকল্পনা ও বাস্তবায়নের ক্ষেত্রে পরিবেশগত আইন, মানদণ্ড এবং প্রয়োজনীয় প্রশমন ব্যবস্থা যথাযথভাবে অনুসরণ করা হবে বলে তিনি আশ্বাস ব্যক্ত করেন। শেষে তিনি সকল অংশগ্রহণকারীকে সভায় সক্রিয়ভাবে অংশগ্রহণ করে গঠনমূলক মতামত প্রদান করার জন্য আহ্বান জানান এবং আশা প্রকাশ করেন যে সবলের সহযোগিতার মাধ্যমে প্রকল্পটি পরিবেশসম্মত ও টেকসইভাবে বাস্তবায়ন করা সম্ভব হবে।

৪. পরিবেশগত প্রভাব মূল্যায়নের খসড়া প্রতিবেদনের উপর উপস্থাপনা

ইকিউএমএস (EQMS) কনসাল্টিং লিমিটেডের কনসালটেন্ট এবং পরিবেশ বিশেষজ্ঞ জনাব ফাহিম উদ্দীন অংশগ্রহণকারীদের আন্তরিক শুভেচ্ছা জানিয়ে উপস্থাপনা শুরু করেন। তিনি খসড়া পরিবেশগত প্রভাব নিরূপণ প্রতিবেদনের উপর নিম্নলিখিত বিষয়গুলি সম্পর্কে একটি উপস্থাপনা প্রদান করেন:

১. জনমতের উদ্দেশ্য
২. প্রকল্পের পটভূমি
৩. প্রকল্পের বর্ণনা
৪. প্রকল্প সংশ্লিষ্ট নমুনা সংগ্রহ
৫. পরিবেশগত বেসলাইন ডেটা
৬. পরিবেশগত এবং সামাজিক প্রভাব মূল্যায়ন
৭. পরিবেশ ব্যবস্থাপনা পরিকল্পনা
৮. পরিবেশ পর্যবেক্ষণ পরিকল্পনা
৯. উপসংহার এবং সুপারিশ।

জনমত যাচাই সভার উপস্থাপনা, উপস্থিতি শীট এবং জনমত যাচাই সভার ছবি পরিশিষ্ট- এ উপস্থাপন করা হয়েছে।

৫. মুক্ত আলোচনা এবং প্রতিক্রিয়া

উপস্থাপনার পরে, একটি প্রশ্নোত্তর পর্ব ও মুক্ত আলোচনা অনুষ্ঠিত হয়, যা টেবিল-১ এ উপস্থাপন করা হয়েছে। ইকিউএমএস কনসালটিং লিমিটেডের পরিবেশ বিশেষজ্ঞ জনাব ফাহিম উদ্দীন, বিএমডির পক্ষে জনাব মাসুক উল নবী, সহকারী পরিচালক, পরিবেশ অধিদপ্তর এর পক্ষে জনাব স্বপন কুমার দাশ প্রশ্নগুলোর উত্তর প্রদান করেন।

EQMS BMD

টেবিল ১- অনলাইন সভার প্রশ্ন উত্তর পর্বের বিবরণ

ক্রঃ নং	নাম ও পদবী	প্রশ্ন/মন্তব্য (লিখিত)	উত্তর (লিখিত)
১	জাহেদুল্লাহ্মান খাদিম, সদস্যসচিব, বামসাথ্রেডেন	বালুমহালগুলোকে যেন্স করে একটি পরিবেশগত ও সামাজিক সমীক্ষা পরিচালনা করা উচিত, যাতে প্রকৃত ঝুঁকিগুলো চিহ্নিত করা যায়। এর মধ্যে স্থানীয় নদী ও খালের প্রাকৃতিক প্রবাহ হ্রাস, নদীতীর ভাঙন বৃদ্ধি পাওয়া এবং কৃষিজমির উপর সেচিয়াতে প্রভাব পড়বে। তিনি আরও বলেন, বর্ষাকাল শুরুহওয়ার আগেই যদি প্রকৃত সেস ইজারাদারী নুতন পাজমেন্ট না। সঠিক পরিকল্পনা ও সঙ্ক ইজারা প্রক্রিয়া নিশ্চিত করা গেলে পরিবেশগত অনেকাংশে হ্রাস পাবে বলে তিনি মত প্রকাশ করেন।	বালু উত্তোলন কার্যক্রমকে স্বচ্ছভাবে নিয়ন্ত্রিত ও পৈরাপদ্রিক পদ্ধতিতে পরিচালনার জন্য হবে। নদীর হাইড্রোলজিকাল স্থিতি ও সেচিয়তি ব্যাহত না হয় সেজন্য নির্দিষ্ট সীমার মধ্যে বালু উত্তোলন করা হবে, যাতে প্রাকৃতিক ভারসাম্য বজায় থাকে। ইজারা প্রক্রিয়াকে স্বচ্ছ ও প্রতিযোগিতামূলক করার জন্য ডিজিটাল টেন্ডারিং এবং নিয়মিত অডিট চালু করা হবে। পাশাপাশি স্থানীয় জনগণ ও জনপ্রতিনিধিদের অংশগ্রহণ নিশ্চিত করতে গণশুনানি বাধ্যতামূলক করা হবে।
২	সাজেদ আহমেদ, ইউপি সদস্য, ৮ নং মাধবপুর ইউনিয়ন, ১ নং ওয়ার্ড	অনেক বালু উত্তোলন কার্যক্রম সম্পূর্ণরূপে বন্ধ হওয়াসত্ত্বেও ভারসাম্যহীনতা অব্যাহত রয়েছে। বিশেষ করে বর্ষাকালে ডেমেটি এলাকায় দৃশ্যমান পরিবর্তন লক্ষ্য করা যায়। এ ছাড়া উত্তোলনকৃত ও মূল্যায়িত হয়ে পড়ে। তিনি আরও উল্লেখ করেন যে, এসব অনিয়মের বিরুদ্ধে প্রতিবাদ জানাতে গিয়ে স্থানীয় প্রভাবশালী গোষ্ঠীর পক্ষ থেকে হুমকি ও শারীরিক হয়রানির শিকার হতে হয়েছে, যা স্থানীয় জনগণের নিরাপত্তার জন্য উদ্বেগজনক।	অহিদ বালু উত্তোলন সম্পূর্ণরূপে বন্ধ রাখা নিশ্চিতকল্পে জিওে ডিজিটাল নীতি গ্রহণ করা হবে। নদীর ডেমসহ গুরুত্বপূর্ণ অংশগুলোর সুরক্ষার জন্য চিহ্নিত নালায় জেল নির্মাণের করা হবে, যেখানে কোনো ধরনের উত্তোলন কার্যক্রম অনুমোদিত হবে না। এছাড়া স্থানীয় জনগণের নিয়মিত নিশ্চিত করতে জনশুনানি বাধ্যতামূলক করা হবে এবং অভিযোগ গ্রহণের জন্য একটি কার্যকর হিউজ হেল্পলাইন (GRM) চালু করা হবে।
৩	কামরুল ইসলাম, ইউনিয়ন ভূমি সহকারী কর্মকর্তা, মুন্সী বাজার	জরুরে প্রাকৃতিকভাবে সঞ্চিত বালু যদি নৈসর্গিক ও পরিবেশভিত্তিভাবে উত্তোলন করা হয়, তাহলে এটি সরকারের জন্য একটি গুরুত্বপূর্ণ রাজস্ব উৎস হতে পারে এবং ফলে উত্তোলনও অনেকাংশে কমে আসবে। তবে ডিজি সরকর কমল ৫, ৫ ধরনের কার্যক্রম পরিচালনার ক্ষেত্রে	প্রকল্পের মাধ্যমে সরকার অনুমোদিত ইজারা পদ্ধতির মাধ্যমে টেকসই বালু উত্তোলন নিশ্চিত করা হবে। পরিবেশগত প্রভাব মূল্যায়ন (EIA) অনুযায়ী নির্ধারিত পরিবেশগত মনিটরিংয়ের মাধ্যমে নিয়মিত পরিবেশ ব্যবস্থাপনা পরিকল্পনা (EMP) বাস্তবায়ন করা হবে। একায়

EQMS BMD

ক্রম নং	নাম ও পদবী	প্রশ্ন/মতামত (লিখিতভাবে)	উত্তর (লিখিতভাবে)
		পরিবেশগত ক্ষতিকর, স্থানীয় জনগণের স্বার্থের হানিকারক হলে তাহলে সংস্থাকে সুবিধা ভাগের দিতে হবে।	নিয়মিত পরিবেশগত মনিটরিং, আইনি পরিপালন এবং রিপোর্টিংয়ের মাধ্যমে কার্যক্রমের প্রভাব হ্রাসকরণ ও নিয়ন্ত্রণ করা হবে।
৪	ইমরান মিয়া, সদস্য, ৪ নং ইউনিয়ন পরিষদ, কমলগঞ্জ পৌরসভা	বালুমহাল ইজারা পরিকল্পনা সিলেটের জেলা সমন্বয় সভা এবং এর জন্য সংস্থাদের পূর্ব প্রস্তুতিমূলক পরিদর্শন ও কর্মের প্রশাসনিক ব্যবস্থা গ্রহণের প্রয়োজন। তিনি আরও প্রশ্ন করেন যে, বালুমহালগুলোকে পোল্ডারভিত্তিক করা হলে এটি একটি বৈধ কার্যালোচ্য প্রাথমিক স্তরে এর নিয়ন্ত্রণ সম্ভব হবে।	প্রস্তাবিত সার্বিক সংযোগিতায় ছাড়ের লাইসেন্স বন্ধ করার ব্যবস্থা গ্রহণ করা হবে। কমপ্লায়েন্স ব্যবস্থাপনায় স্বচ্ছতা ও জবাবদিহিতা নিশ্চিত করতে প্রয়োজনীয় ব্যবস্থাসমূহ অনুসরণ করা হবে। এছাড়া নতুন সম্ভাব্য বালুমহাল পোল্ডারভিত্তিক নিষ্পত্তি সংস্থাকে সহায়তা ও তত্ত্বাবধান মাধ্যমে বিবেচনা করা হবে।
৯	মুশফুক আহমেদ, ইউপি সদস্য, ৬ নং আদিলপুর ইউনিয়ন	বালু পরিবহনের জন্য জেলা জেলা মাঝারাস্তায় চালান সড়কগুলো কম অভিযান হচ্ছে এবং দুর্ঘটনার ঝুঁকি উল্লেখযোগ্যভাবে বৃদ্ধি পাচ্ছে। এছাড়া বালু উত্তোলন ও পরিবহনের ফলে মূলাবলির পরিমাণ বৃদ্ধি পাচ্ছে, যা নিম্নের অবস্থা দিন ও মজুরদের স্বাভাবিক সমস্যায় কারণ হয়ে দাঁড়াচ্ছে।	প্রস্তাবিত অভ্যন্তরে বিভিন্ন পরিবহন রুট নির্ধারণ করা হবে এবং ট্রাফিক ব্যবস্থাপনা পরিকল্পনা অন্তর্ভুক্ত করা হবে। সড়কের অবস্থা নিয়মিত মনিটরিং করা হবে এবং প্রয়োজনে মেরামতের ব্যবস্থা গ্রহণ করা হবে।
৬	অনিল কোচ, ভারপ্রাপ্ত চেয়ারম্যান, ৩ নং কমলগঞ্জ ইউনিয়ন	বালু উত্তোলন ও পরিবহন কার্যক্রমের ফলে আকাশপথের এলাকায় মূলাবলির পরিমাণ উল্লেখযোগ্যভাবে বৃদ্ধি পাচ্ছে, যা স্থানীয় জনগণের দৈনন্দিন জীবনযাত্রায় বিরূপ প্রভাব ফেলছে। বিশেষ করে শিশু ও বয়স্ক সহিসহ খাদ্যাভ, কাশি, অ্যালার্জি এবং অন্যান্য শ্বাসপ্রশ্বাসজনিত রোগে বেশি ঝুঁকির মধ্যে রয়েছে। এছাড়া ফুলবাড়ির বাজার এলাকায়, যেখানে ভারি এবং স্থানীয় পরিবেশের ভ্রমণ মনে হয় পড়ছে। তিনি দ্রুত নিয়ন্ত্রণে আনবার বালু প্রহণের জন্য প্রয়োজন কর্তৃপক্ষের প্রতি জোর দাবি জানান।	ধূলাবালি নিয়ন্ত্রণে একটি সমন্বিত ডাস্ট মনিটরিংসহ প্রশাসন ব্যবস্থাপনা করা হবে। এর অংশ হিসেবে নিয়মিতভাবে পানি ছিটানো (water sprinkling) কার্যক্রম পরিচালনা করা হবে, বিশেষ করে বালু উত্তোলন এলাকা এবং পরিবহন রুটে। সকল বালুবাহী যানবাহনে ঢাকনা (covered trucks) ব্যবহার বাধ্যতামূলক করা হবে, যাতে পরিবহনের সময় ধুলা ছড়িয়ে না পড়ে। এছাড়া সড়ক ও আশপাশের এলাকায় নিয়মিত পরিচ্ছন্নতা কার্যক্রম পরিচালনা করা হবে। স্থানীয় জনগণের মধ্যে অন্ধ সচেতনতা বৃদ্ধি করতে সচেতনতামূলক কর্মসূচি আয়োজন করা হবে এবং প্রয়োজনে মাস্ক সামগ্রী (যেমন মাস্ক) বিতরণের ব্যবস্থাও গ্রহণ করা হবে। নিয়মিত

EQMS

BMD

ক্রম নং	নাম ও পদবী	প্রশ্ন/মতামত (বিস্তারিত)	উত্তর (বিস্তারিত)
			পরিবেশগত মনিটরিংয়ের মাধ্যমে কাজের ওপর নজর পরিবেশগত তথ্য হালনাগাদ করা হবে এবং প্রয়োজন অনুযায়ী অতিরিক্ত নিয়ন্ত্রণমূলক ব্যবস্থা গ্রহণ করা হবে।
৭	আব্দুল আহিদ, কৃষক	খাদ্য উৎপাদনের মূল্য আকাশচুম্বি উপজেলা সদর আসছে এবং আশেপাশে ক্ষেত্রে জমির উপযুক্তভাবে নষ্ট হয়ে যাচ্ছে, যার ফলে ফসল উৎপাদন হ্রাস পাচ্ছে। এতে কৃষকদের আর্থিক ক্ষতি হচ্ছে এবং তাঁরা অর্থনি হয়ে পড়ছে।	প্রকল্প কর্তৃপক্ষ উপজেলা সমবায় ও পুনর্বাসনের জন্য বিশেষ ব্যবস্থা গ্রহণ করবে। অতিরিক্ত কৃষকদের জন্য উপযুক্ত জীবিকা প্রদান এবং বিকল্প জীবিকা (Alternative livelihood) সৃষ্টির উদ্যোগ নেওয়া হবে। এছাড়া খনি সংরক্ষণ কার্যক্রমের মাধ্যমে অতিরিক্তদের পুনর্বাসন নিশ্চিত করা হবে।
৮	মোঃ এনামুল হক, মেম্বর	পরিবেশগত নিরাপত্তা হালনাগাদে বিলম্ব না করার দীর্ঘসূত্রতা নয় প্রকল্পের পরিবেশগত ঝুঁকি হতে পারে, যা অতিরিক্ত প্রকল্পের জন্য ক্ষতিকর।	প্রকল্পের আওতায় নিয়মিত পরিবেশগত মনিটরিং করা হবে এবং EIA নির্দেশিকা কঠোরভাবে অনুসরণ করা হবে। পরিবেশ ব্যবস্থাপনা পরিকল্পনা (EMP) বাস্তবায়নের মাধ্যমে সম্ভাব্য প্রভাবগুলো নিয়ন্ত্রণ ও প্রশমন করা হবে।
৯	বিজ্ঞান শিখা, স্থানীয় বাসিন্দা	নারীদের জন্য কোন কাজে স্থানীয় অর্থনীতি স্থায়ী আন্দোলনের অভিযান ও সিদ্ধিকেটের কবলে সাধার জন্য সমান বাস্তবসম্মত সুযোগ তৈরি হচ্ছে না। সমস্যা দূরে হয়রানীমূলক শিহরে পড়ছে।	স্বচ্ছ ও প্রতিযোগিতামূলক ইজারা প্রক্রিয়ার মাধ্যমে সকলের জন্য সমান সুযোগ নিশ্চিত করা হবে। স্থানীয় উদ্যোক্তাদের অংশগ্রহণ বৃদ্ধি এবং অর্থনৈতিক ব্যবস্থাপনের উদ্যোগে সহায়তা প্রদান করা হবে।
১০	নাসির উদ্দিন, সাংবাদিক	বালু উত্তোলন কার্যক্রমের পরিবেশগত প্রভাব ও ঘটেছে কার্যক্রম সম্পর্কে সঠিক তথ্যের অভাব হয়েছে এবং পরীক্ষা নয়াবাদি না থাকায় প্রতিবন্ধকতা প্রভাব পাচ্ছে না।	প্রকল্পের আওতায় জন্য প্রকল্পে স্বচ্ছতা নিশ্চিত করা হবে এবং নিয়মিত মনিটরিং রিপোর্ট প্রকাশ করা হবে। গণশুনানি, স্থানীয় সভার মাধ্যমে তথ্য সংগ্রহ করা হবে। তথ্যের অসঙ্গতি দূরীকরণের সম্পর্ক করে একটি অংশগ্রহণমূলক মনিটরিং ব্যবস্থা গড়ে তোলা হবে।

EQMS BMD

৬. বিশেষ অতিথির বক্তব্য

রুপন কুমার দাশ, পরিবেশ অধিদপ্তর, মৌলভীবাজার বক্তব্যের শুরুতেই জনমত যাচাই সভায় উপস্থিত সকল অংশীজনদের জনমত যাচাই সভায় অংশগ্রহনের জন্য এবং তাদের সুচিন্তিত মতামতের জন্য ধন্যবাদ জ্ঞাপন করেন এবং আয়োজকদের সুন্দরভাবে পরিবেশগত প্রভাব নিরূপণ এর খসড়া প্রতিবেদন উপস্থাপন করার জন্য ধন্যবাদ জ্ঞাপন করেন। তিনি পরিবেশগত প্রভাব নিরূপণের উপর অংশীজন মতবিনিময় সভার গুরুত্ব তুলে ধরেন এবং উল্লেখ করেন যে সিলিকা বালু কোয়ারীগুলো পরিবেশগতভাবে অত্যন্ত সংবেদনশীল এলাকা, যেখানে সেকোচে বালু উত্তোলনের কাজ সরাসরি পানি, মাটি, বাতাস, জীববৈচিত্র্য এবং মানুষের জীবন-জীবিকার উপর প্রভাব ফেলতে পারে। তাই প্রকল্প বাস্তবায়নের আগে যথাযথভাবে পরিবেশগত প্রভাব নিরূপণ (EIA) সম্পন্ন করা এবং তা আইনি কাঠামোর মধ্যে রাখা অত্যন্ত গুরুত্বপূর্ণ বলে তিনি মত দেন।

৭. সভাপতির বক্তব্য

মোঃ আসাদুজ্জামান, উপজেলা নির্বাহী অফিসার, কমলগঞ্জ, মৌলভীবাজার মতবিনিময় সভায় সিলিকা বালু কোয়ারী প্রকল্পের বাস্তবায়ন প্রক্রিয়া, প্রকল্পকালের মান বজায় রাখা এবং পরিবেশ সুরক্ষার গুরুত্ব তুলে ধরেন। তিনি বলেন, প্রকল্পের প্রতিটি কার্যক্রম স্থানীয় জনগণের জীবনধারা, কৃষি, পানি ব্যবস্থাপনা এবং পরিবেশের উপর সরাসরি প্রভাব ফেলে, তাই সব কাজ অত্যন্ত সতর্কতা ও দায়িত্বশীলতার সঙ্গে বাস্তবায়ন করা হবে। তিনি আরও জানান, প্রকল্প এলাকায় কাজের সময় পরিবেশগত মানদণ্ড, সামাজিক নিরাপত্তা এবং প্রাকৃতিক পানি প্রবাহের বাস্তবিকতা রক্ষায় সর্বোচ্চ গুরুত্ব দেওয়া হবে। যেকোনো প্রকল্প শুরু করার আগে এলাকার জনগণের অবস্থান, কৃষিজমি, যোগাযোগব্যবস্থা ও পানি প্রবাহ সম্পর্কিত বিষয়গুলো বিশ্লেষণ করে কাজ শুরু করা হবে।

এছাড়া তিনি কমিউনিটিকে আশ্বস্ত করে বলেন যে, পরিবেশের কোনো ধরনের ক্ষতি যাতে না হয়, সে বিষয়টি সর্বোচ্চ অগ্রাধিকার দিয়ে প্রতিটি ধাপে পরিবেশগত প্রভাব মূল্যায়ন ও প্রয়োজনীয় প্রশমন ব্যবস্থা গ্রহণ করা হবে। প্রকল্প চলাকালে ধূলাবালি, শব্দদূষণ, যানবাহন চলাচল এবং খননজনিত ক্ষেপণস্তি কমাতে বিশেষ ব্যবস্থা নেওয়া হবে। তিনি আরও উল্লেখ করেন যে স্থানীয় জনগণের উত্থাপিত সমস্যাগুলো বাস্তবায়ন পর্যায়ে বিবেচনায় নেওয়া হবে এবং উপজেলা প্রশাসন নিয়মিত তদারকির মাধ্যমে উন্নয়নকাজের গুণগত মান নিশ্চিত করবে।

৯. জনমত যাচাই সভার সারাংশ

প্রস্তাবিত সিলিকা বালু কোয়ারী প্রকল্পের পরিবেশ এবং সামাজিক প্রভাব মূল্যায়ন (EIA) প্রক্রিয়ার অংশ হিসেবে একটি খসড়া EIA রিপোর্ট প্রস্তুত করা হয় এবং ৫ মে ২০২৬ তারিখে কমলগঞ্জ উপজেলা পরিষদ সম্মেলন কক্ষে অনুষ্ঠিত অংশীজন পরামর্শ সভায় উপস্থাপন করা হয়। সভায় মোট ২৫ জন অংশগ্রহণ করেন, যার মধ্যে সরকারি দপ্তরের প্রতিনিধি, স্থানীয় নির্বাচিত কর্মকর্তা, সংবাদিক, এবং প্রকল্প এলাকার স্থানীয় সম্প্রদায়ের সদস্যরা ছিলেন। সভায় প্রকল্পের পটভূমি, লক্ষ্য, সম্ভাব্য প্রযৌশন কার্যক্রম, পরিবেশগত ভিত্তি অবস্থান এবং প্রকল্পের প্রত্যাশিত পরিবেশ ও সামাজিক প্রভাব সম্পর্কে বিস্তারিত উপস্থাপনা দেওয়া হয়। অংশগ্রহণকারীরা অবৈধ বালু উত্তোলন, সিন্ডিকেট নিয়ন্ত্রণ, নদীর প্রাকৃতিক প্রবাহ ব্যাহত হওয়া, নদীতীর ভাঙন, কৃষিজমির ক্ষতি, অবকাঠামোর ঝুঁকি (যেমন ব্রিজ, রেল), ধূলাবালি ও শব্দদূষণ, সড়ক ক্ষয়ক্ষতি, স্থানীয় জনগণের নিরাপত্তা ও অংশগ্রহণের বিষয়সমূহ, কৃষিজমির সুরক্ষা, জীববৈচিত্র্য রক্ষা এবং স্থানীয় জনগণের নিরাপত্তা ও অংশগ্রহণসহ বিভিন্ন বিষয়ে গুরুত্বপূর্ণ মন্তব্য ও সুপারিশ প্রদান করেন।

অংশগ্রহণকারীরা উল্লেখ করেন যে বর্তমানে অনিয়ন্ত্রিত ও অবৈধ বালু উত্তোলনের ফলে পরিবেশ ও সমাজের উপর নেতিবাচক প্রভাব পড়ছে, যা একটি সুশৃঙ্খল ও বৈজ্ঞানিক ব্যবস্থাপনার মাধ্যমে নিয়ন্ত্রণ করা সম্ভব। তারা স্বচ্ছ ইজারা প্রক্রিয়া, প্রশাসনিক নজরদারি বৃদ্ধি এবং স্থানীয় জনগণের অংশগ্রহণ নিশ্চিত করার ওপর গুরুত্বারোপ করেন।

EQMS BMD

প্রকল্প কর্তৃপক্ষ অংশগ্রহণকারীদের সকল মতামত গুরুত্বের সাথে গ্রহণ করে এবং আশ্বস্ত করে যে বালু উত্তোলন কার্যক্রমকে বৈজ্ঞানিক ও নিয়ন্ত্রিত পদ্ধতির আওতায় আনা হবে। নদীর হাইড্রোলজিক্যাল অবস্থা ও সেডিমেন্ট বিশ্লেষণের ভিত্তিতে সীমিত পরিসরে উত্তোলন নিশ্চিত করা হবে, যাতে পরিবেশগত ভারসাম্য বজায় থাকে। অবৈধ উত্তোলন বন্ধে জিরো টলারেন্স নীতি গ্রহণ, প্রশাসনিক তদারকি জোরদার, এবং আইনশৃঙ্খলা বাহিনীর সহায়তায় কঠোর মনিটরিং ব্যবস্থা বাস্তবায়ন করা হবে। এছাড়া গুরুত্বপূর্ণ অবকাঠামো যেমন ব্রিজ ও স্লুইসগেট রক্ষার জন্য বাফার জোন নির্ধারণ, সড়ক ক্ষয়ক্ষতি কমাতে নির্দিষ্ট পরিবহন রুট ও ট্রাফিক ব্যবস্থাপনা পরিকল্পনা বাস্তবায়ন, এবং ধুলাবালি নিয়ন্ত্রণে পানি ছিটানো ও কভারড ট্রাক ব্যবহারের মতো ব্যবস্থা গ্রহণের কথা উল্লেখ করা হয়। কৃষিজমির ক্ষতি মোকাবিলায় উপসয়েল সংরক্ষণ, অতিপুরুষ প্রদান এবং বিকল্প জীবিকার ব্যবস্থা গ্রহণের প্রতিশ্রুতি দেওয়া হয়। সভায় পরিবেশগত নিকণ্ডলোর গুরুত্ব বিশেষভাবে তুলে ধরা হয় এবং অংশগ্রহণকারীরা একমত হন যে পরিবেশ ব্যবস্থাপনা পরিকল্পনা (EMP) এবং পরিবেশ পর্যবেক্ষণ পরিকল্পনা (EMoP) যথাযথভাবে বাস্তবায়ন করা হলে সম্ভাব্য নেতিবাচক প্রভাবগুলো কার্যকরভাবে নিয়ন্ত্রণ করা সম্ভব হবে। একইসাথে তথ্য প্রকাশে স্বচ্ছতা এবং পথাধাম ও স্থানীয় জনগণকে সম্পৃক্ত করে অংশগ্রহণমূলক মনিটরিং ব্যবস্থার ওপর গুরুত্ব আরোপ করা হয়।

বিশেষ অতিথি তার বক্তব্যে উল্লেখ করেন যে সিলিকা বালু সেক্টরটি এলাকা পরিবেশগতভাবে সংবেদনশীল হওয়ায় এখানে যেকোনো ধরনের বালু উত্তোলন কার্যক্রম অত্যন্ত সতর্কতার সাথে পরিচালনা করতে হবে। তিনি EIA প্রক্রিয়ার গুরুত্ব তুলে ধরে বলেন যে প্রকল্প বাস্তবায়নের পূর্বে যথাযথ পরিবেশগত মূল্যায়ন এবং আইনগত কাঠামো অনুসরণ করা অত্যন্ত জরুরি।

সভাপতি তার বক্তব্যে প্রকল্প বাস্তবায়নের ক্ষেত্রে পরিবেশ সংরক্ষণ, সামাজিক নিরাপত্তা এবং স্থানীয় জনগণের স্বার্থকে সর্বোচ্চ গুরুত্ব দেওয়ার ওপর জোর দেন। তিনি আশ্বস্ত করেন যে প্রকল্পের প্রতিটি ধাপে পরিবেশগত মানদণ্ড অনুসরণ করা হবে এবং স্থানীয় জনগণের উত্থাপিত সমস্যা ও সুপারিশসমূহ যথাযথভাবে বিবেচনায় নেওয়া হবে। উপজেলা প্রশাসনের নিয়মিত তদারকির মাধ্যমে প্রকল্পের গুণগত মান ও পরিবেশগত সুরক্ষা নিশ্চিত করা হবে বলেও তিনি উল্লেখ করেন।

সার্বিকভাবে, অংশীজনরা একমত হন যে প্রকল্পটি যদি স্বচ্ছতা, জবাবদিহিতা, পরিবেশবান্ধব ব্যবস্থাপনা এবং স্থানীয় জনগণের সক্রিয় অংশগ্রহণের মাধ্যমে বাস্তবায়ন করা হয়, তবে এটি অবৈধ বালু উত্তোলন নিয়ন্ত্রণ, পরিবেশ সুরক্ষা, এবং স্থানীয় অর্থনৈতিক উন্নয়নে গুরুত্বপূর্ণ ভূমিকা রাখতে সক্ষম হবে।

উপসংহারে বলা যায় যে, জনমত যাচাই সভার প্রাপ্ত মতামত, উদ্বেগ এবং সুপারিশসমূহ বিবেচনায় নিয়ে প্রস্তাবিত সিলিকা বালু জোয়ারী প্রকল্প বাস্তবায়ন করা হলে এটি পরিবেশগত ভারসাম্য রক্ষা এবং স্থানীয় জনগণের জীবিকা ও নিরাপত্তা নিশ্চিত করার পাশাপাশি একটি টেকসই ও সুশাসিত সম্পদ ব্যবস্থাপনার মডেল হিসেবে প্রতিষ্ঠিত হতে পারে।

EQMS BMD



EQMS BMD

অংশীজন মতবিনিময় সভার উপস্থিতির তালিকা









EQMS BMD

অংশীজন মতবিনিময় সভার ছবি



EQMS BMD


সমকাল
পুলিশের ১৩ কর্মকর্তাকে
বাধ্যতামূলক অবসর
GREEN DELTA
INSURANCE
DIVIDEND PAYMENT

সিলিকা বালু কোয়ারী প্রকল্পের পরিবেশগত প্রভাব নিরূপণ (ইআইএ) এর জন্য

জনমত যাচাই সভা

স্থান: রাজনগর উপজেলা পরিষদ সম্মেলন কক্ষ, উপজেলা: রাজনগর, জেলা: মৌলভীবাজার



জনমত যাচাই সভার বিবরণী

৫ মে ২০২৬

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স্থান: রাজনগর উপজেলা পরিষদ সম্মেলন কক্ষ, উপজেলা: রাজনগর, জেলা: মৌলভীবাজার

কেন্দ্র: উপজেলা পরিষদ সম্মেলন কক্ষ, রাজনগর, মৌলভীবাজার

তারিখ: ৫ মে ২০২৬ সময়: বিকাল ৩:০০ ঘটিকা হতে ৪:৩০ ঘটিকা

সভাপতি: দিপুল শিকদার, উপজেলা নির্বাহী অফিসার, রাজনগর, মৌলভীবাজার

বিশেষ অতিথি: তপন কুমার দাস, পরিবেশ অধিদপ্তর, মৌলভীবাজার

অংশগ্রহণকারী:

1. মোহাম্মদ মাসুক উন নবী, সহকারী পরিচালক, বিএমডি
2. আব্দুস শহীদ, ভূমি উপ-সহকারী কর্মকর্তা, ইউনিয়ন ভূমি অফিস।
3. নুরুল ইসলাম, সভাপতি, রাজনগর উপজেলা বিএনপি।
4. দিপেন্দ্র চন্দ্র সরকার, চেয়ারম্যান, ২ নং উত্তরভাগ ইউনিয়ন।
5. রাহুল হোসেন, চেয়ারম্যান, ৩ নং মুন্সী বাজার ইউনিয়ন পরিষদ
6. স্থানীয় নেতৃবৃন্দ, সাংবাদিক ও সিলিকা বালু কোয়ারীর জনগণ।

১. ভূমিকা

জনমত যাচাই সভা হল এমন একটি প্রক্রিয়া যা জনসাধারণকে প্রকল্পের বিষয়ে তাদের মতামত উপস্থাপন এবং সিদ্ধান্ত গ্রহণের ক্ষেত্রে তাদের মন্তব্য/অভিমত বিবেচনা করার সুযোগ প্রদান করে থাকে। পরিবেশ সংরক্ষণ বিধিমালা ২০২৩ (বিধি ১৬) অনুযায়ী, খসড়া পরিবেশগত প্রভাব নিরূপনের অংশ হিসেবে প্রকল্পের পরিবেশগত প্রভাব এর বিষয়ে স্থানীয় জনগণের কাছে তথ্য উন্মুক্ত করার জন্য এবং সে বিষয়ে তাদের মতামত গ্রহণের জন্য এই জনমত যাচাই সভার আয়োজন করা হয়। বর্ণিত জনমত যাচাই সভাটি গত ৫ মে ২০২৬ তারিখে অনুষ্ঠিত হয়। সভায় উক্ত এলাকার বিভিন্ন প্রতিষ্ঠান ও অংশীজন থেকে মোট ২৭ জন প্রতিনিধি উপস্থিত ছিলেন।

২ কার্যপদ্ধতি

পরিবেশ সংরক্ষণ বিধিমালা ২০২৩ (বিধি ১৬ এর উপবিধি ২) অনুসারে, উক্ত জনমত যাচাই সভা আয়োজন করার অনুমতি প্রসঙ্গে খসড়া পরিবেশগত প্রভাব নিরূপণ প্রতিবেদন ও এর বাংলা সারসংক্ষেপসহ একটি আবেদনপত্র পরিবেশ অধিদপ্তরের প্রধান কার্যালয়ে দাখিল করা হয়েছিল এবং এর পরিপ্রেক্ষিতে পরিবেশ অধিদপ্তর কর্তৃক উক্ত সভায় উপস্থিতির জন্য একজন প্রতিনিধির মনোনয়ন দেয়া হয়। গত ২৩ এপ্রিল ২০২৬ তারিখে দৈনিক সমকাল নামক বাংলাদেশের একটি জাতীয় সংবাদপত্রে এবং দৈনিক সমাচার নামক একটি স্থানীয় সংবাদপত্রে উল্লেখিত জনমত যাচাই সভার বিজ্ঞপ্তি প্রকাশিত হয়। এছাড়াও, আমন্ত্রণপত্রের মাধ্যমে অংশীদারগণকে আমন্ত্রণ জানানো হয়।

৩. সভার উদ্বোধন

পবিত্র কুরআন তেলাওয়াত শেষ এবং পবিত্র গীতার মাধ্যমে আনুষ্ঠানিকভাবে জনমত যাচাই সভার কার্যক্রম শুরু করা হয় এরপর দিপুল শিকদার, উপজেলা নির্বাহী অফিসার, রাজনগর, মৌলভীবাজার অংশগ্রহণকারীদের স্বাগত জানিয়ে সভা শুরু করেন। তিনি জানান, বর্তমানে সিলিকা বালুর কোয়ারীর ইজারাদার বন্ধ আছে। তিনি তাঁর বক্তব্যে উল্লেখ করেন যে,

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প্রকল্পের পরিবেশগত ও সামাজিক প্রভাব মূল্যায়নের অংশ হিসেবে এই জনমত যাচাই সভার আয়োজন করা হয়েছে। এই ধরনের সভার মাধ্যমে স্থানীয় জনগণের মতামত, পরামর্শ এবং উদ্বেগসমূহ সংগ্রহ করা অত্যন্ত গুরুত্বপূর্ণ, যাতে প্রকল্প বাস্তবায়নের সময় পরিবেশ সুরক্ষা এবং স্থানীয় জনগণের স্বার্থ যথাযথভাবে বিবেচনায় নেওয়া যায়। তিনি আরও বলেন, একটি প্রকল্পের ফলে এলাকার অর্থনৈতিক কর্মকাণ্ড বৃদ্ধি, কর্মসংস্থান সৃষ্টি এবং অবকাঠামোগত উন্নয়ন সম্ভব হলেও পরিবেশের ভারসাম্য রক্ষা করা সমানভাবে জরুরি। তাই প্রকল্পের পরিকল্পনা ও বাস্তবায়নের ক্ষেত্রে পরিবেশগত আইন, মানদণ্ড এবং প্রয়োজনীয় প্রশমন ব্যবস্থা যথাযথভাবে অনুসরণ করা হবে বলে তিনি আশ্বাস ব্যক্ত করেন। শেষে তিনি সকল অংশগ্রহণকারীকে সভায় সক্রিয়ভাবে অংশগ্রহণ করে গঠনমূলক মতামত প্রদান করার জন্য আহ্বান জানান এবং আশা প্রকাশ করেন যে সকলের সহযোগিতার মাধ্যমে প্রকল্পটি পরিবেশসম্মত ও টেকসইভাবে বাস্তবায়ন করা সম্ভব হবে।

৪. পরিবেশগত প্রভাব মূল্যায়নের খসড়া প্রতিবেদনের উপর উপস্থাপনা

ইকিউএমএস (EQMS) কনসাল্টিং লিমিটেডের কনসালটেন্ট এবং পরিবেশ বিশেষজ্ঞ জনাব ফাহিম উদ্দীন অংশগ্রহণকারীদের আন্তরিক অভ্যর্থনা জানিয়ে উপস্থাপনা শুরু করেন। তিনি খসড়া পরিবেশগত প্রভাব নিরূপণ প্রতিবেদনের উপর নিম্নলিখিত বিষয়গুলি সম্পর্কে একটি উপস্থাপনা প্রদান করেন:

১. জনমতের উদ্দেশ্য
২. প্রকল্পের পটভূমি
৩. প্রকল্পের বর্ণনা
৪. প্রকল্প সংশ্লিষ্ট সমস্যা সকল
৫. পরিবেশগত বেসলাইন ডেটা
৬. পরিবেশগত এবং সামাজিক প্রভাব মূল্যায়ন
৭. পরিবেশ ব্যবস্থাপনা পরিকল্পনা
৮. পরিবেশ পর্যবেক্ষণ পরিকল্পনা
৯. উপসংহার এবং সুপারিশ।

জনমত যাচাই সভার উপস্থাপনা, উপস্থিতি শীট এবং জনমত যাচাই সভার ছবি পরিশিষ্ট- এ উপস্থাপন করা হয়েছে।

৫. মুক্ত আলোচনা এবং প্রতিক্রিয়া

উপস্থাপনার পরে, একটি প্রশ্নোত্তর পর্ব ও মুক্ত আলোচনা অনুষ্ঠিত হয়, যা টেবিল-১ এ উপস্থাপন করা হয়েছে। ইকিউএমএস কনসালটিং লিমিটেডের পরিবেশ বিশেষজ্ঞ জনাব ফাহিম উদ্দীন, বিএমডির পক্ষে জনাব মাসুক উল নবী, সহকারী পরিচালক, পরিবেশ অধিদপ্তর এর পক্ষে জনাব স্বপন কুমার দাশ প্রশ্নগুলোর উত্তর প্রদান করেন।

EQMS BMD

টেবিল ১- জনমত সংগ্রহ প্রশ্ন উত্তর পর্যায়ে বিবরণ

ক্রম নং	নাম ও পদবী	প্রশ্ন/মতামত (বিস্তারিত)	উত্তর/প্রতিক্রিয়া (বিস্তারিত)
১	জনাব ফরহাদ, ভূমি উপ-সহকারী কর্মকর্তা, ইউনিয়ন ভূমি অফিস	তিনি মতামত প্রদান করেন যে, প্রকল্পসমূহ উপজেলার বিভিন্ন স্থান ও আশে পাশে অবস্থিতকারণে সিলিকা বালু ভরা ভারী ট্রাক চলাচলের উপযোগি হবে। এ কারণে সরকার রাজস্ব খেকে বঞ্চিত হবে এবং প্রশাসনিক নিয়ন্ত্রণ দুর্বল হয়ে পড়বে। তিনি উল্লেখ করেন যে, যদি এসব ক্ষতিকর সংকোচনের বাস্তবায়ন (ক্ষেত্রে) হিসেবে পোড়াবাইক ভাবে নিয়ন্ত্রণকারীভাবে ইজারা চালু করা হয়, তাহলে অবৈধ উত্তোলন কমবে এবং সরকারি রাজস্ব বৃদ্ধি পাবে। একই সাথে পরিবেশের ভারসাম্য রক্ষায় বিশেষভাবে গুরুত্বারোপ করে বিস্তারিত বর্ণনা করা হবে।	সভায় জানানো হয় যে, সকল সিলিকা বালু মাইনপুট সরকার নির্ধারিত ইজারা ও পরিবেশগত নিয়ন্ত্রণ অনুসরণ করে ইজারা প্রদানের আওতায় আনা হবে। অবৈধ উত্তোলন বন্ধে প্রশাসনিক কার্যক্রমটি যোগাযোগ করা হবে এবং পরিবেশগত প্রভাব মূল্যায়ন (EIA) অনুযায়ী টেকসই পদ্ধতিতে খনিজের পরিচালনা করা হবে।
২	মুহাম্মদ ইসলাম, সভাপতি, বাজারমাস ইপাজলা পিএনপি	তিনি বলেন যে, দীর্ঘদিন ধরে স্থানীয় প্রভাবশালী গোষ্ঠী বিভিন্ন ভয়ে ও লাভ ভোগে আধেয়ভাবে বালু উত্তোলন করে আসছে, যার ফলে সাধারণ জনগণ ক্ষতিগ্রস্ত হচ্ছে। তিনি আরও মত প্রকাশ করেন যে, সরকারিভাবে ইজারা প্রদান করা হলে একটি নৈয়ম কাঠামোর মধ্যে কার্যক্রম পরিচালিত হবে এবং স্থানীয় জনগণের কর্মসংস্থানের সুযোগ সৃষ্টি হবে। তবে তিনি জোর দিয়ে বলেন যে, স্বচ্ছতা ও সমন্বয়হীনতা নিশ্চিত না হলে, পুরাতন নামে সিন্ডিকেট তৈরি হওয়ার আশঙ্কা রয়েছে।	প্রকল্প কর্তৃপক্ষ জানায় যে, ইজারা কার্যক্রম যন্ত্র ও প্রতিযোগিতামূলক পদ্ধতিতে সম্পন্ন করা হবে এবং সংশ্লিষ্ট প্রশাসনের মাধ্যমে কঠোর নজরদারি বাস্তবায়ন করা হবে। স্থানীয় জনগণের কর্মসংস্থান নিশ্চিত করা এবং মহৎ কার্যক্রম দফন করার জন্য প্রয়োজনীয় প্রশাসনিক ব্যবস্থা গ্রহণ করা হবে।
৩	মিসেস [illegible], সহকারী, [illegible]	তিনি উল্লেখ করেন যে, উপজেলার বিভিন্ন স্থানে সিলিকা বালুর উত্তোলনের ফলে বর্ষায় যে সড়ক পরিস্থিতির মধ্যে উত্তোলন করা গেলে স্থানীয় অধিবাসীদের ব্যক্তিগত সমস্যা দেখা দেবে। তবে তিনি মন্তব্য করেন যে, অতিরিক্ত ও অনুমোদিত প্রতিষ্ঠানের মধ্যে বাস্তব অভাবিত হবার, জীবিকায়ন এবং	তাদের জানানো হয় যে, শুধুমাত্র নিবন্ধিত সীমা ও অনুমোদিত এলাকার মধ্যেই বালু উত্তোলনের অনুমতি দেওয়া হয়। পরিবেশ ব্যবস্থাপনা পরিকল্পনা (EMP) অনুসরণ করে নিয়মিত পরিবেশগত

৫	মো: ফজলুল হক মেম্বার	পরিবেশগত নিরুপণ প্রতিবেদনে যাতে কোনো পরিবেশগত ক্ষতি হতে পারে, যা অতিরিক্ত হাস্তক্ষেপ প্রয়োজন।	
৬	মোছাম্মত শফিকুন বেগম, ইউপি সদস্য, ২ নং ওয়ার্ড, ১ নং মাধবপুর	তিনি বলেন যে, স্থানীয় জনগণ দীর্ঘদিন ধরে সাইদেন বালু উত্তোলনে কারণে ভোগান্তির শিকার হচ্ছে। তিনি মনোভাব ব্যক্ত করেন যে, সরকারিভাবে উপজেলা প্রশাসন হতে প্রকল্পগুলির নিয়ন্ত্রণ বৃদ্ধি পাবে এবং জনগণের মধ্যে আস্থা তৈরি হবে। তারা তিনি স্থানীয় জনগণের কর্ম সংস্থান, নিরাপত্তা নিশ্চিতকল্পে এবং পরিবেশগত ঝুঁকি কমানোর বিষয়ে গুরুত্বারোপ করেন।	তিনি মন্তব্য করেন যে, প্রস্তাবিত উপজেলার কয়েকটি ছড়া ও খাল উন্নয়নের পরিমাণ নিলিমা বালু মজুদ, যা সরকারিভাবে ইজারা প্রদান করা হলে রাজিয় রাজস্ব বৃদ্ধি পাবে এবং স্থানীয় কর্মসংস্থান সৃজন করা সম্ভব হবে। তিনি নিশ্চয়তাদানে উল্লেখ করেন যে, লাকড়ুরার মালতা ছড়া, দক্ষিণ পাথারের বাদলিয়া ছড়া, শ্রীমঙ্গলের নাগেরে ফেওড়া ছড়া এবং কিলকুটের সুমেরছড়ে সম্ভাব্য খনিজ বালু মজুদ হিসেবে চিহ্নিতকরণ করা যেতে পারে।	সংশ্লিষ্ট কর্তৃপক্ষ জানায় যে, উল্লিখিত ছড়াগুলোর সম্ভাব্যতা ও পরিবেশগত নিরুপণসহ বিস্তারিত সমীক্ষা সাপেক্ষে সরকারিভাবে নিলিমা বালু মজুদ হিসেবে ইজারা প্রদানের বিষয়টি বিবেচনা করা হবে। প্রস্তাবিত খনিজ, পরিবেশগত মূল্যায়ন ও প্রকল্পগত প্রক্রিয়া অনুসরণ করে পরবর্তী সিদ্ধান্ত গ্রহণ করা হবে।
৭	মেসার্স এনজেল ফক মেম্বার		জবাবে জানানো হয় যে, প্রকল্প বাস্তবায়নের ক্ষেত্রে স্থানীয় জনগণের মতামতকে গুরুত্বসহকারে বিবেচনা করা হবে এবং একটি অংশগ্রহণ ভিত্তিক ঝুঁকি ব্যবস্থাপনা (CRM) সমূহ করা হবে। পরিবেশগত ও সামাজিক প্রভাব কমানোর জন্য EIA ও EMP অনুযায়ী প্রয়োজনীয় ব্যবস্থা গ্রহণ করা হবে।
৮	মৌলভী মো: ইসহাক, চেয়ারম্যান, ৩ নং কাজলশাহ ইউনিয়ন পরিষদ	তিনি বলেন যে, স্থানীয় জনগণের দীর্ঘদিনের দাবি হচ্ছে সরকারিভাবে নিবন্ধিত ইজারা ব্যবস্থা চালু করা। তিনি আরও উল্লেখ করেন যে, যদি কোম্পানি পরিচালনার ভার সরকার যেমন বাপেক্স পায়, তেমনি স্থানীয় জনগণের স্বার্থ ও কর্মসংস্থানের সুযোগও বৃদ্ধি পাবে। তাদের তিনি পরিবেশ রক্ষাপূর্বক এবং দূষণমুক্ত পরিবেশে খনন বিষয়ে গুরুত্ব আরোপ করেন।	সভায় জানানো হয় যে, বালু পরিবহনের জন্য নির্দিষ্ট রুট নির্ধারণ করা হবে এবং মূলধারি নিয়ন্ত্রণে পাথি বিটিসি ও কাজের ব্লক বণ্টনের ক্ষেত্রে এলাকা ভিত্তিক অগ্রাধিকার প্রদান করা হবে। পরিবেশগত ঝুঁকি কমানোর লক্ষ্যে প্রস্তাবিত খনিজ পরিবেশগত ব্যবস্থাপনা পরিকল্পনা করা হবে।

EQMS BMD

৮	শ্রীমঙ্গল পৌরসভা, শ্রীমঙ্গল, মৌলভীবাজার	বক্তব্যকালে মেয়র জনাব শ্রীমান অধীরিত সরকার অনিমেষ ও সিলিকোসিস রোগে আক্রান্ত শ্রমিকদের চিকিৎসা সেবা প্রদানে সমন্বিত উদ্যোগ গ্রহণের জন্য সংশ্লিষ্ট সকলের প্রতি আহ্বান জানান। তিনি বলেন, সিলিকা বালু উত্তোলনের অনুমতি প্রদানের পূর্বে পরিবেশগত ও টেকসই পদ্ধতিতে বালু উত্তোলন নিশ্চিত করা হলে এবং পূর্বের ন্যায় পরিবেশ বিধ্বংসী কার্যক্রম পরিচালনা করতে না দেওয়ার ব্যাপারে তিনি গুরুত্বারোপ করেন।
৯	স্থানীয় সংবাদপত্র ও টিভি চ্যানেল প্রতিনিধিবৃন্দ	অংশগ্রহণকারীরা আলোচনায় মতামত প্রদান করেন যে, প্রস্তাবিত উপজেলার বিভিন্ন স্থানে ও গ্রামে সিলিকন ধারে অনুসন্ধানের সিলিকা বালু উত্তোলন করা হলে, যার ফলে সরকার নিপুন পরিবেশ প্রভাব হবে এবং পরিবেশগত অবনতির ঝুঁকি থাকে। তারা মতামত দেন যে, সরকারিভাবে ইজারা প্রদান ও যথাযথ প্রশাসনিক তদারকির মাধ্যমে এই কার্যক্রমের মৈত্র ও নিয়মিত কার্যালয়ের মাধ্যমে আওতায় আনা প্রয়োজন। উপস্থিত অংশগ্রহণকারীরা বিশেষভাবে সালপুরের মাকড়া ছড়া, দক্ষিণ পাথরের ধলাছড়া ছড়া, শমসের নগরের দেওয়া ছড়া এবং জিলাতুলের সুফলছড়ার সম্ভাবনাময়ে সিলিকা বালু মজুদ (ভোরারি) হিসেবে উল্লেখ করেন।

EQMS

BMD

৬. বিশেষ অতিথির বক্তব্য

স্বপন কুমার দাশ, পরিবেশ অধিদপ্তর, মৌলভীবাজার, তাঁর বক্তব্যের শুরুতে অংশীজন পরামর্শ সভায় উপস্থিত সকল সরকারি কর্মকর্তা, জনপ্রতিনিধি, সাংবাদিক, স্থানীয় জনগণ এবং সংশ্লিষ্ট অংশীজনদের ধন্যবাদ জ্ঞাপন করেন। তিনি বিশেষভাবে আয়োজক প্রতিষ্ঠানকে পরিবেশগত প্রভাব মূল্যায়ন (EIA) এর খসড়া প্রতিবেদন সুশৃঙ্খল ও তথ্যভিত্তিকভাবে উপস্থাপনের জন্য ধন্যবাদ জ্ঞাপন করেন। তিনি বলেন, এ ধরনের অংশীজন পরামর্শ সভা পরিবেশগত প্রভাব মূল্যায়ন প্রক্রিয়ার একটি অত্যন্ত গুরুত্বপূর্ণ অংশ, কারণ এর মাধ্যমে স্থানীয় জনগণ, প্রশাসন এবং সংশ্লিষ্ট অংশীজনদের মতামত, উদ্বেগ ও সুপারিশ সরাসরি সংগ্রহ করা সম্ভব হয়। তিনি উল্লেখ করেন যে, রাজনগর উপজেলার সম্ভাব্য সিলিকা বালু মহালসমূহ পরিবেশগতভাবে সংবেদনশীল এলাকায় অবস্থিত এবং এসব এলাকায় যেকোনো ধরনের বালু উত্তোলন কার্যক্রম পানি প্রবাহ, মাটির স্থিতিশীলতা, জীববৈচিত্র্য, কৃষিজমি এবং স্থানীয় জনগণের জীবন-জীবিকার ওপর প্রত্যক্ষ ও পরোক্ষ প্রভাব ফেলতে পারে।

তিনি আরও বলেন যে, অবৈধ ও অনিয়ন্ত্রিত বালু উত্তোলনের ফলে ইতোমধ্যে বিভিন্ন এলাকায় পরিবেশগত ভারসাম্য বিঘ্নিত হওয়ার ঝুঁকি তৈরি হয়েছে। তাই সরকার অনুমোদিত নীতিমালা অনুসরণ করে বৈজ্ঞানিক ও পরিবেশসম্মত পদ্ধতিতে কার্যক্রম পরিচালনা করা অত্যন্ত জরুরি। তিনি জোর দিয়ে বলেন যে, প্রকল্প বাস্তবায়নের পূর্বে যথাযথ পরিবেশগত প্রভাব মূল্যায়ন (EIA), পরিবেশ ব্যবস্থাপনা পরিকল্পনা (EMP) এবং পরিবেশ পর্যবেক্ষণ পরিকল্পনা (EMoP) প্রণয়ন ও বাস্তবায়ন নিশ্চিত করতে হবে। তিনি আরও উল্লেখ করেন যে, সম্ভাব্য সিলিকা বালু মহালসমূহে কার্যক্রম পরিচালনার ক্ষেত্রে প্রাকৃতিক পানি প্রবাহ, স্থানীয় জীববৈচিত্র্য, কৃষিজমি এবং বসতবাড়ির সুরক্ষা নিশ্চিত করতে প্রয়োজনীয় প্রশমন ব্যবস্থা গ্রহণ করতে হবে। একইসাথে পরিবেশ সংরক্ষণ আইন ও বিধিমালা অনুসরণ করে নিয়মিত পরিবেশগত মনিটরিং পরিচালনার ওপরও তিনি গুরুত্ব আরোপ করেন।

৭. সভাপতির বক্তব্য

বিপুল শিকদার, উপজেলা নির্বাহী অফিসার, রাজনগর, মৌলভীবাজার সভাপতির বক্তব্য প্রদানকালে সম্ভাব্য সিলিকা বালু মহাল (ব্লকভিত্তিক) ব্যবস্থাপনা ও সংরক্ষিতভাবে ইজারা কার্যক্রমের বিভিন্ন দিক তুলে ধরেন। তিনি বলেন, রাজনগর উপজেলার বিভিন্ন ছড়া ও খাদে প্রাকৃতিকভাবে সঞ্চিত সিলিকা বালু একটি গুরুত্বপূর্ণ প্রাকৃতিক সম্পদ, যা সুষ্ঠু পরিকল্পনা ও পরিবেশসম্মত ব্যবস্থাপনার মাধ্যমে উত্তোলন করা হলে সরকারের রাজস্ব আয় বৃদ্ধি পাবে এবং স্থানীয় অর্থনৈতিক কর্মযজ্ঞে ইতিবাচক প্রভাব সৃষ্টি হবে। তবে তিনি জোর দিয়ে বলেন যে, পরিবেশের ভারসাম্য রক্ষা, প্রাকৃতিক পানি প্রবাহের স্বাভাবিকতা বজায় রাখা এবং স্থানীয় জনগণের স্বার্থ সংরক্ষণকে সর্বোচ্চ গুরুত্ব দিয়ে কার্যক্রম পরিচালনা করতে হবে।

তিনি আরও উল্লেখ করেন যে, সম্ভাব্য সিলিকা বালু মহালসমূহ যেমন— লালপুরের মাকড়া ছড়া, দক্ষিণ শরীফের ধামালিয়া ছড়া, শমসের নগরের দেওরা ছড়া এবং তিলকপুরের সুনছড়াসহ অন্যান্য সম্ভাব্য এলাকাগুলোর বিষয়ে প্রয়োজনীয় সমীক্ষা, পরিবেশগত প্রভাব মূল্যায়ন (EIA) এবং প্রশাসনিক যাচাই-বাছাই সম্পন্ন করার পর পরবর্তী সিদ্ধান্ত গ্রহণ করা হবে। প্রকল্প বাস্তবায়নের ক্ষেত্রে স্থানীয় কৃষিজমি, বসতবাড়ি, জীববৈচিত্র্য, যোগাযোগ ব্যবস্থা এবং জলপ্রবাহের ওপর সম্ভাব্য প্রভাবসমূহ সতর্কতার সাথে মূল্যায়ন করা হবে।

সভাপতি আরও বলেন যে, অবৈধ বালু উত্তোলন বন্ধে উপজেলা প্রশাসন কঠোর অবস্থানে থাকবে এবং সরকার অনুমোদিত নীতিমালা অনুসরণ করে একটি স্বচ্ছ ও জবাবদিহিমূলক ইজারা ব্যবস্থা নিশ্চিত করা হবে। তিনি আশ্বস্ত করেন যে, প্রকল্প বাস্তবায়নের সময় ধুলাবালি, শব্দদূষণ, ভারী যানবাহনের চলাচল এবং স্থানীয় জনগণের সম্ভাব্য ভোগান্তি কমানোর জন্য প্রয়োজনীয় নিয়ন্ত্রণমূলক ব্যবস্থা গ্রহণ করা হবে। পাশাপাশি পরিবেশ ব্যবস্থাপনা পরিকল্পনা (EMP) অনুযায়ী নিয়মিত

EQMS BMD

মনিটরিং পরিচালনা করা হবে এবং স্থানীয় জনগণের উত্থাপিত মতামত ও সমস্যাগুলো গুরুত্বসহকারে বিবেচনায় নেওয়া হবে।

৯. জনমত যাচাই সভার সারাংশ

প্রস্তাবিত সিলিকা বালু মহাল (কোয়ারী) প্রকল্পের পরিবেশগত ও সামাজিক প্রভাব মূল্যায়ন (EIA) কার্যক্রমের অংশ হিসেবে একটি খসড়া EIA রিপোর্ট প্রস্তুত করা হয় এবং তা রাজনগর উপজেলা পরিষদ সম্মেলন কক্ষে আমন্ত্রিত অংশীজন পরামর্শ সভায় উপস্থাপন করা হয়। সভায় সরকারি বিভিন্ন দপ্তরের কর্মকর্তা, স্থানীয় জনপ্রতিনিধি, সাংবাদিক, রাজনৈতিক ব্যক্তিবর্গ, ইউনিয়ন পরিষদের সদস্য, ভূমি প্রশাসনের প্রতিনিধি এবং সম্ভাব্য সিলিকা বালু মহাল এলাকার স্থানীয় জনগণ অংশগ্রহণ করেন। সভায় প্রকল্পের পটভূমি, উদ্দেশ্য, সম্ভাব্য সিলিকা বালু মহালের অবস্থান, পরিবেশগত ভিত্তি অবস্থা, সম্ভাব্য পরিবেশ ও সামাজিক প্রভাব এবং প্রস্তাবিত প্রশমন ব্যবস্থাসমূহ বিস্তারিতভাবে উপস্থাপন করা হয়।

আলোচনায় অংশগ্রহণকারীরা উল্লেখ করেন যে, রাজনগর উপজেলার নিম্নিয়া ছড়া ও খাল থেকে দীর্ঘদিন ধরে অনিয়ন্ত্রিত ও অবৈধভাবে সিলিকা বালু উত্তোলনের ফলে পরিবেশগত ও সামাজিক সমস্যা সৃষ্টি হচ্ছে। বিশেষভাবে নাসপুরের মাজলা ছড়া, দক্ষিণ পাহাড়ের ধনমলিয়া ছড়া, শমশেরা নগরের দেওয়া ছড়া এবং তিলকপুরের সুনছড়াসহ বিভিন্ন সম্ভাব্য এলাকায় অবৈধ উত্তোলনের কারণে খালের স্বাভাবিক পানি প্রবাহ ব্যাহত হওয়া, তীরভাঙন, কৃষিজমির ক্ষতি, জীববৈচিত্র্যের ওপর বিরূপ প্রভাব এবং স্থানীয় অবকাঠামোর ঝুঁকি বৃদ্ধির বিষয়টি গুরুত্বের সাথে তুলে ধরা হয়। অংশগ্রহণকারীরা অভিমত দেন যে, সরকারিভাবে নিয়ন্ত্রিত ও স্বচ্ছ ইজারা ব্যবস্থার মাধ্যমে এসব কার্যক্রম পরিচালিত হলে অবৈধ উত্তোলন নিয়ন্ত্রণ করা সহজ হবে এবং সরকারি রাজস্ব বৃদ্ধি পাবে।

সভায় অংশগ্রহণকারীরা পরিবহন ব্যবস্থাপনা, ধুলাবালি ও শব্দদূষণ নিয়ন্ত্রণ, স্থানীয় সড়কের ক্ষয়ক্ষতি প্রতিরোধ, কৃষিজমির সুরক্ষা, স্থানীয় জনগণের নিরাপত্তা নিশ্চিতকরণ এবং সিদ্ধান্ত গ্রহণ প্রক্রিয়ায় জনগণের অংশগ্রহণের ওপর গুরুত্বারোপ করেন। তাঁরা মতামত প্রদান করেন যে, প্রকল্প বাস্তবায়নের ক্ষেত্রে পরিবেশগত ভারসাম্য রক্ষা এবং স্থানীয় জনগণের স্বার্থ সংরক্ষণকে সর্বোচ্চ অগ্রাধিকার দিতে হবে।

প্রকল্প কর্তৃপক্ষ সভায় উপস্থিত সকল অংশগ্রহণকারীর মতামত ও সুপারিশ গুরুত্বের সাথে গ্রহণ করে এবং আশ্বস্ত করে যে, সিলিকা বালু উত্তোলন কার্যক্রম সম্পূর্ণভাবে বৈজ্ঞানিক ও নিয়ন্ত্রিত ব্যবস্থাপনার আওতায় পরিচালিত হবে। সম্ভাব্য মহালসমূহে বালু উত্তোলনের পূর্বে প্রয়োজনীয় পরিবেশগত প্রভাব মূল্যায়ন (EIA), হাইড্রোলজিক্যাল বিশ্লেষণ এবং সেডিমেন্ট মূল্যায়ন সম্পন্ন করা হবে, যাতে প্রাকৃতিক পানি প্রবাহ ও পরিবেশগত ভারসাম্য বজায় থাকে। একইসাথে অবৈধ উত্তোলন বন্ধে জিরো টলারেন্স নীতি অনুসরণ, প্রশাসনিক নজরদারি বৃদ্ধি এবং আইনশৃঙ্খলা বাহিনীর সহায়তায় নিয়মিত মনিটরিং কার্যক্রম পরিচালনার বিষয়টি উল্লেখ করা হয়।

এছাড়া সভায় জানানো হয় যে, সম্ভাব্য সিলিকা বালু মহাল এলাকার আশপাশে কৃষিজমি, বসতবাড়ি এবং গুরুত্বপূর্ণ অবকাঠামো সুরক্ষার জন্য প্রয়োজনীয় বাফার জোন নির্ধারণ করা হবে। বালু পরিবহনের জন্য নির্দিষ্ট রুট নির্ধারণ, ট্রাফিক ব্যবস্থাপনা পরিকল্পনা বাস্তবায়ন, সড়ক রক্ষণাবেক্ষণ, ধুলাবালি নিয়ন্ত্রণে নিয়মিত পানি ছিটানো এবং কঠোর ট্রাক ব্যবস্থাপনার ব্যবস্থা গ্রহণ করা হবে। কৃষিজমির ক্ষতি হ্রাসে উপসরোল সংরক্ষণ, ক্ষতিগ্রস্তদের উপযুক্ত ক্ষতিপূরণ এবং বিকল্প জীবিকার সুযোগ সৃষ্টির বিষয়েও প্রতিশ্রুতি প্রদান করা হয়।

সভায় পরিবেশ ব্যবস্থাপনা পরিকল্পনা (EMP) এবং পরিবেশ পর্যবেক্ষণ পরিকল্পনা (EMoP)-এর গুরুত্ব বিশেষভাবে তুলে ধরা হয়। অংশগ্রহণকারীরা মত প্রকাশ করেন যে, যথাযথ পরিবেশগত মনিটরিং, নিয়মিত তদারকি এবং অংশগ্রহণমূলক ব্যবস্থাপনার মাধ্যমে সম্ভাব্য নেতিবাচক প্রভাবসমূহ কার্যকরভাবে নিয়ন্ত্রণ করা সম্ভব হবে। একইসাথে তথ্য প্রকাশে স্বচ্ছতা নিশ্চিত করা এবং গণশুনানি, স্থানীয় জনপ্রতিনিধি ও জনগণকে সম্পৃক্ত করে একটি অংশগ্রহণমূলক মনিটরিং ব্যবস্থা গড়ে তোলার ওপর গুরুত্ব আরোপ করা হয়।

EQMS BMD

বিশেষ অতিথিগণ তাদের বক্তব্যে উল্লেখ করেন যে, রাজনগর উপজেলার সন্নিকট সিলিকা বালু মহালসমূহ পরিবেশগতভাবে সংবেদনশীল এলাকায় অবস্থিত হওয়ায় যেকোনো ধরনের বালু উত্তোলন কার্যক্রম অত্যন্ত সতর্কতা ও দায়িত্বশীলতার সাথে পরিচালনা করতে হবে। তারা EIA প্রক্রিয়ার গুরুত্ব তুলে ধরে বলেন যে, পরিবেশ সংরক্ষণ এবং আইনগত কাঠামো অনুসরণ ছাড়া কোনো ধরনের উত্তোলন কার্যক্রম পরিচালনা করা উচিত হবে না।

সভাপতি তাঁর বক্তব্যে বলেন যে, প্রকল্প বাস্তবায়নের ক্ষেত্রে পরিবেশ সংরক্ষণ, সামাজিক নিরাপত্তা, স্থানীয় জনগণের স্বার্থ এবং প্রাকৃতিক সম্পদের টেকসই ব্যবস্থাপনাকে সর্বোচ্চ গুরুত্ব দেওয়া হবে। তিনি আশ্বস্ত করেন যে, প্রকল্পের প্রতিটি স্তরে পরিবেশগত মানদণ্ড অনুসরণ করা হবে এবং স্থানীয় জনগণের উত্থাপিত মতামত, উদ্বেগ ও সুপারিশসমূহ যথাযথভাবে বিবেচনায় নেওয়া হবে। উপজেলা প্রশাসনের নিয়মিত তদারকির মাধ্যমে প্রকল্পের গুণগত মান ও পরিবেশগত সুরক্ষা নিশ্চিত করা হবে বলেও তিনি উল্লেখ করেন।

সার্বিকভাবে অংশগ্রহণকারীরা একমত হন যে, প্রস্তাবিত সিলিকা বালু মহালসমূহ যদি সতর্কতা, জবাবদিহিতা, পরিবেশসম্মত ব্যবস্থাপনা এবং স্থানীয় জনগণের সক্রিয় অংশগ্রহণ নিশ্চিত করে পরিচালিত হয়, তবে এটি অবৈধ বালু উত্তোলন নিয়ন্ত্রণ, সরকারি রাজস্ব বৃদ্ধি, পরিবেশ সংরক্ষণ এবং স্থানীয় অর্থনৈতিক উন্নয়নে গুরুত্বপূর্ণ ভূমিকা রাখতে সক্ষম হবে।

উপসংহারে বলা যায় যে, অংশীজন পরামর্শ সভায় প্রাপ্ত মতামত, উদ্বেগ ও সুপারিশসমূহ যথাযথভাবে বিবেচনায় নিয়ে প্রস্তাবিত সিলিকা বালু মহাল (কোয়ারী) প্রকল্প বাস্তবায়ন করা হলে এটি পরিবেশগত ভারসাম্য রক্ষা, স্থানীয় জনগণের নিরাপত্তা ও জীবিকা সংরক্ষণ এবং টেকসই প্রাকৃতিক সম্পদ ব্যবস্থাপনার একটি কার্যকর উদাহরণ হিসেবে প্রতিষ্ঠিত হতে পারে।

EQMS BMD



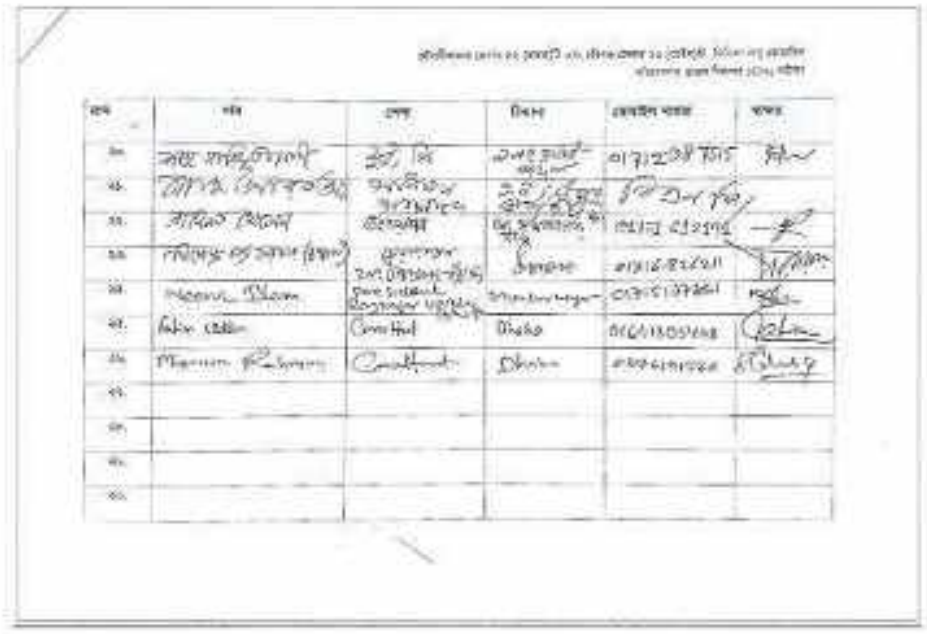
EQMS BMD

অংশীজন মতবিনিময় সভার উপস্থিতির তালিকা





EQMS BMD



EQMS BMD

অংশীজন মতবিনিময় সভার ছবি



EQMS BMD


সমকাল
পুলিশের ১৩ কর্মকর্তাকে বাধ্যতামূলক অবসর
GREEN DELTA INSURANCE
DIVIDEND PAYMENT

Appendix J: Details of Each Sand Quarry

Appendix J-1: Bhurbhuriya Chara

The following table shows the details of the Bhurbhuriya Chara Quarry

Table 11-1: Details of the Bhurbhuriya Chara Quarry

Items	Description
Name of the Chara	Bhurbhuriya Chara
Silika enriched Mouja	Bhurbhuriya chara, Balishira pahar, Ruposhpur and Sunoighar
Total area	12.35 Acre
Volume of sand	Significant
Geographical Coordinate	24°18'11.58"N 91°44'30.203"E
Location of the coordinate	Village: Sreemongol pouroshova 1 no ward; Mouja: Bhurbhuriya chiora; Union: Pouroshova; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Tea garden and Hill **East:** North south directed Vanugach-Sreemongol Highway. **South:** Sreemongol town and Graveyard of freedom fighters which is taken care of by BGB. **North:** Tea garden and Rubber Garden. Lawachara National Park is a few kilometers away from the point.
Access and Connectivity	The specific point, Bhurbhuriya Chara 118 lies in the Bhurbhuriya chara mouja. This point is just at the west side of Banugach-Sreemongol highway leading to Kamalganj upazila and one of the easily accessible points from Sreemongol town. This is part of a sequence of closely located points of Balishira pahar, Sunoigarh mainly at the west side criss-cross through several tea estates. This connectivity ensures that if one point of the chara is reached, others can be easily located. Points of several streams in the area intersect access roads at some locations, enhancing accessibility. The chara got it ends at the Hail haor.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Bhurbhuriya Chara flows through the several tea and rubber gardens in the area and its surrounding bushlands are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Rhesus Monkey**, a species considered Vulnerable. The bird species and wild animals living around the chara contributing to the area's ecological richness depend on chara for drinking water.

Items	Description
Livelihood Importance	Flowing through the municipality the chara plays an important role in water drainage. Additionally, the chara serves as a source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water.

The following figure shows the existing feature of the Bhurbhuriya Chara Quarry

Figure 11-1: Existing Feature of the Bhurbhuriya Chara Quarry



North Side



South Eastern Side



East Side



West Side



East Side



South Western Side



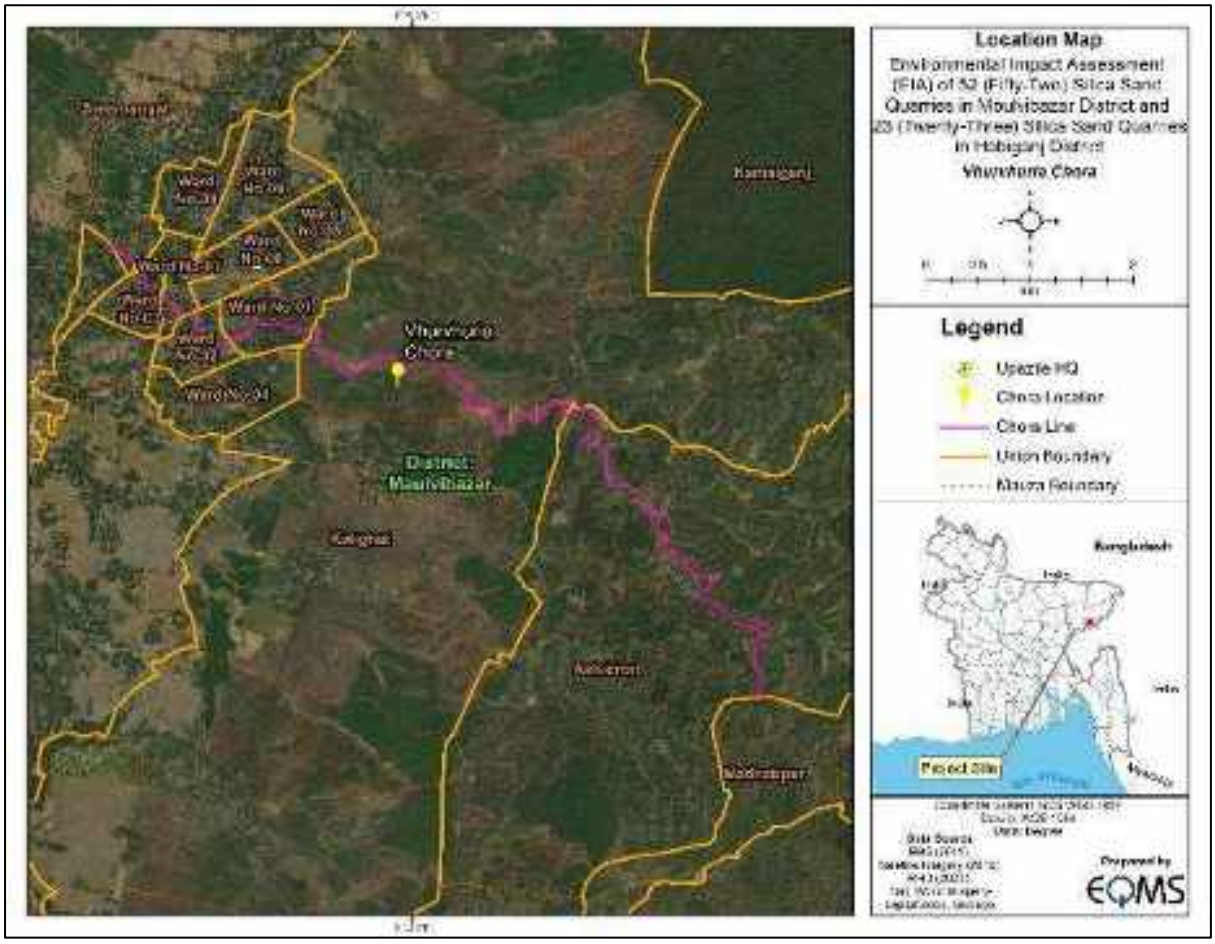
Sand Collection from Chara



South Side

The following figure shows the location within the mouza boundary of the Bhurbhuriya Chara Quarry and surrounding features of the sand Quarry.

Figure 11-2: Location within the Mouza Boundary of the Bhurbhuriya Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-2: Joinka Chara

The following table shows the details of the Joinka Chara Quarry

Table 11-2: Details of the Joinka Chara Quarry

Items	Description
Name of the Chara	Joinka Chara
Geographical Coordinate	24°19'26.786"N 91°43'59.899"E
Silica enriched mouja	Baraura
Total area	2.55 Acre
Volume of sand	Significant
Location	Village: Baraura; Mouja: Baraura; Union: Sreemongol; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Hail haor around 2 Km west of the point where the chara ends. Village, Homestead Vegetation, Agricultual land. **North:** Sreemongol town, Village, Homestead Vegetation, Agricultual land

Items	Description
	East: Hills covered with tea garden where the chara derived, Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Haor. North-South directed Sreemongol-Moulvibazar highway. **South:** Temple, Village, Homestead Vegetation, Agricultural Land
Access and Connectivity	The specific point, Joinka Chara 1330, is part of a sequence of closely located points. The point is located on a chara passing bridge inside the Baraura village. This connectivity ensures that if one point of the chara is reached, others can be easily located. Most streams in the area intersect access roads at several locations, enhancing accessibility. Local Baraura road at the north side of the point connecting to the Sreemongol-Moulvibazar highway has seen damage at some places due to the flow of chara hence locals are quite alarmed on any sand collection.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife. Additionally, Silica-rich sediments contribute to soil health and support unique plant species.
Ecological Importance	Joinka Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat** and **Rhesus Monkey**, species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness. As per the locals, once there had a good number of fisheries now very few fishes found mainly in the rainy season.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Locals use the silica sand for the filtering of their drinking water.

The following figure shows the existing feature of the Joinka Chara Quarry

Figure 11-3: Existing Feature of the Joinka Chara Quarry



North Side



South Eastern Side



East Side



West Side



East Side



South Western Side



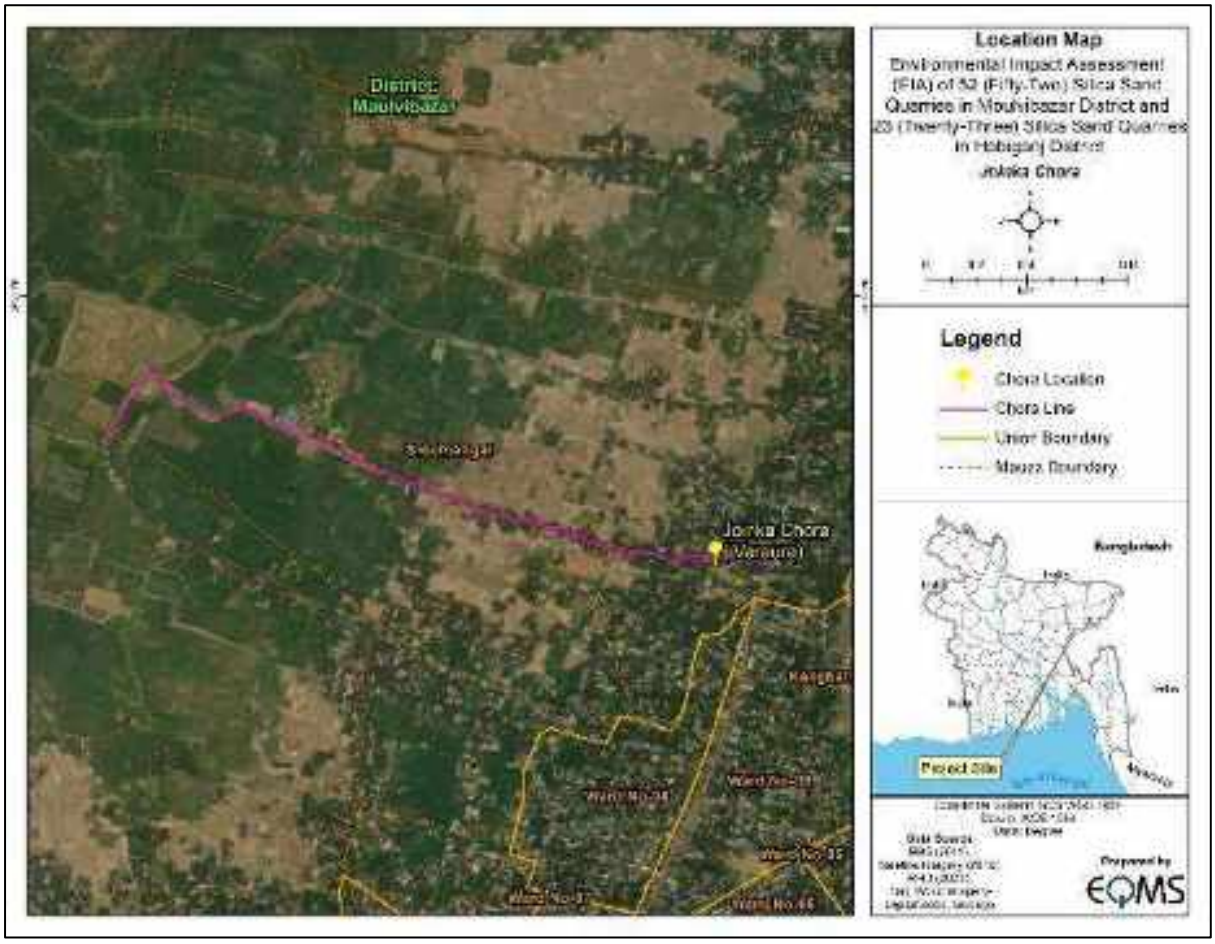
Sand Collection from Chara



South Side

The following figure shows the location within the mouza boundary of the Joinka Chara Quarry and surrounding features of the sand Quarry.

Figure 11-4: Location within the Mouza Boundary of the Joinka Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-3: Khai Chara

The following table shows the details of the Khai Chara Quarry

Table 11-3: Details of the Khai Chara Quarry

Items	Description
Name of the Chara	Khai Chara
Geographical Coordinate	24°19'54.04"N 91°44'18.676"E
Silica enriched mouja	Baraura, Isobpur
Total area	5.44 Acre
Volume of sand	Significant
Location	Village: Baraura; Mouja: Baraura; Union: Sreemongol; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Hail haor a few Km west of the point where the chara ends. Village, Homestead Vegetation, Agricultual land. **North:** Sreemongol town, Village Road, Village, Homestead Vegetation, Agricultual land

Items	Description
	East: Hills covered with tea garden where the chara derived, Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Haor. North-South directed Sreemongol-Moulvibazar highway. **South:** West facing A girl's school just south of the chara, Village, Homestead Vegetation, Agricultural Land
Access and Connectivity	The specific point, Khai Chara 647, is on the bridge of Sreemongol-Moulibazar highway and is part of a sequence of closely located points. This connectivity ensures that if one point of the chara is reached, others can be easily located. The bridge point is the junction of Baraura and Isobpur mouja and Sreemongol Model girls School just after the bridge. Most streams in the area intersect access roads at several locations, enhancing accessibility.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife. Like many hill streams in Bangladesh, Khai Chara likely experiences seasonal flow variations, with higher discharge during monsoons and reduced flow in dry months.
Ecological Importance	Khai Chara supports small fish, crustaceans, and amphibians, which form the base of the local food chain.The stream provides drinking water and hunting grounds for birds and small mammals. Silica from the stream contributes to nutrient cycling, supporting phytoplankton growth in downstream Hail hair where it ends. Khai Chara drains into lHail haor, playing a role in regional water balance.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. The cowboy brings their animals to drink water from the chara.

The following figure shows the existing feature of the Khai Chara Quarry

Figure 11-5: Existing Feature of the Khai Chara Quarry



North Side



South Eastern Side



North Eastern Side



West Side



East Side



South Western Side



East Side



South Side

The following figure shows the location within the mouza boundary of the Khai Chara Quarry and surrounding features of the sand Quarry.

Figure 11-6: Location within the Mouza Boundary of the Khai Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-4: Jag Chara (West Part)

The following table shows the details of the Jag Chara (West Part) Quarry

Table 11-4: Details of the Jag Chara (West Part) Quarry

Items	Description
Name of the Chara	Jag Chara (west part)
Geographical Coordinate	24°20'19.88"N 91°44'27.768"E
Silica enriched mouja	Noagaon, Isobpur
Total area	8.83 Acre
Volume of sand	Significant
Location	Village: Noagaon; Mouja: Noagaon; Union: Sreemongol; Upzila: Sreemangal
Direction of Chara	West- East

Project Surrounding	**West:** Hail haor a few Km west of the point where the chara ends. Village, Homestead Vegetation, Agricultual land. **North:** West facing an office of the Bangladesh Forest department just north of the point 2287, Sreemongol town, Village Road, Village, Homestead Vegetation, Agricultual land **East:** Hills covered with tea garden where the chara derived, Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Haor. North-South directed Sreemongol-Moulvibazar highway. **South:** Village, Homestead Vegetation, Agricultural Land
Access and Connectivity	The specific point, Jhag Chara 2287, is on the bridge of Sreemongol-Moulibazar highway and is part of a sequence of closely located points. This connectivity ensures that if one point of the chara is reached, others can be easily located. The bridge point is the junction of Noagaon and Isobpur mouja and Bangladesh Forest Development Corporation just after the bridge and north side of the bridge is Noagaon mouja and south side Isobpur Mouja. Most streams in the area intersect access roads at several locations, enhancing accessibility.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife. Like many hill streams in Bangladesh, Jhag Chara experiences seasonal flow variations, with higher discharge during monsoons and reduced flow in dry months.
Ecological Importance	Jhag Chara supports small fish, crustaceans, and amphibians, which form the base of the local food chain.The stream provides drinking water and hunting grounds for birds and small mammals. Silica from the stream contributes to nutrient cycling, supporting phytoplankton growth in downstream Hail hair where it ends. Khai Chara drains into Hail haor, playing a role in regional water balance.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. The cowboys bring their animals to drink water from the chara. Huge sand piles have been reported in the point collected by local muscle men, and came to know through the discussion with locals.

The following figure shows the existing feature of the Jag Chara (West) Quarry

Figure 11-7: Existing Feature of the Jag Chara (West) Quarry



North eastern Side



South Eastern Side



North Western Side



West Side



East Side



South Western Side



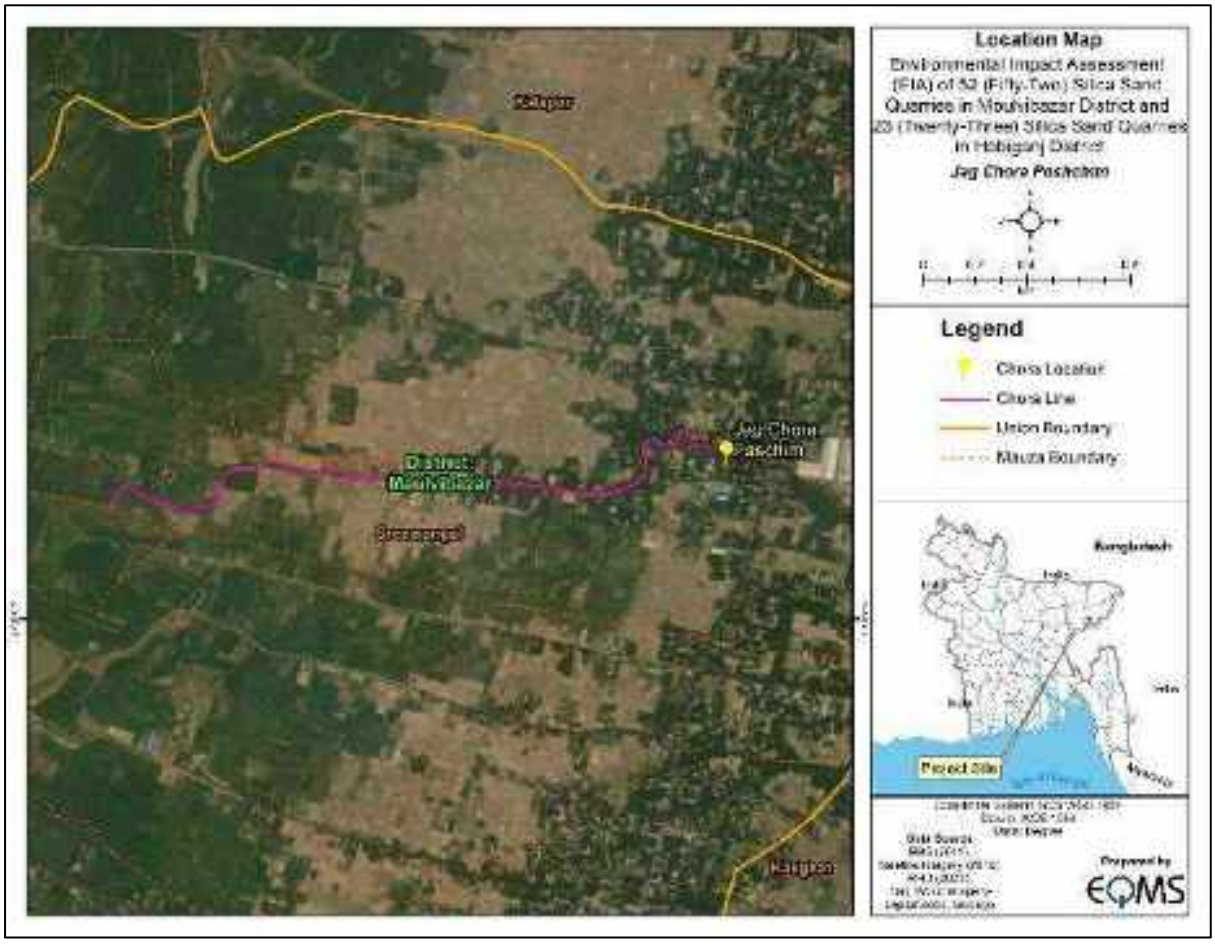
Sand Collection from Chara



South Side

The following figure shows the location within the mouza boundary of the Jag Chara (West) Quarry and surrounding features of the sand Quarry.

Figure 11-8: Location within the Mouza Boundary of the Jag Chara (West) Quarry and Surrounding Features of the Sand Quarry



Appendix J-5: Jag Chara (East Part)

The following table shows the details of the Jag Chara (East Part) Quarry

Table 11-5: Details of the Jag Chara (East Part) Quarry

Items	Description
Name of the Chara	Jag Chara (East part)
Geographical Coordinate	24°20'19.602"N 91°44'28.11"E
Silica enriched mouja	Noagaon, Isobpur
Total area	2.62 Acre
Volume of sand	Significant
Location	Village: Noagaon; Mouja: Noagaon; Union: Sreemongol; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Hail haor a few Km west of the point where the chara ends. Village, Homestead Vegetation, Agricultural land. **North:** West facing An office of the Bangladesh Forest department just north of the point 2287, Sreemongol town, Village road, Village, Homestead Vegetation, Agricultural land **East:** Hills covered with tea garden where the chara derived, Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Haor. North-South directed Sreemongol-Moulvibazar highway. **South:** Village, Homestead Vegetation, Agricultural Land
Access and Connectivity	The specific point, Jhag Chara 2811 is situated on the bridge of the Sreemongol-Moulibazar highway and forms a part of a series of closely located points. This interconnectedness ensures that once one point of the chara is reached, the other points can be easily found. The bridge marks the junction between Noagaon and Isobpur moujas. Just after the bridge, on the north side, lies Noagaon mouja, while the south side is Isobpur mouja. The Bangladesh Forest Development Corporation is located just beyond the bridge. Numerous streams in the area intersect access roads at various points, significantly enhancing accessibility.
Environmental Features	The chara is surrounded by dense vegetation, including bamboo groves, natural herbs, shrubs, wood bushes, and agricultural land. Residential households are dispersed throughout the surrounding areas. The thick bushland and vegetation around the chara provide a habitat for diverse wildlife. Like many hill streams in Bangladesh, Jhag Chara experiences seasonal flow variations, with higher discharge during the monsoons and a reduced flow in the dry months.
Ecological Importance	Jhag Chara serves as a habitat for small fish, crustaceans, and amphibians, forming the foundation of the local food chain. The stream also provides essential drinking water and hunting grounds for various birds and small mammals. Silica carried by the stream aids in nutrient cycling, promoting phytoplankton growth in the downstream Hail haor where the stream terminates. Additionally, Khai Chara feeds into Hail haor, contributing to the regional water balance.

Livelihood Importance	The chara plays a crucial role in providing water for agriculture in the region. Local residents also rely on its water for domestic purposes such as bathing and washing clothes, although it is not used as a drinking water source. Cowboys bring their livestock to the chara to drink. Discussions with locals have revealed the presence of large sand piles at this point, collected by local strongmen.

The following figure shows the existing feature of the Jag Chara (East) Quarry

Figure 11-9: Existing Feature of the Jag Chara (East) Quarry



South Eastern Side



West Side



South Side



North Western Side



East Side



South Western Side



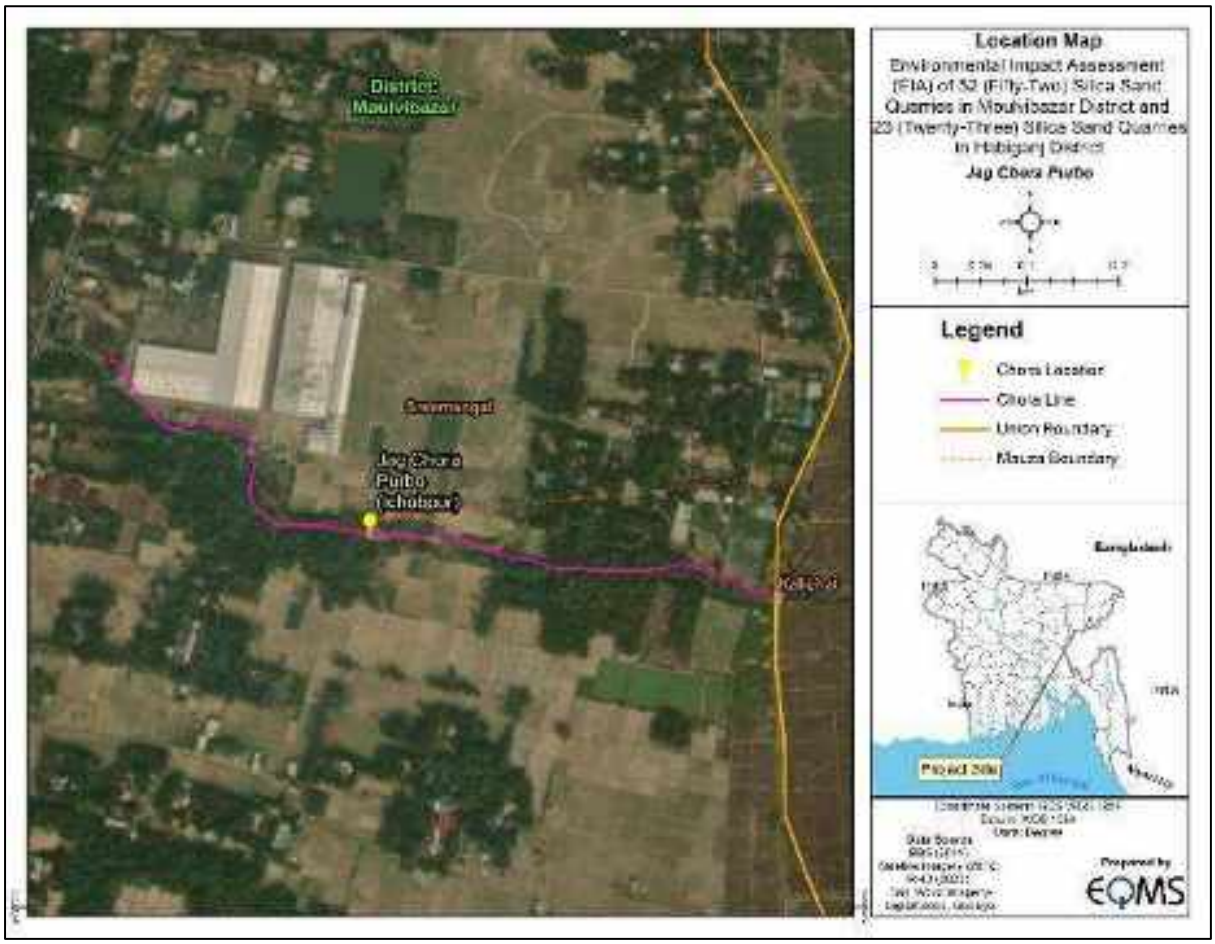
North Side



West Side

The following figure shows the location within the mouza boundary of the Jag Chara (East) Quarry and surrounding features of the sand Quarry.

Figure 11-10: Location within the Mouza Boundary of the Jag Chara (East) Quarry and Surrounding Features of the Sand Quarry



Appendix J-6: Shumoi Chara

The following table shows the details of the Shumoi Chara Quarry.

Table 11-6: Details of the Shumoi Chara Quarry

Items	Description
Name of the Chara	Shumoi Chara
Geographical Coordinate	24°21'37.764"N 91°44'57.814"E
Silica enriched Mouja	Sirajnagar, Lamua
Total area	2.20
Volume of sand	Significant
Location	Village: Sirajnagar; Mouja: Sirajnagar; Union: Kalapur; Upzila: Sreemangal
Direction of Chara	West- East

Project Surrounding	**West:** Hail hair where the chara drains, Lamua mouja of the chara, , Village, Homestead Vegetation, Agricultural land **North:** Bhairabganj bazar, Village, Homestead Vegetation, Agricultural land **East:** Tea state where the chara derives, Village, Homestead Vegetation, Agricultural Land. **South:** Sreemongol town 5 km away, Kakia Bazar 1 Km, North - South facing Sreemongol - Moulvibazar highway, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Shumoi Chara 1949, is on the bridge of Sreemongol-Moulvibazar highway. The bridge is the junction of Sirajnagar and Lamua moja of the chara where the North-east part is Sirajnagar mouja and South west part is Lamua moja. The point is part of a sequence of closely located points. This connectivity ensures that if one point of the chara is reached, others can be easily located. Similar to other Chara, most streams in the area intersect access roads at several locations, enhancing accessibility. All of the points of the chara drain in Haor and several points lie inside the haor.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife. The region around Shumoi Chara is characterized by hilly terrain, tea gardens, and semi-evergreen forests, which influence sediment transport and water chemistry. Located near the human settlement this chara plays an important role in draining flash flood water coming from the hill especially during the rainy season.
Ecological Importance	Shumoi Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat**, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness. Lush vegetation along the stream banks helps prevent soil erosion, provides shade, and maintains a stable microclimate.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Chara water is sometimes used for irrigating tea plantations and betel leaf farms during the dry season. Tea estate workers mostly depend on chara water for bathing and washing clothes.

The following figure shows the existing feature of the shumoi chara Quarry

Figure 11-11: Existing Feature of the shumoi chara Quarry



North Side



North Eastern Side



East Side



South Western Side



North Eastern Side



North Western Side



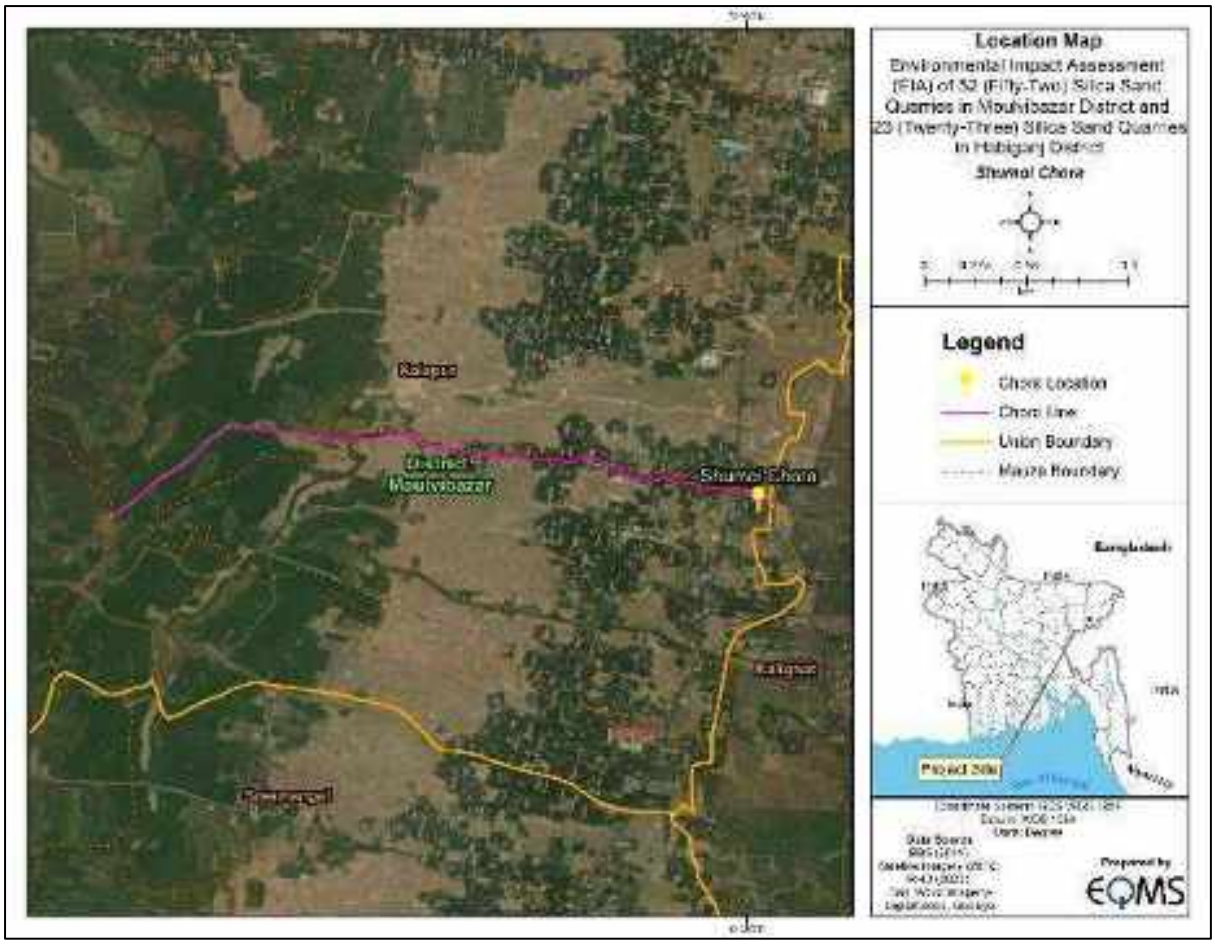
East Side



West Side

The following figure shows the location within the mouza boundary of the Shumoi Chara Quarry and surrounding features of the sand Quarry.

Figure 11-12: Location within the Mouza Boundary of the Shumoi Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-7: Shaown Chara

The following table shows the details of the shaown Chara Quarry.

Table 11-7: Details of the shaown chara Quarry

Items	Description

Name of the Chara	Shaown Chara
Geographical Coordinate	24°20'19.88"N 91°44'27.768"E
Silica enriched mouja	Kalapur, Bhagolpur
Total area	3.00 Acre
Volume of sand	Significant
Location	Village: Kalapur; Mouja: Kalapur; Union: Kalapur; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Hills covered with tea gardens where the chara derived. Village, Homestead Vegetation, Agricultural land. **North:** Village road, Village, Homestead Vegetation, Agricultural land **East:** Hail haor a few Km east of the point where the chara ends. Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Haor. **South:** Village, Homestead Vegetation, Agricultural Land
Access and Connectivity	The specific point, Shaon Chara 139, is on the bridge of a local road and is part of a sequence of closely located points. This connectivity ensures that if one point of the chara is reached, others can be easily located. The bridge point is the junction of Bhagolpur and Kalapur mouja and north side of the bridge is Bhagolpur mouja and south side Kalapurpur Mouja. Most streams in the area intersect access roads at several locations, enhancing accessibility.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife. Like many hill streams in Bangladesh, Shaon Chara experiences seasonal flow variations, with higher discharge during monsoons and reduced flow in dry months.
Ecological Importance	Shaon Chara supports small fish, crustaceans, and amphibians, which form the base of the local food chain. The stream provides drinking water and hunting grounds for birds and small mammals. Silica from the stream contributes to nutrient cycling, supporting phytoplankton growth in downstream Hail hair where it ends. Shaon Chara drains into Hail haor, playing a role in regional water balance.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. The cowboys bring their animals to drink water from the chara.

The following figure shows the existing feature of the shaown chara Quarry.

Figure 11-13: Existing Feature of the shaown chara Quarry



North Side



South Eastern Side



North Western Side



West Side



East Side



South Eastern Side



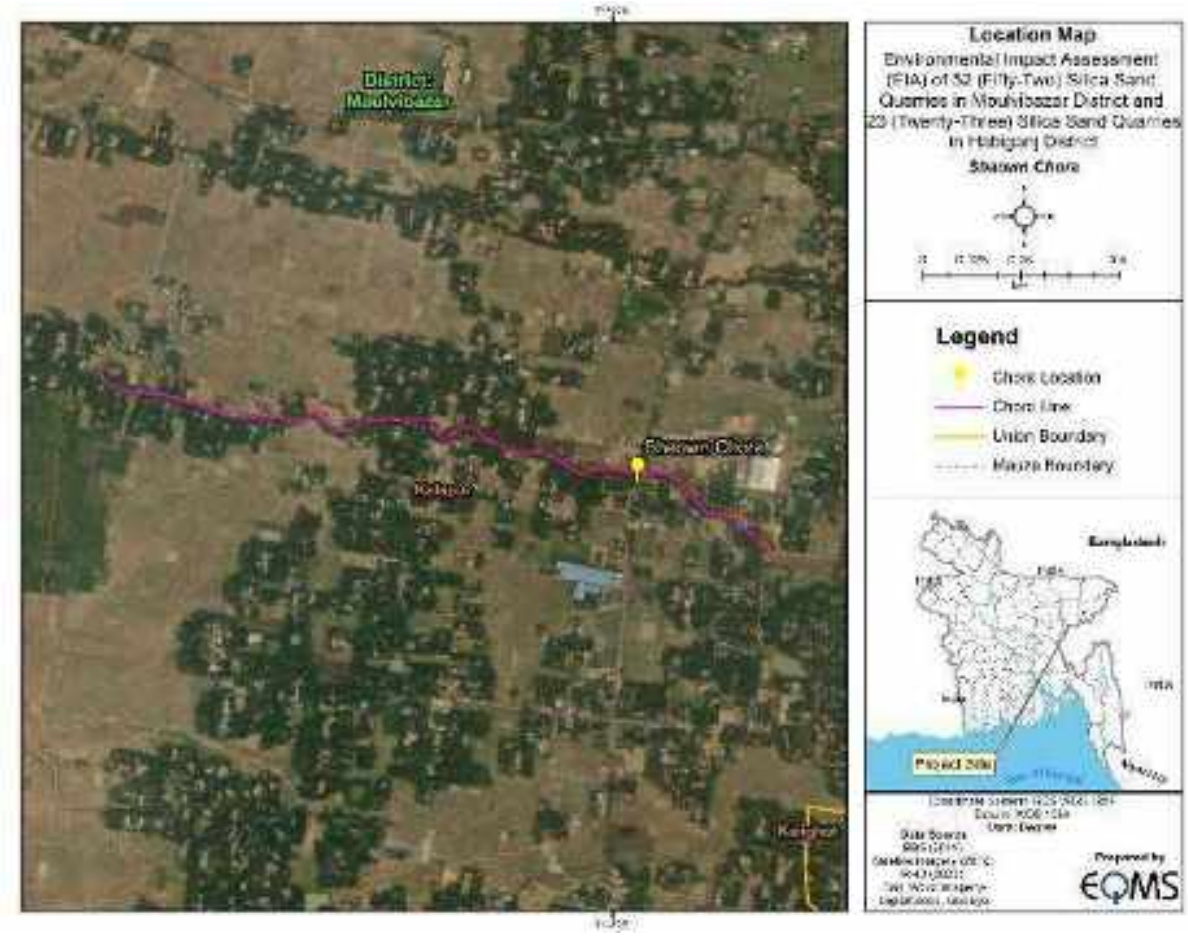
South Side



South Western Side

The following figure shows the location within the mouza boundary of the Shaown Chara Quarry and surrounding features of the sand Quarry.

Figure 11-14: Location within the Mouza Boundary of the Shaown Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-8: Narayan Chara

The following table shows the details of the Narayan chara Quarry.

Table 11-8: Details of the Narayan chara Quarry

Items	Description
Name of the Chara	Narayan Chara
Geographical Coordinate	24°23'40.441"N 91°44'44.248"E
Silica enriched mouja	Kalapur, Bhagolpur
Total area	3.00 Acre
Volume of sand	Significant
Location	Village: Maijdihi; Mouja: Maijdihi; Union: Kalapur; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Baikka beel and Poschimer Haor where the chara drained. Village, Homestead Vegetation, Agricultural land. **North:** Village road, Village, Homestead Vegetation, Agricultural land **East:** Hills covered with tea gardens where the chara derived. Bhoirabganj bazar. Village, Homestead Vegetation, Agricultural Land. **South:** Village, Homestead Vegetation, Agricultural Land
Access and Connectivity	The specific point, Narayan Chara 1144, is on the bridge of a local road and is part of a sequence of closely located points. This connectivity ensures that if one point of the chara is reached, others can be easily located. Most streams in the area intersect access roads at several locations, enhancing accessibility.
Environmental Features	The chara is very narrow and at some points locals obstruct the flow by filling it with soil and sand. vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife. Like many hill streams in Bangladesh, Shaon Chara experiences seasonal flow variations, with higher discharge during monsoons and reduced flow in dry months.
Ecological Importance	Narayan Chara supports small fish, crustaceans, and amphibians, which form the base of the local food chain.The stream provides drinking water and hunting grounds for birds and small mammals. Narayan Chara drains into locally called Poschimer haor connected with Baikka beel, playing a role in regional water balance.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. The cowboys bring their animals to drink water from the chara.

The following figure shows the existing feature of the Narayan chara Quarry

Figure 11-15: Existing Feature of the Narayan Chara Quarry



North Side



North Western Side



North Eastern Side



East Side



North Western Side



West Side



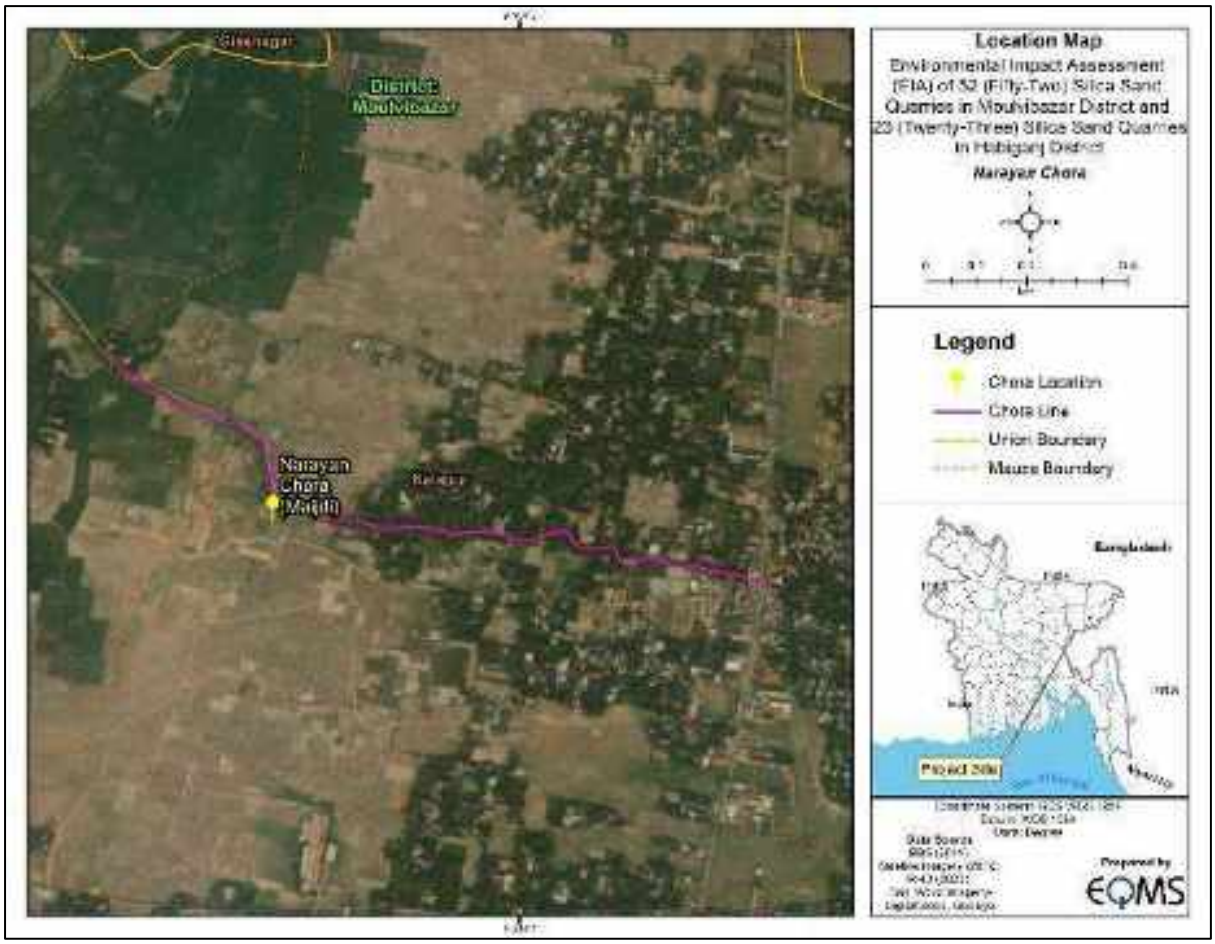
West Side



West Side

The following figure shows the location within the mouza boundary of the Narayan Chara Quarry and surrounding features of the sand Quarry.

Figure 11-16: Location within the Mouza Boundary of the Narayan Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-9: Langlia Chara

The following table shows the details of the Langlia chara Quarry.

Table 11-9: Details of the Langlia chara Quarry

Items	Description
Name of the Chara	Langlia Chara
Geographical Coordinate	24°23'40.441"N 91°44'44.248"E
Silica enriched mouja	Langlia chara
Total area	2.80 Acre
Volume of sand	Significant
Location	Village: Islampur; Mouja:Langlia chara; Union: Sindhurkhan; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Hail Haor where the chara drained. Village, Homestead Vegetation, Agricultural land. **North:** Village road, Village, Homestead Vegetation, Agricultural land **East:** Hills covered with tea gardens where the chara derived. Village, Homestead Vegetation, Agricultural Land. **South:** Village, Homestead Vegetation, Agricultural Land
Access and Connectivity	The specific point, Langlia Chara 625, is on the bridge of a local road and is part of a sequence of closely located points. This connectivity ensures that if one point of the chara is reached, others can be easily located. Most streams in the area intersect access roads at several locations, enhancing accessibility. This is one of the widest chara with high water flow.
Environmental Features	The chara is with significant width and huge sand flow have see. vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife. Like many hill streams in Bangladesh, Langlia Chara experiences seasonal flow variations, with higher discharge during monsoons and reduced flow in dry months. Though the field trip is made during the dry season still a good amount of water flow observed.
Ecological Importance	Langlia Chara supports small fish, crustaceans, and amphibians, which form the base of the local food chain.The stream provides drinking water and hunting grounds for birds and small mammals. Narayan Chara drains into Hail haor, playing a role in regional water balance. As the water flows throughout the year and due to vast width, the chara supports small-scale fishing activities, providing food for local communities.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. The cowboys bring their animals to drink water from the chara.

The following figure shows the existing feature of the Langlia chara Quarry.

Figure 11-17: Existing Feature of the langlia chara Quarry



West Side



North Side



North Eastern Side



West Side



East Side



South Western Side



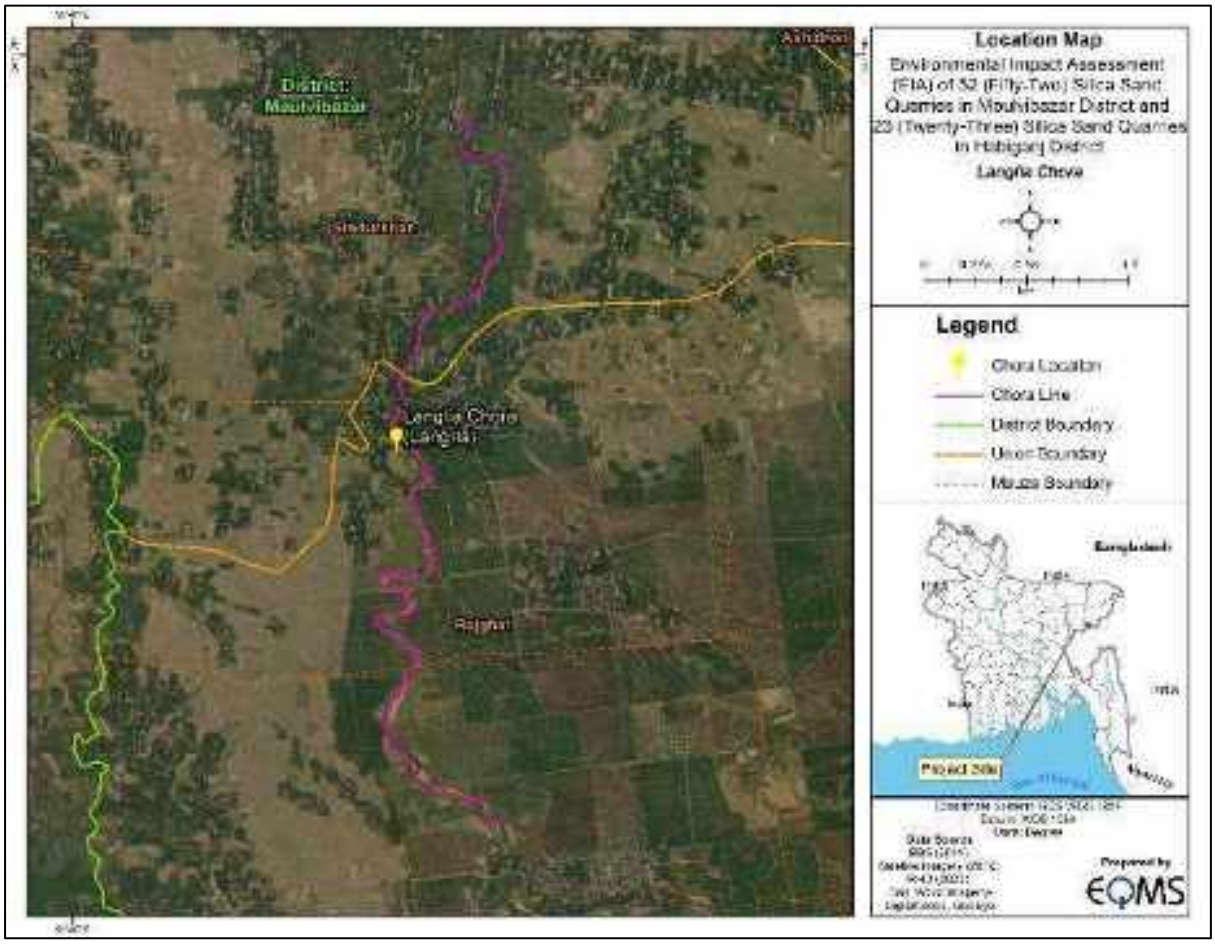
West Side



North Eastern Side

The following figure shows the location within the mouza boundary of the Langlia Chara Quarry and surrounding features of the sand Quarry.

Figure 11-18: Location within the Mouza Boundary of the Langlia Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-10: Udna Chara

The following table shows the details of the Udna Chara Quarry.

Table 11-10: Details of the Udna Chara Quarry

Items	Description
Name of the Chara	Udna Chara
Geographical Coordinate	24°16'4.744"N 91°39'48.179"E
Silica enriched mouja	Huglia
Total area	1.05 Acre
Volume of sand	Significant amount
Location	Village: Sikka; Mouja: Huglia; Union: Sindhurkhan; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Hail Haor where the chara drained. Village, Homestead Vegetation, Agricultural land. **North:** Village road, Village, Homestead Vegetation, Agricultural land **East:** Hills covered with tea gardens where the chara derived. Village, Homestead Vegetation, Agricultural Land. **South:** Village, Homestead Vegetation, Agricultural Land. Tea garden around 3 miles South-West.
Access and Connectivity	The specific point, Udna Chara 208, is inside the village and is part of a sequence of closely located points. This connectivity ensures that if one point of the chara is reached, others can be easily located. Most streams in the area intersect access roads at several locations, enhancing accessibility. This is a chara with sufficient water flow even in dry season. Easily accessible from the Sreemongol-Moulvibazar highway through the local connecting road. Huge sand collection is observed by the locals and so-called leasers carrying the sand with trucks.
Environmental Features	The chara is with significant width and huge sand flow have seen. vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife. Like many hill streams in Bangladesh, Langlia Chara experiences seasonal flow variations, with higher discharge during monsoons and reduced flow in dry months. Though the field trip is made during the dry season still a good amount of water flow observed.
Ecological Importance	Udna Chara supports small fish, crustaceans, and amphibians, which form the base of the local food chain. The stream provides drinking water and hunting grounds for birds and small mammals. Udna Chara drains into Hail haor, playing a role in regional water balance. As the water flows throughout the year and due to vast width, the chara supports small-scale fishing activities, providing food for local communities. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat**, a species considered threatened.

Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water.

The following figure shows the existing feature of the udna chara Quarry

Figure 11-19: Existing Feature of the udna chara Quarry



North Side



South Western Side



North Side



West Side

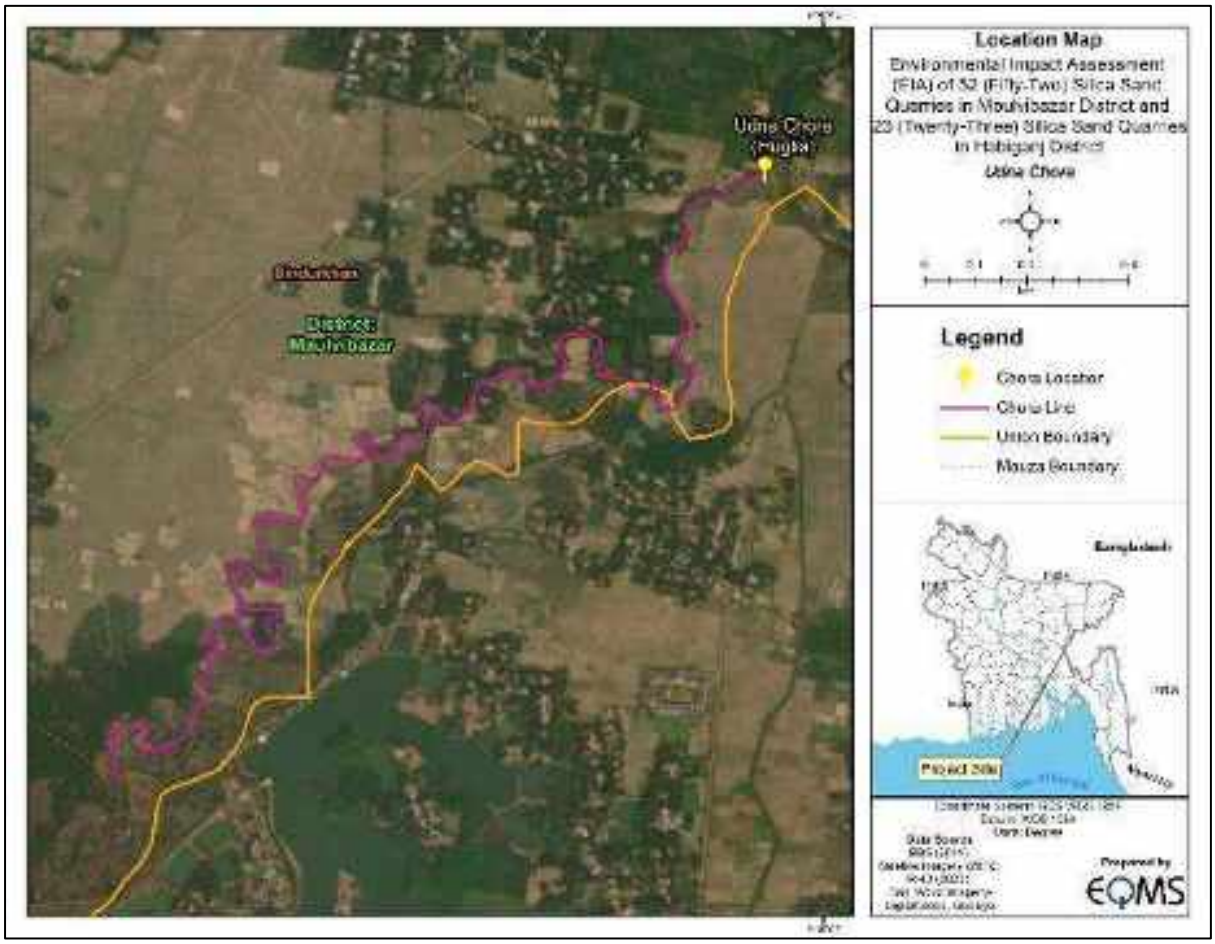




East Side South Eastern Side

The following figure shows the location within the mouza boundary of the Udna Chara Quarry and surrounding features of the sand Quarry.

Figure 11-20: Location within the Mouza Boundary of the Udna Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-11: Bilas Chara

The following table shows the details of the Bilash chara Quarry.

Table 11-11: Details of the Bilash chara Quarry

Items	Description
Name of the Chara	Bilash Chara
Geographical Coordinate	24°16'59.93"N 91°40'30.473"E
Silica enriched Mouja	Ashidron, Sankarsena
Total area	1.40
Volume of sand	Significant
Location	Village: Ashidron; Mouja: Ashidron; Union: Ashidron; Upzila: Sreemangal
Direction of Chara	North- South

Project Surrounding	**West:** Village, Homestead Vegetation, Agricultural land and Hill **North:** Bhujpur Bazar, Village, Homestead Vegetation, Agricultural land **East:** Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Haor. **South:** Bhujpur land office, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Bilash Chara 2361, is part of a sequence of closely located points. This connectivity ensures that if one point of the chara is reached, others can be easily located. Most streams in the area intersect access roads at several locations, enhancing accessibility. Another point Bilash chara 3585 has visited (details Fahim)
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Bilash Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat**, and Rhesus Monkey a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Having the vast width, it is locally called Bilash river and supports small scale fisheries, providing protein for local people.

The following figure shows the existing feature of the Bilash chara Quarry

Figure 11-21: Existing Feature of the Bilash chara Quarry



West Side



South Side



South Side



North Eastern Side



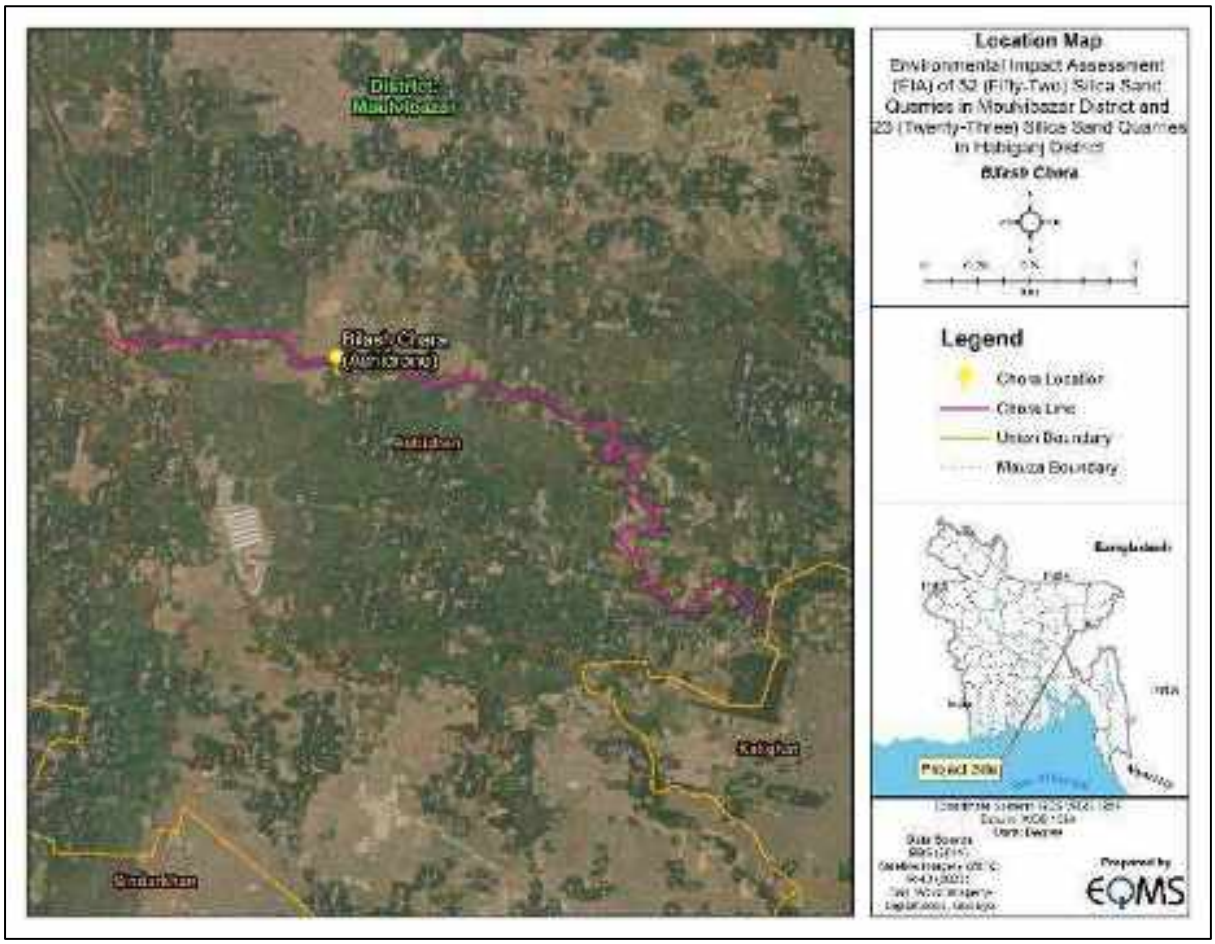
South Western Side



South Side

The following figure shows the location within the mouza boundary of the Bilash Chara Quarry and surrounding features of the sand Quarry.

Figure 11-22: Location within the Mouza Boundary of the Bilash Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-12: Dingdinga Chara

The following table shows the details of the Dingdinga chara Quarry.

Table 11-12: Details of the Dingdinga chara Quarry

Items	Description
Name of the Chara	Dingdinga Chara
Geographical Coordinate	24°15'40.319"N 91°42'42.857"E
Silica enriched Mouja	Saitula
Total area	1.47Acre
Volume of sand	Significant
Location	Village: Saitula; Mouja: Saitula; Union: Ashidron; Upazila: Sreemangal
Direction of Chara	West- East

Project Surrounding	**West:** Baikka beel and Langlia chara where the chara drains, Village, Homestead Vegetation, Agricultural land and Hill **North:** A temple name Shibbari Mandir, Village Road, Village, Homestead Vegetation, Agricultural land **East:** Tea state where the chara derives, Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Haor. **South:** Sindhurkhan bazar, Village Road, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Dingdinga Chara 470, is part of a sequence of closely located points and is just after the Sindhurkhan -Sreemongol road. This connectivity ensures that if one point of the chara is reached, others can be easily located. Similar to 0ther Chara, most streams in the area intersect access roads at several locations, enhancing accessibility. The point of the chara is just close and middle to the Bilash chara at north and langlia chara at east.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Dingdinga Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat**, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. No significant sand collection was seen in the chara.

The following figure shows the existing feature of the Dingdinga chara Quarry.

Figure 11-23: Existing Feature of the Dingdinga Quarry



South Side



South Western Side



South Western Side



South Eastern Side



South Side



North Western Side



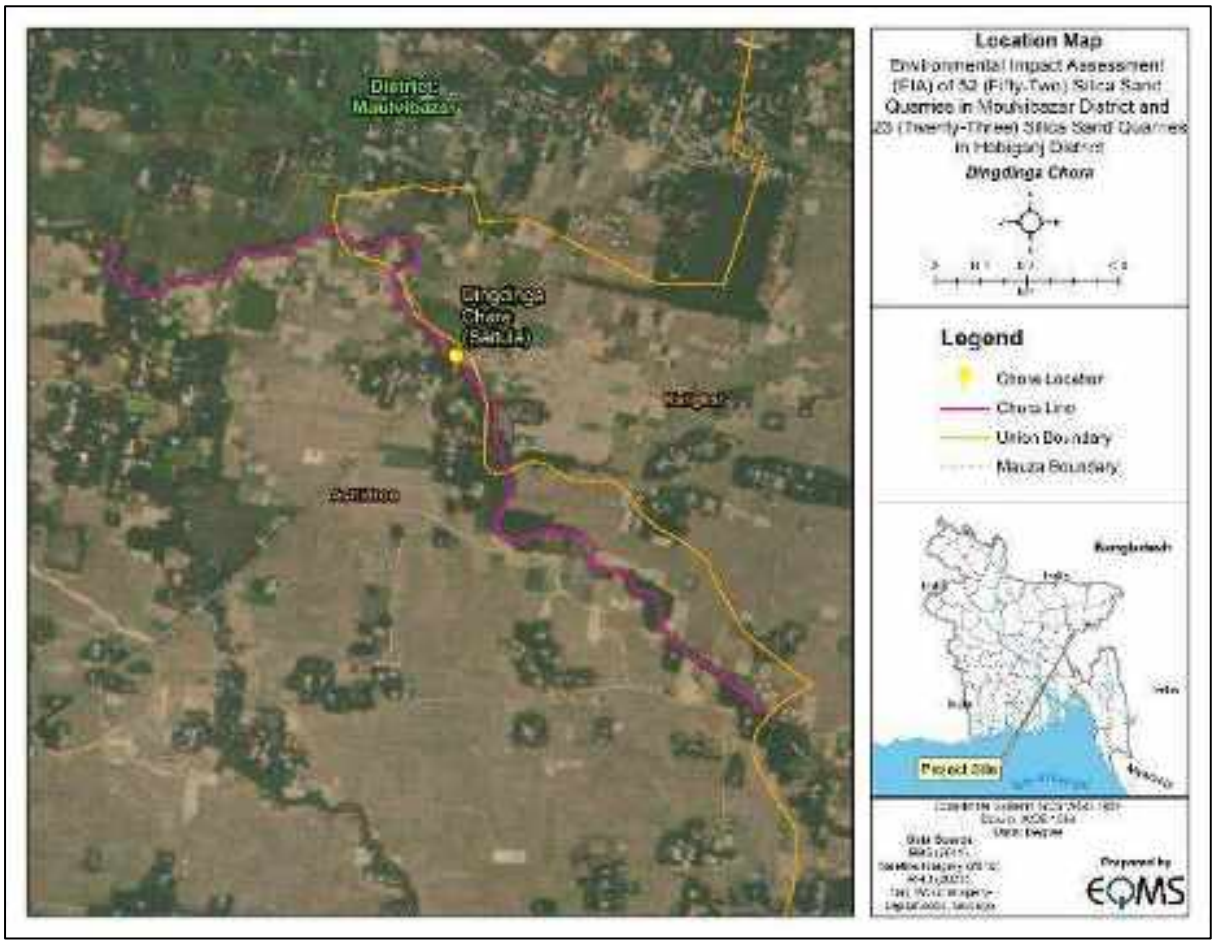
North Side



East Side

The following figure shows the location within the mouza boundary of the Dingdinga Chara Quarry and surrounding features of the sand Quarry.

Figure 11-24: Location within the Mouza Boundary of the Dingdinga Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-13: Putiya Chara

The following table shows the details of the Putiya chara Quarry.

Table 11-13: Details of the Putiya chara Quarry

Items	Description
Name of the Chara	Putiya Chara
Geographical Coordinate	24°14'45.794"N 91°42'41.367"E
Silica enriched Mouja	Saitula
Total area	1.88 Acre
Volume of sand	Significant
Location	Village: Saitula; Mouja: Saitula; Union: Ashidron; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Langlia chara and Baikka beel where the chara drains, Village, Homestead Vegetation, Agricultural land and Hill **North:** Sreemongol town, Indigenous Monipuri Para, Village, Homestead Vegetation, Agricultural land

	East: Tea state where the chara derived, Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Haor. **South:** Sindhurkhan Bazar, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Putiya Chara 1003, is part of a sequence of closely located points. This connectivity ensures that if one point of the chara is reached, others can be easily located. Similar to Dingdinga Chara, the stream in the area intersects access roads at several locations, enhancing accessibility and the point of the chara is close and middle to the Bilash chara at north and langlia chara at east. The point is around a Km South-West of Sindhurkhan Bazar
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Putiya Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat**, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Local communities depend on the stream for small-scale fishing.

The following figure shows the existing feature of the putiya chara Quarry.

Figure 11-25: Existing Feature of the putiya chara Quarry



South Eastern Side

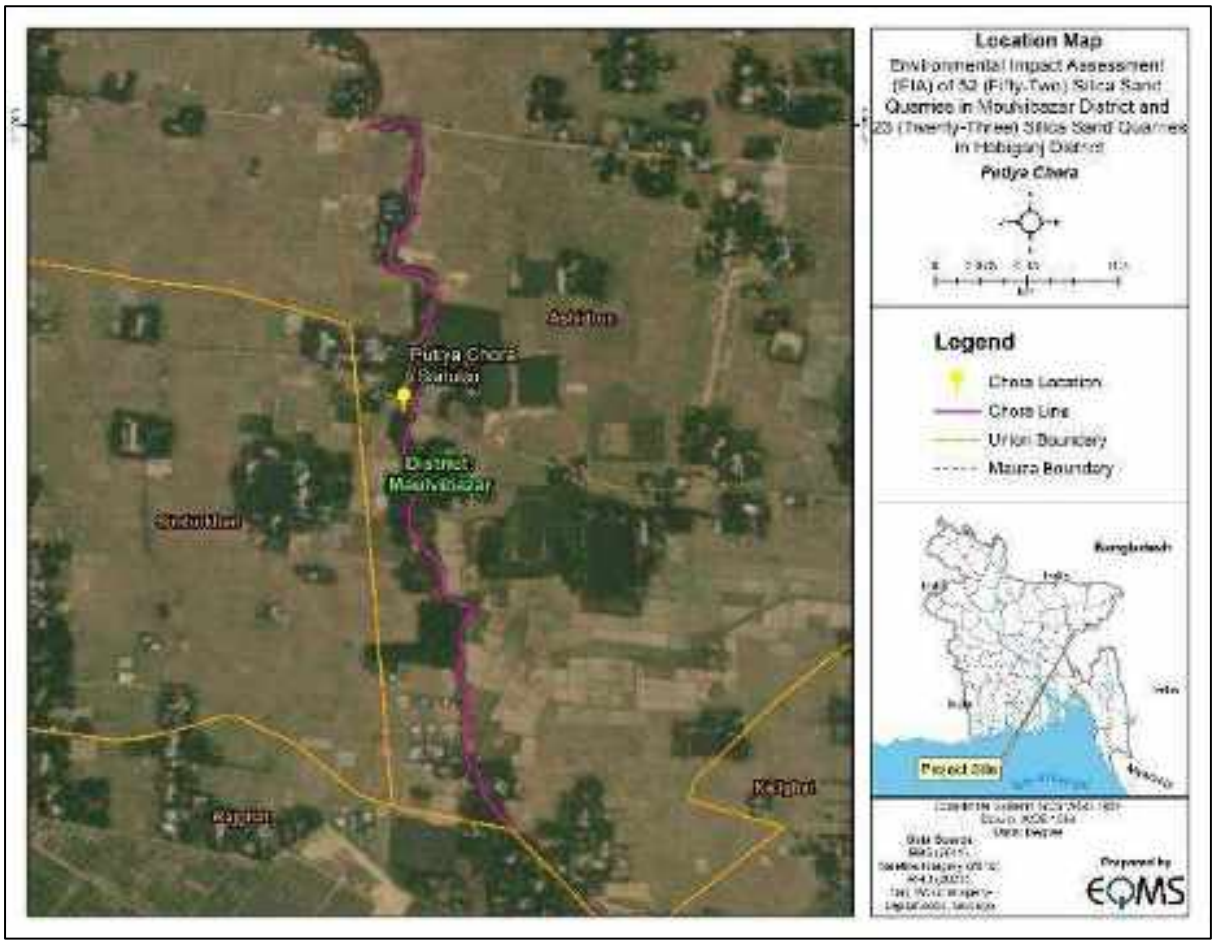


West Side

	
South Eastern Side	North Side
	
South Western Side	South Side
	
South Western Side	West Side

The following figure shows the location within the mouza boundary of the Putiya Chara Quarry and surrounding features of the sand Quarry.

Figure 11-26: Location within the Mouza Boundary of the Putiya Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-14: Noluya Chara

The following table shows the details of the Noluya Quarry.

Table 11-14: Details of the Noluya Quarry

Items	Description
Name of the Chara	Noluya Chara
Geographical Coordinate	24°15'54.526"N 91°39'13.548"E
Silica enriched Mouja	Khoajpur, Durganagar
Total area	2.37 Acre
Volume of sand	Significant
Location	Village: Zamsi; Mouja: Durganagar; Union: Sindhurkhan; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Tea state where the chara derives, Village, Homestead Vegetation, Agricultural land and Hill

	North: Local pitch road called Durganagar-Laharpur road leading to Sreemongol- Habiganj Highway via Satgaon Bazar, Village, Homestead Vegetation, Agricultural land **East:** Bilash chara/River where the chara drains, Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Haor. **South:** Sindhurkhan Amrail road leading to Sindhurkhan Bazar, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Noluya Chara 144, is part of a sequence of closely located points and on a bridge over local pitch road under which the chara passes. This connectivity ensures that if one point of the chara is reached, others can be easily located. Most streams in the area intersect access roads at several locations, enhancing accessibility. The point is accessible from Sreemongol town and close to several other charas from Sindhurkhan Bazar.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Noluya Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat**, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness. Noluya Chara drains into larger rivers or Bilash chara playing a role in regional water balance and drainage of flood water.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water.

The following figure shows the existing feature of the Noluya chara Quarry.

Figure 11-27: Existing Feature of the Noluya chara Quarry



North Side



South Eastern Side



North Eastern Side



West Side



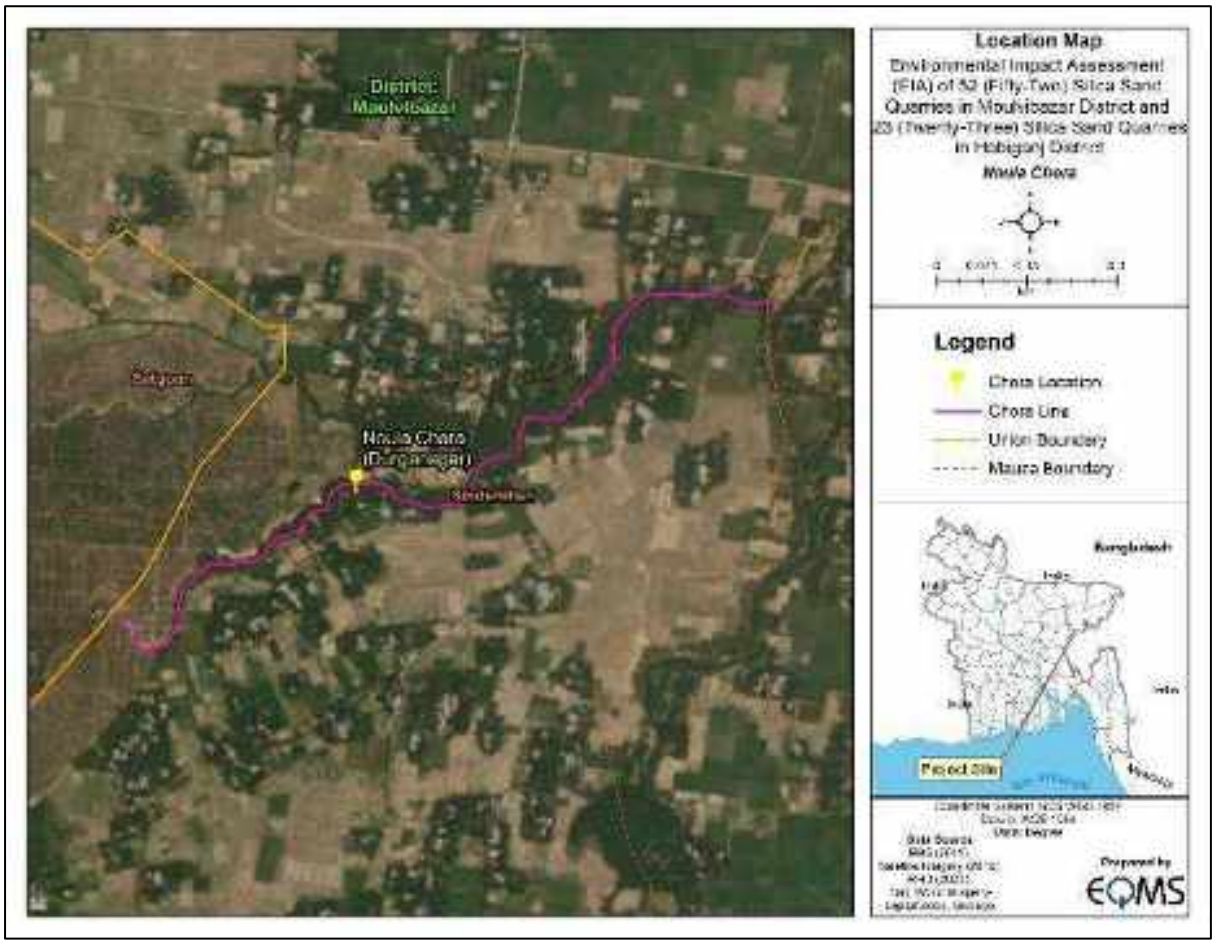
South Side



South Western Side

The following figure shows the location within the mouza boundary of the Noula Chara Quarry and surrounding features of the sand Quarry.

Figure 11-28: Location within the Mouza Boundary of the Noula Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-15: Huglia Chara

The following table shows the details of the Huglia chara Quarry.

Table 11-15: Details of the Huglia chara Quarry

Items	Description
Name of the Chara	Huglia Chara
Geographical Coordinate	24°14'1.845"N 91°38'59.679"E
Silica enriched Mouja	Huglia Chara Tea Garden
Total area	5.25
Volume of sand	Limited
Location	Village: Sindhurkhan; Mouja: Huglia Chara Tea Garden; Union: Sindhurkhanb; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Village, Homestead Vegetation, Agricultural land and Hill covered with tea garden **North:** Village, Homestead Vegetation, Agricultural land

	East: Bangladesh-India Border, Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Bilash river/Chara. **South:** Finlay tea estate, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Huglia Chara Chara 1736, is inside a famous tea Finlay Tea Garden of Bangladesh and close to the Bangladesh-India Border. The point is part of a sequence of closely located points. This connectivity ensures that if one point of the chara is reached, others can be easily located. Similar to other chara, most streams in the area intersect access roads at several locations, enhancing accessibility. The silica enriched moja of this chara passes mainly through the tea garden.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, tea garden and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Huglia Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat** and Rhesus Monkey etc species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. The chara contributes to small scale fisheries. Chara water is occasionally used in tea plants specially in the dry season in limited parts where it is close to the chara. Local people collect sand for the construction work but very limited and no large-scale collection were seen for commercial purposes.

The following figure shows the existing feature of the Huglia chara Quarry

Figure 11-29: Existing features of the Huglia chara Quarry



North Side



South Eastern Side



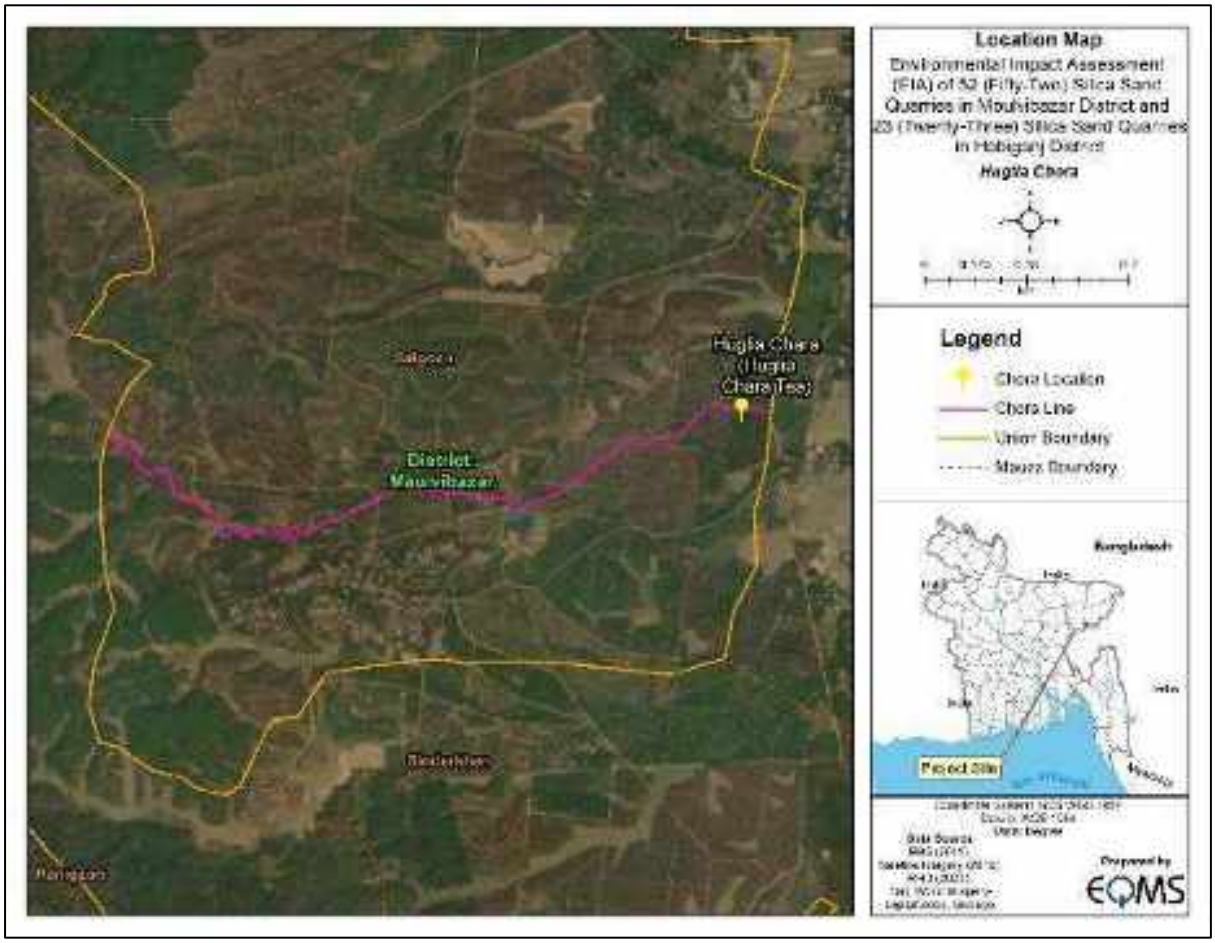
South Western Side



West Side

The following figure shows the location within the mouza boundary of the Huglia Chara Quarry and surrounding features of the sand Quarry.

Figure 11-30: Location within the Mouza Boundary of the Huglia Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-16: Gandhi Chara

The following table shows the details of the Gandhi chara Quarry.

Table 11-16: Details of the Gandhi chara Quarry

Items	Description
Name of the Chara	Gandhi Chara
Geographical Coordinate	24°16'34.338"N 91°38'38.646"E
Silica enriched Mouja	Gandhi chara
Total area	2.60
Volume of sand	Significant
Location	Village: Gandhi; Mouja: Gandhi chara; Union: Sindhurkhan; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Tera state, Village, Homestead Vegetation, Agricultural land and Hill **North:** Village, Homestead Vegetation, Agricultural land **East:** Noluya chara, Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Haor. **South:** Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Ghandi Chara, is part of a sequence of closely located points. This connectivity ensures that if one point of the chara is reached, others can be easily located. Similar to other Chara, most streams in the area intersect access roads at several locations, enhancing accessibility.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Gandhi Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat**, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water.

The following figure shows the existing feature of the Gandhi chara Quarry.

Figure 11-31: Existing Feature of the Gandhi chara Quarry



South Eastern Side



North Eastern Side



South Side



East Side



South Eastern Side



North Western Side



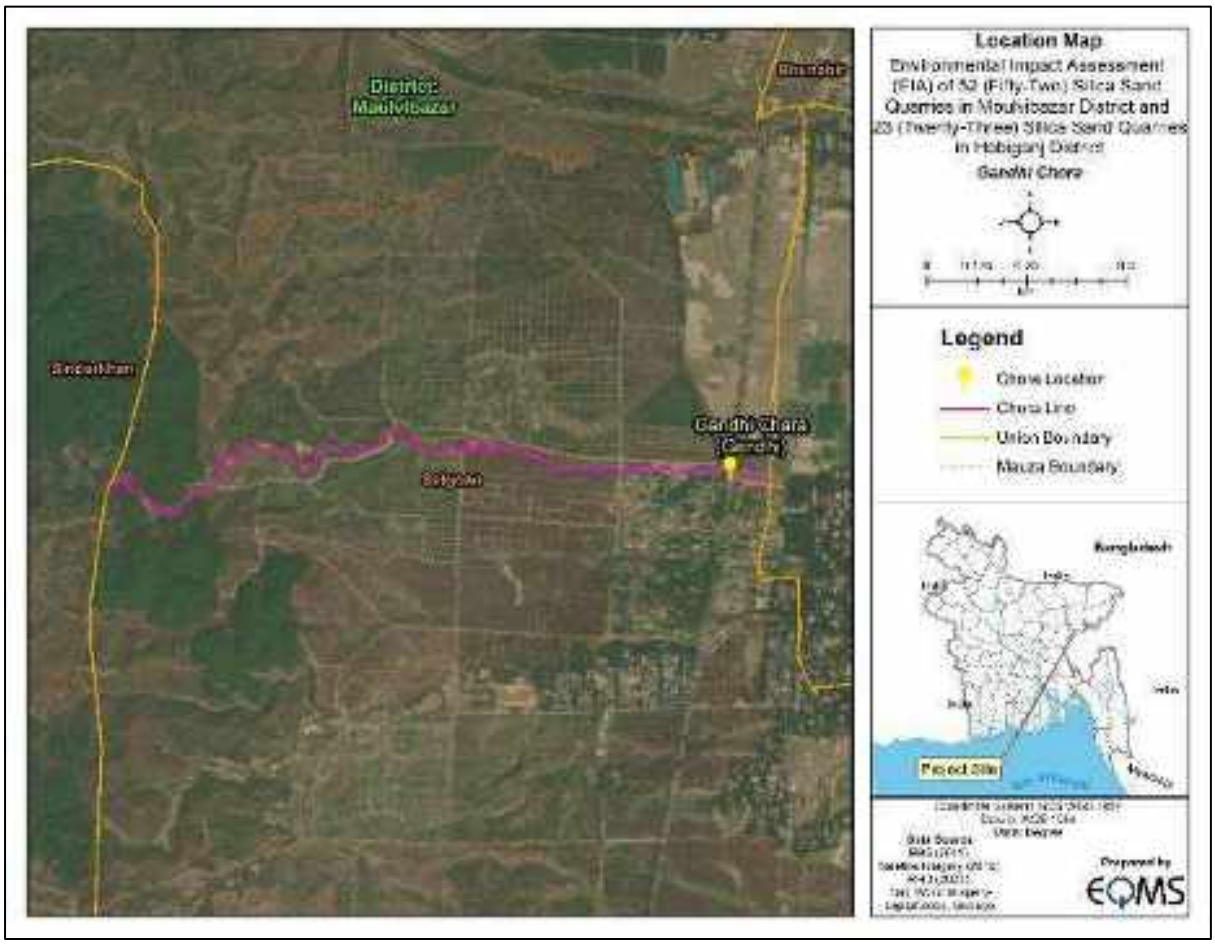
South Side



North Western Side

The following figure shows the location within the mouza boundary of the Gandhi Chara Quarry and surrounding features of the sand Quarry.

Figure 11-32: Location within the Mouza Boundary of the Gandhi Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-17: Amrail Chara

The following table shows the details of the Amrail chara Quarry.

Table 11-17: Details of the Amrail Chara Quarry

Items	Description
Name of the Chara	Amrail Chara
Geographical Coordinate	24°15'35.494"N 91°38'31.323"E
Silica enriched Mouja	Amrail Chara Tea Garden
Total area	4.08
Volume of sand	Significant
Location	Village: Amrail chara; Mouja: Amrail chara tea garden; Union: Sindhurkhan; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Finlay and other tea state hills where it derives, Village, Homestead Vegetation, Agricultural land and Hill **North:** Gandhi chara, Village, Homestead Vegetation, Agricultural land **East:** Bilash river where the chara drains, Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Haor. **South:** Huglia chara, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Amrail Chara 45, is part of a sequence of closely located points just close to Amrail-Sindhurkhan road and at the west of Amrailchara Govt Primary School passing across the tea garden. This connectivity ensures that if one point of the chara is reached, others can be easily located. Similar to other Chara, most streams in the area intersect access roads at several locations, enhancing accessibility.
Environmental Features	The chara is flanked by dense vegetation comprising Tea Garden, bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Amrail Chara and its surrounding tea garden and bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Rhesus Monkey** a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Chara water is occasionally used in tea plants specially in the dry season in limited parts where it is close to the chara. Local people collect sand for the construction work but very limited and large-scale collections through pumps were seen for commercial purposes and making the issue of road erosion.

The following figure shows the existing feature of the Amrail chara Quarry

Figure 11-33: Existing Feature of the Amrail chara Quarry



North Side



South Eastern Side



East Side



West Side



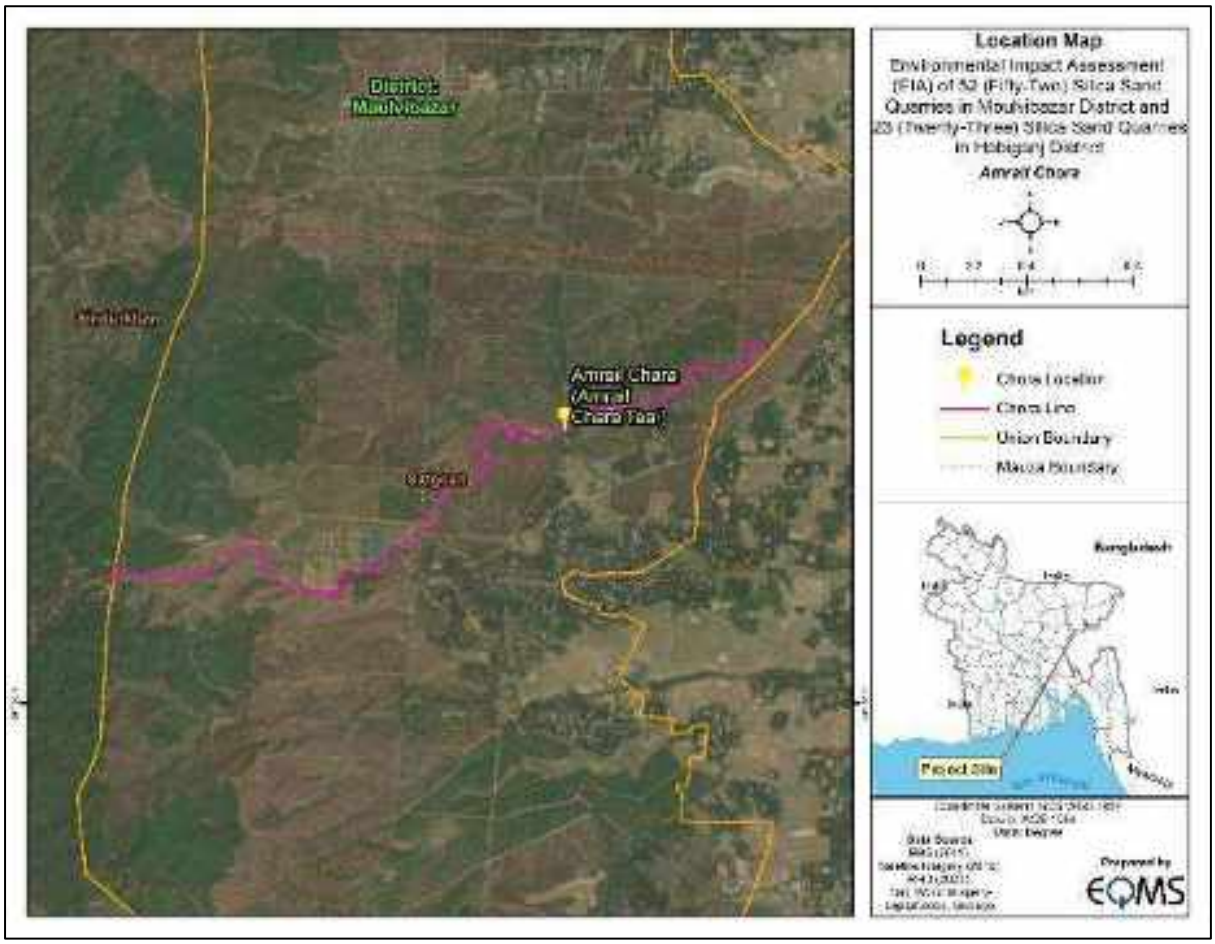
Sand Collection from Chara



South Side

The following figure shows the location within the mouza boundary of the Amrail Chara Quarry and surrounding features of the sand Quarry.

Figure 11-34: Location within the Mouza Boundary of the Amrail Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-18: Alia Chara

The following table shows the details of the Alia chara Quarry.

Table 11-18: Details of the Alia chara Quarry

Items	Description
Name of the Chara	Alia Chara
Geographical Coordinate	24°18'52.363"N 91°39'1.393"E
Silica enriched Mouja	Rajpara
Total area	2.55 Acre
Volume of sand	Significant
Location	Village: Rajpara; Mouja: Rajpara; Union: Vunobir; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Tea state, Vunobir land office, Village, Homestead Vegetation, Agricultural land and Hill **North:** Patrikul bazar, Mirzapur Bazar, Village, Homestead Vegetation, Agricultural land

	East: Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Baikka beel a part of Hail Haor. **South:** Sarker Bazar, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Alia Chara 1236, is part of a sequence of closely located points on the Vunobir-Shamserganj road, just close to the Vunobir Land office. Most of the other points of the chara, east of this point and all of them find their destination near Hail haor. This connectivity ensures that if one point of the chara is reached, others can be easily located. Similar to other Chara, most streams in the area intersect access roads at several locations, enhancing accessibility. Several points of the chara are in the middle of the haor.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Alia Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat**, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness. Nearby hail haor is the important migratory birds living space and sanctuary of indigenous fish species, making the chara ecologically crucial and any activities in this chara need special attention.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Local communities found small-scale fishing in the stream for their food.

The following figure shows the existing feature of the Alia chara Quarry.

Figure 11-35: Existing Feature of the Alia chara Quarry



North Side



North western Side



North Eastern Side



East Side



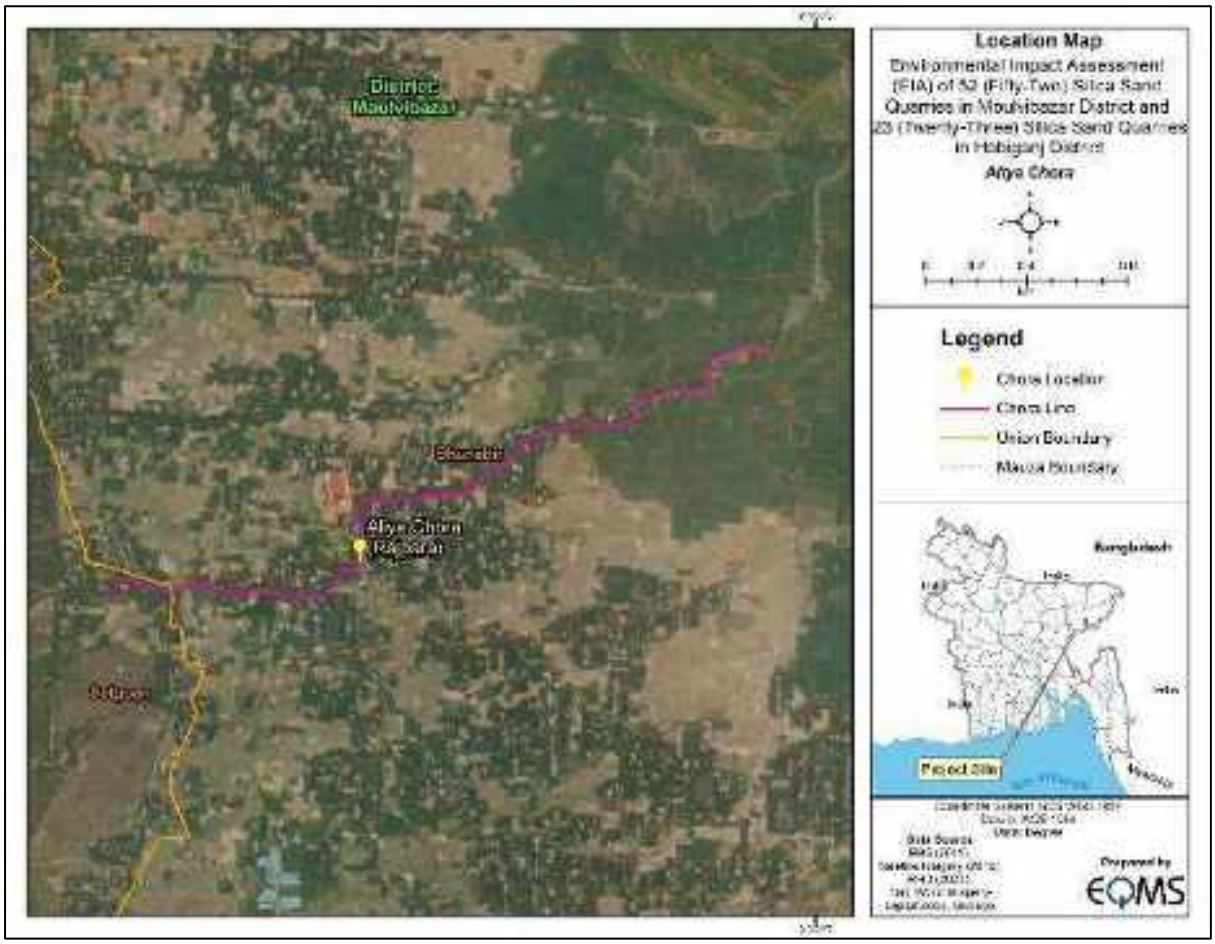
Sand Collection from Chara



South Side

The following figure shows the location within the mouza boundary of the Aliya Chara Quarry and surrounding features of the sand Quarry.

Figure 11-36: Location within the Mouza Boundary of the Aliya Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-19: Makri Chara

The following table shows the details of the Makri Chara Quarry.

Table 11-19: Details of the Makri chara Quarry

Items	Description
Name of the Chara	Makri Chara
Geographical Coordinate	24°19'9.016"N 91°39'0.192"E
Silica enriched Mouja	Rajpara, Patrikul
Total area	2.14 Acre
Volume of sand	Significant
Location	Village: Rajpara; Mouja: Rajpara; Union: Vunobir; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Tea state, Village, Homestead Vegetation, Agricultural land and Hill **North:** Patrikul Bazar, Village, Homestead Vegetation, Agricultural land

	East: Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Hail Haor. **South:** Vunibir Land Office, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Makri Chara 760, is part of a sequence of closely located points. This connectivity ensures that if one point of the chara is reached, others can be easily located. Similar to other Chara, most streams in the area intersect access roads at several locations, enhancing accessibility.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Makri Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat**, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness. Alike Alia chara this chara is close to Hail haor hence **any activities in this chara need special attention**
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. The chara has a significant amount of sand and locals use for construction.

The following figure shows the existing feature of the makri chara Quarry.

Figure 11-37: Existing Features of the makri chara Quarry



North Side



South Eastern Side



North Eastern Side



West Side



East Side



South Western Side



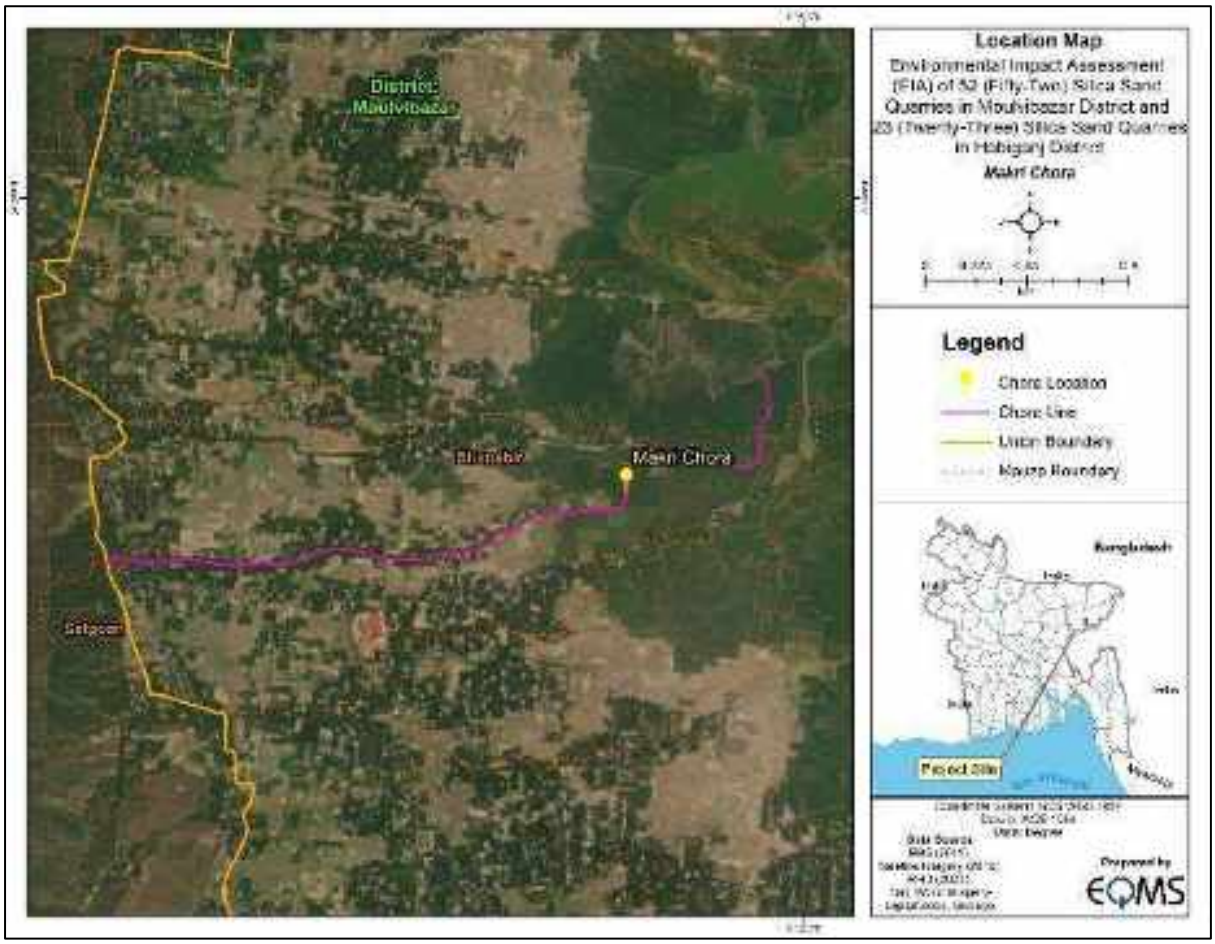
Sand Collection from Chara



East Side

The following figure shows the location within the mouza boundary of the Makri Chara Quarry and surrounding features of the sand Quarry.

Figure 11-38: Location within the Mouza Boundary of the Makri Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-20: Suari Chara

The following table shows the details of the Suari chara Quarry.

Table 11-20: Details of the Suari chara Quarry

Items	Description
Name of Quarry	Suari Chara
Geographical Coordinate	24°19'25.777"N 91°39'5.888"E
Location	Village: Rajpara; Mouja: Rajpara; Union: Vunobir; Upzila: Sreemangal
Total Area	0.69 Acre
Volume of Sand	Significant
Direction of Chara	West- East
Project Surrounding	**West:** Village, Homestead Vegetation, Agricultural land and Hill **North:** Village, Homestead Vegetation, Agricultural land

	East: Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Haor. **South:** Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Suari Chara 571, is part of a sequence of closely located points. This connectivity ensures that if one point of the chara is reached, others can be easily located. Similar to Suari Chara, most streams in the area intersect access roads at several locations, enhancing accessibility.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Suari Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat**, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water.

The following figure shows the existing feature of the suari chara Quarry.

Figure 11-39: Existing Features of the Suari chara Quarry.



North Side



South Eastern Side



North Eastern Side



West Side



East Side



South Western Side



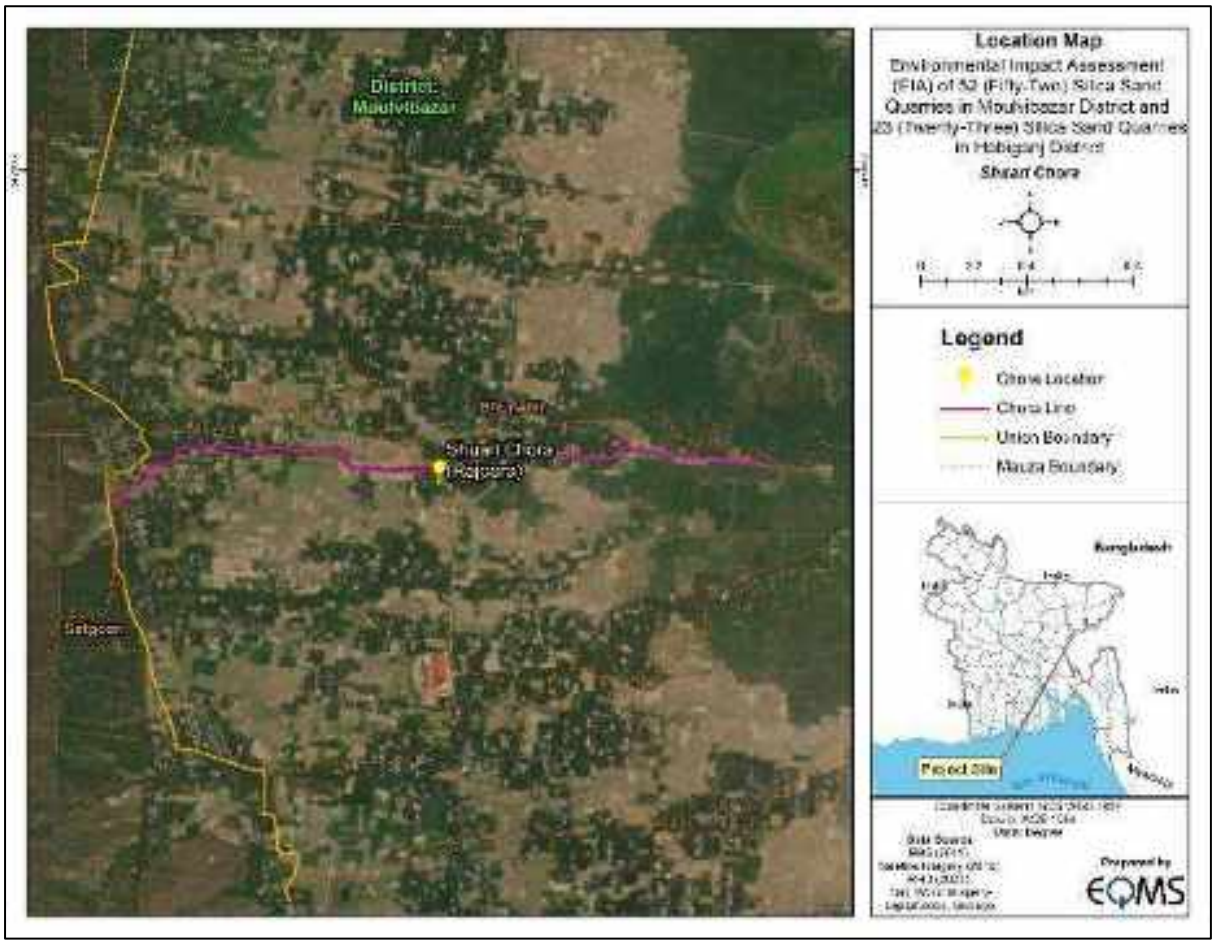
Sand Collection from Chara



South Side

The following figure shows the location within the mouza boundary of the Shuari Chara Quarry and surrounding features of the sand Quarry.

Figure 11-40: Location within the Mouza Boundary of the Shuari Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-21: Patria Chara

The following table shows the details of the patria chara Quarry.

Table 11-21: Details of the Patria chara Quarry

Items	Description
Name of the Chara	Patria Chara
Geographical Coordinate	24°19'47.39"N 91°39'8.204"E
Silica enriched Mouja	Patrikul
Total area	3.87 Acre
Volume of sand	Significant
Location	Village: Patrikul; Mouja: Patrikul; Union: Vunobir; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Tea state where it derives, Village, Homestead Vegetation, Agricultural land and Hill **North:** Gandarbapur bazar, Village, Homestead Vegetation, Agricultural land

	East: Hail haor where it drains, Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Haor. **South:** Sarker bazar and Vunobir land office, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Patria Chara 145, is part of a sequence of closely located points and just north of the previous Alia and Makri chara on the Vunobir-Shamserganj road. This connectivity ensures that if one point of the chara is reached, others can be easily located. Similar to Alia and Makri Chara, most streams in the area intersect access roads at several locations, enhancing accessibility.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Patria Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat**, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness. Similar to Alia and Makri Chara, this is close to Hail haor and Baikka which are important for Migratory birds and Fish Biodiversity. Additionally, Silica from the stream contributes to nutrient cycling, supporting phytoplankton growth in downstream water bodies. Patria Chara drains into haor, playing a role in regional water balance and water drainage.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and tea cultivation**.

The following figure shows the existing feature of the patria chara Quarry

Figure 11-41: Existing Features of the patria chara Quarry.



North Side



North Western Side



North Eastern Side



West Side



East Side



South Eastern Side



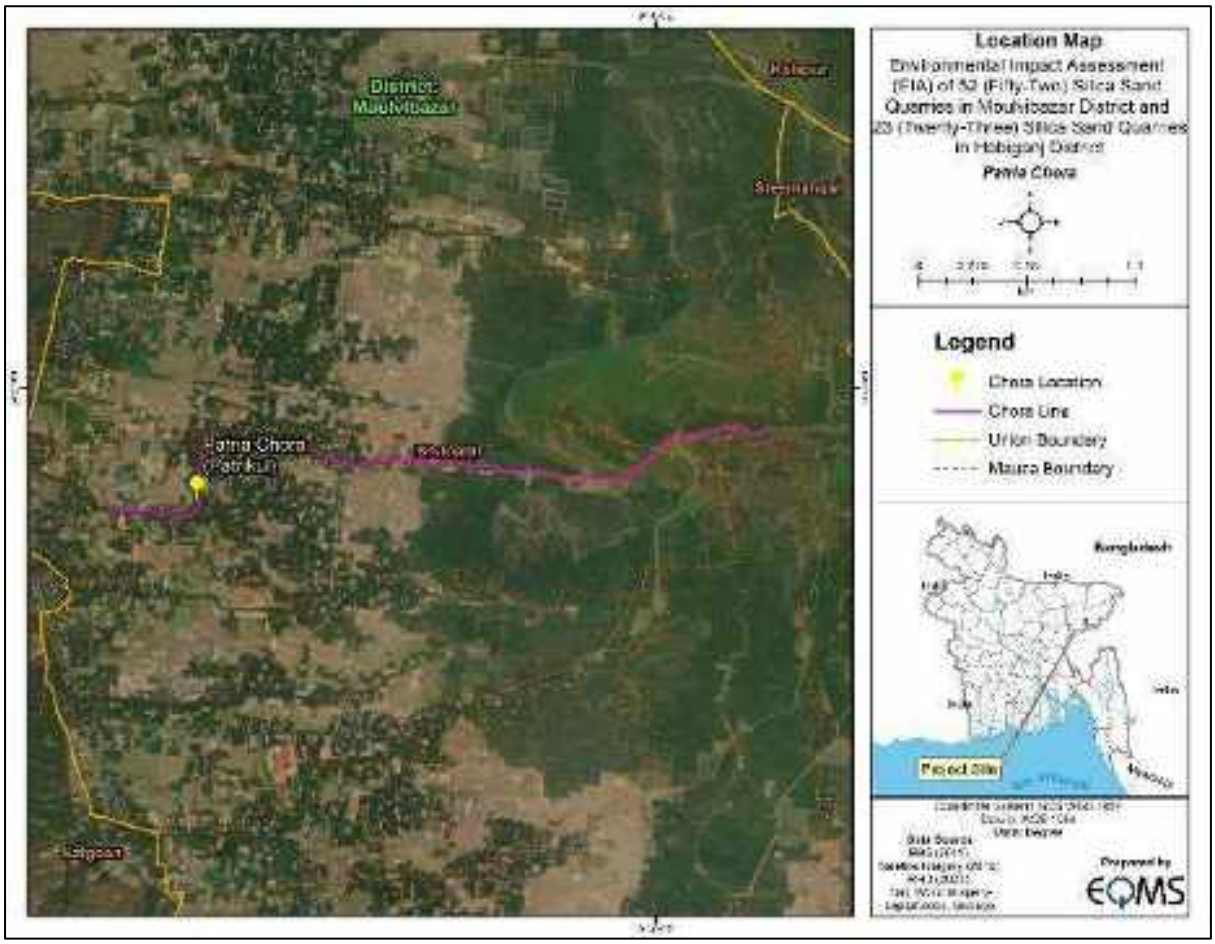
Sand Collection from Chara



South Side

The following figure shows the location within the mouza boundary of the Patria Chara Quarry and surrounding features of the sand Quarry.

Figure 11-42: Location within the Mouza Boundary of the Patria Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-22: Jaita Chara

The following table shows the details of the Jaita Chara Quarry.

Table 11-22: Details of the jaita chara Quarry

Items	Description
Name of the Chara	Jaita Chara
Geographical Coordinate	24°20'32.307"N 91°39'4.574"E
Silica enriched Mouja	Sasoun, Vunobir
Total area	3.01 Acre
Volume of sand	Significant
Location	Village: Vunobir; Mouja: Vunobir; Union: Vunobir; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Tea state where the chara derives, bamboo bush, Village, Homestead Vegetation, Agricultural land and Hill **North:** Patrikul bazar, Village, Homestead Vegetation, Agricultural land

	East: Village pitch road, Mosque, bamboo bush, Village, Homestead Vegetation, Agricultural Land and Haor where the chara drains. **South:** Mirzapur Bazar, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Jaita Chara 432, is part of a sequence of closely located points. Another mouja of this chara namely sason mouja is north of the point. The point is on the bridge of Vunobir-Shamsherganj road and surrounded by bamboo bush. This connectivity ensures that if one point of the chara is reached, others can be easily located. Most streams in the area intersect access roads at several locations, enhancing accessibility. The chara is very close to Hail haor and several points of this are in the middle of the Haor.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife. The chara aids in sediment deposition, impacting soil fertility and aquatic habitats in the haor region. It links upland catchments to the floodplain ecosystem, supporting nutrient cycling and water availability.
Ecological Importance	Suari Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat**, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness. The stream helps sustain Hail Haor, which is a key stopover for migratory birds. The water quality and aquatic life in the chara indirectly influence bird populations.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. The chara is well connected with haor and serves as a fishing ground, providing food and income for nearby households. Among the chara visited significant small-scale fishing found only in this chara. Though several commercial aquafarms found close to the chara and haor they do not use chara water or for drainage.

The following figure shows the existing feature of the jaita chara Quarry.

Figure 11-43: Existing Features of the Jaita Chara Quarry



North Side



South Eastern Side



North Eastern Side



South Side



East Side



South Western Side



Sand Collection from Chara



South Side



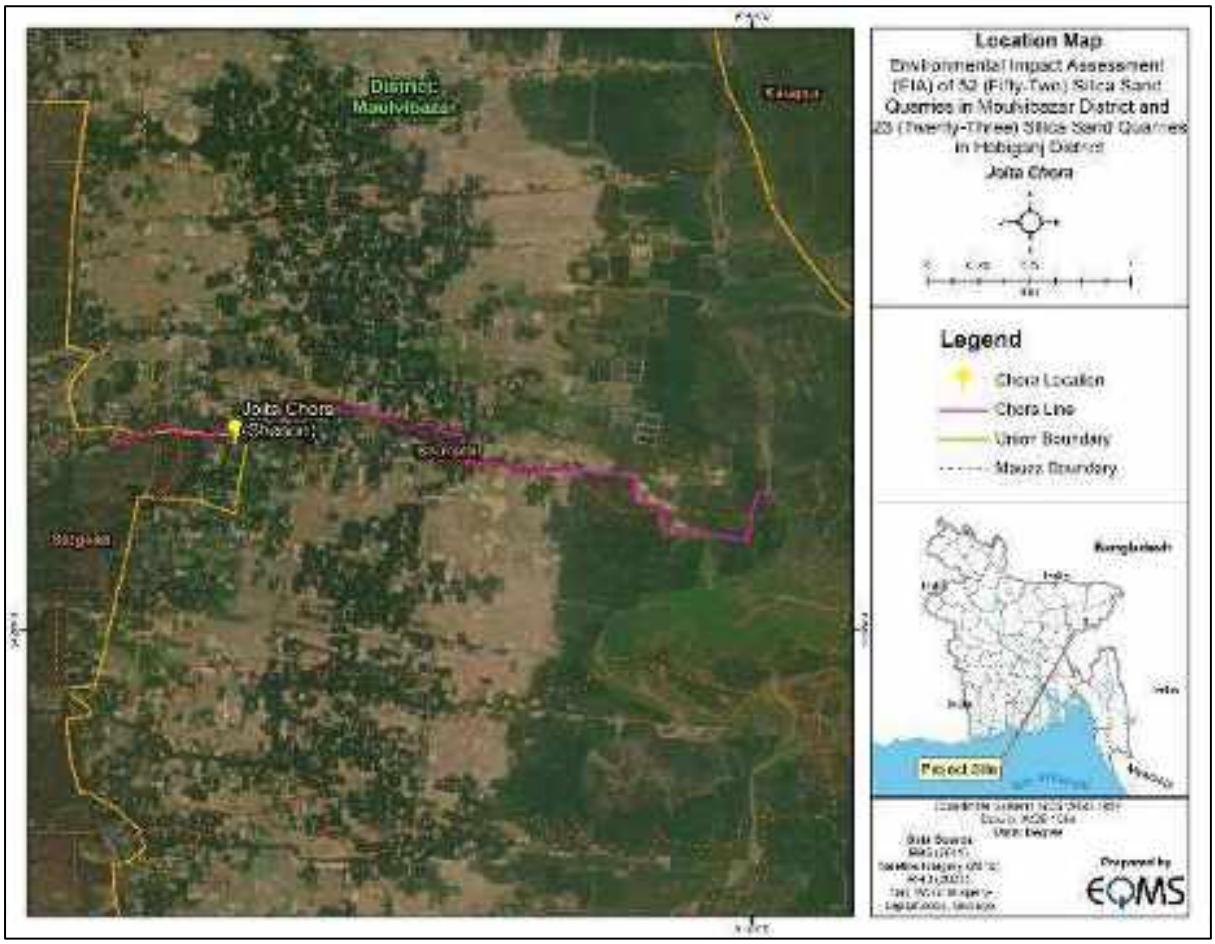
Fishing with trap in the chara



Fishing in the point of chara close to Hail haor

The following figure shows the location within the mouza boundary of the Joita Chara Quarry and surrounding features of the sand Quarry.

Figure 11-44: Location within the Mouza Boundary of the Joita Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-23: Ichamati Chara

The following table shows the details of the Ichamoti Chara Quarry.

Table 11-23: Details of the Ichamoti Chara Quarry

Items	Description
Name of the Chara	Ichamati Chara
Geographical Coordinate	24°21'21.189"N 91°38'50.54"E
Silica enriched Mouja	Vimsi
Total area	1.47 Acre
Volume of sand	Significant
Location	Village: Vimsi; Mouja: Vimsi; Union: Vunobir; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Tea state where it derives, Village, Homestead Vegetation, Agricultural land and Hill **North:** Temple, Gandarbapur bazar, Village, Homestead Vegetation, Agricultural land

	East: Hail haor where it drains, Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Haor. **South:** Sarker bazar and Vunobir land office, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Ichamati Chara 794, is part of a sequence of closely located points and just north of the previous Jaita chara on the Vunobir-Shamserganj road, hence most of the charactecrs similar of Jaita chara. This connectivity ensures that if one point of the chara is reached, others can be easily located. i.e. points 408, 440 and 443 are west and points 1381 and 1411 are east of the point 794. Similar to Jaita Chara, most streams in the area intersect access roads at several locations, enhancing accessibility.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Ichamati Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat**, a species considered threatened and Rhesus monkey frequently seen. The bush is also a haven for various bird species, contributing to the area's ecological richness. Similar to Jaita Chara, this is close to Hail haor and Baikka which are important for Migratory birds and Fish Biodiversity. Additionally, Silica from the stream contributes to nutrient cycling, supporting phytoplankton growth in downstream water bodies. Ichamati Chara drains into haor, playing a role in regional water balance and water drainage.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and crop cultivation**. Lemon gardens are frequently seen in the area where they use chara water for cultivation.

The following figure shows the existing feature of the Ichamoti chara Quarry

Figure 11-45: Existing Features of the Ichamoti Chara Quarry



lemon garden in another point of chara



North Eastern Side

Another point of the chara



East Side



East Side



South Eastern Side



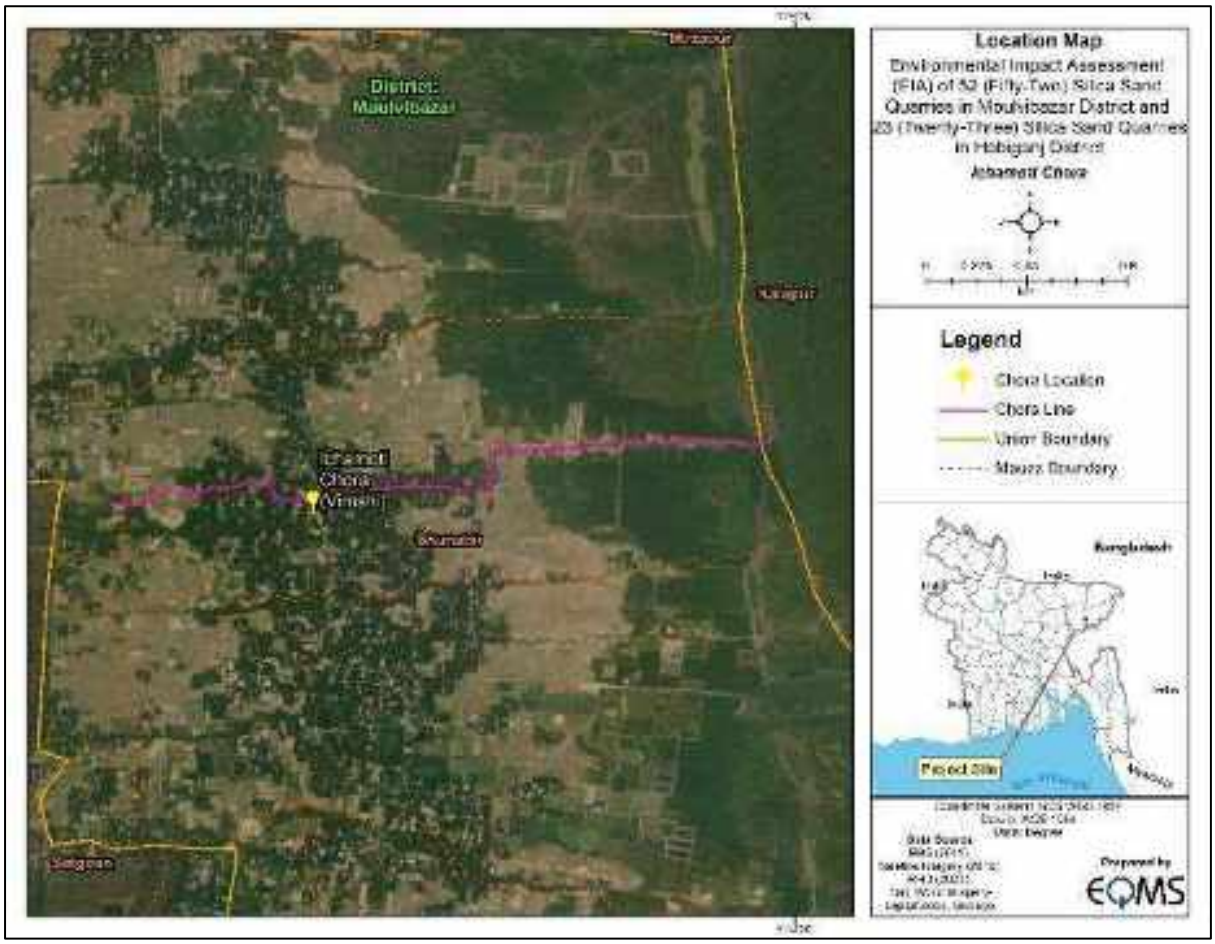
Sand Collection from Chara



South Side

The following figure shows the location within the mouza boundary of the Ichamoti Chara Quarry and surrounding features of the sand Quarry.

Figure 11-46: Location within the Mouza Boundary of the Ichamoti Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-24: Boula Chara

The following table shows the details of the Boula Chara Quarry.

Table 11-24: Details of the Boula chara Quarry

Items	Description
Name of the Chara	Boula Chara
Geographical Coordinate	24°22'33.476"N 91°38'27.354"E
Silica enriched Mouja	Boula chara, Gondorbopur
Total area	1.21 Acre
Volume of sand	Significant
Location	Village: Boulashi; Mouja: Gondobpur; Union: Mirzapur; Upzila: Sreemangal, District: Moluvibazar
Direction of Chara	West- East

Project Surrounding	**West:** Tea state where it derives, Village, Homestead Vegetation, Agricultural land and Hill **North:** Temple, Baulashir bazar, Village, Homestead Vegetation, Agricultural land **East:** Hail haor where it drains, Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Haor. **South:** Graveyard, Gandarbapur bazar, Sarker bazar and Vunobir land office, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Boula Chara 808, is part of a sequence of closely located points and just north of the previous Ichamoti chara on the Vunobir-Shamserganj road and just south of Baulashir bazar. The point is surrounded by dense vegetation of bamboo bush and wild trees. This connectivity ensures that if one point of the chara is reached, others can be easily located. Similar to otheri Chara, most streams in the area intersect access roads at several locations, enhancing accessibility. Several points of the Chara including point 2624 and 2621 and 1 are in the middle of Hail haor hence no quarry site.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife. Flowing close to household and village road chara has issue of erosion and important for the drainage of rain water.
Ecological Importance	Patria Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat**, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness. Similar to Ichamoti Chara, this is close to Hail haor and Baikka which are important for Migratory birds and Fish Biodiversity. Additionally, Silica from the stream contributes to nutrient cycling, supporting phytoplankton growth in downstream water bodies. Patria Chara drains into haor, playing a role in regional water balance and water drainage.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and crop cultivation**. As per the public consultation, the area is rich in agriculture and farmers have significantly depended on chara for irrigation and they believe excavation in chara lowers the water level which will make hardship in their irrigation water and there are very limited fisheries during rainy season. There is a huge sand pile seen in point 773 and collected by leaser though local people and administration argue they are not informed about the lease.

The following figure shows the existing feature of the Boula chara Quarry

Figure 11-47: Existing Feature of the Boula chara Quarry



North Side



North Western Side



North Eastern Side



West Side



East Side



Public consultation in the chara site



Sand Collection from Chara



South Side



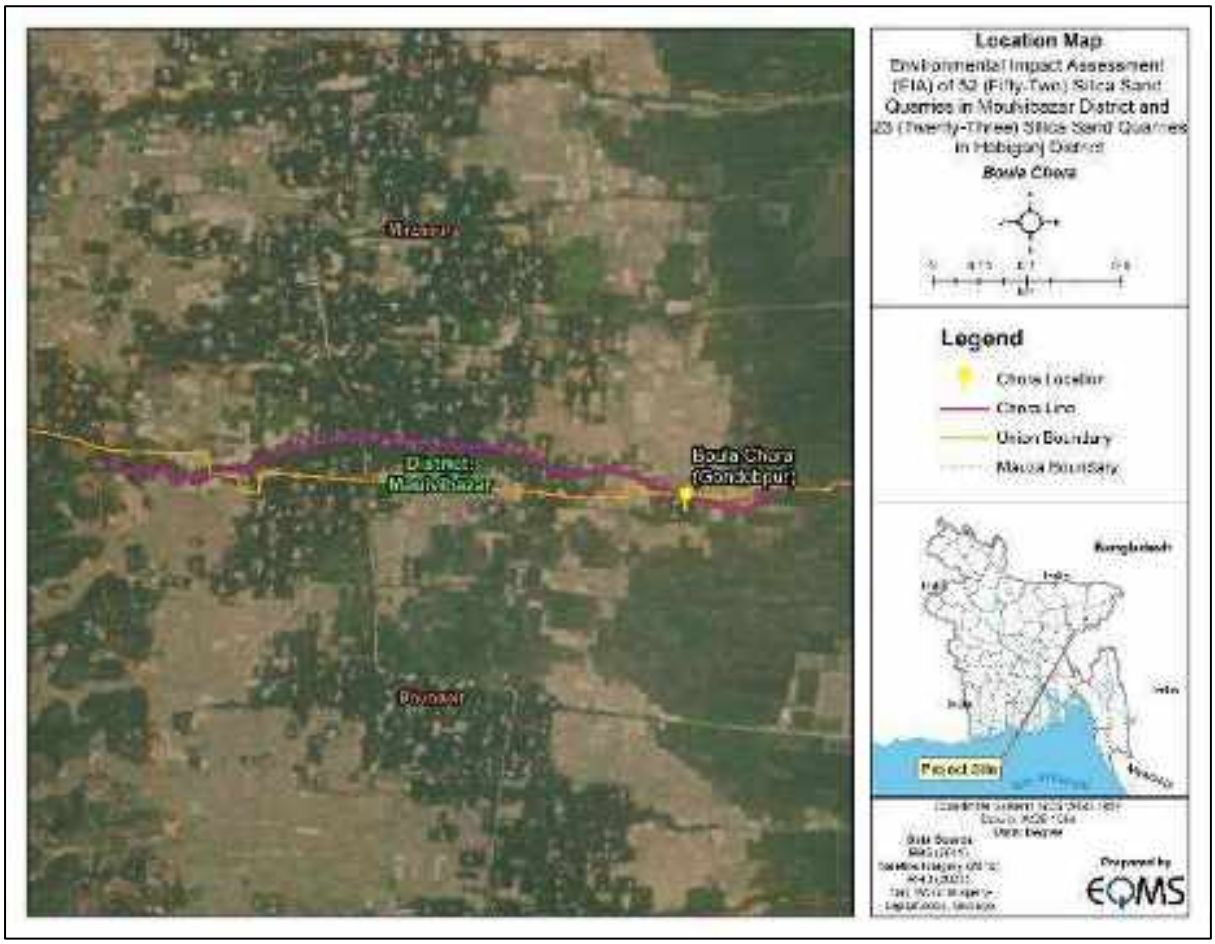
Sand collection in point 773 by leaser



Document of lease

The following figure shows the location within the mouza boundary of the Boula Chara Quarry and surrounding features of the sand Quarry.

Figure 11-48: Location within the Mouza Boundary of the Boula Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-25: Boro Chara

The following table shows the details of the Boro chara Quarry.

Table 11-25: Details of the Boro chara Quarry

Items	Description
Name of the Chara	Boro Chara
Geographical Coordinate	24°25'42.284"N 91°37'18.529"E
Silica enriched Mouja	Saharsri
Total area	2.58 Acre
Volume of sand	Significant
Location	Village: Saharsri; Mouja: Saharsri; Union: Mirzapur; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Tea state where it derives, Village, Homestead Vegetation, Agricultural land and Hill **North:** Shamsherganj bazar, Village, Homestead Vegetation, Agricultural land

	East: Hail haor where it drains, Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation. **South:** Mirzapur bazar and Vunobir land office, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Boro Chara 147, is part of a sequence of closely located points and northmost point of the previous chara of Vunobir union and inside the tea state called Dinarpur Tea state and east of the one important sluice gate which has got national importance as a petition going on in High court regarding the sluice gate and chara issues. This connectivity ensures that if one point of the chara is reached, others can be easily located. Similar to other Chara, most streams in the area intersect access roads at several locations, enhancing accessibility. The point is accessible through the village road inside the tea garden and just after the village household.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife. The chara aids in sediment deposition, impacting soil fertility and aquatic habitats in the haor region. The chara plays an important role in water drainage of tea gardens and flash flood water.
Ecological Importance	Boro Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat**, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness. Similar to Alia and Makri Chara, this is close to Hail haor and Baikka which are important for Migratory birds and Fish Biodiversity. Additionally, Silica from the stream contributes to nutrient cycling, supporting phytoplankton growth in downstream water bodies. Patria Chara drains into haor, playing a role in regional water balance and water drainage. As per locals, wild Boar sometimes seen in the nearby hill and tea garden though some have confusion about their presence need further study.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. The issue related to the petition arose when locals found excavation of sand by leaser hampering the sluice gate making obstacles in the water flow vital for agriculture. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and tea cultivation**. Tea gardens having their own water source not commonly use chara water but occasionally during dry season in the plants close to chara. The working community of the tea garden fully depend on this chara for regular activities. Still few sand collections are seen but locals are concerned about their road damage during sand transportation.

The following figure shows the existing feature of the Boro chara Quarry.

Figure 11-49: Existing Features of the Boro chara Quarry



North Side



North Western Side



North Eastern Side



West Side at the other point



East Side



South Eastern Side at other point



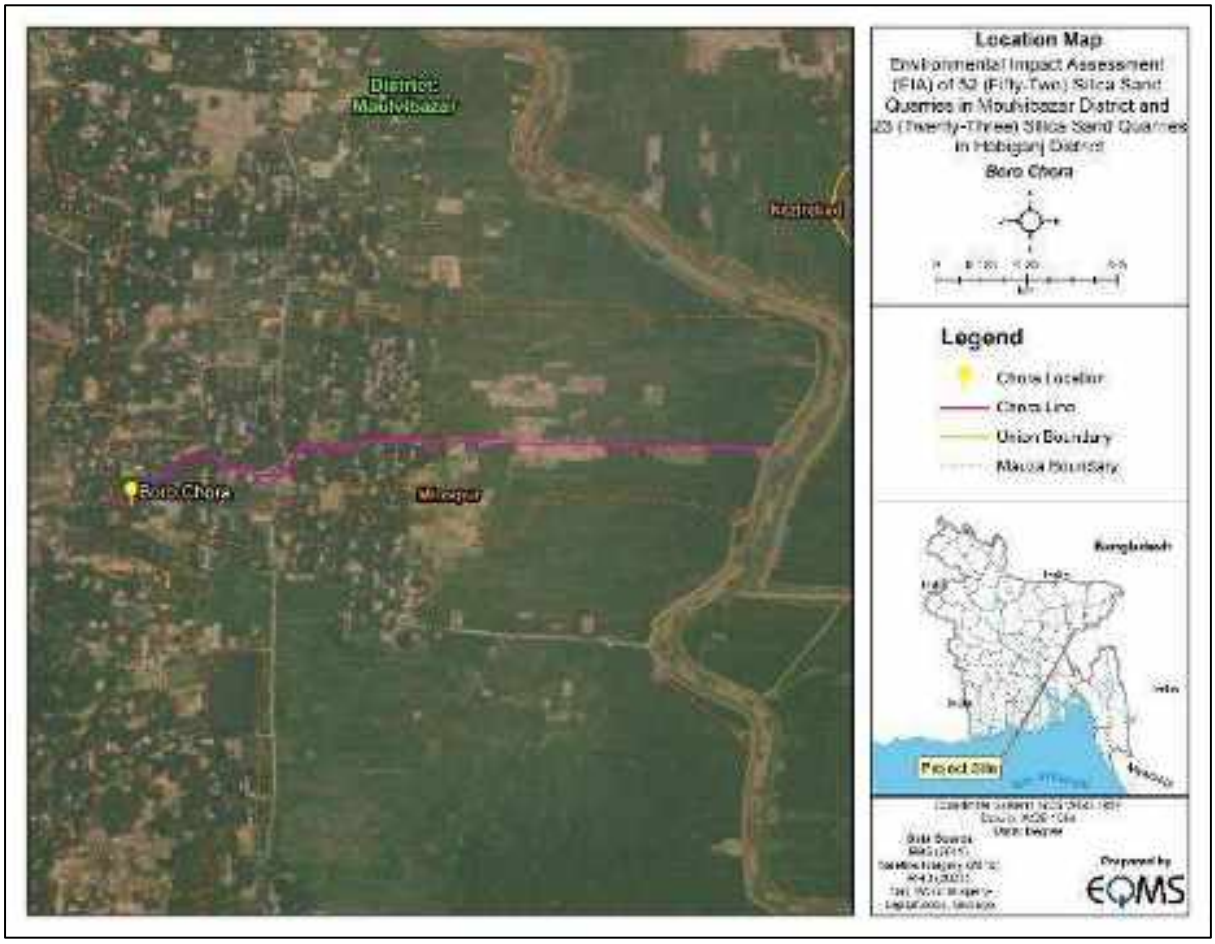
Sand Collection from Chara



South Side

The following figure shows the location within the mouza boundary of the Boro Chara Quarry and surrounding features of the sand Quarry.

Figure 11-50: Location within the Mouza Boundary of the Boro Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-26: Mura Chara

The following table shows the details of the Mura chara Quarry.

Table 11-26: Details of the Mura chara Quarry

Items	Description
Name of the Chara	Mura Chara
Geographical Coordinate	24°23'9.718"N 91°38'14.847"E
Silica enriched Mouja	Dakkhin Pachaun
Total area	2.08 Acre
Volume of sand	Limited in rainy season
Location	Village: Dakkhin Pachaun; Mouja: Dakkhin Pachaun; Union: Mirzapur; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Tea state where it derives, Village, Homestead Vegetation, Agricultural land and Hill **North:** Mirzapur bazar, Village, Village human settlement, Homestead Vegetation, Agricultural land **East:** Hail haor where it drains, Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Haor. **South:** Baulashir bazar, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Mura Chara 1411 is inside the village, is part of a sequence of closely located points north of the previous Boro chara on the west of Vunobir-Shamserganj road. This connectivity ensures that if one point of the chara is reached, others can be easily located. Similar to Boro Chara, most streams in the area intersect access roads at several locations, enhancing accessibility.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife. The stream's flow likely varies with monsoons, with higher water levels during the rainy season and reduced flow in the dry season.
Ecological Importance	Patria Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat**, Rhesus Monkey, species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness. Additionally, Silica from the stream contributes to nutrient cycling, supporting phytoplankton growth in downstream water bodies. Mura Chara drains into haor, playing a role in regional water balance and water drainage.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and robi crop cultivation**.

The following figure shows the existing feature of the Quarry

Figure 11-51: Existing Features of the Mura chara Quarry



South Side



North Western Side



South Eastern Side



North Eastern Side



North Side



South Side



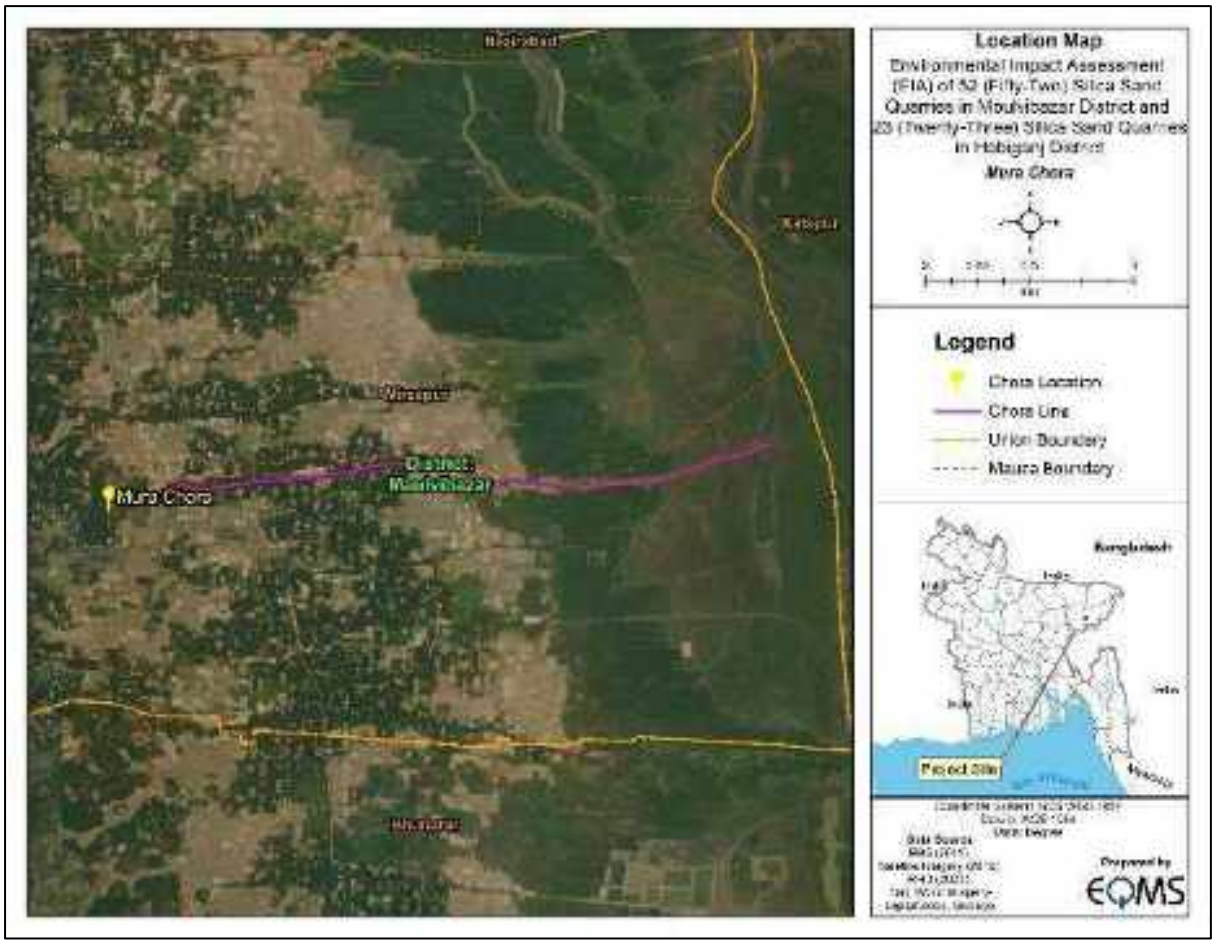
North Side



South western Side

The following figure shows the location within the mouza boundary of the Mura Chara Quarry and surrounding features of the sand Quarry.

Figure 11-52: Location within the Mouza Boundary of the Mura Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-27: Kali Chara

The following table shows the details of the Kali chara Quarry.

Table 11-27: Details of the Kali chara Quarry

Items	Description
Name of the Chara	Kali Chara
Geographical Coordinate	24°23'20.562"N 91°37'50.37"E
Silica enriched Mouja	Dakkhin Pachaun
Total area	1.45 Acre
Volume of sand	Significant
Location	Village: Dakkhin Pachaun; Mouja: Dakkhin Pachaun; Union: Mirzapur; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Tea state where it derives, Village, Homestead Vegetation, Agricultural land and Hill **North:** Village road leading to Mirzapur bazar, Village, Homestead Vegetation, Agricultural land **East:** Hail haor where it drains, Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Haor. **South:** Baulashir bazar and Vunobir land office, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Kali Chara 602, is part of a sequence of closely located points just north of the previous Mura chara on the bridge of a village road. This connectivity ensures that if one point of the chara is reached, others can be easily located. Similar to Mura Chara, most streams in the area intersect access roads at several locations, enhancing accessibility. This point is close to the tea state inside the village and near a religious Mazar.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife. As flowing through the human settlement this chara has erosion issues and people on the bank of chara urged for the construction of the bank.
Ecological Importance	kali Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Rhesus Monkey**, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness. Lush vegetation along the stream banks helps prevent soil erosion, provides shade, and maintains a stable microclimate. Additionally, Silica from the stream contributes to nutrient cycling, supporting phytoplankton growth in downstream water bodies. Kali Chara drains into haor, playing a role in regional water balance and water drainage.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and tea cultivation** although tea gardens do not frequently use chara water.

The following figure shows the existing feature of the Kali chara Quarry.

Figure 11-53: Existing Features of the Kali chara Quarry



North Side



North Western Side



North Eastern Side



West Side of point 932



East Side



South Eastern Side



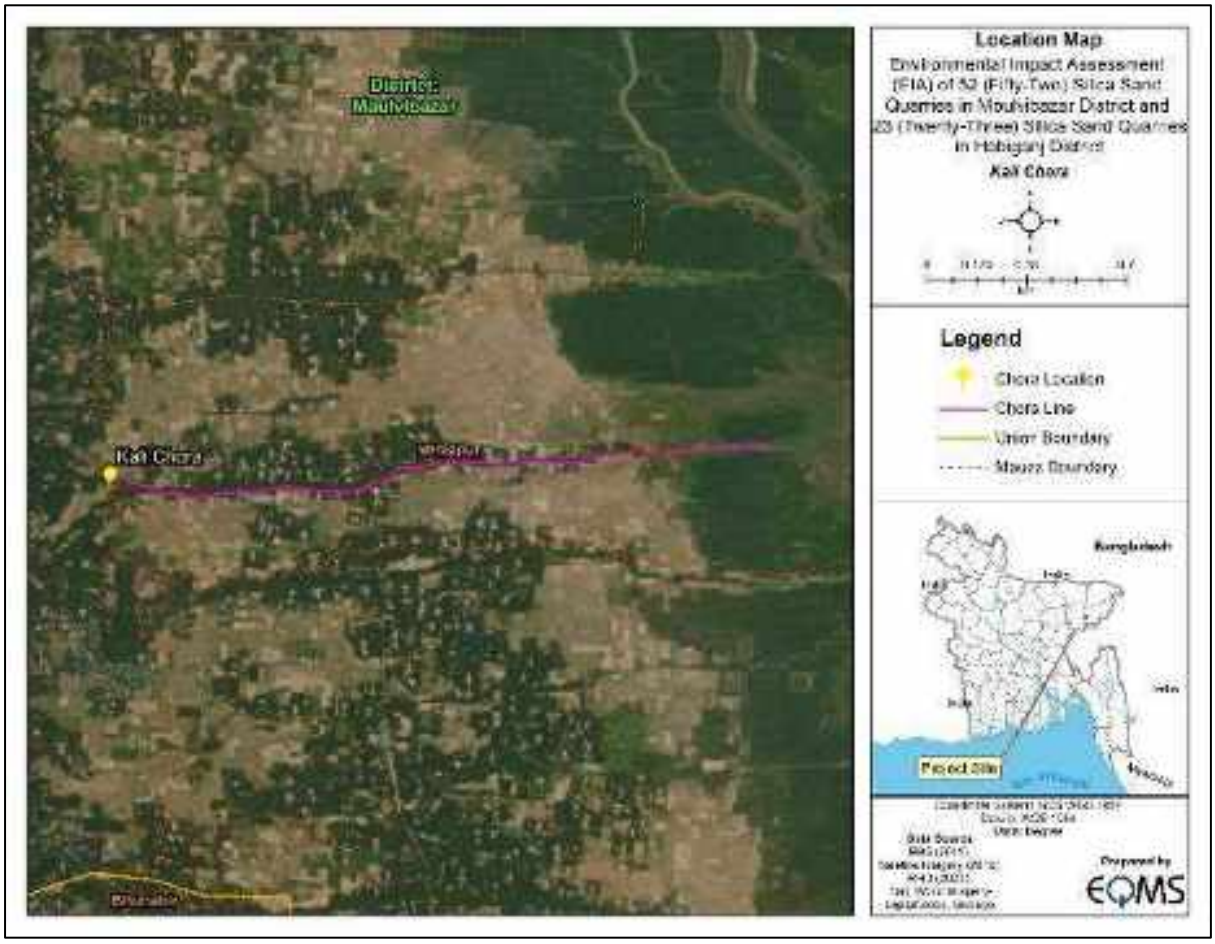
Sand Collection from Chara



South Side of point 932

The following figure shows the location within the mouza boundary of the Kali Chara Quarry and surrounding features of the sand Quarry.

Figure 11-54: Location within the Mouza Boundary of the Kali Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-28: Jholom Chara

The following table shows the details of the Jholom chara Quarry.

Table 11-28: Details of the Jholom chara Quarry

Items	Description
Name of the Chara	Jholom Chara
Geographical Coordinate	24°23'39.171"N 91°37'44.909"E
Silica enriched Mouja	Jatrapasa, Dakkhin Pachaun
Total area	1.66 Acre
Volume of sand	Significant
Location	Village: Uttar Boulachara; Mouja: Jatrapasa; Union: Mirzapur; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Tea state where it derives, Village, Homestead Vegetation, Agricultural land and Hill **North:** Mirzapur bazar, Village, Homestead Vegetation, Agricultural land **East:** Hail haor where it drains, Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Haor. **South:** Baulashir bazar and previous point of Kali chara mazar, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Jolom Chara 1378, is part of a sequence of closely located points just north of the previous Kali chara near the village road. This connectivity ensures that if one point of the chara is reached, others can be easily located. Similar to other Chara, most streams in the area intersect access roads at several locations, enhancing accessibility. At the east side of the location there have bridge where the chara crosses village road. On the other hand, at the bridge point of 1410, here several points of the chara divided on east-west direction. i.e., 1410, 1451 & 1378 east of the bridge and 1342 & 1364 west of the bridge.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife. The region around Jholom Chara is characterized by hilly terrain, tea gardens, and semi-evergreen forests, which influence sediment transport and water chemistry.
Ecological Importance	Jholom Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat**, a species considered threatened. As per local consultation, a fishing cat were spotted a month ago around 200 m away of the point confirmed after pictorial verification. The bush is also a haven for various bird species, contributing to the area's ecological richness. Located close to the hill, this chara transport huge loads of sediment to Hail haor and Baikka beel which are important for Migratory birds and Fish Biodiversity. Floke of winter birds found near the point of 2059 which is close to haor. Additionally, Silica from the stream contributes to nutrient cycling, supporting phytoplankton growth in downstream water bodies. Jholom

	Chara drains into haor, playing a role in regional water balance and water drainage.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and tea cultivation**.

The following figure shows the existing feature of the Jholom chara Quarry.

Figure 11-55: Existing Features of the Jholom chara Quarry



North Side



North Western Side



North Eastern Side



West Side



East Side



South Eastern Side of the point 2031



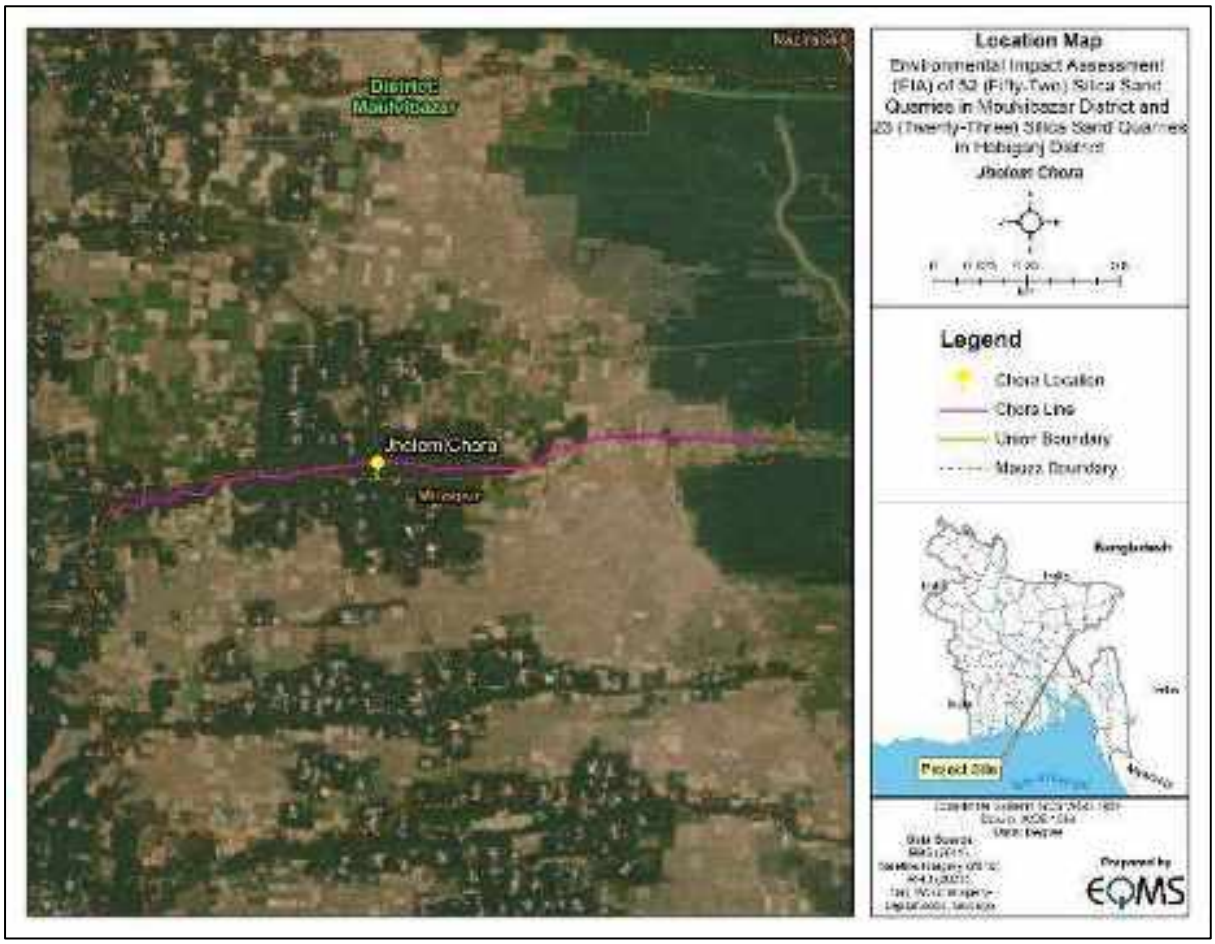
Sand Collection from Chara at the point 1410



South Side of the point 1410

The following figure shows the location within the mouza boundary of the Jholom Chara Quarry and surrounding features of the sand Quarry.

Figure 11-56: Location within the Mouza Boundary of the Jholom Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-29: Fhul Chara

The following table shows the details of the Fhul chara Quarry.

Table 11-29: Details of the Fhul chara Quarry

Items	Description
Name of the Chara	Fhul Chara
Geographical Coordinate	24°17'19.514"N 91°43'24.715"E
Silica enriched Mouja	Ashidron
Total area	0.47 Acre
Volume of sand	Limited
Location	Village: Ashidron; Mouja: Ashidron; Union: Ashidron; Upzila: Sreemangal
Direction of Chara	West- East
Project Surrounding	**West:** Hail haor where it drains, Village, Homestead Vegetation, Agricultural land and Hill **North:** Sreemongol town, Village, Homestead Vegetation, Agricultural land

	East: Tea state where it derives, Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Haor. **South:** Ashidron land office, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Fhul Chara 2585, is part of a sequence of closely located points north of Ashidron union parishad and west of the Sindhurkhan road leading to Sreemongol town. This connectivity ensures that if one point of the chara is reached, others can be easily located. This chara intersects access roads at several locations, enhancing accessibility. This chara is close to Bilash chara and shares the point with Bilash chara in Ashidron mouja.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife. Flowing through the dense locality this chara serves for the drainage of waste, rain water and flood water.
Ecological Importance	Fhul Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness. Fhul Chara drains into Bilashriver, playing a role in regional water balance and water drainage.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and Robi crop cultivation**.

The following figure shows the existing feature of the Fhul chara Quarry.

Figure 11-57: Existing Features of the Fhul chara Quarry



South Side



North Eastern Side



South Eastern Side



West Side



East Side



South Western Side

The following figure shows the location within the mouza boundary of the Fhul Chara Quarry and surrounding features of the sand Quarry.

Figure 11-58: Location within the Mouza Boundary of the Fhul Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-30: Longo Chara

The following table shows the details of the Longo chara Quarry.

Table 11-30: Details of the Longo chara Quarry

Items	Description
Name of the Chara	Longo Chara
Geographical Coordinate	24°19'50.319"N 91°50'15.02"E
Silica enriched Mouja	Madhobpur, Kumrakapn
Total area	2.15 Acre
Volume of sand	Significant
Location	Village: Dolaiparl; Mouja: Madhobpur; Union: Madhobpur; Upzila: Kamalganj
Direction of Chara	West- East
Project Surrounding	**West:** Tea state where it derives, Village, Homestead Vegetation, Agricultual land and Hill **North:** Madhobpur bazar, Village, Homestead Vegetation, Agricultual land

	East: Dolai river where it drains, Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation. **South:** Kamalgan, Village, Homestead Vegetation, Agricultual land
Access and Connectivity	The specific point, Longu Chara 2501, is part of a sequence of closely located points and north of the previous Jhopla chara on the Baniugach - Madhobpur road. This connectivity ensures that if one point of the chara is reached, others can be easily located. Similar to other Chara, most streams in the area intersect access roads at several locations, enhancing accessibility. This chara is close to Monipur Lalitkola academy, Kamalganj. Indigenous Khasia tribe reside near the chara and use chara water for daily activities.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife. There have several important waterbodies and eserve forest in this area like Madhobpur lake, Lawachara National Park where chara water plays vital role in the water chemistry of this area.
Ecological Importance	Longu Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat**, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness. Additionally, Silica from the stream contributes to nutrient cycling, supporting phytoplankton growth in downstream water bodies. Longu Chara drains into Dhalai river, playing a role in regional water balance and water drainage.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and crop cultivation**. Indigenous khasia tribe lives at the end most point of this chara close to its origin hill and have significant dependence on chara water.

The following figure shows the existing feature of the Longo chara Quarry.

Figure 11-59: Existing Feature of the Longo chara Quarry



North Side



North Western Side



South Eastern Side of other point



East Side

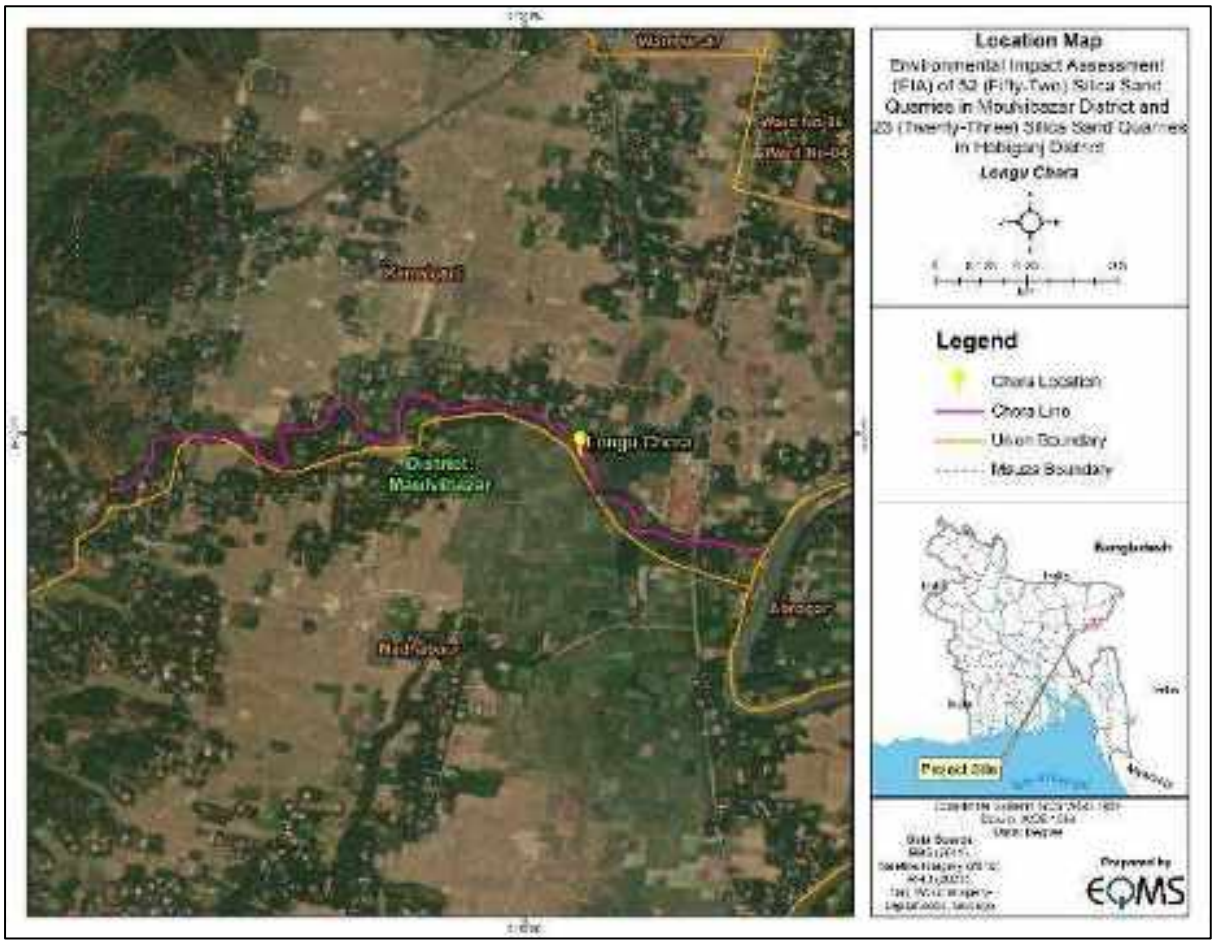


Sand Collection from Chara

South Side of other point

The following figure shows the location within the mouza boundary of the Longo Chara Quarry and surrounding features of the sand Quarry.

Figure 11-60: Location within the Mouza Boundary of the Longo Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-31: Jhopla Chara

The following table shows the details of the Jhopla chara Quarry.

Table 11-31: Details of the Jhopla chara Quarry

Items	Description
Name of the Chara	Jhopla Chara
Geographical Coordinate	24°17'50.532"N 91°50'3.959"E
Silica enriched Mouja	Madhobpur, Hiramoti
Total area	1.70 Acre
Volume of sand	Significant
Location	Village: Jophlachara; Mouja: Madhobpur; Union: Madhobpur; Upzila: Kamalganj
Direction of Chara	West- East
Project Surrounding	**West:** Tea state where it derives, Village, Homestead Vegetation, Agricultual land and Hill **North:** Kamalganj, Bhanugach, Village, Homestead Vegetation, Agricultual land

	East: Dhalai river where it drains, Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation. **South:** Madhobpour bazar and Vunobir land office, Village, Homestead Vegetation, Agricultual land
Access and Connectivity	The specific point, Jhopla Chara 580, is part of a sequence of closely located points and on a bridge of Kamalganj - Madhobpur road. The bridge divided the Madhobpur and Hiramoti mouja, South of the bridge Hiramati moja and North Madhobpur Moja. This connectivity ensures that if one point of the chara is reached, others can be easily located. Most streams in the area intersect access roads at several locations, enhancing accessibility. This chara is good width and local Monipuri people use it for daily activities.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Jhopla Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Rhesus Monkey**, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness. This chara falls into Dhalai river which are important for aquatic species and Fish Biodiversity. Additionally, Silica from the stream contributes to nutrient cycling, supporting phytoplankton growth in downstream water bodies. Jhopla Chara drains into river, playing a role in regional water balance and water drainage.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and crop cultivation**. Local indigenous Monipuri people use it water.

The following figure shows the existing feature of the Jhopla Chara Quarry.

Figure 11-61: Existing Features of the Jhopla Chara Quarry



North Side



North Eastern Side



South Eastern Side of other point



West Side



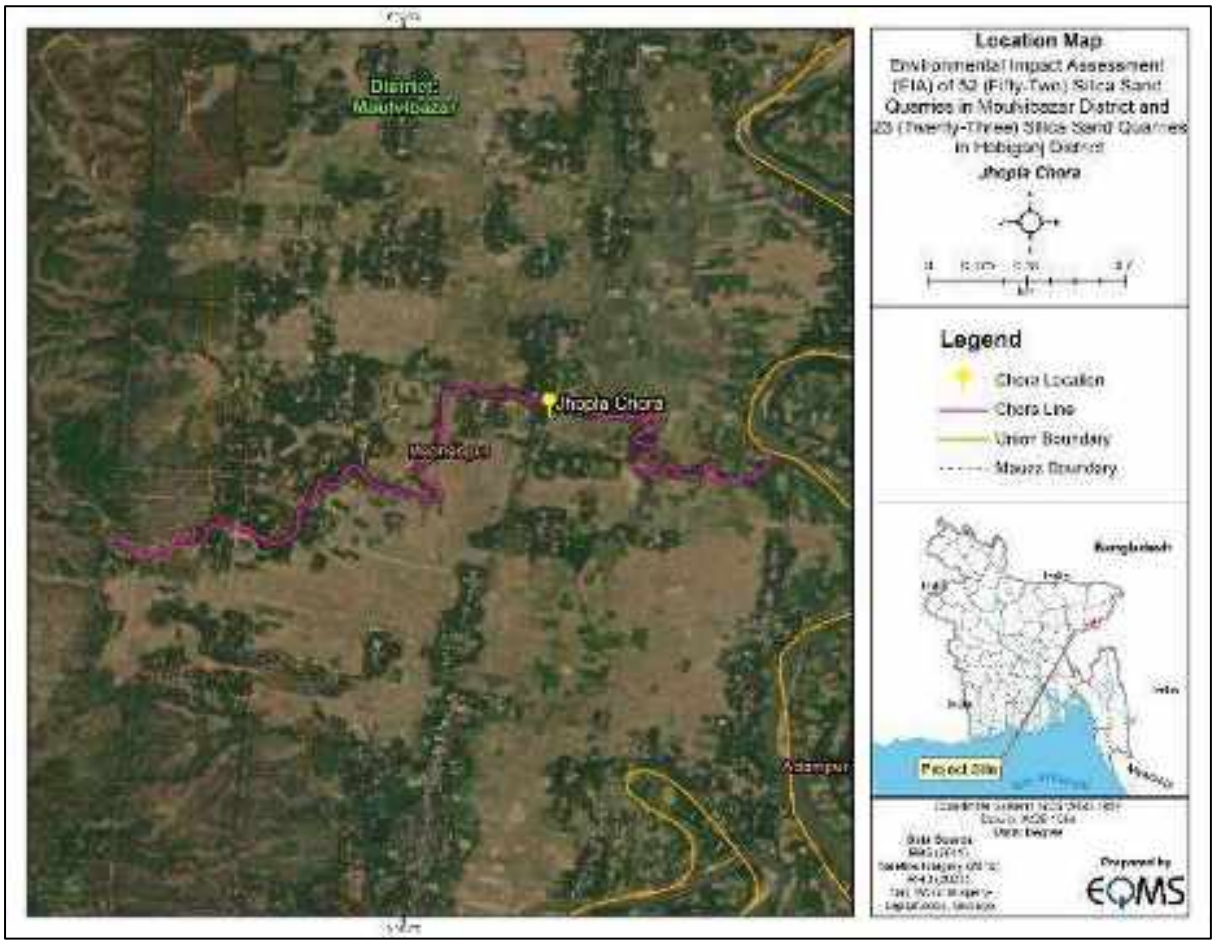
South Side



South Western Side

The following figure shows the location within the mouza boundary of the Jhopla Chara Quarry and surrounding features of the sand Quarry.

Figure 11-62: Location within the Mouza Boundary of the Jhopla Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-32: Jalia Chara

The following table shows the details of the Jalia chara Quarry.

Table 11-32: Details of the Jalia chara Quarry

Items	Description
Name of the Chara	Jalia Chara
Geographical Coordinate	24°19'47.39"N 91°39'8.204"E
Silica enriched Mouja	Rampasha, Badeobahata
Total area	0.96 Acre
Volume of sand	Significant
Location	Village: Badeobahata; Mouja: Badeobahata; Union: Kamalganj Sadar; Upzila: Kamalganj
Direction of Chara	North - South
Project Surrounding	**West:** Tea state where it derives, Village, Homestead Vegetation, Agricultural land and Hill **North:** Canal, Village, Homestead Vegetation, Agricultural land

	East: Thakur Bazar, Village, Homestead Vegetation, Agricultural Land. **South:** Bangaon primary school and Kamalganj Union Parishad, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Jalia Chara 805, is part of a sequence of closely located points and just west of the thakur bazar. Jalia chara on the Vanugach – Shamser nagar road.
Environmental Features	The chara is surrounded by lush vegetation, including bamboo groves, natural herbs, shrubs, and wood bushes, interspersed with agricultural lands. Scattered residential households can be found in the surrounding areas. The dense bushland and greenery around the chara provide a habitat for a variety of wildlife.
Ecological Importance	Jalia Chara and its encompassing bushland boast remarkable biodiversity. Through local consultations, it has been noted that the Golden Jackal is a common sight in this region, alongside the threatened Fishing Cat. The bushland also serves as a sanctuary for numerous bird species, enhancing the area's ecological wealth.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and tea cultivation**.

The following figure shows the existing feature of the Jalia Chara Quarry.

Figure 11-63: Existing Features of the Jalia Chara Quarry



South Side



East Side



South Eastern Side



North Western Side



North Eastern Side



South Western Side



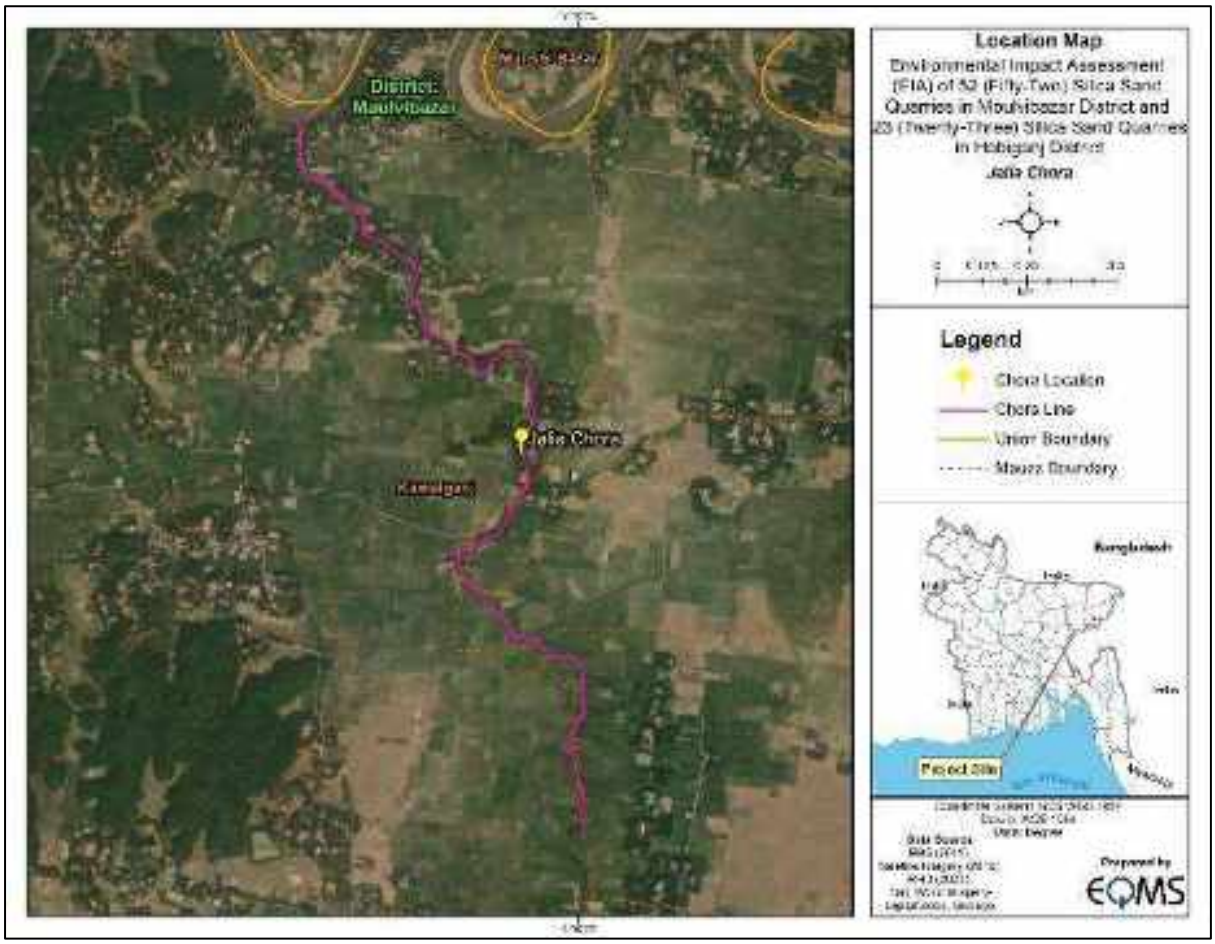
South Western Side



South Western Side

The following figure shows the location within the mouza boundary of the Jalia Chara Quarry and surrounding features of the sand Quarry.

Figure 11-64: Location within the Mouza Boundary of the Jalia Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-33: Lagata Chara

The following table shows the details of the Lagata chara Quarry.

Table 11-33: Details of the Lagata chara Quarry

Items	Description
Name of the Chara	Lagata Chara
Geographical Coordinate	24°21'48.918"N 91°53'2.64"E
Silica enriched Mouja	Govindopur
Total area	1.08 Acre
Volume of sand	Significant
Location	Village: Kamodpur; Mouja: Govindopur; Union: Alinagar; Upazila: Kamalganj
Direction of Chara	North -South

Project Surrounding	**West:** Village, Homestead Vegetation, Agricultural Land , Chalim Bazar, Alinagar Union Parishad **North:** Village, Homestead Vegetation, Agricultural Land, Masjid, Mandir, Halima Bazar **East:** Village, Homestead Vegetation, Agricultural Land, Rubber Field. **South:** Village, Homestead Vegetation, Agricultural Land, Barampur Jamir Uddin Primary School
Access and Connectivity	The specific point, Lagata Chara 1206, is part of a sequence of closely located points just north of the Dhamalia chara on the Shamsernagar - Vanugach road. This connectivity ensures that if one point of the chara is reached, others can be easily located.
Environmental Features	The Chara is surrounded by lush vegetation, including towering bamboo groves, natural herbs, shrubs, and wood bushes, along with neatly arranged agricultural lands. Scattered residential households blend seamlessly into this verdant landscape. This dense bushland and vegetation provide a thriving habitat for diverse wildlife. Birds, small mammals, and insects find refuge and sustenance within this green sanctuary, creating a harmonious balance between human habitation and nature's wild beauty.
Ecological Importance	Lagata Chara and its surrounding bushland are teeming with biodiversity. Local consultations have revealed frequent sightings of the Golden Jackal, along with the threatened Fishing Cat. The dense vegetation also serves as a haven for various bird species, adding to the area's ecological richness. Silica from the stream contributes to nutrient cycling, which supports phytoplankton growth in downstream water bodies. Kala Chara drains into the Kushiyara River, playing a crucial role in regional water balance and drainage.
Livelihood Importance	The chara plays a crucial role in supporting regional agriculture by providing a reliable source of water. Local residents rely on its waters for various domestic tasks such as bathing and washing clothes, although it is not used for drinking purposes. The presence of silica-rich sediments in the chara contributes to the fertility of the surrounding soils, greatly benefiting nearby agricultural lands and enhancing crop yields.

The following figure shows the existing feature of the Lagata Chara Quarry.

Figure 11-65: Existing Features of the Lagata Chara Quarry



East Side



South Side



East Side



North Side



South Side



North Side



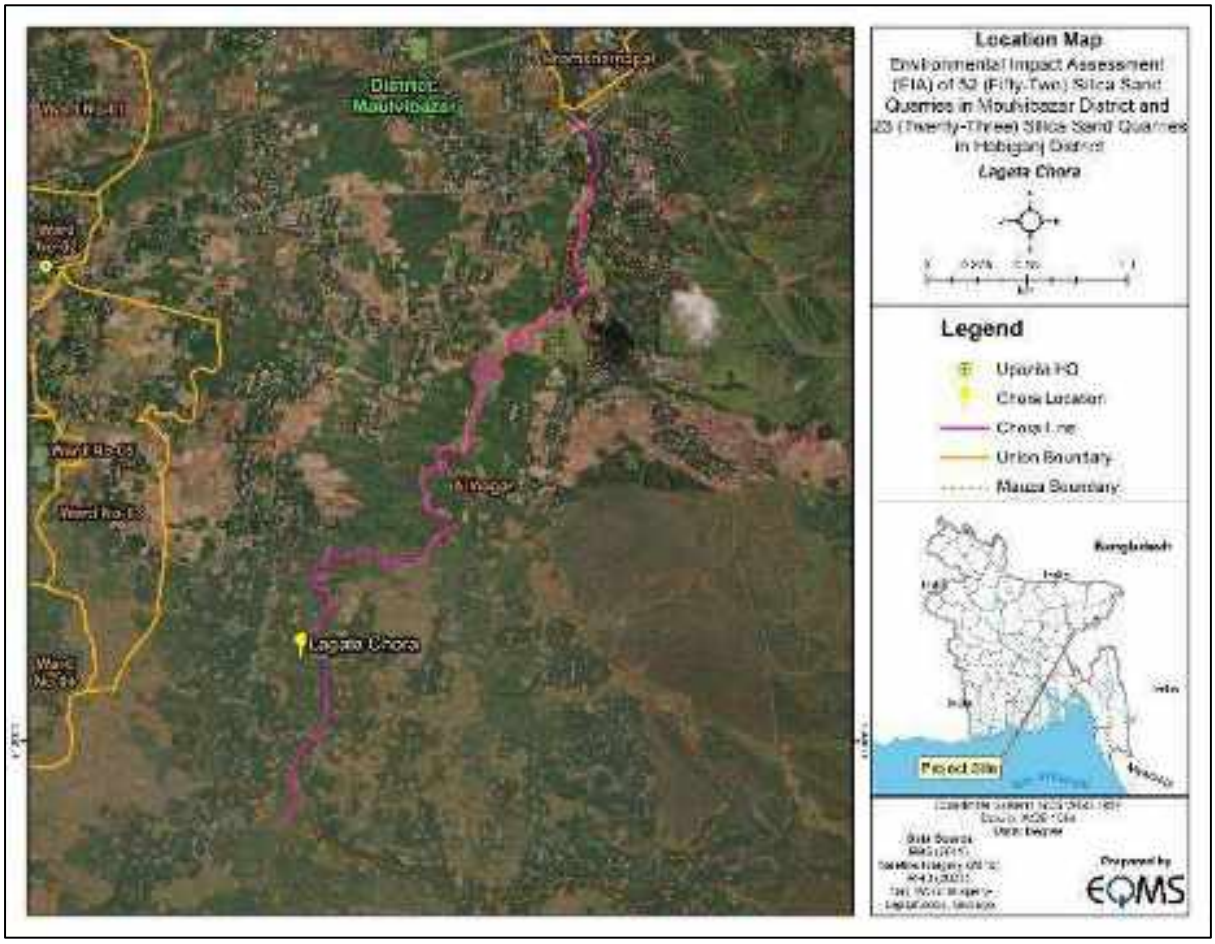
West Side



North Eastern Side

The following figure shows the location within the mouza boundary of the Lagata Chara Quarry and surrounding features of the sand Quarry.

Figure 11-66: Location within the Mouza Boundary of the Lagata Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-34: Dhamalia Chara

The following table shows the details of the Dhamalia chara Quarry.

Table 11-34: Details of the Dhamalia chara Quarry

Items	Description
Name of the Chara	Dhamalia Chara
Geographical Coordinate	24°22'21.756"N 91°53'39.84"E
Silica enriched Mouja	Dakkhiner Pahar
Total area	2.27 Acre
Volume of sand	Significant
Location	Village: Borochek; Mouja: Dakkhiner Pahar; Union: Shamsernagar; Upzila: Kamalganj
Direction of Chara	West- East
Project Surrounding	**West:** Village, Homestead Vegetation, Agricultural Land **North:** Shamsernagar bazar, Village, Homestead Vegetation, Agricultural land **East:** Village, Homestead Vegetation, Agricultural Land and Tea Garden, Shamsernagar Golf field. **South:** Village, Homestead Vegetation, Agricultural Land
Access and Connectivity	The specific point, Dhamalia Chara 1274, is part of a sequence of closely located points and just north Shamsernagar Bazar and Airport. Dhamalia Chara intersects access roads.
Environmental Features	The *chara* is surrounded by dense greenery, including bamboo groves, natural herbs, shrubs, and small trees. Nearby, there are also agricultural fields and scattered houses. The thick vegetation provides a home for various wildlife, where birds, insects, and small animals live safely among the bushes and trees. The area feels peaceful and full of life, with nature and people coexisting side by side.
Ecological Importance	Dhamalia Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness. Dhamalia Chara drains into Kushiyara River, playing a role in regional water balance and water drainage.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **cultivation**.

The following figure shows the existing feature of the Dhamalia Chara Quarry.

Figure 11-67: Existing Features of the Dhamalia Chara Quarry



North Eastern Side



North Western Side



North Western Side



South Eastern Side



North Western Side



North Side



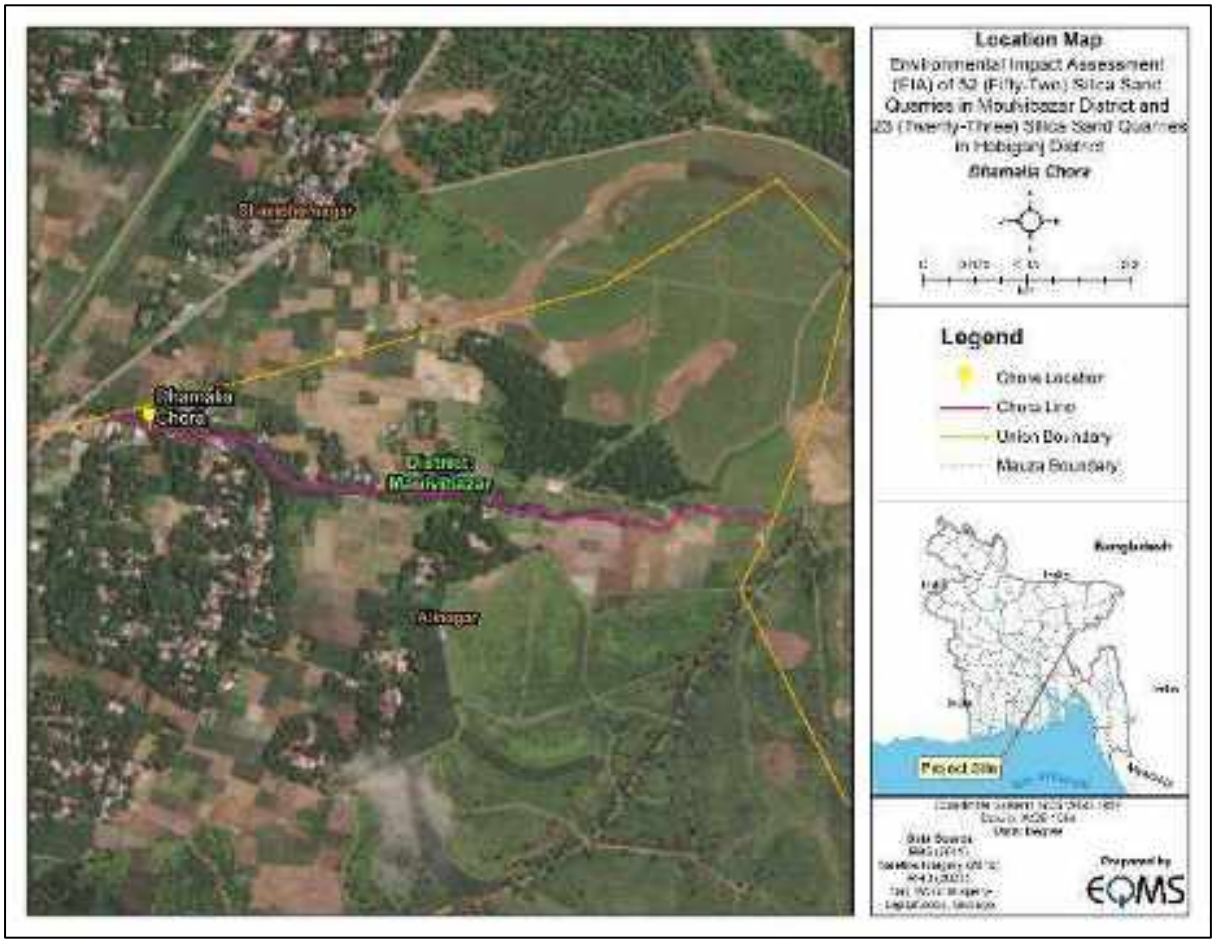
South Western Side



North Western Side

The following figure shows the location within the mouza boundary of the Dhamalia Chara Quarry and surrounding features of the sand Quarry.

Figure 11-68: Location within the Mouza Boundary of the Dhamalia Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-35: Dewra Chara

The following table shows the details of the Dewra chara Quarry.

Table 11-35: Details of the Dewra chara Quarry

Items	Description
Name of the Chara	Dewra Chara
Geographical Coordinate	24°23'20.916"N 91°55'53.052"E
Silica enriched Mouja	Shamsernagar Tea Garden
Total area	7.01 Acre
Volume of sand	Significant
Location	Village: Balurghat Bilerpar; Mouja: Shamsernagar Tea Garden; Union: Shamsernagar ; Upzila: Kamalganj
Direction of Chara	South -North
Project Surrounding	**West:** Tea state where it derives, Village, Homestead Vegetation, Agricultural land and Hill **North:** Pirer bazar, Village, Homestead Vegetation, Agricultural land **East:** Tea state where it derives, Village, Homestead Vegetation, Agricultural land and Hill **South:** Tea state where it derives, Village, Homestead Vegetation, Agricultural land and Hill
Access and Connectivity	Central to the image is the Bangladesh Air Force Station, accompanied by the adjacent Recruits Training School BAF. To the west, the Swiss Valley Resort is nestled alongside the Sylhet-Srimangal-Brahmanbaria Road, while BAF Shaheen College Shamshernagar lies to the south. Marked by a yellow pin, Deora Chara can be found to the east, with Pirer Bazar and Hazipur Post Office further northeast. The Khanihati Play Ground is situated to the northeast of the Air Force Station.
Environmental Features	The chara is bordered by a vibrant tapestry of dense vegetation, which includes bamboo groves, natural herbs, shrubs, and wood bushes. These green expanses are interspersed with agricultural lands, creating a rich and varied landscape. Residential households are dotted around the vicinity, blending harmoniously with the natural environment. The dense bushland and lush vegetation surrounding the chara form a vital habitat for a diverse array of wildlife, fostering a thriving ecosystem.
Ecological Importance	Dewra Chara and the encompassing bushland are teeming with biodiversity. Local consultations have indicated that the Golden Jackal is a frequent presence in the area, alongside the threatened Fishing Cat. The bushland serves as a sanctuary for numerous bird species, significantly enriching the local ecosystem. Dewra Chara also plays a crucial role in the regional water balance and drainage by emptying into the haor. This unique habitat underscores the importance of preserving its ecological wealth for the benefit of both wildlife and the community.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and tea cultivation**.

The following figure shows the existing feature of the Dewra chara Quarry.

Figure 11-69: Existing Features of the Dewra Chara Quarry



North Eastern Side



North Side



North Eastern Side



East Side



South Eastern Side



South Western Side



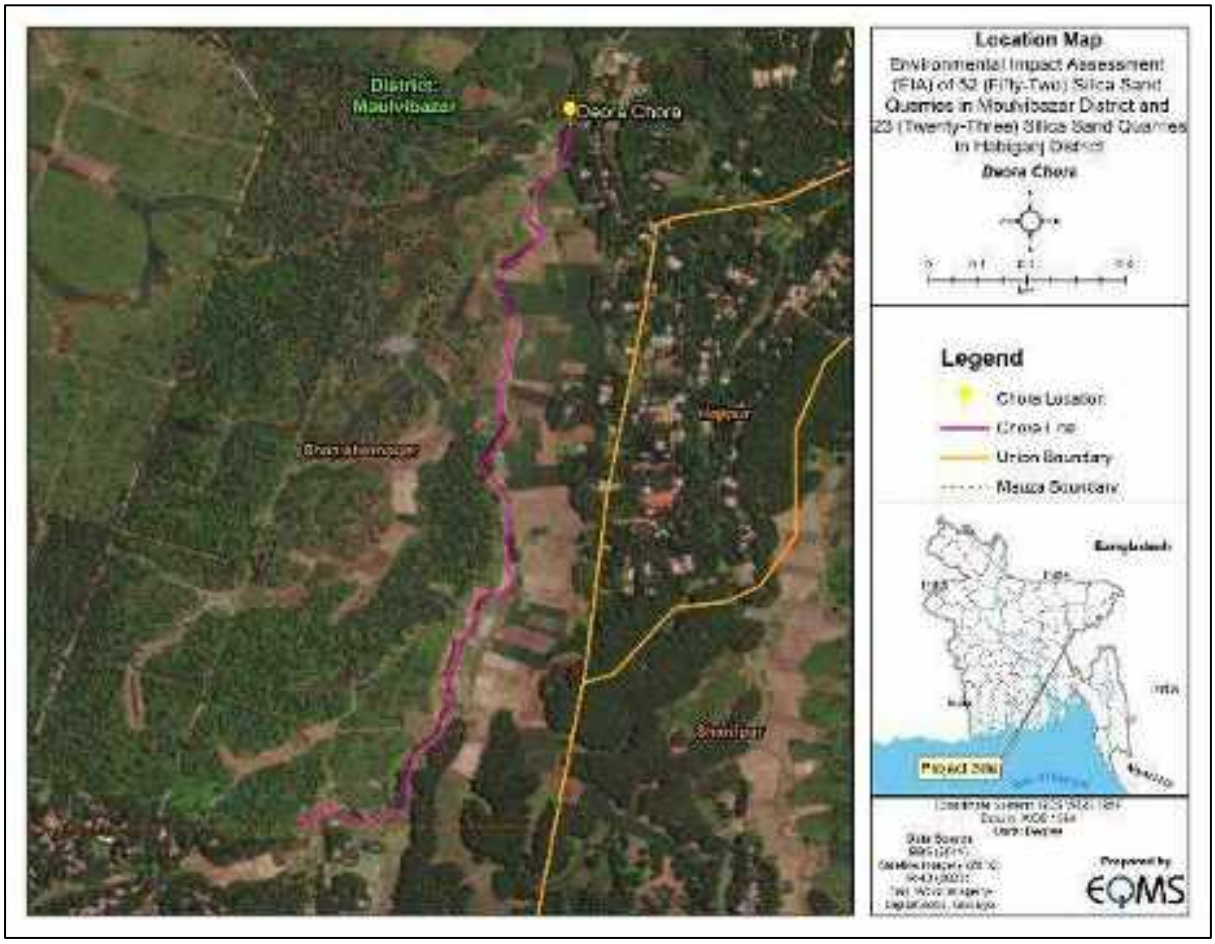
South Side



South Side

The following figure shows the location within the mouza boundary of the Deora Chara Quarry and surrounding features of the sand Quarry.

Figure 11-70: Location within the Mouza Boundary of the Deora Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-36: Shun Chara

The following table shows the details of the Shun chara Quarry.

Table 11-36: Details of the Shun chara Quarry

Items	Description
Name of the Chara	Shun Chara
Geographical Coordinate	24°19'36.204"N 91°52'56.1"E
Silica enriched Mouja	Sreenathpur, Tilokpur, Rameshowpur
Total area	5.30 Acre
Volume of sand	Significant
Location	Village: Shun Chara Bazar; Mouja: Sreenathpur; Union: Alinagar; Upzila: Kamalganj
Direction of Chara	East -North
Project Surrounding	**West:** Village, Homestead Vegetation, Agricultural Land **North:** Shah Sajjad Majar, Yogibil government primary school, Village, Homestead Vegetation, Agricultural land **East:**Tea state where it derives, Village, Homestead Vegetation, Agricultural land and Hill **South:** Amtola bazar and Kamarchara tea garden, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	Central to the map is Shun Chara, surrounded by areas such as Sunchara Bazar, Papon Cloths Store, and Suncherra Resort. The map also features important educational and cultural sites, including the Chitilla Govt. Primary School and Hazrat Shah Sajjad Mazar.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Shun Chara and the encompassing bushland are teeming with biodiversity. Local consultations have indicated that the Golden Jackal is a frequent presence in the area, alongside the threatened Fishing Cat. The bushland serves as a sanctuary for numerous bird species, significantly enriching the local ecosystem. Shun Chara also plays a crucial role in the regional water balance and drainage by emptying into the haor. This unique habitat underscores the importance of preserving its ecological wealth for the benefit of both wildlife and the community.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and tea cultivation**.

The following figure shows the existing feature of the Shun chara Quarry.

Figure 11-71: Existing Features of the Shun chara Quarry



South Eastern Side



East Side



North Eastern Side



South Western Side



South Eastern Side



East Side and Sand Collection



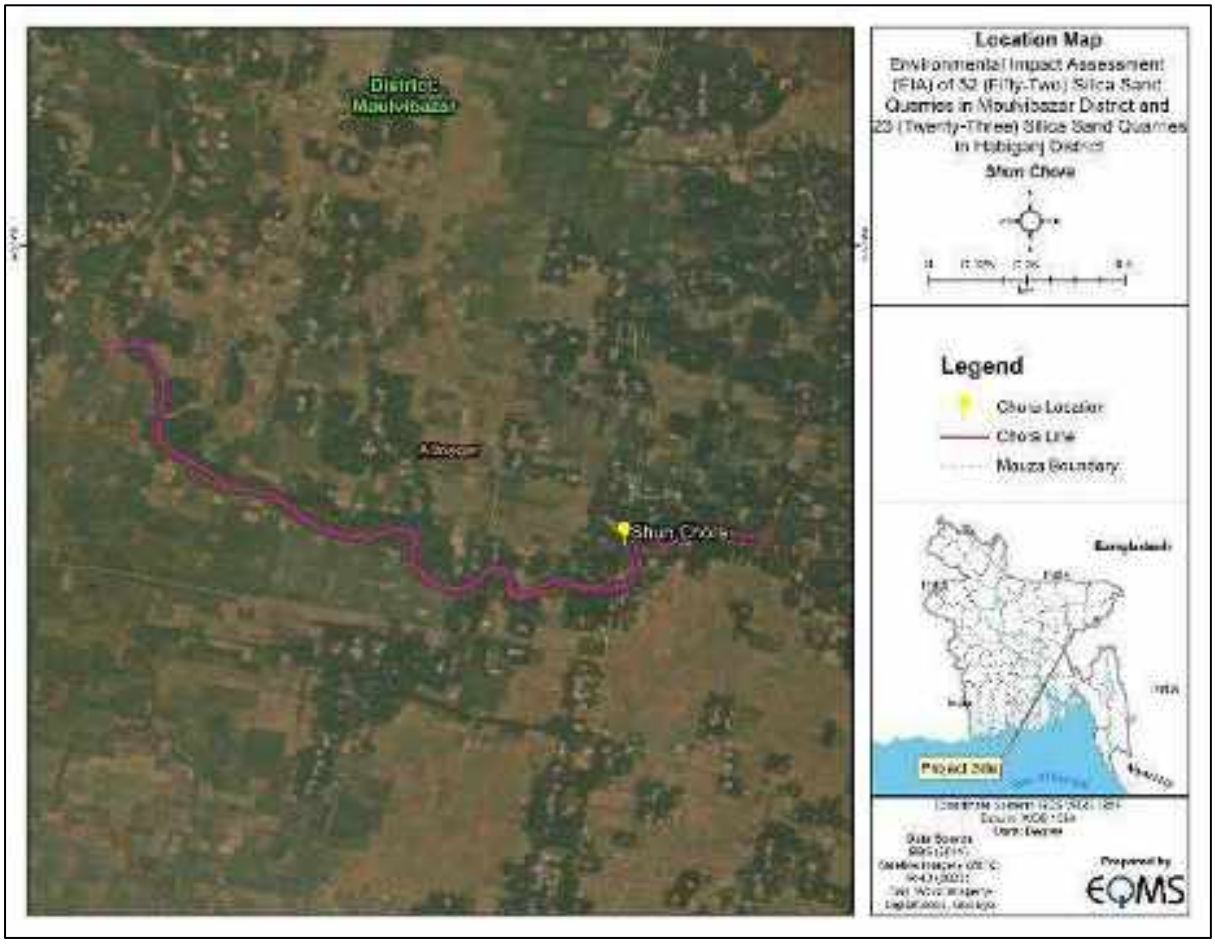
North Eastern Collection from Chara



South Eastern Side

The following figure shows the location within the mouza boundary of the Shun Chara Quarry and surrounding features of the sand Quarry.

Figure 11-72: Location within the Mouza Boundary of the Shun Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-37: Marua Chara

The following table shows the details of the Marua chara Quarry.

Table 11-37: Details of the Marua chara Quarry

Items	Description
Name of the Chara	Marua Chara
Geographical Coordinate	24°38'41.766"N 91°55'2.64"E; 24°38'32.828"N 91°55'47.892"E
Silica enriched Mouja	Lalapur, Nijgaon
Total area	8.76 Acre
Volume of sand	Significant
Location	Village: Lalapur; Mouja: Lalapur; Union: Uttarbagh; Upzila: Rajnagar Village: Nijgaon; Mouja: Nijgaon; Union: Uttarbagh; Upzila: Rajnagar
Direction of Chara	West- East
Project Surrounding	**West:** River,Noluamuk bazar, Village, Homestead Vegetation, Agricultural land and pukhuri beel. **North:** Kachua bazar and Chelar Chok bazar, Village, Homestead Vegetation, Agricultural land **East:** Shahjala Fertilizer company, Village, Homestead Vegetation, Agricultural Land. **South:** Banod bazar and Kalamua, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	A river meanders through the area, providing a natural divide that runs alongside several roads and significant locations. Noteworthy points of interest include Purbo Gonjpur High School, Paban Tajamul Ali Square, and Puan Bazar, all of which contribute to the region's vibrant community life. Additionally, the image highlights the Shahjalal Fertilizer Company Ltd (SFCL), NGFF Market, and Marua Chara, underscoring the area's industrial and commercial facets. Main roads such as the Sherpur-Fenchugonj Road and N208 stand out, facilitating connectivity across the region.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Marua Chara and the encompassing bushland are teeming with biodiversity. Local consultations have indicated that the Golden Jackal is a frequent presence in the area, alongside the threatened Fishing Cat. The bushland serves as a sanctuary for numerous bird species, significantly enriching the local ecosystem. Marua Chara also plays a crucial role in the regional water balance and drainage by emptying into the river. This unique habitat underscores the importance of preserving its ecological wealth for the benefit of both wildlife and the community.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and tea cultivation**.

The following figure shows the existing feature of the Marua Chara Quarry

Figure 11-73: Existing Features of the Marua chara Quarry



West Side



South Eastern Side



East Side



Sand Collection Site



South Side



South Side and Sand Collection



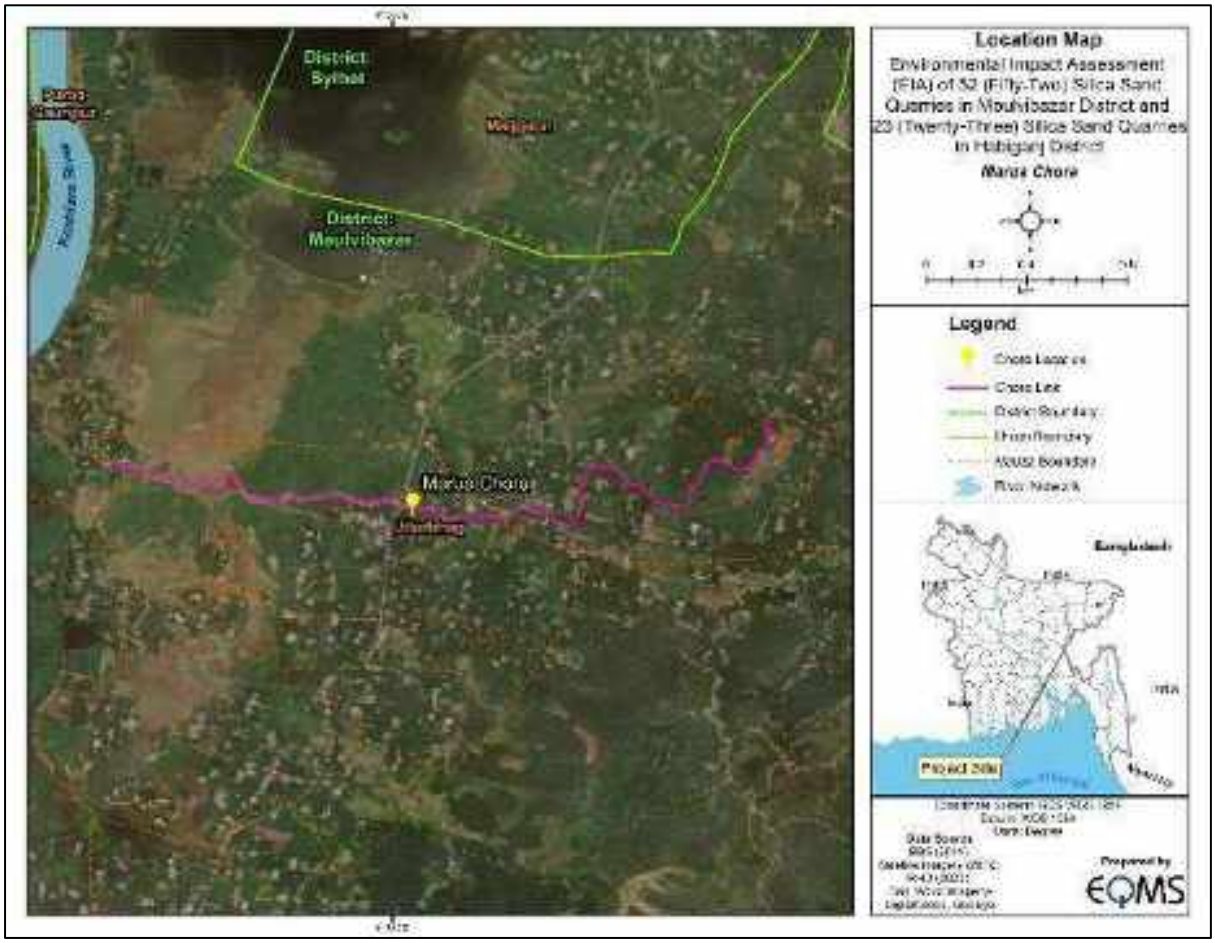
East Chara



East Side

The following figure shows the location within the mouza boundary of the Marua Chara Quarry and surrounding features of the sand Quarry.

Figure 11-74: Location within the Mouza Boundary of the Marua Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-38: Kalamua Chara

The following table shows the details of the Kalamua chara Quarry.

Table 11-38: Details of the Kalamua chara Quarry

Items	Description
Name of the Chara	Kalamua Chara
Geographical Coordinate	24°37'28.098"N 91°54'37.278"E
Silica enriched Mouja	Mukutpur, Uttarbagh
Total area	5.06 Acre
Volume of sand	Significant
Location	Village: Mukutpur; Mouja: Mukutpur; Union: Uttarbagh; Upzila: Rajnagar
Direction of Chara	West- East
Project Surrounding	**West:** River,Noluamuk bazar, Village, Homestead Vegetation, Agricultural land and pukhuri beel. **North:** Kachua bazar and Chelar Chok bazar, Village, Homestead Vegetation, Agricultural land **East:** Shahjala Fertilizer company, Village, Homestead Vegetation, Agricultural Land. **South:** Banod bazar and Kalamua, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	A winding river traverses the landscape, creating a natural boundary that parallels multiple roads and important landmarks. Key points of interest feature Purbo Gonjpur High School, Paban Tajamul Ali Square, and Puan Bazar, all pivotal to the region's active community life. The image further accentuates the industrial and commercial significance of the area, showcasing the Shahjalal Fertilizer Company Ltd (SFCL), NGFF Market, and Marua Chara. Prominent roads such as the Sherpur-Fenchugonj Road and N208 are clearly visible, enhancing the region's connectivity and accessibility.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Kalamua Chara and the encompassing bushland are teeming with biodiversity. Local consultations have indicated that the Golden Jackal is a frequent presence in the area, alongside the threatened Fishing Cat. The bushland serves as a sanctuary for numerous bird species, significantly enriching the local ecosystem. Kalamua Chara also plays a crucial role in the regional water balance and drainage by emptying into the river and pukhuri beel. This unique habitat underscores the importance of preserving its ecological wealth for the benefit of both wildlife and the community.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and tea cultivation**.

The following figure shows the existing feature of the Kalamua Chara Quarry.

Figure 11-75: Existing Features of the Kalamua chara Quarry



West Side



North Eastern Side



North Western Side and Sand Collection



West Side



North Eastern Side



North Western Side



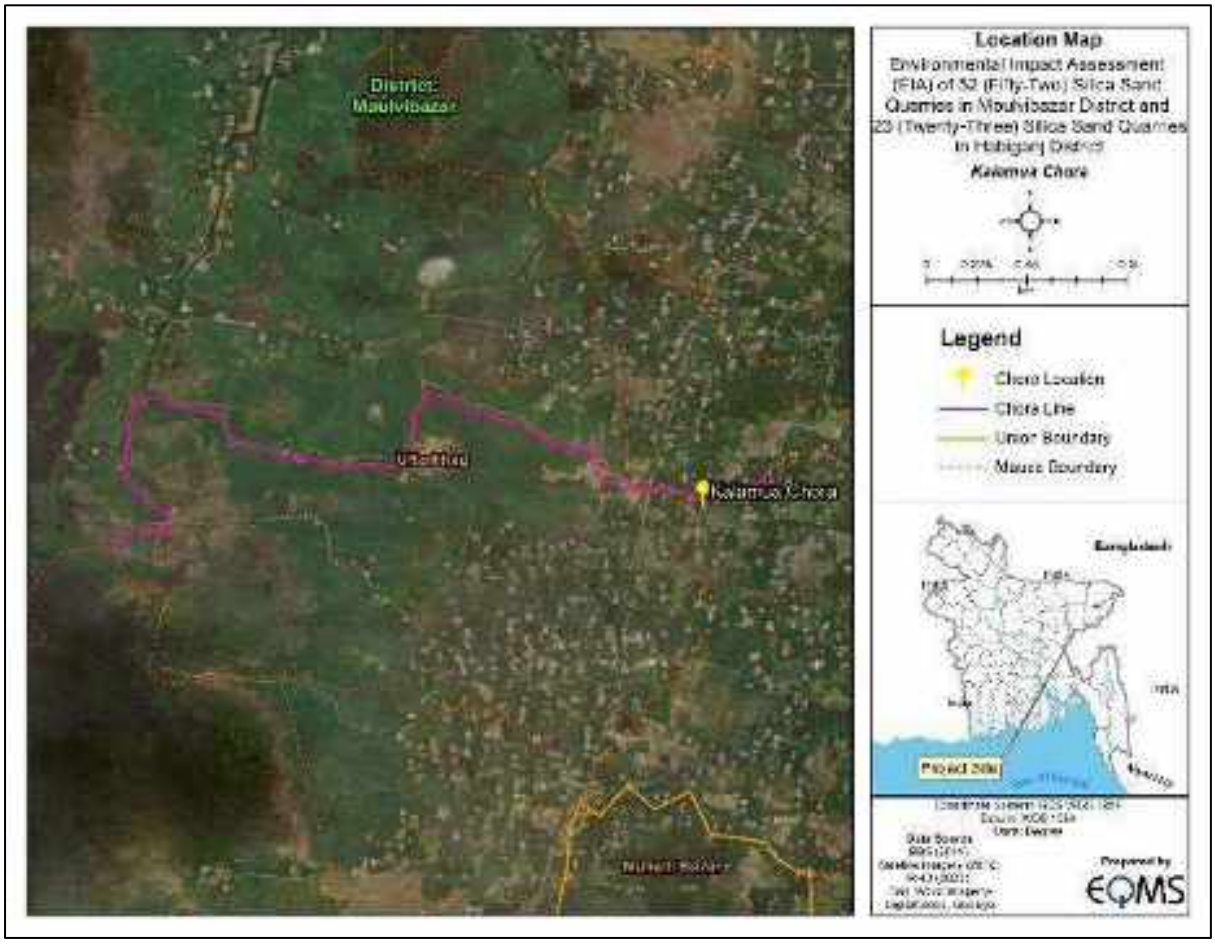
North Western Side



North Eastern Side

The following figure shows the location within the mouza boundary of the Kalamua Chara Quarry and surrounding features of the sand Quarry.

Figure 11-76: Location within the Mouza Boundary of the Kalamua Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-39: Jamira Chara

The following table shows the details of the Jamira chara Quarry.

Table 11-39: Details of the Jamira chara Quarry

Items	Description
Name of the Chara	Jamira Chara
Geographical Coordinate	24°36'5.598"N 91°54'0.306"E; 24°36'4.332"N 91°54'1.626"E;
Silica enriched Mouja	Chadvagh, Goiashpur
Total area	2.33 Acre
Volume of sand	Significant
Location	Village: Goiashpur; Mouja: Chadvagh; Union: Munshibazar; Upzila: Rajnagar Village: Goiashpur; Mouja: Goiashpur; Union: Munshibazar; Upzila: Rajnagar
Direction of Chara	West- East
Project Surrounding	**West:** Montola Bazar, Village, Homestead Vegetation, Agricultural land and Montola Haor **North:** Shah Swab Ali bazar, Village, Homestead Vegetation, Agricultural land **East:** Tea state where it derives, Village, Homestead Vegetation, Agricultural land and Hill **South:** Munshi bazar, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	Sheikh Firoz Miah, Sheikh Jollil Miah, and Montola Jame Mosid, which are prominent in the community. Residential areas such as Rasel Home and Sheikh Bari in miarkandi, rajnagar, moulvibazar, stand out, showcasing the habitation patterns. Community facilities like the Al-Amin Community Center and Gayaspur Government Primary School are also marked, indicating important social infrastructure. The map features significant commercial and industrial sites like mukta perfume manufacturing. Jamira Chara and the N208 road are notable landmarks that enhance connectivity and accessibility within the region.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Jamira Chara, nestled amid expansive bushland, stands out as a haven of biodiversity. The area is home to a vibrant array of wildlife, with local consultations revealing the frequent sighting of the Golden Jackal and the presence of the threatened Fishing Cat. The bushland serves as a sanctuary for a multitude of bird species, further enriching the ecological tapestry of the region. Additionally, Jamira Chara plays a pivotal role in maintaining the regional water balance and drainage, as it feeds into the river and Montola haor. This delicate ecosystem underscores the critical importance of preserving such habitats, benefiting both wildlife and the surrounding community. The natural wealth of Jamira Chara highlights the need for concerted conservation efforts to sustain its ecological health for future generations.

Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and tea cultivation**.

The following figure shows the existing feature of the Jamira chara Quarry.

Figure 11-77: Existing Features of the Jamira Chara Quarry



North Side



North Western Side



North Eastern Side



West Side



East Side



South Eastern Side



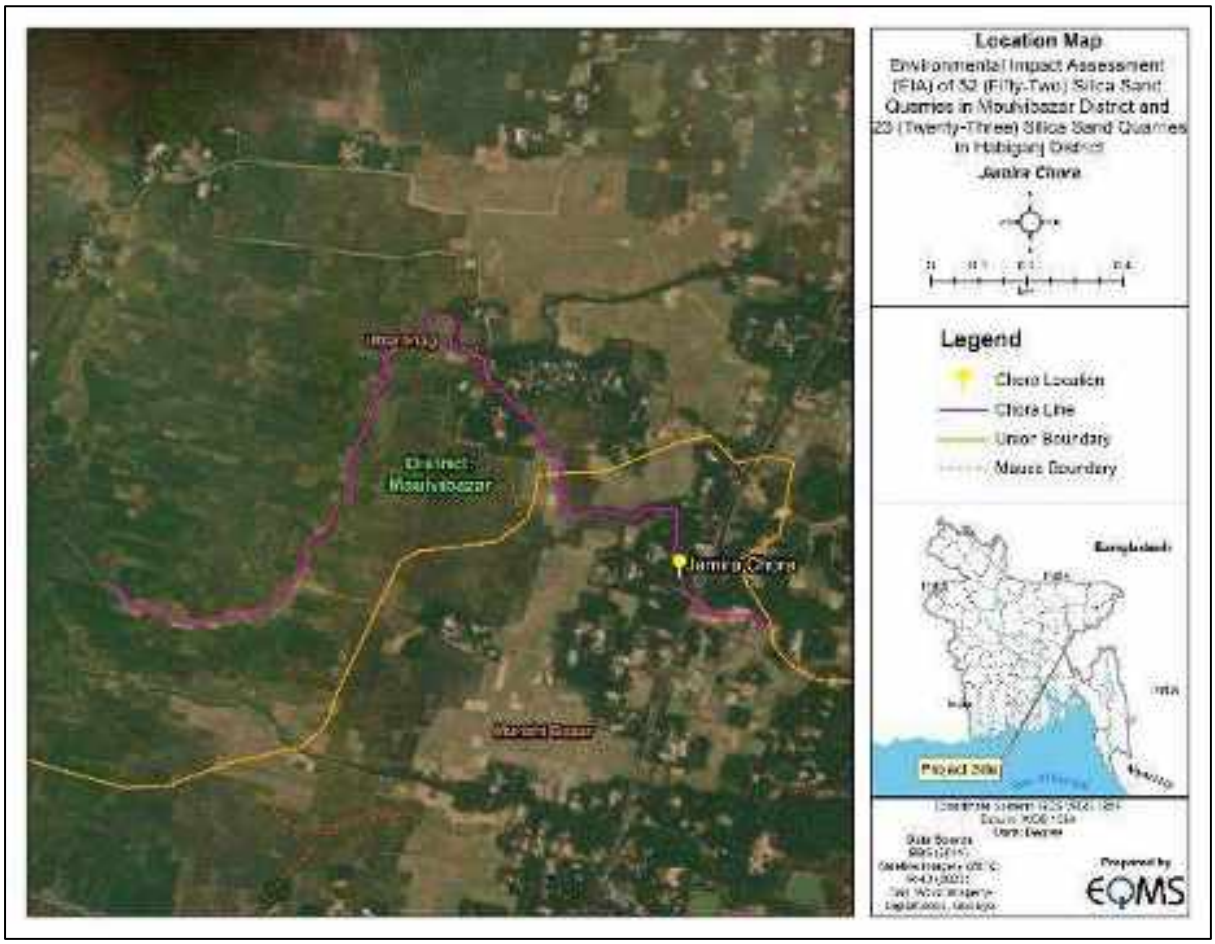
Sand Collection from Chara



South Side

The following figure shows the location within the mouza boundary of the Jamira Chara Quarry and surrounding features of the sand Quarry.

Figure 11-78: Location within the Mouza Boundary of the Jamira Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-40: Har Chara

The following table shows the details of the Har chara Quarry.

Table 11-40: Details of the Har chara Quarry

Items	Description
Name of the Chara	Har Chara
Geographical Coordinate	24°35'7.038"N 91°54'38.484"E
Silica enriched Mouja	Dakkhinbagh
Total area	4.42 Acre
Volume of sand	Significant
Location	Village: Karimpur; Mouja: Dakkhinbagh; Union: Indeshor; Upzila: Rajnagar
Direction of Chara	West- East

Project Surrounding	**West:** Village, Homestead Vegetation, Agricultural land and Haor **North:** Gayashpur bazar, Jamira Chara Village, Homestead Vegetation, Agricultural land **East:** Tea state where it derives, Village, Homestead Vegetation, Agricultural land and Hill **South:** Munshi bazar, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	Key routes, including Baramchal Rd and various unnamed roads, form a network that links residential areas such as green land community and Munshi Bari to important landmarks like Har Chara and Korimpur Tea Garden. These roads and pathways provide crucial connections, facilitating movement within the region.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Har Chara, nestled amid expansive bushland, stands out as a haven of biodiversity. The area is home to a vibrant array of wildlife, with local consultations revealing the frequent sighting of the Golden Jackal and the presence of the threatened Fishing Cat. The bushland serves as a sanctuary for a multitude of bird species, further enriching the ecological tapestry of the region. Additionally, Har Chara plays a pivotal role in maintaining the regional water balance and drainage, as it feeds into the river and Montola haor.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and tea cultivation**.

The following figure shows the existing feature of the Har Chara Quarry.

Figure 11-79: Existing Features of the Har Chara Quarry



East Side

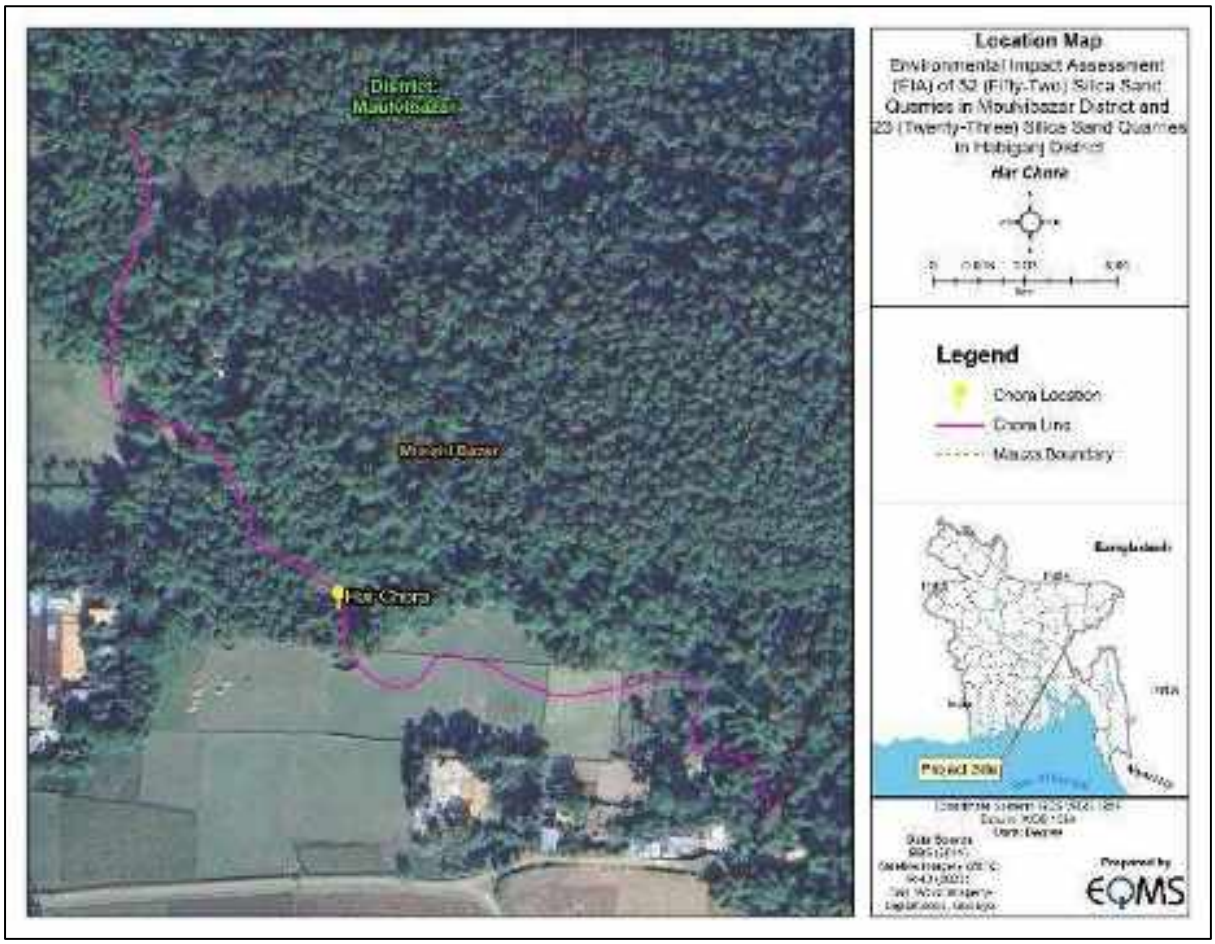


East Side

	
North Eastern Side	North Eastern Side
	
North Eastern Side	North Western Side

The following figure shows the location within the mouza boundary of the Har Chara Quarry and surrounding features of the sand Quarry.

Figure 11-80: Location within the Mouza Boundary of the Har Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-41: Dhamai Chara

The following table shows the details of the Dhamai chara Quarry.

Table 11-41: Details of the Dhamai chara Quarry

Items	Description
Name of the Chara	Dhamai Chara
Geographical Coordinate	24°36'35.13"N 91°55'8.916"E
Silica enriched Mouja	Borodol, Chandbagh
Total area	6.23 Acre
Volume of sand	Significant
Location	Village: Bordol; Mouja: Bordol; Union: Uttarbagh; Upzila: Rajnagar
Direction of Chara	West- East
Project Surrounding	**West:** Montola Bazar, Village, Homestead Vegetation, Agricultural land and Montola Haor **North:** Shah Swab Ali bazar, Village, Homestead Vegetation, Agricultural land

	East: Tea state where it derives, Village, Homestead Vegetation, Agricultural land and Hill **South:** Munshi bazar, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	Among the notable points of interest are Bimlachoron Versatile High School, Muttukpur Government Primary School, and Otterbhag & Indranugger Tea Estate. Healthcare facilities like Bordol Community Clinic and community centers such as Holiday House and Agro Farm are also highlighted. The map features Dhamai Chara and the Chandbagh Tea Estate (M. Ahmed Group), underscoring the agricultural significance of the area. Residential and commercial establishments, including Shamim Miah and Fahim Verates Store, contribute to the region's socio-economic fabric. The Ameenabad Tea Garden is another prominent location.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Dhamai Chara, nestled amid expansive bushland, stands out as a haven of biodiversity. The area is home to a vibrant array of wildlife, with local consultations revealing the frequent sighting of the Golden Jackal and the presence of the threatened Fishing Cat. The bushland serves as a sanctuary for a multitude of bird species, further enriching the ecological tapestry of the region. Additionally, Dhamai Chara plays a pivotal role in maintaining the regional water balance and drainage, as it feeds into the river and Montola haor.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance soil fertility, benefiting nearby rice and tea cultivation.

The following figure shows the existing feature of the Quarry

Figure 11-81: Existing Features of the Dhamai chara Quarry



North Side



North Western Side



North Eastern Side



West Side



East Side



South Eastern Side



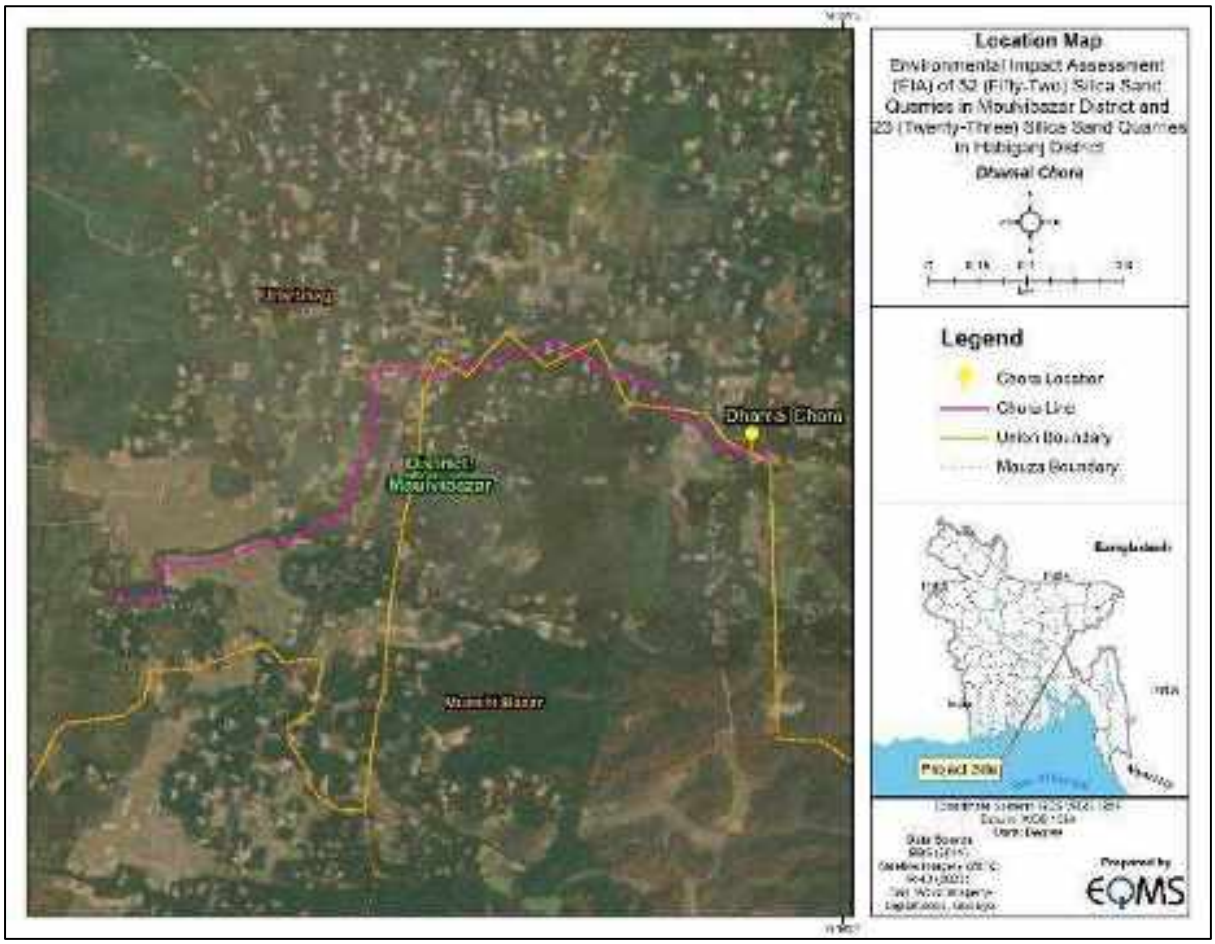
Sand Collection from Chara



South Side

The following figure shows the location within the mouza boundary of the Dhamai Chara Quarry and surrounding features of the sand Quarry.

Figure 11-82: Location within the Mouza Boundary of the Dhamai Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-42: Puranli Chara

The following table shows the details of the Puranli chara Quarry.

Table 11-42: Details of the Puranli chara Quarry

Items	Description
Name of the Chara	Puranli Chara
Geographical Coordinate	24°23'3.176"N 91°54'53.831"E
Silica enriched Mouja	Brahomngao
Total area	0.74 Acre
Volume of sand	Significant
Location	Village: Brahomngao; Mouja: Brahomngao; Union: Brahomngao; Upzila: Rajnagar
Direction of Chara	West- East

Project Surrounding	**West:** canal, Village, Homestead Vegetation, Agricultural land **North:** Munshibazar union parishad, Village, Homestead Vegetation, Agricultural land **East:** Village, Homestead Vegetation, Agricultural Land and Tea Garden. **South:** Chowdhury bazar and Polytechnical School and college, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Puranli Chara 211, To the north, North Baligaon Noorani Jame Masjid stands prominently as a significant religious institution. Moving southward, Murali Govt. Primary School is positioned alongside Moshoria Emdadia Dakhil Madrasa, both serving educational purposes for the local community. To the east, the Officers' Mess is located, potentially indicating a government or administrative presence. The central and western portions of the map are characterized by expansive agricultural fields and vegetated areas, reflecting the rural nature of the region. Additionally, minor water bodies or drainage channels may be present, likely serving irrigation or drainage needs for local agriculture.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Puranli Chara, nestled amid expansive bushland, stands out as a haven of biodiversity. The area is home to a vibrant array of wildlife, with local consultations revealing the frequent sighting of the Golden Jackal and the presence of the threatened Fishing Cat. The bushland serves as a sanctuary for a multitude of bird species, further enriching the ecological tapestry of the region. Additionally, Puranli Chara plays a pivotal role in maintaining the regional water balance and drainage, as it feeds into the canal.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance soil fertility, benefiting nearby rice and tea cultivation.

The following figure shows the existing feature of the Puranli chara Quarry.

Figure 11-83: Existing Features of the Puranli Chara



West Side



South Western Side



North Eastern Side



South Eastern Side



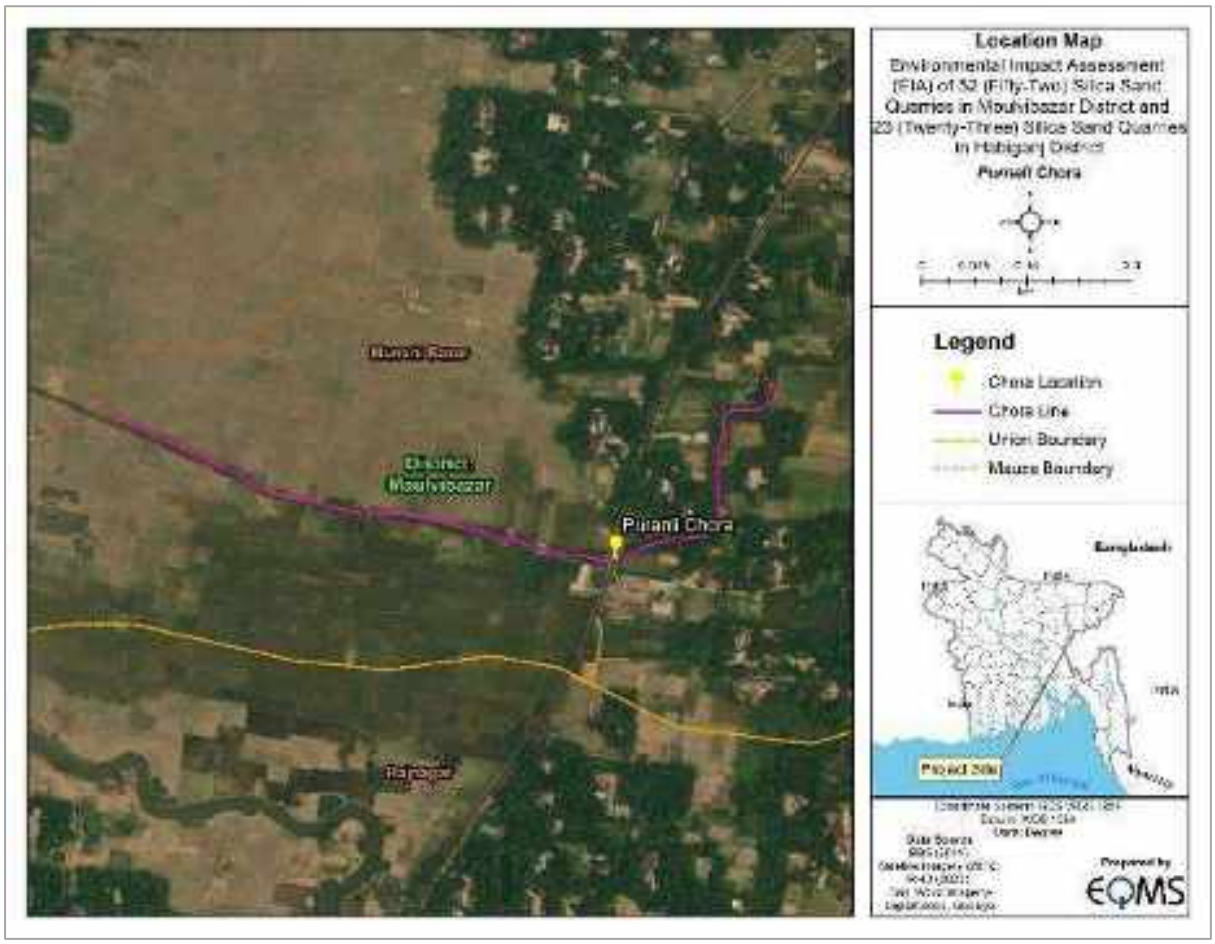
South Side



North Eastern Side

The following figure shows the location within the mouza boundary of the Purnali Chara Quarry and surrounding features of the sand Quarry.

Figure 11-84: Location within the Mouza Boundary of the Purnali Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-43: Jalanga Chara

The following table shows the details of the Jalanga chara Quarry.

Table 11-43: Details of the Jalanga chara Quarry

Items	Description
Name of the Chara	Jalanga Chara
Geographical Coordinate	24°48'38.604"N 92°14'48.378"E ; 24°48'22.356"N 92°15'25.242"E; 24°47'54.018"N 92°16'5.232"E
Silica enriched Mouja	Kumarshail, Bhuga, Shaipur, Shandopur, Kadampur
Total area	28.00 Acre
Volume of sand	Significant
Location	Village: Khumarshail; Mouja: Khumarshail; Union: 4 no Uttar Shahbajpur; Upzila: Baralekha Village: Bhuga; Mouja: Bhuga; Union: 4 no Uttar Shahbajpur; Upzila: Baralekha Village: Kadampur; Mouja: Kadampur; Union: 4 no Uttar Shahbajpur; Upzila: Baralekha

Direction of Chara	West- East
Project Surrounding	**West:** Village, Homestead Vegetation, Agricultural land and Hakaluki Haor **North:** Bhaga Chandpur primary school, Hafiz tea state, Kalikabari tea state, Village, Homestead Vegetation, Agricultural land **East:** Fatehbagh Tea Graden, Kumarshail tea garden, Village, Homestead Vegetation, Agricultural Land **South:** Shahbazpur bazar, Fatehbagh Tea Graden, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	Key routes link several important landmarks, such as Jalanga Chara and Shahbazpur Bazar, ensuring seamless movement within the area. The presence of the Kalikabari Tea Estate further underscores the area's accessibility to agricultural zones.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Jalanga Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat**, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness. Additionally, Silica from the stream contributes to nutrient cycling, supporting phytoplankton growth in downstream water bodies. Jalongha Chara drains into haor, playing a role in regional water balance and water drainage.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance soil fertility, benefiting nearby rice and tea cultivation.

The following figure shows the existing feature of the Jalanga Chara Quarry.

Figure 11-85: Existing Features of the Jalanga Chara Quarry



North Side



North Western Side



North Eastern Side



West Side



East Side



South Eastern Side

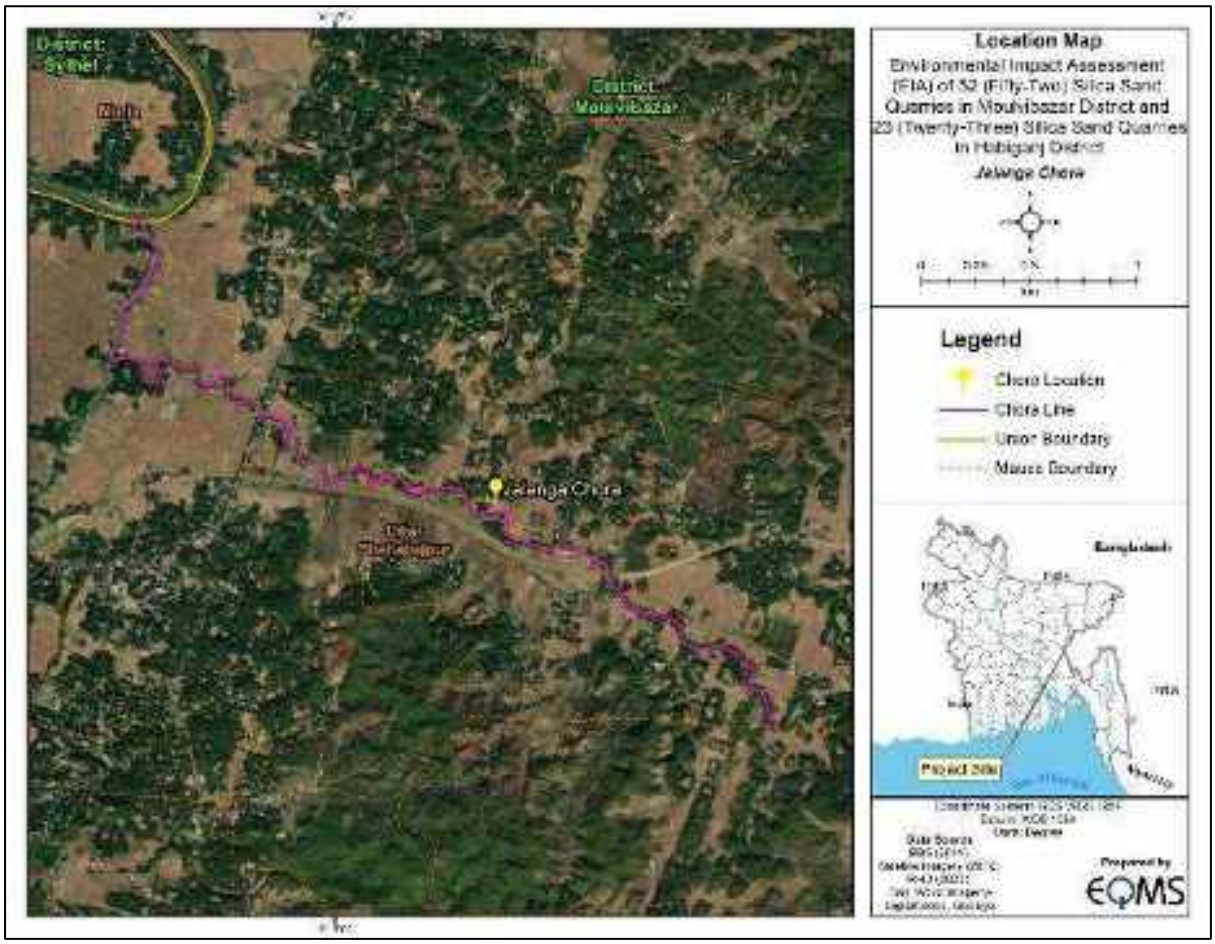


Sand Collection from Chara

South Side

The following figure shows the location within the mouza boundary of the Jalanga Chara Quarry and surrounding features of the sand Quarry.

Figure 11-86: Location within the Mouza Boundary of the Jalanga Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-44: Sunai River

The following table shows the details of the Sunai chara Quarry.

Table 11-44: Details of the Sunai chara Quarry

Items	Description
Name of the Chara	Sunai Chara
Geographical Coordinate	24°49'52.794"N 92°14'39.162"E - Atua Mouza 24°47'4.11"N 92°11'51.822"E - Itauri Mouza 24°46'27.048"N 92°10'27.786"E - Wahedpur Mouza
Silica enriched Mouja	Atua, Itauri , Wahedpur
Total area	69.80 Acre
Volume of sand	Significant
Location	Village: Atua; Mouja: Atua; Union: 4 no Uttar Shahbajpur; Upzila: Baralekha Village: Itauri; Mouja: Itauri; Union: Nij Bahadarpur; Upzila: Baralekha Village: Dakkhin Pariabour; Mouja: Wahedpur ; Union: Nij Bahadarpur; Upzila: Baralekha

Direction of Chara	West- East
Project Surrounding	**West:** Chonopur Jame Masjid, Hakaluki haor, Village, Homestead Vegetation, Agricultural land and tea state. **North:** Karinganj-Sylhet Road and Sutarkandi Border Market, Village, Homestead Vegetation, Agricultural land **East:** Barapunji Bazar and Jeevan Jyoti Hospital, Village, Homestead Vegetation, Agricultural Land and Hill, Tea garden. **South:** Shantir Bazar Bridge, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	R281 is a main road that connects the surrounding areas and provides critical access to the river. Smaller roads and local paths branch out from R281 to connect rural settlements, markets, and community centers. Important access points such as Shahbazar Bazar and Ihana Bazar provide local economic hubs for nearby communities. Schools like Tajpur Abongi Government Primary School and an Upazila Health Complex enhance accessibility to services.
Environmental Features	The Sunai River originates from the hilly areas of the Meghalaya Plateau in India and flows into Bangladesh through Borolekha. Its winding course traverses' lush forests, tea gardens, and paddy fields, making the river an integral part of the region's landscape. The river is characterized by seasonal flow variations. Monsoonal rains significantly increase its discharge, contributing to local groundwater recharge and irrigation.
Ecological Importance	The Sunai River at Borolekha, Moulvibazar, holds significant ecological importance due to its role in supporting biodiversity and maintaining ecosystem functions. It serves as a habitat for various fish species, amphibians, reptiles, and birds, contributing to a balanced food web. The river's riparian vegetation helps stabilize soil, prevent erosion, and filter pollutants, thereby enhancing water quality and reducing the impact of agricultural runoff. Additionally, the river plays a crucial role in groundwater recharge and regulates local hydrology by mitigating both droughts and floods. Its nutrient cycling supports plant and animal life, while its carbon sequestration capacity aids in climate change mitigation. Moreover, the river functions as a natural buffer against extreme weather events, contributing to local climate regulation. Overall, the Sunai River is essential for sustaining the ecological integrity of the Borolekha region and supporting the livelihoods of the surrounding communities.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and tea cultivation**.

The following figure shows the existing feature of the Sunai River Quarry

Figure 11-87: Existing Features of the Sunai River Quarry



North Side



North Western Side



North Eastern Side



West Side



East Side



South Eastern Side



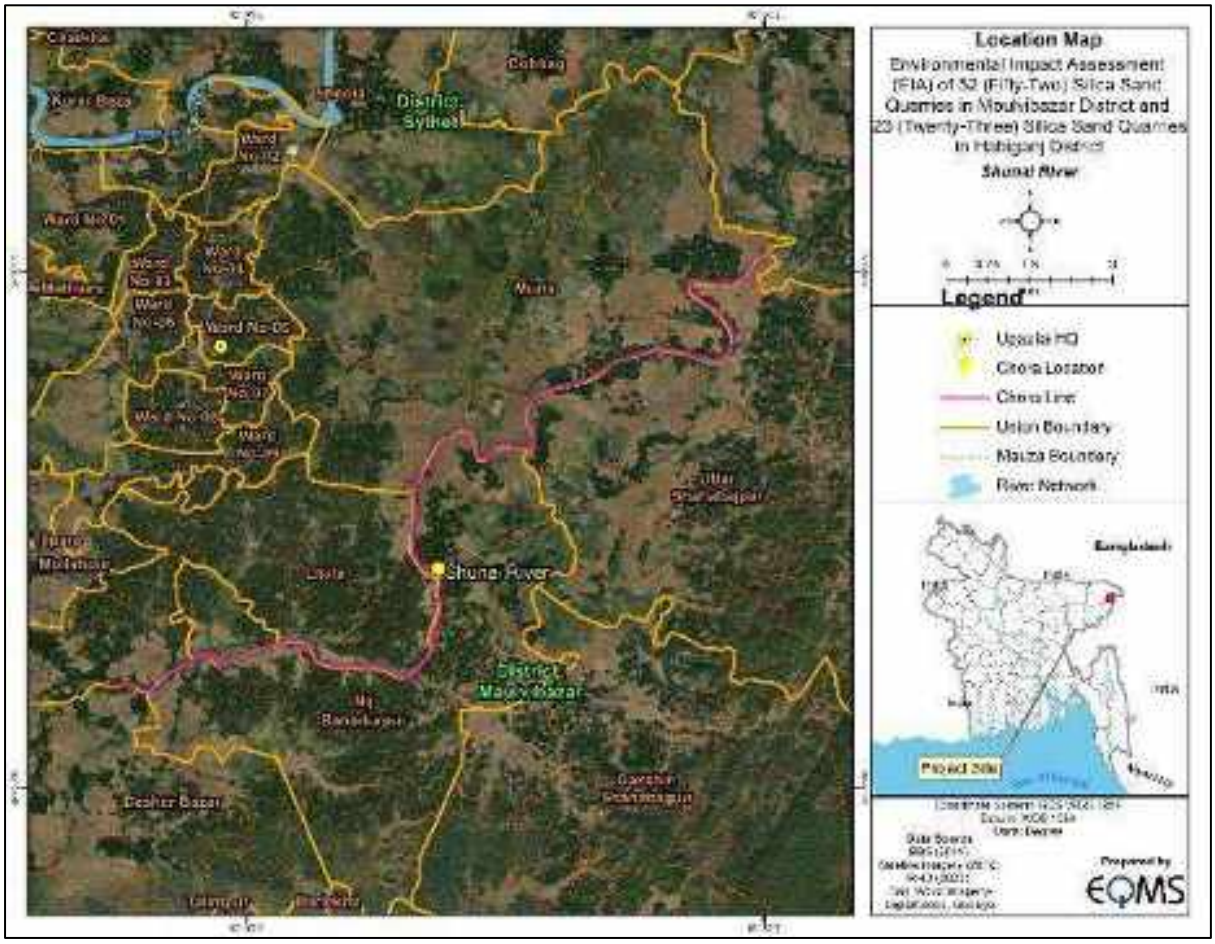
Sand Collection from Chara



South Side

The following figure shows the location within the mouza boundary of the Sunai River Chara Quarry and surrounding features of the sand Quarry.

Figure 11-88: Location within the Mouza Boundary of the Sunai River Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-45: Dew Chara

The following table shows the details of the Dew chara Quarry.

Table 11-45: Details of the Dew chara Quarry

Items	Description
Name of the Chara	Dew Chara
Geographical Coordinate	24°46'2.85"N 92°12'57.21"E
Silica enriched Mouja	Shujaul
Total area	3.75 Acre
Volume of sand	Significant
Location	Village: Vuga; Mouja: Shujaul; Union: Dakkhin Shahbazpur,; Upzila: Borolekha
Direction of Chara	West- East
Project Surrounding	**West:** Shunai River, Village, Homestead Vegetation, Agricultural land **North:** Dakkhin Panchpara bazar, Village, Homestead Vegetation, Agricultural land **East:** Bahadurpur Tea Estate, Village, Homestead Vegetation, Agricultural Land **South:** Chandinogor, Shatma and Rathi Chara Village, Homestead Vegetation, Agricultural land
Access and Connectivity	Deo Chora, surrounded by agricultural lands and scattered settlements. To the north, the Shahbazpur Road runs horizontally, connecting various settlements. To the west, the Kalaiura Jame Mosjid and the Langai River are present near Kanli, suggesting the presence of a religious and natural water source in the area. The Shahbazpur Road also extends towards this side, connecting to other parts of the region.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Dew Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the Golden Jackal is frequently observed in the area, along with the Fishing Cat, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness. Additionally, Silica from the stream contributes to nutrient cycling, supporting phytoplankton growth in downstream water bodies. Dew Chara drains into haor, playing a role in regional water balance and water drainage.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance soil fertility, benefiting nearby rice and tea cultivation.

The following figure shows the existing feature of the Quarry.

Figure 11-89: Existing Features of the Dew Chara Quarry



East Side



North Western Side



North Side



North Western Side



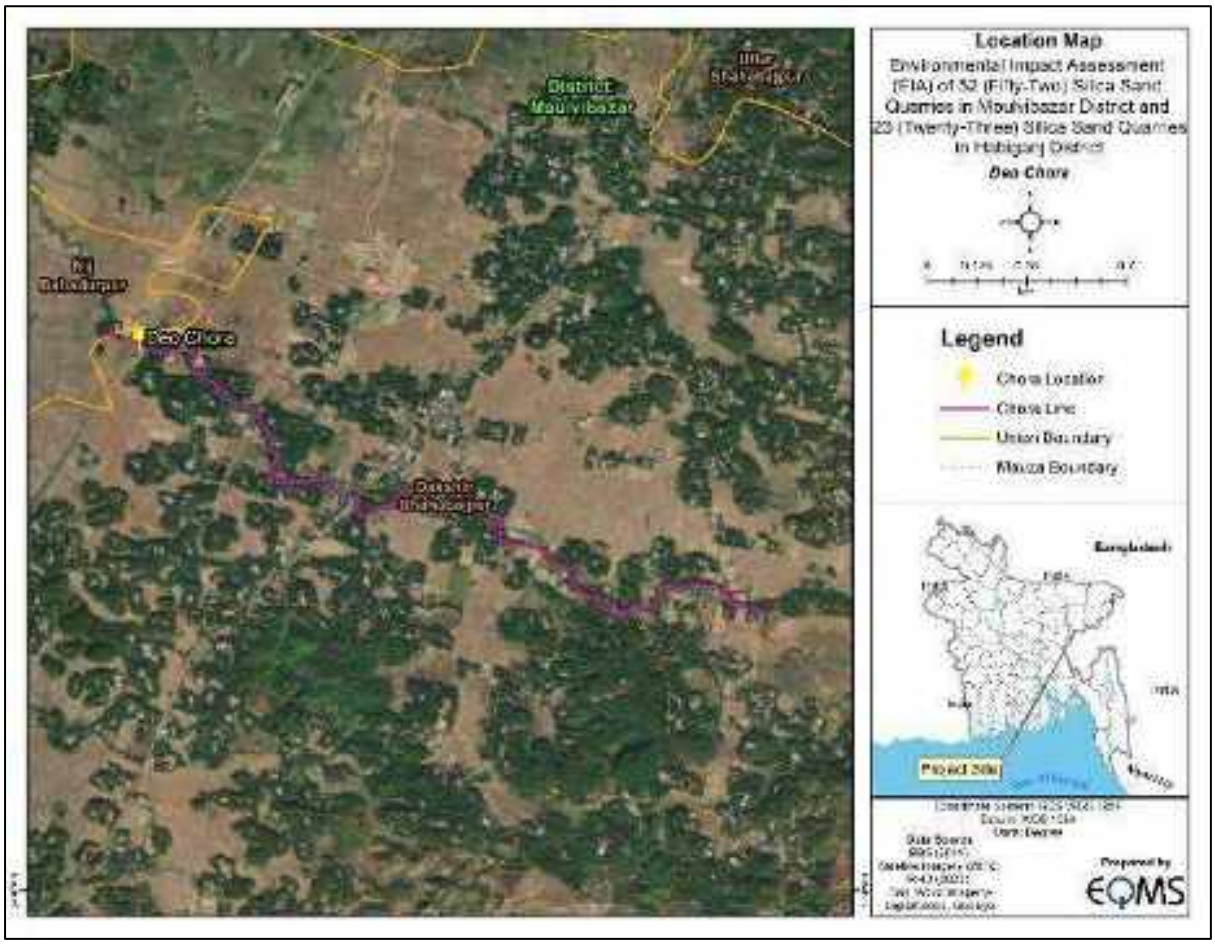
North Western Side



North Eastern Side

The following figure shows the location within the mouza boundary of the Deo Chara Quarry and surrounding features of the sand Quarry.

Figure 11-90: Location within the Mouza Boundary of the Deo Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-46: Shatma and Rathi Chara

The following table shows the details of the Shatma and Rathi chara Quarry.

Table 11-46: Details of the Shatma and Rathi chara Quarry

Items	Description
Name of the Chara	Shatma and Rati Chara
Geographical Coordinate	24°43'3.432"N 92°11'45.732"E and 24°42'54.828"N 92°13'51.114"E
Silica enriched Mouja	Shatma and Rathi
Total area	7.47 Acre
Volume of sand	Significant
Location	Village: Gramtola; Mouja: Gramtola; Union: Baralekha Sadar; Upzila: Baralekha Village: Mohammadnagar; Mouja: Mohammadnagar; Union: Dakkhin Shahbajpur; Upzila: Baralekha
Direction of Chara	West- East

Project Surrounding	**West:** Village, Homestead Vegetation, Agricultural Land, Sunai River **North:** Village, Homestead Vegetation, Agricultural Land **East:** Village, Homestead Vegetation, Agricultural Land and Hill. **South:**Village, Agricultural land
Access and Connectivity	Shatma and Rathi Chara area and its connectivity with nearby regions in Borolekha, Moulvibazar. The R281 highway runs from north to south, serving as the main access route to Barlekha town and surrounding areas. Several local roads branch off from R281, providing access to Shatma and Rathi Chara and connecting settlements, educational institutions like Barlekha Degree College, and local businesses. The marked purple boundary outlines the local administrative area, while the red line highlights the route of the Satma and Rathi Chara stream. Key landmarks like Barlekha Upazila Health Complex and nearby tea gardens enhance the area's significance.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Shatma and Rathi Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the Golden Jackal is frequently observed in the area, along with the Fishing Cat, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness. Shatma and Rathi Chara, this is close to Hakaluki haor which are important for Migratory birds and Fish Biodiversity. Additionally, Silica from the stream contributes to nutrient cycling, supporting phytoplankton growth in downstream water bodies. Shatma and Rathi Chara drains into haor, playing a role in regional water balance and water drainage.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance soil fertility, benefiting nearby rice and tea cultivation.

The following figure shows the existing feature of the Shatma and Rathi Chara Quarry

Figure 11-91: Existing Features of the Shatma and Rathi Chara Quarry



West Side



West Side



South Eastern Side



North Side



South Eastern Side



South Western Side



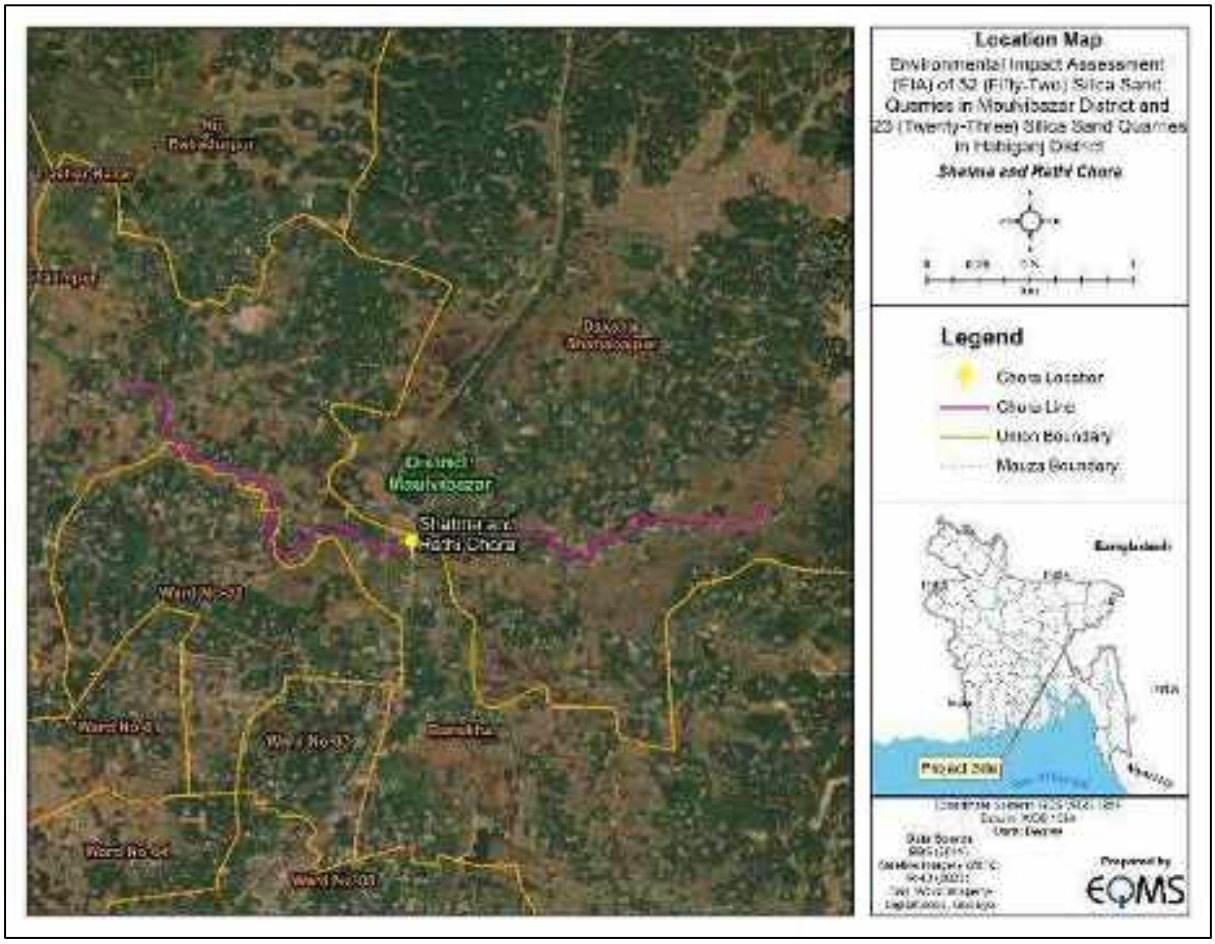
Sand Collection from Chara



South Side

The following figure shows the location within the mouza boundary of the Shatma and Rathi Chara Quarry and surrounding features of the sand Quarry.

Figure 11-92: Location within the Mouza Boundary of the Shatma and Rathi Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-47: Dew Chara

The following table shows the details of the Dew Chara Quarry.

Table 11-47: Details of the Dew chara Quarry

Items	Description
Name of the Chara	Dew Chara
Geographical Coordinate	24°23'28.512"N 91°55'58.266"E and 24°24'6.432"N 91°55'45.804"E
Silica enriched Mouja	Keolakandi and Paboi
Total area	4.80 Acre
Volume of sand	Significant
Location	Village: Keolakandi; Mouja: Keolakandi; Union: Hazipur; Upzila: Kulaura Village: Dakkhin Paboi; Mouja: Paboi; Union: Hazipur; Upzila: Kulaura
Direction of Chara	North South
Project Surrounding	**West:** Shamshernagar Tea state where it derives, Village, Homestead Vegetation, Agricultural land and Hill. **North:** Dakkhin Paboi bazar, Village, Homestead Vegetation, Agricultural land. **East:** Homestead Vegetation, Agricultural Land. **South:** Duncan Tea Garden, Village, Homestead Vegetation, Agricultural Land.
Access and Connectivity	The connectivity is primarily facilitated by the Shanbazpur Road, which runs from north to south through the region. The red line marks the access route following the Sunai River's path, connecting nearby settlements and ensuring access to tea estates like Sabazpur Tea Company and Bahadurpur Tea Estate. Nearby schools and marketplaces are accessible through small roads and paths branching off from the main road, ensuring local connectivity. The surrounding vegetation and agricultural fields, as well as tea gardens, form an important part of the region's landscape, supporting both community access and eco-tourism potential.
Environmental Features	The Chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the Chara serve as a habitat for diverse wildlife.
Ecological Importance	Dew Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the Golden Jackal is frequently observed in the area, along with the Fishing Cat, a species considered threatened. Additionally, Silica from the stream contributes to nutrient cycling, supporting phytoplankton growth in downstream water bodies. Dew Chara drains into haor, playing a role in regional water balance and water drainage.
Livelihood Importance	The Chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance soil fertility, benefiting nearby rice and tea cultivation.

The following figure shows the existing feature of the Dew chara Quarry.

Figure 11-93: Existing Features of the Dew chara Quarry



South Eastern Side



North Eastern Side



East Side



North Eastern Side



South Eastern Side



North Side



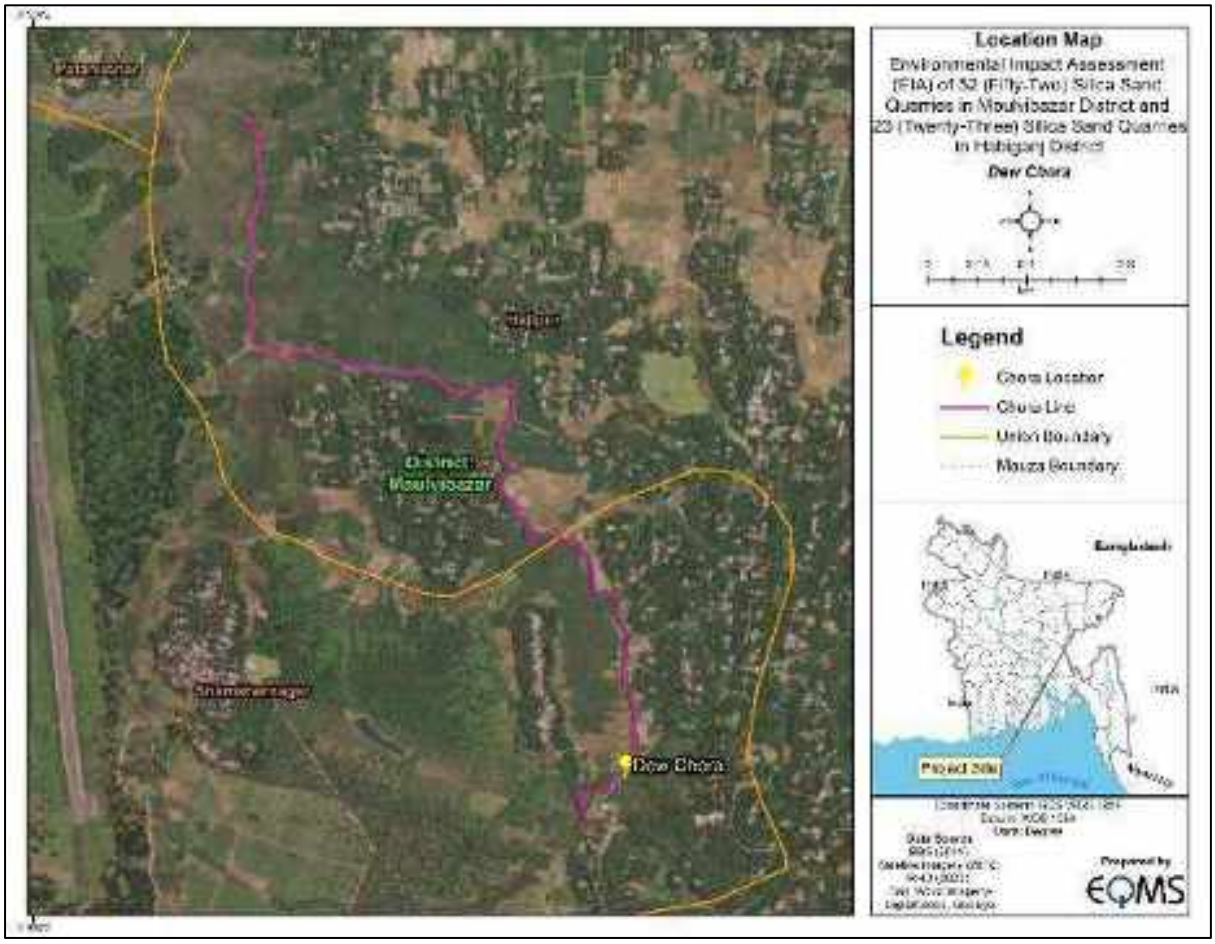
South Side



Sand Collection from Chara at Paboi mouza

The following figure shows the location within the mouza boundary of the Dew Chara Quarry and surrounding features of the sand Quarry.

Figure 11-94: Location within the Mouza Boundary of the Dew Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-48: Buba Chara

The following table shows the details of the Buba chara Quarry.

Table 11-48: Details of the Buba chara Quarry

Items	Description
Name of the Chara	Buba Chara
Geographical Coordinate	24°36'54.006"N 91°59'13.524"E
Silica enriched Mouja	Karimbad, Baburpul
Total area	5.44 Acre
Volume of sand	Significant
Location	Village: Bhavanipur; Mouja: Karimbad; Union: Batera; Upzila: Kulaura
Direction of Chara	West- East
Project Surrounding	**West:** Tea state where it derives, Village, Homestead Vegetation, Agricultural land and Hill **North:** Village, Homestead Vegetation, Agricultural land, Hakaluki Haor **East:** Toler Beel where it drains, Village, Homestead Vegetation, Agricultural Land. **South:** Bhatera Puran bazar, Village, Homestead Vegetation, Agricultural land, School.
Access and Connectivity	The waterway is adjacent to rural roads connecting Bhatera Puran Bazar and nearby villages. The roads are a mix of paved and unpaved, influencing seasonal accessibility. The presence of Bhatera Station Bazar and Bhatera Puran Bazar provides access to local transportation. Rickshaws, auto-rickshaws, and motorcycles are commonly used in the area. Ghagra Chara serves as a drainage channel, playing a role in local water management. It connects to Toler Beel, facilitating water flow and influencing local agriculture.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Buba Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat**, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and tea cultivation**.

The following figure shows the existing feature of the Buba chara Quarry.

Figure 11-95: Existing Features of the Boro Chara Quarry



South Western Side



South Side



North Eastern Side



North Eastern Side



East Side



North Western Side



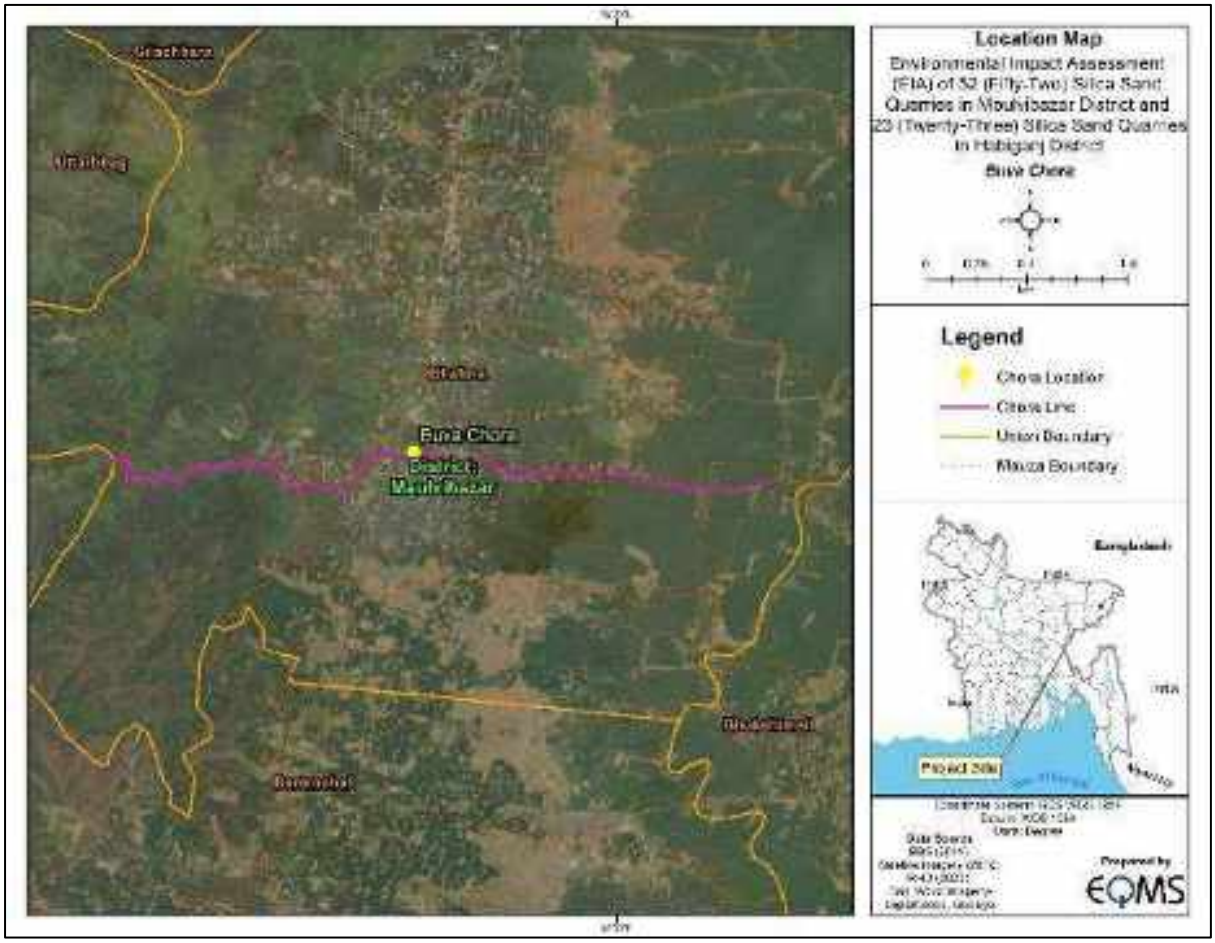
South Side



West Side

The following figure shows the location within the mouza boundary of the Buba Chara Quarry and surrounding features of the sand Quarry.

Figure 11-96: Location within the Mouza Boundary of the Buba Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-49: Ghagra Chrara

The following table shows the details of the Ghagra chara Quarry.

Table 11-49: Details of the Ghagra chara Quarry

Items	Description
Name of the Chara	Ghagra Chara
Geographical Coordinate	24°37'30.342"N 91°59'47.586"E
Silica enriched Mouja	Sreepur
Total area	2.90 Acre
Volume of sand	Significant
Location	Village: Sreepur; Mouja: Sreepur; Union: Batera; Upzila: Kulaura
Direction of Chara	West- East
Project Surrounding	**West:** Tea state where it derives, Village, Homestead Vegetation, Agricultural land and Hill **North:** Village, Homestead Vegetation, Agricultural land, Hakaluki Haor **East:** Toler Beel where it drains, Village, Homestead Vegetation, Agricultural Land. **South:** Bhatera Puran bazar, Village, Homestead Vegetation, Agricultural land, School.
Access and Connectivity	The waterway is adjacent to rural roads connecting Bhatera Puran Bazar and nearby villages. The roads are a mix of paved and unpaved, influencing seasonal accessibility. The presence of Bhatera Station Bazar and Bhatera Puran Bazar provides access to local transportation. Rickshaws, auto-rickshaws, and motorcycles are commonly used in the area. Ghagra Chara serves as a drainage channel, playing a role in local water management. It connects to Toler Beel, facilitating water flow and influencing local agriculture.
Environmental Features	The chara is surrounded by a lush and thriving ecosystem characterized by dense vegetation. The landscape is dominated by bamboo groves, which form an intricate network of towering green stalks, providing shade and serving as a natural windbreak. These groves are interspersed with natural herbs, which contribute to the biodiversity of the area and may hold medicinal or ecological significance. Additionally, a variety of shrubs and wood bushes grow in abundance, further enriching the vegetation cover and offering shelter to various small mammals, birds, and insects.
Ecological Importance	Ghagra Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat**, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness. Ghagra chara is close to Hakaluki haor and Toler Beel which are important for Migratory birds and Fish Biodiversity. Additionally, Silica from the stream contributes to nutrient cycling, supporting phytoplankton growth in downstream water bodies. Ghagra Chara drains into haor, playing a role in regional water balance and water drainage.

Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and tea cultivation**.

The following figure shows the existing feature of the Ghagra Chara Quarry.

Figure 11-97: Existing Features of the Ghagra Chara Quarry



North Side



East Side



North Eastern Side



Northwestern Side



Western Side



North Side



North Side



North Eastern Side

The following figure shows the location within the mouza boundary of the Ghagra Chara Quarry and surrounding features of the sand Quarry.

Figure 11-98: Location within the Mouza Boundary of the Ghagra Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-50: Boro Chara

The following table shows the details of the Boro chara Quarry.

Table 11-50: Details of the Boro chara Quarry

Items	Description
Name of the Chara	Boro Chara
Geographical Coordinate	24°35'4.885"N 91°58'49.039"E
Silica Enriched Mouja	Zinnahnagar
Total area	0.74 Acre
Volume of sand	Significant
Location	Village: Moholal; Mouja: Zinnahnagar; Union: Boromchal; Upzila: Kulaura
Direction of Chara	West- East

Project Surrounding	**West:** Kawadighi haor where it drains, Temple, Baramchal Primary School, Village, Homestead Vegetation, Agricultural land and Hill **North:** Baramchal bazar, Village, Homestead Vegetation, Agricultural land **East:** Tea state where it derives, Village, Homestead Vegetation, Agricultural Land and Homestead Vegetation and Haor. **South:** Singur bazar, Village, Homestead Vegetation, Agricultural land
Access and Connectivity	The specific point, Boro chara 4517, is on the bridge of Fenchugonj-Brahman bazar road. This is part of a sequence of closely located points. This connectivity ensures that if one point of the chara is reached, others can be easily located. Similar to other Chara, most streams in the area intersect access roads at several locations, enhancing accessibility.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife. Good width of chara plays important role in the local drainage of rain and flash flood water
Ecological Importance	Boro chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness. Additionally, Silica from the stream contributes to nutrient cycling, supporting phytoplankton growth in downstream water bodies. Barchara drains into haor, playing a role in regional water balance and water drainage.
Livelihood Importance	The Boro chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and crop cultivation**. Small-scale fishing activities can be sustained by the aquatic biodiversity of the chara, providing food and income.

The following figure shows the existing feature of the Boro chara Quarry.

Figure 11-99: Existing Features of the Boro Chara Quarry



North Side



North Western Side



South Eastern Side



West Side



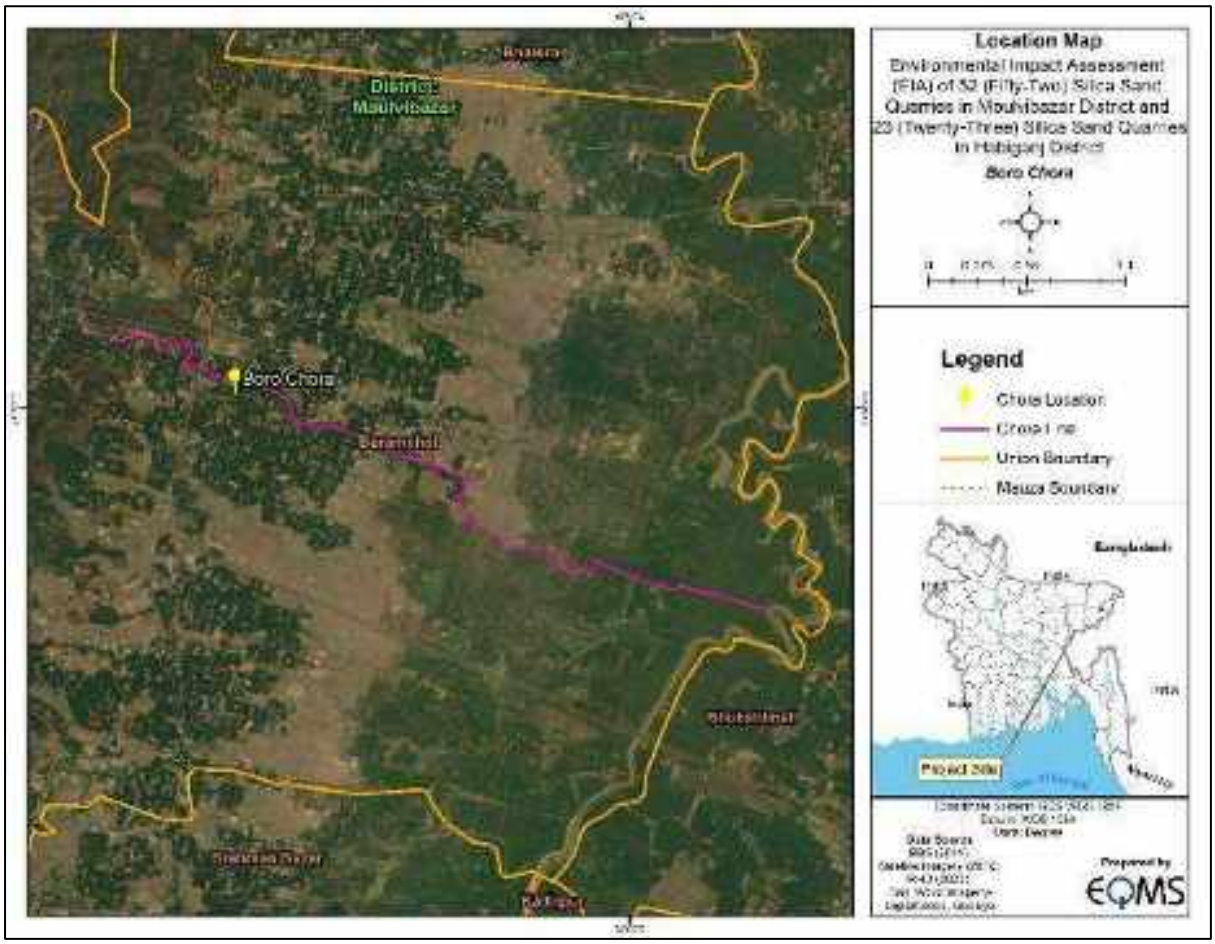
North East Side



North west Side

The following figure shows the location within the mouza boundary of the Boro Chara Quarry and surrounding features of the sand Quarry.

Figure 11-100: Location within the Mouza Boundary of the Boro Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-51: Deora Chara

The following table shows the details of the Deora chara Quarry.

Table 11-51: Details of the Deora chara Quarry

Items	Description
Name of the Chara	Deora Chara
Geographical Coordinate	24°26'7.08"N 91°45'54.078"E
Silica Enriched Mouja	Niteshor
JL No	177
Dag No	742, 891, 797, 741
Total area	1.92 Acre
Volume of sand	Significant
Location	Village: Niteshor; Mouja: Niteshor; Union: Giashnagar; Upzila: Moulvibazar Sadar
Direction of Chara	West- East

Project Surrounding	**West:** Village, Homestead Vegetation, Agricultural land, Mokam Bazar **North:** Village, Homestead Vegetation, Agricultural land, Hazrat shah Gazi Mazar. **East:** Village, Homestead Vegetation, Agricultural Land and Tea Garden **South:** Village, Homestead Vegetation, Agricultural land, Premnagar Tea garden and Dusai Resort
Access and Connectivity	Centrally located and well connected by local roads. Premnagar **Tea Estate** is Located in the southeastern section, connected by winding roads through a tea garden area.
Environmental Features	The chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the chara serve as a habitat for diverse wildlife.
Ecological Importance	Deora Chara and its surrounding bushland are rich in biodiversity. Local consultations revealed that the **Golden Jackal** is frequently observed in the area, along with the **Fishing Cat**, a species considered threatened. The bush is also a haven for various bird species, contributing to the area's ecological richness. Additionally, Silica from the stream contributes to nutrient cycling, supporting phytoplankton growth in downstream water bodies. Deora Chara drains into haor, playing a role in regional water balance and water drainage.
Livelihood Importance	The chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and tea cultivation**.

The following figure shows the existing feature of the Deora Chara Quarry.

Figure 11-101: Existing Features of the Deora Chara Quarry



South- West Side



East Side



East Side



South - West Side



South Side



North Side



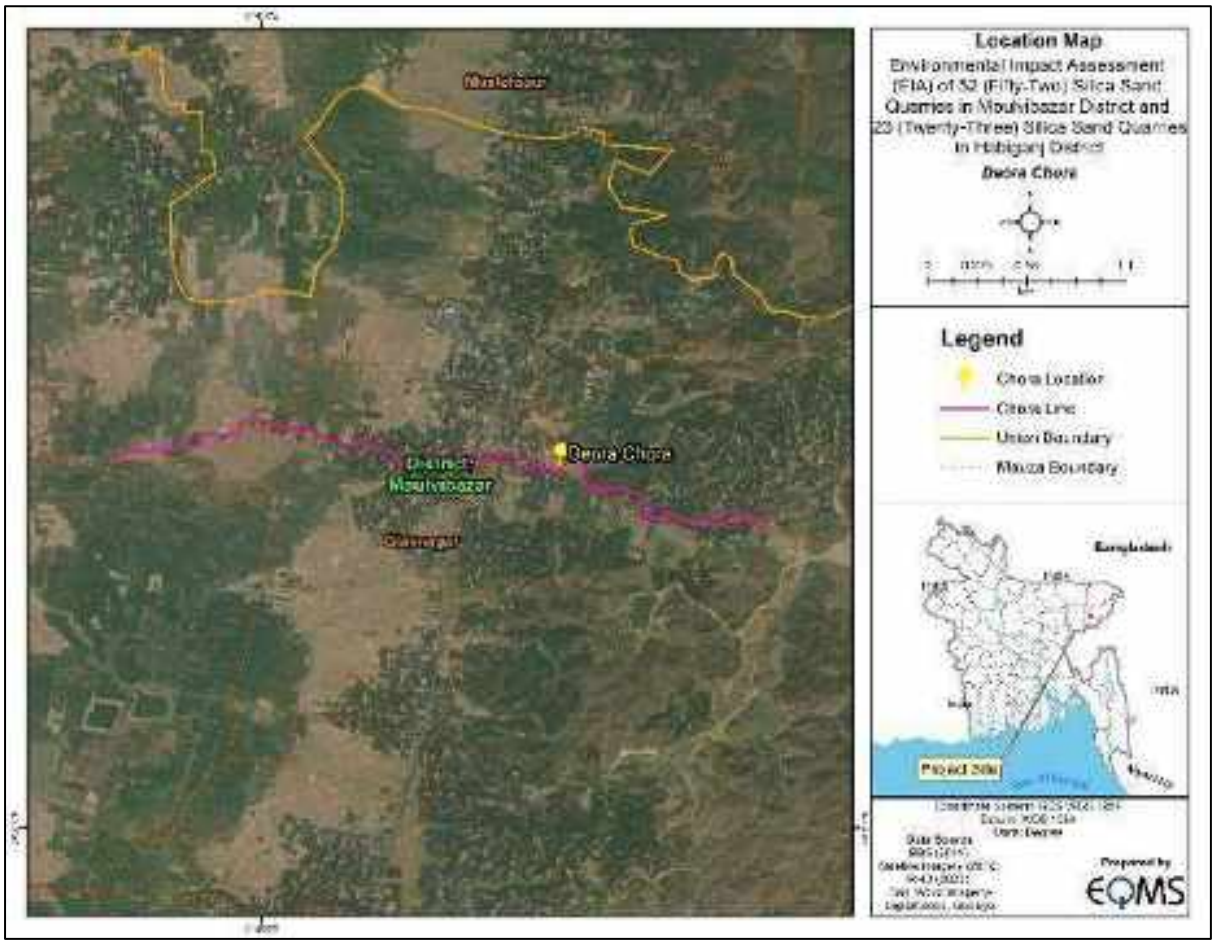
North - Western Chara



North Side

The following figure shows the location within the mouza boundary of the Deora Chara Quarry and surrounding features of the sand Quarry.

Figure 11-102: Location within the Mouza Boundary of the Deora Chara Quarry and Surrounding Features of the Sand Quarry



Appendix J-52: Moura chara

The following table shows the details of the Moura chara Quarry.

Table 11-52: Details of the Moura chara Quarry

Items	Description
Name of the Chara	Moura Chara
Geographical Coordinate	24°24'38.25"N 91°45'40.746"E ; 24°24'42.714"N 91°45'23.166"E ;
Silica enriched Mouja	Moluvi Tea Garden
Total area	3.18 Acre
JL No	191
Dag No	918,942
Volume of sand	Significant
Location	Village: Moluvi Tea Garden; Mouja: Moluvi Tea Garden; Union: Giashnagar; Upzila: Moulvibazar Sadar
Direction of Chara	West- East and North- South

Items	Description
Project Surrounding	**West:** Tea Garden, Agricultural Land and Hill **North:** Moulavi Tea Estate, Village, Homestead Vegetation, Agricultural Land **East:** Giashnagar Bazar, Village.Homestead Vegetation **South:** Village, Homestead Vegetation, Agricultural Land, Hill
Access and Connectivity	The specific point,Moura Chara, Dag No 918 and 942, is part of a sequence of closely located points just north of the previous Deora Chara on the Dhaka Moulvibazar Highway Road. This connectivity ensures that if one point of the Chara is reached, others can be easily located. Streams in the area intersect access roads at several locations, enhancing accessibility.
Environmental Features	The Chara is flanked by dense vegetation comprising bamboo groves, natural herbs, shrubs, wood bushes, and agricultural lands. Residential households are scattered in the surrounding areas. The dense bushland and vegetation around the Chara serve as a habitat for diverse wildlife.
Ecological Importance	Moura Chara and its surrounding bushland form a thriving ecological habitat, rich in biodiversity. Local consultations highlight the frequent presence of the Golden Jackal, an adaptable predator that plays a crucial role in the area's ecosystem. The Fishing Cat, a species considered threatened, also roams these wetlands, relying on the area's water bodies for sustenance. The dense bushland serves as a sanctuary for various bird species, enhancing the region’s ecological diversity. Additionally, the silica carried by the stream supports nutrient cycling, fostering phytoplankton growth in downstream water bodies. As Moura Chara drains into Bakka Beel, it contributes significantly to regional water balance and drainage, underscoring its role in sustaining the hydrological and ecological integrity of the landscape.
Livelihood Importance	The Chara serves as a vital source of water for agriculture in the region. Additionally, local residents use its water for domestic activities such as bathing and washing clothes, although it is not utilized as a source of drinking water. Silica-rich sediments enhance **soil fertility**, benefiting nearby **rice and tea cultivation**.

The following figure shows the existing feature of the Moura chara Quarry.

Figure 11-103: Existing Features of the Moura chara Quarry



East Side



South Side



West Side



North Side



North East Side



East Side

The following figure shows the location within the mouza boundary of the Moura Chara Quarry and surrounding features of the sand Quarry.

Figure 11-104: Location within the Mouza Boundary of the Moura Chara Quarry and Surrounding Features of the Sand Quarry

