Government of the People's Republic of Bangladesh Ministry of Housing and Public Works Urban Development Directorate

Inception Report

On

Environmental Survey and Studies

under "Preparation of Development Plan for Meherpur Zilla" Project of Urban Development Directorate (UDD)

Date: 28 February 2025

Submitted by:

SGS Bangladesh Limited

And

Engineering Consultants and Associates Limited (ECAL)

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1. Introduction

1.1. Project Background

Bangladesh is not only the world's fastest-growing populous country, but also a country with immense potential in the near future. As the world's population grows, so does urbanization. Without suitable standards, it is difficult to manage the developing urban areas as a result of urbanization. Urbanization includes the expansion of houses and other infrastructure. Nobody can deny that the housing and infrastructure situation in metropolitan areas is deteriorating day by day. It must be arranged in order to be properly guided. Meanwhile, the honorable Prime Minister issued significant instructions for the country's spatial and sectoral planning at different levels. Bangladesh is one of the world's most densely populated countries, and it has had tremendous population increase over the last century, however the rate of growth has recently slowed to a reasonable level. Over the next decade, the country will see a rapid development of urbanization. According to an estimate, by 2020, nearly every other man, woman and child will live in an urban area (World Bank ed., Bangladesh 2020). Bangladesh's urban population has been growing at a yearly average rate of 6 percent since independence, at a time when the national population growth was 2.2 percent. As a result, urban population has grown six-fold, compared with a 70 percent increase in rural population (World Bank, 2007). As per recent UN data, approximately 25 percent of Bangladesh's current population currently lives in urban areas. Of this urban population, more than half lives in the four largest cities: Dhaka, Chittagong, Khulna and Rajshahi.

Urbanization refers to the increase in the number of people living in urban areas such as towns and cities. In the course of urbanization, urban expansion is unavoidable. People in Bangladesh are increasingly preferring to reside in and around cities and towns in recent years. People in our country primarily migrate from rural to cities in pursuit of a variety of opportunities. Urbanization, on the other hand, is frequently used as an indicator of development. Unplanned urbanization, on the other hand, poses a hazard to developing countries like Bangladesh. Bangladesh's urbanization has recently been complicated by a number of new issues. Such growing difficulties, as well as their impact, can be mitigated with proper planning and actions. Bangladesh would undoubtedly attain its targeted sustainable urban growth goal through planned urbanization. In 2008, humankind has crossed a socio-demographic milestone for the first time in history by having half of its population living within the urban areas (UNFPA, 2007).

In developing countries, urbanization has now become a powerful force. Cities are important drivers of growth and development, providing jobs, infrastructure, and services. With the unplanned expansion, the growing number of people, assets, and economic activities increase the exposure of cities to the impacts of disasters and climate change. However, in low and lower-middle income countries, new urban development is increasingly more likely to occur on hazard-prone land, namely in floodplains and other low-lying areas, along fault lines, and on steep slopes. In addition to settling in hazard-prone areas, much of the building construction that occurs is unregulated and unplanned, placing vulnerable populations, who settle on hazard-prone land, at increased risk. Besides, poor urban governance, declining ecosystems, and vulnerable rural livelihoods are among the main underlying risk drivers, which need to be addressed to build safer cities. Bangladesh has been experiencing a rapid increase in its urban population ever since its independence in 1971.Urban

population as a percentage of total population increased from around 8.8% to nearly 23% during the 1974-2011 periods. It is estimated that by the year 2021 nearly one-third or 33% of the population of Bangladesh will be living in urban areas. More than 60% of the national GDP is derived from non-agricultural sectors that are mainly based in urban areas. This phenomenon indicates the increasing role of urban areas being played in the national economy.

Upazila Parishad is the lowest administrative level of local government in Bangladesh. The majority of Upazila Parishads are still unable to achieve planned rural-urban development, which involves physically and socioeconomically integrating rural and urban areas. Most of the time, land is used haphazardly, resulting in a low level of living for the population. In the present government's policy for administrative reorganization, the upazila is the most important tier of administration. In light of the foregoing, a comprehensive development plan is required to handle the mandatory land use transition in both urban and rural areas, while avoiding unauthorized and unplanned development. A comprehensive development strategy at the Upazila level appears to be necessary.

Urban Development Directorate under the Ministry of Housing and Public Works, has launched a project titled "Preparation of Development Plan for Meherpur Zilla Project". This initiative aims to formulate a development plan for the next 20 years, divided into essential sectors to create a risk-sensitive and sustainable strategy. To understand the socio-economic and demographic profile of the study area is pivotal step for understanding the immediate needs and forecast the future needs for the next 20 years. Existing data and features are instrumental in providing a clear spatial understanding of the project area, accurately reflecting the potentials and problems of the existing scoria economic related conditions, and facilitating the representation within the development plan. Overall, the scope of socio-economic project signifies a comprehensive and forward-looking approach to urban development, emphasizing sustainability and thoughtful planning over the next two decades.

Environment is one of the important development modules of this project. In this development plan, 'environmental survey and studies' consider is an important tool for a durable and sustainable urbanization. Land use planning is an important component for a modern urban development. But practicing urban development using a proper land use plan is not developed in Bangladesh. Prior to land use planning it is very essential to access environmetal conditions (air, water, soil and noise) and the relevant information in and around the site of future urban development. Therefore, a rigorous environmental survey and study is needed to carry out for a resilient urban development.

1.2. Description of the Study Area

Meherpur Zilla, located in the southwestern part of Bangladesh, holds a significant place in the country's history and culture. Known for its rich heritage and pivotal role in the liberation war, Meherpur continues to thrive with its diverse economy, agricultural abundance, and growing infrastructure. This proposal aims to highlight the key aspects of Meherpur Zilla, focusing on its socio-economic landscape, cultural heritage, and potential for future development. The district comprises three Upazilas: Meherpur Sadar, Mujibnagar, and Gangni. Meherpur Sadar serves as the administrative and economic hub, with a diverse economy primarily based on agriculture and trade. Mujibnagar, formerly Bhoborpara, is renowned for its historical importance in the Liberation War, attracting many tourists to its memorial complex. Gangni Upazila is notable for its vibrant agricultural activities and emerging industrial potential. Collectively, these Upazilas contribute to the district's cultural richness, economic diversity, and historical legacy, positioning Meherpur Zilla as a region of significant importance and development potential in Bangladesh.

Meherpur Zilla is bordered by Kushtia to the east, Chuadanga to the south, and the Indian state of West Bengal to the west and north, situated in the Khulna Division. The district's strategic location offers significant advantages for cross-border trade and cultural exchange. The district is predominantly rural, with a diverse population comprising various ethnic and religious communities. The literacy rate is gradually improving, with ongoing efforts to enhance educational facilities and opportunities.

a. Gangni Upazila

Gangni Upazila (Meherpur district) area 363.95 sq km, located in between 23°44' and 23°52' North latitudes and in between 88°34' and 88°47' East longitudes. It is bounded by Daulatpur (Kushtia) upazila on the North, Alamdanga and Meherpur Sadar upazilas on the South, Daulatpur (Kushtia), Mirpur (Kushtia) and' Alamdanga upazilas on the East, Meherpur Sadar upazila and West Bengal state of India on the West.

Population Total 299607; male 148250, female 151357; Muslim 295458, Hindu 2726, Christian 1313 and others 110. Water bodies Main rivers: Bhairab, Ichamati, Mathabhanga and Kazla; Elangi Beel, Nuner Beel and Elalgari Damash Beel are notable. Administration Gangni Thana was formed in 1923 and it was turned into an upazila on 24 February 1984.' Gangni Upazila consist of one Municipality, 9 Unions, 90 Mouzas and 137 Villages.

b. Meherpur Sadar Upazila

Meherpur Sadar Upazila (Meherpur district) area 276.15 sq km, located in between 23°40' and 23°52' North latitudes and in between 88°34' and 88°47' East longitudes. It is bounded by Gangni upazila and West Bengal state of India on the North, Damurhuda and Mujibnagar upazilas on the South, Gangni and Alamdanga upazilas on the East, West Bengal state of India on the West.

Population Total 256642; male 127300, female 129342; Muslim 252323, Hindu 4199, Buddhist 1, Christian 114 and others 5. Water bodies Main rivers: Bhairab, Kazla; Bhatgari and Chand Beels are notable. Administration Meherpur Thana was turned into an upazila in 1984. Meherpur Municipality was formed in 1960. Meherpur Sadar consist of one Municipality, 5 Unions, 61 Mouzas and 104 Villages.

c. Mujibnagar Upazila

Mujibnagar Upazila (Meherpur district) area 111.51 sq km, located in between 23°36' and 23°45' North latitudes and in between 88°34' and 88°43' East longitudes. It is bounded by Meherpur Sadar upazila on the North, Damurhuda and Meherpur Sadar upazilas on the East, West Bengal of India on the South and on the West. Population Total 99143; male 49084, female 50059; Muslim 92970, Hindu 945, Buddhist 13, Christian 5200 and others 15. Water bodies Bhairab River, Sarashati Canal and Datpur Beel are notable. Administration Mujibnagar upazila was formed on 24 February 2000. Mujibnagar Upazila consist of 4 Unions, 29 Mouza and 33 Villages.
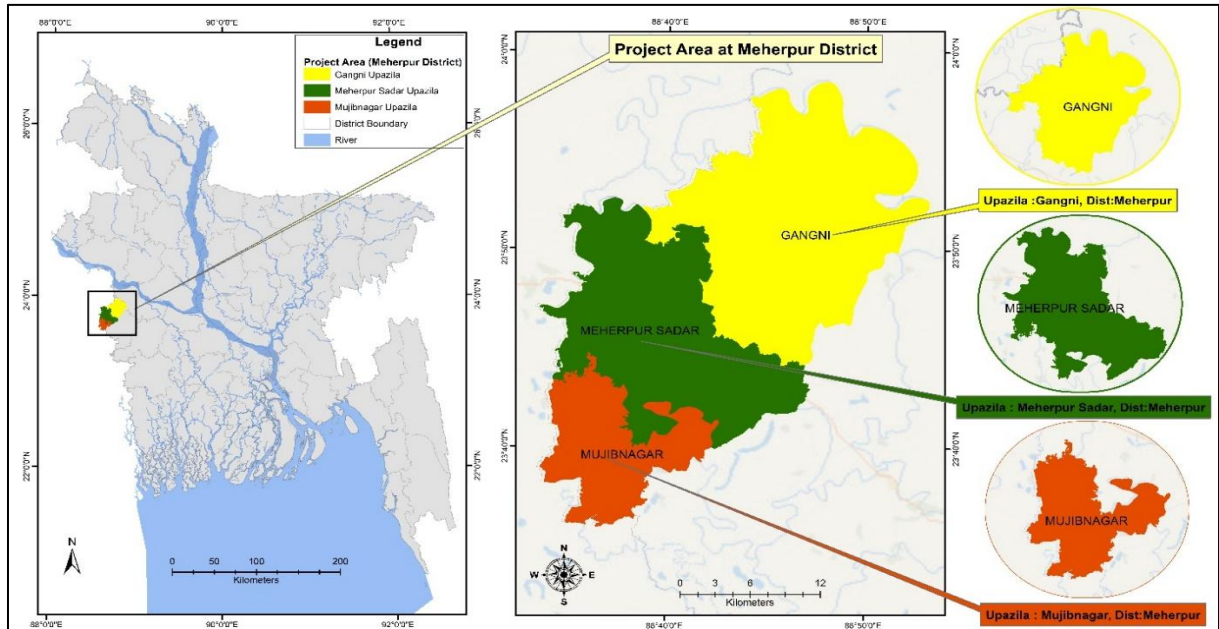
Figure - 1: Study Area Map

1.3. Understanding of the assignment:

a) Environmental survey and study have to be carried out to know the air quality, water quality and noise conditions for day and night situations in the project area. SGS & ECAL will take samples from necessary locations of the project area for investigation of air, water and noise quality in consultation with PD. For this reason, SGS & ECAL has to classify the study area based on morphology, vegetation cover and land use pattern (urban, rural, residential, industrial and agricultural). To do so, the firm will stratify the landscape into different units. Therefore, the firm also needs to produce a map of the all-environmental aspects.

b) Collection of noise level at major growth centers and road intersections. SGS & ECAL will collect the noise level data in the project area to understand whether the existing noise level is within the tolerable international and national level or not. SGS & ECAL will also prepare necessary maps, graphs and datasets of the noise level data and the sampling location selection should be with the consultation with PD.

c) Collection of air quality Data at major growth centers and road intersections. SGS & ECAL will collect the air quality data like PM 0.5, PM 2.5, PM 5, PM 10 and SPM values at the major growth centers and road and prepare all necessary spatial maps, graphs and datasets and the sampling location selection should be with the consultation of PD.

d) Determination of Air Pollution Index (API): SGS & ECAL will determine the API using the collected air pollution data for the existing condition and predict the future scenario that may arise after the development is completed. Also, prepare report including correlation establishing with the development planning and refer to the percussions needed to mitigate the noise and air pollution using the international and national standard guideline.

e) Field and Lab Test for Examining the Water Quality: The Lab test for examining the groundwater quality including (i) Hydro-Geological field parameter test (Arsenic, Ph, EC, TDS, etc) (ii) Major Cataion and Anaion (wet and dry seasons) of groundwater and surface water, (iii) Trace Element Analysis (wet and dry seasons) of groundwater and surface water, (iv) Grain Size Analysis from the monitoring wells.

f) Urban growth prediction (2030 and 2050) using Cellular automata and Markov Chain (CA-Markov) model, both special and temporal Land use land cover (LULC) changes are modeled using a CA-Markov model. This model predicts the characteristics and trends of Land use land cover (LULC) change over time by combining cellular automata with the Markov chain. For the Land Change Modeler, assessing gains and losses, net shifts and simulating LULC changes between the various LULC classes is essential. The dependent and independent covariates were used to predict the LULC change. Identification of cropland conversion and assessment of cropping intensity using phenology matrix Cropland changes to other land cover are common in many developing countries, especially in the periphery of the urban-dominated area. Agriculture land conversion to and from will be documented using the Sankey diagram. Cropland masks will be applied to the NDVI time-series data only to keep the NDVI values of the pixels classified as cropland. The average pixel value (NDVI value) from every image (timestamp) will be then extracted for each administrative unit of the region as CSV files from the masked NDVI time-series data. We will use Google Earth Engine's Python API and Geemap python package to call and extract these datasets. The Savitsky Golay filter will be applied to the time-series data to eliminate the false peaks. The number of peaks and areas under the curve for each year will be quantified using the SciPy python package. The change in area under the curve over the years shows the change in crop production, which could be linked with regional crop production data of FAO stat. Several peak parameters will be taken into consideration in order to identify the right peaks. We considered the minimum distance between adjacent peaks as 80 days (5 instances of 16-day-composites) as most crop cycles are more significant than the specified period.

g) Groundwater status mapping using geo-spatial analysis: Groundwater table data will be collected from the water development board. They have an archive of monthly water table data. We will map and identify the region vulnerable to groundwater depletion using geospatial and geostatistical data processing. Any Other Activities in Consultation with PD.

1.4. Objectives:

Main objectives of the project:
The aim of Environmental study for urban areas of Meherpur Zilla is to identify the noise, water and air pollution conditions of the project area including variations at day and night time. The study is also intended to examine the water quality, identify the noise level of the project area and the air pollution like particle matter ranges from 0.5 to 10.0, suspended particle matter and finally the air pollution index (API) determination which will be correlated to the development plan for the implementation of the project. The Environmental study data and information shall have to integrate with both spatial and attribute data of output of other components of the planning package of "Preparation of Development Plan for Meherpur Zilla'Mn order to keep the environment sustainable.

Specific objectives of present study as per scope of work:
With a view to attain the aim of Environmental study of the project areas, the objectives of the work comprise the following:
   o To collect the noise level at major growth centers and road intersections
   o To collect the air quality like PM 2.5, PM 10 and Suspended Particle Matter (SPM) at major growth centers and road intersections and spatial distribution maps, graphs and dataset.
   o To determind the water quality

o Finally, determine the Air Pollution Index (API) of the project area to specify the tolerable limit of noise and air pollution with the international and national standard to predict the percussions needed for future development planning.

1.5. Scope of work:

As per TOR, description of the field investigation is given in Table-1 below.

Table-1: Description of Field Investigations

SI. No.	Description of Items	Unit	Total Number
Field Tests			
1	Noise level	No	70
2	Water sample collection point for examining the surface Water Quality from Major River, Haor & Baor, Canal water and pond water.	No	24
3	Location points of air sample for Air pollution Index determination and reporting	No	28
4	Climate and climate change impact assessment through FGD and KII	No	6
5	Desktop study of existing literature	No	1

Besides the above scope of work, agricultural soil quality has to be measured or soil quality data has to be collected from SRDI (Soil Resources Development Institute). Climatic data was also collected from weather stations in and around the project area or nearby areas to prepare climate change model.

2. METHODOLOGY FOR THE ASSIGNMENT:

2.1. Noise level measurement:

Sampling Method:
- Monitoring of ambient noise level will be carried out for a period of 1-24 hours (15 hours day-time (0600 – 2100) and 9 hours night-time (2100 – 0900) using a Class 1 Sound Level Meter (Model: SL – 4022 or upper version). The duration of noise level monitoring will be decided based on the consultation with the client.
- A tripod/stand should be used for monitoring.
- To obtain the most accurate data, hold out the SLM at arm's length and hold it out to inspector's side with the microphone pointed towards the source of the noise, to minimize sound reflecting off his body.
- Noise reading should always be taken at the height of the receptor. If the receptor is at the ground level, take a measurement at the ground level (1.2–1.5m off the ground).
- To prevent disturbance from reflecting surfaces, the noise meter microphone facing towards the noise source with clearance of around 3 meters from any structures will be ensured.

Figure-2: Noise Level Meter (Class 1)

2.2. Air quality measurement

Parameters of Ambient air quality, sampling method and laboratory analysis methods are given below:

Table-2: Air Quality Measurement

Parameters	Sampling Method	Laboratory Analysis Method
SPM	o Sample of ambient air is to be carried out by Respirable Dust Sampler [Model 36C12] or portable air quality device (no lab analysis needed).	IS 11255 (Part 1):1985
PM$_{10}$	o Sampling will be conducted for 1-24 hours (duration to be decided based on the discussion with the client). o Sampler placed at an open area (minimum 20 m clearance from any tall structures or vegetations/trees/shrubs) to prevent disturbance. o After completion of sampling, each filter paper with trapped PM shall be preserved in an airtight Polly packet and is again packed in an envelope. All samples are to be accompanied by Chain of Custody (CoC) forms for QA/QC purpose.	IS 5182 (Part 23):2006 - Methods for Measurement of Air Pollution, Part 23: Respirable Suspended Particulate Matter (PM10), Cyclonic Flow Technique
PM$_{2.5}$	o Sample of ambient air is to be carried out by fine particulate monitor [Model APS-302] or portable air quality device (no lab analysis needed). o Sampling to be conducted for 1-24 hours (duration to be decided based on the consultation with the client). o Sampler placed at an open area (minimum 20 m clearance from any tall structures or vegetations/trees/shrubs) to prevent disturbance. o After completion of sampling, each filter paper with trapped PM shall be preserved in airtight Polly packet and is again packed in an envelope. All samples to be accompanied by Chain of Custody (CoC) forms for QA/QC purpose.	In House Gravimetric Method

Figure-3: Respirable Dust Sampler and Fine Particulate Monitor

2.3. Water quality measurement

Water sample has to be tested, and the testing parameters of surface water are The Lab test for examining the groundwater quality including (i) Hydro-Geological field parameter test (Arsenic, Ph, EC, TDS, etc) (ii) Major Cataion and Anaion (wet and dry seasons) of groundwater and surface water, (iii) Trace Element Analysis (wet and dry seasons) of groundwater and surface water. All parameters will

be tested in APHA/USEPA/ISO/IS method except some in-situ parameters (Temperature, Salinity, and Turbidity) to be tested by the electromagnetic method.

Sampling Method:
- Sampling program will be undertaken according to the procedures outlined in ISO 5667-9:1992 -Water Quality Sampling Guidance.
- Sampling will be conducted using a vertical Van Dorn Water Sampler (Beta Plus) to collect the surface water samples.
- New sampling bottles will be rinsed with distilled water for three times and then two times with sample water.
- 2.5 liters of sample per location will be collected.
- All sampling bottles will be properly labeled and transported in ice box (4°C) from site to SGS laboratory at Dhaka.
- All samples will be accompanied by Chain of Custody (CoC) forms for QA/QC purpose.

Water Sample Location:
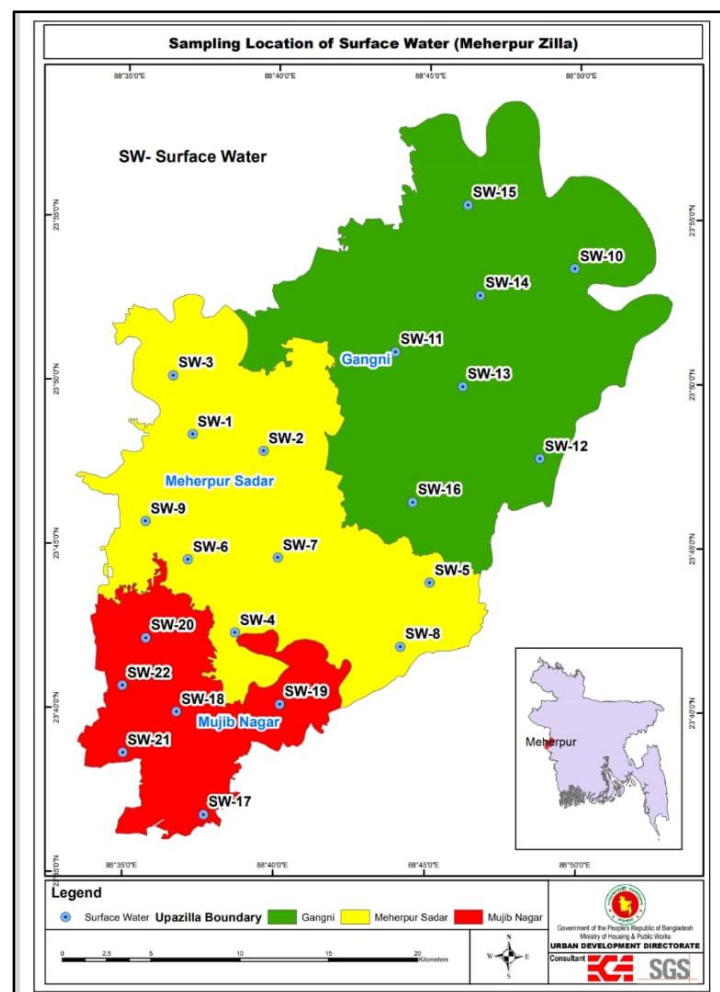
Figure-4: Water Sample Location

2.4. Air Pollution Index

1. Data Collection and Preparation

Data Collection:

- Ensure that the air pollution data for PM10, PM2.5, and SPM is collected using standardized equipment and methodologies as prescribed by national and international guidelines (e.g., WHO, EPA, NAAQS).

Data Preparation:

- Validate the collected data for any anomalies or missing values.
- Aggregate the data to a consistent time scale, such as daily averages, if not already done.

Sample location point of Air and Noise:

Figure-5: Location map of air and noise sampling point.

2. Selection of Standards and Index Calculation

Reference Standards:

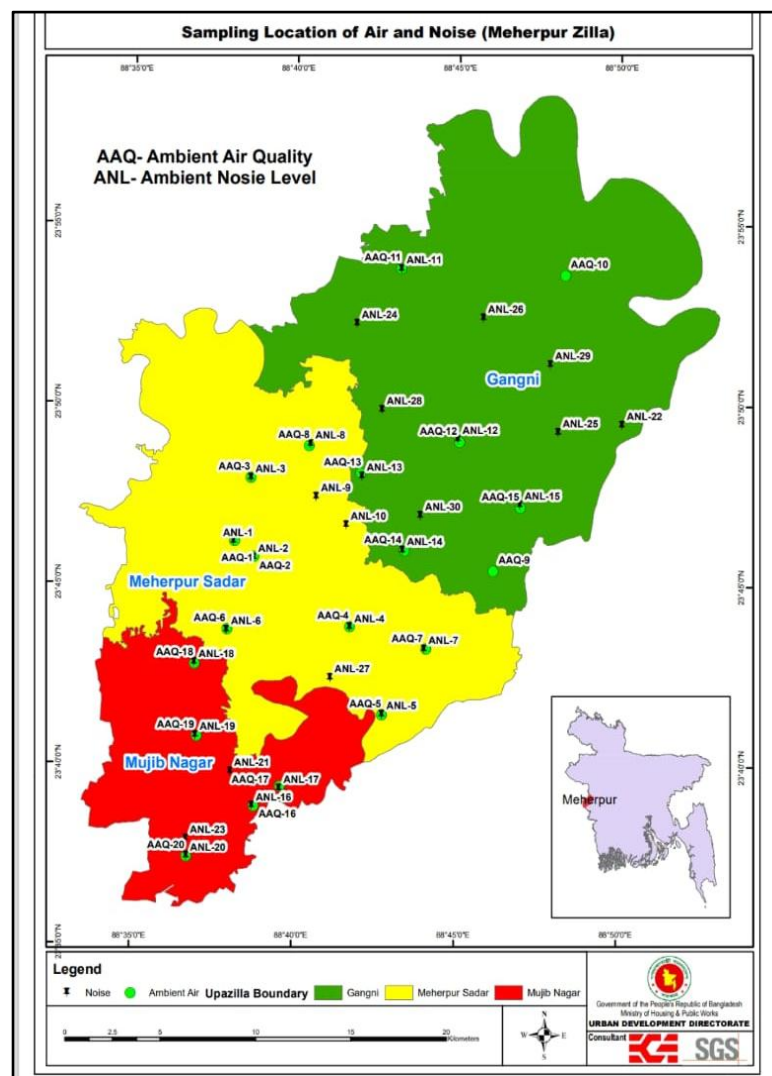- Choose appropriate reference standards for PM10, PM2.5, and SPM from both international (e.g., WHO Air Quality Guidelines, US EPA National Ambient Air Quality Standards) and national standards (e.g., NAAQS in India).

3. Calculation of Sub-indices

- Each pollutant's concentration is converted into a sub-index using a predefined scale. This can be done using linear interpolation between breakpoints.

Steps:

1. Determine the Breakpoints: Identify the concentration breakpoints for each pollutant according to the selected standards.
2. Linear Interpolation: For each pollutant, convert the observed concentration to a sub-index using the formula:

$$Ip = \frac{(I_{HI} - I_{LO})}{(BP_{HI} - BP_{LO})} \times (Cp - BPLO) + ILO$$

Where:

- Ip is the sub-index for pollutant p
- Cp is the concentration of pollutant p
- BPHI and BPLO are the upper and lower concentration breakpoints for the category in which Cp falls.
- IHI and ILO are the upper and lower index breakpoints corresponding to BPHI and BPLO

4. Calculation of Overall API

- The overall API is determined by taking the highest sub-index value among the pollutants.
- API = max (IPM10, IPM2.5, ISPM)

5. Reporting

Categorization:

- Classify the API into categories (e.g., Good, Moderate, Unhealthy for Sensitive Groups, Unhealthy, Very Unhealthy, Hazardous) based on the sub-index values.
- Groundwater status mapping using geo-spatial analysis: Groundwater table data will be collected from the water development board. They have an archive of monthly water table data. We will map and identify the region vulnerable to ground water depletion using geospatial and geostatistical data processing. Any Other Activities in Consultation with PD

3. Training Program (Suitability of The Transfer of Knowledge)

By providing expert consultancy services, SGS & ECAL aims to support the project in achieving its objectives of creating a well-organized, sustainable, and resilient development framework for Meherpur Zilla. This initiative is expected to contribute significantly to the national development goals and the achievement of SDG 11, ultimately leading to improved living standards and quality of life for the people of Bangladesh.

The consultant's expertise in environmental surveys and study will be instrumental to producing a high-quality development plan. These technical capabilities will ensure that the plan is based on accurate and up-to-date information, enabling informed decision-making and effective implementation.

To strengthen the Project Management Office, the consultant is obliged to conduct the respective necessary training according to the direction of PD.

3.1. Relevance to training program:

Following training aspects can be addressed to provide knowledge among the project management unit of UDD which are mention bellow

- Basic understanding of environment and its component, significance and relevance with the, sustainable development and planning perspective.
- Survey approach and methodology and survey tools of air, water and noise data collection.
- Laboratory visit and laboratory equipment demo in SGS laboratory.
- Survey tool validation and field data acquisition demo.
- Data processing and analysis.
- How to present environmental aspects data base in GIS map?
- How to link environmental information into the planning processes.

3.2. Training Approach and methodology

The consultant's expertise in environmental survey and study will be producing a high-quality development plan. These technical capabilities will ensure that the plan is based on accurate and up-to-date information, enabling informed decision-making and effective implementation. In this connection following training approach can be used for transmit the knowledge.

Activities	Approach	Remarks
• Basic understanding of environment and its component, significance and relevance with the, sustainable development and planning perspective. • Survey approach and methodology and survey tools of air, water and noise data collection.	Theory and example through lecture in house.	Venu ECAL&SGS/UDD
• Laboratory visit and laboratory equipment demo in SGS laboratory. • Survey tool validation and field data acquisition demo.	Presentation, lab visit and field orientation.	SGS Laboratory
• Data processing and analysis. • How to present environmental aspects data base in GIS map and model preparation? • How to link environmental information into the planning processes?	Practical orientation and training on data base preparation.	ECAL&SGS/UDD office

3.3. Expert or trainer qualification
Mohammad Zakir Hossain Khan, PhD
Ph.D. in Geography
M.Phil. in Environmental Science
MS in Environmental Science

MBA in Human Resource Management and Marketing

B.Sc. in Civil Engineering

Diploma in Social Compliance

Post Graduate Diploma in Disaster Management

Post Graduate Diploma in Business Management

4. Deliverables and time frame:

4.1. The outlines of the deliverables and the timeframe

for their submission are given in the Table-3 below. The timeframe can be changed as well.

Table 3: List of deliverables with their tentative outlines

Sl. No.	Deliverables	Activities	Time	Remarks
1.	**Project singing**	**Contract singing in between ECAL and UDD**	**8 December, 2024**	**Done**
1	Mobilization Report	Kik off meeting, Work schedule finalization and team mobilization.	30 December,2024	Done
2	Inception Report	Preparation under processes	22 February, 2025	Under preparation
3	Initial land use and land cover map with Report **Dry season** Report on Water, noise and air pollution data collection	Field survey plan has been prepared and field data acquisition will be started 18 February 2025 to 4 March, 2025.	30 April 2025	Undr planed
4	**Wet season** Report on Water, noise and air pollution data collection	Field survey plan has been prepared and field data acquisition will be started 16 June 2025 to 28 June, 2025.	30 July 2025	
5	Draft Report on environmental parameter and prepare spatial distribution map with G1S Shape file and thematic maps	Draft report will be prepared based on field study with thematic map.	30 September 2025	
6	Final Report on Interactive Digital Model on environmental parameter and Human Intervention along with GIS Shape file and thematic maps; and Recommendation on Eco-Sensitive Land Use Planning.	Final report will be finalized after addressing the all kind of comments from TMC of project and from different stakeholder.	30 November 2025	

4.2. Outline of the deliverable

SI No.	Deliverables	Outline of Deliverables
1.	Mobilization Report	• Description of objectives and scope of sub-activities • Team formation and structure of survey team • Actual work schedule for the work • Immediate action taken after signing agreement
2.	Inception Report	• Introduction • Description of activities • Method and materials for each activity • Required resources allocation • Revised work schedule for completion of the work
3.	Report on noise, water and air pollution data collection	• Collection of datasets with photographs • Spatial distribution map. graphs and dataset
4.	Final Report Containing Recommendation on Sustainable Environmental System of the Project Area and Posting the Report on Website	• Establish a correlation of the dataset with the development planning of the project area • Recommendation on the remedial measures to make the environmental system of the region sustainable integration of environmental data and information (both attribute and spatial) with other components of the project • Land use and land cover map • Prediction of future land use and land cover cropland conversion and assessment of cropping intensity using phenology matrix • Drought monitoring reports • Ground water table map and report

5. Team composition and Task assign:

5.1. The Team Composition for the survey of Environmental Survey and Studies under:

As per TOR, we are assigning key person to execute the "Environmental Survey and Studies" under "Preparation of Development Plan for Meherpur Zilla" Project of Urban Development Directorate (UDD), the positions are given bellow

1. Environmental Engineer -1 Person
2. Scientific Officer -1 Person
3. Land use land cover modeller- 1 Person
4. Assistant Modeler -1 Persons

But the task of the project is vast and complex and the project area is belonging under different physical environment, that's why so many disciplines have to be involved in this science-based research work, for example air quality, water quality, soil quality, noise, climatic condition and social aspects related to physical environment etc.

As per TOR, expert diversity is limited but task is deserving some specialized expert in the particular sector. To overcome this limitation, we are suggesting to include some specific consultant in our team composition to complete the task and prepare a holistic baseline survey report on environmental and climatic condition and it will help us to get valuable recommendation regarding Comprehensive Plan.

To successfully official documentation and communication with client's office, a supporting team will work such as Office Manager-1 and Peon-1 will perform for this project.

Finally, a coordinator has to be assigned from the team who will be responsible to coordinate the job as well as team member and also providing the coordination services among the client and individual consultant. Finally, he will be the key person to mobilize the field survey program, communicate with concern authority and deliver the presentation and report in every step of the project execution.

5.2. The Task for this Assignment:

1. Environmental Engineer -1 Person (3 MM)

   Qualification: Minimum B. Sc in Engineering

   Experiences: At Least 5 (five) years' experience in Environmental survey, analysis and in particular on noise and air pollution.

   Responsibility: (i) To conduct, and monitor, supervise environmental surveys and studies; (ii) To analyze environmental data and information collection from field (iii) To identify the areas which exceeds the standard limit of noise and air pollution, (iv) To interlink the attribute and spatial data of Environmental study with that of other components of the project (v) To recommend possible mitigation measures for environmental system, (vi) To prepare report on the assigned task, (vii) Any other related jobs assigned by PD.

2. Scientific Officer -1 Person (3mm)

   Qualification: M. Sc. in any discipline.

   Experiences: 03 (Three) year experience in environmental survey and analysis.

   Responsibility: (i) To conduct, monitor, and data collection of environmental surveys and studies, (ii) To organize the field data for preparing maps and graphs, (iii) To prepare report on the assigned task, (iv) Any other related jobs assigned by PD.

3. Land use land cover modeller- 1 Person (12 mm)

   Qualification: PhD. in agricultural remote sensing.

   Experiences: At Least 10 (Ten) years experience in Remote sensing, survey, analysis and in particular on land use land cover.

   Responsibility: (i) To conduct, and monitor, supervise land use surveys and studies; (ii) To analyze land use, climate and ground water data and information collection from primary and secondary sources, (iii) To conduct lab analysis of the collected data, imagery and interpretation of the results of lab; (iv) To prepare summary of the study for the project area, (v) To recommend possible mitigation measures for interruption in the system due to human intervention (vi) To prepare report on the assigned task, (vii) Any other related jobs assigned by PD.

4. Assistant Modeler -1 Persons (18 mm)

Qualification: B. Sc. in Agriculture.

Experiences: 03 (Five) experience in remote sensing, climate change and analysis.

Responsibility: (i) To conduct, and monitor, supervise GNSS surveys and studies; (ii) To analyze satellite imagery (iii) To conduct prediction analysis; (iv) To able to conduct climate data processing and analysis, (v) To prepare all the spatial and thematic maps using the field data after processing and interpretation (vi) To prepare report on the assigned task, (vii) Any other related jobs assigned by PD.

5.3. The Team Composition and Task Assignment:

Sl. No.	Name of Staff	Firm/ Organization	Area of Expertise	Proposition assigned	Task Assigned
1	Dr. Mohammad Zakir Hossain Khan	ECAL	social and environmental impact assessment study and a lead auditor of ISO 14001	Environmental Enigneer	(i) To conduct, and monitor, supervise environmental surveys and studies; (ii) To analyze environmental data and information collection from field (iii) To identify the areas which exceeds the standard limit of noise and air pollution, (iv) To interlink the attribute and spatial data of Environmental study with that of other components of the project (v) To recommend possible mitigation measures for environmental system, (vi) To prepare report on the assigned task, (vii) Any other related jobs assigned by PD.
2	MOHAMMAD AMIR HOSSAIN	ECAL	Analytical Laboratory technical expert. Chemical testing of water and air quality analysis.	Scientific Officer	To conduct, monitor, and data collection of environmental surveys and studies, (ii) To organize the field data for preparing maps and graphs, (iii) To prepare report on the assigned task, (iv) Any other related jobs assigned by PD.
3	Dr. Khandakar Hasan Mahmud	ECAL	GIS and remotesensing expert. Specially land use and land cover modeler.	Land use Land cover Modeller	(i) To conduct, and monitor, supervise land use surveys and studies; (ii) To analyze land use, climate and ground water data and information collection from primary and secondary sources, (iii) To conduct lab analysis of the collected data, imagery and interpretation of the results of lab; (iv) To prepare summary of the study for the project area, (v) To recommend possible mitigation measures for interruption in the system due to human intervention (vi) To prepare report on the assigned task, (vii) Any other related jobs assigned by PD.
4	MD. JUBAER AREFIN	ECAL	Environment and cliamte change impact analyst.	Assistant Modeller	(i) To conduct, and monitor, supervise GNSSsurveys and studies; (ii) To analyze satellite imagery (iii) To conduct prediction analysis; (iv) To able to conduct climate data processing and analysis, (v) To prepare all the spatial and thematic maps using the field data after processing and interpretation (vi) To prepare report on the assigned task, (vii) Any other related jobs assigned by PD.

6. Work progress

6.1. Contract Negotiation Meeting

The negotiation meeting has been completed at Conference room on 14th Nov. 2024 including the PEC members and the representative of consulting firm of Consultancy Services for Survey (the survey of Environmental Survey and Studies) i.e. ECAL (Engineering Consultants and Associates Limited) and SGS. of this project.

6.2. Contract signing

After successful negotiation meeting, contract agreement has been singed among the both party (UDD and ECAL) in the presence of PEC committee members and the representatives of consulting firm on date 8 December 2024.

6.3. Kickoff meeting with PD office of Urban Development Directorate (UDD):

A consultation meeting has occurred in UDD with the project director and project manager about the program schedule, field mobilization and work procedure. From the discussion, we have outlined a tentative broad schedule for field operation.

- Mobilization report will be submitted by 31 December, 2024.
- A reconnaissance field visit has been planned to conduct 12-13 January, 2025.
- Inception report will be submitted 22 February 2025.

- A detailed field survey schedule will be designed after reconnaissance field visit of the project area and which is included in the inception report.

Figure-6: Kickoff meeting with PD office of Urban Development Directorate (UDD) and SGS Bangladesh Limited and ECAL representative.

6.4. Reconnaissance field visit and Stakeholder consultation:

A reconnaissance field visit has been completed on 23 February 2025 and attended a consultation meeting in the project area in DC office on 24 February 2025. This consultation meeting is conducted by UDD and attend different stakeholders from different GO and NGO who are related with this project. From the consultant part, we also attend this consultation meeting and get valuable information and suggestions from this meeting which will be very helpful to execute the field work.

Figure-7: Consultation meeting at DC office (conference room)

7. Conclusion

The baseline data collection of the project has been designed to cover all kinds of area as per land use diversity. A dedicated expert team is involved with the project and we hope to deliver all kinds of deliverables on time.

Appendix: Some Field Activity During Field Visit

Figure-8: Field instruction from consultant during Noise data recording.

Figure-9: Ambient Air quality monitoring sampler at field operation

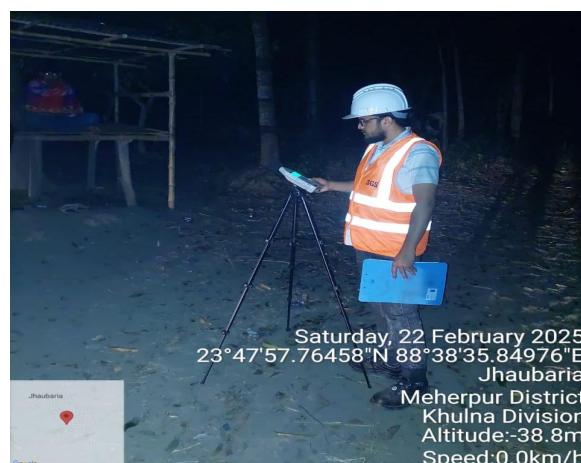
Figure-10: Ambient Noise level measuring in the field at day time.

Figure-11: Ambient Noise level measuring in the field at Night time.