Annexure - III

Terms of Reference (ToR)

For

Consultancy Services

For

Comprehensive Study for Evaluation and Updating of Master Plan for Haor Area

(হাওর মহাপরিকল্পনার মূল্যায়ন ও হালনাগাদকরণের জন্য সমন্বিত সমীক্ষা)

Department of Bangladesh Haor and Wetlands Development

Ministry of Water Resources

1. Background

The haor region with unique hydro-ecological characteristics are large bowl shaped floodplain depressions located in the north-eastern part of Bangladesh covering the districts of Sylhet, Sunamganj, Habiganj, Moulvibazar, Netrokona, Kishoreganj and Brahmanbaria with about 1.97 million ha of area and accommodating about 19.37 million people. There are 373 individually identified Haors/wetlands with an area of approximately 859,000 hectares of land (BHWDB, 2012). These haors are covering 43% area of haor region which are an ardent source of crops, fisheries, aquatic vegetation and important freshwater biodiversity. Wetlands play a crucial role in maintaining the ecological balance of ecosystems, but unsustainable extraction and utilization of its natural resources are vital consequences to threatening the haor ecosystem.

Haors and wetlands are the sources of irrigation facilities, crop production, flood control and navigation facilities which are also the habitat for breeding and nursery purposes for diverse plants and animals. There are 140 species of fish in the haor region, which is also home to thousands of migratory birds. A wide variety of fin fish including 143 indigenous and 12 exotic species along with several species of freshwater prawns. The estimated fish habitat area is about 967,000 ha. Rich wildlife community including 257 species of birds 40 species of reptiles, 29 mammals and 9 species of Amphibian (IUCN, 2012)).

Our major crops like paddy, jute, sugarcane and fish exclusively need water for farming. Besides this, farmers, fishermen, boatmen and water gypsy are mainly water dwellers whose livelihood is extremely dependent on water. Livelihood status of the haor dwelling fishermen mostly depends on the fisheries and other natural resources.

Over time, the ecological balance and biodiversity of haor have changed due to the effects of reduction of forest resource, extension of agricultural land, soil erosion, forest and habitat degradation, human interference etc. As a result, biodiversity is depleting, many species of flora and fauna are threatened, wetlands-based ecosystem is degrading, and the living conditions of local people are deteriorating as livelihoods, socioeconomic institutions, and cultural values are affected. Despite the enormous possibilities, the districts of Haor region are lagging behind in terms of different indicators of development due to the underdeveloped communication system, natural disasters, and inadequate opportunities of employment. If we want to see Bangladesh as a developed one, there is no alternative to balanced development of all regions of the country.

The Haor Master Plan for a period of 20 years (2012-2032) is formulated for the overall development of public life, environment and surroundings of the Haor areas for utilizing the huge potential of the

Haor areas with a budget of BDT 28,000 crore. The master plan operates 154 projects in 17 development areas (water resources, agriculture, fisheries, pearl culture, livestock, forest, biodiversity and wetlands, transportation, water supply and sanitation, housing and settlement, education, health, tourism, social services, industry, power and energy, mineral resources) already identified. Various Ministries/ Departments/Agencies are implementing more than 110 projects related to above mentioned development areas. Meanwhile, a good number of projects have been completed.

Sustainable management and wise use of natural resources of Haor region is the key to achieve the vision 2041 and implementation of Bangladesh Delta Plan 2100 and SDG 2030. The process will focus primarily on the evaluation of formulated project portfolio of the Haor Master Plan as well as performance thorough compliance checking of development activities done so far in alignment with current approved project portfolio considered under the Haor Master Plan. The Government has developed significant policies & plans and initiated different projects for the restoration of wetlands such as the aforementioned Master Plan specifically made for the haor region, but still the country is facing some difficulties both in sustainable management and restoration of wetlands due to both highly varying natural and anthropogenic phenomenon. On the other hand, there was no scope to address the objectives and strategies of Bangladesh water Act 2013, Bangladesh water Rule 2018, National Agriculture Extension policy 2020, National Environment Policy – 2018, Bangladesh Biodiversity Act 2017, National Industry policy 2016, Sustainable Development Goals, Bangladesh Delta Plan 2100 in the Haor Master plan. Besides, there is an instruction in the Haor Master Plan to consider the plan as a living document, which is to be reviewed and updated every five years. So, Haor Master Plan needs to be reviewed for addressing Bangladesh Water Act 2013, National Agriculture Extension policy 2020, National Environment Policy – 2018, Bangladesh Biodiversity Act 2017, National Industry policy 2016, National Strategic Plans, Sustainable Development Goals, Bangladesh Delta Plan 2100 and gaps and experience of the completed projects that will guide the management of agricultural land, water etc. following nature based solution and coordination of implementing and monitoring the development activities in haor area. There also may be considered policy gaps like landuse planning and zoning, wetlands (জলমহাল) leasing etc. for sustainable management of Haors.

Mainstreaming of the Haor region in alignment with the development trajectory was the long pending issue before the previous Haor Master Plan. As a result, economic development has thus always remained lagging behind. Based on the master plan in 2012, development works have been carried out in the last decade. The impacts of the implemented projects on haor ecosystem, fisheries, aquatic vegetation, biodiversity, crop protection, communication as well as the livelihood of the people have to be evaluated to assess the appropriateness of the Haor Master Plan (2012-32) for the targeted development of the Haor region. Considering the impact and significance of the Haor area, it is important to update the Haor Master Plan.

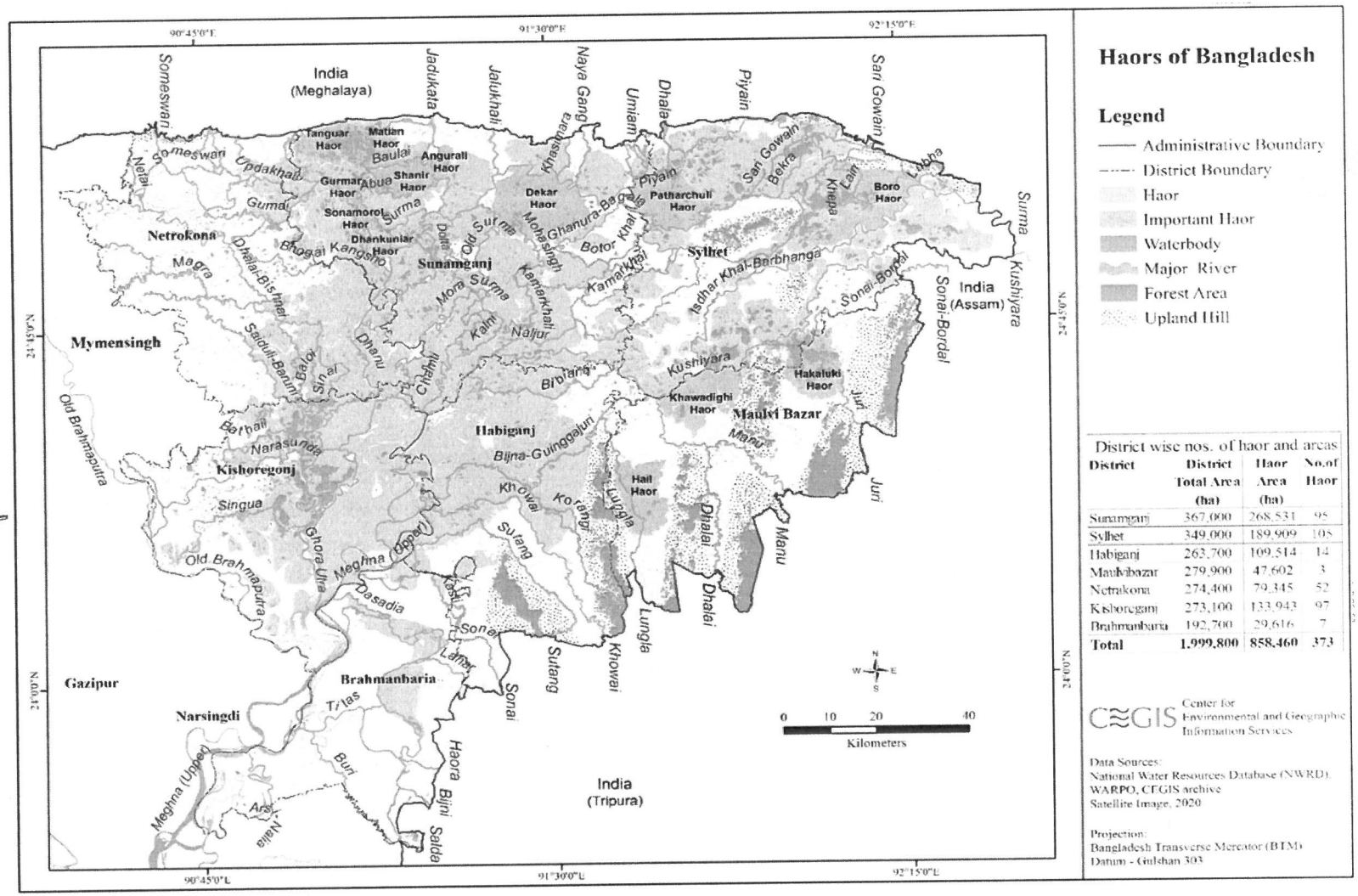

Figure-1: Study Area Map

2. Objectives

The overall objective of the study will be to review the existing master plan, impact of completed and ongoing projects under the Master Plan and subsequently update it in the light of the strategic Bangladesh Delta Plan 2100 and as well as Perspective Plan 2041 and SDG 2030 considering climate change, disaster management and policy directives.

The specific objectives are to –

- ✓ Review ongoing and completed projects under Haor Master Plan (HMP);
- ✓ Historical simulation of integrated mathematical model for impact assessment of implemented and proposed interventions on land, water and environment.
- ✓ Assess project wise economic, social and environmental impact of completed projects under HMP;
- ✓ Identify the gaps of the HMP and other sectoral plans;
- ✓ Prepare the strategies for balancing between development potential and conservation and restoration of haor ecosystem;
- ✓ Identify and update the development area along with new intervention considering the nature-based solution in HMP;
- ✓ Update HMP considering other strategic plans & other related acts, rules and policies; and
- ✓ Develop integrated strategic action plan and investment plan for short, mid and long term following the green growth strategies.

3. Scope of Works

- Carry out comprehensive review of available updated literature in connection with Haor Master Plan (HMP);
- Analyze implemented project wise impact in terms of economic, social and environmental aspects through baseline survey and Focus Group Discussion (FGD), Participatory Rural Appraisal (PRA) and Key Informant Interview (KII) etc. under HMP;
- Identify the Strength, Weakness, Opportunities and Threat (SWOT) of the Haor Master Plan (HMP).
- Analyze problems and bottlenecks of HMP regarding the implementation of projects as mentioned in HMP.
- Update and recommend integrated approach oriented future interventions and action programs as well as department/agency wise action plans aligning with Sustainable Development Goals (SDG), Bangladesh Delta Plan 2100, National Strategic Plans, to ensure ecological protection, socio-economic development, transportation, eco-tourism development etc.

- Identify strategic management issues and livelihood improvements (water conflicts and water development, health and sanitation, sustainable use of resources, value addition and marketing of wetland products, fishery development, eco-tourism etc.) in haor area.
- Evaluate the impacts of implemented interventions on natural resources through integrated mathematical modelling techniques.
- Identify the potential impacts of climate change on ecology and livelihoods through system linkage model to represent qualitative and quantitative relationships between physical variables, ecological variables and socio-economic variables.
- Prepare a set of recommendations that will enunciate the methods of integrating environmental change adaptation into various national actions focused on issues related to eco-zone management.
- Develop integrated strategic action plan and investment plan for short, mid and long term following the green growth strategies.
- Analyze the risk and sensitivity of the proposed interventions for environmental sustainability, climate resilience and disaster.
- Carry out thorough technical assessment for each and every sector for development of additional project portfolio and/ or upgrading existing project repository. This will be done as a means of assessing technical soundness, environmental sustainability, social acceptability and economic viability of proposed interventions/ projects by the following activities –

    - Review sector-specific literature for singling out prominent gaps that need to be filled during updating process as well as maintain synchronization with existing development trajectory;
    - Collect available sector-specific secondary data followed by necessary gap filling, consistency checking, correlations etc. and finally carry out data analysis for devising required scenario and cases for assessing management options;
    - Conduct field reconnaissance and necessary field visits for primary data collection and socio-economic assessment within the study region. This will include organizing stakeholder consultation workshops and seminars in the presence of officials from client side;
    - Carry out required mathematical modeling exercises through existing regional model for assessment of different scenarios of the study region and to come up with innovative solutions. This may include hydrological models for assessing water availability, hydrodynamic models for assessing flood intensity/duration/extent, altering morphological regimes and can also include water quality profiling within the study region;
    - Device appropriate eco-friendly and gender responsive management/ mitigation measures through result analyses in harmonization with climate change impacts and

prioritize based on multi-criteria and techno-economic analyses backed by stakeholder inputs;

- Carry out environmental and social assessment and financial accreditation for prioritized measures to ascertain their environmental sustainability, social acceptability and economic viability;
- Devise an appropriate implementation mechanism/ modality and funding mechanism for formulated/ updated projects and thereby finalize for updating procedure;
- Develop comprehensive digital dynamic database with screening tools to aid public and private agencies for the formulation of future development interventions.

4. Expected Outputs

- ✓ Updated Haor Master Plan will contain proposed interventions for next 10 years considering the green growth strategies and nature-based solution.
- ✓ It will provide project wise impact of development activities in haor area under Haor Master Plan and outside the Master Plan based on integrated mathematical model results
- ✓ It will provide integrated strategic action plan and investment plan for short, mid and long term.
- ✓ Updated Haor Master Plan will have a comprehensive digital dynamic database.
- ✓ All the data and information collected under this study will be incorporated in a report.

5. Approach and Methodology

The overall approach and procedure to be followed to accomplish the objectives of the project has been illustrated as follows:

Data Collection and Processing: Hydraulic & Hydrological, Meteorological, Ecological, Fisheries, Agriculture, Socio-economic etc. data have to be collected from available secondary sources. Following the standard procedures necessary data from primary sources will also be collected. Analyzing data collected from both primary and secondary sources, updating of HMP and impact assessment & evaluation of completed projects in haor area will be carried out.

Survey for existing fisheries, agricultural and socio-economic-environmental status of respective completed project areas:

A multidisciplinary team comprising of hydrologist, environmentalist, sociologist, fisheries expert, agriculturist, WASH (Water & Sanitation) Expert, Monitoring and Evaluation Expert, Climate change and Disaster Management Expert etc., have to conduct the survey for existing socio-economic-environmental, hydrological, fisheries, public health and sanitation and agricultural status to assess impact of the completed project areas in haor region. Data on existing social status has to be collected to assess existing socio-economic condition with health and sanitation information in and around the project area through baseline survey (House Hold Survey/Questionnaires Survey). Data on existing fisheries and agriculture have to be collected to assess existing agriculture and fisheries production and biodiversity of the area and to plan future management strategies. Social and environmental impacts of the completed project activities have also to be evaluated by Social Impact Assessment (SIA) and

Environmental Impact Assessment (EIA). The team has to conduct Public Consultation Meeting (PCM), Focus Group Discussion (FGD), Participatory Rural Appraisal (PRA), and Key Informant Interview (KII) for fulfilling the ESIA objectives and development strategies of the HMP.

The activities need to be performed under Environmental and Social Investigation are as follows:

- Collection and review of related maps, reports and data from secondary sources.
- Conducting the assessment of water resources, physical infrastructures, environmental quality, climatology, ecosystem functioning, agriculture, fisheries, aquatic vegetation, forest and social dependency patterns based on primary and secondary data.
- The Environmental and Social Components for water resources, land resources, livelihood, agriculture, fisheries, ecosystem and socio-economic condition have to be identified from the outcome of baseline survey.

- **Water Resources**
  - Impact of completed and proposed interventions on each Important Environmental and Social Components such as flooding, drainage, irrigation, water use, wave action and erosion, instream water resources, surface water availability have to be assessed.
  - Climate change impacts on water resources as well as for proposed interventions have to be addressed.
  - Combined impact of completed and proposed interventions has to be assessed by making comparison between baseline, with project and without project condition.
  - Introduce Nature Based solutions by sharing water for irrigation, fisheries and other purposes for erosion control, flood management, resource management etc.
- **Livelihood**
  - Identification of livelihood types and dependencies and delineating status of them.
  - Analyzing assets of the area and assess how completed projects/external forces change the livelihood status of the local people by conducting household survey in respective areas and analysis of livelihood risk-based challenges.
  - Address strategic management issues and livelihood improvement (water conflicts and water development, sanitation and health, sustainable use of resources, value addition and marketing of wetland products, fishery development, ecotourism etc.) to include in updated HMP.

- **Agriculture**
  - Impact of interventions of completed projects on each Important Environmental and Social Components such as land type, soil fertility, cropping intensity, crop production, crop damage etc have to assessed

- Introduce mechanism to increase soil fertility and crop production through introducing short duration variety, drought tolerant variety, climate resilient variety of crops, advanced technologies in updated HMP.

- **Fisheries**
  - Impact of completed and proposed interventions on each Important Environmental and Social Components such as Fish habitat, Fish Sanctuaries, Fish Biodiversity and Fish production have to be assessed in updated HMP.
  - Impact of water control structures on Fish migration, Fish breeding, Fish habitat etc. have to be assessed.
  - Impact of aquatic vegetation as shelter, breeding purpose, food production for fishes, aquatic birds and animals.

- **Ecosystem**
  - Identification of seasonal ecosystem prospects
  - Assessment of the extent, status and function of wetland resources, aquatic vegetations and functions in connection with the multidisciplinary stakeholders.
  - Analyze the change in status of wetland types to generate information on trends and conduct the trend analysis for developing future scenarios in the milestone of 2031 and 2041.
  - Identification of afforestation sites for bird sanctuary and suggest local plant nurseries in the wetlands and floodplain sites including types of trees.
  - Impact assessment of existing as well as proposed interventions.
  - Impact of terrestrial vegetation as shelter, breeding purpose, food production for aquatic birds and animals.

The collected data has to be analyzed to assess the impact on social and environmental, agriculture and fish production and biodiversity conservation due to proposed interventions. Impact in matrix form, mitigation measures, findings of public consultation as well as conclusions and recommendations have to be presented in the relevant section of the report. Department of Environment (DoE) guidelines have to be followed to perform EIA approach. All formalities supporting the Rules prevailing in this sector are to be strictly taken consideration.

Impacts Assessment of Implemented and Proposed Interventions.

The key issues and challenges of haor areas include water scarcity, flash floods, monsoon floods, water logging/drainage congestion, lack of drinking water and sanitation services and degradation of environment. Mathematical modelling approach is the best techniques to address the above mentioned issues as well as to analyze the complex hydrological conditions of haor area in an integrated way. In the present study mathematical modelling techniques have to be used to address the hydrological issues in haor region. The existing regional model have to be used for this purpose. So far 110 nos. of projects

have been implemented in haor area based on the recommendation of existing haor master plan. The impact on hydrology, flooding condition and drainage condition of haor region due to interventions of the completed project in haor area have to be evaluated through holistically and integrated way by using existing regional model. The gathered knowledge have to be used to update the existing HMP.

Monitoring and evaluation of projects

Monitoring and evaluation of completed projects of haor area through field level data collection on impact of the respective project and Project Completion Report in Haor area have to be done. Monitoring of existing projects in haor area have to be considered to reflect in updated HMP.

Gap analysis of Haor Master Plan

Gaps of objectives and achievement of HMP have to be assessed to reflect in updated HMP.

Revision of Haor Master Plan and Identification of development sectors

Development sectors of Haor Master Plan should be reviewed and revised to address Bangladesh Water Act 2013, National Agriculture Extension policy 2020, National Environment Policy -2018, Bangladesh Biodiversity Act 2017, National Industry policy 2016, National Strategic Plans, Sustainable Development Goals, Bangladesh Delta Plan 2100 and gaps and experience of the completed projects.

6. Workshops

Workshops will be arranged at field level to disseminate and share the study results with the stakeholders. Feedbacks from the stakeholders will be addressed in the Draft Final Report (DFR). Another workshop will be arranged at Dhaka after submission of DFR to involve the stakeholders & concerned officials for selecting most feasible option. Relevant comments from the workshop will be incorporated in the Final Report (FR).

7. Duration of the Study and Reporting

Total duration of the study period is estimated as 18 months. Submission of reports should be in the following schedule:

Reports	Target Dates
Inception Report 20 copies)	end of 2nd month
Progress Report (each 20 copies)	end of every 6thand 14th month
Interim Report (each 20 copies)	end of 10th month
Draft Final Report (30 copies)	end of 17th month
Final Report (100 copies)	end of 18th month

8. Work plan and Manning Schedule

The manning schedule and activity schedule have to be submitted by the consultant before commencement of the study. The study activities have to be scheduled considering the smooth and timely operation of the project.

9. Key Professional and Qualifications

9.1 Key personnel

It is estimated that consultant may require about 96 man-months input of professional staff as shown below:

Sl. No.	Professional	Nos.	Man-Month
1	2	3	4
1	Team Leader	1	12
2	Senior Planner	1	8
3	Hydrodynamic Modeller	1	6
4	Hydrologist	1	6
5	Climate change and Disaster Management Expert	1	6
6	Agriculturist	1	6
7	Fisheries Expert	1	6
8	Economist	1	4
9	Sociologist	1	6
10	Environmentalist/ Biodiversity Expert	1	8
11	WASH (Water & Sanitation) Expert	1	4
12	Monitoring and Evaluation Expert	1	6
13	Data Analyst	3	18
Total		**16**	**96**

ইনসেটে ভাষান
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পরিকল্পনা কমিশন

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উপসচিব
পানি সম্পদ মন্ত্রণালয়
গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

9.2 Job Description of Key Personals and Qualifications

Position	Qualification and Experience	Responsibilities
Team Leader	Minimum Master degree in Water Resources Engineering/ Biological Science/ Fisheries/ Statistics/ Environmental Science/ Agricultural Science. He/she should have at least 20 years' experience in water resources planning and management. He/she should have experience in flood management/water resources development/aquatic ecosystem management in Haor and Wetland areas of Bangladesh. He/she also should have experience in mathematical modelling specially in Surface water, river hydraulics and in coordinating similar study projects..	• Full responsibility for all aspects of planning, liaison and reporting. • Provide advice and direction to the multi-disciplinary study team. • Prepare project plan, schedules and time frame work for completion of projects in time. • Orient the work plan in consultation with Project Director to ensure smooth completion of the study. • Guide and supervise the study team • Organize meeting and workshop • Attend meetings as and when required • Responsible for quality output of the study • Reporting
Senior Planner	Minimum Master Degree in Civil Engineering/ Water Resources Engineering/Environmental Science having at least 18 years work experience on Water Resources Planning activities. He/she should have 12 years working experience in flood management/water resources planning and development in Haor areas of Bangladesh and preparation of at least one master plan.	• Review the completed and on-going project activities in Haor region and identify problems and bottlenecks. • Guide and supervise proposed multi-disciplinary projects to be included in updated Haor Master Plan • Supervise to analyze the hydrological data. • Interpretation of hydrological data. • Attending meeting as and when required. • Assisting the team leader in coordinating the study. • Contribute to reports. • Participate in the workshops.
Hydrodynamic Modeller	Minimum Master's degree in Civil /Water Resources. He/she should have 18 years' experience in river hydraulics and surface water modelling by using MIKE – 11, MIKE – GIS and ECO LAB	• Review the previous studies of the study area related to surface water modelling. • Interact with team leader and senior planner to develop the model. • Analyze and interpret model results; assess available surface water resources.

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পরিকল্পনা কমিশন

Position	Qualification and Experience	Responsibilities
		• Assess the hydrological impact for completed projects and proposed interventions. • Prepare the water quality profile of major rivers. • Contribute in surface water modelling component of reports.
Hydrologist	Minimum Master's Degree in Civil Engineering/Water Resources Engineering /Hydrology or in a similar discipline, He/she should have 15 years working experience in hydrological analysis of Haor region of Bangladesh or in relevant Field.	• Analyze hydrological aspects of rivers and wetlands in haor area. • Analyze and interpret hydrological data under the guidance of senior planner and modeller. • Attend meeting as and when required. • Assist the team leader in coordinating the study. • Contribute in reports.
Climate Change and Disaster Specialist	Minimum Master Degree in Disaster Management/Water Resources Engineering/ Environmental Engineering/ Environmental Science having 15 years work experience on climate change and water resources for development project.	• Collect and review existing reports, data and information related to climate change for the study area. • Generation of future climate change scenario of the study area in regional or local scale. • Analyze climate change data for the area and interpret results • Guide the team to assess the impact of climate change on water availability, fisheries production, agriculture production, biodiversity, environment, etc. for completed and proposed interventions. • Provide climate change and disaster adaptation and mitigation plan. • Assist the team leader as and when required. • Contribute in reports. • Participate in the workshops.
Agriculturist	Minimum post graduate degree in Agriculture/Agricultural Engineering/Crop Science.. He/she should have 15 years' experience with experience in field survey, evaluation of agricultural benefits of a project between pre & post project condition	• Analyze existing conditions of the agricultural practices and production. • Arrange interaction meeting with the stakeholders at field level for Focus Group Discussion (FGD), Key Informant Interviews (KII), Public Consultation Meeting (PCM) and Participatory Rural Appraisal (PRA) to find out the desired goal of the study. • Conduct agricultural survey and analyse the data. • Suggest improved agricultural method with respect to time, land, cropping pattern, cropping inputs & agricultural practices.

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Position	Qualification and Experience	Responsibilities
		• Evaluate agricultural impacts after post project condition. • Propose scopes to future development of agriculture resources. • Assess agriculture related impact for completed projects and proposed planning. • Contribute in preparation of master plan related to agricultural interventions. • Contribute in reports. • Assist the study team in holding seminars, workshops;
Fisheries Expert	He/she should have minimum Masters' degree in Fisheries/Zoology/Marine Science. He/she should have at least 15 years' specialized knowledge in fish characteristics and all relevant parameters influencing fish habitat.	• Compile and analyze necessary information related to fish culture, spawning of fish such as spawning time, river condition, weather condition, water quality, habitat of mother fish etc. concerning the river and wetland in the Study area. • Assess vulnerabilities of proposed interventions on Fisheries Resources and suggest remedies, mitigation program and any other step to be taken up for conservation of fisheries resources in the Project Area. • Arrange interaction meeting with the stakeholders at field level for Focus Group Discussion (FGD), Key Informant Interviews (KII), Public Consultation Meeting (PCM) and Participatory Rural Appraisal (PRA) to find out the desired goal of the study. • Conduct fisheries and aquatic vegetation survey and interpret the data. • Responsible for fisheries related impact assessment for completed projects and proposed planning. • Propose scopes to future development of Fisheries Resources. • Contribute in preparation of master plan related to fisheries interventions. • Assist the study team in holding seminars, workshops;
Economist	He/she should have at least a Masters degree in economics with a minimum 15 years experiences. A significant portion of his experience may also include natural resources management, physical and monetary valuation of possible environmental impacts.	• Review the method of economic valuation of different sector. • Economic analysis of different components of proposed projects of the plan. • Analyze the benefit – cost ratio of proposed plan. • Contribute in report.

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পরিকল্পনা

Position	Qualification and Experience	Responsibilities
Sociologist	Minimum Masters in Sociology from a recognized University of Bangladesh. He/she should have at least 10 years of experience in sociological activities & field survey, i.e. interaction with the stakeholders, holding Focus Group Discussion (FGD), Target Group Discussion (TGD) and work-shops/seminars at field level to find out the desire goal of the study and to disseminate the result of the study. He/she should have working experience in preparation of at least one master plan.	• Collecting views of the local people, their present socio-economic activities and problems including present situation in the vicinity of Project Area; • Holding interaction meeting with the stakeholders at field level holding Focus Group Discussion (FGD), Participatory Rural Appraisal (PRA),Key Informant Interviews (KII) and Public Consultation Meeting (PCM) to find out the desired goal of the study • Find-out the conflicting issues, conduct motivational works among the stakeholders against any negative issue and to suggest mitigation measures. • Responsible for socio-economic related impact assessment for completed projects and proposed planning. • Contribute in preparation of master plan related to social aspects. • Assist the study team in holding seminars, workshops; • Contribute in report
Environmentalist/ Biodiversity Expert	Minimum Masters degree in Environmental science/ Environmental Engineering/Water Resources Engineering. He/she should have professional experience of 15 years preferably in Water Management Projects and in the field of water quality management and EIA.	• Make inventory of present environmental situation including pollution. • Carry out Environmental and Ecological Impact Assessment for completed projects. • Conduct EIA and SIA for the interventions that have been implemented as proposed in Haor Master Plan. • Conduct biodiversity and terrestrial vegetation survey and interpret the results. • Arrange interaction meeting with the stakeholders at field level for Focus Group Discussion (FGD), Key Informant Interviews (KII), Public Consultation Meeting (PCM) and Participatory Rural Appraisal (PRA) to find out the desired goal of the study. • Co-ordinate relevant activities and assist the Team leader. • Contribute in preparation of master plan related to environmental aspects. • Attend meeting and workshops as and when required. • Contribute in report.

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ইসরাত জাহান
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কৃষি, পানি সম্পদ ও পল্লী প্রতিষ্ঠান বিভাগ
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Position	Qualification and Experience	Responsibilities
WASH (Water & Sanitation) Expert	Masters in Water Resources Engineering / Environmental Engineering/Civil Engineering/Agricultural Engineering. More than 15 years of experiences in baseline survey, , , water, sanitation, hygiene etc.	• Identify the present situation and update existing baseline scenario of water, sanitation and hygiene. • Collect water quality data and interpret the results. • Identification of safe water and sanitation coverage. • Develop and update WASH project portfolio. • Contribute in preparation of master plan related to sanitation and hygiene aspects. • Contributes in report
Monitoring and Evaluation Expert	Minimum Masters degree in Water Resources/Environmental Engineering/Agriculturist/ Biological Science. He/she should have 15 years' experience in different water resources management and planning.	• Review the different projects implemented by different agencies in haor region. • Identify the short comings of the existing master plan. • Find out the challenges and opportunities of the proposed project as mentioned in the existing master plan. • Analyze the impact of completed projects on haor ecosystem. • Analyze the Strength, Weakness, Opportunities and Threats (SWOT) for existing as well as for updated master plan. • Provide guide line for preparation of master plan. • Contribute in report. • Attended in workshops.
Data Analyst	Minimum bachelor degree in Computer Science and Engineering/Water Resources Engineering/ Statistics/ /Civil Engineering. He/she should have at least 3 years' experience in analysis of data on water level, rainfall, discharge etc. Previous experience in a similar environment will be preferred.	• Collection of reports/maps/data from secondary sources; • Analysis of all data • Assist study team as and when required.

শাহ ইয়ামিন-উল ইসলাম
উপসচিব
পানি সম্পদ মন্ত্রণালয়
গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

ইসলাম
সিনিয়র সহকারী প্রধান
(সিনিয়র সহকারী সচিব)
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পরিকল্পনা কমিশন

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2. IUCN, 2012. Biodiversity of Tanguar Haor: A Ramsar Site of Bangladesh. Volume I: Wildlife (Amphibians, Reptiles, Birds and Mammals).