

TERMS OF REFERENCE (TOR)

for

Traffic and Transportation Surveys and studies

Under

**“চট্টগ্রাম জেলার মীরসরাই উপজেলার উন্নয়ন পরিকল্পনা প্রণয়ন ঃ সার্বিক দুর্যোগ ব্যবস্থাপনাকে
ভূমি ব্যবহারের মাধ্যমে সম্পৃক্তকরণ”**

**(Preparation of Development Plan for Mirsharai Upazila, Chittagong District:
Risk Sensitive Landuse Plan)**

URBAN DEVELOPMENT DIRECTORATE
Ministry of Housing and Public Works
Government of the People’s Republic of Bangladesh
November, 2016

Table of Content

Content	Page No.
Appendix-01: Background Information of the Project	115
Appendix-02: Scope of Work	118
Appendix-03: Bidding For Tender	129
Appendix-04: Format of Curriculum Vitae and Project Team	130

APPENDIX 01

BCKGROUND INFORMATION OF THE PROJECT

1.1. Project Background

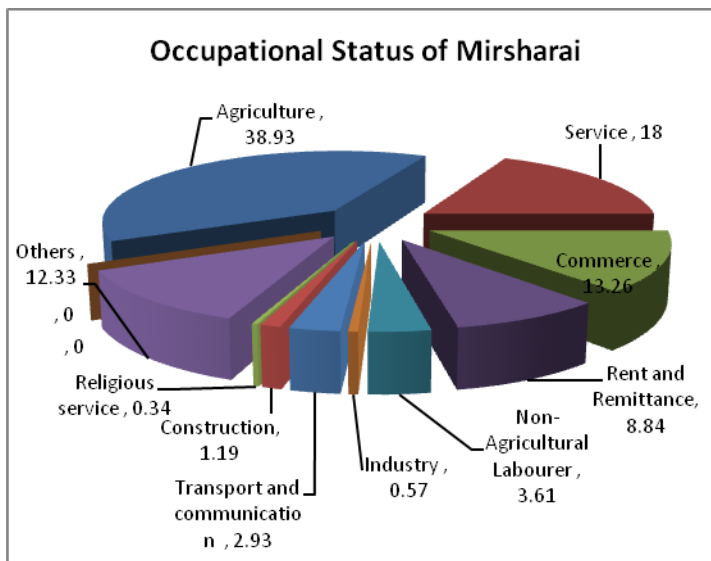
Mirsharai Upazila (CHITTAGONG DISTRICT) area 482.88 sqkm(BBS)/509.80sqkm(GIS Data), located in between 22°39' and 22°59' north latitudes and in between 91°27' and 91°39' east longitudes. It is bounded by TRIPURA state of India, CHHAGALNAIYA and FENI SADAR upazilas on the north, SITAKUNDA upazila and BAY OF BENGAL on the south, FATIKCHHARI upazila on the east, SONAGAZI and COMPANIGANJ (NOAKHALI) upazilas on the west. Mirsharai Thana was formed in 1901 and it was turned into an upazila in 1983. Mirsharai Upazila consists of 2 Municipality, 16 Union and 113 Mouza.

Mirsharai, the combination of lake and hilly area contains attractive scenic beauty on the southernmost part of Bangladesh. The most important attraction of the upazila is that one can travel Mohamaya Chara Lake by speed boat and explore hilly area and can enjoy Khoiyachora, Baghbiani, Napitachora, Sonaichora, Mithachora and Boyalia waterfalls. This area is located 192.2 km far from DHAKA and 4.5 hour bus journey. Anyone can travel by rail and it is 197 km of rail journey and it takes 4.5 hour from Dhaka to Mirsharai Upazila. 56 km from the CHITTAGONG Divisional headquarters and takes 1.5 hour travel by bus. The Bangladesh Road Transport Corporation introduced a direct bus service from Dhaka to *Mirsharai* via comilla.(Source: Banglapedia,2012)

At Mirsharai Upazila main river is Feni; Sandwip Channel is notable; canal 30, most noted of which are Feni Nadi, Isakhali, Mahamaya, Domkhali, Hinguli, Moliash, Koila Govania and Mayani Khal. The hills range on the northern and eastern side of this upazila along the bank of the Feni River extended up to Chittagong and the Chittagong hill tracts

Historical Events: Sultan Fakhruddin Mobarak Shah conquered Chittagong in 1340 AD and established the Muslim rule in this region. During the reign of Gaur Sultans Hussain Shah and Nusrat Shah, Paragal Khan and Chhuti Khan were the rulers of this area. Subsequently Nizam Shah, brother of emperor Sher Shah, was the ruler of this area. Nizampur Pargana is named after Nizam Shah and the whole area of Mirsharai came under the control of Nizampur pargana. From the beginning of the 16th century this region was very rich in Bangla literature. Most of the time between 1580 and 1666 this region was under the control of the Arakanese. The place at which (of the present Mirsharai thana) Bujurg Umed Khan, son of Subadar Sayesta Khan, landed after crossing the Feni River was named as Bujurg Umedpur. With the conquest of Chittagong by Bujurg Umed Khan in 1666, this region came permanently under the Mughal rule. Towards the end of British rule in India, Durgapur and Karerhat areas of Mirsharai upazila were the centres of revolutionary activities of Chittagong. A fierce battle was fought between the freedom fighters (under Capt. Wali Ahmed) and the Pak army at a place adjacent to the Fenafuni Bridge on the south of Mirsharai sadar in which about 100 Pak soldiers were killed. Besides, direct encounters were held between the freedom fighters and the Pak army at many' places including Shuvapur Bridge, Hinguli Bridge, Aochi Mia Bridge and Mostan Nagar.

Main occupations: Agriculture 38.93%, non-agricultural labourer 3.61%, industry 0.57%, commerce 13.26%, transport and communication 2.93%, service 18%, construction 1.19%, religious service 0.34%, rent and remittance 8.84% and others 12.33%. Total cultivable land 22,896.40 hectares, fallow land 147713 hectares; single crop 38.91%, double crop 42.46% and treble crop land 18.63%. At present Cultivable land under irrigation is 6,917.85 hectare. Ownership of agricultural land Landowner 51.30%, landless 48.70%; agricultural landowner: urban 38.82% and rural 52.09%.



Value of land : The market value of the first grade arable land is Tk 30000 per 0.01 hectare. Main crops Paddy, potato, aborigine, bean, tomato, pumpkin and radish. Extinct or nearly extinct crops Sugarcane, jute, arahar, mustard, sesame, linseed, ground nut. Main fruits Mango, blackberry, jackfruit, banana, papaya, litchi, pineapple, water-melon.

Communication facilities Roads: Pucca road 230 km, semi-pucca road 119 km, mud road 1435 km; railway 16 km; waterway 11 nautical miles, Rail junction 4. Extinct or nearly extinct traditional transport Palanquin, bullock cart. Noted manufactories Carpet industry, pipe mill, ice factory, rice mill, bakery, brick-field, steel furniture, fish- poultry' feed' factory, bidi factory. There are also Cottage industries, Goldsmith, blacksmith, potteries, weaving, tailoring, bamboo and wood work. Hats, bazars and fairs Hats and bazars are 52, fairs 5, most noted of which are Abu Torab Bazar, Kamar Ali Bazar, Bara Daroga Hat, Mahajan Hat, Karer Hat, Baraia Hat, Shantir Hat, Zorwarganj Baishakhi Mela, Baruni Snan Mela and Shadhinata Mela. Main exports product is Bamboo, fish, paddy, potato, banana, vegetables.

NGO Activities: Operationally important NGOs are BRAC, Proshika, ASA, Sheba, CARE, and Hunger Project. Upazila health complex 1, family planning centre 16, satellite clinic 11.

Opportunity: Bangladesh can earn money in local and also in foreign exchange by opening a tourist resort at *Mirsharai*. The spot, if properly developed will become an excellent holiday resort and tourist centre. Rowing facility can be arranged easily; fishing and hunting facilities are already there. The success of developing *Mirsharai* as a tourist centre and Special Economic Zone depends much on good communication facilities and availability of modern amenities. Moreover, the proposed *Special Economic Zone* would generate many industry related new activities including huge vehicular traffic such as air, rail, road and water. This phenomenon would have both positive and negative impact on the socio-economic condition and existing land use pattern of the region. The proposed planning package would guide such probable changes in the socio-economic condition and land use pattern of the region, and would also address the adverse impact of such changes.

The proposed project would be prepared on a regional development perspective considering the region as a part of whole of Mirsharai Upazila and its 16 unions. In this development planning package since its

location is strategically important from the regional context because this upazila is situated on the way to Dhaka Chittagong highway as the highway runs through this upazila.

Description of the Project Area: A detailed description of the Project Area is given below:

Table: Area, Population and Density of the Project Area:

Municipality	Union	Mouza	Village	Population		Density (per sq km)	Literacy Rate (%)
				Urban and Other Urban	Rural		
2	16	103	208	31206	367510	826	55.1

Source: BBS, 2011

Mirsharai sea beach, hilly area, Mohamaya Chara Lake, Khaiya Chara region has the greater potential for tourism development as there are abundant resources to attract tourists. Mirsharai is developing in an unplanned and haphazard manner very rapidly due to the ample opportunity for tourism development, which is acting as pull factor for private sector developers. Hence, this project has been under taken to protect the region from depletion of its natural resources and character and tourism development as well.

Moreover, honorable MoHPW Minister expressed his heartiest interest to develop char of this Upazila as an exclusive economic zone; as well as to establish a tourist zone and economic zone covering Mirsharai upazila.

1.2 Objectives of the Project

The objective of the project is to optimize resources and activities for sustenance of marginal people. The economic activities and resources are very important to the economy and life of the people of Bangladesh whose living conditions are inextricably linked to the productivity and sustainability of this zone. There is no long term Holistic Development Plan for this zone. Coastal zone needs to be integrated with the mainstream of development process of the country. So, an interdisciplinary development planning approach is urgent to optimize livelihood of this zone. The Physical development planning problems, needing attention, are as follows:

- a) To integrate Special Economic Zone with the mainstream of development process of the country.
- b) To frame policies for the best use of land and its control for the Mirsharai Upazila.
- c) To optimize hilly environment for sustenance of marginal people.
- d) Formulation of Policies and plans for mitigation of different types of hazards, minimizing the adverse impacts of climate change and recommend possible adaptation strategies for the region.
- e) Formulation of Policies and plans for gradual nucleation of settlements with policies and plans for development of growth centers of the area.
- f) Formulation of a planning package for development of tourism in Mirsharai Upazila, and also to accommodate future changes in existing land use pattern, socio-economic condition of the area and quality of life of the people due to establishment of the third sea port in the region in an integrated and comprehensive manner.

APPENDIX 02

2. Scope of Work

UDD project team members' shall prepare the plan for Preparation of Development Plan for Mirsharai Upazila, Chittagong District: Risk Sensitive Landuse Plan. The survey firm shall conduct all necessary traffic and transport surveys and studies for the project, and prepare working paper on the relevant fields under study, and also assist the UDD team members in preparation of final plan and all relevant reports till completion of the project. The survey firm would extend all necessary assistance particularly in gathering and procuring all relevant traffic and transportation related attribute and spatial data of relevant feature within the project area; GIS database operation and management, analysis and preparation of all maps and reports till completion of the project.

The survey firm shall collect all relevant data and information through digital survey and upload the collected data to website instantly through online communication device; at the end of each month submit a report containing all information have been uploaded to website and ensure that all data and information are accessible to viewer.

The survey firm shall be responsible for quality of data and information collected, data processing, cleaning and editing, and presentation into tabular form including preparation of working paper as required by PD. The survey firm shall deliver all raw and processed data along with working papers containing guidelines for preparing the planning package.

The main objective of the work is to develop a comprehensive computerized transportation planning tool (model) that can be used to prepare and update land-use, transportation development as well as disaster management plan for Mirsharai Upazila. To achieve this, following sub-objectives need to be fulfilled:

- a) To prepare a socio-economic geodatabase of the inhabitants of the study area containing information particularly interesting for transportation modeling and land-use planning
- b) To prepare an inventory of existing land-use of the study area using GIS and conduct survey to calculate the trip production-attraction rates for various land-use
- c) To prepare an inventory of road network as well as transportation system of the study area using GIS. This will include geometric and operational details of the different components of road network, public transport facilities, options for non-motorized trips, etc.
- d) To conduct a comprehensive household travel demand survey
- e) To obtain values for various demographic and socio-economic indicators included in the model. This can be collected from census or through modeling – as necessary.
- f) To forecast the land value and land use as impacted by changes in transportation accessibility and policies; and develop integrated land use and transportation model.
- g) To collect detailed data on freight movement and develop travel demand forecasting models for freight.
- h) To simulate transportation operations in details at the project area including multimodal operations of automobile, motorcycle, bicycle and pedestrians etc. to increase safety and improve overall operations; and also evaluate the effects, if changes in roadway geometry, operating characteristics, land use and travel demand through the newly developed transportation planning tool.
- i) To simulate vehicular traffic flow to analyze and solve traffic bottlenecks that might occur under day to day operation during peak hours and compare policies for alleviating peak-period congestion.
- j) To estimate the risk, resilience and vulnerability of the network under general operating condition and even during extreme conditions, such as special events and evacuations from natural or man-made disasters; and formulate as well as examine the effectiveness of emergency evacuation plan.
- k) To prepare improved transport system, which is affordable and sustainable to the Mirsharai Upazila's people.

Table: The detail works are given below -

Item	No of Inter-Section/Quantity	Unit (Person/Quantity)	Duration of Survey
Intersection	10	12	7
Data entry, Data quality checking, analysis, report writing and printing etc.	10	12	7

2.1 Typology for Different Types of Surveys, Studies and Activities

The Survey firms' shall have to follow the following step-wise integrated activities for the stated scope of work on the intended different survey works. He/she would have to interlink the intended survey activity with different steps of other related activities conducted by other different survey firms'. A detailed methodology of the specific survey work including procedure for relating its output with that of other different surveys and activities (both attribute and spatial of hydrological, socio-economic and other required hard and soft data), which would impart by other different survey firms' has to be mentioned clearly in the proposed technical proposal. The survey firm has to combine the traffic and transportation database with that of database (GIS database) of physical feature, topographic and land use database prepared by other survey firm(s). A presentation of the proposed methodology shall have to make before the Proposal Evaluation Committee (PEC) as part of technical proposal evaluation. The bidder has to make the presentation by using his/her own hardware and software along with valid license. The Client may the premise of the firm without providing prior notice (if necessary).

The survey firm has to perform the following tasks relating to traffic and transportation surveys and studies:

A. Surveys and Studies

(a) Collection of data and information about Trip generation, Trip distribution and Travel Behavior by Household Survey: Data and information relating to inhabitants Trip generation, Trip distribution and travel behavior by random household survey. The number of questionnaire to be surveyed should be determined in consultation with PD.

(a) Collection of Data and Information of Vehicle Registration from Bangladesh Road Transport Authority (BRTA): Data and information relating to registration of vehicle from BRTA and perform statistical analysis of the past trends in growth on the basis of types and numbers of different vehicles registered in the project area.

(b) Road Surveys: In this survey detail of existing roads like type and condition of pavement, existing width and possibility for future extension should be studied and presented with appropriate explanatory notes. Road survey would include hierarchy, network and circulation pattern.

(c) Traffic Volume and Origin and Destination (O-D) Survey: Traffic volume and O-D surveys in major roads intersections and river *ghats*, both day and night time for peak and off-peak period should be surveyed by dividing the project area into zones based on homogeneity of land use and presented with sufficient maps and charts showing origin and destination and volume of traffic.

(d) Study of Critical Traffic Junction Survey: Critical traffic Junctions should be separately studied and conditions illustrated graphically.

(e) Trip Generation Survey: Trip generation survey at different locations should be conducted in the project area by dividing the project area into traffic zones based on homogeneity of land use.

(f) Travel Behavior Study: Household interview survey should be conducted in the project area to determine the travel behavior (travel pattern). The number of questionnaire to be surveyed should be determined in consultation with PD.

(g) Goods Movement and Their Mode of Shipment Study: The survey firm shall also conduct goods movement and their mode of shipment study of the project area.

B. Data Analysis and Interpretation

(a) Determination of Peak and Off-Peak Traffic Volume and Analyze Capacity of Roads: On the basis of the survey results the survey firm shall determine the peak hour and off-peak hour traffic volume; and also analyze the capacity of roads and also prepare information for a traffic impact study of land use proposals on the street corner.

(b) Land Value and Land Use Forecast: The survey firm shall forecast the land value and land use as impacted by changes in transportation accessibility and policies; and develop integrated land use and transportation model.

(c) Determine the Level of Goods Movement and Their Mode of Shipment: The survey firm shall determine the levels of goods movement and their mode of shipment to forecast regional and long-distance commodity flow and truck demand to develop alternative pricing strategies and freight specific facilities.

(d) Simulate Transportation Operations: The survey firm shall simulate transportation operations in details at the project area including multimodal operations of automobile, motorcycle, bicycle and pedestrians etc. to increase safety and improve overall operations. The survey firm shall also evaluate the effects if changes in roadway geometry, operating characteristics, land use and travel demand.

(e) Simulate Traffic Flow to Analyze and Solve Traffic Bottleneck: The survey firm shall simulate vehicular traffic flow to analyze and solve traffic bottlenecks that might occur under ordinary or even extreme conditions, such as special events and evacuations from natural or man-made disasters. The survey firm shall also compare policies for alleviating peak-period congestion and examine the effectiveness of emergency evacuation plan.

The survey firm shall develop a 20- year Prediction model for transportation of the project area by using ARC GIS compatible Transportation Analysis Software (e.g., Cube 6 or equivalent) and prepare report on the basis of output of the surveyed data showing a prediction model of 20-year period for Project area. And survey firm will supply a "model" that can modify or update as needed in future. Also, the modelling tool should be finalized after discussing with the PD.

The survey firm shall take photograph and geo-coordinate of the survey locations and upload them in the Web site instantly through online communication device; and also upload the surveyed data to website and computer at the same day.

2.2 Step wise Activities to Accomplish the Task

The survey firm shall have to follow the following step-wise integrated activities for the stated scope of work on the intended different survey works. He/she would have to interlink the intended survey activity with different steps of other related activities conducted by other different survey firms. A detailed methodology of the specific survey work including procedure for relating its output with that of other

different surveys and activities (both attribute and spatial data of physical feature, topographic, land use and other required hard and soft data), has to be mentioned clearly in the proposed technical proposal. The survey firm has to combine the rural database with that of database (GIS database) of municipality area. A presentation of the proposed methodology shall have to make before the Proposal Evaluation Committee (PEC) as part of technical proposal evaluation. The bidder has to make the presentation by using his/her own hardware and software along with valid license. The Client may visit the premise of the firm without providing prior notice (if necessary).

STEP 1 MOBILIZATION, RECONNAISSANCE SURVEY, PROJECT DESIGN AND SUBMISSION OF MOBILIZATION REPORT

Deployment of Key Personnel and supporting staff for the intended project, tentative project management plan and tentative work schedule. The survey firm shall conduct reconnaissance survey including Focus Group Discussion, **Tea Stall Meeting etc.; steps taken immediate after signing the contract including initial meeting with the local public** representatives including Mayor of the municipalities, UP chairman, counselor etc.

Submission of Mobilization Report containing findings from reconnaissance survey with illustration with photographs, maps, figures, data etc.

STEP 2 COLLECTIONS OF MAPS, BASIC STATISTICS AND INFORMATION AND SUBMISSION OF INCEPTION REPORT

To start the survey process the existing situation of the planning area has to be represented in a set of maps and in a collection of basic statistics and information.

Step 2-I Collection of Geo-physical Maps and Reports Includes

- Maps and reports of the region.
- Maps and reports on national and regional highways.
- Maps on feeder and rural roads etc.
- As a first 'overlay' to the base map and existing road network of the planning area has to be given.

STEPS 2-II Collection of Basic statistics: Present Activities

- Number of inhabitants/households, differentiated according to income level/type/density and quality of housing
- Production and employment (formal/informal, number and size of establishments, type of production/activity, income/education level)
- Public services (education, health, security etc.) and utilities (drinking water, sewerage/sanitation, garbage disposal, gas, electricity, telecommunication); administrative institutions
- Commercial activities (shops, markets both formal and informal)
- Transportation facilities (roads, public transportation, parking facilities, waterways, railway, foot path etc.)

Step 2- III Submission of Inception Report

The report should include the following (with necessary maps/figures/diagrams/graphs etc.)

- (1) An introduction narrating the purpose of the study, objectives and scope of services and activities to be performed.
- (2) **A brief of the Sixth Five Year Development Plan** and Sustainable Development Goals (SDG) with principal objectives of the development plan within the broad scope of Urban and Regional Planning, transportation sector of the National Development Plan, provision of National Perspective Plan and other relevant national level plan, policy etc.
- (3) A Review of the work plan, time schedule, input and management plan.
- (4) An assessment of the actual provision of inputs in relation to the expected outputs.
- (5) Analysis and findings from reconnaissance survey including problems and possible solutions to the survey activities and prospects of development. This would also include results of tea stall meeting, courtyard meeting and focus group discussion (FGD) in the project area.
- (6) Review of all relevant reports, documents and other materials, which will form the base for the contract indicating those items already acquired and those requiring official assistance for acquisition.
- (7) An assessment of all additional data collected and survey works to be carried out for completion of the database for the contract. This should be accompanied by a detailed program for the collection of the remaining data.
- (8) Development of methodology for each component of the survey work under the planning. (*i.e., regional structure plan, sub-regional plan, structure plan, urban area plan, rural area plan, action area plan*)

STEP 3 SURVEY ACTIVITIES (FIELD SURVEY INFORMATION IN ORIGINAL FORMAT HAVE TO BE SUBMITTED TO THE PROJECT DIRECTOR (PD) AT THE END OF EVERY WEEK) AND SUBMISSION OF SURVEY REPORT

(1) A review of the work plans and time schedule for the remaining period of the contract.

(2) Activities to be performed by the survey firm for Transportation Survey Report:

- All traffic and transportation related survey data including vehicle registration, traffic volume, O-D survey, critical traffic junction, trip generation, travel behavior, goods movement and mode of shipment etc.

Step 3 Traffic and Transportation Survey

STEP 3-I A questionnaire shall be designed in online communication device (tablet) compatible format (apps), where necessary, in consultation with PD.

STEP 3-II Questionnaire shall be designed on household survey, vehicle registration, traffic volume, O-D survey, critical traffic junction, trip generation, travel behavior, goods movement and node of shipment in consultation with PD.

STEP 3-III Surveys will be conducted on major road intersections, and household level on the issues stated in the ToR in consultation with PD.

3-I-D During conducting the survey, geo-coordinate and photograph of the road intersection and household including photograph of the respondent has to taken and would be uploaded to website instantly by using online communication device (tablet).

3-IV The survey firm shall check the quality of data and upload the data to computer at the end of same day.

3-V The survey firm shall identify the location of survey and the household as well on physical feature map and link the surveyed location and household with that of spatial database in Arc GIS.

3-VI The survey firm shall link the attribute data of traffic and transportation survey with that of spatial data base in Arc GIS.

3-VII The survey firm shall provide spatial translation of the interpretation obtained from data analysis to draw a scenario of output of traffic and transportation survey on space.

Step 3-VIII Inventory of survey will have to be prepared as per format prepared in consultation with PD. Data processing, analysis of survey data, mapping, working paper containing planning strategy and development options, and reporting will be made as per requirement of TOR.

Step 3-IX All the collected data and information (both spatial and attribute) shall be interlinked with that of different other surveys (including physical feature, topographic, land use etc.) conducted by different other survey firms. The survey firm shall also identify the location/ household/ feature surveyed on base map and also locate in spatial database.

Step 3-X After completion of all survey work and linking all attribute and spatial database with each other the survey firm will submit survey report stating actual methodology explaining detailed procure adopted in the field survey, problems faced during survey work, how the problems were solved, interlinking of database with that of different other surveys (including physical feature, land use, topography etc.). The report shall also contain detailed information relating to data uploaded to website. The survey firm shall submit all raw database including map, questionnaire, photograph etc and spatially linked database along with survey report.

STEP 4: DATA PROCESSING, ANALYSIS, INTERPRETATION, PRESENTATION, FORMULATION OF WORKING PAPER AND SUBMISSION OF INTERIM REPORT

(1) A review of the work plans and time schedule for the remaining period of the contract.

(2) Activities to be performed by the survey firms for Interim Report:

- Preparation of working paper based on analysis and interpretation of collected field data on all relevant components of the survey components according to ToR .

Interim report containing requisite working paper (if more than above stated required) shall be prepared by the survey firms as directed by the PD.

Step 4-I: The working paper (content of working papers shall be determined in consultation with the PD) shall contain analysis of existing situation on traffic and transportation of the planning area.

Step 4-II: SWOT analysis, and Identification of problem area and requirement on space; and analyzing them with respect to surveyed data and information.

Step 4-III: Assist the Project team members in formulation of planning standard with respect to traffic and transportation of the planning area; and also by integrating results of different other surveys (including physical feature, land use, topography, geology etc.) in close co-ordination with different other survey firms, who conducted such surveys and studies.

Step 4-IV: Assist the Project Team members in formulation of policies for planning and development of alternate strategies to attain the traffic and transportation related policies in close co-ordination with different other survey firms, who conducted different surveys and studies including physical feature, land use, topography, geology etc.

Step 4-V: Assist the Project Team members in analysis of alternative strategies and selection of most appropriate option among the developed alternatives in close co-ordination with different other survey firms.

Step 4-VI: Submission of Interim Report along with all working papers containing the issues as stated in step 4-I to step 4-V.

Step 5 Preparation of Draft Final Report for the Project

(1) A review of the work plans and time schedule for the remaining period of the contract.

(2) Activities to be performed by the survey firms for preparing Planning:

The *survey firm* shall assist Project Team in preparation of planning with special reference to traffic and transportation of the planning area, which consists of the following steps:

Step 5-I-A: A guideline of Preparation of Regional Strategic Plan of Chittagong District would be prepared for 20 years according to the guidelines from: National policies, Formulated and integrated different sectoral strategies at sub regional level, spatially interpreted sectoral strategies at sub regional level, Conservation Plan level and Development Plan.

Step 5-I-B: The regional plan shall be formulated on the basis of regional transportation system along with other components of stated in the ToR.

Step 5-I-D: Sub-Regional Structure Zoning Category would be determined on the basis of regional transportation system along with (i) Main flood flow zone, (ii) Sub flood flow zone, (iii) Wetland, (iv) Forest, (v) Agricultural land, (vi) Urban area, (vii) Rural settlements, (viii) Forest settlements, (ix) Industrial hazards, (x) Restricted flood protection reserve, (xi) Restricted military / public safety etc.

Step 5-I-E: Conservation Plan under regional plan shall be prepared depending on the ecosystems and resources of the existing nature and Landuse conflicts.

Step 5-I-F: Structure plan shall be prepared based on the outputs of sub-regional plan and other surveys and studies to develop the indicative plans for the upazilas. The structure plan would establish inter and intra-regional connectivity, economic base the upazlia, set policies and develop strategies to achieve the policies. The plan would identify the urban areas and different rural centres of the upazila; and would also determine the planning requirements for the urban area, rural centers and rural area. The plan would also come up with a basis for preparing urban area plan, rural area plan and detailed plan for the upazila.

Step 5-I-G: Corridor Development Plan shall be prepared along the national and regional Corridor outside the urban areas to prohibit ribbon development. The plan would emphasize over retaining efficiency of the national highway. Content (with thematic map) of The Development Control Plan for Highway Corridor will be the similar or revised version (where necessary) of The Urban Area Plan.

Step 5-I-H: Urban Area plan shall be prepared for the urban areas of the upazila, based on the planning requirements for the urban areas, which would be identified at the structure planning stage. The plan would also come up with a basis for preparing detailed plan for the urban areas.

Step 5-I-I: Rural Area plan shall be prepared for the rural areas of the upazila, and based on the planning requirements for the rural areas, which would be determined at the structure planning stage.

Step 5-I-J: Action plan shall be prepared for the proposed bankable projects for the upazilas,

Step 5-I-K: submission of Draft final report containing draft 20-year prediction model on traffic and Transportation of project area prepared by using GIS compatible Transport modeling software.

Step 6 Preparation of Final Report for the Project

The survey firm has to assist the UDD planning team in preparation of final report in the following manner;

Step 6-I: After approval of the draft final report by the Project Implementation Committee, survey firm has to assist the UDD Planning team in public hearing at the respective upazilas.

Step 6-II: The survey firm shall assist the UDD planning team for necessary modification of the planning and finalization thereby.

Step 7: Printing of Final Reports and Maps and posting in WEB Page

The survey firm shall assist the UDD Project Team for final printing of the planning map and report; and also assist the web developer in prepare the documents in web compatible format and publishing in web page.

2.3 Report submission schedule and Mode of Payment

Reports shall be presented and illustrated in a clear and concise professional manner, including maps, plans, diagrams and other graphics. Schedule of submission:

Table 5: List of Report with Language, No. of Copies, Period of Submission, Binding status and Mode of Payment

Report	Language	No. of Copies	Period of Submission	Binding Status	Mode of Payment (% of Contract amount)
Mobilization Report	English	50	Within 30 days of signing contract	Spiral Binding	Not more than 10%
Inception Report	English	50	End 2 nd month	Spiral Binding	Not more than 20%
Interim Report	English	50	End of 3 th month	Spiral Binding	Not more than 30%
Draft Survey Report	English & Bangla	100	After Submission of Interim Report next 15 days	Spiral Binding	Not more than 10%
Survey Report	English & Bangla	100	End of 4 th month	Spiral Binding	Not more than 30%

2.4. Presentation

(a) Study result should be presented in two forms: first on the map of RF 1: 50000 indicating the national/regional settings and RF 1: 250000 indicating the planning area; secondly in report form. The design of the map should be appropriate in size so that it is not difficult for handling. The Scale, colors and indications to be used must be according to the instruction of Urban Development Directorate (UDD).

(b) Final study results shall be analyzed, interpreted and presented in Report form.

(c) Reports shall be prepared in MS word 2010 version or above and font shall be Times New Roman 12 pt

(d) All table, graph, diagram, chart, map shall be interactive with its original program such as MS Office and GIS

(e) All report shall be submitted in Web format

(f) Audio-visual presentation shall be made by the survey firm before submitting each and every report

2.5 Deliverable:

- Working papers concerned with objectives of the study (both hard and soft copy)
- All collected data, information, book, journal and other relevant documents to be handed over to the client
- All customized data base management system for user
- All maps and reports shall be submitted as per direction of PD.

SURVEY FIRM'S PROFILE

The survey consultants should have at least the following criteria:

- At least 5 years of field level survey and planning related project work experience
- Adequate office space with all sorts of survey, mapping and printing equipment's, e.g.
- Adequate manpower with finest expertise and highest length of work experiences

2.6 **Progress Reports:** Progress Reports shall have to be submitted to UDD by survey firm in every 1 (One) month on the basis of the approved working schedule.

- Medium of language of the progress report shall be English.
- Both soft copy and hard copy shall be submitted by the survey firm.
- Progress report shall be submitted within 1st week of the next quarter

2.7 Others

(i) All vehicles, equipments and other inconsumable materials procured for survey firm by the UDD under this project must be returned to UDD after completion of the project.

(iii) After completion of survey works and after submission of Final Report a Seminar / Workshop should be arranged by the survey firm with the elite, Draft reports, Public representative businessmen, professionals etc. of the region.

(iv) Penalty shall be imposed or cancellation of contract shall be made by UDD on the survey firm who will violate the TOR or for any other misconduct by the survey firm.

(v) No payment will be made to the survey firm before accepting the Reports by the Implementation Committee.

(vi) Full time survey firms must stay in the survey firm's office.

(vii) All reports & detailed area plans will be prepared by the survey firms within the quoted price.

(viii) The transportation plan and Arc GIS compatible Model for **Mirsharai Upazila** should be composed of in a DVD and supplied to UDD.

(ix) The client reserves the right to accept any or reject any or all tenders within assigning any reason thereof.

- (x) The client reserves the right to increase or decrease any item or specifications in the schedule
- (xi) Scale, dimension and quality of Map/3-D map shall be determined in consultation with the PD.
- (xii) The survey firm team members shall be permanent employee of the survey firm and shall have practical knowledge experience as first and knowledge.
- (xiii) The survey firm shall submit Legal software license documents (License Number) in the proposal to prove their technical strength and capabilities.
- (xiv) An inventory shall be made on the logistics of the survey firm (if necessary).
- (xv) The survey firm shall present the technical proposal before PEC (if necessary).

2.8 Institutional arrangements

Inter Ministerial Steering Committee and Project Implementation Committee (PIC) should be set up to monitor the project. The Secretary of the Ministry of Housing and Public Works will chair the Steering Committee and the Director of the Directorate will chair the PIC. In addition Proposal Opening Committee (POC) shall be formed to open the EOI and RFP of the Project and Proposal Evaluation Committee shall be formed to evaluate the EOI and RFP for selection of survey firm.

2.9 QUALIFICATION, EXPERIENCE AND RESPONSIBILITY OF TRAFFIC AND TRANSPORTATION SURVEY FIRM

A. Transport Planning Experts – 1 Person (1x4 = 4 mm.)

Qualification: At least Master's Degree in Traffic Engineering/ Transportation Planning.

Experience: 10 years working experience in Transportation Planning/ Traffic Engineering with experience in using ARC GIS compatible Transport Planning Software.

Responsibility: (i) To study existing transportation system of seasonal variation and disaster; (ii) To analyze the capacity of roads and also prepare information for a traffic impact study of land use proposals on the street corner. (iii) To forecast the land value and land use as impacted by changes in transportation accessibility and policies; and develop integrated land use and transportation model. (iv) To determine the levels of goods movement and their mode of shipment to forecast regional and long-distance commodity flow and truck demand to develop alternative pricing strategies and freight specific facilities. (v) To simulate transportation operations in details at the project area including multimodal operations of automobile, motorcycle, bicycle and pedestrians etc. to increase safety and improve overall operations; and also evaluate the effects, if changes in roadway geometry, operating characteristics, land use and travel demand. (vi) To simulate vehicular traffic flow to analyze and solve traffic bottlenecks that might occur under ordinary or even extreme conditions, such as special events and evacuations from natural or man-made disasters; and also compare policies for alleviating peak-period congestion and examine the effectiveness of emergency evacuation plan. (vii) To prepare guidelines for improved transport system, affordable to the Mirsharai Upazila's people; (viii) To work closely with the GIS and RS expert to find out new transportation network in the area from Satellite Image and also relating the findings into transportation studies and also in the GIS database *(ix) to prepare a 20-year Transport model with Arc GIS compatible Transportation Modeling Software* (x) Provide on job training to the Project Team Members; and preparation of working paper, reports and transport plan of the project as assigned by the PD;

B. Transport Survey Expert– 1 Person (1x3 = 3 mm.)

Qualification: BURP/B.Sc Engineering in Surveying/Civil/Traffic Engineering/Transport Planning.

Experience: Minimum 10 years practical experience in transportation surveys and studies.

Responsibility: (i) To design transport surveys for the project (ii) To conduct, coordinate and monitor traffic and transportation related surveys and studies;(ii) Ensure quality and accuracy of survey data; (iii) To compile all the survey data into digital form;(iv) To conduct database management and operation. (v) To assist the GIS Expert in transferring survey data into GIS, (v) To arrange survey trainings for UDD staff. (iv) *Preparation of working paper, reports and plan of the project as assigned by the PD;* (vii) Any other survey and studies related Jobs

C. Transport Survey Supervisor– 1 Person (1x3 = 3 mm.)

Qualification: Bachelor of URP/Geography/Diploma in Civil/ Surveying/Equivalent

Experience: At least 2 years' experience traffic and transport related survey.

Responsibility: (i) To supervise and monitor the traffic and transport related digital (where necessary) surveys by using online communication device (Tablet). (ii) To ensure the quality of survey data. (iii) To capture the geo-coordinate and photograph of the survey location and respondent and household surveyed; and upload to the web site instantly. (iv) To upload/enter the surveyed data into computer. (v) Any other related Jobs.

APPENDIX-03

BIDDING FOR TENDER

3.1 Contents of the Technical Proposal

According to the provisions laid in the Public Procurement Regulations 2008.

3.2 Financial Proposal

Financial proposal should be prepared as per following format in the firm's own letter head.

Format of Financial Offer

Sl No	Description of Survey and Studies	Area/no.	Rate (TK.)	Total Amount(TK.)
01	Traffic and Transportation related Surveys and Studies			
02	Data Entry into Computer, Processing, Editing and Analysis			
03	Preparation of Transport Plan			
04	Project Team of Survey firm			
	TOTAL			

N.B. – Above Quoted rates should be inclusive of the cost Salaries, Management, Transportation, Contingency, Incidental, Income Tax & VAT and other related cost including printing and binding of maps and reports etc.

APPENDIX-04

FORMAT OF CURRICLUM VITAE AND PROJECT TEAM

4.1 Format of Curriculum Vitae of Professionals

According to the provisions laid in the Public Procurement Regulations 2008.

4.2 Format of the Proposed Project Team

Sl. No.	Position	Name	Age (in Years)	Length of Experience (Year)	Qualification	Man month
1.						
2.						
3.						
4.						
5.						

4.3 Format of the Major Experience in Similar Project Completed During Last 05 Years

Sl. No.	Name of the project	Name of the Client	Cost of the Project	Project Duration
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				

Signature of the Bidder

Signature of the Project Director

Signature of the Director