

INCEPTION REPORT

Preparation of Development Plan for Fourteen Upazila
Package 01: Dohar, Nawabganj and Shibchar Upazila



November 2015



Desh Upodesh Ltd.
in association with
AAIMA International BD Ltd. and Technical Support Services Ltd.

26 Novemeber, 2015

**To,
The Project Director,
Preparation of Development Plan for Fourteen Upazilas
Package-1:**

Sub: Submission of Inception Report

In fulfillment of the terms of reference we are, herewith, submitting the final Inception Report including all suggested corrections by the TMC members for necessary action at your end. Prior to preparation of the report we have accomplished some important project tasks in the process of moving the project activities forward.

Hope you will find the report to your satisfaction. We are always at your service.

With best wishes.

Dr. Akhter Husain Chaudhury
Team Leader
Preparation of Development Plan for Fourteen Upazilas
Package-1:

Government of the People's Republic of Bangladesh
MINISTRY OF HOUSING AND PUBLIC WORKS
Urban Development Directorate (UDD)

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EXECUTIVE SUMMARY

Comprehensive development of upazilas is the urgent need of the time. For this purpose government has taken up an initiative to go for comprehensive planned development of the entire upazila keeping the upazila shahar as the focal point of the entire upazila development. The current project is aimed to prepare a comprehensive development plan for Nawabganj, Dohar and Shibchar Upazilas.

Seventh Five Year Plan is the last of the series of five year plans prepared by the government to pursue national development with strategic targets. The plan reiterates the government's development policies and strategies for next five years covering among other issues, urban development, housing and water supply. There are policies on such issues as environment, industrial, agriculture, disaster management, waste management, bio diversity; there are also action plans, SME Policy, Bangladesh climate change strategy and action plan, water act and water management plan and policy, national sanitation policy that are very much related to the overall upazila development. The project has already collected and reviewed most of these documents to relate them to the current planning efforts.

The current planning process of the three upazilas will move conventionally through a series of information gathering on multiple issues covering different sectors of development followed by analysis of the prevailing situations and revealing problems and opportunities in respective upazilas. The information gathering process involves a number of survey and data collection methods and processes. This includes, 3D image interpretation, mouza map digitization and creation of base map with reference to satellite imagery; preparation of contour maps, existing land use maps and existing physical feature survey maps of the upazila based on image interpretation and ground truthing; a host of relevant studies ,like, study of urban and rural economy, housing, slum and squatter study, hydrological and bathymetric study, agriculture land demarcation study, transport sector study, study on demography, migration and growth of human settlement, infrastructure study, study of health facilities, public space and open space recreation study to understand existing conditions of the issues concerned; a household based sample socio-economic survey will be done to unveil information about various issues of households; geological surveys will be carried out to ascertain seismic vulnerability, assessment of disasters like, flooding.

The survey and study findings will be analyzed to unveil issues, problems and opportunities to lead the way forward to planning. Upazila development planning process adopts an integrated approach to planning where, not only the urban and rural scenarios have been integrated together to produce a total development plan for the upazila but also the sub-regional aspects have also been infused into the process to catch and redistribute the development overspill.

Five categories of plans will be prepared under the current project-Sub-regional Strategic Plan, Upazila Structure Plan, Urban Area Plan, Rural Area Strategic Plan and Action Area Plan. Besides, recommendations will be set to safeguard the upazila from possible earthquake hazard after a thorough geological study.

So far, the consultant has completed mobilisation of all its manpower and resources for the work. After preliminary field observation and initial consultation with key officials of the upazila it has conducted a second round of consultation with the public representatives conveying them the purpose and contents of the plans and sought their cooperation to make the planning process a success. The consultant has established local project offices in the three upazila headquarters; placed work order for procurement of satellite imagery for preparation of base maps. It has completed procurement of all mouza maps of Nawabganj and Dohar Upazilas, while procurement of maps of Shibchar Upazila is in progress.

The Inception Report is divided into eight Chapters. Chapter 1 is the introductory part of the report where project background, objectives and scope of work and understanding of the project have been described.

Chapter two gives the profile of three project upazilas.

Chapter three analyses the government plans, policies and strategies under various sectors that have relation with overall upazila development.

Chapter four describes the various methods and processes for survey and data collection including sectoral studies to enable current situation analysis. The chapter also describes the plan typologies to be followed under the current project.

Chapter five describes the activity and manning schedule.

Chapter six includes progress of project works.

While chapter seven provide a conclusion of the report.

List of Abbreviation and Acronym

ADB	Asian Development Bank
ADP	Annual Development Plan
ASEAN	Association of Southeast Asian Nations
BARC	Bangladesh Agricultural Research Centre
BBS	Bangladesh Bureau of Statistics
BANBEIS	Bangladesh Bureau of Educational Information & Statistics
BC rules	Building Construction Rules
BIMSTEC	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation
BM	Bench Mark
BTCL	Bangladesh Telecommunications Company Limited
BTM	Bangladesh Transverse Mercator
BWDB	Bangladesh Water Development Board
CBO	Community Based Organisation
CS	Cadastral Survey
DC	Deputy Commissioner
DEM	Digital Elevation Model
DG	Director General
DGPS	Differential Global Positioning System
DLRS	Land Record and Survey Department
DoE	Department of Environment
DPHE	Department of Public Health and Engineering
DPI	Dot per Inch
DPW	Digital Photogrammetric Work Station
DSM	Digital Surface Model
DTM	Digital Terrain Model
DVD	Digital Versatile Disc
FGD	Focus Group Discussion

Gdb	Geo-Data Base
GDP	Gross Domestic Product
GT Station	Ground Truthing Station
GCP	Ground Control Point
GIS	Geographic Information System
GPS	Global Positioning System
GSB	Geological Survey of Bangladesh
HVACs	High Value Agricultural Commodities
IMU	Inertial Measurement Unit
INS	Inertia Navigation System
IT	Information Technology
JL No	Jurisdiction List Number
KII	Key Informant Interview
LAN	Local Area Network
LGED	Local Government Engineering Department
MSL	Mean Sea Level
NARS	National Agricultural Research System
NEHRP	National Earthquake Hazard Reduction Program
NGO	Non-Government Organization
O-D	Origin-Destination
PD	Project Director
PDB	Power Development Board
PGA	Peak Ground Acceleration
PGV	Peak Ground Velocity
PRA	Participatory Rapid Appraisal
RAP	Rural Area Plan
RDP	Rural Development Plan
REB	Rural Electrification Board
RHD	Roads and Highways Department
RL	Reduce Level

RS	Revenue Survey
RTK	Real Time Kinetic
R&H	Roads and Highways
SAARC	South Asian Association for Regional Co-operation
SCP	Secondary Control Point
SME	Small and Medium Sized Enterprises
SoB	Survey of Bangladesh
SPARRSO	Space Research and Remote Sensing Organization
SPSS	Statistical Package for Social Science
SPT	Standard Penetration Test
SRDI	Soil Resource Development Institute
TIF	Tagged Image Format
ToR	Terms of References
UBC	United Building Codes
UDD	Urban Development Directorate
UNO	Upazila Nirbahi Officer
USD	United States Dollar

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CHAPTER 1

CHAPTER 1: INTRODUCTION

1.0 Introduction

The current chapter is the introductory chapter of the Inception Report. The chapter states about project background, objectives and the scope of activities. Also, it spells out consultant's understanding of the assignment.

1.1 Project Background

Bangladesh is ranked as an emerging global market and one of the Frontier Five in the world (Wikipedia, 2015). It earned an average GDP growth rate of 6% between 2004 and 2014. The export oriented industrial sector leads the economy forward, where remittances from the Bangladeshi abroad provide vital foreign exchange as an engine of growth.

Located in one of the most fertile regions on Earth, agriculture plays a crucial role in Bangladesh, where it ranks fifth in the global production of fish and seafood. The Bangladesh telecoms industry has witnessed rapid growth over the years. The IT sector is emerging as a vital export sector. The country has substantial reserves of natural gas and coal. Located at the crossroads of SAARC, BIMSTEC, the ASEAN+3 and the Indian Ocean, Bangladesh has the potential to emerge as a regional logistics hub. In 2015, per-capita income stood at USD 1,314 (Wikipedia, 2015).

The medium and small urban centres are playing significant role in the process of economic growth. Improved connectivity and basic services are playing key role behind the changing status of the urban sector. But very often, urban based development accrues benefits to a selected section of the society living in and around the urban centres. This result regional within a upazila imbalance in sharing the fruits of development.

An inclusive development strategy combining the urban and rural areas is the need of the time to make breakthrough in development imbalance. Due importance to planned development of urban centres and their rural hinterlands can produce better results in improving livelihood of the people in general. Organized development of infrastructure and services and control of development can render urban centres congenial places for living and working and serving as the development disseminators to their vast rural hinterlands. So far, the secondary and small towns have not been properly addressed in the context of planned development in national policies and strategies. The urban centres are likely to play a vital role in transforming the vast rural economy including its production and employment. Therefore, more attention is needed to be paid in developing infrastructure and services in smaller

urban centres integrated with their rural zone of influence. There is a need for comprehensive development of upazilas where the main. The upazila headquarters has to be the focal point all social, administrative and economic and services of the entire upazila region and bring the services to the door steps of the citizens. For this purpose the Urban Development Directorate under the Ministry of Housing and Public Works of the government has taken up an initiative to go for comprehensive planned development of the entire upazila starting with fourteen upazilas initially. A particular focus of the plan would be the assessment of earthquake risk and vulnerability to suggest measures for hazard mitigation.

This project is aimed to prepare a comprehensive development plan for Nawabganj, Dohar and Shibchar Upazilas, where apart from town development plan, an effort will be made to prepare strategic plan for a sub-region covering adjacent upazilas of the project upazilas. The project will also prepare an urban area plan for urban part of the project upazilas apart from structure plan for the entire upazila and action area plans for selected priority projects. Besides, a rural development plan would be prepared for rural part of the upazila.

1.2 Objectives of the Project

The following objectives have been set to be achieved under the project:

- a. Prepare comprehensive development plan for the entire upazila including infrastructure, services, land use and agriculture under Structure Plan, Urban Area Plan, Rural Area Plan and Action Area Plan.
- b. Prepare sub-regional plan for selected sub-region.
- c. Assess earthquake hazard, vulnerability and risk and make recommendations for mitigation measures.

1.3 Scope of Work

Following, in brief, is the scope of work of the project according to the ToR of the project 'Preparation of Development Plan for Fourteen Upazilas:

1. Construction and establishment of bench mark pillars as per instruction.
2. Procure and process satellite imagery for necessary mapping, data collection and analysis.
3. Carry out physical feature surveys in the entire upazila covering all features on the surface of the earth and prepare necessary maps.
4. Carry out land use survey and prepare existing land use maps.
5. Conduct topographic survey based on 3D image and field verification and prepare updated topo and physical feature maps.
6. Conduct sample socio-economic survey in urban and rural areas.
7. Carry out study on rural economy and social infrastructure.
8. Conduct traffic survey, including volume and O-D survey.
9. Conduct hydrological study of river and other water bodies.
10. Carry out survey on formal and informal industries available in the upazila.

11. Survey and inventory of recreational open space.
12. Survey of health facilities including community health facilities in the entire upazila.
13. Survey for demarcation of agricultural land in the upazila and prepare necessary maps.
14. Conduct archaeological study to identify relics and heritages.
15. Study of pollution generation in the upazila.
16. Prepare sub-regional strategic plan for eleven districts after carrying out necessary studies spelled out in the ToR.
17. Prepare structure plan for the entire upazila for next 20 years indication the direction and nature of development through policies and strategies.
18. Prepare urban area plan for urban areas of the upazila for duration of 10 years.
19. Prepare action area plan for five years in areas that are needed for immediate development intervention.
20. Prepare rural area plan showing long term development strategy for 20 years.
21. Prepare regional morphotectonic and neotectonic maps for potential earthquake source identification.
22. Carry out engineering and geological mapping to identify geotechnical and geophysical characteristics sub-surface that cause damage to infrastructure.
23. Assessment of seismic hazard through micro zonation mapping.
24. Assessment of earthquake vulnerability of existing building stock, basic infrastructure and lifeline services.
25. Earthquake risk assessment using necessary software.
26. Preparation of detailed building data base for risk study and precautionary measures against possible earthquake impact.

1.4 Understanding of the Assignment

This project is an integrated planning project where, both, the urban and rural areas have been combined together with a focus on spatial development. The primary aim of the project is to improve infrastructure and services to facilitate overall socio-economic development of the entire upazila. Planned urban development will be a special focus of the project in order to equip urban centres with necessary infrastructure and services to serve as the disseminator of development to its vast undeveloped rural hinterland. The overall regional development will be the gamut of the sub-regional plan where broad based land use categories will be focused with particular attention on conservation of environmentally sensitive areas.

The objective of sub-region and the project upazilas will be attained through preparation and implementation of long term sub-regional and structure plan and action area plans with urban area plan and rural area plan in between. Development of rural areas will be addressed through rural area strategic plan where improvement of agriculture sector will also be in the agenda.

CHAPTER 2

CHAPTER 2: PROJECT AREA PROFILE

2.0 Introduction

Chapter 2 of the Inception Report highlights the project upazilas in details including their location and area, population, important issues such as, economy, land use and transport and communication.

2.1 Nawabganj Upazila

2.1.1 Brief Description of the Area

Nawabganj is an upazila under Dhaka District having an area of 244.80 sq km. It is situated in between 23°34' and 23°45' north latitudes and in between 90°01' and 90°17' east longitudes. Nawabganj Thana was formed in 1874 and was turned into an upazila in 1983.

Singair upazila is the northern boundary of Nawabganj Upazila, while Dohar upazila is on the south. Keraniganj and Sirajdikhan upazilas on the east and Harirampur upazila and Manikganj Sadar upazilas are on the west. The upazila is composed of 14 unions and 329 villages. There is no pourashava in the upazila.



Map 2.1: Nawabganj Upazila

There is debate about naming of the upazila. One legend says that during the Nababireign, when travelling from Murshidabad to Dhaka, the Nabab and his army used take rest here setting up tent. Besides, small staff used to stay here for collection of revenue. Gradually,

settlements developed here and became a ganj or a market place, and thus the place came to be known as Nawabganj.

Nawabganj is very close to the Dhaka city, about 1 hour journey from the Dhaka zero point by bus. It is a place where people from different religions are living together with fraternity and harmony.

2.1.2 Demography

In 2001 the population of the upazila was 2,96,605 with 2,31,488 (78.04%) number of Muslims and 59,559 (20.08%) number of Hindus, 5535 Christian and 23 belonging to other religions. According to 2011 population census the population of the upazila was 3,35,757. The number of Hindus came down to 61087 (18.19%) and the Muslims stood at 252820 (75.30%). The number of Christian was 4877 and 27 others. The number of male was 1,72,747 male and female 1,63,016. From 2001 to 2011 the population of the upazila increased by about 13%. The rate of population growth during the period was 1.48. There are 62,387 households in the upazila. The population density stands at 1302 persons per square km (2011).

2.1.3 Road Communication

The upazila has 96.50 km pucca road 106 km semi-pucca road and 660 km earthen road. It has 11 nautical miles of waterway, 3 bridges and 150 culverts (Upazila at a Glance). The upazila has very good road communication with Dhaka and adjoining upazilas.



Picture 2.1: Nawabganj Ichamati Bridge



Picture 2.2: A Major Road of Nawabganj Town

2.1.4 Education

According to 2011 population census the average literacy rate of the upazila is 57.80%. The literacy rate was 58.75% in 2001. Educational institutions in this upazila include, 7 colleges, 37 secondary schools, 2 high school cum college, 170 primary schools, 13 community schools and 4 madrasas. Important education facilities are: Bandura Holy Cross High School (1912), Churain Tarini Bama High School (1923). In the upazila on average, 1 primary school serves every 3026 population, while the country as a whole 1 primary school serves every 1380 population.

2.1.5 Utility Services

a. Electricity: All the unions of the upazila are under rural electrification network and 87.4% of the dwelling households have electricity connection.

b. Drinking water: The sources of drinking water are, tube-well 96.00%, tap 1.6% and 2.4% other sources (Population Census Report, 2011). Presence of arsenic has been detected in shallow tube-wells. There are 1500 arsenic free tube-wells in the upazila.

c. Housing quality: According to 2011 population census, of the total dwelling structures of the upazila 8.80% is pucca, 25.0% semi-pucca and 65.4% katcha, Jhupri type structures stands at 0.8%.



Picture 2.3: Kolakopa Kokilpari High School



Picture 2.4: Urban Drainage Facility under Construction.

d. Sanitation: The percent of hygienic sanitation stands at 100%. Water sealed sanitary latrines exist in 36.4% households, non-water sealed sanitary latrine in 50.60% households, while 11.30% households have non-sanitary latrines. About 1.7% households do not use any latrine.

2.1.6 Health Facilities

Nawabganj Upazila has one health complex, 12 union health and family welfare centres, 26 community clinics, 72 satellite clinics and 4 family planning centres. Besides, there are 11 private clinics in the upazila. Gross birth rate stands at 19.75%, while the gross death rate is 8.87%.



Picture 2.5: Nawabganj Upazila Health Complex

2.1.7 Economy

The economy of the upazila is predominantly agriculture based. About 31.01%, (2001) of the population is engaged in agricultural activities. The percent of non-agricultural laborer stands at 3.07%, industry 3.68%, commerce 12.98%, transport and communication 1.95%, service 12.26%, construction 3.82%, religious service 0.13%, rent and remittance 19.36% and others 11.74%. The upazila has 14 hats and bazaars. Four fairs are held every year, most noted of which are *Bairagi Paush Mela* at Bandhanpara and *mela* of Hazrat Afaz Uddin Shah (R) at Galimpur. Main exports of the upazila are Jute, cotton sari and lungi.

Fisheries, dairies and poultry enterprises include, fishery 250, dairy 240, poultry 165. Cottage industries available are, goldsmith, blacksmith, weaving, embroidery, wood work, bamboo work. The upazila land ownership picture is like this, landowner 42.42%, landless 57.58%.

2.2 Dohar Upazila

2.2.1 Brief Description of the Area

Dohar Upazila of Dhaka District has an area of 161.49 sq km (*Dohar Upazila at a Glance*). Located about 60 km from Dhaka City, it is situated in between 23°31' and 23°41' north latitudes and in between 90°01' and 90°13' east longitudes (*Banglapedia*, 2015).



Map 2.2: Dohar Upazila Map Source: Banglapedia

On the north of the Dohar upazila is Nawabganj upazila, on south is the Padma River, on east Srinagar upazila and on the west stands Harirampur upazila of Manikganj District. The main river of the upazila is the Padma. There are a number of river branches and canals passing through the upazila.

Dohar thana was established in 15 July, 1917 and turned into an upazila in 1983. The thana started functioning officially in 1 January 1918 after the gazette notification in 21 September, 1917. Currently, the upazila comprises 8 unions, 109 villages and a Pourashava. During British era there was extensive indigo plantation at Joypara area of the upazila. During the non-cooperation Movement led by Mahatma Gandhi (1920-1922) an 'Abhai Ashram' was established in this upazila. During Quit India movement against the British, 'The All India Convention of Gandhi Seba Sangha' was held at village Malikanda in 1940 and was attended by Mahatma Gandhi, who stayed in the village for two days.

2.2.2 Demography

In 2001 the population of the upazila was 1,91,423 with male 94046 and female 97377 (Banglapedia, 2015).

According to the population census 2011 the population of the upazila rise to 2,26,439 with about 1,07,041 male and 1,19,398 female (Dohar Upazila at a Glance). In 2011 the number of Muslims was 2,15,634 (95.2%), Hindus 10300 (4.54%); number of Christian was 455, number of Buddhist was 38, and others 12 (BBS, 2011). The number of households is 49,400. The rate

of population growth is 1.30. The population density stands at 1,402 persons per square km (2011).

2.2.3 Road Communication

The upazila has 147 km pucca road, 48 km semi-pucca road and 200 km earthen road (*Banglapedia*, 2015). There are 466 bridges and culverts in the upazila. BWDB has built an embankment along the Padma river for flood protection which is also used as a road.

Dohar Upazila headquarters is well connected with the capital city and its adjacent upazilas. From Dhaka Zero point the distance of the upazila HQ is about 65 km and takes about 1.5 hour by road. It can be reached from two sides, from zero point via Keraniganj and from zero point via Postagola and Sreenagar. The upazila is also connected with Munshiganj Zila Headquarters via Dhaka-Mawa Road-Nimitali of Sirajdi Khan Upazila. Dohar is also connected with Char Bhadrasan of Faridpur District through waterway across the Padma. The upazila maintains good road communication with surrounding upazilas of Nawabganj, Sreenagar, Sirajdi Khan, Louhajanganj Harirampur.

2.2.4 Education

According to 2011 population census, the average literacy rate of the upazila is 65%. with 68% male and 62 % female. Average literacy of the upazila in 2001 was 49.3%; male 50.5%, female 48.2%. Educational institutions in this upazila are, 10 colleges, 44 secondary schools, 2 high school cum college, 120 government primary schools, 38 private primary schools; 20 community schools and 29 madrasas. Noted educational institutions are, Joypara College (1972), Purbachar Government Primary School (1925), Joypara Pilot High School (1902). The upazila has 17 orphanages. The upazila has 1 primary school for every 4283 persons, against 1 primary school for every 1380 persons nationally.



Picture 2.6: Joypara Pilot High School

2.2.5 Utility Services

a. Electricity: All the wards and unions of the upazila have electricity coverage provided by Rural Electrification Board net-work. However, only 45.90% of the dwellings have access to electricity.'

b. Drinking water: Sources of drinking water are, tube-well 93.62%, pond 0.64%, tap 0.53% and others 5.21%. The presence of intolerable level of arsenic has been detected in many shallow tube-wells the upazila.

c. Sanitation: About 86.5% of the households use sanitary latrine with 28.5% having water sealed sanitary and 58.0% having non-water sealed. Non sanitary latrine is used only by 12.3% households of the upazila, while another 1.2% does not have any latrine facility at all.

d. Housing quality: Only 9.3% of the dwelling structures in the upazila is pucca, 38.4% semi-pucca and 51.7% katcha, Jhupri type dwelling is only 0.60%.

e. Utility Services: The upazila has 36 post offices and sub-post offices and one telephone exchange for land lines.

2.2.6 Health Facilities

Upazila has one health complex with 50 beds; 16 union health and family welfare centre (*Dohar Upazila at a Glance*). There is one family planning clinic, 1 MCH unit. The number of allocated post of doctors for the upazila is 37, the doctors at work are 34; allocated post of senior nurse is 15, at work 13, assistant nurse is 1.



Picture 2.7: Dohar Upazila Health Complex

2.2.7 Economy

The mainstay of the local economy is agriculture. It is the primary sources of income of the majority of the people. About 52.64% (*Dhaka District Statistics, Population Census Report, 2011*) of

the population above 7 years is engaged in agricultural activities. The people engaged in industry stands only at 11.04% and 36.32% are engaged in service activities. Noted local manufacturings are, cotton mill, saw mill, welding factory, bidi factory. Available cottage industries are goldsmith, blacksmith, weaving, potteries, embroidery, cane work, bamboo work, and wood work. The upazila has 781 cottage industries of different kinds and 3 medium scale manufacturing units. Monetary transactions are made through 10 banks and mobile banking facilities. Main exports of the upazila are, jute, cotton sari and lungi.

Cottage industries available include goldsmith, blacksmith, weaving, embroidery, wood work, bamboo work. In the fishery sector the upazila has 7,454 fish ponds and 7 fish fry production centres. The annual demand for fish is 6,180 metric tons; the local production is 5,513 metric tons (*Upazila at a Glance*). There is a deficit of 667 metric tons of fish in the upazila. There are 122 high breed chicken farms and 150 dairy farms and 4 fishery farms. The upazila has 323 cooperatives of different kinds including 120 farmers' cooperatives (*Upazila at a Glance*).

Trading in the upazila is carried out through 34 hats and bazaars. The most noted are Joypara Hat, Kartikpur Hat, Kacharighat Hat, Palamganj Hat, Dohar Hat, Medhula Hat and Narisha Hat. Main exports of the upazila are, weaving cloths, wheat, vegetables.

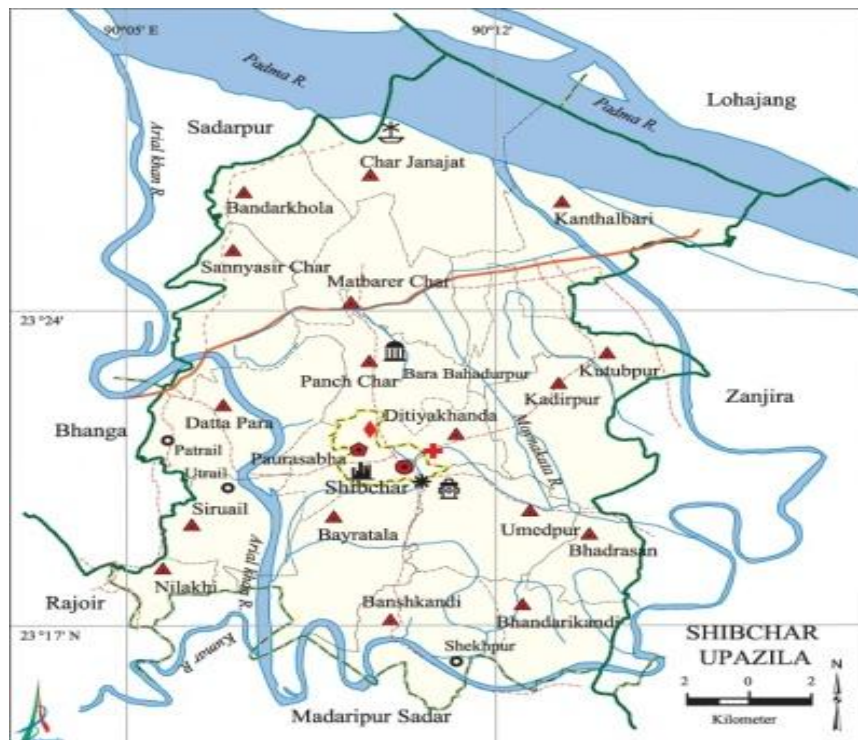
Total cultivable land in the upazila is 39,103 hectares (96, 625.23 acres). Net agricultural land is 16,500 hectares (40,772.22 acres). Upazila's 3,015 hectares (450.197 acres) grow one crop, two crops are grown in 4,367 hectares (10 791.05 acres) and 9118 hectares are triple cropped (*Dohar Upazila at a Glance*). The upazila has an intensity of cropping of 164 that was 190 in 2001. The upazila has 1690.61 acres of Khas land. To supply irrigation to farm lands, there are 123 numbers of deep tube wells, 2,423 shallow tube wells and 2, 88 low lift pumps. The number of hand tube well is 4,276. The upazila has an annual food demand of 78,267 metric tons.

Main crops of the upazila are Boro paddy, Aman paddy, Potato, Jute, Mustard, Pulse. Extinct or nearly extinct crops are Aus paddy, Tobacco. Main fruits are Mango, Guava, Papaya, Jackfruit, Coconut, Litchi, and Banana.

2.3 Shibchar Upazila

2.3.1 Brief Description of the Upazila

Shibchar Upazila under Madaripur district has an area of 321.88sq km (Shibchar Upazila at a Glance) and located in between 23°15' and 23°30' north latitudes and in between 90°05' and 90°17' east longitudes (Banglapedia, 2015). The upazila has the

**Map 2.3: ShibcharUpazila**

Map Source: Banglapedia

Sadarpur Upazila and the Padma river on the north, Madaripur Sadar and Rajoir Upazila on the south; Zanzira Upazila on the east. The upazila is comprised of 19 unions and 506 villages. Shibchar has 212 villages under 19 unions. There is also a paurashava in the upazila.

The exact reason for naming of the upazila is not clear. But it was named according to the Hindu god Shib. This upazila is famous for great Islamic reformist and freedom fighter of Bengal HAJI SHARIATULLAH (1781-1840) who was born in this upazila at village Shamail. He was the initiator of Faraizi Movement in this region in the nineteenth century that subsequently spread all over East Bengal. His son Muhsinuddin Ahmad Alias DUDUMIYAN (1819-1862) re-established the '*Panchayet System*' in the Faraizi dominated region; he even formed a *lathial bahini* (affray fighters) for self-defense.

2.3.2 Demography

According to 2001 population census the population of Shibchar Upazila was 3,24,438; male 165,125, female 159,313. Shibchar Upazila has a density of 1008 persons/sq.km (2001). The population census of 2011 shows population of the upazila as 3,18,220 where Muslim 306,034 (96.17%), Hindu 12,165 (3.82%), Buddhist 13, Christian 8 and others 9. The population density in 2011 was 989 persons per square km (**Table-2.2**).

Table 2.1: Shibchar Upazila Demography

Year	Union	Population	Density (per sq km)	Literacy Rate (%)
2001	19	3,24,438	1008	34.2%
2011	19	3,18,220	989	43.50%

Source: Bangladesh Population Census 2001, 2011, Bangladesh Bureau of Statistics (BBS)

2.3.3 Road Communication

According to population census report 2011, the upazila has, in total, 770.7 km of road network with 145 km pucca road 125 km semi-pucca road, 501 km of earthen road, for movement within the upazila and linking outside areas. It has also 1350 km of water ways during monsoon, while 75 km water way can be used round the year.



Picture 2.8: An Arterial Road in the Shibchar Upazia

Shibchar is well linked with surrounding upazilas and districts including the capital city Dhaka via Mawa Ghat. From Dhaka one can reach Shibchar town in 3 hours (ferry) and 1.45 hours crossing the river by speed boat. It is well connected with Madaripur and Shariatpur district headquarters. Dhaka-Khulna Highway passes through the upazila. Using the road one can easily move to Barisal and Patuakhali in the south and Khulna, Satkhira and Jessore in the north and north-west, apart from Faridpur and Magura.

2.3.4 Education

Average literacy of the upazila in 2001 was 34.2% with male 38.5% and female 29.8%. In 2011, literacy rate rose to 43.50%. Literacy rate was 16.6% in 1981, 26.9% in 1991 34.2%. The upazila has 1 primary school for every 1890 population, while nationally there is one school for every 1380 population.

Among educational institutions, the upazila has 6 colleges, 38 secondary schools, 175 primary schools, 2 satellite schools, 11 community schools, 79 madrasas. Noted educational

institutions are, Barhamganj Government College (1964), Rijia Begum Mohila College (1985), Elias Ahmed Chowdhury College (2001), Bayratala Ideal College (2001), Nurul Amin College, Datta Para TN Academy (1934),



Picture 2.9: Shibchar Nandakumar Institution

Bhadrasan GC Academy, Nandakumar Institution (1910), Rajarchar High School (1972), Kanthalbari High School (1962), Sheikh Fazilatunnesa High School (1974), RM High School (1930), Takerhat High School (1952), Bhandarikandi AM High' School (1953), Panchchar High School (1920), 'Munsikadirpur' High School (1950), Utrail High School, Khankandi Syed Ashraf Ali High School, Bahadurpur Shariatia Alia' Madrasa.

2.3.5 Utility Services

a. Electricity: In Shibchar upazila 45.4% households have electricity connection. In the upazila 83 villages so far have been provided with electricity connection. About 87,067 households so far have been supplied power connection.

b. Drinking Water: About 95% of the upazila households have access to safe drinking water. The sources of drinking water are, tube-well 96.90%, tape 0.5% and other sources (Population Census Report, 2011).

c. Major Offices and Services: Shibchar Upazila has one fire station and four police camps. In order to render better serve the people of the upazila with land issues, there are land *tahshil* offices in each union.

Table 2.2: Number of Filling Station, Fire Brigade Station, Police Station/Camp, Union Land (*Tahshil*) Office, BOP (BGB Camp), Cyber Cafe (2011)

Item	Number
Filling station	1
Fire brigade	1

Police station/camp	4
Union land (<i>tahshil</i>) office	18
Sub-registry office	1
BOP (BGB camp)	0
ISP provider	0
Cyber café	0

Source: *Upazila at a Glance, 2015, Shibchar Upazila Parishad.*

c. Water Bodies and other Facilities: In addition to the existence of two rivers there are 2622 ponds in the upazila indicating the upazila as low in topography. There are couples of cyclone shelters as well. However, the recorded playground is insufficient in number.

Table 2.3: Number of Pond, Dighee, Flood Camps/Shelter, Cyclone Shelter, Stadium/Playground, Park/Amusement Park (2011) in Shibchar Upazila

Item	Number
Pond	2622
Dighee	0
River flow	2
Flood camp/shelter	0
Cyclone shelter	12
Stadium/playground	9
Park/amusement park	0

Source: *Bangladesh Population Census 2011, Bangladesh Bureau of Statistics (BBS)*

2.3.6 Health Facilities

The Upazila has one health complex with 50 beds, 15 union health and family welfare centres, 3 union sub-health centre, 29 community clinics, 72 satellite clinics, 4 family planning centres. The table below shows the details of upazila health facilities.

Table 2.4: Health Facility in Shibchar Upazila

Facility Type	Total (No.)	No. of Beds
No. of Upazila Health Complex	1	50
No. of Union Sub-Centres	3	0
No. of Union Health and Family Welfare Centres	15	0
No. of Rural/Urban/Thana Dispensaries	0	0
No. of Community Clinics	38	0
No of Trauma Centres	0	0
No. of MCWCs	0	0
No. of Chest Disease Clinics (TB clinics)	0	0
No. of Private Clinics/Facilities	6	56
No. of NGO Clinics/Facilities	1	0

Source: *Shibchar Upazila Health Complex, 2013*

2.3.7 Economy

The economy of the upazila is primarily based on agriculture as it is the main sources of income of the people of the upazila. Cottage industries, like, Goldsmith, blacksmith, weaving, handloom, embroidery, wood work, bamboo work is available. The upazila has only 15 handloom factories of which only 5 are in operation. No notable industrial concern exists. There are about 215 cottage industries of different kinds in the upazila in which 1075 persons are engaged as workers.

Only two handloom factories are there with 15 looms of which only one thirds are operational. Engagement of people in this handloom industry is very negligible at present only 10 people are employed. Following table 2.5 and 2.6 show the data on handloom

Table 2.5: Handloom Establishment (2011)

Operational		Number
Number of unit (factory)		2
Number of loom	Operational	5
	Non-operational	10
	Total	15

Source : Madaripur District Statistics; Population Census 2011, BBS.

Table 2.6: Employment Status in Handloom Industry (2011)

Item		Number
Number of handloom		1
Person engaged	Family member	3
	Regular	5
	Hired /Casual	2
Total		10

Source : Madaripur District Statistics; Population Census 2011, BBS.

More than two hundred cottage industries are there in the upazila where more than thousand people are employed. Among them 60% are household based and in rest 40%, the labour is hired from outside the family (**Table 2.7**).

Table 2.7: Number of Establishment and Person Engaged in Cottage Industry (2011)

Item		Number
Number of unit		215
Person engaged	Family	645
	Hired	430
	Total	1075

Source : Madaripur District Statistics; Population Census 2011, BBS.

Regarding the sector of employment in this upazila, 74.60% is engaged in agriculture, 5.35% in industry and 20.04% in the service sector (*Madaripur Community Tables, BBS, Population Census 2011*).

Main sources of income : Agriculture 63.95%, non-agricultural labourer 2.16%, industry 0.81%, commerce 14.57%, transport and communication 2.18%, service 6.16%, construction 1.22%, religious service 0.15%, rent and remittance 0.71% and others 8.09%.

The upazila has 3 hatcheries and 1 artificial breeding centre; 96 poultry farms and 22 dairy farms (*Upazila at a Glance*). Main exports of the upazila are, Jute and paddy.

Trading in the upazila is carried out through 67 hats and bazaars including 6 growth centres (*Upazila at a Glance*).

Table 2.8: Number of Growth Centre, Hat/Bazar, Poultry Farm, Dairy Farm, Nursery, Horticulture Centre, Brick Kiln, Decorator Service (2011)

Item	Number
Growth centre	6
Hat/bazaar	61
Poultry farm	82
Dairy farm	520
Nursery	4
Horticulture centre	0
Brick kiln	13
Decorator	55

Source: *Upazila at a Glance, 2015, Shibchar Upazila Parishad.*

Agriculture

The main crops of the upazila are Boro paddy, Aman paddy, potato, jute, mustard, pulse. Extinct or near extinct crops are Aus paddy, tobacco. Main fruits of the upazila are mango, guava, papaya, jackfruit, coconut, litchi, banana etc.

Upazila has 59273 acres of total cropped area; 42988 acres of permanent cropped area; 842 acres of temporary cropped area and 14975 acres is permanent fallow land. The upazila has 81787 acres of single cropped land, 53222 acres of double cropped land and 14494 acres of triple cropped land.

Regarding ownership of agricultural land 65.77% of the land belongs to the land owners 34.23% is landless and 46.31% agricultural land owner. (Source : *Madaripur District Statistics; Population Census 2011, BBS*).

Table 2.9: Land Area Based on Utilization (2008)

Item	Amount (Acre)
Permanent cropped area	42988
Temporary cropped area	843
Permanent fallow area	14975
Total area	59273

Source : *Madaripur District Statistics; Population Census 2011, BBS*

Total land area under cultivation of major crops and vegetation like paddy, wheat and tomato covers 26836 acres. There is a shortfall of irrigation facilities in the upazila since only 43% lands are under regular irrigation.

Table 2.10: Land area Under Irrigation for Selected Crops (2008)

Item		Amount (Acre)
Paddy	Total area	21800
	Irrigated area	10758
Wheat	Total area	4792
	Irrigated area	618
Potato	Total area	244
	Irrigated area	244

Source: Agricultural Census, BBS, 2008

Livestock and Poultry

In case of livestock rearing it is found that cows and buffalos are the top choice of the dwellers in the villages of the upazila. Almost 50 % of the rural households rear goats. Apparently, sheep rearing is very rare in the upazila (**Table-2.11**).

Table 2.11: Number of Holding Reporting Selected Livestock Species (2008)

Item		Number
Cow & buffalo	Holding number	33174
	Number of animal	49315
Goat	Holding number	15208
	Number of goat	45591
Sheep	Holding number	102
	Number of sheep	487

Source: Agricultural Census, BBS, 2008

In case of poultry rearing, the major poultries are, hen, cock, duck and other birds. The number of poultry indicates that most of the households who reported to rear poultry, they do it for commercial purposes (**Table-2.12**).

Table 2.12: Selected Poultry/Birds (2008)

Item		Number
Hen and cock	Holding reporting	215
	Total number	229886
Duck	Holding reporting	120
	Total number	53790
Others	Holding reporting	30
	Total number	12000

Source: Agricultural Census, BBS, 2008

CHAPTER 3

CHAPTER 3: REVIEW OF RELEVANT DOCUMENTS

3.0 Introduction

Chapter 3 makes a review of the documents that are relevant to the current project. These documents will be of great help in drawing up development plan and policy proposals of the five categories of plans under the project.

3.1 Review of 7th Five Year Plan

The government has very recently approved the seventh five-year development plan of the country. It sets the annual average growth target at 7.4 per cent during the period between fiscal year (FY) 2015-16 and FY 2019-20. The plan focuses, among issues, on higher growth, conversion of population into a large pool of skilled manpower, promotion of infrastructural facilities and building a strong social safety net. It lays an investment target Tk.31.9 trillion. About 80% of this projected level of investment would be generated from the private sector, come from the private sector. The target for economic growth has been set at of 8.0 per cent in the terminal year of the new medium-term plan. The plan aims at improving in the following sectors of the nation.

1. Improving Access of the Poor to Financial Services
2. Strategy for Development of SME in Bangladesh
3. Strategy for Education and Training
4. Improving Land Administration and Management
5. Prospect and Strategy for Tourism Development
6. Strategy for Mobilizing Foreign Resources
7. Strategy for Export Diversification
8. Fiscal Management and Revenue Mobilization
9. Financial Market Developments and Challenges in Bangladesh
10. Strategy for Infrastructure Development
- 11a. Climate Change and Disaster Management
- 11b. Environment, Forestry and Biodiversity Conservation
12. Governance and Justice
13. Strategy on Local Government Strengthening
14. Strategy for Food Security and Nutrition
15. Lagging Regions Study
16. Gender Equality and Women's Empowerment
17. Agriculture Sector Development Strategy
18. Achieving Digital Bangladesh by 2021 and Beyond
19. Strategy for Ocean and River Resources Management
20. South Cooperation in the Regional Context
21. Health Strategy
22. Impact of Demographic Transition on Socioeconomic Development
23. FINAL Nutrition Background Paper for 7th Five Year Plan
24. Linking Equity and Growth in Bangladesh
25. Ending Extreme Poverty in Bangladesh

The plan is a huge document and covers a wide range of issues. It would be an uphill task to go for total review of the plan document. Therefore, the consultant makes a brief review of the infrastructure strategies of the plan which is the most relevant sector for the current project.

Infrastructure is a key issue for any development which is also important for 14 upazila project. The plan terms infrastructure as the key pillars for economies like Bangladesh. Comparison among developing Asian countries shows that despite overall progress Bangladesh is still substantially lacks quality of infrastructure. Bangladesh has to lay more emphasis on effective implementation of infrastructure investments coupled with necessary institutional changes relating to implementation, regulation, and policy formulation.

Regarding strategies for infrastructure development the plan calls for,

- fixation of infrastructure investment priority to get the best results;
- take up integrated transport development policy ;
- demand based transport development;
- continue to repair, maintain, improve and expand existing roads on a - priority basis;
- construction of padma multipurpose bridge to be completed by 2018;
- continuation of investment to reform and modernise railways;
- construction of circular rail road track around dhaka city and development of mrt,brt to meet growing travel demand;
- construction of a sea port and an lng terminal at moheshkhali;
- strengthen fleet capacity while making biman a profitable organisation - by improving its management and enhancing the capacity of passenger transport;
- take up more ppp projects to finance infrastructure development;
- improve procurement system;
- make improvement in institutional system for better management of infrastructure development.

3.2 Review of Sixth Five Year Plan

The review of the Sixth Five Year Plan (DFYP) concentrates on the physical planning and housing, water supply and sanitation, urbanization strategy, objectives and strategies for urban local government development.

The Sixth Five Year Plan (SFYP) (2011-2015) recognizes that a combined action of socio-economic, political, demographic factors resulted in rapid urbanization in Bangladesh that increased from 7.6% in 1970 to nearly 25% in 2005. But the urban areas are showing poor conditions due to poor urban management, low efficiency, massive corruption; high proportion of traffic, water and air pollution and poor law and miserable law and order situation in larger urban centres. Increase of urban population at different rates in different urban centres is a significant feature of urbanization that comes through mass migration in primate cities. Major cause of migration is the failure of agriculture sector to absorb surplus rural labour force entering the economy every year. A considerable proportion of urban population lives in smaller district town and upazila towns.

3.2.1 Physical Planning and Housing

As observed in the SFYP, due to high demand caused by rising population and inadequate supply, the housing situation of Bangladesh is gradually taking critical shape, particularly, in

major urban centres. Public sector efforts so far, have been found inadequate to mitigate the housing problem. However, private sector participation in urban housing has been found encouraging. The following goals and objectives has been set by SFYP for the housing sector development:

a) Goals:

- Sustainable urban development,
- Better quality of life,
- Urban Governance and Management,
- Institutionally and Financially capable City Corporations and Pourashavas.

b) Objectives:

- Develop low –cost housing for disadvantaged people
- Strengthened the supporting Authorities
- Develop Sites and Services Schemes
- Construction of Condominium for low and middle income
- Construction of Multi-storeyed flats for sale to government employees
- Construction of Housing facilities for working women
- Construction of low cost housing in coastal areas
- Involve Private investors in housing sector.

City Corporations/Pourashavas are to undertake projects for improving urban environment and services by developing road and road infrastructure, solid waste management facilities, drainage system, primary health care facilities, street lighting etc. to enable housing development by the people in general

3.2.2 Water Supply and Hygienic Sanitation

The following goals and objectives have been determined by the SYFP for water supply and sanitation:

a) Goals:

The overall goal is to improve the health and living standard of the people in rural and urban areas by providing access to safe water supply, hygienic sanitation and adequate drainage system.

b) Objectives:

- Achieve 100% coverage of water supply and sanitation services.
- Improve overall environment.
- Achieve congenial environmental sanitation in a sustained manner.
- Ensure quality for drinking and domestic purpose.

Using Surface Water

Due to constant extraction of ground water the capacity and reserve in the sub-surface is deteriorating. SFYP aims to plans to substitute surface water for groundwater through the construction of three large water treatment plants until 2020 to 2021 in Dhaka city where water demand is the highest among all urban centres.

3.2.3 Urbanization Strategy of the SFYP

SFYP recognizes that urbanization strategy needs to change substantially to meet the challenges of future urbanization in Bangladesh. It suggests the following:

Urban Governance Improvement

SFYP recognizes that there is need to improve governance in urban local bodies to offer better municipal services to the people. The urban centres must be able to attract private investment and mobilize public resources based on service delivery and the quality of urban environment. To improve urban governance the government would take up the following measures:

- institutional reforms and decentralization of responsibilities and resources to the local authority
- participation of civil society including women in design, implementation and monitoring of local priorities
- building capacity of all actors (institutions, groups and individuals) to contribute fully to decision making and urban development process and
- Facilitating networking at all levels.
- Promoting Balanced development of Urban Centers
- Urban Resource Mobilization
- Developing of a Sound Real Estate Market
- Facilitating NGO Involvement in Housing
- Better Urban Land Management
- Better Environmental Management
- Developing Sustainable Urban Transportation
- Making Provision of Infrastructure and Services
- Reducing Urban Poverty

3.2.4 SFYP Objectives and Strategies for the Development in Pourashavas and City Corporation Areas

Major Objectives and Strategies for development of Pourashavas and City Corporations are as follows:

a) Objectives

- Development of effective road network to set up congestion free, safe and sound communication system.
- Development of pedestrian facilities in the city
- Reduction of traffic accidents
- Auto traffic signalization for better traffic management

- Sustainable parking management
- Improvement of solid waste management
- Provision of water supply for the citizens
- Development of recreational facilities
- Development of modern street lighting
- Development of primary health facilities
- Improvement of drainage system to address the problem of water logging
- Development of commercial complexes for expanding economic activities
- Infrastructure development for low income settlement

b) Strategies

- To achieve plan objectives, the following strategies will be perused:
- Establishing strong elected Pourashavas and City Corporations
- Revamping the Property Tax system
- Strengthening the capacity of Ministry of Local Government and Planning Commission to support development of Pourashavas and City Corporations
- Planning Road Infrastructure Development and Public Transportation
- Developing comprehensive layout plan comprising all civic amenities
- Improving urban environment by regulating disposal of solid waste
- Co-ordinated infrastructure development and provision of utilities
- Building comprehensive data base in LGED and City Corporation/ Pourashava for urban planning
- Govt. khas land to be used for solving housing problem, specially for poor housing. Abandoned houses will be converted into multi-storied building to solve housing problem
- Strictly enforce the Building Code of 1993
- Soft loans for housing for the poor
- Construction for houses working women
- Construction of hospitals, educational institutions
- Reduce wage discrimination.

It is, therefore, explicit that SFYP has greatly emphasized on urban area planning and chalked out detailed objectives and strategies which are valuable guidelines for the preparation of Pourashavas and City Corporations Master Plans.

3.3Poverty Reduction Strategy Paper (PRSP)

In 1999 the World Bank (WB) and the International Monetary Fund (IMF) decided that there should be 'poverty reduction strategies' for low income countries as the basis for providing all their concessional lending and eligibility for their debt relieves. So the Heavily Indebted Poor Countries Debt Relief Initiative (HIPC) was launched in 1996 to allow developing countries to come out of the burden of unsustainable debts. Poverty Reduction Strategy Paper (PRSP) was perceived to become a national plan of action to reduce poverty and promote growth LDCs. This was a three-year rolling plan prepared in 2005 that became basis of all social, macroeconomic and structural development of a nation. In this series of PRSPs Bangladesh

prepared its own PRSP for the first time titled 'Unlocking the Potential.' It aimed at unlocking the potential the potentials of social and economic energies of the nation. From such a perspective, the medium term strategic agenda for Bangladesh to attain the goal of accelerated poverty reduction targeted to improve the following issues:

- Employment
- Nutrition
- Quality Education (particularly in primary, secondary and vocational levels with strong emphasis on girls' education)
- Local governance
- Maternal Health
- Sanitation and Safe Water
- Criminal Justice Monitoring

It is recognized in the PRSP that, both, in their individual essence and in their potential synergies, this eight-point strategic agenda would provide the key to 'a comprehensive acceleration in the pace of poverty reduction.' However, other priorities are also to be attended, 'but it is on these eight that the strategic gaze of the nation has to be unwavering,' the report said.

Critics raise some questions about Bangladesh PRSP with respect to its process, content and the philosophy. Empirically it is proved that the neo-liberal approach of 'growth maximisation' does not always bring 'trickle down' benefits on the poor. Following this approach PRSP, in fact, has raised social inequality. The growth achieved did not guarantee adequate payoff for the labour market in Bangladesh. The critics are of view that, in this milieu, employment should be considered as a fundamental escape for poverty. Thus, poverty reduction strategy of Bangladesh is irrational when it fails to emphasise on equitable distribution of income and land reform as they have direct relation to the capacity building of labour and thus to reduction of inequality

3.4The Millennium Development Goals (MDGs) are eight international development goals that were established for developing countries following the Millennium Summit of the United Nation since 2000, following the adoption of the United Nations Millennium Declaration. In the summit 189 United Nations member states at that time, and at least 23 international organizations, committed to help achieve the following Millennium Development Goals by 2015:

1. To eradicate extreme poverty and hunger
2. To achieve universal primary education
3. To promote gender equality
4. To reduce child mortality
5. To improve maternal health
6. To combat HIV/AIDS, malaria and other diseases
7. To ensure environmental sustainability[1]
8. To develop a global partnership for development

As studied by UNDP Bangladesh has already met several targets of the MDGs including reducing poverty gap ratio, attaining gender parity at primary and secondary education, under-five mortality rate reduction, containing HIV infection with access to antiretroviral drugs, children under five sleeping under insecticide treated bed nets, detection and diseases has been remarkable.

As evident from the Household Income and Expenditure Survey of 2010, the incidence of poverty in Bangladesh is declining at a rate of 2.47 percent per year since 1991-92. The target of reducing population living below the poverty line by half is already achieved in 2012. The country is paying greater attention now to hunger-poverty reduction and employment generation, increases in primary school completion and adult literacy rates, creation of decent wage employment for women, increase in the presence of skilled health professionals at delivery, increase in correct and comprehensive knowledge on HIV/AIDS, increase in forest coverage, and coverage of information and communication technology.

About MDGs critics are of the opinion that it lacks of analysis and justification behind the chosen objectives; it is difficult or lack of measurements for some goals and uneven progress. Despite developed countries' assistance in achieving the MDGs, it rose during the challenge period, more than half went for debt relief and much of the remainder going towards natural disaster relief and military aid, rather than further development.

3.5 Urban and Regional Planning Act 2014

Draft Urban and Regional Planning Act 2014 was prepared by Urban Development Directorate of the Ministry of Housing and Public Works with a view to help prepare short, medium and long term plans for proper urbanization in Bangladesh, control of land use and integrated spatial development plan. The law would serve as the legal framework for urban planning in Bangladesh.

According to the as soon as the act is approved the government shall create a council comprising 18 secretary from 11 ministries and senior secretaries from two ministries. Minister, Housing and Public Works shall serve as the Chairman of the Parishad while, Director, Urban Development Directorate shall be Member Secretary. There will be a 19 member 'Urban and Regional Executive Council' to provide technical support, execution and coordination of the act through scrutiny and review.

Following are the key features of the act.

- a. Urban Development Directorate shall issue no objection certificate concerned with urban and regional planning and land management and related development to public sector bodies and individuals.
- b. Urban Development Directorate shall serve as the formulator of urban and regional plans of the country and shall serve as the coordinator of the same.
- c. Under the act the government shall, on advice of the council, engage any government body to serve as development control authority in any particular area.

d. For integration and coordination, any concerned development agencies must have prior permission from the council for preparation of their respective national, regional and local plans; preparation of special land use plan and control of development.

e. Any person/agency violating, any provision of the 'Urban and Regional Planning Act 2014' shall be considered as an offence under the Code of criminal Procedure, 1998 and may be subject to punishment for imprisonment for one to five years and a minimum fine of taka 5 lakh.

The act will give Urban Development Directorate total power to control urban and regional level planning, land use and development control in the country. However, this might necessitate major institutional development and capacity building of UDD to handle the huge tasks imposed by the legal document.

3.6 Year 2000 Act for Preservation of Play Field, Open Space and Natural Waterbody in Metropolitan City, Divisional City and the Municipal Areas of District Towns.

The Key Features of the Act are as follows:

1. Publicity of the Master Plan

The act calls for wide level publicity after preparation of any master plan of any area to convey to the people about the contents of the plan. The concerned authority shall sell the copies of the master plan at appropriate rate. The master plan, apart from plan provisions, shall also convey to the general public about their responsibilities.

2. Changing the Provision of Play Field, Open Space and Natural Waterbody in the Master Plan

The act restricts changing the provision of Play Field, Open Space and Natural Waterbody in the master plan without approval of concerned authority. The above places also cannot be rented, leased or transferred by any means.

3. Punitive Measures for Violation of the Act

There will be maximum 5 years of imprisonment or a fine of taka 50 thousand for violating any provision of the act. Any development made in the above places violating the provisions of the act, shall be forfeited by the order of the court.

The act was prepared to secure the existence Field, Open Space and Natural Waterbody for public interest.

3.7 Disaster Management Policy

As a low-lying deltaic country Bangladesh is formed by the Ganges, the Brahmaputra and the Meghna rivers. Its geographical location, land characteristics, large number of rivers and the monsoon climate make the country highly susceptible to natural disaster that include flood, cyclone, drought, tidal surge, tornado, earthquake, river erosion, high arsenic contents of ground water, water and soil salinity,. The country is also vulnerable to many manmade hazards, like, fire drainage congestion/ water logging, infrastructure collapse, epidemic, and various forms of pollution.

Bangladesh Disaster Management Policy was formulated in 2010 to prevent, manage and mitigate disasters. The vision of the policy is 'to reduce the risk of people, especially the poor and the disadvantaged, from the effects of natural, environmental and human induced hazards, to a manageable and acceptable humanitarian level, and to have in place an efficient emergency response system capable of handling large scale disasters.'

The Mission of the policy envisages 'to bring a paradigm shift in disaster management from conventional response and relief practice to a more comprehensive risk reduction culture.'

The Overall Objective is 'to strengthen the capacity of the Bangladesh disaster management system to reduce unacceptable risk and improve response and recovery management at all levels.'

The subsequent governments have established disaster management system in Bangladesh. In 1997 the government through the Standing Orders (SoD) on Disaster created a well-defined disaster management system governed by the Ministry of Food and Disaster Management (MoFDM). Under SoD a series of inter-related committees, at both national and sub-national levels have been created to ensure effective planning and coordination of disaster risk reduction and emergency response management at all levels.

The Management at the National Level are:

- i. National Disaster Management Council (NDMC) headed by the Hon'ble Prime Minister to formulate and review the disaster management policies and issue directives to all concerns.
- ii. Inter-Ministerial Disaster Management Co-ordination Committee (IMDMCC) headed by the Honourable Minister in charge of the Ministry of Food and Disaster Management (MoFDM) to implement disaster management policies and decisions of NDMC / Government.
- iii. National Disaster Management Advisory Committee (NDMAC) headed by an experienced person having been nominated by the Hon'ble Prime Minister.
- iv. Cyclone Preparedness Program Implementation Board (CPPIB) headed by the Secretary, Ministry of Food and Disaster Management to review the preparedness activities in the face of initial stage of an impending cyclone.
- v. Disaster Management Training and Public Awareness Building Task Force (DMTATF) headed by the Director General of Disaster Management Bureau (DMB) to co-ordinate the disaster related training and public awareness activities of the Government, NGOs and other organizations.
- vi. Focal Point Operation Coordination Group of Disaster Management (FPOCG) headed by the Director General of DMB to review and co-ordinate the activities of various departments/agencies related to disaster management and also to review the Contingency Plan prepared by concerned departments.
- vii. NGO Coordination Committee on Disaster Management (NGOCC) headed by the Director General of DMB to review and co-ordinate the activities of concerned NGOs in the country.

- viii. Committee for Speedy Dissemination of Disaster Related Warning/ Signals (CSDDWS) headed by the Director General of DMB to examine, ensure and find out the ways and means for the speedy dissemination of warning/ signals among the people.

Sub-national Level Managements are:

- i. District Disaster Management Committee (DDMC) headed by the Deputy Commissioner (DC) to co-ordinate and review the disaster management activities at the district level.
- ii. Upazila Disaster Management Committee (UZDMC) headed by the Upazila Nirbahi Officer (UNO) to co-ordinate and review the disaster management activities at the Upazila level.
- iii. Union Disaster Management Committee (UDMC) headed by the Chairman of the Union Parishad to co-ordinate, review and implement the disaster management activities of the concerned union.
- iv. Pourashava Disaster Management Committee (PDMC) headed by Chairman of Pourashava (municipality) to co-ordinate, review and implement the disaster management activities within its area of jurisdiction.
- v. City Corporation Disaster Management Committee (CCDMC) headed by the Mayor of City Corporations to co-ordinate, review and implement the disaster management activities within its area of jurisdiction.

Besides the above committees government may form any other committee from time to time as a part of disaster management institutional mechanism. So far, these committees have been performing well during regular disasters like, cyclone, flood and tidal bore. They are contributing in reducing the loss of life and property as well handling post disaster mitigation measures. However, the major handicaps to Bangladesh disaster are inadequate infrastructure, primarily road and lack of awareness of the people. However, the situation has shown substantial improvement over the years.

The Bangladesh Disaster Management Act was enacted in 2012 to serve as the legislative basis for the protection of life and property and to manage long term risks from the effect of hazards of natural, technological and human induced, and to respond to and recover from a disaster event.

The past seismic records of Bangladesh and adjoining areas indicate that Bangladesh is vulnerable to earthquake hazard as it, as a whole, lies in the earthquake zone of which two-third comes under major and moderate fault. The most vulnerable parts of the country are a few cities and towns where construction boom of high rise building and infrastructural facilities are observed. They are at high vulnerability due to earthquake hazard because of the existing dense population in large urban areas. This situation calls for critical evaluation of seismic hazard in major urban centres in Bangladesh with a view to recommend appropriate mitigation measures (both structural and non-structural) may be undertaken.

So far, the disaster management policy has been found working effectively as proved during natural disasters in the past. Community participated pre-disaster warning system and post disaster mitigation measures have been able to reduce the number of casualties remarkably.

3.8 National Plan for Disaster Management 2010-2015

National Disaster Management Plan 2008-2015 was enacted by Disaster Management Bureau Ministry of Food and Disaster Management in April 2010. The National Plan for Disaster Management is aimed to address the key issues of disaster like risk reduction, capacity building, climate change adaptation, livelihood security, gender mainstreaming, community empowerment and response and recovery management. The plan will also serve as basic guideline for all relevant agencies in coordinating disaster management activities and enhancing mutual cooperation.

This plan has been a step forward to supplement traditionally measures to manage the natural hazards. This plan has come out of the need for addressing the emerging issues like climate change adaptation, drought, desertification and human induced hazards in national policy and plans was very much required. This plan, in a comprehensive way, for the first time, includes, both, the natural and human induced hazards in its action plan involving government and non-government organizations, and private sector.

The key focus of the Plan is to establish institutional accountability in preparing and implementing disaster management plans at different levels of the country. It includes Disaster Risk Reduction and Hazard Specific Multi-Sectoral Plans, which have rendered the plan an exclusive tool for reducing risk and achieving sustainable development.

A participatory approach has been adopted in preparing the plan. Several consultations with different categories of stakeholders have been made, that established a road map of effective partnership with the organizations working in local, national and regional levels. It is expected that this plan will contribute towards developing and strengthening regional and national networks.

The National Plan for Disaster Management 2010 lays down,

- Vision for Disaster Management,
- Aim of the plan,
- Strategic goals of the plan,
- Roles and responsibilities of entities involved in emergency operations and risk reduction - disaster management regulative framework.

The plan articulates the long-term strategic focus of disaster management in Bangladesh. It addresses the key issues of risk reduction, capacity building, information management, climate change adaptation, livelihood security, issues of gender and the socially disadvantaged, etc. iii. Show the relationship between the government vision, key result areas, goals and strategies, and to align priorities and strategies with international and national drivers for change. It also describes in its plan, detailed road map for the development of disaster management plans by various entities. The plan illustrates to other ministries, NGOs, civil society and the private sector, their responsibility and ways to contribute to the achievements of the strategic goals and government vision on disaster management. The plan suggests disaster management plans at various administrative level, like, district disaster management plan, upazila disaster management plan, union

management plan and pourashava/city corporation disaster management plan. It also recommends incorporation of disaster element in various plans and development projects of different ministries.

3.9 National Urban Sector Policy, 2011 (Draft)

Draft National Urban Sector Policy, was drawn up in 2011 to streamline and manage country's urbanisation process. The policy was set with a vision to strengthening the beneficial aspects of urbanization and effectively dealing with its negative consequences. The objectives to achieve the vision are to,

- regional balance in urbanization;
- economic development and poverty reduction by means of urban infrastructure development;
- optimum utilization of land resources;
- protect and preserve urban environment;
- ensure effective local urban governance

Policies were drawn up on such issues as,

- Pattern and process of urbanization.
- Local Economic development.
- Urban Local Finance and Resource mobilization.
- Urban Land Management.
- Urban Housing.
- Urban Poverty and Slum Improvement.
- Urban Environmental Management.
- Infrastructure and Services.
- Urban Transportation.
- Health and Education.
- Social Structure.
- Gender Concern.
- Recreation, Playground, Park, Open Space and Graveyards.
- Cultural and Aesthetic Development.
- Rural-Urban Linkage.
- Law and Order.
- Legislation.
- Urban Governance.
- Urban Research, Training and Information.

The draft urbanisation policy adopts a holistic approach to draw up the policies. The policy encompasses almost all possible issues present in the urban scenario of the country. However, the policy seems to have overlooked the issue of high demographic concentration in a few large urban centres. It failed to address decentralisation of urban agglomeration and consequences of high rural-urban migration large cities only.

3.10 Upazila and ZilaTown Infrastructure Development Projects

One of the main reasons for haphazard growth in urban Bangladesh is the lack of proper planning and effective development control. The Pourashava Ordinance has empowered the Pourashavas to prepare Master Plans for development, expansion and improvement of any area within its jurisdiction and impose restrictions, regulations and prohibitions with regard to the development of sites and the erection and re-erection of buildings. But due to lack of technical manpower and equipment, no Pourashava has been able to prepare and implement a Master Plan of its own.

The Local Government (Pourashava) Act 2008 and City Corporation Act 2008 have given these authorities wide responsibilities in town planning and development, public health and sanitation, water supply and sewage disposal, maintenance of public infrastructure and amenities. Under Schedule- 2 of the Local Government (Pourashava) Act 2008 it is now mandatory for Pourashava /City Corporation to prepare a Master Plan within five years from the date of creation of the Ordinance (for the old and newly created pourashava). Under this legal power LGED has taken up two projects for preparation of town plan for Upazila and Zila towns of the country for development of infrastructure and development control.

3.11 National 3R Strategy for Waste Management, 2010

This strategy was drawn up by the Department of Environment, Ministry of Environment and Forest. This is a set of strategies for waste management and called 'National 3R Strategy for Waste Management 2010'. The 3Rs denote in hierarchy, in order of importance – 'reduce' followed by 'reuse' and then 'recycle'.

The 3R strategy aims to achieve complete elimination of waste disposal on open dumps, rivers, flood plains by 2015 and promote recycling of waste through mandatory segregation of waste at source as well as create a market for recycled products and provide incentives for recycling of waste.

Strategies for Promotion of 3R

The main features of the National Strategy promoting 3R are:

- Prioritizing waste avoidance/reduction over recycling, and recycling over all other forms environmentally sound disposal;
- Reusing non-avoidable waste as far as possible;
- Promoting environment friendly raw materials;
- Maintaining content of hazardous content in the waste at the lowest possible level;
- Guaranteeing an environmentally sound residual waste treatment and disposal as basic prerequisite for human existence, environmental conservation and protect biodiversity.

The projects implemented as part of the National 3R strategy are worthy "Promotion of Source Separation of Waste" and "64 District Composting Project in Bangladesh".

Promotion of Source Separation of Waste in Dhaka and Chittagong

This project is being implemented by DOE in partnership with DCC (North and South) and CCC. The project is financed by Climate Change Trust Fund of Government of Bangladesh to promote segregation of waste. From April this year the 3R pilot project has been launched in Dhaka's Gulshan, Baridhara, Gonobhaban (Mohammadpur), Dhanmondi, Minto Road and Chittagong's Nasirabad, Shugandha Housing, Hill View Housing, Khulshi, North Khulshi, Panchlaish Housing Society, Moushumi Residential Area and Jamalkhan Area. As part of the project, three bins are provided for 50,000 households in Dhaka and Chittagong. Also, awareness raising campaign is undertaken. Moreover, segregated waste will be composted. Based on the results of the pilot project, it will be gradually extended all over the city. This project is implemented as part of the National 3R strategy to promote segregation of waste at source and promote recycling.

64 District Composting Project in Bangladesh Using Programmatic CDM. This project is financed by the Climate Change Trust Fund of Government of Bangladesh. Under this project DOE is providing technical assistance and capital cost for implementation of composting project in the municipalities of Bangladesh. Moreover, DOE is registering a programmatic CDM project with the UNFCCC and revenue from carbon credits will be shared between DOE and the municipalities. The first phase of the project is being implemented in Narayanganj, Cox's Bazar, Gazipur and Mymensingh Municipalities. Gradually, DOE plans to support all municipalities with such project. This project is implemented as part of the National 3R strategy.

3.12 Private Residential Land Development Rules 2004

Government in 2004 approved 'Private Residential Land Development Rules 2004' under the provisions of the Town Improvement Act 1953, Building Construction Act 1952 and Year 2000 Act for Preservation of Play Field, Open Space and Natural Waterbody in Metropolitan City, Divisional City and the Municipal Areas. The rules were formulated in order to establish discipline among the indiscriminately growing private land based housing estates that hardly follow any standard or rule in providing services and facilities in their housing estates.

According to the rules, any entrepreneur before embarking on a land based housing development project, must be registered with the concerned authority. Any company failing to get registered shall be subject to all its activities relating to real estate development declared illegal.

The planner, architect, engineer, consulting firm or any agency responsible for preparing the lay out plan of any housing estate must also be registered with the concerned authority.

The rules impose some condition while approving the lay out plan of any housing estate. Following are the salient features of the conditions:

- a. The land level of the proposed housing estate must be raised above the highest flood level to keep the area free from flooding.
- b. The water flow of all the canal, river, waterbody exists in the project area must be ensured.
- c. The company must provide all basic services according to the advice of the service giving agencies.
- d. Care must be taken to ensure that execution of the project does not create any waterlogging or cause degradation of environment in the adjacent areas.

e. The minimum size of housing project will 5 acre if it is within City Corporation or pourashava area and 10 acres if outside city corporation or pourashava area.

f. For estimation of population of the project area a standard of 350 per acre will be used.

g. The company is allowed to sell 70% of the project area land. Rest 30% of the land shall not be saleable. These lands will be used for providing infrastructure and services within the project area.

h. In the project lay out plan, the width of the main road will be minimum 60 feet, secondary road 40 feet and feeder road will be 25 feet.

This set of rules have been prepared to streamline the activities of real estate companies, secure interest of the land buyers and create a congenial and livable environment imbued with all necessary basic urban services and facilities.

3.13 National Biodiversity Strategy and Action Plan for BGD, 2004

According to the Convention on Biological Diversity (CBD), biodiversity is defined as “the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems”. Biodiversity is key to human livelihoods, especially in a country like Bangladesh, where a large proportion of the population depend on natural resources for their livelihoods, while living in fragile ecosystems subject to frequent natural disasters.

The National Biodiversity Strategy and Action Plan (NBSAP), 2004 was designed as a national framework to conserve and make sustainable use of biodiversity, and equitable sharing of benefits derived from it. The guiding principles for the document are mainly derived from the principles of the Convention on Bio Diversity (CBD), 1992 to which Bangladesh is contracting party. Besides, the document also takes into consideration, the Poverty Reduction Strategy Papers (PRSP) of the government of Bangladesh, the Millennium Development Goals of UNDP, related sectoral policies of the country and other international obligations. Preparation and implementation of respective National Biodiversity Strategy and Action Plan (NBSAP) is a major commitment of the Contracting Parties to the Convention.

Overall Goal and Major Objectives of NBSAP

The overall goal of the NBSAP has been worked out as to conserve Bangladesh’s biological diversity in order to ensure that its various components are utilized in a sustainable manner for attaining progress and socio-economic development of the nation and ensuring livelihood security of the people for present and future generations.

The major objectives of the NBSAP are to:

- conserve, and restore the biodiversity of the country for wellbeing of the present and future generations;
- ensure that long-term food, water, health and nutritional securities of the people are met through conservation of biological diversity;
- maintain and to improve environmental stability for ecosystems;

- ensure preservation of the unique biological heritage of the nation for the benefit of the present and future generations;
- guarantee the safe passage and conservation of globally endangered migratory species, especially birds and mammals in the country; and
- stop introduction of invasive alien species, genetically modified organisms and living modified organisms

Sixteen strategies have been developed to shape and direct the actions towards achieving the goals and objectives of the NBSAP. These are:

- **Strategy 1:** Recognize the value and importance of biodiversity for the Bangladesh people and document properly its components, distribution and value.
- **Strategy 2:** Conserve ecosystems, species and genetic pool of the country to ensure that the present and future wellbeing of the country and its people are secure
- **Strategy 3:** Restore ecosystems and rehabilitate endangered species
- **Strategy 4:** Adopt national measures and standards to deal with invasive alien species and genetically modified organisms.
- **Strategy 5:** Promote equitable sharing of biodiversity conservation costs and benefits among different sectors of the society.
- **Strategy 6:** Contribute to raising awareness and building capacity of biodiversity conservation among the different sectors of the society
- **Strategy 7:** Promote use of traditional knowledge for conservation, use and protection of the local communities' intellectual property rights
- **Strategy 8:** Establish institutions for inter-sectoral implementing mechanism for the Bangladesh National Biodiversity Strategy and Action Plan.
- **Strategy 9:** Enhance Protected Area management, recognizing the benefits of collaboration with local communities in their management (co-management).
- **Strategy 10:** Ensure wise use of wetland resources.
- **Strategy 11:** Establish participatory mechanisms to receive and utilize the inputs from private sector, civil society, academia and local communities about the different processes leading to biodiversity conservation, use and sharing of benefits.
- **Strategy 12:** Review and develop biodiversity related legislation(s) and establish a specific branch in the Judiciary to deal with biodiversity and environmental issues
- **Strategy 13:** Establish an open and transparent monitoring and reporting system status and trends of implementing the principles of CBD
- **Strategy 14:** Develop a financial strategy that is innovative and sustainable.
- **Strategy 15:** Address issues of synergies with other Multilateral Environmental Agreements (MEAs) and processes that deal with climate change, disaster management, livelihoods, food security and sustainable development
- **Strategy 16:** Integrate biodiversity conservation into the national development making, planning and processes

The financing strategy for execution of the NBSAP focuses on increasing of public budget allocations; use of domestic instruments like taxes on water, timber, levies from road, rail and air passenger tariffs; linking biodiversity with markets and business; debt swap trust funds and development partners' contribution.

It emphasizes development of a stronger and more effective clearing house mechanism using as many channels of communication as possible; support development of folk theatre to reach more people and establishing links to the on-going activities on awareness raising and information dissemination.

The NBSAP is a 'living document' in the sense that it is responsive, flexible and practical. Implementation and monitoring will run simultaneously with provisions for periodical reporting and reviews. Revision of the NBSAP is needed at least every six years to respond to changing conditions.

3.14 SME Policy 2005

With a view to boost the country's economy, government in 2005 formulated small and Medium Enterprises (SME) development policy. The SMEs have historically been playing significant role in local as well as global economy. SME brings growth with clear benefits for poverty reduction in the very process of economic growth. It is believed the over-riding vision must be for setting up a market-based economic order with a level playing field for all enterprises, in which SMEs can aspire to opportunities of growth and wealth-creation commensurate with their own endowments and diligence, innovation and management commitment.

SME is viewed as the vehicles for quality of life improvement, economic growth and poverty alleviation of the common people. The primary role of the Government shall be that of a facilitator to aid naturally growing SME's through removing market and policy obstacles, and secondly providing necessary promotional support.

The broad objectives of the SME policy strategies are to:

1. Accept SMEs as an indispensable player in growth acceleration and poverty reduction, worthy of its total commitment in the requisite overall policy formulation and execution;
2. The SME policy strategies shall essentially be linked with broad-based and integrated manner in line with the poverty reduction strategy paper of the Government of Bangladesh.
3. Encourage and induce private sector development and promote the growth of FDI, develop a code of ethics and establish good governance, ICT based knowledge management and customer supremacy in the market alliances.
4. Identify and establish the network of infrastructure and institutional delivery mechanisms that facilitate the promotion of SMEs;
5. Re-orient the existing fiscal and regulatory framework and government support institutions towards bolstering the goals of SME policy;
6. Nurture and partner civil-society institution(s) having credible management teams in terms of the delivery of needed services, leadership, initiation, counselling, mentoring

and tutoring; etc.

7. Create innovative but meritocratic arrangements so that deserving and especially small enterprises with desired entrepreneurial antecedents and promise can be offered financial incentives within industries prescribed on some well-agreed bases.
8. Help implement dispute settlement procedures that proactively shield small enterprises especially from high legal costs and insidious harassment.
9. Take measures to create avenues of mobilizing debt without collaterals to match (either using debt guarantee schemes or mapping intellectual-property capital into pseudo-venture capital) in order to assist small enterprises in dealing with their pervasive lack of access to finance.
10. Accord, systematically, precedence to small versus medium enterprises, within the limitations of government's resources.
11. Harness information & communications technologies, Internet Protocol (IP)-based infrastructure, and electronic-governance in an effort to parlay regulatory services, all kinds of useful information and mentoring inputs, with an accent on increasing the viability of SMEs in all sectors of the economy.

Booster Sectors

The policy identified 11 booster sectors for promotion. These are:

- i. Electronics and Electrical;
- ii. Software Development
- iii. Light Engineering
- iv. Agro-processing and related business
- v. Leather and Leather goods VI. Knitwear and Ready Made Garments
- vi. Plastics and other synthetics
- vii. Healthcare and Diagnostics
- viii. Educational Services
- ix. Pharmaceuticals/ Cosmetics/ Toiletries
- x. Fashion-rich personal effects, wear and consumption goods.

The promotional activities for SME include,

- Tax holiday incentives
- Credit distribution package and venture capital market
- Quality assurance certification

In its tactical plan of action a package promotional programmes have been suggested. These are:

- a. Strategic skills upgrading
- b. Creating enabling environment
- c. Development of supply chain for technopreneurship
- d. Development of SME Web Portal
- e. Creation of a virtual SME front-office
- f. Providing exports-friendly content on the SME portal
- g. Electronic-governance with a human touch

- h. High-performance communications backbone
- i. International technology-exchange programs

The policy also recommended for capacity building with specific programmes that include development of specialized professional expertise, re-skilling boot camps; institutional capacity building for training; development of capacity for coordination among multiple institutions; providing technical assistance and investment; promoting private-public collaboration; curriculum development for vocational training.

Upazilas are hinterlands of larger urban centres. Promotion of SME at upazila level with efficient connectivity with larger cities can boost local economy. At upazila level manufacturing can be done at a much lower cost than in big cities. With adequate credit, energy supply and training, manufacturing units can be set up at upazila level. Produces can be easily transported to the markets at larger urban centres, thus boosting the local economy. This will help absorb local surplus agricultural labour and reduce migration to larger urban centres.

3.15 Bangladesh Climate Change Strategy and Action Plan, 2009

Bangladesh climate change strategy and action plan 2009 has been developed by Ministry of Environment and Forest. Bangladesh is one of the most vulnerable victims of climate change. With the climate change it is likely that floods, tropical cyclones, storm surges and droughts would become more frequent and severe in the coming years. Climate changes will threaten the significant achievements Bangladesh has made over the last 20 years in increasing incomes and reducing poverty, and will make it more difficult to achieve the MDGs. It is essential that Bangladesh prepares now to adapt to climate change and safeguard the future well-being of its citizens.

During last 35 years, the country has invested over \$10 billion to ensure safety of the country against natural disasters. These investments, in many cases supported by development partners, include flood management schemes, coastal polders, cyclone and flood shelters, and the raising of roads and highways above flood level. Besides, the government has developed effective warning systems for floods, cyclones and storm surges, and is a community-based disaster preparedness system. Climate resilient varieties of rice and other crops have also been developed.

The Climate Change Strategy and Action Plan (BCCSAP) 2009 was developed in consultation with civil society, including NGOs, research organizations, the private sector and development partners. The initial (2008) and the revised (2009) Climate Change Strategy and Action Plan build on and substantially expands the National Adaptation Programme of Action (NAPA), published in 2005. The BCCSAP 2009 will be reviewed and revised as further experience and knowledge are gained in implementing adaptation and related research programmes as well as new development priorities that may emerge in future.

Strategy and Action Plan

The climate change action plan is built on **six pillars**:

- food security, social protection and health
- comprehensive disaster management
- infrastructure
- research and knowledge management
- mitigation and low carbon development
- capacity building and institutional strengthening

The Climate Change Action Plan is a 10-year programme (2009-2018) and under the aforementioned pillars, **44 programs** have been identified for implementation.

Table: 3.1: Climate Change Action Plan

Sl. No.	Theme	Strategy
1	Food security, social protection and health	To ensure that the poorest and most vulnerable in society, including women and children, are protected from climate change and that all programmes focus on the needs of this group for food security, safe housing, employment and access to basic services, including health.
2	Comprehensive disaster management	To further strengthen the country's already proven disaster management systems to deal with increasingly frequent and severe natural calamities.
3	Infrastructure	To ensure that existing assets (e.g., coastal and river embankments) are well maintained and fit-for-purpose and that urgently needed infrastructure (e.g. cyclone shelters and urban drainage) is put in place to deal with the likely impacts of climate change.
4	Research and knowledge management	To predict the likely scale and timing of climate change impacts on different sectors of the economy and socioeconomic groups; to underpin future investment strategies; and to ensure that Bangladesh is networked into the latest global thinking on science, and best practices of climate change management.
5	Mitigation and low carbon development	To evolve low carbon development options and implement these as the country's economy grows over the coming decades and the demand for energy increases.
6	Capacity building and institutional strengthening	To enhance the capacity of government ministries and agencies, civil society and the private sector to meet the challenge of climate change and mainstream them as part of development actions.

There is an action plan proposed for management of **urban waste** under the theme of “mitigation and low carbon development”. The actions proposed are:

- firstly, design of the urban waste landfill sites so that the produced methane can be captured in all major urban areas; and
- secondly, using CDM mechanism to set up small power plants by capturing the produced methane from waste landfill.

The government of Bangladesh has established a National Climate Change Fund, with an initial capitalization of \$45 million later raised to \$100 million, which will focus mainly on adaptation.

The projects financed by Climate Change Trust Fund implemented are worthy “Promotion of Source Separation of Waste” and “64 District Composting Project in Bangladesh”.

Challenges to Environment Protection

Against increasing population and consequent rise in food demand, food production will be adversely affected by natural calamities. Poverty and conservation of natural resources is a mutually reinforcing process. To reduce poverty and protect environment it is important to address issues, such as common property rights; crop, fisheries, forestry, and livestock sustainability; conservation of protected and ecologically critical areas; ecosystem and biodiversity loss; land degradation and river erosion; coastal zone management; drought and floods; and ground water depletion. There are also issues like illegal and unauthorized hill cutting in greater Chittagong, especially in Rangamati, Bandarban and Khagrachhari.

Conservation of water bodies is essential to protect the eco-system, which, in turn, will reduce adverse consequences from water logging in urban areas. Conservation of water bodies would improve the drainage system, provide fresh water, increasing water retention capacity during monsoon. They also help preserve biodiversity and recharge groundwater.

3.16 Bangladesh Water Act, 2013

The recently published Water Act 2013 is based on the National Water Policy, and designed for integrated development, management, extraction, distribution, usage, protection and conservation of water resources in Bangladesh. In general, if one takes a critical look at the Act, the new law has provided the right framework for better management of water resources in the country.

The formation of the high-powered National Water Resources Council (henceforth termed as the Council) with the prime minister as the head implies the importance the government is paying to the management of this precious resource. An Executive Committee under the Ministry of Water Resources will implement the decisions taken by the Council. The intention to take initiatives for a basin-scale, integrated water resources management of trans-boundary rivers, and exchange of data on flooding, drought, and pollution with co-riparian countries are good steps in the right direction. Following is review of act:

- a. As per this Act, all forms of water (e.g., surface water, ground water, sea water, rain water and atmospheric water) within the territory of Bangladesh belong to the state.
- b. The private landowners will be able to use the surface water inside their property for all purposes in accordance with the Act. A worthwhile initiative is the requirement for permits/licenses for large scale water withdrawal by individuals and organizations beyond domestic use.
- c. The Act does not allow extract, distribute, use, develop, protect, and conserve water resources; they will not be allowed to build any structure that impedethe natural flow of rivers and creeks without prior. However, what maximum amount of surface water or groundwater can be withdrawn by individuals or organizations is not mentioned in the Act.
- d. Setting up a priority order for water usage in an area where the water resources is in critical condition is also a significant step. It should be noted that only drinking water and domestic usage are considered as basic rights.
- e. In view of water resources protection and conservation, the Act adopted a timely decision to address the water needs in irrigation and urban areas in the context of available surface water, groundwater, and rainwater.
- f. The situation of drinking water supply in Dhaka City is a good example in this context. For instance, Dhaka City annually receives about 2000 mm of precipitation, of which about 80% occurs during the rainy season. If the rainwater is harvested and distributed after proper treatment then the water needs during this time period can easily be met.
- g. The need for water resources management in the context of natural drainage pattern has also been correctly highlighted in the Act.
- h. Management of water resources within the territory of the country in rivers, creeks, reservoirs, flood flow zone, and wetlands has been assigned to the Executive Committee under the Ministry of Water Resources, which is another noteworthy decision.
- i. Draining of wetlands that support migratory birds has been prohibited by the Act. Consequently, without prior permission from the Executive Committee, building of any structure that can impede the natural flow of water has been prohibited; however a few activities, including dredging of rivers for maintaining navigability, land reclamation projects by filling wetlands, flood control and erosion control structures will be exempted pending prior permission. These are good steps to make better use of wetlands.
- j. It is not clear as to how or if the government will address the issue of land grabbing and encroachment that are clear impediment to natural flow in the flood flow zone, wetlands, and foreshore of rivers.
- k. Public hearing for the proposed national water management plan is also a good provision, provided it is practiced diligently.
- l. The Act provides provisions for punishment and financial penalty for non-compliance with the Act, including negligence to abide by government policy, ordinance, non-cooperation with government officials, refusal to present necessary documents, providing false information, affiliation with perpetrators, and protection measures for

water resources management.

- m. The maximum penalty for violations is set to five years of imprisonment and/or monetary penalty of Tk.10, 000. The amount of monetary penalty has been set at Tk. 500,000 in the draft proposal of the Act in 2012. This drastic reduction in monetary penalty may encourage many people to pay the penalty instead of abiding by the law. Punishment related to water quality degradation caused by industrial discharge and other sources of pollution is not adequately addressed in the Act.
- n. Water pollution issues are deferred to the provisions of the Environmental Protection Act of 1995 without much clarification. The Act remains nebulous without a clear commitment by the government to ensure the quality of water for various beneficial uses as outlined in the Environmental Protection Act. The Act does not address the need for establishing effluent treatment plants or the maximum contaminant levels that will be allowed for discharge to receiving bodies of water by industries and other potential sources of pollution. Since the Act outlines various punishable activities, it is expected that provisions for punishment and penalty for water quality degradation be included in future amendments.
- o. No court can accept any law suit under the provision of this Act without a written complaint from the Director General of Water Resources Planning Organization or his appointee, which is a severe drawback of this Act.
- p. Although the Act is formulated to protect the quality and quantity of the water resources that belong to the people, no individual or organization will be allowed to file a law suit against other individuals, organizations, or government authority if even they violate various provisions of the Act.
- q. The Act provides unlimited power to the Executive Committee to take any action that they deem necessary to implement various provisions of the Act.
- r. The Act also exempts the government authority of any violation, non-compliance, negligence, wrongfully causing financial damage to individuals or organizations, and/or avoidance to implement this Act in the name of good faith.
- s. Limitless power of the Executive Committee without any provision for check against such power may lead to wrong-doing and anarchy. Although an accused will be allowed to defend oneself in the court, there is no clear provision to appeal against any judgment given out by a court.
- t. The Act is recognition of the significance for managing all forms of water resources. It provides the legal framework for development, management, extraction, distribution, usage, protection, and conservation of water resources. However, the Act falls short in making a commitment by the government to ensure the quality of water for various beneficial uses.

3.17 National Water Management Plan, 2004

The National Water Management Plan (NWMP) approved in 2004 states that urban population would increase to 73 million by 2025, and 136 million by 2050. Under this context, water supply, sanitation and storm water drainage for urban areas would be the major challenges. The NWMP thus proposes three specific programs for Dhaka city in particular to

address bulk Water Supply and distribution system; improve Sewerage and Sanitation system and improve Storm Water Drainage.

Furthermore, WARPO has developed and approved a National Water Management Plan (NWMP) in 2004, which aims at implementing the NWP within 25 years with the provision of review and updating every five years. Later on, in 2005, improvement of water supply and sanitation was included as a part of its agenda for reducing poverty.

3.18 National Water Policy, 1999

The government adopted the National Policy for Safe Water Supply and Sanitation in 1998 as a complementary to national water policy. In 2004 it also adopted a National Policy for Arsenic Mitigation where public awareness, alternative safe water supply, proper diagnosis and management of patients, and capacity building has been stressed. As alternative water supply source the policy gives "preference to surface water over groundwater".

The National Policy for Safe Drinking Water and Sanitation, 1998 recognizes that Safe water and sanitation are essential for the safety of public health. The goal of the policy to ensure access to safe water and sanitation services at affordable cost to all people. The specific goals in this regards are:

- Making safe drinking water available to each household in the urban areas
- Ensuring supply of quality water through observance of accepted quality standards
- Taking measures in urban areas for removal of solid and liquid wastes and their use in various purposes.

3.19 National Sanitation Strategy

Agenda 7C of millennium Development Goal (MDG) aims to halving the proportion of people without sustainable access to clean drinking water and basic sanitation by 2015. It is noted that in developing countries water-related diseases are the most common cause of illness which is transmitted by drinking water. Water-washed diseases are caused by insufficient clean water for washing and personal hygiene, which causes dysentery, skin and eye infections (UNDP 2005: 17; WHO/UNICEF 2009). Achieving this target of MDG is also closely associated with achieving other MDGs. In line with MDG, the National Water and Sanitation Policy (developed by the Ministry of Water Resources in 2004) set the following specific targets:

- a. Review and improve coverage of sanitation to 60% of the population by 2007;
- b. Extension of sanitation coverage to 65% by 2010;
- c. Extension of sanitation coverage to 80% by 2015;
- d. Extension of sanitation coverage to 90% by 2020;
- e. Achieve 100% sanitation coverage by 2025;
- f. Sustain 100% sanitation coverage in beyond 2025.

The government is relentlessly working on achieving 100% hygienic sanitation in all Pourashavas and upazilas. Most upazilas have already achieved the target. This will undoubtedly enhance healthy living of the common people in upazilas that would add to their productivity and save money otherwise spent as medical expenses.

3.20 Linking National Level Policies and Laws with Upazila

Over the years the subsequent governments of Bangladesh formulated a number of national level policies, strategies and acts to promote national social welfare, economic development and promote a livable environment. These documents have profound impact in protecting and promoting societal interests. Most of these documents are intended to control human activities that are mostly directed to secure personal interests doing harm to community interests. Again, many of the policies and legal documents help promote community interests brining common welfare.

Though all these documents have been prepared at national level but they have profound impact and implications at local level. Because communities in local administrative entities like upazila finally make up the entire nation. Upazila is one of the lowest stratum in the national administrative hierarchy. Most upazilas comprise at least one pourashava covering its urban part. Whatever the policy or act is formulated, its execution starts at the local government level. Several upazilas make up a zila and several zilas make up the state of Bangladesh. Performance of execution of policies, strategies and legal documents are counted from local government level at the upazila, the pourashava and city corporation within a zila. They are all added up to prepare overall performance of the zila.

However, almost all the upazilas have vast rural hinterlands and as such many national level policies and strategies have little implications to upazilas. National 3R strategy of waste management has very little implications at this moment for upazilas. Because they hardly produce enough waste to apply 3R strategy. This strategy is meant for high density large cities where waste management is a critical problem. But national level policies and strategies concerning conservation of ecologically sensitive areas is highly applicable for upazilas where there still exist conservable areas. Performance of hygienic sanitation policy starts from the upazilas. Their combined performance makes up the nation's performance.

Therefore, the capacities of the upazilas and union parishads should be strengthened with manpower and logistics so that they are more capable to apply the nationally formulated policies and strategies effectively. Because they are aimed at national welfare, and when welfare of upazilas will be achieved through application of policies and strategies the welfare of entire nation will be accomplished.

CHAPTER 4

CHAPTER 4:

APPROACH AND METHODOLOGY OF SURVEY

4.0 Introduction

The current Chapter is about the approach to planning and methodology that cover assessment of existing conditions through data collection, survey and the planning process. The chapter describes the methodology adopted for survey and data collection and their deliverables. Studies needed to be conducted to assist planning and the process of plan preparation including output to be derived.

4.1 Approaches to Planning

Upazila development planning is a unique plan typology that was never came into practice before in Bangladesh. The project adopts an integrated approach to planning where not only the urban and rural scenarios have been integrated together to produce a total development plan for the upazila but also the sub-regional aspects have also been infused into the process to catch and redistribute the development overspill. The sub-regional planning will integrate the adjoining upazilas economically and socially to promote overall development of the sub-region benefiting all the involved upazilas. The planning process moves conventionally through a series of information gathering on multiple issues covering different sectors of development followed by analysis of situations. The analysis will unveil issues, problems and opportunities to lead the way forward to planning. In designing the urban area plan efforts will be directed to create the upazila town as a centre wherefrom development can be radiated to its vast undeveloped rural hinterland. This will be achieved through provision of improved infrastructure and services, good internal and external connectivity. Improved infrastructure and services will attract investment in SME sector and improved connectivity will enable of better marketability of agricultural products. This will boost local economy and promote social development through higher job opportunities and income enhancement. Adoption of irrigation-fertilizer-seed technology will promote agricultural production and better connectivity will increase capacity of marketing adding more income to the cultivators. Thus a comprehensive upazila development plan when executed will bring about total change in the socio-economic scenario of the upazila. However, everything relies on the level and the speed the plan proposals are brought to the light.

4.2 Information Gathering for Assessment of Existing Conditions

Any plan making process moves forward with assessment of existing conditions. The prevailing conditions of different aspects of development are evaluated through host information collected from the field and secondary sources. In this stage surveys and studies are undertaken to collect information required for situation analysis.

4.2.1 Study Area Base Map Preparation

4.2.1.1 Collection of Mouza Map

The RS/CS Mouza maps will be the basis of the base map for the project area. The project area will be delineated on Mouza sheets. Mouza maps will be collected from the respective Deputy Commissioner's Office and DLRS covering the entire project area. The Mouza sheets having distortion due to rapping or pasting of cloths/tape will be avoided during collection of mouza maps. As original mouza sheets are not available, photocopy versions of the same will be collected from DLRS or DC offices.

Table 4.1: Naming Structure of Image Files (Example)

File Name	X_XXX_MN_XX					
	X					Upazila Code (single digit string)
		XXX				JL No. (3 digits string)
			—			An underscore as separator of JL No & Mouza Name
				MN		Name of Mouzas
					—	An underscore as separator of Sheet no & Mouza Name
					XX	Sheet No. (2 digits string)

4.2.1.2 Specification for Digitization of Mouza Maps

Preparation of Geo Database

Three geo databases will be created (preferably “file geo database”, it will be different if we prefer to use distributed geo database) using BTM projection (described at the next section of this chapter) criteria. File geo database is preferred because it is portable and it is capable of containing 01 (one) TB data.

Scanned image will be processed in three stages. For each stage, different geo databases will be created. Table- 4.2 explains the geo database.

As BTM projection is already defined during creation of the geo database, while importing these rectified map, the projection automatically defined. Beauty of geo database is that feature class can be exported to most widely used Shape file.

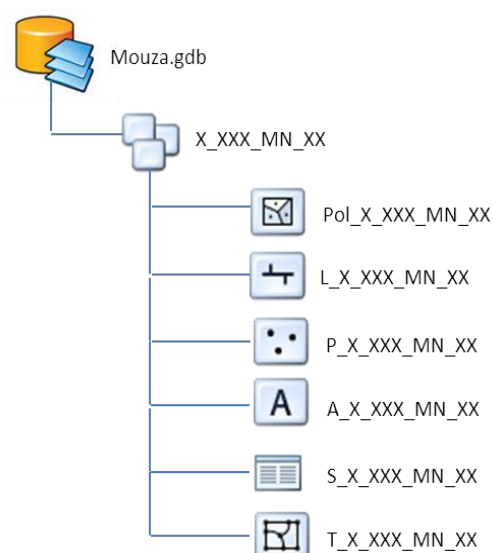


Figure 4.1: Simplified Structure of the Geodatabase

the
is

Table 4.2 Geo databases for Processing Mouza Map

Geo databases	Explanation
RectifiedJL.gdb	Container of geo-referenced Mouza sheets (Scanned and Rectified Mouza map, raster data).
JL_digital.gdb	Vector data container (output of the heads-up digitization).
Mouza.gdb	Container of Edge matched combined mouza maps.

After completion of all the above stated processes, as a requirement of ToR, mouza maps will be submitted in the ToR prescribed scale on sheet by sheet basis so that it can be checked and verified by superimposing the same on the original mouza maps using light table.

Projection system that will be used for all spatial data and maps is Bangladesh Transverse Mercator (BTM) and Spheroid will be EVEREST 1830. The detailed parameters of BTM (EVEREST 1830) projection system is presented as below:

Projection System to be Used

Projection System	: Bangladesh Transverse Mercator (BTM)
Spheroid (Ellipsoid)	: Everest 1830
Semi-major axis - a	= 6,377,276.34518m
Semi-minor axis - b	= 6,356,075.41511m
Inverse flattening 1/f	= 300.8017
False Easting	: 500,000m
False Northing	: -2,000,000m
Latitude of origin	: 0° N
Longitude of origin/Central Meridian	: 90° E
Scale Factor	: 0.9996
Datum conversion method	: Coordinate Frame
Datum shift	: WGS-84 to Everest 1830
Rotation X	: 0
Rotation Y	: 0
Rotation Z	: 0
Translation X	: -283.729m
Translation Y	: -735.942m
Translation Z	: -261.143m
Scale	: 0 ppm
Vertical Datum	: National Datum i.e. MSL (SoB reference datum)

4.2.1.3 Digitization of Mouza Maps

On screen digitization method will be used for digitization of mouza maps. ArcGIS or AutoCAD software will be used for this purpose. Feature wise feature class will be developed for digitizing the mouza maps. Naming structure will be same as image file described in Table xx. To keep uniqueness of all features, the ID or code numbers of respective features will be finalized as per suggestion and discussion with UDD. Proposed manuscripts for digitization of mouza maps are given in **Table-4.3 and Table-4.4**. Polygon features would be built using the line, point and annotation features using ArcGIS software. To keep uniqueness of all features the ID or code numbers of respective features will be finalized as per suggestion and discussion with UDD. Following steps would be followed during the process of digitization of individual mouza maps:

- A. Preparing the Manuscript.
- B. Converting Digitized Maps to Shape/Geo database Format.
- C. Edit Plot Check.

Preparing the Manuscript

Feature wise, two types of manuscripts shall be developed for digitizing the mouza maps where all the features of mouza sheets be stored as shape file with a unique code number for respective features. for the two types of manuscripts are described below:

Manuscript-1: Point Features-

This manuscript will contain all point

features of the mouza maps like, Plot Number, Bench Mark, Traverse Station, GT Station, Iron Pillar, Other etc. Every point shall be digitized and stored with a numeric user ID (Code) representing feature type. Details for Manuscript-1 are given in **Table-4.3**.

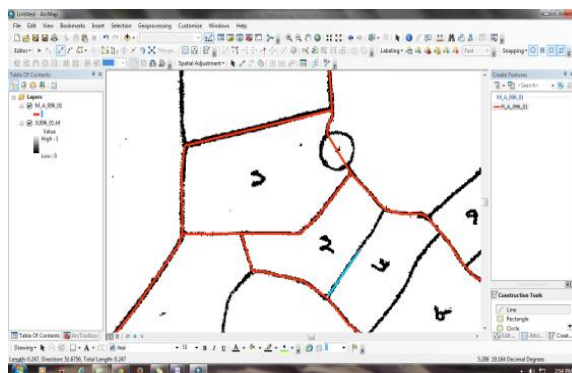


Figure 4.2: On Screen Digitization of Mouza Maps

Table 4.3: Sample Feature Description for Digitization Manuscript-1

SI No	Feature Type	Shape Type	Shape Name	Code (ID)
1.	Mouza Name	Point	X_XXX_MN_XXP	As in Mouza sheets
2.	JL No.	Point		As in Mouza sheets
3.	Sheet No.	Point		As in Mouza sheets
4.	Plot No.	Point		As in Mouza sheets
5.	Unidentified Plot Number (not readable)	Point		99999
6.	Boundary Pillar	Point		41
7.	Bench Mark	Point		42
8.	Iron Pillar	Point		43
9.	Travers Station (Old)	Point		44
10.	Travers Station (New)	Point		45
11.	GT Station	Point		46
12.	Other Pillars	Point		47
13.	Pucca Well	Point		51
14.	Tube Well	Point		52
15.	Mosque	Point		53
16.	Temple	Point		54
17.	Adjacent Mouza/Sheet	Point		61
18.	Any other point feature	Point		88
19.	Demarcation Pillar	Point		71
20.	Settlement Pillar	Point		72
21.	Stone	Point		73
22.	Station	Point		74
23.	Pucca Pillar	Point		75

SI No	Feature Type	Shape Type	Shape Name	Code (ID)
24.	Municipality Pillar	Point		76
25.	CS Iron Pillar	Point		77

Manuscript-2 & 3: Line & Polygon Features- This manuscript will contain all line and/or closed boundary type features such as mouza boundary, sheet boundary, plot boundary, road, halot, khal, railway, pond & water bodies, structures, etc. All the features shall be digitized and stored as line having unique ID (Code) representing feature type. Details for Manuscript-2 are given in **Table-4.4**.

Table 4.4: Feature Description for Digitization Manuscript-2 & 3

SI No	Feature Type	Shape Type	Shape Name	Code (ID)
1.	Mouza Boundary	Line	X_XXX_MN_XXL	11
2.	Sheet Boundary	Line		12
3.	Mouza/Sheet Match-line	Line		13
4.	Plot Boundary	Line		14
5.	Road	Line		21
6.	Halot	Line		22
7.	Khal (Canal)	Line		23
8.	River	Line		24
9.	Rail Line	Line		25
10.	Slope	Line		26
11.	North Line	Line		27
12.	Unknown Line	Line		99
13.	Permanent Structure (<i>Dalan</i>)	Polygon	X_XXX_MN_XXS	31
14.	Tin Shade Structure	Polygon		32
15.	Other Structure	Polygon		33
16.	Pan Baraz	Polygon		34
17.	Pond/Water-body	Polygon		35

Table 4.5: Attribute Database Format for Digitized Mouza Map

Field Name	Description	Data Example
Mz_ver	Mouza Map Version	CS
Layer	Name of the Feature which the field contains	Mouza Boundary Sheet Boundary Mouza/Sheet Match-line Plot Boundary Road Halot, etc
Layer_Code	ID of different Features	11, 12, 22, 31, etc
M_Code	Mouza Code	RS_143_01 This code represents the example for the Mouza having JL no. 143, Sheet no. 01 of SingaraMouza, Nawabganj Upazila.
Mouza	Name of the Mouza (as in Mouza Map)	Singara, Jantrail, etc
JL_No	JL Number (as in Mouza Map)	033, 169, etc

Field Name	Description	Data Example
Sheet_No	Sheet Number (as in Mouza Map)	01, 02, 03, etc. (this would be '00' where the Mouza is within a single sheet)
M_Upazila	Name of Thana (as in Mouza Map)	Nawabganj
M_Dist	Name of District (as in Mouza Map)	Dhaka
Scale	Original Scale of the Mouza Map (as in Mouza Map)	16" = 1 Mile, 64" = 1 Mile, etc
Sv_Period	Survey Period (as in Mouza Map)	1950, 1967-69, etc
Revenue_No	Revenue Survey Number (as in Mouza Map)	153, 196, etc

Converting Digitized Maps to Shape/Geo database Format

Line, point and annotation features of digitized mouza sheets/maps would be stored in shape/geo-database (ArcGIS) or dwg (Autodesk) format. Later on, these lines, point/annotation features would be used to build polygon database of mouza maps using ArcGIS.

4.2.1.4 Edit Plot Check

After digitization of mouza maps, edit plots of mouza maps will be produced containing all the features and boundaries with different legend. The digitized mouza maps will be checked and verified by superimposing on the original mouza maps using the light table. All possible errors (missing arcs, dislocation arcs, and wrong or missing polygons, labels, ID etc.) will be solved with this edit plot checking and final digital mouza maps will be prepared. After digitization and necessary edit plot check, both soft and hard copies of all the digital mouza maps will be supplied to UDD for preservation.

4.2.1.5 Geo-referencing of Mouza Map

This is the most important step that determines the accuracy of the digital map. It is stated in ToR that each mouza sheets will be geo-referenced with at least four (4) GCPs, which will be selected by the joint team of UDD and consulting firm. And, these GCPs should be taken using RTK GPS in known place like mouza BM/pillar/traverse station/old building/or any other permanent structure that exists in the mouza map. But, in reality this method is too much time consuming, costly and yields less accuracy. In order to achieve better accuracy, the number of GCPs should be taken depending on size and matching of mouza reference points to the real world. It is very difficult to identify the correct GCPs in the field and selection of a single wrong GCP may result in huge distortion of position. Ortho-rectified satellite image comes with far better accuracy in terms of selection of GCPs in this respect. Mouza map can be easily geo-referenced based on the Ortho-rectified image. The best process for geo-referencing of digitized mouza maps involves three stages:

1. Selection of GCPs from stereo image
2. Identifying the GCP's location on the digitized mouza map

3. ArcMap operation to spatially adjust the digital mouza map with Ortho-rectified satellite images

4.2.1.6 Joining/Edge Matching of Mouza Maps and Demarcating the Project Area/Boundary

This process is easier said than done. At first the digitized and projected mouza sheets are appended to get the composite mouza map. But the edges of mouza sheets do not usually match. So rubbersheet method or Spatial adjustment at the edge of each mouza sheets will incur some errors but this step is unavoidable.

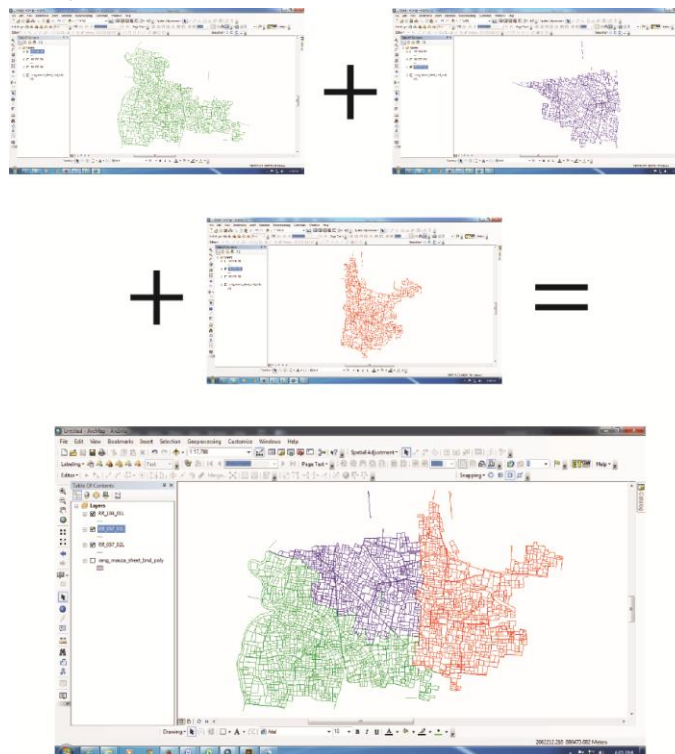


Figure 4.3: Sample of Mosaic Mouza Maps

Once all the mouza maps of each upazila is geo-referenced and edge-matched, upazila boundary based on gazette notification will be marked on the mosaic mouza maps.

4.2.1.7 Preparation of Layout of Project Area Map

Final map and layout of project area map (mosaic Mouza of project area) will be done as per specification suggested by UDD using ArcGIS 10.2/10.3. All the features of mouza maps including plot number, sheet, mouza and project boundary will be identified & shown in the project area maps in separate layer. Both, soft and hard copy of base/project area map will be supplied to UDD as per specification and scale prescribed by the PD office.

4.2.2 Preparation of Base Map using Satellite Image and Photogrammetric Method

Stereo images are nothing but the overlapping image. A good example of stereo imaging is our eyes. The reason behind having two eyes is that we can focus on the same object from two directions providing us the mental image of the depth of the object. In a nutshell, we need

overlapping images of every snap from two different directions. **Figure- 4.4** shows the overlapping images.



Figure 4.4: Overlapping images (stereo pair)



Figure 4.5: Stereo viewing of the overlapping images

4.2.2.1 Collection of Image

The consultant will purchase the ortho-rectified stereo images for this project. Tentative image specification is given below:

Specification of Pleides Stereo Satellite Image

- Program service : Standard
- Sensor : Pleides
- Acquisition type : New acquisition
- Products : 0.5m Panchromatic; 2m Multispectral;
4-band ;p; 470-830nm; Blue:430-550,
Green: 500-620nm.
- Spectral Bands : Red: 590-710nm,Near-infrared:740-940nm.
- Swatch width : 20 km
- Combined Incidence Angles : Maximum 30 degree
- Acquisition Mode : Stereo 0<4B/H<0.7

	Clouds (+Shadows)
• Validation Criteria (% of the area of interest)	: <10%, Haze accepted, Snow Ice
• Other Validation Criteria	: <10% accepted
• Reference	: ICR_FC_93787-BANGLADESH1/421 SQ.KM
	: ICR_FC_93794-BANGLADESH1/388 SQ.KM
• Area of Interest (Sq.km)	: 809 sq.km

Work order for image purchase is attached in **APPENDIX- 6.3**.

4.2.2.2 Image Processing

Image processing will be done after collecting raw digital images. The tasks involved in image processing are

- Epi-polar Correction
- Color Balance
- Contrast Adjustment
- Sharpening
- Pyramid
- Bit Rate Setting

GPS/INS Processing

Raw IMU (GPS/INS) data of image will be processed and adjusted to accomplish Aerial Triangulation.

Following a series of steps, with the help of previously collected GCPs and automatically collected tie points, we can develop stereo image of the same area. **Figure-4.5** shows the stereo image of the developed using the overlapping images in previous figure. **Figure-4.6** shows the step by step process of extraction of features from 3D images.

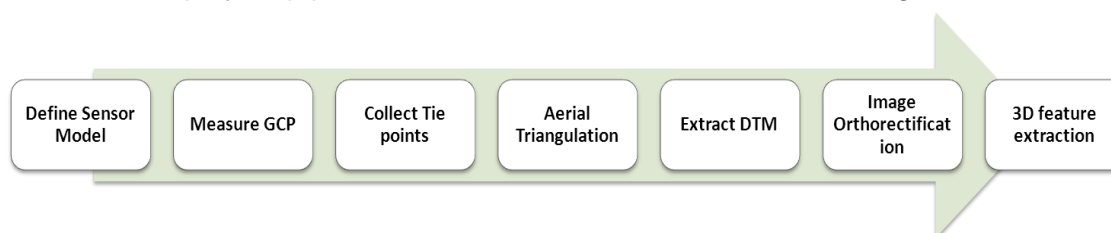


Figure 4.6: Steps of Feature Extraction from Stereo Images

Define Sensor Model

A sensor model describes the properties and characteristics associated with the camera or sensor used to capture photography and imagery. Characteristics of satellite image are largely dependent on the sensor using which the image is captured. So before processing the imagery, it is very important that we inform the computer about the sensor. Most of the softwares are equipped with the definition of the characteristics of sensor models. At the very beginning of the image processing, we'll need to identify the sensor model from the list. If it is not available, the sensor characteristics (usually comes with the image provided by the vendor). For example, some of the information contained in the sensor model definition is

pixel size, the number of columns in the sensor, exact position (3D coordinate with number of coordinates) and orientation of each image as they existed when the imagery was collected.

Measuring GCPs

Unlike traditional geo-rectification techniques, GCPs in digital photogrammetric have three coordinates: X, Y, and Z. These GCPs will also be used here for geo-referencing each of the images and to establish the relationship between the images. This relationship is established using the bundle block adjustment approach.

Automated Collection of Tie Points

Tie point collection is the process of identifying and measuring tie points across multiple overlapping images. Tie points are used to join the images in a project so that they are positioned correctly relative to one another. A tie point is a point whose ground coordinates are not known, but is visually recognizable in the overlap area between multiple images. To prevent misaligned ortho-photo mosaics and to ensure accurate DTMs (Digital Terrain Model) and 3D features, tie points are commonly measured within the overlap areas of multiple images. Digital image matching techniques are used to automatically identify and measure tie points across multiple overlapping images.

Aerial Triangulation

Raw IMU (Inertial Measurement Unit) data of image will be processed and adjusted to accomplish Aerial Triangulation. In case of satellite image the RPC (Rich Photorealistic Content) file will replace the GPS/INS file. Aerial Triangulation is a mathematical process used to determine the position and orientation of each photograph at the moment of exposure.

Once GCPs and tie points have been collected, the process of establishing an accurate relationship between the images in a project, the camera/sensor, and the ground can be performed. This process is referred to as bundle block adjustment. The components needed to perform a bundle block adjustment may include the internal sensor model information, external sensor model information; the 3D coordinates of tie points, and additional parameters characterizing the sensor model.

Automated DTM Extraction

Digital image matching (i.e., auto-correlation) techniques are used to automatically identify and measure the positions of common ground points appearing within the overlap area of two adjacent images. Once the automated DTM extraction process has been completed, a series of evenly distributed 3D mass points is located within the geographic area of interest.

Ortho-rectification

Orthorectification is a process by which image distortions caused by topography and image orientation are geometrically corrected by the incorporation of a terrain model. Ortho-rectification of every image will be carried out using digital photogrammetric system based on

result of aerial triangulation and the generated DEM. Obliqueness of the images will be adjusted in this stage.

Using sensor model information and a DTM, errors associated with sensor orientation, topographic relief displacement, Earth curvature, and other systematic errors are removed to create accurate imagery for use in a GIS.

Mosaicking of Orthophoto

Individual rectified photograph will be assembled to form seamless mosaic. Mosaicking of Orthophoto includes the following tasks

- a) Seam line Drawing: Drawing the boundary of the image delineating which part of the image will go which image.
- b) Balancing of Color and Contrast
- c) Feathering.

4.2.2.3 Digital Mapping from Stereo Model

After the orientation of stereo models, digital mapping will be carried out. Digital Photogrammetric Workstation (DPW) will be used as the platform for acquiring features from digital stereo images (model). The proposed Geo-database and its Feature classes will be designed based on the followings:

- Projection Parameters of the Coordinate System
- Name and type of layer (feature classes)
- Structure of Attribute Tables of the Feature classes.

Extraction of features from stereo images requires use of specialized and high-end hardware and software. A list of supported Hardware and Software to be used for Stereo Image Processing is provided below-

Operating system	: Windows 7 Professional 64-bit
Processor	: 32-bit: Intel® Pentium® 4 HT, Core™ Duo, Xeon®, or 100% compatible
Chipset	: Intel® C612 or compatible
Memory	: 8GB DDR4 ECC
Storage	: 1 TB SATA (7200 rpm)
Optical drive	: Slim SATA SuperMulti DVD writer
Graphics	: NVIDIA® Quadro® FX 3400/4400, 3450, 3500, 3800 NVIDIA Quadro FX 4500, 4600, 4800 NVIDIA Quadro FX 5500, 5600, 5800 NVIDIA Quadro 6000, 5000, 4000, 2000, 600 NVIDIA Quadro K600, K4000, K5000 AMD ATI FirePro™ V8800, V8750, V8700 AMD ATI FireGL™ V8600
Stereo Display Monitors	: Planar® SD 3D/Stereoscopic Displays Planar SA2311W 3D Vision™ Ready Monitor 120 Hz LCD Monitors with NVIDIA 3D Vision™ Kit True3Di Stereoscopic Monitors

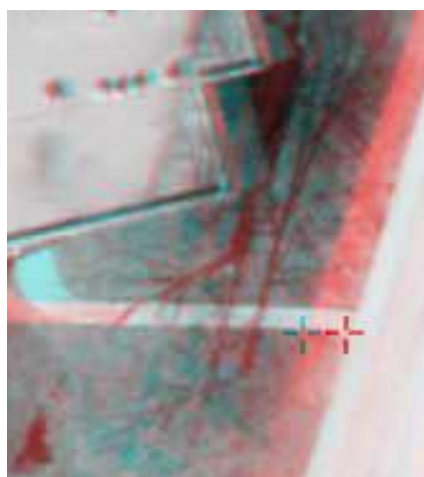
Peripherals	: TopoMouse™ or TopoMouse USB™ Immersion 3D Mouse MOUSE-TRAK Stealth 3D (Immersion), S3D-E type, Serial Port Stealth Z, S2-Z model, USB version Stealth V, S3-V type (add as a serial device) 3Dconnexion SpaceExplorermouseix EK2000 Hand Wheels EMSEN Hand
Software (Stereo processing)	: Erdas Imagine LPS 2013 Erdas Imagine Image Photogrammetric 2014 Stereo Analyst for ArcGIS 10.1
Software (Database and mapping)	: Arc GIS 10.1/ 10.2/ 10.3

3D Feature Extraction

Based on sensor model information, two overlapping images comprising a DSM (Digital Stereo Model) can be aligned, leveled, and scaled to produce a 3D stereo effect when viewed with appropriate stereo viewing hardware.

DSM creation is once again a multiple step process e.g. re-orientation of mono images, parallax adjustment, positioning and adjusting elevation etc. 3D GIS allow for the direct collection of 3D geographic information from a using a 3D floating cursor. Additional elevation not required. True 3D information is collected directly from imagery.

For the update and maintenance of a GIS, existing layers are commonly superimposed on a DSM and reshaped to their accurate real-world positions. updating of the survey map, this process will be adopted.



cursor

DSM
data is

vector
then
For

Figure 4.7: 3D Floating Cursor

Feature registration will be done considering and measuring the position of the object under its accuracy level. The Erdas Imagine Photogrammetric Suit 2014 will be used for identifying and registration of the objects and Arc GIS 10.2/10.3 of ESRI will be used for vector data storing and editing. Following features will be digitized from stereo images:

- Roads
- Structures
- Water bodies
- Railway tracks
- High voltage electric tower and line

- Agricultural and forest lands
- Terminals
- Playgrounds

As it is understood that the proposed assignment includes the works as shown in the flow chart in next page, the methodology has been prepared based on these activities and the assignment will be carried out accordingly.

The workflow associated with creating 3D GIS data is linear. We'll be using mainly stereo analyst extension of the ERDAS Imagine software. This extension is also supported by ArcGIS. So transformation between ERDAS Imagine and ArcGIS is relatively easier. The quality control will be maintained in two stages, at the field level and at the office level.

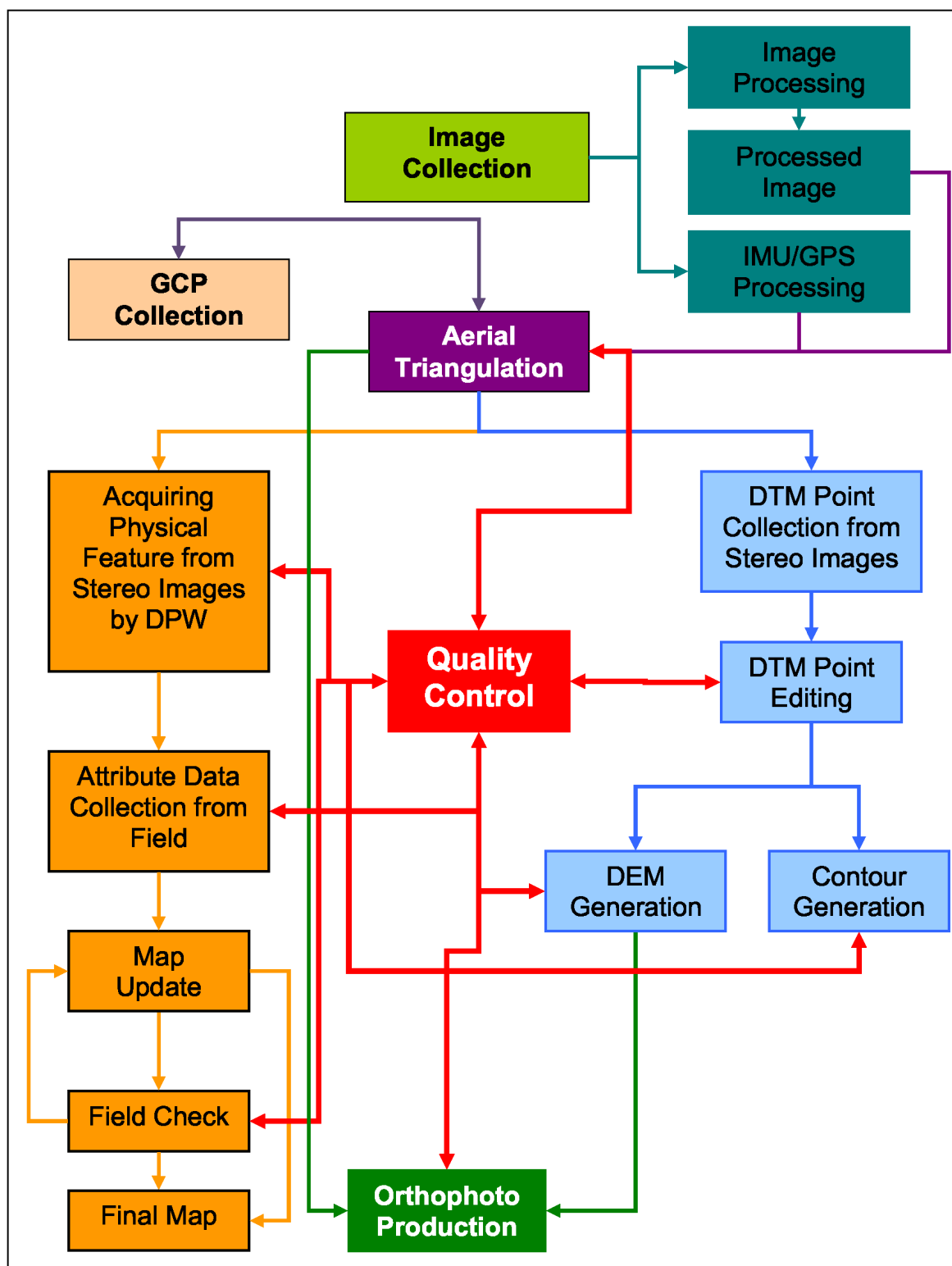


Figure 4.8: Flow Chart of Image Processing Methodology

Quality Control at the Field Level

- Use of satellite based advanced survey technique for identifying physical features,
- Daily checking of the field equipment before starting the work,
- Routine check and calibration of the survey equipment,
- Frequent field visit by the joint team comprising the senior staff of survey firm and project officials of UDD, and
- Interaction with project officials at the field level.

Quality Control at the Office Level

- Daily review meeting with survey groups,
- Spatial and temporal Comparison of the survey data,
- Daily updating and processing of data and Maps at field level and in GIS as well
- Frequent interaction and review meeting with project officials
- Maintain & monitor daily log sheets and level books in the field for ground truthing,

4.2.3 Creating Final Base Map of the Project Area

Final base map of the project area for survey will be prepared by overlaying following feature layers.

Table 4.6: Feature Layers

Layer Description	Feature Type	Feature Source
RS/CS mouza symbolized by line type (road, river, canal, halot, plot, etc)	Polyline	Digitization of scanned RS/CS mouza
RS/CS mouza plot number	Point/Annotation	Digitization of scanned RS/CS mouza
RS/CS mouza name	Polygon/Point/Annotation	Processing of mos
Road	Polyline	Digitized from stereo image
Structure	Polygon	Digitized from stereo image
Water body	Polygon	Digitized from stereo image

This base map will be printed in appropriate size and scale for survey works.

4.3 Field Survey

4.3.1 Establishment of Ground Control Point (GCP)/Bench Mark (BM)

For GPS and Total Station Survey, establishment of adequate and uniformly distributed Bench Mark is very crucial. Since all the subsequent survey operations are dependent on and related to the Bench Mark, any error simply multiplies and compounds to a huge total deviation. As such accuracy of Bench Mark coordinate values both along horizontal and vertical axes is of utmost importance.

Methodology

Establishment of BMs comprises the following item of works:

- Collection of BM reference from SoB
- Identification of Reference BM in the field
- Selection of BM/GCP sites
- Construction and Installation of BM pillars.
- Establishment of Co-ordinate of BM Pillars (x, y, z i.e. Northing, Easting & RL in mMSL).

Deliverables

Forty Eight (48) BM pillars will be set up in the field according to the specification prescribed by the client.

4.3.1.1 Reference BM Identification

Selection of existing reference BM inside or around the project area is essential for establishment of new BM network for the project area. Reference BM provides geo-reference (x, y) and elevation (z) with respect to a datum i.e. the co-ordinates of the BM pillars. For establishing co-ordinates of the new BMs, coordinates of the available SoB BMs in and around of the project area will be collected from Survey of Bangladesh (SoB).

4.3.1.2 Selection of BM/GCP Sites

As mentioned in the ToR, Bench Marks (BM) having three dimensional co-ordinates (Northing, Easting and Reduce Level in mMSL) will be established covering the entire project area approximately at 5km grid to carry out the survey activities. Approximate number of BM pillars in three different upazilas is given below:

Table 4.7: Upazila-wise Distribution of BM pillars

Sl. No.	Name of upazila	Area (sq.km)	Approximate no. of BM Pillar
01	Nawabganj	244.8	19
02	Dohar	161.49	17
03	Shibchar	321.88	12

All the sites for installation of BM pillars will be selected by joint team of the consultant and the client. However, in selecting the sites for BM Pillars following factors will be taken in to consideration.

- Accessibility at all season throughout the year
- Availability of open sky for good satellite signals
- Free from the influence of external electro-magnetic fields
- Secure place for long term preservation
- Local resistance to installation of pillars at private lands

Each BM pillar should have associated Ground Control Point as pair. These GCPs are secondary control points located within 200m radius of the related BM and should be visible to each other. Other site selection criteria for GCPs are same as those of BMs. It is also mentionable that additional GCPs may be installed as per the requirement of field survey.

4.3.1.3 Construction and Installation of BM Pillars

The BM pillars will be constructed and installed before the physical survey work starts. The construction design and specification BM pillars been obtained from the PD office, UDD. As per ToR, there will be 5' high 10"×10" pillars with 3'×3' base. A pin with cross hair will be put at the top of the pillar. After construction, the part above ground level will be painted with yellow color. BM ID will be engraved in the pillar or will be painted with non-removable paint. BM Pillars will be constructed according to the design specification provided by UDD.

4.3.1.4 Establishment of Co-ordinate of BM Pillars

Establishment of co-ordinates {x, y, z i.e. latitude/northing, longitude/easting & Reduce Level (RL) in Mean Sea Level (MSL)} of BM Pillars needs extensive GPS survey, 1st Order level/BM carry and data processing work. The total work comprises the following items:

- Baseline survey by RTK-GPS Static Method.
- Network Adjustment.

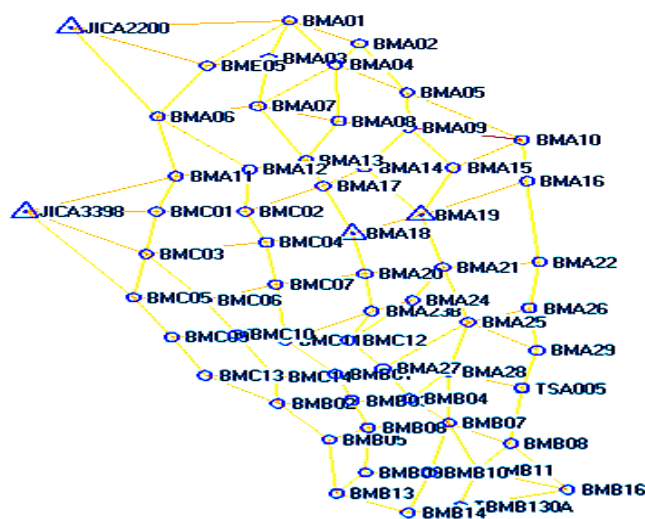


Figure 4.9: A Sample Network Design for Baseline Survey

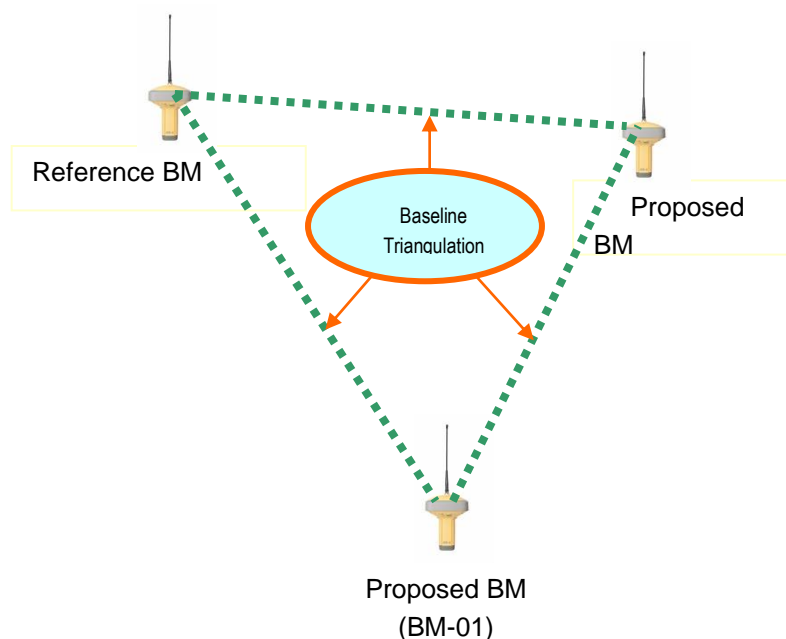


Figure 4.10: Typical Baseline Survey set-up for a Single Triangulation of 3 Baselines

ii. Baseline Survey by RTK-GPS Static Mode

The Baseline survey is the simultaneous data collection in static mode at two or more fixed points using two or more dual frequency GPS receivers. The measurement network for RTK-GPS baseline survey will be planned by connecting the BM/Control Points to be established and the selected SoB reference BM points (known Latitude, longitude and ellipsoidal height) available inside and around the project area. A line connecting two measurement points is known as baseline. It is important to emphasize that the configuration of network was based on practical considerations rather than requirements of an ideal network. A sample network design for baseline survey is shown in **Figure 4.9**.

Measurement or logging time for a session is usually one hour. During the measurements the GPS receivers at the two points record the information or data (Latitude, Longitude, Ellipsoidal Height) on the configuration of available satellite at the time, which at the end of day's work will be processed using relevant GPS software. If results from the field measurements found unacceptable, measurements will be repeated. A typical baseline survey set-up for a single triangulation with three baselines is shown in figure 4.10

ii. Network Adjustment

The verified results of each baseline will be stored for the subsequent network adjustment. After completing the baseline survey, network adjustment will be done with respect to the known values (Latitude, Longitude, and Ellipsoidal Height) of selected SoB reference BMs available inside and around the project area. The adjustment module of software will be used for network adjustment. After network adjustment the precise co-ordinates (Latitude/Northing, Longitude/Easting, and Ellipsoidal Height) of each BM will be obtained.

With the output co-ordinates of the BMs in latitude / nothing, longitude / easting and ellipsoidal height from the network adjustment result, a network of geoid points will be established for the project area. However, to achieve a functional datum i.e. national datum (MSL) as per requirement of the project, it is required to convert the Ellipsoidal Heights to National Datum and determine the reduce levels of the BMs in MSL.

To do so, with the output co-ordinates of the BMs in Latitude, Longitude and Ellipsoidal Height from baseline survey results, the vertical heights will be established with respect to MSL datum from one or more SoB reference BM available inside or around the project area using 1st order level BM carry survey by auto level machine as shown in figure 4.11

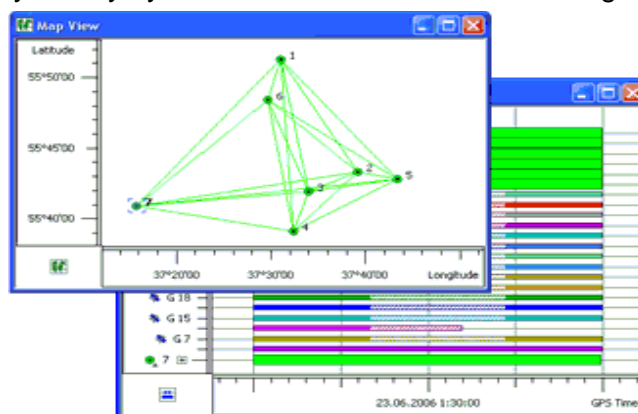


Figure 4.11: Adjustment Module

4.3.2 Physical Feature, Land Use and Topographic Survey

A highly qualified group will be formed comprising of well-equipped and well-organized staff for its field survey and GIS mapping projects. The most modern survey equipments like Photogrammetric Workstation, Total Station, RTK-GPS; DGPS will be engaged for the field survey and data acquisition campaign. Topographic maps and satellite images of different physical, cultural and thematic information will be used for preparation of spatial layers. And the thematic layers will provide information about major communication network, agricultural pattern, river & canal, settlement etc.

4.3.2.1 Mobilization of Survey Team

Survey manager along with survey & equipment experts, GPS and Total Station surveyors will be mobilized after the finalization and approval of the survey/work plan by the client. List of the survey team members, their qualification and responsibility is presented in **Table-4.8**.

Table 4.8: Survey Team

Sl. No.	Designation	No.	Qualification	Year of Experience	Responsibilities
1	GIS and Engineering Survey Expert	1	BURP	10	Overall planning of the field activities, team selection and overseeing of all aspects of field level survey including data processing and Map production.
2	Survey Manager	1	Diploma in Surveying	9	Co-ordination of field survey activities and manage surveyors at field level
3	Survey Coordinator	1	Diploma in Surveying	5	Supervise on field survey operation, co-ordinate data processing
4	Equipment Expert	1	B.Sc. in Electrical & Electronic Engineering	16	Equipment Calibration & management
5	RTK-GPS Surveyor	2	Diploma in Surveying	7	Establishing Primary & Secondary Ground Control Points (GCPs).
6	Total Station Surveyor	5	Diploma in Surveying	5 to 10	Topographic & Physical Feature Survey.
7	Optical Level Surveyor	4	Diploma in Surveying	5 to 10	Establishment of Vertical Coordinate (Z Value) of BM Pillars
8	Survey Assistant	30	Diploma in Surveying	1-5	Assist in survey works.

4.3.2.2 Equipment, Hardware and Software to be used

A large number of advanced survey equipment including Real Time Kinematic Global Positioning System (RTK-GPS) and Differential Global Positioning System (DGPS), Total Station (TS), Optical Levels will be deployed for conducting topographic, land-use, physical feature & infrastructure surveys. A local area network (LAN) comprising numbers of Intel Core i3/i5/i7 desktop computers, color printer, plotter and scanner will be used for data processing and mapping purposes. The equipment, computer & peripherals are listed in below. However, apart from the same if any equipment/software is required for smooth completion of the project, the consultant is committed to buy the same.

Table 4.9: Survey Equipments (Tentative)

Sl.	Equipment/Hardware/Software	Quantity	Purpose
Survey Equipment			
1	RTK (Real Time Kinematic) GPS Receiver <ul style="list-style-type: none"> - Trimble R8 Model 2 Base and Rover GNSS System with internal radio 450 to 470Mhz - TSC2 Data Collector - Other peripheral hardware 	2 sets	Baseline survey for establishment of GCP Coordinates
2	Total Station <ul style="list-style-type: none"> - Topcon GTS-223 - Topcon GTS-102N - Gowin TKS-202 	2 sets 2 sets 2 sets	Physical Feature and Topographic Survey
3	Automatic Level Machine South NL 32	4 sets	Establishment of vertical coordinate (z) of GCPs
4	Handheld GPS Receiver <ul style="list-style-type: none"> - Garmin etrex Venture HC - Garmin etrex Legend 	1 set 2 sets	Identification of features at reconnaissance survey level
Hardware			
5	Desktop Computers Desktop Core i5	5 sets	Data Processing and Mapping
6	Laptop Computers Core i5	2 sets	Data Processing at field level
7	Printers <ul style="list-style-type: none"> - HP Designjet Z5400 (42" Plotter) - Canon iX 4000 (Inkjet A3 Printer) - Canon 3680 (Inkjet A4 printer) - HP Laserjet 1005 	2 sets 1 set 2 sets 1 set	Map, Reports and other printings
Software			
8	GPS and TS Data Processing <ul style="list-style-type: none"> - Access for TSC2 - SDR Level 5 - T-Com - Topcon-Link - Garmin Map Source Mapping Software <ul style="list-style-type: none"> - ArcGIS 10.1 - Autodesk Land Desktop 2006 - AutoCAD 2007 		Baseline data processing, Network Adjustment, TS & GPS data processing and Mapping.

4.3.2.3 Physical Feature Survey

Methodology

Physical feature survey will be conducted for the whole project area including rural or rural-urban fringe areas. Surveys teams will collect attribute data of the features digitized from stereo images in prescribed attribute data collection sheet. Any missing feature will be surveyed by Total Station or GPS or by plot survey. Along with the filed survey, a lot of physical feature data will be collected from respective secondary sources. A list of physical feature data that will be collected is given below:

A. Buildings: (Polygon Feature)

Sl.	Data Description	Data Source	Note
1.	Size and position	- Stereo Image - Field Survey	
2.	Holding Number/ House No.	- Field Survey	
3.	Number of storey	- Field Survey	
4.	Number of Basement		
5.	Type of Structure	- Stereo Image - Field Survey	Pucca, Semi-pucca, Kathca, Under construction
6.	Floor wise use	- Field Survey	Use category is to be finalized and approved by PD Office
7.	Name of structure	- Field Survey	
8.	Age of Structure	- Field Survey	0-10, 11-20, 21-30, 31-40, 41-50, 50+

B. Road Network

- Road Centerline (Line Feature)
- Road (Line Feature)
- Road (Polygon Feature)
- Footpath, Road Island (Polygon Feature)
- RoW (Line Feature)

Sl.	Data Description	Data Source	Note
1.	Alignment and position	- Stereo Image - Field Survey	
2.	Name	- Secondary data - Field Survey	
3.	Type	- Stereo Image - Field Survey	Bridge, Culvert, Railway bridge, Foot-over bridge, Railway over bridge, etc.
4.	Length	- Post data processing - Field Survey	
5.	Width	- Post data processing - Field Survey	

C. Railway Network (Line Feature)

Sl.	Data Description	Data Source	Note
1.	Alignment and position	- Stereo Image - Field Survey	
2.	Destination	- Secondary data - Field Survey	Dhaka-Sylhet, Dhaka-Chittagong, etc.
3.	Type	- Stereo Image	Broad gauge, meter gauge

		- Field Survey	
4.	RoW	- Secondary data	
5.	Length	- Post data processing	

D. Water Body

- Water bodies (Polygon Feature)
- River, canal centerline (Line Feature)
- Water bodies as per CS mouza (Line Feature)

Sl.	Data Description	Data Source	Note
1.	Alignment and position	- Stereo Image - Field Survey	
2.	Name	- Secondary data - Field Survey	
3.	Type	- Stereo Image - Field Survey	River, canal, lake, pond, ditch, borrow pit, beel, etc.
4.	Area	- Post data processing	
5.	Length and average width	- Post data processing	For river and canal
6.	Flow direction	- Field Survey	For river and canal

E. Drainage Network (Secondary data)

- Drain Centerline (Line Feature)
- Inlet/ Outlet, Sluice gate (Point Feature)

Sl.	Data Description	Data Source	Note
1.	Alignment and position	- Secondary data	
2.	Type	- Secondary data	- Surface (Katcha) - Surface (Uncovered) - Surface (Covered) - Pipe
3.	Length	- Post data processing	
4.	Width	- Secondary data	
5.	Depth	- Secondary data	
6.	Flow Direction	- Secondary data	
7.	Location of Sluice gate, inlet, outlet	- Secondary data - Post data processing	

F. Water Supply Network

- Supply Line (Line Feature)
- Pump house, overhead tank, etc (Point Feature)

Sl.	Data Description	Data Source	Note
1.	Alignment and position of supply line	- Secondary data	Approximate position
2.	Position of pump house, overhead tank	- Field Survey	
3.	Diameter	- Secondary data	
4.	Length	- Post data processing	
5.	Capacity of Pump	- Secondary data	
6.	Catchment area	- Secondary data - Post data processing	
7.	Location of water treatment plant	- Field Survey - Secondary data	
8.	Capacity of water treatment plant	- Secondary data	
9.	Location of Stand Pipe	- Field Survey - Secondary data	

G. Gas Supply Network

- Supply Line (Line Feature)
- Gas Substation (Point Feature, Polygon Feature)

Sl.	Data Description	Data Source	Note
1.	Alignment and position of supply line	- Secondary data	Approximate position
2.	Position of Transmission Station	- Field Survey	
3.	Diameter	- Secondary data	
4.	Pressure	- Secondary data	
5.	Length	- Post data processing	
6.	Capacity	- Secondary data	
7.	Catchment area	- Secondary data - Post data processing	

H. Sewerage Network

- Sewerage Line (Line Feature)
- Treatment Center (Polygon Feature)

Sl.	Data Description	Data Source	Note
1.	Alignment and position of sewerage line	- Secondary data	Approximate position
2.	Position of Treatment Plant	- Field Survey	
3.	Diameter	- Secondary data	
4.	Length	- Post data processing	
5.	Capacity	- Secondary data	

I. Electricity Distribution Network

- High Voltage Electric Line (Line Feature)
- High Voltage Electric Tower (Point Feature)
- Electric Power Plan or Substation (Polygon and Point Feature)
- Electric Line (Line Feature)
- Electric Pole (Point Feature)

Sl.	Data Description	Data Source	Note
1.	Alignment and position of high voltage line	- Field Survey	
2.	Voltage	- Secondary data	
3.	Position of high voltage electric pole	- Field Survey	
4.	Length	- Post data processing	
5.	Alignment of Electric Line	- Secondary data	
6.	Position of Electric Pole	- Field Survey	
7.	Owner	- Secondary data	PDB, REB

J. Solid Waste Disposal

- Disposal Sites (Polygon and Point Feature)
- Location of dustbins or collection point (Point Feature)

Sl.	Data Description	Data Source	Note
1.	Position of disposal site	- Field Survey - Secondary data	
2.	Location of dustbins	- Field Survey	
3.	Location of transfer stations	- Field Survey - Secondary data	

K. Other Line Features (Line Feature)

Sl.	Data Description	Data Source	Note
1.	Position	- Field Survey	
2.	Type	- Field Survey	Important Boundary Wall, Embankment, etc
3.	Length	- Post data processing	

L. Other Point Features (Point Feature)

Sl.	Data Description	Data Source	Note
1.	Position	- Field Survey	
2.	Type	- Field Survey	Light Post, Telephone Pole, Post Box, TV tower, Radio tower, Mobile tower, etc

Deliverables

There is no mention about the number of physical feature maps to be submitted to the client. The consultant feels a nominal number of hard copies should be submitted along with the soft copies of survey data in DVD.

So consultant will submit 10 hard copies of physical feature survey maps according to the scale specified by the client along with soft copies of survey data in DVD.

4.4.2.4 Existing Land Use Survey

Methodology

Landuse survey basically records the use of land by its functional activity such as residential, industrial or commercial etc. The land use survey (both attribute and spatial) will indicate the use of each plot of land covering the whole area. The surveyors will visit each and every site to record existing uses with specified notation and colors as per direction of the PD. Physical feature data along with the RS/CS mouza map will be used to extract the land use information. Structural use related data will be available from physical feature map. Usually structural use defines the use of land parcel. Land use information of mouza plots without structure will be collected through direct field survey or processing of satellite images. Through Field survey, following land use information will be collected.

Land Uses/ Other Poly (Polygon Feature)

Sl.	Data Description	Data Source	Note
1.	Position of Feature	- Field Survey	
2.	Type	- Field Survey	Described below*
3.	Name	- Secondary data - Field Survey	
4.	Area	- Post data processing	

**Type of Land Uses/ Other Poly*

Community Religious

- Graveyard
- Crematorium
- Cemetery
- Eidgah

Recreational

- Parks
- Playground
- Stadium
- Golf Course
- Botanical Garden
- Zoological Park
- Heritage Site

Terminals and depots

- Airport
 - Bus Terminal
 - Truck Terminal
 - Railway Station
 - Depot
 - ICD
 - Launch Terminal
 - Ferry Ghat
 - MRT Terminal
- Utility
- Power Plant/Station
 - Water Treatment Plant
 - Sewage Treatment Plant
 - Waste Disposal Sites
- Forest and Agricultural
- Agricultural Land
 - Forest Land
- Others
- Restricted Area
 - Brickfield
 - Slum
 - Monument
 - Bazaar Boundary
 - Other Important Uses

The land use map will be prepared indicating the board categories of land uses described in ToR according to density and quality. It should be mentioned here that the detailed land use categories may further need to be refined by the joint team of UDD and the experts of consulting team before start of the land use survey at field level. Different kinds land use classification (including Land Based Classification Standard) will be properly evaluated. A tentative land use classification for field survey is presented in **Table-4.10**.

Table 4.10: Tentative Land Use Classification for Land Use Survey

No.	Land uses	Illustrated
1	Residential	Planned Residential Area, Govt. Quarters, Private Housing, Rest/Guest/Circuit House, Bungalow, Mess, Orphanage/Old Home, Rural Homestead, Slum Squatters
2	Commercial	Residential Hotel/Hotel and Restaurant, Wholesale Rice Market, Wholesale Vegetables Market, Wholesale Fish Market, Wholesale Paper Market, Wholesale Grocery Goods Market, Wholesale Fruit Market, Book Stall, Cloths Shop, Paper and Magazine, Stationery Shop, Shoe Shop, Bag and Leather Goods, Cosmetics, Spectacles, Electronic Goods, Audio Video Cassette, Utensils/Crockery, Sports Goods, Computer Goods, Motor Car Parts, Jewellery Shop, Show Room, Furniture Shop, Department Store, Mobile Phone Sales Centre, Hardware Goods, Sweet Shop, Bakery Shop, Gift Shop, Press and Printing, Grocery Shop, Gun Shop, Iron and Steel Shops, Shopping Centre/Mall, Super Market, Rubber Stamps, Phone-Fax-Photocopy, Cycle Store, Studio/Colour Lab, Drug/Pharmacy, Pottery Shop, Electronics, Sports and Athletics, Kitchen Market, Katcha Bazaar, Beauty parlour/Hair dresser, Govt Food Godown, Cold Storage, Other's Godowns.
3	Mixed Use	Commercial-Residential, Office-Residential, Commercial-Residential, Two or more use
4	Transport	Airport/Bus Terminal, Truck Terminal, BRTC Bus Depot/Tempo Stand/Rickshaw Stand/Railway station/ BIWTA Terminal/ Launch Terminal etc, Broad Gauge, Meter Gauge, River. Primary/secondary/other schools/ Colleges
5	Administrative	Deputy Commissioner's Office, ZilaParishad Office, SP Office/Police Headquarter, Civil Surgeon Office, LGED Office, Upazila Headquarter, Paurashava Office, Union Parishad Office, Settlement Office, Post Office, Bank, Public Works Department Office, R&H Office, DPHE Office, Statistical Bureau Office, PDB Office, BWDB Office, DoE Office, All types of Government Office, Private Bank/Insurance Company, Mercantile & Co-operatives, Money Exchange Center, Private Company/Different types of NGO/CBO/Club, Construction Office, Commercial Group Office, Trading Corporation Office, Security Service Office, Law Chamber, Doctors Chamber, Political Party Office, Professional's Association, Labour Union.

No.	Land uses	Illustrated
6	Industrial	Dairy Products, Fish & Sea Food, Salt Crushing Mill, Soft Drink, Bakery Product, Cotton Textile, Jute Textile, Silk & Artificial Textile, dyeing Industry, Coconut Fibre Industry, Knitting Industry, Hosiery Products, Readymade Garments, Tannery & Finishing, Leather Buying House, Leather Footwear, Compressed Natural Gas, Fertilizers, Insecticide Industry, Soap and Detergent, Paints & Varnishes, Medicine and Drug Company, Paper Product (all kinds), Newspaper, Rubber Footwear, Cycle & Tyre Tube, PVC Product, Glass Product, Brick Kiln/Fields, Cement, Iron & Steel, Re-rolling Mills, Hands and Edge tools, Bland & Knives, Heating and Lighting, Plumbing Equipment, Machinery Equipment, Wire & Cables, Electric Lamps, Electrical Apparatus, Fruits and Vegetables, Oil Products, Edible Salt, Molasses, Atta, Maida & Suji (Flour Mill), Spice Industry, Rice Mill, Boiler (Rice), Handicrafts, Pottery, Carpets, Fabrics, Sewing/Handloom Products, Wooden Furniture, Cane Furniture, Steel Furniture, Steel Furniture, Ship Building, Lime Stone, Sports & Athletics.
7	Agriculture	Single Crop Land, Double crop Land, Triple Crop Land, Barren Land, Mango/Lichi/Jack Fruit/Banana/Lemon/other fruit garden etc. Different types of flower garden/Tree cultivation, Hatchery/Gher, Livestock/Poultry Farm/Dairy Farm, Agricultural Research Area.
8	Education	Kindergarten and Nursery, Primary School, High School, College, Public University, Private University, Public Medical College, Homeopathic Medical College, Engineering College/University, Law College, Social Research, Health Research, Economic Research, Vocational Training Institute, Physical Training institute, Nursing Training Institute, Teachers' Training Institute, Computer Training Institute, Dakhil Madrasa, Kamil Madrasa Tutorial/Coaching Centre, Hafezia Madrasa, Government Training Institute, Library, Museum, Social Welfare Institute.
9	Health	Govt. Hospital, Pvt. Hospital, Mental Hospital/Maternity/Children Hospital/Clinic/Diagnostic Centre, Veterinary Hospital
10	Recreational	Cinema Hall, Theatre Hall, Museum & Art Gallery, Auditorium/Community Centre/Town Hall, Park/Playground/Amusement Park/Theme Park, stadium/Gymnasium/Swimming Pool/Tennis Complex
11	Places of Worship	Mosque, Eidgah,/Mazar/Dargha/Temple/Church/Pagoda
12	Restricted Area	Cantonment/BDR/Navy/Police Station/Ansar Camp/Jailkhana, TV Station, Radio Station, T&T Board, Power Supply Station
13	Open Space	Historic Sites, National Park/Botanical Garden, Zoological Park, Forest Land/Urban Green, Ecological Park/sites, River Bank
14	Water Bodies	Pond, Tank, Beels, Lakes, Khals, Streams, Drains
15	Graveyard	Graveyard, Cemetery, Cremation Place
16	Miscellaneous	Solid waste Dumping Ground, Slaughter House, Water Pump House, Hazardous Area, Overhead Tank, Monument, ShahidMinar

Output of this Land Use survey will be one or more maps showing existing gross rural agricultural land, residential, commercial, administrative and cultural zones, nature of rural

area or rural urban fringe area (high, low), water courses and water bodies, roads demarcating the main zones and plantation/vegetations as per direction of PD.

Deliverables

The consultant shall deliver, after land use survey, 10 hard copies of land use survey maps according to the scale directed by the client and soft copies of all surveyed land use data in DVD.

4.3.2.5 Topographic Survey

Methodology

According to the ToR, the consultant will be responsible to purchase stereo satellite images. Using these images, it is possible to extract maximum physical features, including the alignment of the line features, like road, canals and rivers. Apart from the same, using the ERDAS Imagine's LPS (recently called ERDAS Photogrammetric) functionality, it is possible to generate Digital Elevation Model (DEM) with resolutions up to 12.5 cm (eATE). The ToR requires us to prepare land levels/spot levels for contours at 10 meter interval. Classic ATE functionality is enough to satisfy the condition of ToR (ATE Classic can generate DEM with 10 m resolution).

At first the topographic base map will be created using the stereo analyst extension of ERDAS Imagine software (to be used with ArcGIS). But because of following constraints, the base map for the whole area will not be possible to create using 3D image.

- Because of cloud cover, image of the earth surface may not be captured
- at slum and squatter type of settlements, tiny roads are often covered, rooms are not separated, using the stereo image to map these areas will incur erroneous result
- canopy cover mainly at the rural areas is also a big problem

Thus, field verification of the extracted information will be required. Additionally, for mapping of the omitted portion of the map developed from stereo image, GPS and Total station based survey may be required. **Table 4.11** States the requirement of topological survey.

For supporting the Total Station Survey, huge numbers of Secondary Control Point (SCP) will be established using RTK fast static survey technique (15 minutes overlapping time). These SCPs will be used by the total station groups as reference points (Station and Back Points) for physical feature, topographic and land use survey.

Table 4.11: Topographical Survey Data

Survey Item	Illustrated
Topographical Survey	<ul style="list-style-type: none"> • Land levels/ spot levels for contours at 10 meter intervals with denser intervals for undulations. Initially it can be extracted from the stereo image. Later on, using RTK-GPS assisted Total station survey will ground truth the same. • Alignment and crest levels (not exceeding 50 meter) of road,

Survey Item	Illustrated
	embankment, dykes and other drainage divides <ul style="list-style-type: none"> • Alignment and topography of rivers, lakes, khals /canals etc., including water bodies demarcated in CS/RS mouza maps • Natural drainage courses and catchments areas or watersheds of water bodies • Outline of bazaars, homestead, water body, swamps etc.

Deliverables

The consultant shall deliver, after topographic survey, 10 hard copies of topographic survey maps according to the scale instructed by the client and soft copies of all surveyed topographic data in DVD.

4.3.2.6 Field Verification

After preparation of physical survey maps, one set of colored maps (topographic and physical infrastructure, physical feature and land use) will be plotted in 1:1980 scale for field level verification. The field level checking will be supervised and monitored by the joint team of UDD and consultants.

Based on field verification, the necessary updating of physical survey maps will be done and final map layout will be produced for submission to UDD. Before preparing final map layout, necessary approval on draft map layout will be taken from UDD on title, legend and size of the maps.

Sl. No.	Physical Feature Name	Data Type			Z Value (Z measurement level)			Description
		Point	Line	Polygon	On Top	On Ground level	Not required	
A. Water bodies								
1	River Edge			x		x		
2	Khal Edge			x		x		
3	Drainage Channels			x		x		Name, width
4	River/Khal centerline		x			x		Name, width
5	Flow direction	x					x	
6	Ponds/Tanks/Ditches			x		x		
7	Coastline		x			x		

Sl. No.	Physical Feature Name	Data Type			Z Value (Z measurement level)			Description
		Point	Line	Polygon	On Top	On Ground level	Not required	
B. Building/Structure								
8	House			x	x			Residential Building
9	Industry			x	x			Industrial Building
10	Commercial			x	x			Commercial Building
11	Mixed			x	x			Mixed use
12	Boundary Wall		x		x			Wall use as boundary
C. Roads								
13	Road Pucca		x	x		x		Asphalt Road
14	Road HBB		x	x		x		HBB Road
15	Road Katcha		x	x		x		Katcha Road
16	Path Pucca		x	x		x		Pucca Path
17	Path Katcha		x	x		x		Katcha Path
18	Traffic Island/Divider		x	x		x		
19	Road/Path Centerline		x			x		Name, width
D. Railways								
20	Railway RoW line		x			x		
21	Railway centerline		x			x		
22	Railway Junction points	x				x		
E. Other Structure and Flood Works								
23	Bridge/Culverts			x	x			Type, area, name
24	Embankments			x	x			Name, length
25	Pump Station for Flood			x		x		Name
26	Sluice Gates		x		x			Name
27	Bus/Trucks Terminals			x		x		Indicate right of way and areas
28	Harbor/Bathing/Boat Jetty		x		x			Harbor, Boat Jetty

Sl. No.	Physical Feature Name	Data Type			Z Value (Z measurement level)			Description
		Point	Line	Polygon	On Top	On Ground level	Not required	
F. Natural Features								
29	Forest			x		x		Area > 2500 sqm
30	Group of trees			x		x		Area < 2500 sqm
31	Group of trees point	x				x		
32	Wetlands/ Bog/ Marshland/ Flood prone area			x		x		Area > 2500 sqm
33	Sand/ Sand dunes			x		x		Area > 2500 sqm
34	Significant Single Tree	x				x		Easily identified single tree
G, Utility Services								
35	High voltage Electric line		x		x			National/regional grid
36	Telephone Line		x		x			
37	Gas Line		x			x		
38	Utility Substation	x				x		Electric, Telephone exchange, Gas
39	Overhead Water Tank			x	x			Name, Capacity
40	Waste disposal and treatment points	x				x		A dustbin of municipality and other informal points
41	Water work			x		x		
42	Deep Tube well stations	x				x		RCC DPHE and other deep tube well stations and output
H. Area Polygon								
43	Residential Area			x		x		Planned, Unplanned, Density (High, middle , low)
44	Commercial Area			x		x		Established markets

Sl. No.	Physical Feature Name	Data Type			Z Value (Z measurement level)			Description
		Point	Line	Polygon	On Top	On Ground level	Not required	
								with ancillary shop, groups of shops including small workshops
45	Institutional, Educational, Health, Govt. office			x		x		School/college/madrasa/ clinics, hospital, govt. office
46	Industrial (as classified by acts and rules)			x		x		Main activity, type of waste effluent
47	Agricultural Area			x		x		All types of agricultural uses
48	Recreation/ sports			x		x		Parks/ play/sports ground, indoor facilities, zoological garden, stadium area
49	Religious/ cemetery			x		x		Mosque, temples, church, mazar and others
50	Graveyard			x		x		Sites
51	Historic Place			x		x		Sites
52	Borrow pits			x		x		Areas cut for filling material
53	Vacant Land			x		x		Vacant land with no apparent use
54	Public gathering			x		x		Place of public meeting, open-air cultural performance and religious gathering
55	Garden			x		x		Indication Pea, pineapple, etc

Sl. No.	Physical Feature Name	Data Type			Z Value (Z measurement level)			Description
		Point	Line	Polygon	On Top	On Ground level	Not required	
56	Disaster prone areas			x		x		Flood (indicating the flood affected area in 1998), Earthquake and fault line

4.4 Household Based Socio-economic Sample Survey

The terms of reference calls for conducting a household based socio-economic sample survey of the entire upazila. It does not, however, specify the sampling procedure to choose sample households. The consultant devised a stratified random sampling method to carry out the socio-economic survey as illustrated below.

POED-5 formula has been used to determine sample households at 95 Confidence level. $\pm 3\%$ samples will be taken from each upazila household for survey. The total samples will be proportionately distributed between urban and rural areas according to the size of households in the Pourashava wards and villages. Sample households will be selected according to **Simple Random Sampling Method**.

4.4.1 Sampling Procedure for Pourashava

For Pourashava the entire pourashava households will be considered as the population. From the sample households determined for the upazila the sample households of the pourashava will be allocated according to its proportion of households in the upazila. Next, the samples allocated for the pourashava will be proportionately distributed to the wards. Sample households will be chosen using simple random sampling method.

4.4.2 Sampling Procedure for Union Parishad

The total number of samples determined for rural area will be proportionately allocated to each union according the number of households it contains. Sample households will be equally distributed among the villages within union. Sample households will be chosen directly in the field.

4.4.3 Dohar Upazila Sampling

4.4.3.1 Household Sampling for Dohar Pourashava

Table-4.12 shows that 9 wards jointly produce 177 households as sample households for survey based on 2011 population census.

Table 4.12: Ward Wise Distribution of Households and Sample Households

Stratum	No. of households	No.of Samples
Ward-1	998	22
Ward-2	1429	31
Ward-3	568	13
Ward-4	562	12
Ward-5	508	11
Ward-6	821	18
Ward-7	890	20
Ward-8	913	20
Ward-9	1367	30
Total	8056	177

4.4.3.2 Household Sampling for Unions of Dohar Upazila

Total number of unions in Dohar upazila is 8. From eight unions all the villages will be selected for survey. The samples of the union will be proportionately distributed among the villages. The total number of sample to be surveyed in rural areas will be 910. The details shown in **Table-4.13**.

Table 4.13: Union Wise Village Distribution and Sampling

SL No.	Name of Union	No. of Total Households	Proportion of the Households as Sample size
1	Bilaspur Union	2898	64
2	Kushumhati Union	4898	108
3	Mahmudpur Union	3510	77
4	Muksudpur Union	5218	115
5	Narisha Union	8537	188
6	Nayabari Union	3279	72
7	Roypara Union	5496	121
8	Sutar Para Union	7508	165
	Total	41344	910

Combining pourashava and union the total number of samples in the entire upazila for survey will be (910+177) 1087 households.

Within each selected household, the head of the family will be respondent. In case head of the family is not available one adult (age 18 and over) respondent will be chosen for interview. A structured questionnaire will be used for survey.

4.4.4 Nawabganj Upazila Sampling

Nawabganj upazila does not have any pourashava. So we will only choose the procedure for selection of rural households for survey.

4.4.4.1 Household Sampling for Unions of Nawabganj Upazila

Total number of unions in Nawabganj upazila is 14. The number of households selected for the upazila is distributed to the unions according to the proportion of the households of the unions. This is presented in **Table-4.14**.

Table 4.14: Union Wise Sample Distribution

SL No.	Name of Union	No. of Total Households	Proportion of the Households as Sample size
1	Agla Union	3815	59
2	Bakshanagar Union	4748	74
3	Bandura Union	6773	105
4	Barrah Union	5661	88
5	Baruakhali Union	3559	55
6	Churain	5105	79
7	Galimpur Union	2874	45
8	Jantrail Union	5147	80
9	Joykrishna Pur Union	3833	60
10	Kailail	5666	88
11	Kalakopa	5195	81
12	Nayansree	6010	93
13	Shikari Para	3971	62
14	Sholla	8400	130
	Total	70757	1099

The total number of households to be surveyed Nawabganj upazila will be 1099. Since the upazila does not have a pourashava so there will be no survey for urban area.

Total number of unions in Nawabganj upazila is 14. From 14 unions all the villages will be selected for survey. The samples of the union will be proportionately distributed among the villages. The total number of sample will be surveyed in this upazila is 1099.

All the villages from each union will be selected for survey. Samples from each village will be selected using simple random sampling method. Household head will be surveyed. In case head of the family is not available one adult (age 18 and over) respondent will be chosen for interview.

4.4.5 Shibchar Upazila Sampling

4.4.5.1 Household Sampling for Shibchar Pourashava

Shibchar upazila has a pourashava, so the consultant has selected samples for both, rural and urban areas. Sample units from each ward will be chosen directly in the field with every alternative house.

From the sample households determined for the upazila the sample households of the pourashava will be allocated according to its proportion of households in the upazila. Next, the samples allocated for the pourashava will be distributed according to the size of households in each ward. Shibchar pourashava consist of 09 wards. All the wards will be considered for collecting ultimate sampling units i.e. households. Please see **Table-4.15**. In the table it is shown that 9 wards will produce 87 households as sample households for survey. Sample households will be chosen directly in the field. Simple random sampling method will be used for selecting samples.

Table 4.15: Ward Wise Distribution of Households:

Stratum	No. of households	No. of Household / Respondent-
Ward-1	860	13
Ward-2	412	7
Ward-3	583	9
Ward-4	1387	22
Ward-5	618	10
Ward-6	457	7
Ward-7	457	7
Ward-8	383	6
Ward-9	370	6
Total	5527	87

4.4.5.2 Household Sampling for Unions of Shibchar Upazila

Since most of the upazila area is covered by union parishads there will be huge number of rural households. Total number of unions in Shibchar upazila is 18. The number of households selected for the upazila will be distributed to all the unions according to the proportion of the households of the unions. This is presented in **Table-4.16**.

All the villages from each union will be selected for survey. The samples of the union will be proportionately distributed among the villages. Samples from each village will be selected directly from the field. Household head of the family will be the respondent. In case head of the family is not available one adult (age 18 and over) respondent will be chosen for interview.

Table 4.16: Union Wise Sampling Distribution and Sampling

SL No.	Name of Union	No. of Total Households	Proportion of the Households as Sample size
1	Bandarkhola	2094	33
2	Banshkandi	4249	67
3	Bayratala-Daskshin	1864	29
4	Bayratala-Uttar	2693	43
5	Bhadrasan	2409	38
	Bhandarikandi	2376	38
6	Char Jannat	3557	56
7	Datta Para	5242	83
8	DitiyaKhanda	2513	40
9	Kadirpur	3172	50
10	Kanthali Bari	4136	65
11	Kutubpur	302	60
12	Matborer Char	5411	85
13	Nilakhi	2798	44
14	Panch Char	3995	63
15	Sannyasirchar	3836	61
16	Shibchar	1128	18
17	Sirual	3662	58
18	Umedpur	5159	81
	Total	6230	1012

Combining pourashava and union sample households the total number of samples in the entire upazila for survey will be (87+1012) 1099 households.

Within each selected household, the head of the family will be respondent. In case head of the family is not available one adult (age 18 and over) respondent will be chosen for interview.

A draft socio-economic survey questionnaire is attached in **APPENDIX-4.2**

4.4.6 Work Plan for PRA Session and Socio-economic Survey

Table 4.17: Timeline for PRA Sessions

Upazila Wise Work Schedule	PRA Session Schedule
1. Training in Dhaka	December 06, 2015 (Sunday)
2. Shibchar	December 08-December 30, 2015(Saturday -Thursday)
3. Nawabganj	January 02-Jan 09, 2016 (Saturday-Saturday)
4. Dohar	January 11-January 20, 2016(Monday-Wednesday)
5. Draft Report Submission	January 31,2016 (Sunday)

Table 4.18: Distribution of PRAs by Upazila, UPs and Municipality

Upazila	No. of Union Parishads (Ups)	No. of Pourashava Wards	No. of PRA
1. Shibchar	19	09	28
2. Nawabganj	14	-	14
3. Dohar	08	09	17
Total	41	18	59

Table 4.19 Sequence of Activities and Duration of a PRA Sessions

Sessions	Duration	Time	Remarks
1.Registration 2.Opening, introductions, expectations (announce per diem)	30 minutes	10-11am	Whole group (15 -20 persons)
3. Social mapping Session	1 hour	11am-12pm	Whole group
4. Venn diagram Session (Problem, Potential)	1 hour	12pm-1pm	Whole group
Lunch break	30 minutes	1:00 - 1:30 pm	
4. Technology of Participation (ToP) Consensus Workshop	1.5 hours	1:30 – 3:00 pm	Whole group
5. Reflection and closing	30 minutes	3:00 – 3:30pm	Whole group

PRA Facilitation Team = 2 teams

Team 1. 4 persons (1 planner, 1 social scientist, 1 graduate, 1 logistics manager)

Team 2. 4 persons (1 planner, 1 social scientist, 1 graduate, 1 logistics manager)

Compensation for Participants = per head 500 taka (includes honorarium and food)

Honorarium – per diem to cover travel expenses and very partial support income for absence in work

Food

1. Water bottle – 60 per session
2. Refreshment (morning/afternoon) – Dal Puri, Singara, Sweets, Tea or other locally available items
3. Lunch- meat, egg, byriani, fish, pan supari, soft drinks or other locally available items
4. Closing tea, jalmuri, biscuits

Materials needed for 59 PRAs (initial estimate):

- | | |
|--|--------------------------------|
| 1. LGED Map (Union, Upazila, Pourashava) | 16. Meta cards – 10 packs |
| 2. NGO/UP risk and asset map (if available) | 17. Folder – 2 dozens |
| 3. Sticky Wall – 2 pcs | 18. Note books – 10 pcs |
| 4. Sticky Spray – 4 pcs | 19. Clip Board – 10 pcs |
| 5. Flipchart – 20 packs | 20. Chalk – 10 boxes |
| 6. Poster paper – 50 pcs (Yellow, | 21. Duster – 1 dozen |
| 7. Glue stick gum – 1 dozens | 22. Stapler (big) – 2 |
| 8. Pen – 10 dozens (black, blue and red color) | 23. Stapler pin big – 4 boxes |
| 9. Pencil-2 dozen | 24. Paper clip – 2 dozens |
| 10. Eraser – 4pcs | 25. Rubber – 2 dozens |
| 11. Pencil sharpener-4 pcs | 26. Masking tape – 4 packs |
| 12. Scissor – 2pcs | 27. Tissue box -40 boxes |
| 13. Color markers – 10 dozens | 28. Floor mat/carpet – 6 rooms |
| 14. Drawing Paper – 20 pcs | 29. Digital Camera -2 |
| 15. Sketch pen – 2 dozens | 30. Video |

Other special needs:

1. **Official letter** to concerned Upazilas, Unions, Police Stations
2. **List of contact persons** with phone number for 3 upazillas
3. **Hotel reservation** (for Shibchar, Nawabganj and Dohar) including **healthy food** for team
4. **Vehicle** – Full-time availability
5. **Phone** expenses for communication with participants and local leaders.

Timeline for Socioeconomic Survey (Tentative)

1. **Questionnaire:** Other experts are requested to give me their required question sets by Nov.015 for their specific sector to include in the socioeconomic survey
2. **Database:** Specific sectoral experts will be supervise their concerned sectoral survey team members for data entry and data base in SPSS and excel software as per their requirements

4.5 Major Studies

Upazila development plan needs some studies on various issues of the upazila in order to

Activity	Timeframe
Questionnaire Design	Nov.2015
Pre-testing of questionnaire	Nov.26-27,2015
Hiring of surveyors	Nov.28-29,2015
Training of surveyors in Dhaka	Dec.06,2015
Surveys in Shibchar	Dec.08- Dec.30,2015
Survey in Nawabganj	Jan.02 Jan.09,2016
Survey in Dohar	Jan.11-Jan.20,2016
Draft Report	February,15,2016.

help analyse the current situation and unveil problems and issues of the upazila. The studies will also indicate opportunities to overcome problems and promote development through appropriate planning. The studies will be conducted on the following issues.

4.5.1 Urban and Rural Economy: Study of Investment and Employment

The economic study will primarily focus on status of the upazila economy to identify its problems and issues. This information will be analysed to prepare recommendations for improvement of the local economy.

Issues

The economic study of the upazila will concentrate on the overall economic status and its performance in various sectors of the economy. The issues that would be covered under the economic study will include,

- Status of labour force and employment;
- investment scenario: performance of industrial and agricultural sectors;
- marketing facilities and services offered by markets and growth centres;
- import and exports of the upazila;
- banking facilities and their performance;
- peculiarities of urban and rural economy including informal sector activities;
- credit facilities available different sectors of the local urban and rural economy.

Methodology of Data Collection

Following is short statement on the methodology to be adopted for collecting data to conduct economic study.

Specific Tasks

In implementing economic studies the following tasks will be performed:

Field Visit and Data Collection

The consultant will pay a reconnaissance visit to the project site to acquaint with the project areas during the study. During the time of visit, necessary data/information will be collected for primary assessment in consultation with the different stakeholders of the project including project beneficiaries and potential affected persons.

Questionnaire Survey

Standard questionnaire will be prepared for survey of economic enterprises including shops, wholesale markets covering such issues as,

- capital investment;
- daily turnover;
- employed persons;
- problems and issues facing.

The survey will be collected on the basis of purposive sampling. If the data processing is unmanageable manually computer software will be used. Necessary measure will be taken to ensure quality of the database.

Survey of Credit Institutions

A survey will be conducted on formal credit institutions based on some selected questions like,

- The total credit disbursed last financial year;
- Purpose of credit;
- Credit recovery rate;
- Credit utilisation.

Agencies of survey will include local bank branches and cooperatives and other government approved financial agencies. Besides, enquiry will also be made about the status of informal credit activities.

Collection and Review of Reports

Relevant project documents, Pourashava Master Plans, relevant reports, documents, previous studies etc. will be collected from available sources for review. All these, would facilitate the consultant to get a thorough knowledge/idea to assess previous and present status and will be used as useful input for the present study.

Data will be collected mostly from secondary sources, like, BBS Publications- District Population Statistics, Non-farm Enterprise Survey, agricultural Survey. Some data will be drawn from household based socio-economic survey. Besides, data will also be gathered from concerned agencies at upazila level, local banks and credit agencies, NGOs and other government publications.

Discussions with Upazila Level Officials, Elected Bodies and Local Elite

The consultant would conduct discussions with the government and non-government officials, elected upazila and union Parishads and local elite such as school and college teachers, madrasa teachers, imams on relevant issues. This will facilitate sharing of ideas for conceptual clarity as well as overcoming/minimizing different constraints in carrying out the task.

Collection of Secondary Data and Maps

Relevant secondary data, reports, and maps from different departments of Government, national & international agencies, research organizations, NGOs, web sites etc. were collected and have been used in this Report. A number of BBS publications will be helpful for economic analysis, such as,

- Labour Force Survey 2012
- Survey of Manufacturing Industries 2005-2006
- Survey of Manufacturing Industries 2012
- Bangladesh Standard Classification of Occupation 2012
- Cottage Industry Survey 2011
- Preliminary Economic Census 2013
- Year Book of Agricultural Statistics 2011
- Year Book of Agricultural Statistics 2012
- Millennium Development Goals of Bangladesh
- Socio-economic Status Survey 2010
- Household Income and Expenditure Survey 2010
- Report on Welfare Monitoring Survey 2009

- Report on Rural Credit Survey 2014

Recruitment and Training of Survey Team

A number of Enumerators and Supervisors will be deployed in the field to collect data from the field. All of them will be recruited locally considering it convenient for travelling to different places of the project area and adjustment with the local condition. Before deployment in the field for actual data collection, all the Enumerators and Supervisor will be provided with intensive training both in the classroom and in the field. The objective of such training will build capacity in undertaking the above survey to build rapport with the respondents, fill-in the questionnaires/checklist, etc.

Socio-Economic and Agronomic Survey

The consultant will conduct socio-economic sample survey of the selected households of the upazila. The questionnaire will contain many economic questions, like, income, expenditure, landed property, etc. All these information will be used for economic analysis.

Growth Centre and enterprise survey

In a upazila there are a number of growth centres and rural markets. These are the centres based on which economic rural development will take place. In addition some employers will be selected for survey.

Public consultations

The objective of consultations/meetings is to ensure people/stakeholders participation in the project activities at different stages and incorporate their views and feedbacks as a user's input during planning/preparation of the project. This also will enable different socio-economic interest groups in an area to develop their capabilities and to play a dynamic role in development initiatives. These consultations are expected to strengthen the commitment of a wide cross-section of affected people, public representatives, government employees, professional groups, voluntary groups including NGOs, community based organizations by giving them an opportunity to share responsibility in key decisions.

The primary objective of the economic study is to assess current status of the local economy and help address the problems and issues.

Deliverables

The economic study will finally produce a report containing text, data tables and maps giving a clear picture about the status of upazila economy by its various sub-sectors-its problems, issues and opportunities.

4.5.2 Housing, Slum and Squatter Study

Urban areas are the places where there are high density of houses, and concentration of slum and squatters are found. Slum and squatter dwellers live in those areas where income earning opportunities are available. Due to high density and higher income of the urban people poor

people gather in urban areas that offer opportunities for informal sector activities and non-farm petty jobs.

Issues

Under housing, slum and squatter study a wide variety of data will be collected, both, from primary and secondary sources. The issues of data collection will cover:

- housing type by construction;
- average area under each category of housing unit;
- land coverage of houses;
- availability of utility services in houses;
- owner occupied house and tenant occupied house;
 - house rent dynamics;
 - number of slums and squatters in the town;
 - income and occupation of the family members;
 - family size, age group, education of family members;
 - origin of the families and reason for leaving the place of origin and reason for settling in the town;
 - landed property at the origin of the slum dwellers;
 - condition of house and utility services.

Methodology of Data Collection

Data will be collected both from primary and secondary sources. Following is a short statement about the methodology for data collection:

Primary Sources of Data

A major source of primary data about housing will come from household based socio-economic survey. The survey findings will provide basic data about house ownership, area coverage, construction type, etc. Primary data of slum and squatter will be generated through such method as, case study on issues listed above; listing of slum and squatter available and basic data of families. Case study will be done on few families without any structured questionnaire, but will include some very basic questions, like, origin, reason for leaving original place, occupation and income, housing.

Secondary Data Sources

Secondary data will primarily rely on published research and study reports; BBS Slum Study Report 2015; Urban Slum Mapping by CUS that also contain basic data about slums. Help of housing research reports will be sought to conduct an in depth study on housing. Other report to be reviewed will include, National Housing Policy; National Building Code; BC Rules; Private Housing Estate Approval Rules 2004.

Besides, the consultant will depend on poverty and slum related publication of the BBS, like-

- Health and Morbidity Status Survey 2014
- Slum Census 2014
- Community Series –Dhaka and Madaripur Districts 2011
- Bangladesh Poverty Maps (Zila and Upazila) 2010
- Poverty Maps Brochure 2010.

Deliverables

The consultant, after the study, will deliver a report on housing, slum and squatters supported by necessary, tables and maps giving such information as;

- quality of housing in the upazila-rural and urban;
- estimation of housing need and supply;
- average number of persons living in each room;
- quality of utility services in houses;
- number of slums in the town;
- Condition of housing of the slum dwellers;
- access to utility services to the slum dwellers
- family members and their education;
- number of working members and their occupation;
- income and expenditure of the family;
- reason for departing original place and reason for coming to the present place.

The study findings will be analysed to identify problems and make necessary recommendations for improvement of the housing condition and betterment of slum and squatter dwellers.

4.5.3 Agricultural Land Demarcation Survey

The main aim of the agriculture sector study is to identify areas of farm land with different heights, cropping pattern and cropping type; land use and land utilisation, loss of farm land due to non-urban use; flooding affecting agriculture ; quality of agricultural land ; facilities and problems of marketing of agricultural products and the infrastructure facilities including the transportation. Lands will be delineate according to single, double and triple crops as well as productivity and overlaying the information on proposed land uses along with recommendations for specific land use practices considering constraints.

Several layers of information will be developed on socio-economic condition of the farming community, traders, entrepreneurs and market infrastructure for agro-commodities to be included in the Rural Area Plan (RAP).

Issues

For agricultural sector study of the upazila a wide variety of farm related data will be required on a number of issues:

- demarcation of total land under agricultural;
- category of farm land based on height, cropping pattern, crop type;
- growth and decline of farm land in last 10 years;
- area of farm land based on number of harvest-single crop, two crop, three crop;
- total irrigated land of the upazila;
- marketing facilities available-bazar,growth centre;
- transportation facilities available and their problems;
- sources of and status of farm credit;

- daily wage of farm labourers and availability of farm inputs;
- status of the upazila with respect to food production.

Methodology of Agricultural land Demarcation

The whole study will be conducted following a methodology, which consists of some sequential steps. The subsequent steps are described here in brief, which will be followed to achieve the objectives of the study.

Data Collection

Both primary and secondary data will be collected for developing the present and future scenarios of agriculture in the selected upazilas.

Primary Data Collection: Both quantitative and qualitative data will be collected.

a) Quantitative Data Collection: For quantitative data collection reconnaissance survey and semi-structured questionnaire survey will be conducted.

i) Reconnaissance Survey: To have an idea about the site and to get general information about the characteristics of land, soil, cropping system, marketing facilities in the upazila vicinity will be collected and special characteristics of the upazilas will be examined by in-situ observations.

ii) Questionnaire Survey: To collect quantitative data relevant to peri-urban and rural agriculture agricultural activities at household level will be assessed through sample survey. HH survey program of the study will have a section of farm household information, agricultural practices, current land use along with irrigation facilities & farm mechanization, present cropping system, cropping pattern and level of technology use by farmers especially for producing high value agricultural commodities (HVACs). For the purpose a sample survey will be conducted at household level using a semi-structured questionnaire. Stratified random sampling procedure will be followed and representative sample size of the household will be determined with 95% confidence level and ± 5 precision level following Yamane's sample size determination.

b) Qualitative Data Collection: For qualitative data collection six focus group discussion (FGDs), at least three Case Studies (CS), and 20 key informant interviews (KIIs) will be conducted with cross section of stakeholders like DAE field officials & staff, agribusiness people, input dealers, etc.

Secondary Data Collection

Secondary data related to land type, soil type, existing land use, cropping system, cropping pattern and cropping intensity will be collected from DAE, SRDI and BARC and other NARS institutes. Growth and or decline of arable land during the last 10 years will be gathered from BBS literature and publications including Agricultural Census Reports. Reports on Livestock and Fisheries will be collected from DLS, DoF, BLRI and Agricultural Universities.

Data Processing and Analysis

After the collection of raw data in both quantitative and qualitative form, will be processed using different techniques. The primary data will be processed by statistical package for social science (SPSS) and Microsoft Excel. After processing data will be analysed following different methods and models. Arc GIS, SPSS and Microsoft Excel will be used for analysis for relevant information. An integrated technique of analytical hierarchical process (AHP) and geographic information system (GIS) will be used to evaluate the suitability of the study area for peri-urban and rural agriculture necessary to develop a strategic plan of the selected upazilas for the next 20 years.

Reporting

Draft report will first be prepared and presented before the project personnel and relevant experts and as per comments and recommendation the final draft will be prepared and submitted to UDD.

Deliverables

Agriculture sector study will produce a report containing an overall picture of the agriculture in the upazila with particular focus on,

- topographic map including administrative boundaries, suitability, detail orientation of land use in the upazilas;
- map showing pure agricultural land in the upazila with category of land –high, medium, low land level;
- land utilisation and floodability;
- agricultural land demarcation showing single crop, double crop and triple crop;
- data on decline and growth of farm land in ;last 10 years and the possible reasons for such change;
- farm land ownership pattern;
- landlessness among the cultivators;
- cost of production and profitability of the farmers;
- status of food crop production and need of the upazila;
- status of investment financing by the farmers;
- transportation and marketing of agro-products;
- marketing facilities -hat, bazar, growth centre- and their problems;
- access to agricultural credit;
- availability and cost of farm labour;
- area identification for intervention to increase cropping intensity;
- a statement of development options to address land and other natural resources use issues;

On analysis of the current status of the agricultural sector, the consultant will reveal the problems in each sub-component of the sector and will recommend measures to overcome those in the rural planning report.

All collected attribute and spatial data will be linked with other database of the project for quick access to necessary action.

4.5.4 Transport Sector Study

Transport is a very important sector for development of any area. Transportation enables social interaction and promotes economic activities through movement of people, goods and services.

4.5.4.1 Issues

Transport sector study will encompass a variety of survey and data collection on various issues, like,

- Traffic volume survey to ascertain volume of traffic movement in peak and off peak hours in major roads, river ghats and railway station;
- Trip generation survey at different important locations;
- Regional connectivity analysis;
- Rural- urban transport linkage;
- Available public transport facility and scope of further improvement ;
- Pedestrian movement-problems and issues; footpaths;
- Origin-Destination (O-D) survey to find out the need for alternative roads/routes;

4.5.4.2 Methodology of Data Collection and Survey

Almost all traffic data will be gathered through direct field survey. The surveys will include:

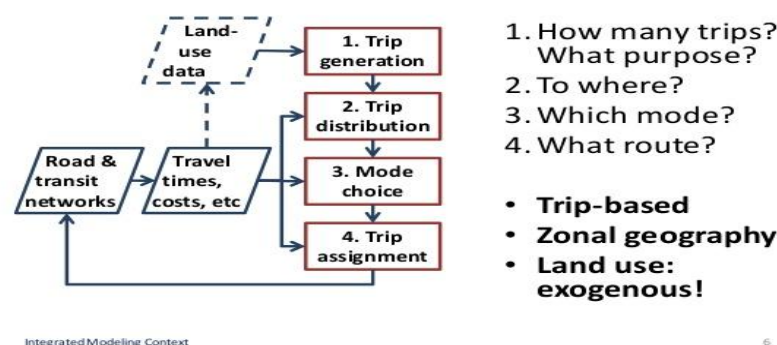
- The existing transport infrastructure inventory, including transport network by hierarchy, physical condition of the roads (RoW, X-sectional elements, pavement types etc.) will be studied collecting data from LGED about road design and direct measurement in the field.
- Geometrics of major road intersections, mode of travel and travel routes will be studied by direct field measurement; additional and supplementary data will be gathered during physical feature survey.
- Truck and bus routes will be studied with data collected from bus and truck owners’;
- Loading and unloading areas of trucks will be studied from the field observation and interview;
- Bus and truck terminals, parking areas will be studied through field visit and interview with relevant management bodies, transport operator and owners;
- Survey of footpaths their conditions will be studied through direct field visit;
- Road survey will be done to ascertain their condition of pavement, right of way (RoW), X-section elements; road curvature; right of way of urban roads; scope of road widening in urban and rural areas; quality of road; storm water drainage.
- Traffic volume will be studied in upazila ghats in peak hour and off peak hour.
- Field survey will be done in critical traffic junctions to ascertain problems of movement of the traffic;

Traffic Demand Forecasting Using Four Step Model

Overview of the 4-step Model: Under this method in general travel demand forecasting attempts to quantify the amount of travel in the transportation system. Demand for transportation is created by the separation of land use activities. The supply of transportation is represented by the service characteristics of streets and transit networks. There are four basic phases in the traditional travel-demand forecasting process in Four Step Method, those are as follows:

1. **Trip generation** forecasts the number of trips that will be made.
 2. **Trip distribution** determines where the trips will go.
 3. **Mode usage** predicts how the trips will be divided among the available modes of travel.
 4. **Trip assignment** predicts the routes that will take, resulting in traffic forecasts for highway system and ridership forecasts the transit system.
- Statistical analysis of past trends of traffic growth by mode and number will be carried out subject to availability of data.
 - Data on road total length in the upazila with RoW and pavement width in urban and rural areas will be collected from Pourashava, LGED and RHD.

“Four-step” Travel Demand Model



- Take records of traffic accidents from local thana, local people, find out possible reasons of accidents.
- Availability of traffic signal and obedience to traffic laws will be studied through personal interview and field observation;
- Observe pedestrian movement attitude of the people, facilities available and the accidents to pedestrians will be studied through interview of traffic police, people at the accident spots.
- Statistical analysis of the past trends in growth on the basis of types and numbers of different vehicles.

Traffic Volume Survey will be done at particular points of important roads of the upazila with traffic mode during day and night. This survey will give data on volume of traffic movement. Time and venue of survey will be decided after discussion with the PD.

Origin and Destination (O-D) survey will be done at particular locations at the entry of the town to ascertain the need for alternative road like by-pass to avoid the town by the traffic going beyond the town. Time and location will be decided through consultation with UDD. Technique of O-D survey will be used, on board transit-survey/ road- side interview.

4.5.4.3 Traffic and Transportation Survey Work Plan

O-D Survey: One point at a major road entering the upazila town will be selected for origin and destination survey. The hours of survey will be decided in consultation with the client. Accordingly, the number of enumerators will also be determined.

Traffic Volume survey: will be done at two important locations in each upazila town, where the movement of traffic is the highest. The hours of survey and the number of enumerators to be engaged will be decided in consultation with the client.

Intersection Survey: Map of intersections will be prepared from the physical feature survey maps.

Time Schedule: Traffic and transportation survey will start on 30 December and is expected to continue for about a month. However, transportation related data collection, like,

- road length and width by category;
- traffic infrastructure-ghat, bus, truck terminal, footpath

from secondary sources and from the field will start from early December.

4.5.4.4 Deliverables

After the transport study the consultant will produce a report on existing condition of the transport sector. The transport sector study will cover such issues as,

- Total length of roads by category of RoW and quality of pavement;
- Volume of traffic movement in the streets by various traffic modes;
- Origin and destination of traffic and need for new road.
- Length of road and connectivity with various locations within and outside the upazila.
- Condition of available pedestrian movement facilities.
- Availability of traffic signals and obedience by vehicle operators.
- Trend of traffic growth and forecast of future traffic growth.
- Availability and condition of transport infrastructure in the upazila including, terminals, ghats and parking facilities.
- Passenger movement by destination, availability of bus facilities; condition of services.

Surveyed data will be used to make a prediction of future traffic demand for next 20 years using a 4-step model. All data will be supported by necessary maps, charts and data tables. Transportation study will greatly assist in assessing on street traffic problems in urban and

rural areas, need for alternative road/bypass/shorter connections to important destinations, problems of urban and rural road intersections, adherence to traffic law, pedestrian movement, movement of traffic at river ghats.

All these information will be used to prepare a transport sector development plan for the upazila and inter-regional connectivity. Assessment will be used to make recommendations of improvement of traffic situation and ease the transportation problems which will be clearly articulated in the transportation plan for both rural and urban areas. Moreover, prioritized bankable projects/schemes will also be identified from the plan.

4.5.5 Hydrological and Bathymetric Study

As a riverine country hydrology is very important issue for this project, because overwhelming part of the upazila is dominated by rural and natural environment. River and khals are very important elements of rural areas that serve as lifeline of the people and at the same time occasionally turn into a source of disaster.

4.5.5.1 Issues

The issues that will be dealt with in hydrological study will cover such elements as,

- Identification of waterbodies in the upazila including pond, ditch, beel etc, covering both perennial and seasonal;
- identification of rivers and their flows; khals/canals;
- encroachment and blockage of rivers and khals;
- seasonal precipitation and their analysis;
- delineation of catchment areas;
- bathymetric measurement of water channel depth;
- identification of water control structures including, operational condition and identification of reasons for non-operation of hydraulic structures;
- identification of highest flood level.

4.5.5.2 Methodology of Data Collection

Mainly two sources will be used for necessary data collection for hydrological study- primary and secondary.

Primary Sources

The physical feature and topographic survey will provide the primary data collected from the field. Information such as, local water reservoirs (pond, ditch, khal, beel and boar), both, perennial and seasonal will be collected from the field during physical feature survey. Blockage of rivers and khals will be detected by field visit.

Land level data to determine flow direction will be collected through land level survey developed into contour maps. This data will be immense use during determination of flood water conservation, drainage system design and water storage design. Besides, information will also be collected from maps produced by Geological Survey of Bangladesh, maps and reports prepared by BWDB, LGED etc.

Secondary Sources

A good amount of data will be gathered from secondary sources like, project reports of BWDB and other hydrological studies. Information about hydraulic structure for flood protection and irrigation will also come from BWDB.

4.5.5.3 Deliverables

After collection of all hydrological data and their analysis the consultant shall prepare a report containing the following:

- Condition and nature of encroachment and siltation of rivers and khals;
- The flow direction of rivers khals and their role in drainage of storm water discharge in the catchment areas ;
- condition of water control structures if any, their performance and the reasons for their non-operation;
- occurrence of flood and the highest flood level; areas affected by flooding ;
- long term, medium term and short term (100,50,20 and 5 years) flooding prediction;
- recommended measures for flood protection and mitigation;
- recommendations to protect khals and other waterbodies from encroachment; and conservation of large water retention areas.

The report will be supported by necessary maps, diagrams and data tables. All collected attribute and spatial hydrological data will be linked with other spatial data bases of the project.

4.5.6 Geological Study

The geological study is prior needed before the construction of any strategic installation for the purpose of (1) sustainable planning (2) designing and (3) maintenance of the infrastructures. Such study in one hand will support to develop the suitable land-use plan which might reduce the construction and maintenance cost of the infrastructure in other hand. In order to develop an environmental friendly plan and reducing the damage and loss caused by any natural hazard, the necessity of this study is the inevitable part of the development.

4.5.6.1 Issues

The project puts special attention to seismic hazard, vulnerability and risk assessment particularly its impact on densely populated urban areas. According to the terms of reference the consultant shall have to address four main issues,

- a. Earthquake hazard, vulnerability, risk and loss assessment for the project area
- b. Detailed building inventory of pourashavas and growth centres.
- c. Development of scenario based spatial earthquake contingency plan for urban areas
- d. Preparation of ward based spatial contingency plan for the project area

The aim of this work is to determine subsurface soil condition of the project area and evaluating of natural geological and hydro-meteorological hazards such as earthquake,

landslide and ground failure and integrate the consequence into the design of the infrastructure. The main objective will be achieved through accomplishment of the following sub-objectives:

- Geological engineering site characterization of the subsurface geological materials up to the depth of 30m;
- Seismic hazard assessment using engineering seismological information in and around the project area
- Finally prepared Landuse maps by considering all hazards.

4.5.6.2 Earthquake Vulnerability Study Methodology

The method of study can be divided into following components:

- 1) Collection of relevant existing data, topo sheets, reports, maps, satellite imageries of the study area;
- 2) Section of all the geotechnical and geophysical tests/survey location base on the existing data and geomorphological units of the project area;
- 3) Collection of both geotechnical and geophysical data in field. Following investigations given in **Table-4.17** that will be conducted for the preparation of engineering geological maps for the project area:

Table 4.20: Geotechnical and geophysical investigation will be carried-out in the project area

Name of Upazila	Area	Name of investigations			
		Borelogwith SPT (<i>borehole depth-30m</i>)	PS logging (<i>30m depth</i>)	MASW and SSMM (<i>30m depth</i>)	Single Microtremor (<i>Vs>100m depth</i>)
Shibchar	321.88 sqkm	60	11	15	15
Nawabganj	244.8 sq km	87	12	22	20
Dohar	161.49 sq km				
Total	728.17 sq km	147	23	37	35

- 4) Laboratory test of selective boreholes will be conducted for investigating geotechnical properties of soil samples.
- 5) Geophysical data (PS Logging, MASW, SSMM and Microtremor survey) analysis for calculating AVS30 will be done by using some types of advanced international software's.
- 6) Preparation of engineering geological map is to develop the geotechnical and geophysical characteristics of the soft sub-surface sedimentary deposits. In this investigation, the GIS technique, the advanced international software and hardware will be used, which makes the system's performance steady with good expansibility. These information are often used for foundation engineering, seismic hazard assessment. The

purpose of engineering geological investigations is to generate AVS30 maps for the targeted areas. The investigated area will be differentiated into number of potential grid sizes. AVS30 will be calculated for each grid of the targeted areas.

- 7) Seismic hazard assessment using engineering seismological information in and around the project area.

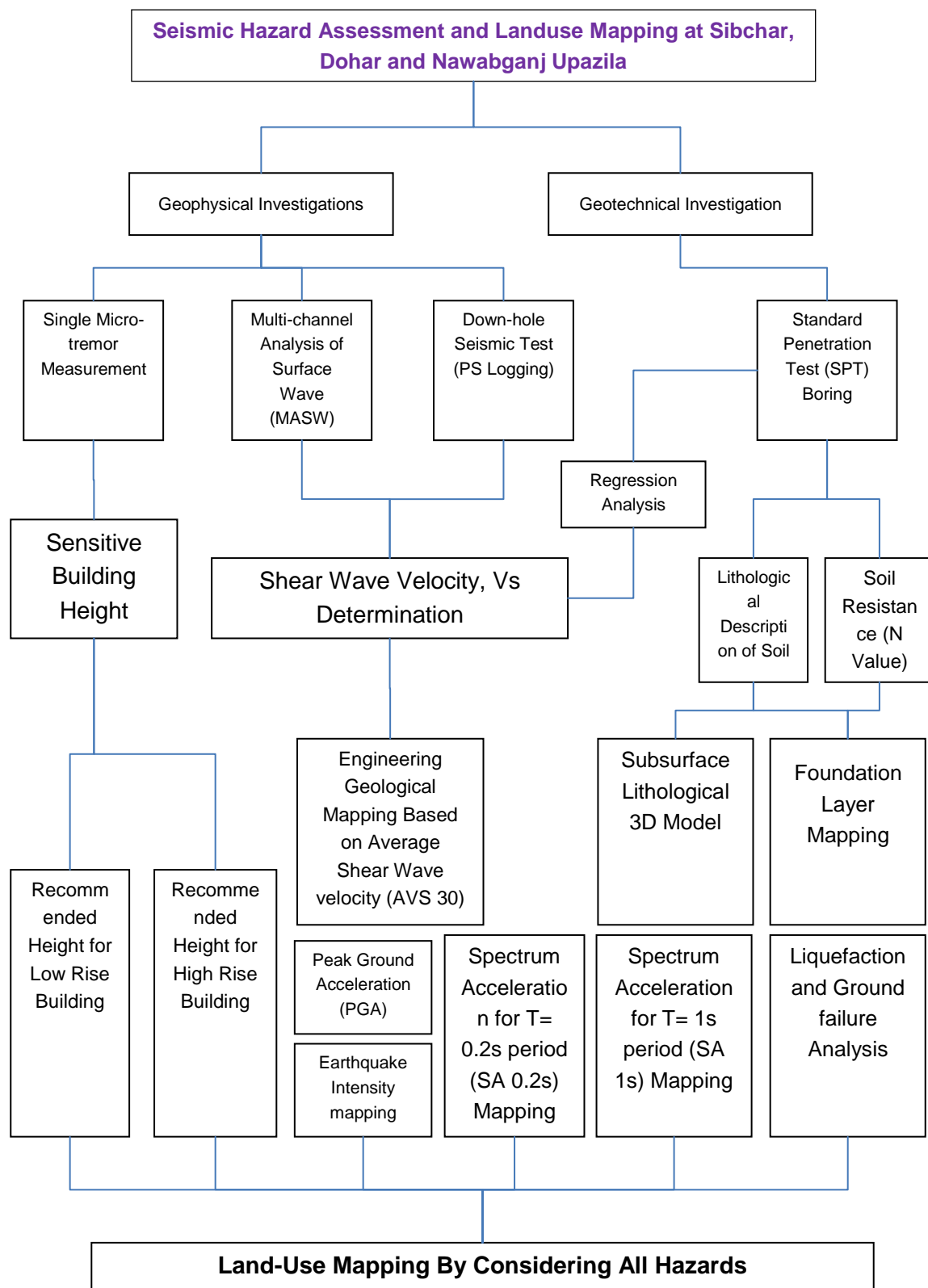


Figure 4.12: Flowchart showing the methodology of the works

- 8) Organization of workshop and seminar to present the research findings to different professionals.
- 9) Report writing.

Geophysical Investigation

Field geophysical investigation is conducted to achieve the purpose of seismic risk and damage assessment. Seismic site characterization by analysing seismic wave propagation velocity from acquired shallow seismic wave form data is the main objectives. P-S logging, Multi-Channel Analysis of Surface Wave (MASW) and Micro-tremor tools are widely used in this study.

General purposes of the geophysical survey are:

- To estimate shear wave velocity and measure soil/rock properties (i.e. shear modulus, bulk modulus, compressibility, and Poisson's ratio)
- To Seismic site response study
- Characterization of strong motion sites
- Utilize this information for seismic hazard analysis

Single Microtremor Measurement

Single microtremor is one of the geophysical tools that can be used for calculating the risk building height. Observation of microtremors can give useful information of dynamic properties of the site such as predominant period, amplitude, peak ground acceleration and shear wave velocity. Microtremors are the phenomenon of very small vibrations of the ground surface even during ordinary quiet time as a result of a complex stacking process of various waves propagating from remote man-made vibration sources caused by traffic systems or machineries in industrial plants and from natural vibrations caused by tidal and volcanic activities.

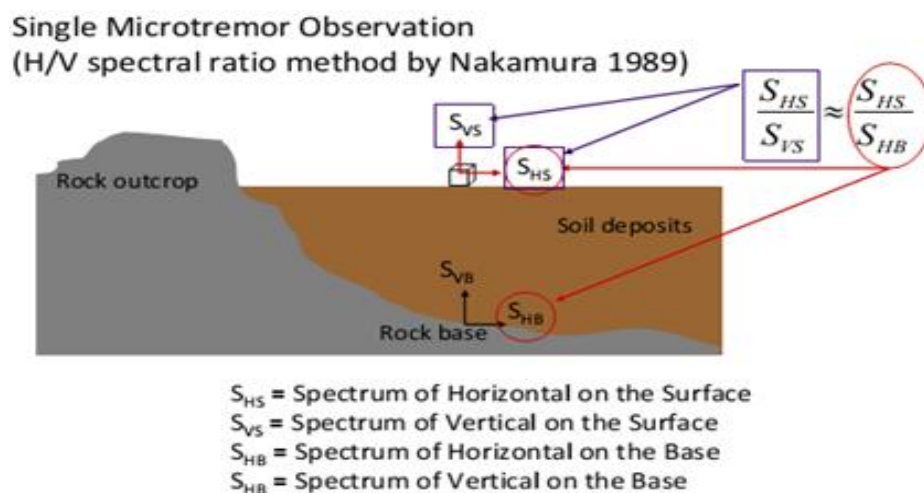


Figure 4.13: Fundamental of Single Microtremor observation

The microtremor equipment is set on the free surface on the ground without any minor tilting of the equipment. The N-S and E-W directions are properly maintained following the directions arrowed on the body of the equipment. The sampling frequency for all equipment is set at 200Hz. The low-pass filter of 40Hz is set in the data acquisition unit. Like the seismometer or accelerometer, the velocity sensor used can measure three components of vibrations: two horizontal and one vertical. The natural period of the sensor is 2 sec. A global positioning system (GPS) is used for recording the coordinates of the observation the available frequency response range for the sensor is 0.5-20Hz. sites. The length of record for each observation was 20~30 min. In this project this data acquisition system will be applied.

Multi-Channel Analysis of Surface Wave (MASW)

The recent and very popular method for computation of shear wave velocity is Multichannel Analysis of Surface Wave (MASW). This method is widely used for seismic micro zonation. A MASW is a seismic surface method, widely used for subsurface characterization and is increasingly being applied for seismic micro zonation and site response studies (Anbazhagan and Sitharam, 2008). It is also used for the geotechnical characterization of near surface materials (Park and Miller, 1999; Xia et al., 1999; Miller et al., 1999; Anbazhagan and Sitharam, 2008). MASW is used to identify the subsurface material boundaries, spatial and depth variations of weathered and engineering rocks (Anbazhagan and Sitharam, 2009). In this project, we will use the MASW system consisting of 12 to 24 channels Geode seismograph with 12 to 24 vertical geophones of 10 Hz capacity. The data acquisition parameters are given in **Table 4.18**

Table 4.18: Data Acquisition Parameters

Seismic refraction	
Number of channels	12 to 24
Geophone spacing	3m
Array length	36 to 69m
Sampling rate	1ms
Record length	2 sec
Natural frequency of Geophone	10 Hz
Source	8 kg hammer

As MASW is a non-invasive and low cost method, it can be used to estimate average shear velocity of the near surface materials up to the depth of 30 m.

Down-hole Seismic Test (PS Logging)

Seismic down-hole test is a direct measurement method for obtaining the shear wave velocity profile of soil stratum. The seismic downhole test aims to measure the travelling time of elastic wave from the ground surface to some arbitrary depths beneath the ground. The seismic wave is generated by striking a wooden plank by a sledge hammer. The plank is placed on the ground surface at around 1 m in horizontal direction from the top of borehole. The shear wave emanated from the plank is detected by a tri-axial geophone. The measurements were taken at every 1 m interval until the geophone is lowered to 30 m below ground surface.

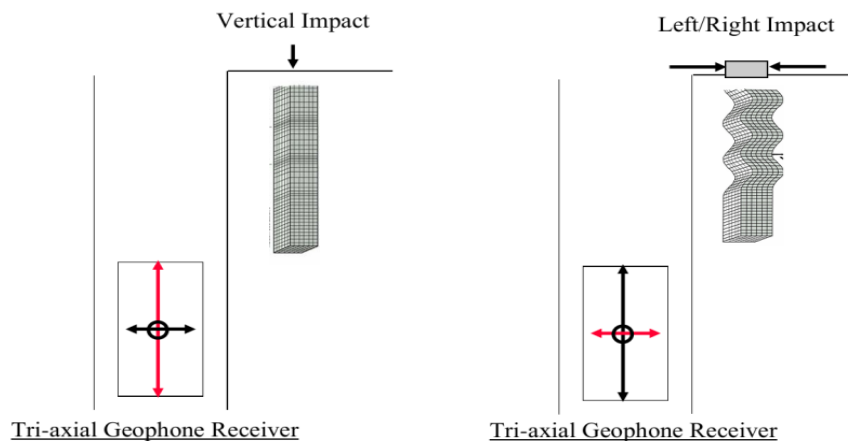
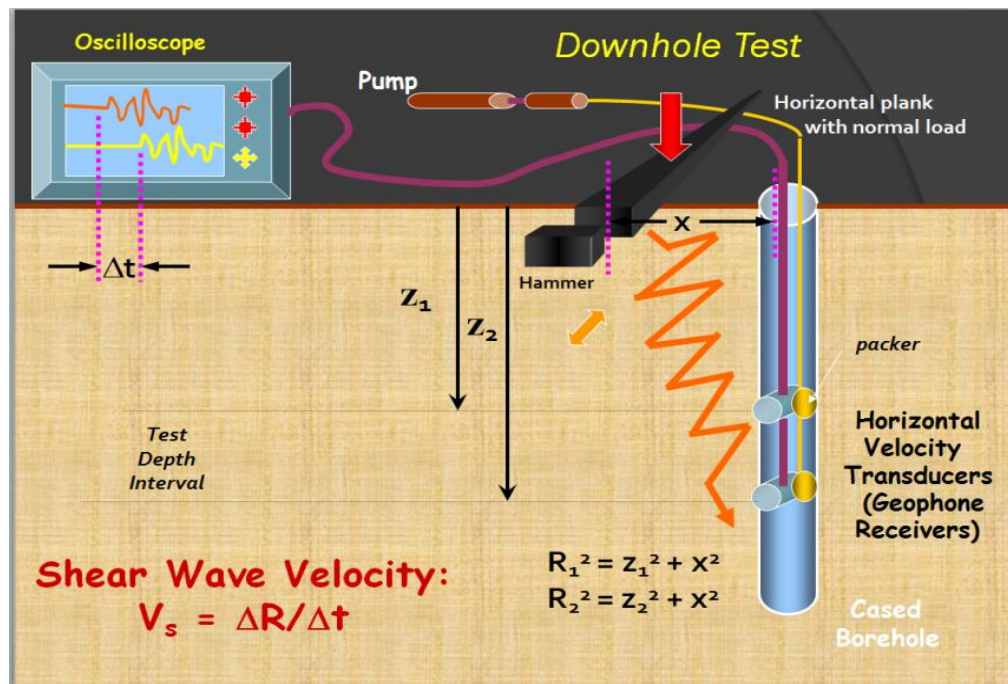


Figure 4.14: Detail test procedure and triaxial geophone behave of PS logging test

In Downhole Seismic Test (PS logging), this method will be used to calculate shear wave velocity for this project.

Geotechnical Investigation

Geotechnical investigations have become an essential component of every construction to ensure safety of human beings and materials. It includes a detailed investigation of the soil to determine the soil strength, composition, water content, and other important soil characteristics.

Geotechnical investigations are executed to acquire information regarding the physical characteristics of soil and rocks. The purpose of geotechnical investigations is to design earthworks and foundations for structures, and to execute earthwork repairs necessitated due to changes in the subsurface environment. A geotechnical examination includes surface and

subsurface exploration, soil sampling, and laboratory analysis. Geotechnical investigations are also known as foundation analysis, soil analysis, soil testing, soil mechanics, and subsurface investigation. The samples are examined prior to the development of the location. Geotechnical investigations have acquired substantial importance in preventing human and material damage due to the earthquakes, foundation cracks, and other catastrophes. Geotechnical investigations can be as simple as conducting only a visual assessment of the site or as detailed as a computer-aided study of the soil using laboratory tests.

Standard Penetration Testing (SPT)

The Standard Penetration Test (SPT) is one of the oldest and most common in situ tests used for soil exploration in soil mechanics and foundation engineering, because of the simplicity of the equipment and test procedures (Anbazhagan et al. 2012). Standard Penetration Test N values become very important in earthquake geotechnical engineering.

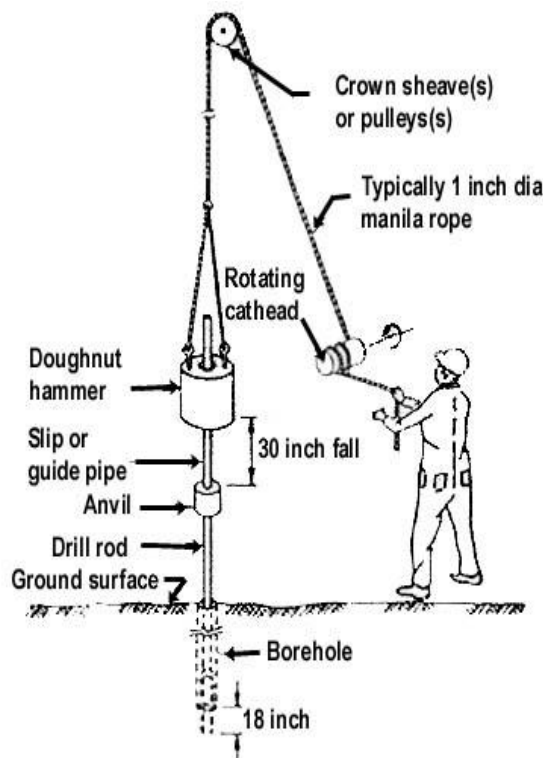


Figure 4.15: The SPT sampler in place in the boring with hammer, rope and cathead

In the field data acquisition, we will use the donut hammer with free fall release manually (pulling hammer rope by hand and dropping them after reaching marked height) and the rods length will be 10ft. The diameters of those bores will be 3 in and N values will be taken at every 1.5m interval.

Laboratory Testing

A wide variety of laboratory tests can be performed on soils to measure a wide variety of soil properties. Some soil properties are intrinsic to the composition of the soil matrix and are not affected by sample disturbance, while other properties depend on the structure of the soil as well as its composition, and can only be effectively tested on relatively undisturbed samples. Some soil tests measure direct properties of the soil, while others measure "index properties"

which provide useful information about the soil without directly measuring the property desired.

The Purpose, Standard Reference and Significance of the laboratory tests are mention in below table:

SL No	Name of Test	Purpose	Standard Reference	Significance
1	Grain Size Analysis (Sieve and Hydrometer Analysis)	This test is performed to determine the percentage of different grain sizes contained within a soil.	ASTM D 422 - Standard Test Method for Particle-Size Analysis of Soils	The distribution of different grain sizes affects the engineering properties of soil. Grain size analysis provides the grain size distribution, and it is required in classifying the soil.
2	Natural Moisture Content Determination	This test is performed to determine the water (moisture) content of soils. The water content is the ratio, expressed as a percentage, of the mass of "pore" or "free" water in a given mass of soil to the mass of the dry soil solids.	ASTM D 2216 - Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures	For many soils, the water content may be an extremely important index used for establishing the relationship between the way a soil behaves and its properties. The consistency of a fine-grained soil largely depends on its water content. The water content is also used in expressing the phase relationships of air, water, and solids in a volume of soil.
3	Atterberg Limits Determination	This lab is performed to determine the plastic and liquid limits of a fine grained soil.	ASTM D 4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils	The Swedish soil scientist Albert Atterberg originally defined seven "limits of consistency" to classify fine-grained soils, but in current engineering practice only two of the limits, the liquid and plastic limits, are commonly used.

SL No	Name of Test	Purpose	Standard Reference	Significance
4	Specific Gravity Determination	This lab is performed to determine the specific gravity of soil by using a pycnometer. Specific gravity is the ratio of the mass of unit volume of soil at a stated temperature to the mass of the same volume of gas-free distilled water at a stated temperature.	ASTM D 854-00 – Standard Test for Specific Gravity of Soil Solids by Water Pycnometer	The specific gravity of a soil is used in the phase relationship of air, water, and solids in a given volume of the soil.
5	Direct Shear Test	This test is performed to determine the consolidated-drained shear strength of a sandy to silty soil. The shear strength is one of the most important engineering properties of a soil, because it is required whenever a structure is dependent on the soil's shearing resistance.	ASTM D 3080 - Standard Test Method for Direct Shear Test of Soils Under Consolidated Drained Conditions	The direct shear test is one of the oldest strength tests for soils. In laboratory, a direct shear device will be used to determine the shear strength of cohesion less soil (i.e. angle of internal friction (f)).
6	Unconfined Compression strength Determination	The primary purpose of this test is to determine the unconfined compressive strength, which is then used to calculate the unconsolidated undrained shear strength of the clay under unconfined conditions.	ASTM D 2166 - Standard Test Method for Unconfined Compressive Strength of Cohesive Soil	For soils, the undrained shear strength (su) is necessary for the determination of the bearing capacity of foundations, dams, etc. The undrained shear strength (su) of clays is commonly determined from this test.

Average shear wave velocity (AVS 30) mapping and site response analysis

Shear wave velocity mapping is an essential component in seismic hazard and microzonation studies. The average shear wave velocity of the surface materials up to the depth of 30 m (AVS30) is directly related to the amplification of seismic waves at the site during an earthquake. In this study, the AVS 30 will be estimated using down-hole seismic test, Multi-channel Analysis of Surface Wave (MASW) and Vs founded from SPT-N values by applying an empirical relation. The average shear wave velocity (AVS30) of the subsurface soils will be estimated for the depth varies of 20m to 30 m from the ground surface and the subsurface soils and soil amplification factor will be categorized based on National Earthquake Hazards Reduction Program (NEHRP) and United Building codes (UBC) classification systems.

Seismic Hazard Assessment

Seismic hazard is a broad term used in a general sense to refer to the potentially damaging phenomena associated with earthquakes, such as ground shaking, liquefaction, landslides, and tsunamis. In the specific sense, seismic hazard is the likelihood, or probability, of experiencing a specified intensity of any damaging phenomenon at a particular site, or over a region, in some period of interest. The methodology for assessing the probability of seismic hazards grew out of an engineering need for better designs in the context of structural reliability, since such assessments are frequently made for the purpose of guiding decisions related to mitigating risk. However, the probabilistic method has also proven to be a compelling, structured framework for the explicit quantification of scientific uncertainties involved in the hazard estimation process. For preparation of seismic hazard map, historical earthquake data and damage information are needed. The response of the soil layers in-term of the amplification factor of the soft-soil need to be developed based on the engineering properties of the sub-soil. The main outcomes of the seismic hazard assessment are:

- a. Calculation of Peak Ground Acceleration (PGA), Peak Ground Velocity (PGV), Response Spectrum $S_a(T)$ of 5% damping at 0.3 and 1.0 second periods values of 10% exceedance probability during next 50 years for upper soft local soil by using these amplification factor which is very important for designing a new engineering structure.
- b. Liquefaction and Ground Failure Map is also conducted from PGA, PGV, water level and laboratory tests. Liquefaction is address by high-moderate- low zone in round from 100m*100m to 500m*500m grid size.


Resources Allocation





Resources allocations are listed below:

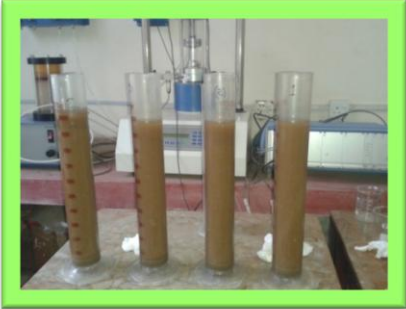

Geophysical Equipment

1.		Down-hole/Cross-hole Seismic Logger OLSON INSTRUMENTS, U.S.A.
2.		Multi-channel Analysis of Surface Wave (MASW) Survey Instrument.
3.		Microtremor Survey Instrument Japan

Geotechnical Instruments

1		Two sets of Standard Penetration Test Boring Rig
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Laboratory Instruments		
1		One Dimensional Consolidation Test Instrument ELE International
2		Direct Shear Test Instrument ELE International
3		Oven
4		Sieve shaker

5		Hydrometer
6		Liquid Limit and Plastic Limit Determination Instrument

Survey Instruments

1		Total Station
2		Garmin Hand GPS ETREX 30

4.5.6.3 Locations of the Geological Work

Locations of all work stations of each survey have been selected by making grid where Arc GIS software has been used. In SPT boring survey, each boring distances around 2 km from each other. In MASW survey, the distance of each workstation is about 4.5 km. And in Microtremor (single array) survey, approximately, 4 km grid has been prepared to select the each work location.

From the above different length of grid, the following numbers of test and/or survey have been found which are shown in figure 5 and 6.

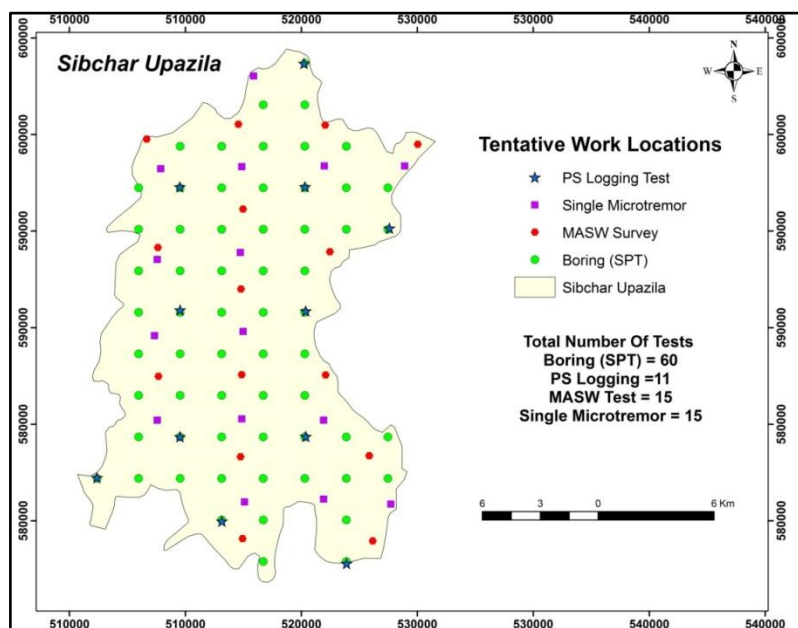


Figure 4.16: Tentative Geophysical and Geotechnical Test Locations at Sibchar Upazila

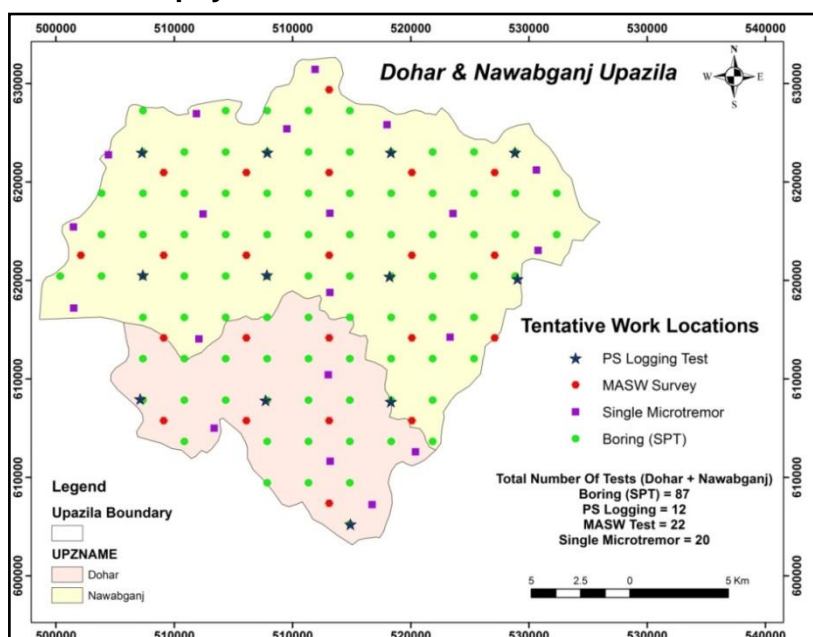


Figure 4.17: Tentative geophysical and geotechnical test locations at Dohar and Nawabganj Upazila

Schedule of Fieldwork

The survey category wise schedule has been given in the table below:

Description		1st-December- 2015 To 28th-march-2016															
		1st month				2nd month				3rd month				4th month			
		Weeks				Weeks				Weeks				Weeks			
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th
In situ	Site Selection for Geotechnical and Geophysical Works																
	Standard Penetration Tests (SPTs) Boring																
	Drilling of boreholes and casing by PVC pipe for conducting PS logging test																
	Conduct PS logging test (Down-hole seismic test)																
	Conduct Multi-channel analysis of surface wave (MASW)																
	Conduct single microtremor measurement																
In Laboratory	Grain Size Analysis																
	Natural Moisture Content Determination																
	Atterberg Limits Determination																
	Specific Gravity Determination																
	Direct Shear Test																
	Unconfined Compression strength Determination																
Data analysis and Interpolations	PS logging, MASW and single microtremor data analysis																
	AVS 30 determination in all locations and preparing AVS 30 map																
	Seismic hazard assessment and prepared related maps																
	Report Finalization																

4.5.6.4 Deliverables/Outcome from the Study

The ultimate target is to develop the risk-informed and environment friendly physical plan based on the below mentioned outcomes. These outcomes shall further guide to develop the design of the infrastructures addressing their risk reduction aspects. The list of Outcome / Deliverable maps is given below.

1. Engineering Geology

- a. Geological and geomorphologic map preparation of the study area
- b. Regional morphotectonic and neotectonic mapping for potential earthquake source area identification
- c. Subsurface lithological 3D model
- d. Foundation layer map which showing the depth of the foundation from existing ground level for footing.

2. Seismic Vulnerability, Damage and Risk Assessment

- a. Engineering geological mapping based on average shear wave velocity up to depth 30m (AVS 30).
- b. Peak Ground Acceleration (PGA) map both in Base rock and local soil (depth 30m).
- c. Spectrum Acceleration for T= 0.2s period (SA 0.2s) map both in Base rock and local soil (depth 30m).
- d. Spectrum Acceleration for T= 1s period (SA 1s) map both in Base rock and local soil (depth 30m).
- e. Liquefaction and Ground failure maps.

3. Hazard Microzonation Maps

- a. Earthquake Intensity maps.
- b. Sensibility maps for both high rise building and low rise building.
- c. Recommended building height maps for both high rise building and low rise building
- d. Land use maps by considering all hazards

4.5.7 Study on Demography, Migration and Growth of Human Settlement

4.5.7.1 Issues

Demographic study will concentrate on population related issues, like

- population growth and area wise size of population;
- area wise density of population;
- family size, age group of population, gender;
- in and out migration;
- population projection for the project period; pattern of growth of homestead and Settlement.

4.5.7.2 Methodology of Data Collection

Almost all the data will be gathered from secondary sources, like, BBS Population census reports. Some data about family issues will be collected through household based sample survey; growth and pattern of human settlement will be studied directly in the field.

4.5.7.3 Deliverables

After the study the consultant shall produce a report containing analysis of population over the upazila-urban and rural, increase of density of population ; working age group population; status of in and out migration; estimation of future population. The report would be supported by charts, figures, data tables and diagrams.

4.5.8 Study of Social Infrastructure

Growth in any area is promoted through development of physical and social infrastructure. Social infrastructures are, education, religious, recreation and sports, community and socio-cultural facilities, etc.

4.5.8.1 Issues

The consultant shall collect data on availability of social infrastructure and make analysis of the existing conditions to identify their lacking. The data collection will include, but not limited to the following,

- the number and category of education facilities with location;
- number of students and teachers including teacher-student ratio;
- the number and type of religious facilities;
- availability of other different kinds of socio-cultural and community establishment and their functions;

4.5.8.2 Methodology of Data Collection

Both, primary and secondary sources will be used to collect data on physical and social infrastructure facilities.

The primary sources of information for physical infrastructure will be pourashava, union parishad, UNO Office, upazila education office, Upazila Social Welfare Office and direct field visit. A number of about social infrastructure will come from household based socio-economic survey.

Secondary sources of social infrastructure data are, reference materials, like, upazila and Pourashava at a glance, reports of concerned agencies, National ADP, reports of BANBEIS, BBS etc.

For some information it will be necessary to visit the concerned establishments, like, number of teachers and students in education facilities, number of doctor and other

staff and the number of patients treated monthly, availability of doctors in the public sector health facilities, number and performance of private health facilities.

4.5.8.3 Deliverables

Following data collection the consultant will submit a report with assessment of the available social infrastructure in the upazila. There will be areas wise inventory of available facilities. The report will identify the,

- the deprived areas with respect to education facilities,
- identify and comparison teacher-student ratio with respect to standard;
- identification of problems of education facilities;
- religious facilities and their problems;
- social and cultural activities taking place in the upazila and their role in social development.

The report will be enriched with necessary maps, data tables, charts, etc. Findings of the study will be used to prepare recommendations to improve situation in deprived areas subsequently.

4.5.9 Archaeological Study

Every upazila has more or less some archaeological resources. Some of them are important as tourist attraction and heritage, while some are the important to religious devotees.

4.5.9.1 Issues

Data on archaeological resources include location of:

- old mosque and mandir, akhra;
- old Zamindar House/Dak Bangla;
- architecturally important house/monument;
- old and large dighi;
- other important places and establishment that carry tourist or heritage importance.

The consultant will also collect detailed design, history of feature.

4.5.9.2 Methodology of Data Collection

Primary information about heritage will be collected from UNO Office and consultation with the local people, local leaders. Then a direct visit to the sites will be undertaken to assess the condition of the relic, present use, preserve ability, etc.

4.5.9.3 Deliverables

After necessary data collection the consultant shall prepare a detailed report with supporting photograph and data. The report will describe the present condition of the heritage, possible reason of decline; importance of the establishment/site from

heritage and tourist point of view; cost and management issues about their preservation. All data collected will be linked with the other spatial database of the project.

4.5.10 Environment and Pollution Study

Pollutions are usually generated by mills and factories that use pollutant chemical in processing products. Polluted area also generated in the agricultural fields due to use of chemical fertiliser. Another kind of pollution is generated from natural sources, like arsenic.

4.5.10.1 Issues

The consultant will,

- make assessment of overall environment of the upazila from different perspectives;
- identify polluting industries in the area and the pollutants they are generating;
- identify tube wells in the upazila whose water is contaminated by arsenic;
- identify contamination of soil due to excessive use of chemical fertilizer and pesticides in the farm lands.

4.5.10.2 Methodology of Data Collection

The following methodology will be used for pollution study,

- polluting industries will be identified during industrial survey to be conducted over the entire upazila;
- it will be identified with the help of DoE what kind of pollutants are being produced by the factories and how harmful they are for human being;
- where the pollutants are dumped and what the impacts are on the environment due to dumping;
- data about arsenic contaminated tube well will be identified Public Health Engineering Department in collaboration with upazila engineer.

4.5.10.3 Deliverables

After collection, the data will be analyzed and a report will be prepared. The report will,

- unveil the level of pollution, if any, is generated by the polluting industries;
- its impact on local ecology, environment and biodiversity;
- how local people are physically and economically affected by pollution;
- the report will also identify the health impacts of arsenic contamination of tube well water;
- it will show what alternative measures are being taken to supply drinking water to the arsenic prone area people;
- how much farm lands are being affected due to over use of chemical fertilizer and their impact on human health.

There will be recommendations about easing the effects of pollution and prevention of creation of further pollution.

4.5.11 Study on Urban Services

Urban services data will be collected mainly from the upazila town. They will cover, road, bridge, culvert, embankment, power supply, drainage, water supply, waste management, etc.

4.5.11.1 Issues

The consultant shall collect data on availability of physical and social infrastructure and make analysis of the existing conditions to identify their lacking. The data collection will include, but not limited to the following,

- Number of and length of roads in the pourashava;
- Inventory of existing bridges and culverts;
- Inventory of power supply in pourashava wards;
- Access to water supply by pourashava people and the type of facility used;
- Access to drainage by the urban dwellers and the problems of waterlogging;
- Solid waste management and its problems in urban areas;
- Access to telecommunication facilities.

4.5.11.2 Methodology of Data Collection

Both, primary and secondary sources will be used to collect data on physical and social infrastructure facilities. The primary sources of information for physical infrastructure will be pourashava, and UNO Office, direct field visit. Some information will come from the questionnaire based households survey. Secondary sources of urban services data are, reference materials, like, upazila and Pourashava at a glance, reports of concerned agencies, National ADP, Local PWDB Office, local BTCL Exchange, if any, etc. However, the most important source will be the physical feature survey findings.

4.5.11.3 Deliverables

Following data collection the consultant will submit a report with assessment of the available urban services and infrastructure in the pourashava. There will be areas wise inventory of facilities. The report will identify the deprived areas, problems of facilities. The report will be enriched with necessary maps, data tables, charts, etc. Findings of the study will be used to prepare recommendations to improve situation in deprived areas subsequently.

4.5.12 Health Facilities including Community Health Facilities

Every Upazila has a number of public and private sector health facilities most of which are concentrated in urban areas of the upazila. Under health facilities study the following issues will be considered.

4.5.12.1 Issues

The following information will be collected on health facilities.

- all public sector health facilities with location, bed, staff (doctor,nurse,medical assistant) available in the upazila;
- data on availability of staff and facilities in upazila health complex, union family welfare centre;
- availability of doctors in health complex and family welfare centres;
- medical equipment available in health facilities;
- average number of patients treated each day/month;
- availability of medicine;
- problems from the view point of service recipients.
- number and location of NGO operated medical facilities with type of service;
- number and location of private medical facilities, charges, facilities available.

4.5.12.2 Methodology of Data Collection

Data for health facilities will be collected in two ways. First, directly from the health facilities using structured formats; second, from secondary sources, like, UNO Office, Upazila Health Complex, NGOs. Some case studies may be conducted on the medical service recipients to assess quality of service offered; local journalists can also be a good source of information.

4.5.12.3 Deliverables

On completion of data collection the consultant will prepare a report on health facilities and their services covering such issues as,

- adequacy of public and private sector hospital beds compared to total upazila population;
- essential medical equipment availability in clinics and hospitals (population-bed ratio);
- choice of patients about public and private facility-reasons;
- quality of service in health establishments- opinion of the patients;
- availability of doctor in public sector health facilities;
- identification of deprived areas.

The report will be supported by necessary data tables and photographs. The report will enable to make recommendations in the plan about improvement of health services and facilities.

4.5.13 Public Space and Open Space Recreation

Public space and recreational open spaces are important element in everyday life, particularly, in urban areas. The project will study the various issues regarding public space and recreational open space.

4.5.13.1 Issues

The issues that would be covered under public space and recreational open space will cover .but not limited to the following,

- inventory and detailed information of public space and recreational open space in the upazila;
- category and use of public open space, if any;
- active opens pace (play field) in educational institutions and for community use;
- availability of park or incidental open space and different kinds of public open space;
- standard of recreational open space available compared to the size of population in urban areas;
- provision of recreational open space in pourashava master plan.

4.5.13.2 Methodology of Data Collection

Most of the data will be procured during physical feature survey. The data will be supplement by direct field visit as well. The area of open space, owner or management and actual use will be identified and authenticated by direct field visit. Large open space will be initially identified from satellite imagery r and confirm by ground truthing.

4.5.13.3 Deliverables

The consultant shall prepare a study report on public space and recreational open space highlighting such issues as,

- categories of open space available;
- status of public space and recreational opens space in the upazila;
- problems of providing open space;
- management of public and open space and their problems;
- benefits of open space in urban life and
- aset of recommendations about providing and promoting public and recreational open space.

The report will be equipped with necessary data and maps showing location of public and recreational open space in the upazila.

4.6 Methodology for Plan Preparation

Plan preparation activities have two phases. In the first phase some pre-planning activities need to be done before embarking on planning tasks. The two pre-planning tasks are population projection and fixation of planning standards.

4.6.1 Plan Preparation

The consultant has been assigned to prepare five categories of plan for the project upazilas from broad based strategic plans to micro level action area plans.

4.6.1.1 Sub-Regional Plan

Sub-regional plan is strategic plan covering the entire project upazila plus surrounding upazilas that have relation with the subject upazilas. The plan will have 20 year duration and will aim at over all development of the sub-region focusing on environmental conservation.

a. Methodology

The sub-regional planning process moves through collection of a wide variety of data, their review and analysis, review of national policies and plan and formulation of development policies and strategies.

I. Study and Review of Existing Situation of the Sub-region

Following studies will be carried out for drawing the present picture of the sub-region including identification of problems and prospects.

▪ Demographic Study

Demographic study will be done about population growth and population distribution within the upazila also the age group of population and occupation. These studies will enable taking up decisions on population control, population re-distribution employment, employment promotion. The study will also make project of population to see the impact of population on the land and the local economy and take up necessary measures to counter them.

Lands Study

Lands study will cover a wide range of issues related to land. These are:

- **Broad Land Use Pattern** of the upazila categorised into agriculture, homestead, waterbody and the urban and commercial activities in particular. Study and review of the broad land use pattern of the project upazila and compare them with its adjacent upazilas will reveal how they can supplement each other. This study will help supplement each other land use in a productive manner. This will be particularly useful for utilizing each other's facilities and outputs. For example, if there are large waterbodies in one upazila that can be used for fish cultivation, the surplus fish can be supplied to the adjacent upazilas to meet their demands. In this way the sub-regional upazilas can benefitted economically.
- **Identification of major infrastructure and services** in subject upazilas that can be used for sub-regional development.
- **Determination of hierarchy of settlements** in the sub-region for determining service delivery pattern to the hinterland.
- **Determination of Upazila Settlement Pattern** to understand the proportion of land under settlements, the way the settlement are being developed, the

area coverage, etc. This will help draw up policies about redirecting the growth of settlements and housing in order to safeguard farm land against depletion to meeting the growing need of homestead by new families.

Study and Review of Hinterlands and Economic and Socio-cultural Interdependency of the Upazilas

Study will be carried out to find out the economic hinterland of the sub-regional upazila and the economic-and socio-cultural interdependency among the sub-regional upazilas. This study will determine the economic interdependency of the upazilas with respect to agricultural and industrial products, professional and specialized services, educational, urban services and labour supply. Based on the study policy decision will be taken to promote economy and employment in the sub-regional upazilas.

Study on Sub-Regional Level Major Infrastructure

Consultant shall unveil the sub-regional level connectivity within the upazilas and the outside region by and waterway; it will also look into the, telecommunication network, etc. The connectivity study will enable identification of facilities services that can be used to boost mobility of goods and passengers in a better way and thus promote sub-regional development.

Study of Major Sub-Regional Economic Activities

Major economic activities of the sub-regional upazilas will be studied including agriculture, industry, livestock and poultry to identify the upazilas that are better off and the upazilas are worse off so that policy decisions can be drawn up to balance development by promoting inter upazila exchange of goods and services.

Study on Hydrology

Hydrological study will the flow and movement of local rivers and their tributaries, flooding and inundation; hydrodynamics, morphological, geomorphological developments; impact of FCD and FCDI projects (if any) at sub-regional level.

Disasters and their Management

Disaster occurring regularly and the potential disasters will be studied including their impacts on life and property; mitigation measures undertaken to ease impacts and for rehabilitation. The disasters will include, flood, draught, arsenic, cyclone, river erosion. Study will also be done on potential hazard like,

- Earthquake
- Water Resources
- Environment
- Connectivity
- Heritage

Study on Urban Basic Services

Urban services are important determinants of urban development through promotion of liveability in urban areas. The consultant shall study housing, road, sanitation, water supply, education and health in urban areas of the sub-regional upazilas and determine adequacy of facilities and determine policy decisions to improve services and make urban places attractive places of investment. It will also indicate the facilities that can be shared by other upazilas. All attribute and spatial data will be linked with other databases of the project.

II. Analysis of Problems and Opportunities

Collected data will be analysed and a comparative study of sub-regional upazilas will be carried out to identify problems and opportunities in each upazila. These analyses will be useful for drawing up policy proposals for sub-regional development.

III. Drawing Policy Proposals to Ameliorate Problems and Promote Sub-Regional Development

Policy proposals will include among others, the following,

- Sub-regional water resources management;
- Regional broad land use zoning
- Valuable land conservation ;
- Connectivity improvement to promote mobility and better distribution of economic goods and services;
- Improvement of urban basic services to encourage urbanisation and promote urban based economic activities;
- Disaster and climate change study
- Sub-regional input output analysis of subject upazilas.

b. Deliverables

Ten copies of Sub-regional Plan comprising a report supported by data and maps will be submitted.

4.6.1.2 Structure Plan

Structure Plan is also a strategic plan that sets down policy proposals and major developments in indicative form. Following methodology shows the sequential activities that will be performed to prepare upazila structure plan.

a. Methodology

Components of the Structure Planning

Primarily structure planning comprises three components-

1. Study for review of existing conditions;
2. Analysis of findings and
3. Review of national policies and strategies

4. Formulation of Structure Plan strategies and policies.

1. Study for Review of Existing Conditions

Sectoral Analysis to Identify Problems and Opportunities

Study on various sectors will be done to identify problems and issues including the opportunities they offer for development of the upazila.

- **Economic study** will focus on agriculture, industry, employment and investment;
- **Demography** study will deal with such issues as, population growth, age and size of population, family size, gender, occupation, literacy rate etc.;
- **Housing Study** will concern, type of housing, area coverage by housing units, services available, rental housing and house rent, homelessness, slum and squatter dwellers;
- **Transport and communication study** will be done on such issues as, road and waterway linkage within the upazila and outside destinations, condition of terminals and ghats, quality of roads, mode of transport in operation; problems of mobility and transportation of goods etc.
- **Agricultural study** will be done to ascertain the type and amount of crop and non-crop products grown, cost of production, marketing, availability of labour, irrigation facilities; share cropping etc. Agricultural study will also cover fishery, livestock and poultry-their current status and problems;
- **Study on land** will be carried out to identify land use changes taking place over the years, conversion of farm land into non-farm use; broad land use classes in the upazila;
- **Study on environmental risks** will be done on hazards, such as, flood, arsenic, earthquake, draught etc., to identify the vulnerability involved with such disasters that may cause loss to life and property.

Review of Existing Physical and Social Infrastructure of the Upazila

Available physical infrastructure such as, road, bridge, embankment, power supply, water supply, sanitation of the entire upazila will be studied. Study will also be done on social infrastructure, like, education and health facilities. The studies will identify the adequacy of facilities and their service quality with respect to service recipients; also identify problems of facilities and services.

Hydrological Study

Being a riverine country hydrological study is important for any rural based development plan. The study is intended to cover such issues as,

- hydrodynamic characteristics of rivers;
- morphological characteristics of the area concerned;
- geomorphologic changes occurring in the area over the years'
- dominant hydrodynamic and morphologic process going on.

2. Analysis of Findings

Studies will be followed by review and analysis of information gathered from studies and secondary sources. The analysis will focus on such issues as,

- handicaps to economic growth of the upazila -investment and employment in agriculture and non-agriculture sectors;
- problems of intra and inter-regional connectivity;
- status of urban basic services, problems and issues;
- surplus labour force and rural unemployment;
- urban and rural social and physical facilities, problems and issues.

Many other issues apart from the above will come under analysis. Analysis of findings will be followed by prioritization of issues and sectors for immediate intervention and the others to be followed.

Review of National Policies and Strategies

National level policies and strategies will be one of the guiding principles for drawing up structure plan policies. Review of national policies will include, agricultural policy, industrial policy, water management policy, SME Policy, environmental policy, transport policy. These policies will be adhered during formulation of upazila structure plan policies.

Formulation of Upazila Development Strategy and Policy

On review and analysis of existing conditions of the upazila and consideration of the national policies the consultant shall work out upazila development policies and strategies. The structure plan strategies and policies be worked out that will focus on such issues as,

- economic development-agriculture, industry;
- transport sector development;
- development of services and facilities-water, power, sanitation etc.;
- social infrastructure-education, health etc..

The plan will make strategic land use zoning of the upazila classifying areas into, main flood flow and sub-flood flow, water supply conservation area, mixed use planned zone, mixed use spontaneous zone, rural settlement, agriculture, industrial area, and restricted area. The policy proposals will include transport and communication, basic services, agriculture and industry, employment and investment. Indicative proposals will be made for major infrastructure.

Structure Plan's strategies and policies to guide long term development of the upazila and coordinate development in the urban area and serve as guide to development control. It will also serve as a framework for local level plans.

The structure plan will also identify priority areas to serve as boosters to upazila development through promotion employment. Structure plan will serve as the framework for subsequent local level planning exercises.

Implementation

The structure plan at the end prepares a set of recommendations to implement the policies and strategies developed.

b. Deliverables

As deliverable, ten copies of a plan report will be submitted containing the following:

- The plan will be supported by maps, data tables and diagrams.
- Submission of a composite structure plan map at RF 1: 10000 scale;
- Five hard copies of plan along with soft copies of report and plan will be submitted.

5.6.1.3 Urban Area Plan

Urban Area Plan concerned urban part of the upazila that is mainly the upazila headquarters that may be covered by a pourashava or not. The following methodology will be followed in drawing up the urban area plan.

a. Methodology

Delineation of Urban Area and Identification of the Size of Population

Prior to embarking on preparing urban area plan, the planning area will be delineated in consultation with the Pourashava. In a upazila with pourashava is usually the pourashava boundary that constitutes the planning area. But sometimes pourashava may have intention to extend its area. So the planning area may have to go beyond the pourashava boundary. It might also be reverse, in case the pourashava area is too large. In case of Nawabganj Upazila, where there is no pourashava, the planning area will be decided in consultation with the upazila authority.

Next, there will be population analysis- its growth trend, gender and age classes and density, etc.

Review of Existing Land Use Pattern

Existing land use pattern of the pourashava/upazila town will be reviewed to ascertain the pattern of land use development, anomalies and problems arising from incompatible land uses. This review will help drawing up a land use plan to streamline and guide future land use development of the town.

Study and Review of Existing Physical and Social Infrastructure and Services and Identification of their Problems

The consultant shall study the available physical and social infrastructure and their problems. The physical infrastructure shall include among others, road network, electricity, water supply, sanitation and solid waste management; recreational open

space facilities; bazaar. Important social infrastructure to be studied will be education and health facilities, library and community centre.

Available facilities will be studied to determine their adequacy with respect to the size of population, problems of the facilities and services in order to suggest improvements.

Traffic Survey and Study and Problem Analysis

Traffic volume survey conducted in the streets of urban area of the upazila will identify the volume of traffic, under variety of modes that move in the street. Origin and destination (O-D) survey will reveal the origin and destination of traffic. With the analysis of traffic volume data decisions can be taken about road infrastructure improvement and traffic management to ensure smooth movement of traffic.

O-D survey finding will assist in taking decision about developing bypass for the traffic that do not have any business in the town or want to bypass the busy town area.

Existing roads will be thoroughly studied including connectivity with different parts of the upazila and important destinations outside the upazila. Study will also be done on right of way of the roads and the quality of roads. This information will be used to identify road problems including inadequacy of connectivity, need for alternative roads to improve mobility of goods and people across the upazila and promote economic activities and employment.

Study of Economic Activities

The consultant shall study intensively the economic activities pursued in the town including trading-wholesale and retail, industrial activities in operation, informal economic activities; sources of capital investment; performance of institutional and non-institutional credit agencies. The problems of investment will be identified. The study will also evaluate the role of the town in shaping the upazila economy.

Evaluation of Urban Basic Services

Liveability and functionality of an urban centre is determined by how well it is served by the basic urban services. The basic urban services include water supply, electricity, drainage, sanitation and solid waste management. Each of these issues will be intensively studied to reveal their deficiency, problems of supply against their demand.

Population Projection for Next 10 years

The next important phase of planning will be projection of population for next 10 years that is the end of planning period. This projected population will serve as the basis for determining the planning standards for various urban services to be provided in the urban area plan.

Determination of Planning Standards

Planning standards are necessary to determine the number, area or volume of service facilities needed for the projected population. The planning standards are usually determined following standards already in practice in the country or elsewhere in the world. The projected population of the urban area serves as the basis for providing services and facilities using the planning standards.

Formulation of Urban Area Development Plan Proposals

On completion of studies and analysis of situations and identification of problems, issues and needs the consultant shall embark upon development plan formulation. The major components of the urban area plan proposals will cover,

- land use plan;
- infrastructure and communication plan;
- utility services plan;
- environment including drainage improvement plan;
- multi-sector investment plan;
- plan implementation measures.

b. Deliverables

The deliverables under urban area plan will include but not limited to the following:

- Urban Area Plan containing a report with supporting maps and data;
- A Composite Plan map of RF 1: 3960 scale
- A proposed road network plan of RF 1: 1980 scale.
- A proposed line services network plan of RF 1: 1980 scale.
- A proposed land use plan map of RF 1: 3960 scale.
- A proposed community services plan map of RF 1: 3960 scale.
- Ten hard copies of each category of plan along with soft copies of report and the plan.

5.6.1.4 Rural Area Plan

Rural area plan is a strategic plan to be proposed for a 20 year period that would lay down strategies and policies for rural area development. The planning proceeds in the following manner.

a. Methodology

For evaluation of existing conditions and identification of problems the following studies will be conducted.

Inventory and Evaluation of Existing Physical and Social Infrastructure

Inventory of available physical and social infrastructure will be carried out in order to evaluate them in respect of need of the rural population. Inventory and evaluation will be conducted on union and village basis.

The physical infrastructure will include road, bridge and culvert, embankment, canal; while social infrastructure will include education facilities of different types, medical facilities, post office, banking/money transaction facilities.

These infrastructure services will be evaluated in respect people's needs; problems of providing the infrastructure; role of physical and social infrastructure in rural area development.

Review and Evaluation of Existing Land Use Pattern

Land use pattern indicates utilisation of land for various human uses. Land is an extremely resource in Bangladesh. Its utilisation must be made very carefully as it impacts country's food security. Increasing population demands more land for habitation and other human activities. These lands are procured from farm lands. It is stated that about 1% of the country's land is being converted from agriculture to non-agriculture, which is alarming. Evaluating existing land use pattern and comparing it with earlier land use data it will be possible to determine the rate of land use conversion in the upazila. This will help drawing up policy proposals to impose restriction on land use conversion. By land use survey it would be possible to know the proportion of land under various uses-agriculture, homestead, water body, fallow.

Sectoral Analysis to Identify Problems and Opportunities

Analysis of different sectors of the rural area-economy, demography, housing, transport and communication, basic services, etc., will be carried out to identify their problems and opportunities. Problems will be addressed through improvement proposals, while opportunities will be utilised as potentialities of the rural area for its development.

Study of Economic Activities and their Problems and Potentialities

The primary means of living of the rural area people is the agriculture. Other activities include, trading, cottage industry, fishing and service activities. The consultant shall make thorough study of the rural economy in order to identify its problems and find out what potentialities it has that can be taken care of to boost rural economy of the upazila. Agriculture sector will be thoroughly studied with respect to problems of crop production, marketing, cost of production, labour availability; landlessness. Particular attention will be given to the utilisation of surplus manpower released by the rural sector annually.

Study on Transport and Communication

Transport and communication plays a vital role in the development process of any area. Good connectivity increases exchange of goods and services that promotes trading and production finally leading to employment and income. The consultant shall intensively look into the rural area connectivity by road and waterway with the upazila and the district headquarters and other important places within and outside

the upazila. Appraisal will include road link, quality of rural roads, mode of traffic on roads; waterway connectivity type, condition of service and ghats and their problems. Evaluation of existing condition will enable to make proposals for improvement of the situation in terms of new road link, improvement of existing roads, waterway ghats, and ferry services across the rivers.

Review of National Policies, Strategies and Plans

National development policies are important guidelines to formulate development plan of any area. There are important national policies, strategies and plans that are worth consideration during formulation of rural area plan. The policies, strategies and plan that would be reviewed will include the following:

- Sixth Five Year Plan;
- National Agricultural Policy
- National Land Use Policy
- Poverty Reduction Strategy Paper (PRSP)
- Millennium Development Goals and Bangladesh
- Disaster Management Policy
- National Biodiversity Strategy and Action Plan for BGD, 2004
- SME Policy 2005
- Bangladesh Climate Change Strategy and Act Plan, 2009
- Bangladesh Water Act, 2013
- National Water Management Plan, 2004
- National Water Management Policy, 1998
- National Sanitation Strategy.

These policies and plans will provide important feedbacks and guidelines to draw up rural area development plan policies and strategies.

Formulation of Development Strategy and Policy Options

On completion of studies and reviews efforts will be directed towards formulation of rural area plan strategies and policies that will primarily aim at boosting rural development. The strategies and policies will be focused, particularly, on the following issues,

- raising farm family income through development of agricultural production with improved farming and marketing of farm products;
- improvement of connectivity with growth centres as marketing points within and outside the upazila;
- promotion of non-farm investment for generating new employment for absorbing surplus rural labour force;
- providing physical and social infrastructure to improve liability and human development including promotion of education and health;

- promotion of new sources of financing farm and non-farm investment initiatives;
- determination of priority areas of investment;
- conservation of farm land against increasing demand for farm land for non-farm use

Plan Execution Measures

Recommendations will be set to indicate ways and means to for execution of the policy recommendations.

b. Deliverables

As deliverables of the rural area plan the consultant shall supply the following:

- Rural Area Plan containing a report with supporting maps and data;
- A set of Union level Composite Plan map of RF 1: 3960 scale
- A proposed Union level road network plan of RF 1: 3960 scale.
- A proposed Union level land use plan map of RF 1: 3960 scale.
- A proposed social/community services plan map of RF 1: 3960 scale.
- Ten hard copies of each category of plan along with soft copies of report and plan will be submitted.

4.6.1.5 Action Area Plan

Action area plan is usually prepared for local areas under the framework of a higher level plan. However, in terms of ToR of the current project action area plan is in fact not a conventional type of plan, rather it is a process to select priority projects for implementation during the first five years of the structure plan. In this sense its typology is absolutely different from what the other agencies (like LGED) are preparing in the name of 'action area plan'.

a. Methodology

Under the current project action area plan or project formulation will be preceded by a number of actions as stated below.

Area Coverage of Action Area Plan

The project selection under action area plan will cover the entire upazila including pourashava and union territories.

Considerations for Project Selection

For project selection the following documents and issues will be taken into consideration:

- **Structure Plan** strategies and policy proposals will be reviewed and first five year structure plan priorities will be given importance.
- **Urban Area Plan** development proposals will be reviewed for priority project selection for urban area.

- **Rural Area Plan** will be taken into account for selection of priority projects for rural areas.
- **Stakeholder consultation** will be carried out to identify local level problems and grievances that would serve as a basis for formulation of development projects.
- **Analysis of available resources** will be carried out to identify ability of the local government and stakeholders for execution of projects.

After formulation of projects they will be evaluated to see their feasibility of execution in respect of available resources, priority local need and technology.

Resource Allocation and Plan Execution

Recommendations will be made on allocation of resources, their sources for execution of the development projects. The plan will also indicate ways and means to for execution of the policy recommendations.

b. Deliverables

The consultants shall submit a report containing description of the projects including the following deliverables:

- Designs of proposed physical infrastructure projects (wherever necessary).
- Project cost estimates;
- All projects will be formulated under a format showing cost estimate, benefits, and possible environmental and socio-economic impacts;
- Recommendations on sources of fund.

Ten hard copies of action plan report with soft copies will be submitted.

4.7 Consultation Plan

One of the important aspects of the present planning process is to involve all levels of people of the upazila in the activities of the plan making. The intention is to make the plan people oriented and to create a sense of belongingness among the people about the plan.

4.7.1 Participatory Rapid Appraisal (PRA)

Various approaches to Participatory Rapid Appraisal method will be applied to ensure people's participation in the current planning process. In this process the stakeholders will be the following:

- a. Public Agency (UNO, Pourashava, concerned local level government agencies, etc.) officials.
- b. Local Communities (elected representatives, community leaders, local CBOs)
- c. Professional Groups.
- d. General Public

Primarily the following three procedures of PRA will be applied.

- i. Focus Group Discussion
- ii. Courtyard Meeting
- iii. Tea Stall Meeting

Focus Group Discussion (FGD) will be conducted with the Public Agency (UNO, Pourashava, concerned local level government agencies, etc.) officials, NGOs and Professional groups. The first and important FGD will be done in the upazila UNO office where all the upazila level government officials will be brought together and where the project information will be disseminated. The cooperation of the officials will be sought for successful accomplishment of the project tasks. Later on, further FDG will be carried out at all Union Parishads and Pourashava Wards.

Courtyard Meeting will be carried out mainly with public representatives like union parishad Chairman and Councillors, Pourashava Mayor and Councillors. About four to five courtyard meetings will be carried out in each upazila.

Tea Stall Meeting will be done with public in general at selected gathering points in the upazila. Four to five tea stall meetings will be done in each upazila. The meetings will be held at important public gathering points, like, bazaar, street corner, near mosque.

There will be two main purposes of above PRA, first to disseminate the content and objectives of the project to the stakeholders and the second, is to ascertain the local problems and aspirations of the people. These outputs gathered will be used in making plan proposals.

Deliverables

After completion of all PRAs the consultant shall submit separate reports for each upazila to the Project Director. The findings of PRA will also be provided in the Survey Report.

4.7.2 Matching PRA Analysis with Technical Analysis

During PRA sessions a host of demands and proposals will be received from participating stakeholders. However, many of these proposals and demands actually come as popular demands out of their day to day problems they face. Many of such demands would be found not technically feasible during technical analysis, like, high cost of development, insurmountable problems in acquisition of land, non-availability of land, legal notice. In such cases the consultant shall try to find out alternative ways to resolve the problem. In any case the consultant shall have to justify their decision for deviating from the public demand.

CHAPTER 5

CHAPTER 5:

WORK PROGRAMME AND MANNING SCHEDULE

5.0 Introduction

In this chapter of the Inception Report the tasks of the consultant including activity schedule, manning schedule have been revisited. Wherever, necessary changes have been made in the work schedule to cope with changing situation.

5.1 Work Programme

The consultant submitted a work programme during the proposal submission. But since the project activities have gone through many changes and the actual schedule of project execution could not be maintained, a fresh work programme is submitted with revised time schedule of activities. **Table-5.1** shows the revised work programme details. According to the revised work programme the next submission will be Draft Survey Report in 05 May 2016, Final Survey Report in 30 May,2016. These will be followed by two more submissions that is submission of Draft Final Plan with Report on 19 October,2016 and Final Plan with Report on 20 December,2016. We expect to wind up the project by December 2016.

Table-5.1 Work Programme (Major Activities)

Task	Duration	Start	Finish
1. Start of the Project	1 day	8/06/15	08/06/15
2. Mobilisation and Reconnaissance survey	4 day	9/6/15	12/06/15
3. Submission of Mobilization Report	1 day	11/06/15	11/06/15
4. Preliminary Collection of maps, and data from secondary sources;fieldvisit,initial consultation.	54 days	14/06/15	10/08/15
5. Submission of Inception Report	1 day	10/11/15	10/11/15
6. Household Based Socio-economic Survey	60 days	29/11/15	20/01/16
7. Traffic and Transportation Survey	30 days	30/12/15	29/01/16
8. Traffic and Transportation Survey Data Processing and Submission	32 days	29/12/15	30/01/16
9. Regional morphotectonic and neo tectonic survey and mapping.	90 days	14/12/15	15/03/16
10. Sub-surface lithological 3D model preparation.	30 days	21/02/16	15/03/16
11. Engineering geological mapping.	30 days	21/02/16	15/03/16
12. Peak ground acceleration mapping	20 days	25/02/16	15/03/16
13. Liquefaction and ground failure mapping	20 days	25/02/16	15/03/16
14. Earthquake intensity mapping	20 days	25/02/16	15/03/16
15. Land use map considering all hazards.	30 days	01/03/16	30/03/16
16. Vulnerability assessment	20 days	10/03/16	30/03/16
17. Risk assessment	20 days	10/03/16	30/03/16
18. Study on Urban and Rural Economy	21 days	03/12/15	21/12/15
19. Study on Social Infrastructure	21 days	03/12/15	21/12/15
20. Formal and Informal Industry Study	21 days	03/12/15	21/12/15
21. Hydrological Study	21days	21/01/16	08/02/16

Task	Duration	Start	Finish
22. Study on Recreational Open Space	21 days	03/12/15	21/12/15
23. Study on Health Facilities	21days	03/12/15	21/12/15
24. Agricultural Land Demarcation Study	21 days	21/01/16	08/02/16
25. Agricultural Study	30 days	21/01/16	16/02/16
26. Archaeological Study	21 days	21/01/16	08/02/16
27. Housing, Slum and Squatter Study	28 days	21/01/16	14/02/16
28. Submission of Working Paper on All Studies	15 days	31/01/16	14/02/16
29. Review of Pourashava Plan of Shibcahr and Dohar	15 days	14/11/15	30/11/15
30. Collection, scanning and digitization of mouzamap, editplot checking and edge matching; geo-referencing.	60 days	09/12/15	06/01/16
31. Mosaic of mouza maps and demarcation of study area.	20 days	30/12/15	19/01/16
32 Preparation of GIS map Layout and Printing of Study area	7 days	18/01/16	24/01/16
33. Training of UDD Official and Staff on GIS Based Mapping	2 days	11/10/15	12/10/15
34. Procurement and Processing of Satellite imagery	90 days	15/09/15	15/12/15
35. Training of UDD Staff on Photogrammetric Image processing and DEM Preparation	2 days	23/09/15	24/ 09/15
36. Establishment of BM pillars	15 days	01/12/15	15/12/15
37. Topographic Survey and Mapping	120 days	01/12/15	29/03/16
38. Physical Feature survey and mapping	120 days	01/12/15	29/03/16
39. Land Use Survey and mapping	60 days	20/12/15	20/ 02/16
40. Physical Feature and Land Use Survey Field varification and Updating	30 days	28/02/16	30/ 03/16
41. Preparation of GIS Map Layout and printing of physical Feature, Land Use and Topographic Survey Maps.	30 days	17/03/16	16/04/16
42. Training of UDD Officers and Staff on sampling, PRA and Field Survey Methodology	2 days	18/12/15	12/19/15
43. PRA at Union and Ward Level	52	06/12/15	20/01/16
44. Submission of Draft Survey Report with Map and Data	1 day	05/05/16	05/05/16
45. Submission of Final Survey Report with Maps and Data	1 day	30/05/16	30/05/16
46. Population projection and Planning Standard Fixation	3 days	11/06/15	13/10/16
Preparation of Upazila Development Plan	140 days	01/07/16	17/10/16
- Preparation of Sub-regional Plan		03/12/15	21/12/15
- Preparation of Structure Plan		03/12/15	21/12/15
- Preparation of Urban Area Plan		03/12/15	21/12/15
- Preparation of Rural Area Plan		03/12/15	21/12/15
- Preparation of Action Area Plan		03/12/15	21/12/15
47. Submission of Draft Final Plan with Report	1 day	19/10/16	19/11/16
48. Submission of Final Plan with Report	1 day	20/12/16	20/12/16
50. End of the Project	1 day	31/12/16	31/12/16

Graphical presentation of the revised work programme is attached as **APPENDIX-5.1**.

5.2 Manning Schedule

Manning schedule of the project explains the schedule of activities the consultants shall be undertaking during the project.

Manning schedule is attached as **APPENDIX-5.2**.

5.3 Tasks and Responsibilities of the Consultants

The tasks and responsibilities of the consultant has been specified in the terms of reference of the project. Each consultant is supposed play his/her role as consultant for a particular field during the project period and shall deliver output as the terms of references says.

All the consultants have been shown intermittent. That is, they will render services as and when needed throughout the project period. The consultants have varied man-month decided on the basis of necessity of their services in the project. The consultant shall be rendering their services, both, in the office and in the field as and when necessary.

The tasks and responsibilities of the consultant of the project is attached as **APPENDIX-5.3**

5.4 Output Delivery

The project will undertake a large number of surveys and studies to assess the existing conditions of the project upazilas. Each survey and study will produce outputs in the form of maps, data and information. Details of outputs to be submitted have been mentioned under 'deliverables' in Chapter 4. Besides surveys and studies five categories of plans will be prepared under the project. Each plan type will produce a number of maps and report containing descriptions of the plan.

5.4.1 Report Submission Schedule

The Input-output of the consultancy services of the professionals will produce 5 (five) types of major reports with analytical text associated with related database, drawings, photographs, maps, etc. The reports are:

Table 5.2: Time Schedule of the Project Reports to be Submitted

Sl. No.	Type of Report	Content	Date of Submission	Remark
01	Mobilization Report	Mobilisation of resources	11 June,2015	Submitted
02	Inception Report	Methodology and work schedule	8 Nov.,2015	Submitted
03	Draft Survey Report	Survey and study findings in draft form	21 May, 2016	-
04	Final Survey Report	Survey and study findings in corrected and modified form	20 June,2016	-
05.	Draft Plan with Report	Five categories of	19 Oct.2016	-

Sl. No.	Type of Report	Content	Date of Submission	Remark
		draft plans with maps and reports		
05	Final Plan with Report	Five categories final plans with maps and reports after modification of the draft plan and report.	20 Dec.,2016	-

Apart from above major reports the consultant shall produce a number of study reports concerning the studies done under the project.

CHAPTER 6

CHAPTER 6: PROGRESS OF WORK

6.0 Introduction

Chapter 6 of the Inception Report is about the progress achieved so far in accomplishing the tasks according to the terms of reference.

6.1 Contract Signing

Immediately after receiving the letter of intent of the project a contract was signed between UDD and the consultant on 8 June, 2015.



Picture 6.1: Contract Signing and Team Mobilization Meeting

6.2 Consultant Team Mobilization

After signing the agreement, the consultant mobilised key consultants of the project and some important support staff. Seven key positions including the Team Leader were mobilised initially. Later on, other members of the consultants team also joined the team. Please see Table-6.1 for details of the project personnel mobilisation.

Table 6.1: List of Consultants and Support Staff Mobilized by the Consultancy Firm

Sl. No.	Name	Designation	Date of Mobilization
A. Key Personnel			
01	Dr.Akhter Husain Chaudhury	Team Leader	10-06-2015
02	Hamida Khatun Popy	GIS Expert	10-05-15
03	Golam Mortoja Himu	Photogrammetric Expert	10-05-15
04	Saiful Islam	Survey Expert	10-05-15
05	Mohammed Kamruzzaman Palash	Urban Planner	10-05-15
06	Gholam Mostofa Patwary	Transport Expert	10-05-15
07	Mohammed Jahid Alam	Associate Geologist	10-05-15
08	K.M Mosarrof Hossain	Social Expert	10-06-15
09	Mia Abdur Rashid	Agricultural Scientist	12-06-15
10	Hossain Ahmed	Geological Survey Expert	12-06-15
11	Mohammad Zafarullah	Urban Economist	12-06-15
12	Md. Abul Bashar	Civil Engineer & Hydrologist	12-06-15
13	Morshedul Hasin	Geologist	12-06-15
B. Support Staff			
1.	John Nilu Marak	Office Manager	10-05-15
2.	Abdullah Al Nyem	Junior Planner	10-05-15
3.	Jobaer Ahmed Jasim	Project Co-ordinator	10-05-15
4.	Jaimuddin	Office Assistant	10-05-15
5.	AB Siddique	Peon	10-05-15

6.3 Preliminary Data, Document and Map Collection

6.3.1 Collection of Documents

Immediately after initiation of the project, the consultant started collecting data from secondary sources, like, BBS Publications, Upazila at a Glance of the concerned upazilas, District Gazetteer of Dhaka and greater Faridpur. Preliminary data collected include, area and population, education facilities in the upazila, various services and facilities available; infrastructure facilities; geological condition, agriculture.

Documents collected include, BBS Population Census District Statistics, District Gazetteer, Agriculture Census, Pourashava Master Plan of Dohar and Shibchar. A preliminary list of documents collected is presented in Section-6.6 of the Inception Report.

6.3.2 Collection of Cadastral Maps and Fixation of Boundaries

In spatial planning cadastral maps are used for demarcating areas for setting proposals and taking implementation actions. Cadastral maps mouzas and plots. In the current project RS (Revised Survey) version of the local cadastral maps will be used. Cadastral maps of three upazilas are being collected from DLRS Office in Dhaka.

Following are the number of mouzas sheets available in DLRS. All sheets of Nawabganj and Dohar Upazila have already been collected and mouza map collection of Shibchar upazila is under process.

Table 6.2: Mouza Sheets of Three Upazilas

Upazila	Number of Mouzas	Number of Mouza Sheets
1. Nawabganj	178	233
2. Dohar	82	114
3. Shibchar.	107	194

Source: DLRS

After collection, the mouza sheets will be scanned, digitized and geo-referenced to enable fixation of different area boundaries and identification of various locations in the maps. Usually, the mouzas are individually surveyed and mapped. For the purpose of planning there it is needed to attach all the mouzas in a upazila together which is called mosaic. Using computer software all the mouzas in an upazila will be brought together matching the edges of mouza sheets. This process is called edge matching.

6.3.4 Collection of Geophysical Maps and Reports

Geophysical data gives information about the physical processes and physical properties of the Earth and its surrounding space environment. The data includes Earth's shape, its dynamics and their surface expression in plate tectonics, the generation of magmas, volcanism and rock formation etc. Now a day it also covers the water cycle including snow and ice; fluid dynamics of the oceans and the atmosphere; electricity and magnetism in the ionosphere and magnetosphere and solar-terrestrial relations; and analogous problems associated with the Moon and other planets. Geophysical information at upazila level is rare as no studies were conducted earlier to collect upazila level geophysical data. However, there are some national level and district level information available with SPARRSO and Geological Survey of Bangladesh, old District Gazetteers and American Geological Survey Department available in the department's website. The consultant will employ its utmost effort to collect those maps and data to analyse the geological condition of the project upazilas.

6.4 Setting up of Project Office at Upazila Level

Consultant has established three field offices in the three project upazila headquarters. The field office of Shibchar upazila is in KhajarDek Road, Osman Shaheb Bari, Ward No-7, Shibchar pourashava, Madaripur. The field office address of Nawabganj upazila is, House No-75, Block-A, Girls School Road, Kashimpur, Nawabganj, Dhaka-1320. The field office address

of Dohar upazila is Shobuj Villa, South Joypara, Dohar, Dhaka-1330. The consultant has signed separate agreement with the house owners of the offices in this regard. Agreement deeds of office rent are attached in **APPENDIX 6.1**



Picture-6.2: Field Office at Shibchar



Picture-6.3: Field Office at Dohar



Picture-6.4: Field Office Nawabganj

6.5 Collection and Review of Pourashava Master Plan

Of the three project upazilas, Dohar and Shibchar have their pourashava master plans prepared under the UTIDP project of LGED. There is no pourashava in Nawabganj so no pourashava master plan was prepared for Nawabganj town. Before going for Urban Area Plan preparation, the master plans of the two Pourashavas will have to be reviewed. The consultant has already collected the copies of pourashava master plans of Shibchar and Dohar Pourashavas and has started reviewing the plans.

The review primarily focuses on the,

- area coverage of the plans;
- the context and the kind of proposals made;
- the basis of making proposals;
- logical basis of proposals.

A more detailed review will be carried out during preparation of Urban Area plan. During this review the planners of the current project will look into the planning standards of the pourashava master plan document. This will be matched with the urban area plan planning standards. The planners will also identify inadequacy of pourashava master plan with respect to the number and area of infrastructure and services proposed in the plan; appropriateness of the land use zoning proposed in the plan; the planning standards followed; location of various services and facilities.

Proposals that will be found appropriate will be adopted in the urban area plan and the proposals that are found irrational or technically not feasible will be either discarded or revised.

6.6 Collection of Documents

The consultant has already collected a series of documents from various sources for use in the project. List of the documents is provided below:

- District Gazetteer
- Geological data about three upazilas on, sedimentation, stratification, fault line, linement;
- Hydrological data about three upazilas-waterbody, canal, river, flooded areas, embankment;
- Agricultural Census by BBS;
- Non-farm economic activities Census by BBS;
- Soil data for three upazilas-soil category, soil category wise crop;
- Seventh Five Year Plan;
- Sixth Five year Plan;
- NGOs in operation and their activities;
- Inventory of small and cottage and other industries;
- Heritages and the tourist attractions in the upazila;
- Location and capacity-doctor,nurse, medical technician, medical assistant and logistics in Shibchar Upazila;
- District statistics of Dhaka and Madaripur Districts;
- Education facilities-location, number of students and teachers, results.

6.7 Public Consultation

Public consultation in the field so far, was conducted in two phases- **Initial Consultation** and **Second Round of Consultation**.

6.7.1 Initial Consultation Meeting

Immediately after initiation of the project, two teams of the consultants visited the three upazilas for initial consultation and field observation. One team visited Nawabganj and Dohar upazila and the other team went to Shibchar upazila.

6.7.1.1 Consultation Meeting in Nawabganj

A team of the consultant went for a quick initial meeting with the Chairman and UNO of Nawabganj upazila on 10 June, 2015. But, both, the Chairman and the UNO were absent from their offices. The team met upazila accountant available in the office and explained him the details of the project, its aims and objectives. He was informed that a series of detailed surveys would be conducted in the entire upazila to assess the existing conditions of the upazila-its spatial growth, land use, topography and transport and communication. He was handed over the UDD letter about the project initiation. The team also handed over the UDD letter to Chairman's office for his information.

6.7.1.2 Consultation Meeting in Dohar

On 10 June 2015 afternoon the same team, after visiting Nawabganj Upazila headquarters, went to the Dohar UNO Office for initial consultation. But unfortunately, no key official including the UNO was found present in the office. However, UNO Office was handed over the UDD letter about the project.

The team next went the Dohar Upazila Chairman's Office, but it was told that he was sick and was under treatment in Dhaka. Vice Chairman was also absent. The consultant team handed over the UDD letter to the Chairman Office. The staffs present were briefed about the project, its aims and objectives. They were informed that a series of detailed surveys would be conducted in the entire upazila. It would include land use, topography and transport and communication surveys, study of rural and urban services and facilities available.



Picture 6.5: Consultation Meeting with Local People

With utter despair, the team found that the Pourashava Mayor was too absent from his office. The team handed over the UDD letter to his office. The staffs present in the office were briefed about the project, its aims and objectives. It was informed that a series of detailed surveys and data collection will be carried out in the entire upazila to assess the existing conditions of the upazila-its spatial growth, land use, topography and transport and communication. The team had a few street side tea stall meetings with local people where the local people were briefed about the project.

6.7.1.3 Consultation Meeting in Shibchar

Another team of the consultants went to Shibchar on 10 June 2015 for initial meeting with upazila officials. But meeting with Shibchar Upazila UNO Md. Iqbal Hossain, could not be held as he was out to Dhaka for official business. UNO in charge, Assistant Commissioner Land, was met in the UNO's Office. He was given the letter of UDD about the project. The team members briefed the officials about the project, its aims and objectives. It was informed that a series of detailed surveys will be conducted in the entire upazila to collect data on various issues to assess the existing conditions of the upazila including spatial growth, land use,

topography and transport and communication, agriculture services and facilities available. Cooperation of the upazila administration was sought in this respect. The Officials agreed to extend all out cooperation in survey, data collection and planning.



Picture 6.6: Consultation Meeting with Pourashava Mayor

6.7.2 Reconnaissance Survey and Field Observation

To have a preliminary idea about the upazila the team went around the three upazilas and observed the following issues.

Land Use

- The overall land uses in all the three upazilas are very similar in nature. Vast areas of all the three upazilas are rural-agricultural and dominated by natural environment. There were greenery and water shed, flowing river imbued unique biodiversity. Just outside the urban areas there is vast agricultural land with settlements as villages in between. Villages contain rural homesteads with intense vegetation and water bodies.
- The upazila shahars are the only urbanised areas which were found dominated by housing land use with commercial development along major roads.
- Upazila Complex is the only major administrative land use of the upazila.
- In all the three upazilas vegetation and waterbody is widely found in both in and urban areas, with higher proportion in rural areas.
- Only a handful of very small scale processing plants are found in all the three upazilas, like, rice mill, oil mill.

Transportation

- Nawabganj Upazila has 862 km of road network. Rickshaw, tempo and scooters are widely used mode of transport; motor cycle is also a widely used mode for long and short distance travel. In Nawabganj Upazila rickshaw is the most popular mode transport, both, in rural and urban areas. Buses usually carry long distance passengers. Passengers

mostly go to Dhaka, Dohar and Sreenagar. Scooter/Baby Taxi also move to long distance- Dohar,Dhaka. They mostly carry shared passengers.

- In Dohar Upazila there are 489 kms of road network. There is one road from Dhaka to Dohar via Keraniganj-Nawabganj. Another road from Dhaka- Mawa road also links Dohar with Dhaka and Munshiganj. Distance of Dohar upazila headquarters from Dhaka is about 60 km. Buses usually carry long distance passengers. Buses go to Dhaka carrying passengers from MoinatGhat on the Padma. These passengers come from Faridpur and Char Bhadrasan and Sadarpur of Faridpur district crossing the Padma by speed boat and trawler. Most buses go to Dhaka via Dohar and Dhaka-Mawa Road as this road is of better quality than Nawabganj-Keraniganj Road. Buses also go to Sreenagar, the adjacent upazila. Baby taxi, tempo and battery operated autos are found as alternative modes of transports for short and long distance travel.
- As learnt from the Upazila UNO office the Shibchar upazila has 771 km of road network. Tempoes play from Panchchar to the Shibchar Upazila headquarters, Ferry Ghat and is also a widely used mode of transport as it is faster. Battery operated electric autos are also found in the streets. Buses usually carry long distance passengers and go to Madaripur, Shariatpur - Zanjira and Rajoir Upazila through Shibchar. From Dhaka-Khulna Highway one can move to any district.
- There are some common features in the transportation system of all the three upazilas. Roads in urban and rural areas are narrow and tortuous that often is the cause of traffic congestion, particularly, in urban areas. There is no footpath in the town, informal activities rampant on the street. Rickshaw and rickshaw vans are very common and popular modes of transport, both, in rural and urban areas. Rickshaw is used for carrying passenger, while rickshaw van has versatile uses, however, mostly carrying goods.



Picture 6.7: Chaotic Transport Movement



Picture 6.8: Tempos parked on the street



Picture 6.9: Transit with Ferry in BIWTA Ghat of Shibchar

Environment

- Except in some parts of Dohar Upazila all other upazilas are free from arsenic in the ground water. Quality of surface water in waterbodies seems fresh and unpolluted as there is no polluting industry around.
- In urban areas of all the three upazilas solid waste/rubbish is yet to emerge as a problem. Towns have a low density of population and low income, so people produce less waste. Generated wastes are dumped in low land as land filling material.
- None of the Pourashavas has waste dumping sites as they do not feel its necessity right now.
- In Nawabganj Upazila sanitary latrines are found in 100% of the households. The Dohar Upazila has achieved the 86.5% hygienic sanitation; while Shibchar Upazila has sanitary latrines in 92% households.
-

6.8 Second Round of Consultation

A second round of public consultation was carried out in three upazilas at suitable time periods.

Objective of the Arranging Participatory Consultation

Objectives of arranging the second round of consultation are as follows:

- Ensuring participation of local people in preparing of development plan for their own area.
- To know the ideas from grass root levels on development plan of their locality.
- Sharing ideas on importance and role of the local peoples in preparing development plan.
- Finding out the problem & prospects and sharing it with UDD authority.
- Inform the communities about the positive impacts of the projects.

Following is a short report on second round of consultations in three upazilas.

6.8.1 Consultations in Shibchar Upazila

A team of the consultants including the Project Director and a few of UDD officials went to the Shibchar on 11 August 2015 under a pre-scheduled consultation programme.

A four member team comprising Package-01 consultants, two project support staff and the concerned UDD officials apart from the Project Director attended the consultation sessions, where Mr. Mosharref Hossain, the Social Expert of the Package-1, was in charge of conducting all the sessions. Details of the team is presented below

Table 6.3: Package 01 Team Conducted Public Consultation Meetings

SL No.	Name	Position
01	Dr. Akhter Husain Chaudhury	Team Leader
02	K.M. Mosharref Hossain	Social Expert
03	Md.Gholam Mustafa Patwary	Transport Planner
04	Md Jobaer Ahmed Jasim	Jr. Urban Planner
05	Abdullah Al Nyem	Jr. Urban Planner
Guest Observer team are as Follows:		
01	Shaheen Ahmed	Project Director
02	Nurul Islam Faisal	Director ,AAima Int.
03	Md Moklesur Rahman	Geographer



Picture 6.10: Focus Group Discussion with Shibchar Upazila vice-chairman, UNO and other officers

Summary of Consultation Meeting

On August 11-13, 2015 a series of consultation meetings and project briefing sessions were held in different locations of the upazila. The first consultation was held at the Upazila HQ Meeting room where Upazila Vice Chairman, UNO and other upazila level government

Officials were present. Mr. K.M. Mosharref Hossain, Social Expert, Package-01 moderated the first consultation meeting. The Moderator explained the objectives of the session and welcomed all participants for joining the consultation meeting. Dr. Akhter Husain Chaudhury, Team Leader, Shaheen Ahmed, Project Director Md. Gholam Mustafa Patwary, Transport planner were present as speaker.

Fifteen (15) public consultation meetings/PRA were held from August 11 to August 13, 2015 at different places of Shibchar Upazila. Meetings were held with journalists, Women Group and NGOs. A wide category of people from different walks of life, including the local people participated in the focus group discussion; courtyard meeting and tea stall meetings

In the consultation, mainly the project details were disseminated; besides local problems and opportunities available in the locality were discussed. Participants were including local people and public representatives. Participants were found very positive about the project and they expressed their happiness to knowing that they would be a part of the Upazila Development Plan. The participants were spontaneous and cordial throughout all the consultation meetings.

Md. Jobaer Ahmed Jasim, Abdullah Al Nyem Jr. Urban Planner, PDPFU, Package-01, were present in the meeting as facilitators.

The following table presents the Public Consultation Meetings (PCM)/PRA organized in different places.

Table 6.4: Public Consultation Meetings (PCM)/PRA in Shibchar Upazila

SL.	Date	Event	Participant	Venue	No. of Participants
1.	11/08/015	FGD-1.	Upazila level Govt. Officials	Upazila Auditorium	14
2.	11/08/015	FGD-2	NGOs	VDS-Office Seminar Room	06
3.	11/08/015	FGD-3	Local traders	Shibchar Bonik Samittee	12
4	12/08/015	FGD-4	College Teachers	Rejia Begum Girls College Auditorium	21
5	12/08/015	FGD-5	Representatives of women organisations	Jatio Mohila Sangstha office Room.	24
6	12/08/015	FGD-6	Councilors of Pourashava	Pourashava Conference Room	17
7	13/08/015	FGD-7	Media and Press Journalist	Upazila Parishad Auditorium.	14
8	12/08/015	Court Yard Meeting-1	UP Chairman and Councilors	Umedpur UP	39
9	13/08/015	Court Yard	UP Chairman and	Panchchar UP	44

SL.	Date	Event	Participant	Venue	No. of Participant s
		Meeting-2	Councilors Others		
10	13/08/015	Court Yard Meeting-3	UP Chairman and Councilors Others	Sannyasir Char UP	35
11	13/08/015	Court Yard Meeting-4	UP Chairman and Councilors	DattaPara	24
12	12/08/015	Tea Stall Meetings-1	General public	Chandar Char Bazar Umedpur UP	27
13	11/08/015	Tea Stall Meetings-2	General public	Kadirpur Bazar Ditiakhanda UP	31
14	11/08/015	Tea Stall Meetings-3	General public	Goher Ali Matborkandi Kutubpur UP	16
15	11/08/015	Tea Stall Meetings-4	General public	Bangla Bazar of Kathal Bari UP	13

6.8.2 Consultations in Nawabganj Upazila

A team of the consultants including the UDD project Officials went to Nawabganj for a second round of consultation in the third week of October. A four member team comprising of the project participated in the second round of public consultation (**Table-6.5**) where Mr. K.M. Mosharref Hossain, the Social Expert was responsible to moderate the whole session.

Table-6.6 gives the summary of consultation.



Picture 6.11: Focus Group Discussion with Nawabganj Upazila UNO, Chairman, vice-chairman, AC land and other officers

Table 6.5: Package 01 Team Conducted Public Consultation Meetings

SL No.	Name	Position
01	Md. Kamruzzaman Palash	Urban Planner (cum Deputy Team Leader)
02	K.M. Mosharref Hossain	Social Expert
03	Md. Gholam Mostafa Patwary	Transport Planning Expert
04	Md. Jobaer Ahmed Jasim	Jr. Urban Planner
05	Abdullah Al Nyem	Jr. Urban Planner
02	Nurul Islam Faisal	Director, Aaima Intl BD Ltd.
Guest Observers from UDD		
01	Fauzia Sharmin Tithi	Project Manager
03	Md. Moklesur Rahman	Geographer

The following table presents list of Public Consultation Meetings (PCM)/PRA organized in different places.

Table 6.6: Public Consultation Meetings (PCM)/PRA in Nawabganj

SL.	Date	Event	Participants	Venue	No. of participants
1.	19/10/15	FGD-1.	Journalist	Upazila Press club	19
2.	19/10/15	FGD-2	College Teachers	D.N.College seminar room	23
3.	19/10/15	FGD-3	Women's Organizations	Upazila Press club	25
4	19/10/15	FGD-4	Nawabganj Trade Association	Bonik Samittee Office	08
5	20/10/15	FGD-5	NGO Representatives	BRAC Office	09
6	21/10/015	FGD-6	Upazila Chairman and other stake holders	Upazila conference room	17
7	20/10/015	Court Yard Meeting-1	UP Representatives & Others	Sholla UP	41
8	20/10/015	Court Yard Meeting-2	UP chairman & Others	Melong High School-Kailail UP	18
9	20/10/15	Court Yard Meeting-3	UP Representatives & Others	Baruakhali UP	19
10	21/10/015	Court Yard Meeting-4	UP Representatives & Others	Churain UP	24
11	21/10/015	Court Yard Meeting-5	UP Representatives & Others	GalimpurUP	18
12	19/10/015	Tea Stall Meetings-1	General public	Bandura Bazar Bandura UP	17
13	19/10/015	Tea Stall Meetings-2	General public	Kamargonj-Monipara,	18

SL.	Date	Event	Participants	Venue	No. of participants
				BokshnagarUP	
14	20/10/015	Tea Stall Meetings-3	General public	College road, KolakopaUP	20
15	20/10/015	Tea Stall Meetings-4	General public	Barrah Bazar, Barrah UP.	21
16	20/10/015	Tea Stall Meetings-5	General public	Tikorpor Bazar. Agla UP	18

Summary of Consultation Meeting

The consultant carried out sixteen (16) Public consultation meetings between Oct. 19 to Oct.21, 2015 at different places under Nawabganj Upazila under Dhaka District.. Almost all categories of professionals and local people living around the venues attended the meetings.

Mr. K.M. Mosharref Hossain, Social Expert, of the project moderate the consultation meeting. The Moderator explained the objectives of the session and welcomed all participants for joining public consultation meeting. Md. Kamruzzaman Palash, Urban Planner of the Project Team, Md.Gholam Mustafa Patwary, Transport Planning Expert were the main speakers, while Fauzia Sharmin Tithi, Project Manager from UDD, participated as guest speaker.

Md.Jobaer Ahmed Jasim, Abdullah Al Nyem, Jr. Urban Planner, of the project, were present in the meeting as facilitators. Mr. Mokhlesur Rahman and Mr.Raju from UDD were also present in the meeting.

The participants attending the meetings were spontaneous and cordial throughout the meeting sessions. The issues discussed in the consultation meetings included, the process of preparation of various development plans of the upazila, along with the local problems and prospects. All local people and representatives are very positive about the satisfaction over the participatory aspect of the planning process where their voices are being heard. They expressed their willingness to go for all cooperation to make the plan preparation a success.

6.8.3 Consultations in DoharUpazila

The consultant carried out twelve (12) Public consultation meetings within 01 November to 02 November 2015 at different places of Dohar Upazila under Dhaka District. Almost all categories of professionals and local people living around the venues attended the meetings.

Table 6.7: Package 01 Team Conducted Public Consultation Meetings

SL No.	Name	Position
01	Md. Kamruzzaman Palash	Urban Planner (cum Deputy Team Leader)
02	K.M. Mosharref Hossain	Social Expert
03	Md. Jobaer Ahmed Jasim	Jr. Urban Planner
04	Abdullah Al Nyem	Jr. Urban Planner
05	Nurul Islam Faisal	Director, Aaima Intl BD Ltd.
Guest Observers from UDD		
01	Fauzia Sharmin Tithi	Project Manager
02	Md. Abdul Hakim	Surveyor
03	Md. Raju Ahmed	Draftsman

The following table presents list of Public Consultation Meetings (PCM)/PRA organized in different places.

Table 6.8 Public Consultation Meetings (PCM)/PRA in Dohar

SL.	Date	Event	Participants	Venue	No. of participants
1.	01/11/15	Court Yard Meeting-1	UP Representatives & Others	Narisha Union	20
2.	01/11/15	Court Yard Meeting-2	UP Representatives & Others	Sutarpara Union	17
3.	01/11/15	FGD-1	Journalists	Weekly PrioBangla office	5
4	01/11/15	Tea Stall Meetings-1	Available people in the spot.	Khajar Hat Bazar, Bilaspur Union	30
5	01/11/15	Tea Stall Meetings-2	Available people in the spot.	Char kushai (azambarimour) Mahmudpur Union	24
6	01/11/15	Tea Stall Meetings-3	Available people in the spot.	Kartikpur Bazar Kushumhati Union	18
7	01/11/15	Tea Stall Meetings-4	Available people in the spot.	Bashtola Bazar Roypara Union	15
8	02/11/15	Court Yard Meeting-3	UP chairman & Others	Muksudpur Union	31
9	02/11/15	FGD-2	College Teachers	Joypara College	28
10	02/11/15	FGD-3	UNO, Upazila Chairman, Pouroshova Mayor and other Upazila and Pourashova officers	Upazila conference Room	16

SL.	Date	Event	Participants	Venue	No. of participants
11	02/11/15	FGD-4	JoyparaBanikShomitee Leaders and businessmen	BanikShomitee Office	18
12	02/11/15	FGD-5	NGO workers	SRDP office	9



Picture 6.12: Focus Group Discussion with Dohar Upazila UNO, Chairman, vice-chairman, Pourashova Mayor, Assistant Engineer and other officials

The consultation meetings were moderated by Mr. K.M. Mosharref Hossain, Social Expert, of the project. The Moderator explained the objectives of the session and welcomed all participants for joining public consultation meeting. Mr. K.M. Mosharref Hossain, Social Expert and Md. Kamruzzaman Palash, Urban Planner of the Project Team, were the main speakers, while Fauzia Sharmin Tithi, Project Manager from UDD, participated as guest speaker.

Md. Jobaer Ahmed Jasim, Abdullah Al Nyem, Jr. Urban Planner, of the project, were present in the meeting as facilitators. Md. Abdul Hakim and Mr. Raju from UDD were also present in the meeting.

The participants attending the meetings were cordial, friendly and hospitable throughout the meeting sessions. The issues discussed in the consultation meetings included, the process of preparation of various development plans of the upazila, different survey that will be taken place during survey period along with the local problems and prospects. All local people and

representatives were very positive about bottom up participatory aspect of the planning process where their voices are being heard. They expressed their willingness to do all cooperation to make the plan preparation a success.

6.9 Satellite Image Collection and Work Station Set up

Recent satellite image technology provides convenience in producing 3D images using stereo images. Using photogrammetric technology Digital Elevation Models can be created for any area from 3D satellite image. The new technology also helps create geospatial database more effectively. The consultant has already placed order for procurement of satellite imagery and the work order is attached with this report (**APPENDIX-6.3**). The collected images will be ortho-rectified and used for identification of land level and physical features. The consultants have already set up a work station in its office for processing of satellite imagery and procure necessary information. These data will be verified in the field before preparing the final survey maps.

6.10 Preparation of Project Leaflet

To disseminate information about the project, the consultant has prepared three separate project leaflets for three project upazilas. The leaflets contain basic data about the project upazilas and the facts about the upazila development project. The intention of the leaflet is to let local people know about the project and understand the objectives and contents project.

6.11 Signing of Agreement between the Firm and the Consultants

As per instruction of the client, the consulting firm has signed agreement individually with its project consultants (except a few left) for carrying out tasks of the project where the consultants have provided promissory notes to accomplish their respective tasks of the project. Copies of the agreement have been submitted with UDD (**APPENDIX- 6.2**.)

6.12 Way Forward

Way forward of the project awaits a huge task of data collection, mostly, from the field. These data collection will be accomplished through—physical survey and from secondary sources—books, reports, plans, policies and various references. Another important assignment would be conducting studies on a large number of issues, like, hydrology, geology, economy, infrastructure and services, agriculture, archaeology, formal and informal industrial establishment. The findings of data collection will be followed by a survey report comprising analysis of findings that would lead to the planning phase.

CHAPTER 7

CHAPTER 7: CONCLUSION

7.0 Conclusion

Upazila is one of the lowest level administrative entities of the government and a local government with good range of power and capacity. It has a headquarter with many service delivery units of the government. In most places the headquarters contain two local governments, one urban called Pourashava and the other called Upazila Parishad for entire upazila comprising both urban and rural areas. Upazila has a vast crop producing rural hinterland where services are delivered from the urban headquarters. There is immense opportunity to defuse development drive from the upazila town provided that the towns are well equipped with basic urban services and has excellent connectivity with the rural hinterland and beyond. Required service delivery from the town can help boost agricultural production. With the higher production income of the farmers would rise and the surplus could be diverted for investment in the town creating new avenues for employment. Cheap and faster connectivity would reduce the cost of marketing fetching higher income for the farmers that in turn would raise standard of living of the rural people. Non-farm investment the town can create new jobs for the surplus rural labour force. The current project aims at comprehensive development of the upazila to be achieved through execution of a series of plans that ranges from sub-regional plan to action area plan. Utmost importance has been laid in the project to involve stakeholders in the process of planning in order to make the plans more need oriented imbued with the elements of beneficiary participation that would create a sense of belongingness among the people about the plan.

APPENDICES

APPENDIX-4.1

নগর উন্নয়ন অধিদপ্তর
প্রিপারেশন অব ডেভেলপমেন্ট প্ল্যান ফর ফোরটিন উপজেলাস
প্যাকেজ-১

গ্রামীণ আর্থ-সামাজিক জরিপ প্রশ্নমালা ২০১৫

নমুনা নম্বরঃ.....

জরিপের তারিখঃ

সাক্ষাৎকার গ্রহণকারী: নাম..... স্বাক্ষর.....

☐ ডাটা এন্ট্রিকারী-----

তারিখঃ-----

☐ তথ্য নিরীক্ষক-----

তারিখঃ-----

☐ সকল তথ্য নেয়া হয়েছে হ্যাঁ ☐ না ☐

☐ অসম্পূর্ণ

অংশ-১ঃ ব্যক্তিগত ও আর্থসামাজিক

১. সাক্ষাত প্রদানকারীর তথ্যাবলী

১.১ নাম :

১.২ লিঙ্গঃ পুরুষ /মহিলা (✓ দিন)

১.৩ পিতা নাম : ----- মাতার নামঃ-----

১.৪ বয়স : - - - - -বছর

১.৫ বৈবাহিক অবস্থাঃ বিবাহিত/অবিবাহিত (✓ দিন)

১.৬ সন্তানের সংখ্যাঃ ছেলে----- জন, মেয়ে----- জন

১.৭ পেশা : কৃষি ☐ অকৃষি ☐

১.৭.১ পেশা কৃষি হলে কাজের অভিজ্ঞতাঃ -----বছর

১.৮ গৃহ স্থাপনার বয়সঃ -----বছর

১.৯ শিক্ষাগত যোগ্যতাঃ ক) প্রাথমিক, খ) মাধ্যমিক, গ) উচ্চ মাধ্যমিক, ঘ) স্নাতক/স্নাতকোত্তর, (✓ চিহ্ন দিন)

১.১০ ঠিকানা :

গ্রাম :

ব্লক :

ইউনিয়ন :

ডাকঘরঃ

উপজেলাঃ

জেলাঃ

মোবাইল নং (যদি থাকে)ঃ

২. পরিবারের সদস্যদের তথ্য (সাক্ষাৎকার প্রদানকারী ব্যতীত) :

ক্রঃ নং	নাম	লিঙ্গ	বয়স (বছর)	শিক্ষাগত যোগ্যতা	পেশা
১					

২					
৩					
৪					
৫					
৬					
৭					

৩. আয়ের প্রধান উৎস (✓ চিহ্ন দিন)

কৃষি	ব্যবসায়	চাকুরী	শ্রমজীবী	অন্যান্য (উল্লেখ করুন)

৪. আয়ের অ-প্রধান উৎস (✓ চিহ্ন দিন)

কৃষি	ব্যবসায়	চাকুরী	শ্রমজীবী	অন্যান্য (উল্লেখ করুন)

৫. পরিবারের বার্ষিক আয় (টাকায়) :

	কৃষি	অকৃষি	মোট আয়
সাক্ষাৎকার প্রদানকারী			
অন্যান্য সদস্য			
মোট			

৬. আপনার বাড়ী হতে নিম্ন বর্ণিত সুবিধাদির দূরত্ব কত?

- (ক) উপজেলা সদরঃকিঃমিঃ
(খ) নিকটবর্তী বাজারঃ.....কিঃমিঃ
(খ) পাকা রাস্তাঃ.....কিঃমিঃ
(গ) প্রাইমারী স্কুলঃ-----কিঃমিঃ
(ঘ) হাই স্কুল -----কিঃমিঃ
(ঙ) খেলার মাঠ -----কিঃমিঃ

নাগরিক সার্ভিস সমূহের অবস্থা (✓ দিন)ঃ

ক্রমিক নং	সুবিধা সমূহ	সুবিধা আছে/নাই	সেবার মান	ক্রমিক নং	সুবিধা সমূহ	সেবার মান
১	বিদ্যুৎ			৫	ডিশ সুবিধা	
২	স্বাস্থ্য সম্মত টয়লেট			৬	অন্যান্য (উল্লেখ করুন)	
৩	মোবাইল					
৪	টেলিভিশন					

কোডঃক। সুবিধা- আছে-১ নাই-২ খ। সেবার মান ১। ভাল ২। মোটামুটি ৩। খুব খারাপ ৪। সুবিধা নাই।

২০৪। নাগরিক সুবিধা সমূহের দূরত্ব :

ক্রমিক নং	সুবিধাসমূহ	দূরত্ব (কিঃমিঃ)
১	মেডিকেল হাসপাতাল/ক্লিনিক	
৬	ব্যাংক	
৭	পোস্টঅফিস	
১৫	কবরস্থান/শ্মশান	

কোড সমূহ :

প্রাপ্যতা

১। আছে

দূরত্বঃ

১। পায়ে হাটা দূরত্ব (০.৫ কিমি এর নীচে)

যাতায়াত মাধ্যম

১। পায়ে হেটে

সেবারমান

১। ভালো

- ২। নেই।
- ২। ০.৫ কি: মি: ভেতরে
- ৩। ০.৫ কি:মি:- ১ কি: মি:
- ৪। ১ কি: মি: - ২ কি: মি:
- ৫। ২ কি: মি -৩ কি: মি:
- ২। বাই-সাইকেলে
- ৩। রিক্সা
- ৪। টেম্পো
- ৫। যান্ত্রিক গাড়ি
- ৬। বাস
- ৭। নৌকা
- ৮। অন্যান্য
- ২। মোটামুটি
- ৩। ভাল নয়
- ৪। সুবিধা নাই

২০৫। স্বাস্থ্য সেবাঃ(গত ৬ মাসে পরিবারের কারো স্বাস্থ্য সমস্যা/ অসুখ হয়েছিল কি? কি অসুখ হয়েছিল? কোথায় চিকিৎসা করিয়েছিলেন?)

সদস্য কোড	অসুখের ধরন	চিকিৎসার জন্য কোথায় যাওয়া হয়?	চিকিৎসা না করানোর কারণ
১	২-কোড	৩-কোড	৪-কোড
২			
৩			
৪			
৫			

কোড : ২-অসুখের ধরন

১. জ্বর/সর্দি/কাশি/টাইফয়েড
২. ডাইরিয়া/আমাশয়
৩. জন্ডিস/নিউমোনিয়া
৪. বাত/হাঁপানী
৫. স্ত্রীরোগ
৬. চর্মরোগ
৭. ডায়াবেটিস
৮. হৃদরোগ ৮.প্রযোজ্য নয়
৯. অন্যান্য

১০. কোন অসুখ হয়নি

৩-চিকিৎসার জন্য কোথায় যায়৪-চিকিৎসানা করানোর কারণ

১. সরকারী হাসপাতাল
২. প্রাইভেট ক্লিনিক
৩. উপজেলা স্বাস্থ্য কেন্দ্র
৪. হোমিওপ্যাথি ডাক্তার
৫. গ্রাম্য চিকিৎসক
৬. ফকির/ওবা
৭. অন্যান্য
১. কমিউনিটি ক্লিনিক নাই
২. শিক্ষিত ডাক্তারের অভাব
৩. হাসপাতাল দূরে
৪. সরকারী ওষুধ পাওয়া যায় না
৫. ফ্রি চিকিৎসা নাই
৬. অন্যান্য

২০৬। শিক্ষা :

ক। আপনার পরিবারের কোন সদস্য স্কুল/কলেজে যায় কি ? ১. হ্যাঁ ☐ ২. না ☐

() হ্যাঁ হলে কোন ধরনের শিক্ষা প্রতিষ্ঠানে যায়?এ শিক্ষা প্রতিষ্ঠানের কি কি ধরনের সমস্যা আছে ?

সদস্য কোড	শিক্ষা প্রতিষ্ঠান	শিক্ষা প্রতিষ্ঠানের সমস্যা
১	২-কোড	৩-কোড

কোড : ২-শিক্ষা প্রতিষ্ঠান

১. কিন্ডার গার্টেন
২. দাখিল ও আলিম
৩. ফাজিল ও কামিল
৪. সরাঃ প্রাইমারী স্কুল
৫. হাই স্কুল
৬. কলেজ
৭. কারিগরি শিক্ষা প্রতিষ্ঠান
৮. বিশ্ববিদ্যালয়
৯. অন্যান্য

৩-সমস্যা

১. শিক্ষার মান ভালো না
২. অদক্ষ শিক্ষক
৩. শিক্ষা উপকরণের অভাব
৪. খেলার মাঠ নাই
৫. অপরিচ্ছন্ন অবকাঠামো
৬. লাইব্রেরী নাই
৭. কোন সমস্যা নেই

(খ) শিক্ষা প্রতিষ্ঠানে না গেলে না যাওয়ার কারণ কি

(১) আর্থিক অসচ্ছলতা (২) শিক্ষায় পরিবারের অনিচ্ছা (৩) পরিবারের স্কুল/কলেজে যাওয়ার মত কেউ নেই (৪) অন্যান্য

অংশ ৪: প্রাকৃতিক এবং অন্যান্য দুর্যোগ

৪০১। প্রাকৃতিক ও অন্যান্য দুর্যোগ

১. আপনার এলাকায় জলাবদ্ধতা হয় কি? (১) হ্যাঁ
 হ্যাঁ হলে, জলাবদ্ধতার কারণ (একাধিক উত্তর হতে পারে):
 (ক) নিচু এলাকা (খ) পানি নিষ্কাশনের ব্যবস্থা নেই (গ) অন্যান্য

৪০২। নিম্ন বর্ণিত সময়ে আপনাদের বসতবাটি বন্যা প্রাবল্যিত হয়েছিল কি? (১) হ্যাঁ (২) না
 হ্যাঁ হলে পানি কতটা হয়েছিল? আপনার পরিবারের কি পরিমাণ ক্ষতি হয়েছিল?

উল্লেখযোগ্য বন্যা (সাল)	ভিটির নীচে (ফুট)	ভিটি পর্যন্ত (ফুট)	ভিটির উপরে (ফুট)	ক্ষতির পরিমাণ (টাকায়)
১৯৯৮				
২০০১				
২০০৪				
২০০৮				
২০১২				

অংশ ৫: এলাকার বিভিন্ন ধরনের সমস্যা

৫০১। আপনার এলাকার সর্বাধিক গুরুত্বপূর্ণ তিনটি সমস্যা কি কি? (গুরুত্ব অনুযায়ী নম্বর বসান)

সমস্যার কোড নং												
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কোডঃ

১. বিদ্যুৎ সমস্যা ২. যানবাহন সম্পর্কিত ৩. বর্জ্য নিষ্কাশনের জায়গার অভাব ৪. রাস্তাঘাট সম্পর্কিত ৫. জলাবদ্ধতা
 ৬. আইন শৃঙ্খলার অবনতি ৭. পয়ঃনিষ্কাশন ৮. খাবার পানি সংক্রান্ত ৯. বাজার অনেক দূরে ১০. ভাল শিক্ষা প্রতিষ্ঠানের
 অভাব ১১. কর্ম সংস্থান সমস্যা ১২. নারী নির্যাতন ১৩. ধর্মীয় গোড়ামি ১৪. অন্যান্য

৬. কৃষি ভূমির মালিকানা :

- ক) নিজস্ব জমি:-----শতাংশ।
 খ) বন্ধক নেয়া:-----শতাংশ।
 গ) বর্গা নেয়া : -----শতাংশ।

গ) মোট চাষের জমি: -----শতাংশ।

৭. ভূমি ব্যবহার :

- ক) বসত ভিটা ও তৎসংলগ্ন জমি - -----শতাংশ।
 খ) আবাদী (মাঠ ফসলী জমির পরিমাণ) -----শতাংশ।
 গ) বন্ধক দেয়া জমির পরিমাণ-----শতাংশ।
 ঘ) বর্গা দেয়া জমির পরিমাণ -----শতাংশ।
 ঙ) স্থায়ী বাগানের অধীনে জমির পরিমাণ-----শতাংশ।
 চ) অনাবাদী জমির পরিমাণ -----শতাংশ।
 চ) জলাশয় / পুকুর -----শতাংশ।

৮. আবাদী জমির বৈশিষ্ট্য:

ভূমির শ্রেণীর	মাটির বৈশিষ্ট্য	জমির পরিমাণ
উঁচু জমি		
মাঝারী উঁচু		
মাঝারী		

মাঝারী নীচু		
নীচু		
কোড (ভূমির শ্রেণীর): ১= উচু জমি, ২= মাঝারী উচু, ৩= মাঝারী, ৪= মাঝারী নীচু, ৫= নীচু		
কোড (মাটির বৈশিষ্ট্য): ১= বেলে জমি, ২= বেলে দো-আঁশ, ৩= দো-আঁশ, ৪= কাদা দো-আঁশ, ৫= কাদা		

৯. ভূমি ব্যবহারের বিবরণ:

ক. গৃহ ও গৃহ সংলগ্ন ভূমির ব্যবহার: বসত বাড়ির মোট জমি: ----- (শ:)

ঘরবাড়ি, গাছপালা ও শাকসব্জী চাষে ব্যবহৃত জমি					অব্যবহৃত জমি			
ঘর ও উঠানের জমি (শঃ)	ফলজ (শ:)	বনজ (শ:)	অন্যান্য (শ:)	ব্যবহৃত মোট জমি (শ:)	ঘরবাড়ির উপযুক্ত জমি (শঃ)	গাছ রোপনের উপযুক্ত জমি (শঃ)	শাকসব্জী চাষের উপযুক্ত জমি (শ:)	অব্যবহৃত মোট জমি (শ:)

খ. আবাদী ও অনাবাদী (মাঠ ফসলী জমি) পরিমাণ) ----- --শতাংশ।

আবাদী জমি (শতাংশ)		অনাবাদী জমি (শতাংশ)				
সেচকৃত	অসেচকৃত	আবাদযোগ্য (শঃ)		আবাদ অযোগ্য (শতাংশ)	অকৃষি কাজে ব্যবব হত	মোট
		সেচকৃত	অসেচকৃত			

১০. জমির প্রকার অনুযায়ী প্রধান প্রধান শস্য বিন্যাসঃ

জমির প্রকার	খরিপ-১ (ফসল)		খরিপ-২ (ফসল)		রবি (ফসল)	
	সেচকৃত	অসেচকৃত	সেচকৃত	অসেচকৃত	সেচকৃত	অসেচকৃত
উচু জমি						
মাঝারী উচু						
মাঝারী						
মাঝারী নীচু						
নীচু						

১১ . ফসল আবাদের জন্য এক একর পরিমাণ জমি ভাড়া/লীজ নিতে খরচঃ-----টাকা

১২ . আপনি গত মৌসুমে ফসল আবাদের জন্য কোনো ঋণ গ্রহণ করেছেন কি ? হ্যাঁ /না (✓ চিহ্ন দিন)

উত্তর হ্যাঁ হলে কত টাকা গ্রহণ করেছেন :..... টাকা

১৩ . ২০১৩-১৪ সালে সব ফসল মিলিয়ে মোট আবাদকৃত জমির পরিমাণ (একরে) :

	নিজস্ব	বর্গা	ভাড়া	বন্ধক	অন্যান্য	মোট
রবি						
খরিপ-১						
খরিপ-২						

অংশ-২ঃফসল উৎপাদন

ক) সেচের আওতাধীন জমি

সেচের ধরণ	সেচের আওতাভুক্ত এলাকা								
	জমির প্রকার	জমির পরিমাণ	প্রাক খরিফ		খরিপ		রবি		মোট
			ফসল	জমির পরিমাণ	ফসল	জমির পরিমাণ	ফসল	জমির পরিমাণ	
১	২	৩	৪	৫	৬	৭	৮	৯	১০ (=৫+৭+৯)
গভীর নলকূপ/ অগভীর নলকূপ									
ভূ-পৃষ্ঠস্থ সেচ									

খ) ফসল উৎপাদনের পরিসংখ্যান

ফসলের মৌসুম	আবাদকৃত ফসল	জমির পরিমাণ (শঃ)	ফলন (টন/একর)	উৎপাদন (টন)
খরিপ-১	আউশ (উফশী)			
	আউশ (স্থানীয়)			
	পাট (তোষা)			
	পাট (দেশী)			
	ভুট্টা			
	চিনাবাদাম			
	পুঁই শাক			
	ডাটা			
	লাল শাক			
	শশা			
	করল			
	বেগুন			
	টেঁড়শ			
	পালং শাক			
	মিষ্টি আলু			
	চিচিঙ্গা			
	ঝাঙ্গা			
	তিল			
	তিসি			

ফসলের মৌসুম	আবাদকৃত ফসল	জমির পরিমাণ (শঃ)	ফলন (টন/একর)	উৎপাদন (টন)
	ছোলা			
	মুগ			
	এস কলাই			
	তরমুজ			
	মরিচ			
খরিপ-২	আমন (উফশী)			
	আমন (স্থানীয়)			
	করলা			
	বেগুন			
	টেঁড়শ			
	কেনাফ			
রবি	বোরো (উফশী)			
	বোরো (স্থানীয়)			
	গম			
	বার্ধাকপি			
	ফুলকপি			
	সীম			
	মূলা			
	গাজর			
	ওলকপি			
	শালগম			
	আলু			
	মিষ্টি আলু			
	চিনাবাদাম			
	সরিষা			
	ভুট্টা			
	খেসারী			
	মটর গুটি			
	ধইধুগা			

গ) ফল উৎপাদনের পরিসংখ্যান:

ফলের নাম	জমির পরিমাণ/গাছের সংখ্যা	উৎপাদন (টন/বিঘা)
কলা		
কাঠাল		
আম		
নারিকেল		
লিচু		
লেবু		
বাতাবী লেবু		

ফলের নাম	জমির পরিমাণ/গাছের সংখ্যা	উৎপাদন (টন/বিঘা)

ঘ) প্রযুক্তি গ্রহণের অবস্থা

ফসলের নাম	মান সম্মত বীজের ব্যবহার (হাঁ/না)	জৈব সারের ব্যবহার (হাঁ/না)	সুষম সারের ব্যবহার				শস সংরক্ষণ ব্যবস্থাপনা (হাঁ/না)	কস্য সংগ্রহের ব্যবস্থাপনা (হাঁ/না)
			ইউরিয়া (হাঁ/না)	টিএসপি (হাঁ/না)	এমওপি (হাঁ/না)	অন্যান্য (হাঁ/না)		
আমন (উফশী)								
আমন (স্থানীয়)								
আউশ (উফশী)								
আউশ (স্থানীয়)								
বোরো (উফশী)								
বোরো (স্থানীয়)								
পাট								
গম								
ভুট্টা								
তেল ফসল								
ডাল ফসল								
সজি								

ঙ. উৎপাদন খরচ

১) বোরো (সেচকৃত)

ব্যবহৃত উপকরণ		উপকরণের পরিমাণ, /বিঘা, ১বিঘা = শঃ	মূল্য, টাকা/কেজি	মোট খরচ, টাকা/বিঘা
জমি প্রস্তুতি	পাওয়ার টিলার (ঘন্টা)			
	পশু শক্তি (ঘন্টা)			
	শ্রমিক			
উপকরণ	বীজ/চারা			
	জৈবসার			
	ইউরিয়া			
	টিএসপি			
	এমওপি			
	অন্যান্য			
	সেচ			
	বালাই নাশক			
শ্রমিক	সার প্রয়োগ			
	বীজ/চারা রোপন			
	আগাছা দমন			
	সেচ প্রয়োগ			
	ডালাই নাশক প্রয়োগ			
	ফসল কর্তন			
	ফসল মাড়াই			
	ফসল ঝাড়াই			
	ফসল শুকানো			
	ফসল বাজারজাতকরণ			

ব্যবহৃত উপকরণ		উপকরণের পরিমাণ, /বিঘা, ১বিঘা = শঃ	মূল্য, টাকা/কেজি	মোট খরচ, টাকা/বিঘা
গত মৌসুমের ফলন কেজি/বিঘা				

২) আমন

ব্যবহৃত উপকরণ		উপকরণের পরিমাণ, /বিঘা, ১বিঘা = শঃ	মূল্য, টাকা/কেজি	মোট খরচ, টাকা/বিঘা
জমি প্রস্তুত কর	পাওয়ার টিলার (ঘন্টা)			
	পশু শক্তি (ঘন্টা)			
	শ্রমিক			
উপকরণ	বীজ/চারা			
	জৈবসার			
	ইউরিয়া			
	টিএসপি			
	এমওপি			
	অন্যান্য			
	সেচ			
	বালাই নাশক			
শ্রমিক	সার প্রয়োগ			
	বীজ/চারা রোপন			
	আগাছা দমন			
	সেচ প্রয়োগ			
	ডালাই নাশক প্রয়োগ			
	ফসল কর্তন			
	ফসল মাড়াই			
	ফসল ঝাড়াই			
	ফসল শুকানো			
	ফসল বাজারজাতকরণ			
গত মৌসুমের ফলন কেজি/বিঘা				

৩) আউশ

ব্যবহৃত উপকরণ		উপকরণের পরিমাণ, /বিঘা, ১বিঘা = শঃ	মূল্য, টাকা/কেজি	মোট খরচ, টাকা/বিঘা
জমি প্রস্তুতকরণ	পাওয়ার টিলার (ঘন্টা)			
	পশু শক্তি (ঘন্টা)			
	শ্রমিক			
উপকরণ	বীজ/চারা			
	জৈবসার			
	ইউরিয়া			
	টিএসপি			
	এমওপি			
	অন্যান্য			
	সেচ			
	বালাই নাশক			

ব্যবহৃত উপকরণ		উপকরণের পরিমাণ, /বিঘা, ১বিঘা = শঃ	মূল্য, টাকা/কেজি	মোট খরচ, টাকা/বিঘা
শ্রমিক	সার প্রয়োগ			
	বীজ/চারা রোপন			
	আগাছা দমন			
	সেচ প্রয়োগ			
	ডালাই নাশক প্রয়োগ			
	ফসল কর্তন			
	ফসল মাড়াই			
	ফসল ঝাড়াই			
	ফসল শুকানো			
	ফসল বাজারজাতকরণ			
গত মৌসুমের ফলন কেজি/বিঘা				

৪) গম

ব্যবহৃত উপকরণ		উপকরণের পরিমাণ, /বিঘা, ১বিঘা = শঃ	মূল্য, টাকা/কেজি	মোট খরচ, টাকা/বিঘা
জমি প্রস্তুত করণ	পাওয়ার টিলার (ঘন্টা)			
	পশু শক্তি (ঘন্টা)			
	শ্রমিক			
উপকরণ	বীজ/চারা			
	জৈবসার			
	ইউরিয়া			
	টিএসপি			
	এমওপি			
	অন্যান্য			
	সেচ			
	বালাই নাশক			
শ্রমিক	সার প্রয়োগ			
	বীজ/চারা রোপন			
	আগাছা দমন			
	সেচ প্রয়োগ			
	ডালাই নাশক প্রয়োগ			
	ফসল কর্তন			
	ফসল মাড়াই			
	ফসল ঝাড়াই			
	ফসল শুকানো			
	ফসল বাজারজাতকরণ			
গত মৌসুমের ফলন কেজি/বিঘা				

৫) ভুট্টা

ব্যবহৃত উপকরণ	উপকরণের পরিমাণ, /বিঘা, ১বিঘা = শঃ	মূল্য, টাকা/কেজি	মোট খরচ, টাকা/বিঘা
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ব্যবহৃত উপকরণ		উপকরণের পরিমাণ, /বিঘা, ১বিঘা = শঃ	মূল্য, টাকা/কেজি	মোট খরচ, টাকা/বিঘা
জমি প্রস্তুত করণ	পাওয়ার টিলার (ঘন্টা)			
	পশু শক্তি (ঘন্টা)			
	শ্রমিক			
উপকরণ	বীজ/চারা			
	জৈবসার			
	ইউরিয়া			
	টিএসপি			
	এমওপি			
	অন্যান্য			
	সেচ			
	বালাই নাশক			
শ্রমিক	সার প্রয়োগ			
	বীজ/চারা রোপন			
	আগাছা দমন			
	সেচ প্রয়োগ			
	ডালাই নাশক প্রয়োগ			
	ফসল কর্তন			
	ফসল মাড়াই			
	ফসল ঝাড়াই			
	ফসল শুকানো			
	ফসল বাজারজাতকরন			
গত মৌসুমের ফলন কেজি/বিঘা				

৬) শাক-সজি

ব্যবহৃত উপকরণ		উপকরণের পরিমাণ, /বিঘা, ১বিঘা = শঃ	মূল্য, টাকা/কেজি	মোট খরচ, টাকা/বিঘা
জমি প্রস্তুত করণ	পাওয়ার টিলার (ঘন্টা)			
	পশু শক্তি (ঘন্টা)			
	শ্রমিক			
উপকরণ	বীজ/চারা			
	জৈবসার			
	ইউরিয়া			
	টিএসপি			
	এমওপি			
	অন্যান্য			
	সেচ			
	বালাই নাশক			
শ্রমিক	সার প্রয়োগ			
	বীজ/চারা রোপন			
	আগাছা দমন			
	সেচ প্রয়োগ			
	বালাই নাশক প্রয়োগ			
	ফসল কর্তন			
	ফসল বাজারজাতকরন			
গত মৌসুমের				

ব্যবহৃত উপকরণ		উপকরণের পরিমাণ, /বিঘা, ১বিঘা = শঃ	মূল্য, টাকা/কেজি	মোট খরচ, টাকা/বিঘা
ফলন কেজি/বিঘা				

অংশ-৩ঃ সেচ এবং খামার ভিত্তিক পানি ব্যবস্থাপনা (সেচযুক্ত কৃষির বৈশিষ্ট্য)ঃ

(ক) রবি মৌসুমঃ সেচ প্রকল্পের কমান্ড এরিয়ার আওতায় শীত কালে বা শুষ্ক মৌসুমে সেচের জন্য পানি পাওয়া যায় কী না? যদি পাওয়া যায় তবে নিম্নের ছকে তথ্যাদি দিন।

উৎস	সেচকৃত এলাকা(শঃ)						
	বোরো	গম	ভুট্টা	ডাল ফসল	তেল ফসল	সজি	তামাক
ভূগর্ভস্থ (গভীর নলকূপ)							
ভূগর্ভস্থ (অগভীর নলকূপ)							
ভূ-পৃষ্ঠস্থ (এলএলপি)							

(খ) খরিপ-২ মৌসুমঃ বৃষ্টি বিধৌত প্রতিবেশগত ব্যবস্থায় স্বল্প মেয়াদী খরার সময় আপনি সম্পূরক সেচ প্রদান করেন কী না? যদি করেন তবে নিম্নের ছকে তথ্যাদি দিন।

উৎস	সেচকৃত এলাকা (শঃ)				
	রোপা আমন	ভুট্টা	সজি	ফল	অন্যান্য
ভূগর্ভস্থ (গভীর নলকূপ)					
ভূগর্ভস্থ (অগভীর নলকূপ)					
ভূ-পৃষ্ঠস্থ (এলএলপি)					

(ঘ) আপনার শস্য ক্ষেতের পানি নিষ্কাশনে কোনো সমস্যা আছে কি না? যদি থাকে তা কেমন?

- ১)
- ২)
- ৩)
- ৪)
- ৫)

(ঙ) সেচ সুবিধা সম্প্রসারণের ফলে শস্য নিবিড়তা বেড়েছে কি না? যদি বেড়ে থাকে তবে শতকরা কত ভাগ?

(চ) সেচ সুবিধা সম্প্রসারণের ফলে শস্য বহুমুখীকরণ বেড়েছে কি না? যদি বেড়ে থাকে তবে নতুন ফলন কী কী?

- ১)
- ২)
- ৩)

(ছ) সেচ সুবিধা সম্প্রসারণের ফলে শস্যের উৎপাদন বেড়েছে কি না? যদি বেড়ে থাকে তবে ফসলভিত্তিক শতকরা কত ভাগ?

- ১) ধানঃ-----%
- ২) গমঃ-----%
- ৩) ভুট্টাঃ-----%
- ৪) সজিঃ-----%
- ৫) ডালঃ-----%
- ৬) তেলঃ-----%
- ৭) তামাকঃ-----%
- ৮) অন্যান্যঃ-----%

(জ) পানি ব্যবহারকারী কৃষক সংগঠন ঠিকমত কাজ করছে কী না? যদি না করে তবে কী কী সমস্যার কারণে করছে না?

- ১)
- ২)
- ৩)

(ঝ) সেচ সুবিধা সম্প্রসারণের ফলে অথবা সেচ প্রদানের মাধ্যমে আপনার আয় উল্লেখযোগ্য পরিমাণ বেড়েছে কি না? যদি বেড়ে থাকে তবে কত টাকা?

(ঞ) বিগত ৫ বছরে আপনি কোনো প্রাকৃতিক দুর্যোগের (বন্যা, ঘূর্ণিঝড়) সম্মুখীন হয়েছেন কী? হ্যাঁ না

অংশ-৪মত্স্য

জলাশয়ের বিবরণ/বর্তমান অবস্থা: টিক চিহ্ন দিন (✓)

(ক) জলাশয়ের ধরণঃ পুকুর/ ডোবা/ খাল/ ধান ক্ষেত

(খ) মালিকানার ধরণঃ একক/ একাধিক/ দল

(গ) বর্তমান অবস্থাঃ আবাদি/ অনাবাদি/ পতিত

(ঘ) পানি ধারণঃ মৌসুমী/ এক বছর/ বহু বছর

(ঙ) জলাশয়ের আয়তন (বিঘা/শঃ)ঃ

(ঙ.১) সর্বোচ্চ আয়তন----- (ঙ.২) সর্ব নিম্ন আয়তন-----

(ঙ.৩) গড় আয়তন-----

(চ) জলাশয়ের গভীরতা (মিঃ)ঃ

(চ.১) শুষ্ক মৌসুমে----- (চ.২) বর্ষা মৌসুমে-----

(চ.৩) গড় -----

(ছ) স্বাভাবিক বন্যার ধরণঃ

(ছ.১) বন্যা প্রবণ এলাকা----- (ছ.২) বন্যা মুক্ত এলাকা -----

(ঝ) মাটির ধরণঃ

(ঝ.১) বেলে----- (ঝ.২) বেলে দোআঁশ-----

(ঝ.৩) দোআঁশ----- (ঝ.৪) পলি দোআঁশ-----

(ঝ.৫) এটেল----- (ঝ.৬) এটেল দোআঁশ-----

(ঞ) পানির রংঃ পরিষ্কার/সবুজ/ঘোলা/বাদামী

(ত) আগাছার আচ্ছাদনঃ নাই (<১০%)/<২৫% /<৫০% /<৭৫% / <১০০% / সম্পূর্ণ

(থ) জলাশয়ে মাছ চাষের বর্তমান কার্যক্রমঃ

(থ.১) প্রাকৃতিক আবাদ----- (থ.২) ব্যক্তিগত আবাদ-----

(থ.৩) দলীয় বা কমিউনিটি আবাদ----- (থ.৪) পলি দোআঁশ-----

(দ) জলাশয়ে আগাছার উপস্থিতি/প্রাপ্যতাঃ

- ১) কচুরীপানা
- ২) টোপা পানা
- ৩) ক্ষুদি পানা
- ৪) হেলেশগা

- ৫) কলমী
৬) অন্যান্য

(ন) জলাশয়ে মাছের প্রাপ্যতাঃ

ক্রঃ	স্থানীয় নাম	গত বছরের উৎপাদন, কেজি
১	বুই	
২	কাতল	
৩	মৃগেল	
৪	গ্রাস কার্প	
৫	সিলভার কার্প	
৬	সরপুটি	
৭	তেলাপিয়া	
৮	পাঙ্গাস	
৯	কই	
১০	মাগুর	
১১	শিং	
১২	পুটি/টেংরা/ মলা/ ঢেলা	
১৩	অন্যান্য (উল্লেখ করুন)	

(ফ) মৎস্য চাষ কার্যক্রম এবং উৎপাদন, খরচ ও আয়ঃ

উপকরণ	পরিমাণ	মূল্য
বিষ প্রয়োগ		
রোটেনন		
ফসফোটক্সিন		
চুন প্রয়োগ		
পোনা		
গের		
খাবার		
জাল		
শ্রমিক		
সেচের জ্বালানী ও যন্ত্রপাতি খরচ		
গত বছরের মাছের উৎপাদন		

(ব) আপনি কী মাছ চাষের জন্য গত বছর ঋণ গ্রহণ করেছিলেন?

যদি করে থাকেন কত টাকাঃ -----টাকা

অংশ-৫ঃ পশুসম্পদ

ক) পশুসম্পদের মালিকানার ধরণ

পশুসম্পদের ধরণ	গত বছরের মোট	জন্ম (+)	ক্রয়	বিক্রয়
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			মৃত্যু (-)					
	সংখ্যা	মূল্য (টাকা)	সংখ্যা	মূল্য (টাকা)	সংখ্যা	মূল্য (টাকা)	সংখ্যা	মূল্য (টাকা)
স্থানীয় জাত								
গাভী								
ষাঁড়								
ষাঁড় বাছুর								
বকনা বাছুর								
বলদ								
মিশ্র/শংকর জাত								
গাভী								
ষাঁড়								
ষাঁড় বাছুর								
বকনা বাছুর								
বলদ								
ভেড়া								
ছাগল								
হাঁস								
মুরগী								
অন্যান্য								

খ) পশুসম্পদের জন্য ব্যবহৃত খাবার (গত তিন মাসে)

খাবার	মোট পরিমাণ, কেজি		একক মূল্য, টাকা/কেজি
	নিজস্ব	ক্রয়কৃত	
ধানের খড়			
গমের খড়			
সবুজ ঘাস			
আখের মাথা			
সজির অবশিষ্ট			
চালের কুড়া			
গমের কুড়া			
ডালের ভূষি			
তেলের খেল			
ঔষধ			
ভিটামিন ও খনিজ			
মোলাসেস			
অন্যান্য			

খ.১ পশুসম্পদের জন্য যদি বাণিজ্যিক খাবার ব্যবহার করা না হয় তবে কী কারণে?

- ১) মূল্য বেশী
- ২) পাওয়া যায় না
- ৩) অর্থের অভাব
- ৪) ক্রয় ক্ষমতার বাইরে
- ৫) অন্যান্য
- ৬) অন্যান্য

খ.২ পশুসম্পদের বা পশুসম্পদ আবাদের মূল সমস্যা কী কী?

- ১) মূল্য বেশী
- ২) উপযুক্ত জাত পাওয়া যায় না
- ৩) অর্থের অভাব
- ৪) ক্রয় ক্ষমতার বাইরে
- ৫) উৎপাদিত পণ্য বিক্রয় করা যায় না
- ৬) উৎপাদিত পণ্যের উপযুক্ত মূল্য পাওয়া যায় না
- ৭) চুরি হয়ে যায়
- ৮) অন্যান্য

গ) দুগ্ধ উৎপাদন ও বিপণন:

১. গত ছয় মাসে দুগ্ধবতী গাভীর সংখ্যাঃ
২. দৈনিক গাভী প্রতি দুগ্ধ উৎপাদনঃ-----লিঃ
৩. দৈনিক মোট দুগ্ধ উৎপাদনঃ-----লিঃ
৪. দৈনিক মোট দুগ্ধ বিক্রয়ঃ-----লিঃ, গড় বিক্রয় মূল্যঃ -----টাকা/লিঃ
৫. দৈনিক মোট দুগ্ধ ভোগঃ-----লিঃ
৬. আপনার এলাকায় কোনো দুগ্ধ প্রক্রিয়াকরন বা সংগ্রহ কেন্দ্র আছে কী না?
৭. দুগ্ধ বিক্রয় কেন্দ্রঃ বাড়ী / বাজার / সংগ্রহ কেন্দ্র

অংশ-৬ঃ কৃষিজাত পণ্যের মূল্য সংযোজন ও বাজারজাতকরণ

ক) বাজার প্রবেশাধিকার

পণ্যের নাম	গত ১২ মাসে বিক্রয়ের পরিমাণ, কেজি	কার কাছে বিক্রয়	বিক্রয়ের স্থান	বিক্রয়ের সময়	বাজার হতে বাড়ীর দূরত্ব, কিমি	পরিবহনের জন্য ব্যবহৃত যানবাহন	পরিবহন খরচ (ফসল, দুধ ও গবাদিপশুর জন্য টাকা/কেজি)
আন							
গম							
ভুট্টা							
তেল ফসল							
ডাল ফসল							
সজি							
ফল							
হাঁস/মুরগী							
দুধ							
ডিম							
গরু/মহিষ							
ছাগল/ভেড়া							
অন্যান্য (উল্লেখ করুন)							

কোডঃ ক্রেতা ১ = ক্ষুদ্র ব্যবসায়ী/ফড়িয়া, ২ = পাইকারী ক্রেতা/বেপারী, ৩ = আড়তদার, ৪ = ভোক্তা, বিক্রয়ের স্থানঃ ১ = বাড়ী, ২ = বাজার, ৩ = সংগ্রহ কেন্দ্র, বিক্রয়ের সময়ঃ ১ = শস্য কর্তনের পরপরই, ২ = যখন উপযুক্ত বাজার মূল্য পাওয়া যায়

খ) উপকরণ ক্রয়ের উৎস

উপকরণ	ক্রয়ের স্থান	কার কাছ থেকে ক্রয়	ক্রয়ের সময়	উপকরণের বাজার হতে বাড়ীর দূরত্ব,
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				কিমি
বীজ				
সার				
পেস্টিসাইড				
পশুখাদ্য				
মাছের পোনা				

কোডঃক্রয়ের স্থানঃ১ = কৃষকের বাড়ী, ২ = বাজার। কার কাছ থেকে ক্রয়ঃ ১= কৃষক, ২= খুচরা বিক্রেতা, ৩ = সরকারী সংস্থা, ৪ = অন্যান্য (উল্লেখ করুন)। ক্রয়ের সময়ঃ১ = ফসল উৎপাদনের সময়, ২ = ফসল উৎপাদনের পূর্বে

গ) ঋণের উৎস ও পরিমাণ

ঋণের উৎস	ঋণের পরিমাণ	সূদের হার
আত্মীয় স্বজন		
বন্ধুবান্ধব		
স্থানীয়/গ্রাম্য ঋণদাতা/মহাজন		
ব্যাংক		
এনজিও		
অন্যান্য (উল্লেখ করুন)		

ঘ) কৃষি উৎপাদন ও বাজারজাতকরণে সমস্যা

(১) জীব ও ভৌত সমস্যা

অতি বৃষ্টি/ অনাবৃষ্টি/ বন্যা/ খরা

ভূমি ক্ষয়/ মাটির অবক্ষয়

সেচের পানির অভাব

মাছ চাষে পানির অভাব

(২) উৎপাদন ও কারিগরী সমস্যা

কম উৎপাদন

রোগ ও পোকাকার আক্রমণ

উপযুক্ত প্রযুক্তির অভাব

সম্পূরক সেচের অভাব

মাটির পুষ্টি ও উর্বরতা হ্রাস

(৩) উপকরণের প্রাপ্যতা/সরবরাহ

বীজঃ মানসম্মত বীজের অভাব

সারঃ মানসম্মত সারের অভাব

পশুখাদ্যঃ মানসম্মত পশুখাদ্যের অভাব

মাছের পোনাঃ মানসম্মত পোনার অভাব

পেস্টিসাইডঃ মানসম্মত পেস্টিসাইডের অভাব

(৪) আর্থসামাজিক কারণ

ক্রয়কৃত উপকরণের উচ্চমূল্য

উৎপাদন মৌসুমে শ্রমিকের অভাব

অপর্যাপ্ত ঋণ সুবিধা

অপর্যাপ্ত সম্প্রসারণ সেবা

(৫) বাজারজাতকরণ সমস্যা

সংরক্ষণ সুবিধার অভাব

অপর্যাপ্ত পরিবহন

পরিবহন খরচ বেশী

পণ্যের নিম্ন মূল্য

(৬) পশুসম্পদ পালনের সমস্যা
রোগের সমস্যা
অপর্যাপ্ত চিকিৎসা সুবিধা
পশুখাদ্যের অপর্যাপ্ততা
পশুখাদ্যের উচ্চমূল্য
দুধ প্রক্রিয়াকরন সুবিধার অভাব

APPENDIX 4.2

নগর উন্নয়ন অধিদপ্তর প্রিপারেশন অব ডেভেলপমেন্ট প্ল্যান ফর ফোরটিন উপজেলাস প্যাকেজ-১

শহর আর্থ-সামাজিক জরিপ প্রশ্নমালা ২০১৫

নমুনা নম্বরঃ.....

জরিপের তারিখঃ

সাক্ষাৎকার গ্রহণকারী: নাম..... স্বাক্ষর.....

☐ ডাটা এন্ট্রিকারী-----

তারিখ:-----

☐ তথ্য নিরীক্ষক-----

তারিখ:-----

☐ সকল তথ্য নেয়া হয়েছে হ্যাঁ ☐ না ☐

☐ অসম্পূর্ণ

সুপারভাইজারের স্বাক্ষর

আর্থ-সামাজিক তথ্য

অংশ ১ : পারিবারিক / খানা বিষয়ক তথ্য

১০১। উত্তরদাতার নাম.....

১০২। খানার প্রকার, জনসংখ্যা ও অন্যান্য বৈশিষ্ট্যঃ (উত্তরদাতা থেকে শুরু করুন)

সদস্য কোড	খানা প্রধানের সাথে সম্পর্ক	সঠিক বয়স	লিঙ্গ	শিক্ষা	ধর্ম	বৈবাহিক অবস্থা	পেশা
	২-কোড		৩-কোড	৪-কোড	৫-কোড	৬-কোড	৭-কোড
১							
২							
৩							
৪							
৫							
৬							
৭							
৮							
৯							
১০							

২- খানা প্রধানের সাথে সম্পর্ক ৩-লিঙ্গ কোড সমূহ ৪-শিক্ষা ৫-ধর্ম

APPENDIX 4.2

1 খানা প্রধান	6 অন্যান্য	1 পুরুষ	1 নিরক্ষর	6 াতক/সমমান	1 মুসলিম
2 স্ত্রী/স্বামী		2 মহিলা	2 শ্রেণী ১ম-৫ম	7 াতকোত্তর/সমমান	2 হিন্দু
3 পুত্র/কন্যা		3 হিজড়া	3 শ্রেণী ৬ষ্ঠ- ১০ম	8 অপ্রাতিষ্ঠানিক	3 বৌদ্ধ
4 পিতা/মাতা			4 এস.এস.সি/সমমান	9 কারিগরী	4 খ্রীষ্টিয়ান
5 ভাই/বোন			5 এইচ.এস.সি/সমমান		5 উপজাতি

৬-বৈবাহিক অবস্থা

৭-পেশা

1 অবিবাহিত	1 সরকারী চাকুরী	7 বেসরকারী চাকুরী/এনজিও	13 পোল্ট্রি/চিংড়ি/মৎস্য চাষী
2 বিবাহিত	2 শিক্ষকতা/ডাঃ/ইঞ্জি/উকিল/কৃষিবিদ	8 হস্‌ড শিল্প/কুটির শিল্প/তাঁতী/ধোপা	14 মধু আহরণ কারী
3 বিধবা/বিপত্তিক	3 চাষাবাদ/কৃষি কাজ	9 দক্ষ শ্রমিক	15 ছাত্র /ছাত্রী
4 তালাক প্রাপ্ত	4 গৃহকর্তী	10 দিন মজুর/অদক্ষ শ্রমিক	16 বেকার
5 পৃথক	5 বড় ব্যবসা	11 রিক্সা/ভ্যানচালক/ড্রাইভার/মাঝি	17 অবসর প্রাপ্ত
6 পরিত্যক্ত	6 ছোট/ক্ষুদ্র ব্যবসা/ফেরিওয়ালা	12 বিউটিপারলার/নাপিত	18 অন্যান্য (উল্লেখ করুন)

১০৩। খানার অবস্থানঃ

১। এলাকার ধরণ (✓) (1) শহরের কেন্দ্র স্থল (2) সিক (3) শহরতলী পলিড (5) অন্যান্য

২। মৌজা/মহলগা 3। ওয়ার্ড নং হোডিং নং । রাস্তা/লেন/সড়ক

১০৪। বাড়ি এবং বাড়ির মালিকানার ধরণ (✓ দিন)ঃ

১।	বাড়ির মালিকানা	(1) একক (2) যৌথ (3) সরকারী ভবন (4) ভাড়া (5) অন্যান্য (উল্লেখ করুন)
২।	বাড়ির মালিকানার উৎস (বাড়ির মালিক হলে)	(1) উত্তরাধিকার সূত্রে প্রাপ্ত (2) দানসূত্র (3) সরকারী বরাদ্দপ্রাপ্ত (4) লীজ (5) ক্রয়সূত্রে (6) খাস জমি (7) অন্যান্য
৩।	বসবাসরত বাড়ির ধরণ	ক। (1) এক তলা (2) দুই তলা (3) তিনতলা (4) চারতলা (5) পাঁচতলা (6) ৬ তলা বা উর্ধ্ব খ। (1) আধা পাকা (2) টিন শেড (3) কাঠের বাড়ি (4) কাঁচা বাড়ি (5) অন্যান্য (উল্লেখ করুন)
৪।	বাড়ির কক্ষ সংখ্যা	(1) এক কক্ষ (2) দুই কক্ষ (3) তিনকক্ষ (4) চার কক্ষ (5) পাঁচ কক্ষ (6) ৬ কক্ষ বা উর্ধ্ব
	বাড়ির তলার সংখ্যা	(1) এক তলা (2) দুই তলা (3) তিনতলা (4) চারতলা (5) পাঁচতলা (6) ৬ তলা বা উর্ধ্ব
৫।	বাড়ির ব্যবহার	(1) আবাসন (2) বাণিজ্যিক (3) অফিস (4) মিশ্র (5) অন্যান্য
৬।	বাড়ির অবস্থা	(1) ভাল (2) ধ্বংসমুখ (3) নতুন (4) বহু পুরাতন
৭।	বসবাসের মেয়াদ কাল	(1) ৫এর নীচে (2) ৫-১০ বছর (3) ১০-১৫ বছর (4) ১৫-২০ বছর (5) ২০ বছরে উর্ধ্ব

১০৫। খানার মাসিক আয় (আনুমানিক)ঃ

ক্রমিক নং	আয়ের উৎস	টাকা
1	চাকুরী	
2	ব্যবসা	
3	কৃষি	
4	বাড়ি ভাড়া	
5	দিন মজুরী	
6	পোল্ট্রি/চিংড়ি/মৎস্য চাষ	
7	কুটির শিল্প	
8	অবসর প্রাপ্ত	
9	রেমিট্যান্স (বৈদেশিক আয়)	
10	অন্যান্য (উল্লেখ করুন)	
11	মোটঃ	

১০৬। খানার মাসিক ব্যয় (আনুমানিক)ঃ

ক্রমিক নং	খরচের বিবরণ	টাকা	ক্রমিক নং	খরচের বিবরণ	টাকা
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APPENDIX 4.2

1	খাদ্য		6	স্বাস্থ্য	
2	বাড়ী ভাড়া		7	শিক্ষা	
3	পানি		8	যানবাহন	
4	পোষাক		9	বিনোদন	
5	বিদ্যুৎ/গ্যাস/অন্যান্য জ্বালানী/টেলি		10	সামাজিক ব্যয়	
	মোটঃ		11	অন্যান্য (উল্লেখ করুন) মোটঃ	

১০৭। জমির বাজার মূল্যঃ

জমির একক	বসত ভিটা		
	১৯৯৮ সাল	২০০৩ সাল	২০১২ সাল
জমির মূল্য/শতাংশ			

১০৮। বাড়ীর প্র্যান অনুমোদন বিষয়ক (শুধু মাত্র পৌরসভা এলাকার বাড়ির মালিকের জন্য)

- (ক) বাড়ির প্র্যান পৌরসভা/উপজেলা/সিটি কর্পোরেশন পরিষদ কর্তৃক অনুমোদিত কি? (১) হ্যাঁ (২) না
 (খ) বাড়ি তৈরির সব আইন (চারিদিকে জায়গা ছেড়ে) মেনে বাড়ি নির্মাণ করেছেন কি? (১) হ্যাঁ (২) না
 (গ) যদি না হয় কারণ কি? (১) এ ব্যাপারে অবগত নন (২) কোন বাধ্যবাধকতা নেই বলে (৩) জায়গা কম বলে (৪) প্রয়োজন মনে করি নাই
 (৫) অন্যান্য (উল্লেখ করুন)-----

১০৯। অভিগমনের(Migration)তথ্য (প্রযোজ্য ক্ষেত্রে / চিহ্ন দিন)

1	পৌরএলাকার স্থায়ী বাসিন্দা	(1) হ্যাঁ (2) না		
2	যদি না হয়, পৌরসভায় অভিগমনের সাল	সঠিক সাল:	সঠিক সাল:	সঠিক সাল:
3	অভিগমনের উৎস	(1) একই উপজেলা	(2) জেলার অন্যান্য উপজেলা	(3) অন্য জেলা (4) অন্য দেশ
4	বসবাসের কারণ	ভাড়া বিহীন	অল্প ভাড়া	নিকটস্থ কর্মস্থল
5	অভিগমনের কারণ	চাকুরী	ব্যবসা	দারিদ্রতা
			প্রাকৃতিক দুর্যোগ	বৈবাহিক
				অন্যান্য

অংশ ২: অবকাঠামো সুবিধা/সেবা সুবিধা

২০১। যাতায়াত ব্যবস্থার বর্তমান অবস্থা (বাড়ী সংলগ্ন) :

বাসা থেকে প্রধান রাস্তার দূরত্ব	বাসার সম্মুখস্থ রাস্তার প্রস্থ (মিঃ)	বাসার সম্মুখস্থ রাস্তার ধরন	রাস্তার সমস্যা	মেরামতের সময়	প্রধান রাস্তার সুবিধা		
					ড্রেন	লাইটপোস্ট	ট্রাফিক সিগনাল
০১-কোড	২-কোড	৩-কোড	৪-কোড	৫-কোড	৬-কোড	৭-কোড	৮-কোড

কোড :

01. বাসা থেকে প্রধান রাস্তার দূরত্ব (1) ০-১০০মি (2) ১০১-৫০০মি (3) ৫০১-১০০০মি (4) ১০০০মি+

02. বাসার সম্মুখস্থ রাস্তার প্রস্থ (মিঃ) (1) ৩ মি (2) ৫ মি (3) ৫মি+

03. বাসার সম্মুখস্থ রাস্তার ধরন (1) পিচ ঢালা (2) এইচবিবি (3) ইটের রাস্তা (4) আরসিসি (5) সিসি (6) কাঁচা

04. রাস্তার সমস্যা (1) ভালো (2) ভালো না (3) হকার দ্বারা দখলকৃত (4) অপ্রশস্ত (5) অন্যান্য

05. মেরামতের সময় (1) প্রতি বছর (2) ২/৩ বছর পর (3) অনিয়মিত

06. ড্রেন (1) পাকা (2) কাঁচা (3) নাই

07. লাইটপোস্ট (1) আছে (2) নাই

08. ট্রাফিক সিগনাল (1) আছে (2) নাই

২০২। নাগরিক সার্ভিস সমূহের অবস্থা (✓ দিন)ঃ

ক্রমিক নং	সুবিধা সমূহ	সুবিধা আছে/নাই	সেবার মান	ক্রমিক নং	সুবিধা সমূহ	সেবার মান
1	পাইপে সরবরাহকৃত পানি			5	পয়ঃ নিষ্কাশন	
2	বিদ্যুৎ			6	বর্জ্য নিষ্কাশন	
3	গ্যাস			7	টেলিফোন/মোবাইল	
4	ড্রেন			8	অন্যান্য (উল্লেখ করুন)	

কোডঃক। সুবিধা- আছে-১ নাই-২ খ। সেবার মান ১। ভাল ২। মোটামুটি ৩। খুব খারাপ ৪। সুবিধা নাই।

APPENDIX 4.2

২০৩। অত্যাৱশ্যকীয় সেৱা সমূহেৰ অৱস্থা

পানি সরবরাহ					জ্বালানীৰ উৎস	আলোৱাৰ উৎস	বাড়িৰ পাশেৰ ড্ৰেন	শৌচাগাৰ		বৰ্জ্য ব্যবস্থাপনা		
উৎস	সরবরাহেৰ পৰ্যাপ্ততা	পানিৰ মান	পানি সংগ্ৰহেৰ সমস্যা	বাড়িৰ থেকে পানিৰ লাইন				ধৱন	মালিকানা	বৰ্জ্য ফেল্ডাৰ স্থান	ডাষ্টবিনেৰ দূৰত্ব	বৰ্জ্য পৰিষ্কাৰেৰ সময় সূচি
০১-কোড	হ্যাঁ-১/না-২	২-কোড	৩-কোড	৪-কোড	৫-কোড	৬-কোড	৭-কোড	৮-কোড	৯-কোড	১০-কোড	১১-কোড	১২-কোড

কোডঃ

- ০১ পানিৰ উৎস (১) পাইপ লাইন সরবরাহ (২) নিজস্ব টিউবওয়েল (৩) কমন টিউবওয়েল (৪) খাল/নদী (৫) পুকুৰ/কুয়া (৬) অন্যান্য
 ০২ পানিৰ মান (১) পান যোগ্য (২) পানেৰ অযোগ্য (৩) অন্যান্য
 ০৩ পানিৰ সমস্যা (১) উৎস দূৰে (২) সংগ্ৰহেৰ দীৰ্ঘ সময় লাগে (৩) পানি দূষিত (৪) আৰ্শেনিক যুক্ত (৫) অন্যান্য
 ০৪ পানিৰ দূৰত্ব (১) ০.০০-০.২৫ কিমি (২) ০.২৫-০.৫কিমি (৩) ০.৫কিমি এৰ উৰ্দ্ধে
 ০৫ জ্বালানীৰ উৎস (১) সিলিভাৰ গ্যাস (২) বায়োগ্যাস (৩) ঘুটে-মুঠে (৪) কেৰোসিন (৫) লাকড়ি (৬) হিটাৰ (৭) সৌৰশক্তি
 ০৬ আলোৰ উৎস (১) বিদ্যুৎ (২) কেৰোসিন (৩) মোমবাতি (৪) সৌৰ শক্তি (৫) বায়োগ্যাস
 ০৭ ড্ৰেন (১) কাঁচা (২) পাকা (৩) নাই
 ০৮ শৌচাগাৰ(১) কাঁচা ল্যাট্ৰিন (২) পাকা ল্যাট্ৰিন (৩) পিট ল্যাট্ৰিন (৪) ল্যাট্ৰিন নাই
 ০৯ টয়লেটেৰ মালিকানা (১) ব্যক্তিগত (২) যৌথ (৩) কমুনিটি (৪) অন্যান্য
 ১০ বৰ্জ্য ফেল্ডাৰ স্থান(১) ডাষ্টবিন (২) ডাষ্টবিনেৰ পাশে (৩) খাল/নদীতে (৪) বাড়িৰ পাশে (৫) সিবিও নিয়ে যায় (৬) মাটিৰ গৰ্ভে
 ১১ ডাষ্টবিনেৰ দূৰত্ব (১) ০.০০-০.২৫কিমি (২) ০.২৫-০.৫কিমি (৩) ০.৫কিমি এৰ উৰ্দ্ধে
 ১২ বৰ্জ্য সংগ্ৰহেৰ সময় সূচী (১) প্ৰতিদিন (২) একদিন পৰ একদিন (৩) অনিয়মিত

২০৪। বৰ্তমান নাগৰিক সুবিধা সমূহ :

ক্রমিক নং	সুবিধাসমূহ (✓ দিন)	প্ৰাপ্যতা	দূৰত্ব	যাতায়াত মাধ্যম	সেৱাৰ মান	ভ্ৰমণ খৰচ (মাসিক)
১	মেডিকেল হাসপাতাল/ক্লিনিক					
২	কমিউনিটি সেন্টাৰ					
৩	মাৰ্কেট					
৪	পুলিশ বক্স					
৫	পাৰ্ক/খেলাৰ মাঠ					
৬	ব্যাংক					
৭	পোস্টঅফিস					
৮	দমকল বাহিনী					
৯	প্ৰাথমিক বিদ্যালয়/মাধ্যমিক বিদ্যালয়/উচ্চ মাধ্যমিক/কলেজ					
১০	ব্যায়ামাগাৰ/ক্লাব/খেলাৰ মাঠ					
১১	সিনেমা হল//মিলনায়তন					
১২	কাঁচা বাজাৰ					
১৩	বাস স্ট্যান্ড					
১৪	লাইব্ৰেৰী					
১৫	কবৰস্থান/শ্মশান					
১৬	ঈদগাহ/মসজিদ/মন্দিৰ/মঠ					
১৭	অন্যান্য (উল্লেখ কৰা ন)					

কোড সমূহ :

প্ৰাপ্যতা

- ১। আছে
২। নেই।

দূৰত্বঃ

- ১। পায়ে হাটা দূৰত্ব (০.৫ কিমি এৰ নীচে)
২। ০.৫ কি: মি: ভেতৰে
৩। ০.৫ কি:মি:- ১ কি: মি:
৪। ১ কি: মি: - ২ কি: মি:
৫। ২ কি: মি -৩ কি: মি:

যাতায়াত মাধ্যম

- ১। পায়ে হেটে
২। বাই-সাইকেলে
৩। ৱিক্সা
৪। টেম্পো
৫। ব্যক্তিগত গাড়ি
৬। বাস
৭। নৌকা
৮। অন্যান্য

সেৱাৰ মান

- ১। ভালো
২। মোটামুটি
৩। ভাল নয়
৪। সুবিধা নাই

২০৫। স্বাস্থ্য সেৱাঃ(গত ৬ মাসে পৰিৱাৰেৰ কাৰো স্বাস্থ্য সমস্যা/ অসুখ হয়েছিল কি? কি অসুখ হয়েছিল? কোথায় চিকিৎসা কৰিয়েছিলে?)

APPENDIX 4.2

সদস্য কোড	অসুখের ধরন	চিকিৎসার জন্য কোথায় যায়	চিকিৎসা না করানোর কারন
১	২-কোড	৩-কোড	৪-কোড
২			
৩			
৪			
৫			

কোড : ২-অসুখের ধরন

১. জ্বর/সর্দি/কাশি/টাইফয়েড
২. ডাইরিয়া/আমশয়
৩. জন্ডিস/নিউমোনিয়া
৪. বাত/হাঁপানী
৫. স্ত্রীরোগ
৬. চর্মরোগ
৭. ডায়বেটিস
৮. হৃদরোগ
৯. প্রযোজ্য নয়
১০. অন্যান্য

১০. কোন অসুখ হয়নি

৩-চিকিৎসার জন্য কোথায় যায়

১. সরকারী হাসপাতাল
২. প্রাইভেট ক্লিনিক
৩. উপজেলা স্বাস্থ্য কেন্দ্র
৪. হোমিওপ্যাথি ডাক্তার
৫. গ্রাম্য চিকিৎসক
৬. ফকির/ওঝা
৭. অন্যান্য

৪-চিকিৎসা না করানোর কারণ

১. কমিউনিটি ক্লিনিক নাই
২. শিক্ষিত ডাক্তারের অভাব
৩. হাসপাতাল দূরে
৪. সরকারী ওষুধ পাওয়া যায় না
৫. ফ্রি চিকিৎসা নাই
৬. অন্যান্য

২০৬। শিক্ষা ব্যবস্থা :

ক। আপনার পবিত্রের কোন সদস্যস্কুল/কলেজে যায় কি? ১. হ্যাঁ ☐ না ☐

() হ্যাঁ হলে কোন ধরনের শিক্ষা প্রতিষ্ঠানে যায়? প্রশিক্ষণ প্রতিষ্ঠানের কি কি ধরনের সমস্যা আছে?

সদস্য কোড	শিক্ষা প্রতিষ্ঠান	শিক্ষা প্রতিষ্ঠানের সমস্যা
১	২-কোড	৩-কোড

কোড : ২-শিক্ষা প্রতিষ্ঠান

১. কিন্ডার গার্টেন
২. দাখিল ও আলিম
৩. ফাজিল ও কামিল
৪. সরঃ প্রাইমারী স্কুল
৫. হাই স্কুল
৬. কলেজ
৭. কারিগরি শিক্ষা প্রতিষ্ঠান
৮. বিশ্ববিদ্যালয়
৯. অন্যান্য

৩-সমস্যা

১. শিক্ষার মান ভালো না
২. অদক্ষ শিক্ষক
৩. শিক্ষা উপকরণের অভাব
৪. খেলার মাঠ নাই
৫. অপরিচ্ছন্ন অবকাঠামো
৬. লাইব্রেরী নাই
৭. কোন সমস্যা নেই

(খ) শিক্ষা প্রতিষ্ঠানে নাগেলে না যাওয়ার কারণ কি

(১) আর্থিক অসচ্ছলতা (২) শিক্ষায় পরিবারের অনিচ্ছা (৩) পরিবারের স্কুল/কলেজে যাওয়ার মত কেউ নেই (৪) অন্যান্য

২০৭। চিত্তবিনোদন ব্যবস্থা

ঘরোয়া বিনোদন		বহির্বিবিনোদন	
ধরন	মন্তব্য	ধরন	মন্তব্য
১-কোড	২-কোড	১-কোড	২-কোড

কোডঃ

ঘরোয়া বিনোদন

১. টেলিভিশন/রেডিও
২. ক্যারাম
৩. লুডু/তাস/দাবা
৪. বই পড়া

বহির্বিবিনোদন

১. খেলার মাঠ
২. ক্লাব
৩. পার্ক/চিড়িয়াখানা
৪. যাদুঘর

মন্তব্য

১. সল্শেডাযজনক
২. মোটামুটি
৩. অসল্শেডাযজনক

APPENDIX 4.2

5. অন্যান্য

5. পর্যটন/বনভোজন

6. সিনেমা

7.অন্যান্য

অংশ ৩ : প্রতিদিনের যাতায়ত বিষয়ক তথ্য

৩০১। পরিবারের সদস্যদের যাতায়াত/ভ্রমণ সংক্রান্ত তথ্যঃ

[illegible]

পূর্ব দিনের ভ্রমণ সংক্রান্দ তথ্য (তারিখসহ) লিপিবদ্ধ করতে হবে। কোন সদস্য যদি একইদিনে একাধিক ভ্রমণ করে থাকেন তবে তা পৃথকভাবে লিপিবদ্ধ করতে হবে। ফিরতি যাত্রা পৃথক হিসাবে চিহ্নিত হবে।

কোডঃ

২:দূরত্ব ৩:ভ্রমণের উদ্দেশ্য ৬:বাহনের নাম ৭: সমস্যা

- | | | | |
|-------------------------|--|-----------------------|-----------------------------|
| 1. ১ কি.মি. | 1. কর্মস্থলে গমন | 1. রিক্সা/ভান | 1. রাস্তা সংকীর্ণ |
| 2. ১-৩ কি.মি. | 2. স্কুল/কলেজ/বিশ্ববিদ্যালয়/শিক্ষা প্রতিষ্ঠান | 2. সাইকেল | 2. সবসময় যানজট |
| 3. ৩-৫ কি.মি. | 3. কেনাকাটা | 3. মোটর সাইকেল | 3. বাস স্টপেজ নেই |
| 4. ৫-৭ কি.মি. | 4. আনন্দ ভ্রমণ/বিনোদন/খেলাধুলা | 4. কার/জীপ/মাইক্রোবাস | 4. দুর্ঘটনা |
| 5. ৭ কি.মি.-এর অধিক | 5. আত্মীয় গৃহে গমন | 5. বাস | 5. মাঝে মাঝে রাস্তা ভাল নেই |
| 6. বাহন পরিবর্তনের জন্য | 6. বেসীট্যাক্সী/টেম্পো | 6. ভাড়া বেশি | |
| 7. অন্যান্য | 7. হেঁটে | 7. অন্যান্য | |
| | 8. অন্যান্য (উল্লেখ করুন): | | |

অংশ ৪ : প্রকৃতিক এবং অন্যান্য দুর্যোগ

৪০১। প্রাকৃতিক ও অন্যান্য দুর্যোগ

১. আপনার এলাকায় জলাবদ্ধতা আছে কি? (১) হ্যাঁ (২) না
 হ্যাঁ হলে, জলাবদ্ধতার কারণ (একাধিক উত্তর হতে পারে):
 (ক) নিচু এলাকা (খ) পানি নিষ্কাশনের ব্যবস্থা নেই (গ) অন্যান্য

৪০২। নিম্ন বর্ণিত সময়ে আপনাদের বসতবাটি বন্যা পৃষ্ঠাবিত হয়েছিল কি ?(১) হ্যাঁ (২) না
হ্যাঁ হলে পানি কতটা হয়েছিল? আপনার পরিবারের কি পরিমান ক্ষতি হয়েছিল?

উল্লেখযোগ্য বন্যা (সাল)	ভিটির নীচে (ফুট)	ভিটি পর্যন্ত (ফুট)	ভিটির উপরে (ফুট)	ক্ষতির পরিমাণ (টাকায়)
১৯৯৮				
২০০১				

APPENDIX 4.2

২০০৪				
২০০৮				
২০১২				

অংশ ৫ : এলাকার বিভিন্ন ধরনের সমস্যা

৫০১। আপনার এলাকার সর্বাধিক গুরুত্বপূর্ণ তিনটি সমস্যা কি কি? (গুরুত্ব অনুযায়ী নম্বর বসান)

সমস্যার কোড নং												
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কোডঃ

- | | | | | |
|-------------------------|----------------------|-----------------------------------|------------------------|----------------------------------|
| ১. বিদ্যুৎ সমস্যা | ২. যানবাহন সম্পর্কিত | ৩. বর্জ্য নিক্ষেপনের জায়গার অভাব | ৪. রাস্তাঘাট সম্পর্কিত | ৫. জলাবদ্ধতা |
| ৬. আইন শৃঙ্খলার অবনতি | ৭. পয়ঃনিষ্কাশন | ৮. খাবার পানি সংক্রান্ত | ৯. বাজার অনেক দূরে | ১০. ভাল শিক্ষা প্রতিষ্ঠানের অভাব |
| ১১. কর্ম সংস্থান সমস্যা | ১২. নারী নির্যাতন | ১৩. ধর্মীয় গোড়ামি | ১৪. অন্যান্য | |

৫০২। আপনার চাষযোগ্য জমি কি পরিমাণ আছে? -----বিঘা-----একর

৫০৩। কয় ফসলি জমি? -----বিঘা ১ ফসলি-----বিঘা ২ ফসলি-----বিঘা ৩ ফসলি

৫০৫। আপনি কি এলাকার উন্নয়নমূলক কাজে অংশগ্রহণ করে থাকেন? হ্যাঁ (১) ☐ ☐

কী কী উন্নয়নমূলক কাজে অংশগ্রহণ করে থাকেন? (✓ দিন)

ক্রমিক নং	কীভাবে	ক্রমিক নং	কীভাবে
১	সুযোগ সুবিধাদি বৃদ্ধির জন্য জমিপ্রদান	৪	সুযোগ সুবিধা বৃদ্ধির জন্য উপদেশ প্রদান
২	সুযোগ সুবিধাদিবৃদ্ধির জন্য অর্থ প্রদান	৫	অন্যান্য (উল্লেখ করুন)
৩	সুযোগ সুবিধাদিবৃদ্ধির জন্য শ্রম বন্টন		

৫০৬। গুরুত্ব অনুসারে আপনার এলাকার প্রয়োজনীয় উন্নয়ন মূলক কাজের উল্লেখ করুনঃ (যথার্থ উত্তর বৃত্তায়িত করুন)

১	রাস্তা	৪	মিলনায়তন	৭	কাঁচা বাজার
২	পয়ঃনিষ্কাশন	৫	চিত্তবিনোদন/শিশুপার্ক	৮	বাস স্ট্যান্ড
৩	সরবরাহকৃত পানি	৬	শিক্ষা প্রতিষ্ঠান	৯	বর্জ্যনিষ্কাশন

অংশ ৬ : উন্নয়ন প্রকল্পে অংশ গ্রহণ

৬০৭। উপজেলা/শহরের উন্নয়নের জন্য কোনভাবে সহায়তা করতে চান কি? কিভাবে?

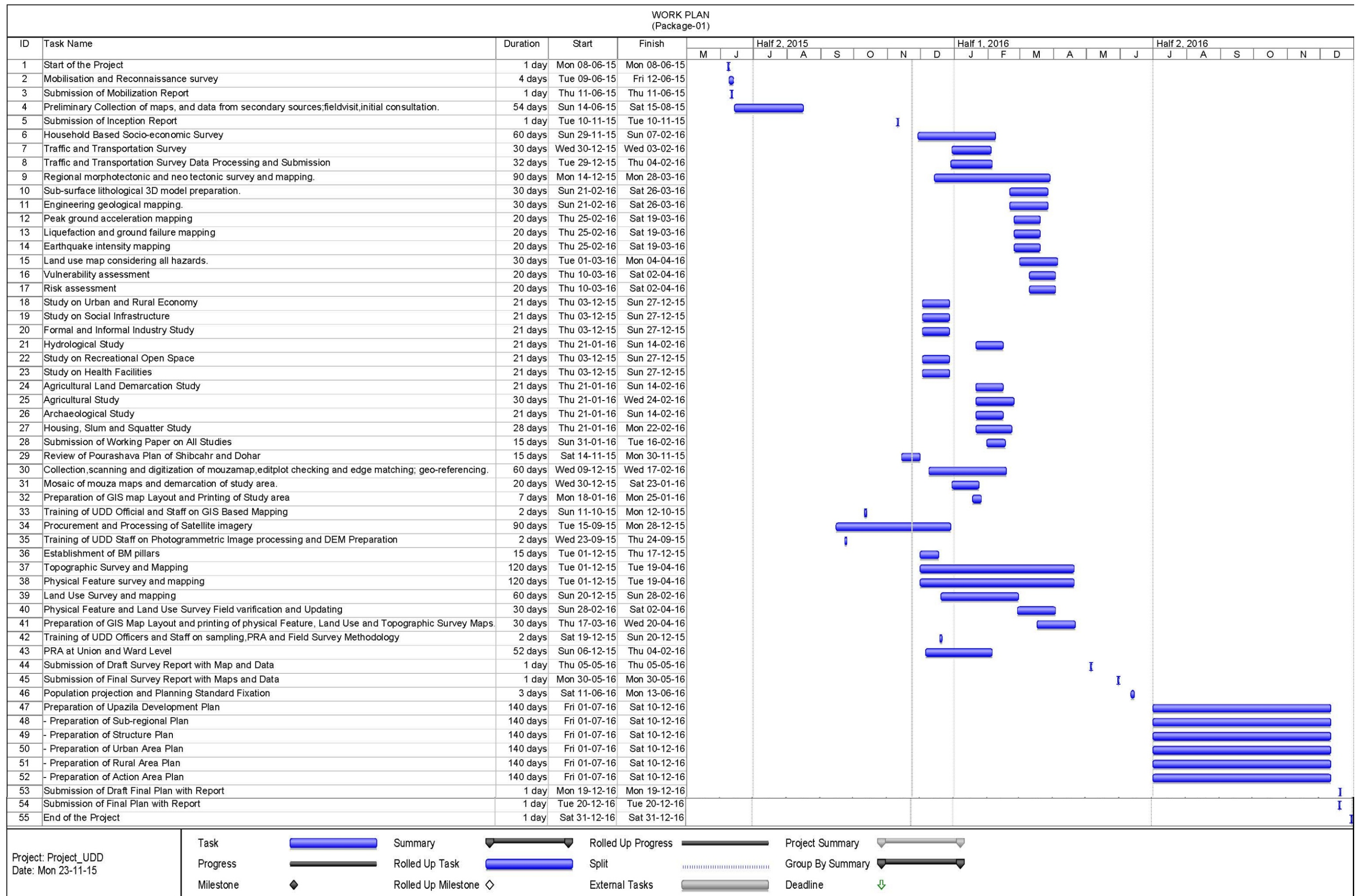
১	জমি দিয়ে	৪	পরামর্শ দিয়ে
২	অর্থ দিয়ে	৫	অন্যান্য(উল্লেখ করুন)
৩	শ্রম দিয়ে		

৬০৩। উপজেলা/শহরের উন্নয়নের ব্যাপারে আপনার কোন মতামত বা পরামর্শ আছে কি? কী পরামর্শ

দিবেন?.....
.....
.....

তথ্য প্রদানের জন্য আপনাকে ধন্যবাদ

APPENDIX 5.1





APPENDIX 5.2

Manning Schedule

DESIGNATION	Survey and Planning Phase (21 m)																					Staff Input			Total PM
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Home	Field	Total	
A. Professional Staff																									
1. Team Leader	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	11	2	13	13
2. Survey Expert	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	1.5	1.5	3	3
3. GIS Expert	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	19	0	19	19
4. Photogrammetric Expert	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	3	1	4	4
5. Agricultural Scientist	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	1	1	2	2
6. Urban Economist	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	3	1	4	4
7. Transport Planning Expert	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	3	1	4	4
8. Urban Planner	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	12	2	14	14
9. Social Expert	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	4	2	3	3
10. Geologist	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	3	1	4	4
11. Civil Engineer cum Hydrologist	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	3	1	4	4
12. Associate Geologist	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	3	1	4	4
13. Geological Survey Technician	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	3	1	4	4
B. Supporting Staff																									0
14. Office Manager	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	21	0	21	21
15. Jr. GIS Expert -1 for Dhaka	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	15	6	21	21
16. Jr. Urban Planner-1 No. for Project office at Dohar Upazila	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	0	21	21	21
17. Jr. Urban Planner-1 No. for Project office at Nawabgonj Upazila	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	0	21	21	21
18. Jr. Urban Planner-1 No. for Project office at Shibchar Upazila	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	0	21	21	21
19. Office Assistant - 1 No. for Dhaka	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	21	0	21	21
20. Office Assistant - 1 No. for Dohar Upazila	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	0	21	21	21
21. Office Assistant - 1 No. for Nawabgonj Upazila	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	0	21	21	21
22. Office Assistant - 1 No. for Shibchar Upazila	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	Fulltime	0	21	21	21
																									271

LEGEND:

Fulltime 
Intermittent 

TASKS AND RESPONSIBILITIES OF THE CONSULTANTS

1. **Team Leader:** Tasks and responsibilities of the team leader are stated below

- To take over the charges on all surveyed data and information from UDD Project Team; and coordinate among all the consultant team;
- To review the land use planning guidelines developed during survey part of the project, considering hydrological, physiographic, agricultural land classification, soils condition, ecological and environmental, socio-economic and livelihood pattern and other relevant characteristics; and make necessary corrections in consultation with PD;
- To review land category and land use matrix for the project area; and make necessary corrections in consultation with the PD;
- To identify and plan development project for the area;
- To review the recommendations on sectoral studies into spatial form, and plan implementation strategy and policy; and make necessary corrections in consultation with the PD;
- To coordinate preparation of different planning components including analytical reports, prepared by different consultants, for the planning package (structure plan, urban area plan, rural area plan, and action plan);
- To compile different planning components including analytical reports, prepared by different consultants, for the planning package; and prepare and finalize the planning package (structure plan, urban area plan, rural area plan, action plan) and report for the upazilas;
- To be responsible for knowledge transfer to Project Personnel to the UDD Project Team; and
- Any other related jobs as assigned by PD.

2. **Urban Planner:** Tasks and responsibilities of the urban planner are stated below

- To supervise and monitor land use, socio-economic, physical feature, topographic and other related surveys and studies; and coordinate among the consultant team;
- To review the existing plans and implementation problems;
- To prepare land use planning guidelines considering hydrological, physiographic, agricultural land classification, soils condition, ecological and environmental, socio-economic and livelihood pattern and other relevant characteristics;

- To prepare land category for the project area;
- To prepare land use matrix;
- To identify and plan development project for the area;
- To interpret the recommendations of sectoral studies into spatial form;
- To formulate plan implementation strategy and policy;
- To prepare report, working papers, sectoral studies and prepare report for submission to the PD;
- Preparation of working paper, reports and plan of the project as assigned by the PD;
- To assist the UDD team members in preparing land use plan according to the sectoral studies of the Structure Plan;
- To be responsible for knowledge transfer to Project Personnel and Preparation of working paper, and analytical reports; and
- Any other related jobs as assigned by PD.

3. **Survey Expert:** Tasks and responsibilities of the survey expert are stated below

- To design different surveys for the project;
- To conduct, coordinate and monitor physical feature, topographical and landuse, survey;
- Ensure quality and accuracy of survey data;
- To compile all the survey data into digital format;
- Experienced in RTK GPS/Total Station/Digital Level survey and processing;
- To arrange survey trainings for Project staff;
- Preparation of working paper, reports and plan of the project as assigned by the PD;
- Any other survey and studies related Jobs as assigned by PD.

4. **Photogrammetric Expert:** Tasks and responsibilities of the photogrammetric expert are stated below

- To prepare topographic, physical feature, landuse and other related map of the area;
- To prepare, supervise, manage and monitor digital database (Spatial and attribute) of the project;

- Installation and troubleshooting of GIS in UDD project office and head office;
- Ensure the quality of the map and related work;
- To work with a multi-disciplinary team environment to synchronize the multi-sectoral data into GIS database;
- Preparation of working paper, reports and plan of the project as assigned by the PD;
- Any other related jobs as assigned by PD.

5. **GIS Expert:** Tasks and responsibilities of the GIS expert are stated below

- To prepare topographic, physical feature, landuse and other related map of the area;
- To prepare, supervise, manage and monitor digital database (Spatial and attribute) of the project;
- Installation and troubleshooting of GIS in UDD project office and head office;
- Ensure the quality of the map and related work;
- To work with a multi-disciplinary team environment to synchronize the multi-sectoral data into GIS database;
- Preparation of working paper, reports and plan of the project as assigned by the PD;
- Any other related jobs as assigned by PD.

6. **Agricultural Scientist:** Tasks and responsibilities of the agricultural scientist are stated below

- To prepare questionnaire and other necessary arrangements for conducting surveys and studies;
- To conduct, monitor and supervise agricultural related data collection process and ensure quality of data collected;
- To classify the agricultural land by land type including cropping pattern, productivity, utilization and other related parameter as directed by the PD;
- To review and identify the characteristics of agricultural production of the region;
- To determine the agricultural water demand for the region;

- To identify the potential characteristics of farmland and agro-based industries on the basis of character of the agricultural production of the region, agricultural water demand and other related parameters;
- To work in a multi-disciplinary team to integrated agriculture related issues in to the planning package;
- To work closely with the GIS/RS analyst to include the agriculture related data into GIS database;
- Preparation of working paper, sand analytical report based on study and survey;
- Any other related jobs assigned by PD.

7. **Economist:** Tasks and responsibilities of the economist are stated below

- To prepare questionnaire and other necessary arrangements for conducting surveys and studies related to urban and rural economy;
- To conduct, monitor and supervise urban and rural economy related data collection process and ensure quality of data collected;
- To review and analyse economic growth variables of the town in the last six decades and forecast future trends in relation to the region to identify economic potential of the area;
- To prepare multi-sectoral investment program;
- To conduct feasibility studies of urban and rural development project/action area plans;
- To work with members of the consulting team to relate the results of such analyses with other parameters of urban and regional planning to form an inter-active multi-sectoral development criteria matrix;
- To assist other consulting team members to the translate the trends and patterns of urban and rural economic activities in space;
- To conduct various economic analysis including economic viability analysis and calculation of opportunity cost for the bankable projects in the area to prepare Action Plan;
- Preparation of working paper, and analytical report based on study and survey;
- Any other assignment pertaining to urban and rural economic activities and analysis as assigned by PD.

8. **Transport Planning Expert:** Tasks and responsibilities of the transport planning expert are stated below

- To conduct different traffic surveys and studies, and also analyze transportation network of the project area and ensure quality of data collected;
- To propose a transportation network to establish an efficient inter and intra town circulation system and also establish rural-urban linkage for the project area;
- To develop traffic prediction model of 20-year period for the project area;
- To work with a multidisciplinary team to integrate the output of the traffic surveys and transportation studies with both attribute and spatial data of different other components of the project;
- Preparation of working paper, and analytical report based on study and survey; and
- Any other related jobs as assigned by PD.

9. **Socio-economic Expert:** Tasks and responsibilities of the socio-economic expert are stated below

- To prepare, piloting, editing and finalization of socio-economic and other related questionnaire; and make necessary arrangements for PRA in consultation with the Team Leader and PD;
- To conduct, supervise and monitor socio-economic and other related questionnaire surveys including PRA for the project area;
- To supervise and monitor data entry, editing and presentation of data in tabular form;
- To analyze the data as directed by the Team Leader and PD and presentation in graphs and figures;
- Preparation of working paper, reports with recommendation as assigned by PD;
- Preparation of Socio-economic development model for the project area for the next 20-years;
- To work with a multidisciplinary team to integrate the outputs of socio-economic and other questionnaire surveys and PRA as well with attribute and spatial data of other components of the project is GIS database;
- Any other related jobs as assigned by the Team Leader and PD.

10. **Geologist:** Tasks and responsibilities of the geologist are stated below

- To conduct and supervise boreholes for geological surveys for the study area;
- To check and monitor the accuracy of the borehole preparation process, collected sample and data for the geological survey;
- To conduct lab test of the collected samples and interpretation of the results of lab test;
- To prepare seismic hazard, vulnerability, damage and risk assessment map for the area;
- To prepare macro zonation map for the area;
- Any other related jobs assigned by PD.

11. **Civil Engineer:** Tasks and responsibilities of the civil engineer are stated below

- To work the geologist for conducting engineering and hydro-geological survey and analysis for the study;
- To assess the strength of road, buildings and other infrastructure to measure seismic vulnerability;
- To assist the geologist in conducting aquifer test for delineating the area for ground water harvesting;
- Any other related Jobs;
- Assist PD and PM in preparing plans and reports.

12. **Associate Geologist:** Tasks and responsibilities of the associate geologist are stated below

- To assist the geologist in conducting and supervising boreholes for geologist surveys for the study area;
- To assist the geologist in checking and monitoring the accuracy of the borehole preparation process, collected sample and data for the geological survey;
- To assist the geologist in conducting lab test of the collected samples and interpretation of the results of lab test;
- To assist the geologist in preparation of seismic hazard, vulnerability, damage and risk assessment map for the area;

- To assist the geologist in preparation of macro zonation map for the area;
- Any other related jobs assigned by PD


13. **Geological Survey Technician:** Tasks and responsibilities of the geological survey technician are stated below

- To prepare boreholes for geological surveys for the study area;
- To collect samples and data for the geological survey;
- To assist the geologist in conducting lab test of the collected samples;
- Any other related jobs assigned by PD.

APPENDIX 6.1

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

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৳ ১০০

একশত টাকা

কছ ৯২১১৭২৯

স্বাক্ষর

“অফিস ভাড়ার চুক্তিপত্র”

মো: ওসমান খান, পিতা: মো: আমির হোসেন খান, মাতা: মৃত মতিজান বেগম, সাং- নলগোড়া, ওয়ার্ড নং- ০৭,
নলগোড়া খাজার ডেগ সড়ক, শিবচর পৌরসভা, ডাকঘর : বরহামগঞ্জ, উপজেলা: শিবচর, জেলা: মাদারীপুর।

..... ১ম পক্ষ (মালিক)।

পরামর্শক প্রতিষ্ঠান দেশ উপদেশ লিঃ সহযোগিতায় আইমা ইন্টারন্যাশনাল বিডি লি: ও টেকনিক্যাল সাপোর্ট
সার্ভিসেস লি: এর পক্ষে প্রকল্প সমন্বয়কারী মো: জোবায়ের আহমেদ (জসীম), ৮০/সি, আসাদ এভিনিউ ৫ম তলা,
মোহাম্মদপুর, ঢাকা-১২০৭।

..... ২য় পক্ষ (ভাড়াটিয়া)

পরম করুণাময় সর্বশক্তিমান মহান আল্লাহর নাম স্মরণ করিয়া অত্র অফিস ভাড়া চুক্তিপত্র দলিলের বয়ান লিখিতে
আরম্ভ করিলাম যেহেতু প্রথম পক্ষ মো: ওসমান খান, পৌরসভা কার্যালয় থেকে খাজার ডেগ সড়ক সংলগ্ন তিনতলা ভবন
এর নীচতলার বামপাশের একটি ইউনিট ভাড়া দেওয়ার প্রস্তাব করিলে দ্বিতীয় পক্ষ প্রিপারেশন অব ডেভেলপমেন্ট ফর
ফোরটিন উপজেলাস প্রকল্পের কার্যালয় হিসেবে নিম্নবর্ণিত শর্তসমূহে ভাড়া নিতে সম্মত ও রাজি হইলে আমরা উভয় পক্ষ
সাক্ষীগণের সম্মুখে সহি সম্পাদন করিলাম।


“শর্তসমূহ”

- এই চুক্তি ১লা নভেম্বর, ২০১৫ইং হইতে কার্যকরী হইবে যাহা ভাড়াটিয়া যদি ছাড়িয়া দিতে চান তাহলে ০১ (এক)
মাস পূর্বে উভয় পক্ষ উভয় পক্ষকে জানাইতে হইবে।
- দ্বিতীয় পক্ষ চলতি মাস এর ভাড়ার টাকা প্রতি মাসের ০৫ তারিখের মধ্যে মাসিক ভাড়া হিসেবে ২,৫০০/- (দুই
হাজার পাঁচশত) টাকা প্রথম পক্ষকে প্রদান করিবেন।

APPENDIX 6.1

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

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একশত টাকা

কছ ৯২১১৭০০

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পাতা-০২

৩। ভাড়াটিয়া গ্যাস, পানি, বিদ্যুৎ বিল ইত্যাদি আলাদা পরিশোধ করিবেন।

৪। দ্বিতীয় পক্ষ, প্রথম পক্ষের ভাড়াটিয়া হিসেবে তাহার ভাড়াকৃত এরিয়ায় এমন কোন জিনিস সংরক্ষণ করিতে পারিবেন না, যাহা অবৈধ বা দেশের প্রচলিত আইনের পরিপন্থি। এইরূপ করিলে তাহার জন্য দ্বিতীয় পক্ষ সম্পূর্ণরূপে দায়ী থাকিবেন।

৫। দ্বিতীয় পক্ষ তফসিল বর্ণিত তাহার এরিয়ার পার্শ্বস্থ জায়গা যথাসম্ভব পরিস্কার রাখিতে সচেষ্ট হইবেন এবং এমন কোন কর্ম অথবা ব্যবস্থায় লিপ্ত হইবেন না যাহাতে পার্শ্বস্থ ব্যক্তি বা প্রতিষ্ঠানের অসুবিধার সৃষ্টি হয়।

৬। দ্বিতীয় পক্ষ ভাড়াকৃত অফিস ছাড়িয়া দিতে চাহিলে ০১ (এক) মাস পূর্বে প্রথম পক্ষকে জানাইতে হইবে তদরূপ প্রথম পক্ষ যদি নিজের প্রয়োজন হয় তবে ০১ (এক) মাস পূর্বে দ্বিতীয় পক্ষকে জানাইতে হইবে।

৭। এই দলিলে উল্লেখিত হয়নি এমন সব বিষয়ে প্রথম পক্ষ ও দ্বিতীয় পক্ষ পারস্পরিক আলোচনা, প্রচলিত আইন এবং স্বাভাবিক ন্যায় বিচারের দৃষ্টিকোণ হইতে সিদ্ধান্ত গ্রহণ করিবেন।

৮। এই চুক্তিনামায় উল্লেখিত সকল দায় এবং অধিকার চুক্তিনামার পক্ষগণের অবর্তমানে তাহাদের প্রতিনিধির উপরে বর্তাইবে।

৯। ২ (দুই) মাসের নোটিশে উভয় পক্ষ এই চুক্তিনামা বাতিল করিতে পারিবে।

১০। দ্বিতীয় পক্ষ ভাড়াকৃত বাড়ীর পরিবেশ ও শব্দ দূষণ, অসামাজিক ও অবৈধ কার্যক্রম এবং রাজনৈতিক কর্মকাণ্ড পরিচালনা করিতে পারিবেন না।

চলমান পাতা-০৩

APPENDIX 6.1

সংবিধানপ্রাধিকার বাংলাদেশ সরকার

₹ ১০০

₹ ১০০

একশত টাকা

কছ ৯২১১৭৩১

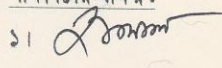
পাতা-০৩

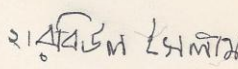
এতদ্বারা সরল মনে, সুস্থ শরীরে, স্ব-জ্ঞানে, অন্যের বিনা প্ররোচনায়, স্ব-ইচ্ছায় উপরোক্ত চুক্তিপত্রের সকল শর্তাবলী মানিয়া স্বীকার করিয়া সর্বদিকের মমার্থ বুঝিয়া এবং চুক্তিপত্র যথাযথ পাঠ করিয়া অর্থ অনুধাবন করিয়া নিম্নলিখিত হাজিরান সাক্ষীগণের উপস্থিতিতে অস্থায়ী ভাড়াটিয়া চুক্তিপত্রটি উভয় পক্ষ অদ্য নিজ নিজ নাম সহ সম্পাদন করিলাম। ইতি, তারিখ-

প্রথম পক্ষের স্বাক্ষর 26.10.2018

দ্বিতীয় পক্ষের স্বাক্ষর 26.10.2018

সাক্ষীগণের স্বাক্ষর :

১। 

২। 

৩।



কছ ৯৭২৮০২৯

“অফিস ভাড়ার চুক্তিপত্র”

হাফেজ আব্দুস সালাম, পিতা : মৃত : আব্দুল আজিজ, মাতা : মৃত : নূরজাহান বেগম। হোল্ডিং নং- ৭৫, ব্লক-এ, কাশিমপুর, পোঃ নবাবগঞ্জ, উপজেলা : নবাবগঞ্জ, জেলা : ঢাকা -১৩২০

.....প্রথম পক্ষ (বাড়ীর মালিক)

পরামর্শক প্রতিষ্ঠান দেশ উপদেশ লিঃ সহযোগিতায় আইমা ইন্টারন্যাশনাল বিডি লিঃ ও টেকনিক্যাল সার্পোর্ট সার্ভিসেস লিঃ এর পক্ষে প্রকল্প সমন্বয়কারী মোঃ জোবায়ের আহমেদ (জসীম), চর/সি, আসাদ এভিনিউ ৫ম তলা, মোহাম্মদপুর, ঢাকা-১২০৭।

..... দ্বিতীয় পক্ষ (ভাড়াটিয়া)

পরমকরণীয় সর্বশক্তিমান মহান আল্লাহর নাম স্মরণ করিয়া অত্র অফিস ভাড়া চুক্তিপত্র দলিলের বয়ান লিখিতে আরম্ভ করিলাম যেহেতু প্রথম পক্ষ হাফেজ আব্দুস সালাম, গার্লস স্কুল সড়ক সংলগ্ন ৭৫ নং বাড়ী, ব্লক-এ তিনতলা ভবনের মালিক। তিনি তৃতীয় তলার উত্তর পার্শ্বে এক ইউনিট ভাড়া দেওয়া প্রস্তাব করিলে দ্বিতীয় পক্ষ প্রিপারেশন অব ডেভেলপমেন্ট প্ল্যান ফর ফোরটিন উপজেলাস প্রকল্পের কার্যালয় হিসাবে নিম্নবর্ণিত শর্তসমূহে ভাড়া নিতে সম্মত ও রাজি হইলে আমরা উভয় পক্ষ স্বাক্ষরগণের সম্মুখে সহি সম্পাদন করিলাম।


শর্তসমূহে

- ১। এই চুক্তি ১লা নভেম্বর, ২০১৫ইং হইতে কার্যকরী হইবে যাহা ভাড়াটিয়া যদি ছাড়িয়া দিতে চান তাহলে ০১ (এক) মাস পূর্বে উভয় পক্ষকে জানাইতে হইবে।
- ২। দ্বিতীয় পক্ষ চলতি মাস এর ভাড়ার টাকা প্রতি মাসের ০৫ তারিখের মধ্যে মাসিক ভাড়া হিসাবে ৩,৫০০/- (তিন হাজার পাঁচশত) টাকা প্রথম পক্ষকে প্রদান করিবেন। এক মাসের অগ্রিম ভাড়া হিসাবে ৩,৫০০/- (তিন হাজার পাঁচশত) টাকা প্রথম পক্ষ কে প্রদান করা হবে।
- ৩। ভাড়াটিয়া শুধু বিদ্যুৎ বিল আলাদা পরিশোধ করিবেন।

APPENDIX 6.1

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

৳১০০



৳১০০

একশত টাকা

কছ ১৭২৮০০০

১৭২৮০০০

পাতা # ২

- ৪। দ্বিতীয় পক্ষ, প্রথম পক্ষকে ভাড়াটিয়া হিসাবে তাহার ভাড়াকৃত এরিয়ায় এমন কোন জিনিস সংরক্ষণ করিতে পারিবেন না, যাহা অবৈধ বা দেশের আইনের পরিপন্থি। এইরূপ করিলে তাহার জন্য দ্বিতীয় পক্ষ সম্পর্কিত দায়ী থাকিবেন।
- ৫। দ্বিতীয় পক্ষ তফসিল বর্ণিত তাহার এরিয়ার পার্শ্বস্থ জায়গা যথাসম্ভব পরিষ্কার রাখিতে সচেষ্ট হইবেন এবং এমন কোন কর্ম অথবা ব্যবস্থায় লিপ্ত হইবেন না যাহাতে পার্শ্বস্থ ব্যক্তি বা প্রতিষ্ঠানের অসুবিধার সৃষ্টি হয়।
- ৬। দ্বিতীয় পক্ষ ভাড়াকৃত অফিস ছাড়িয়া দিতে চাহিলে ১ (এক) মাস পূর্বে প্রথম পক্ষকে জানাইতে হইবে তদরূপ প্রথম পক্ষ যদি নিজের প্রয়োজন হয় তবে ১ (এক) মাস পূর্বে প্রথম পক্ষকে জানাইতে হইবে।
- ৭। এই দলিলে উল্লেখিত হয়নি এমন সব বিষয়ে প্রথম পক্ষ ও দ্বিতীয় পক্ষ পারস্পরিক আলোচনা, প্রচলিত আইন এবং স্বাভাবিক ন্যায় বিচারের দৃষ্টিকোণ হইতে সিদ্ধান্ত গ্রহণ করিবেন।
- ৮। এই চুক্তিনামায় উল্লেখিত সকল দায় এবং অধিকার চুক্তিনামার পক্ষগণের অবর্তমানে তাহাদের প্রতিনিধির উপরে বর্তাইবে।
- ৯। ২ (দুই) মাসের নোটিশে উভয় পক্ষ এই চুক্তিনামা বাতিল করিতে পারিবে।
- ১০। দ্বিতীয় পক্ষ ভাড়াকৃত বাড়ীর পরিবেশ ও শব্দ দূষণ, অসামাজিক ও অবৈধ কার্যক্রম এবং রাজনৈতিক কর্মকান্ড পরিচালনা করিতে পারিবেন না।

APPENDIX 6.1

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

₹ ১০০

₹ ১০০

একশত টাকা

কছ ৯৭২৮০০১


পাতা # ০৩

এতদ্বারা সরল মনে, সুস্থ শরীরে, স্ব-জ্ঞানে, অন্যের বিনা প্ররোচনায়, স্ব-ইচ্ছায় উপরোক্ত চুক্তিপত্রের সকল শর্তাবলী মানিয়া স্বীকার করিয়া সর্বদিকের মমার্থ বুঝিয়া এবং চুক্তিপত্র যথাযথ পাঠ করিয়া অর্থ অনুধাবন করিয়া নিম্নলিখিত হাজিরান স্বাক্ষীগণের উপস্থিতিতে অস্থায়ী ভাড়াটিয়া চুক্তিপত্রটি উভয় পক্ষ অদ্য নিজ নিজ নাম সহি সম্পাদন করিলাম। ইতি, তারিখ -

৩০/১০/২০১৫
প্রথম পক্ষের স্বাক্ষর

৩০.১০.২০১৫
দ্বিতীয় পক্ষের স্বাক্ষর




স্বাক্ষীগণের স্বাক্ষর :

১। 

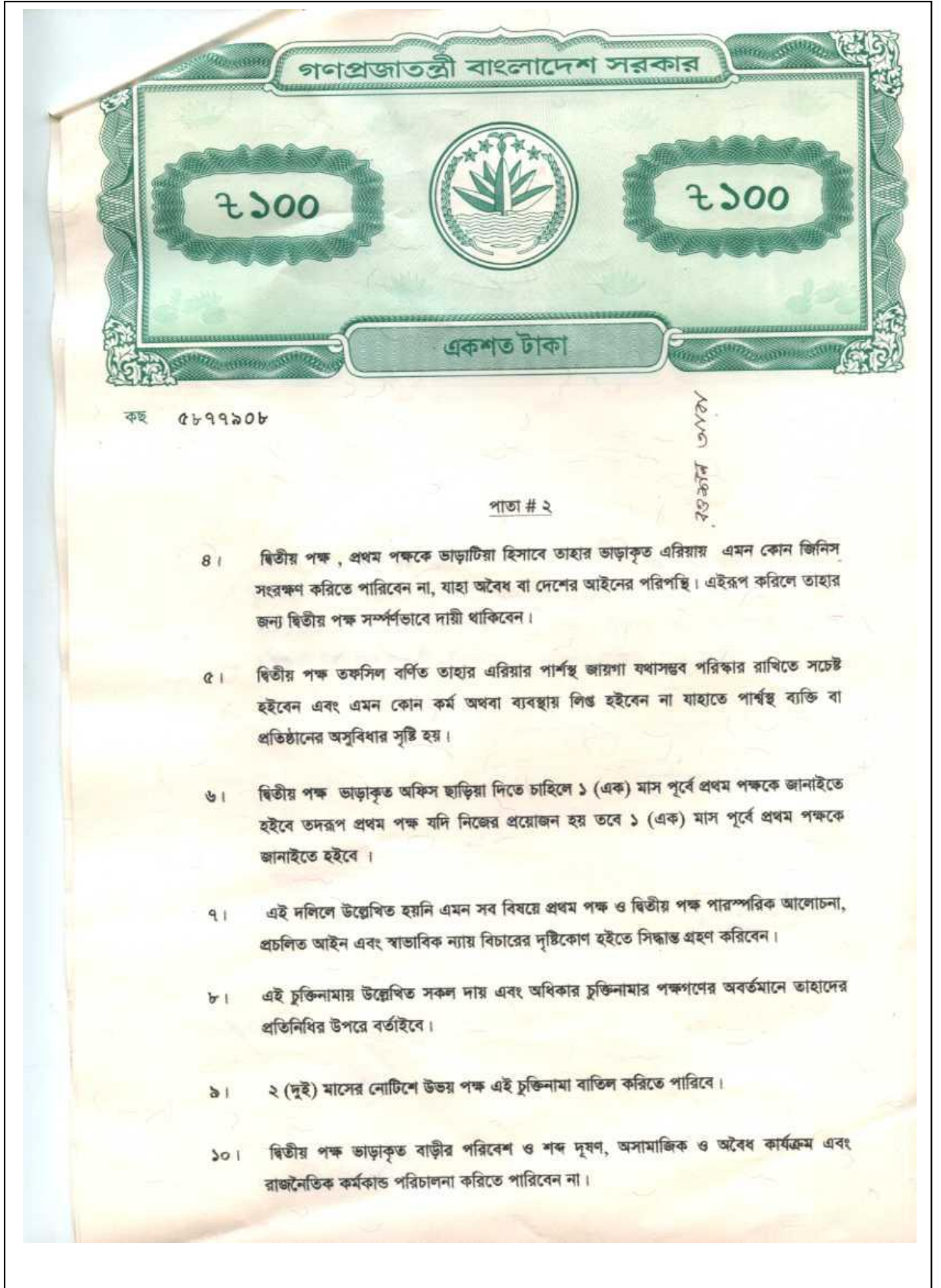
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APPENDIX 6.1

		
একশত টাকা		
<p>কছ ৫৮৭৭৯০৭</p>		
“অফিস ভাড়ার চুক্তিপত্র”		
<p>রওশন আরা, স্বামী-সফিউদ্দিন, (বাসা-সবুজ ভিলা), গ্রাম-দক্ষিণ জয়পাড়া, পোঃ- জয়পাড়া, থানা- দোহার, জেলা-ঢাকা-১৩৩০।</p>		
.....প্রথম পক্ষ (বাড়ীর মালিক)		
<p>পরামর্শক প্রতিষ্ঠান দেশ উপদেশ লিঃ সহযোগিতায় আইআ ইন্টারন্যাশনাল বিডি লিঃ ও টেকনিক্যাল সার্পেটি সার্ভিসেস লিঃ এর পক্ষে প্রকল্প সমন্বয়কারী জন নীলু, ৮০/সি, আসাদ এভিনিউ ৫ম তলা, মোহাম্মদপুর, ঢাকা-১২০৭।</p>		
..... দ্বিতীয় পক্ষ (ভাড়াটিয়া)		
<p>পরমকরমণাময় সর্বশক্তিমান মহান আল্লাহর নাম স্মরণ করিয়া অত্র অফিস ভাড়া চুক্তিপত্র দলিলের বয়ান লিখিতে আরম্ভ করিলাম যেহেতু প্রথম পক্ষ রওশন আরা, স্বামী-সফিউদ্দিন, (বাসা-সবুজ ভিলা), গ্রাম- দক্ষিণ জয়পাড়া, পোঃ- জয়পাড়া, থানা-দোহার, জেলা-ঢাকা, দ্বিতীয় তলার ভবনের নীচতলা দক্ষিণ পার্শ্বে ভবনের মালিক। তিনি নীচ তলার দক্ষিণ পার্শ্বের এক ইউনিট ভাড়া দেওয়া প্রস্তাব করিলে দ্বিতীয় পক্ষ প্রিপারেশন অব ডেভেলপমেন্ট প্র্যান ফর ফোরটিন উপজেলাস প্রকল্পের কার্যালয় হিসাবে নিম্নবর্ণিত শর্তসমূহে ভাড়া নিতে সম্মত ও রাজি হইলে আমরা উভয় পক্ষ স্বাক্ষরগণের সম্মুখে সহি সম্পাদন করিলাম।</p>		
শর্তসমূহে		
<p>১। এই চুক্তি ১লা নভেম্বর, ২০১৫ইং হইতে কার্যকরী হইবে যাহা ভাড়াটিয়া যদি ছাড়িয়া দিতে চান তাহলে ০১ (এক) মাস পূর্বে উভয় পক্ষকে জানাইতে হইবে।</p>		
<p>২। দ্বিতীয় পক্ষ চলতি মাস এর ভাড়ার টাকা প্রতি মাসের ০৫ তারিখের মধ্যে মাসিক ভাড়া হিসাবে ৪,০০০/- (চার হাজার) টাকা প্রথম পক্ষকে প্রদান করিবেন। এক মাসের অগ্রিম ভাড়া হিসাবে ৪,০০০/- (চার হাজার) টাকা প্রথম পক্ষকে প্রদান করা হবে।</p>		
<p>৩। ভাড়াটিয়া শুধু বিদ্যুৎ বিল আলাদা পরিশোধ করিবেন।</p>		
চলমান পাতা # ২		


APPENDIX 6.1



APPENDIX 6.1

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

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পাতা # ০৩

বর্তমান তারিখ

এতদ্বারা সরল মনে, সুস্থ্য শরীরে, স্ব-জ্ঞানে, অন্যের বিনা প্ররোচনায়, স্ব-ইচ্ছায় উপরোক্ত চুক্তিপত্রের সকল শর্তাবলী মানিয়া স্বীকার করিয়া সর্বদিকের মমার্থ বুঝিয়া এবং চুক্তিপত্র যথাযথ পাঠ করিয়া অর্থ অনুধাবন করিয়া নিম্নলিখিত হাজিরান স্বাক্ষীগণের উপস্থিতিতে অস্থায়ী ভাড়াটিয়া চুক্তিপত্রটি উভয় পক্ষ অদ্য নিজ নিজ নাম সহি সম্পাদন করিলাম। ইতি, তারিখ -


১৩/১১/১৫


প্রথম পক্ষের স্বাক্ষর

১৩/১১/১৫

দ্বিতীয় পক্ষের স্বাক্ষর

স্বাক্ষীগণের স্বাক্ষর :

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APPENDIX 6.2

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

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AGREEMENT


This agreement is signed between the Project Team member and the Consultants of the project

"Preparation of Development Plan for Fourteen Upazila"
under Urban Development Directorate (UDD).

It is agreed that the undersigned Team member has allowed and authorized **Desh Upodesh Ltd., Bangladesh**, in association with **AAIMA International Bd Ltd., Bangladesh** and **Technical Support Services Ltd.** to propose Curriculum Vitae (CV) for the above-mentioned project.

It is confirmed that the Team member will be available, both, in the Central Office as well as at Project Site Office as and when needed and that the Team member shall complete all inputs required for the project for the full period indicated in the RFP.

APPENDIX 6.2



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The brief outline of the responsibility shall be:

- (i) To take over the charges on all surveyed data and information from UDD Project Team; and coordinate among all the consultant team;
- (ii) To review the land use planning guidelines developed during survey part of the project, considering hydrological, physiographic, agricultural land classification, soils condition, ecological and environmental, socio-economic and livelihood pattern and other relevant characteristics; and make necessary corrections in consultation with PD;
- (iii) To review land category and land use matrix for the project area; and make necessary corrections in consultation with the PD;
- (iv) To identify and plan development project for the area;
- (v) To review the recommendations on sectoral studies into spatial form, and plan implementation strategy and policy; and make necessary corrections in consultation with the PD;
- (vi) To coordinate preparation of different planning components including analytical reports, prepared by different consultants, for the planning package (structure plan, urban area plan, rural area plan, and action plan);
- (vii) To compile different planning components including analytical reports, prepared by different consultants, for the planning package; and prepare and finalize the planning package (structure plan, urban area plan, rural area plan, action plan) and report for the upazilas;
- (viii) To be responsible for knowledge transfer to Project Personnel to the UDD Project Team; and
- (ix) Any other related jobs as assigned by PD.

APPENDIX 6.2

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

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That client shall be responsible for making necessary arrangements for travel, per-diem, logistics and remuneration as per agreement between the client and the consultants.

The entire agreement or any part of it may be discarded on mutual agreement between the client and the consultant.

Project Team Member:

Signature:
Date:
Name: Dr. AKHTER HUSAIN CHAUDHURY
Designation: **Team Leader**

Consultant:

Signature:
Date:
Name: MUNIRUL HAQUE
Designation: Managing Director, DUL
For & on behalf of DUL-AIBL-TechSuS

APPENDIX 6.2

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

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AGREEMENT

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"Preparation of Development Plan for Fourteen Upazila"
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APPENDIX 6.2



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The brief outline of the responsibility shall be:

- (i) To conduct different traffic surveys and studies, and also analyze transportation network of the project area and ensure quality of data collected;
- (ii) To propose a transportation network to establish an efficient inter and intra town circulation system and also establish rural-urban linkage for the project area;
- (iii) To develop traffic prediction model of 20-year period for the project area;
- (iv) To work with a multidisciplinary team to integrate the output of the traffic surveys and transportation studies with both attribute and spatial data of different other components of the project;
- (v) Preparation of working paper, and analytical report based on study and survey; and
- (vi) Any other related jobs as assigned by PD.

That client shall be responsible for making necessary arrangements for travel, per-diem, logistics and remuneration as per agreement between the client and the consultants.

APPENDIX 6.2

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

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The entire agreement or any part of it may be discarded on mutual agreement between the client and the consultant.

Project Team Member:

Signature: MD. GHOLAM MUSTAFA PATWARY

Date: 17.08.2015

Name: MD. GHOLAM MUSTAFA PATWARY

Designation: **Transport Planning Expert**

Consultant:

Signature: Munirul Haque

Date: 17. Aug. 2015

Name: MUNIRUL HAQUE

Designation: Managing Director, DUL
For & on behalf of DUL-AIBL-TechSuS

APPENDIX 6.2



AGREEMENT

This agreement is signed between the Project Team member and the Consultants of the project

**"Preparation of Development Plan for Fourteen Upazila"
under Urban Development Directorate (UDD).**

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APPENDIX 6.2

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

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The brief outline of the responsibility shall be:



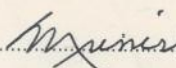
- (i) To design different surveys for the project;
- (ii) To conduct, coordinate and monitor physical feature, topographical and landuse, survey;
- (iii) Ensure quality and accuracy of survey data;
- (iv) To compile all the survey data into digital format;
- (v) Experienced in RTK GPS/Total Station/Digital Level survey and processing;
- (vi) To arrange survey trainings for Project staff;
- (vii) Preparation of working paper, reports and plan of the project as assigned by the PD;
- (viii) Any other survey and studies related Jobs as assigned by PD.

That client shall be responsible for making necessary arrangements for travel, per-diem, logistics and remuneration as per agreement between the client and the consultants.

[Signature]

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APPENDIX 6.2

	
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The entire agreement or any part of it may be discarded on mutual agreement between the client and the consultant.	
<u>Project Team Member:</u>	<u>Consultant:</u>
Signature: 	Signature: 
Date: 22.08.2015	Date: 22.08.2015
Name: SAIFUL ISLAM	Name: MUNIRUL HAQUE
Designation: Survey Expert	Designation: Managing Director, DUL For & on behalf of DUL-AIBL-TechSuS

APPENDIX 6.2



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AGREEMENT

This agreement is signed between the Project Team member and the Consultants of the project

**"Preparation of Development Plan for Fourteen Upazila"
under Urban Development Directorate (UDD).**

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APPENDIX 6.2



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The brief outline of the responsibility shall be:


- (i) To prepare, piloting, editing and finalization of socio-economic and other related questionnaire; and make necessary arrangements for PRA in consultation with the Team Leader and PD;
- (ii) To conduct, supervise and monitor socio-economic and other related questionnaire surveys including PRA for the project area;
- (iii) To supervise and monitor data entry, editing and presentation of data in tabular form;
- (iv) To analyze the data as directed by the Team Leader and PD and presentation in graphs and figures;
- (v) Preparation of working paper, reports with recommendation as assigned by PD;
- (vi) Preparation of Socio-economic development model for the project area for the next 20-years;
- (vii) To work with a multidisciplinary team to integrate the outputs of socio-economic and other questionnaire surveys and PRA as well with attribute and spatial data of other components of the project in GIS database;
- (viii) Any other related jobs as assigned by the Team Leader and PD.

That client shall be responsible for making necessary arrangements for travel, per-diem, logistics and remuneration as per agreement between the client and the consultants.

APPENDIX 6.2

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

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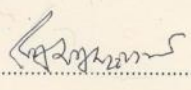
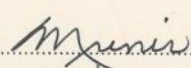


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The entire agreement or any part of it may be discarded on mutual agreement between the client and the consultant.

<p><u>Project Team Member:</u></p> <p>Signature: </p> <p>Date: 22.08.2015</p> <p>Name: K.M. MOSHARROF HOSSAIN</p> <p>Designation: Social Expert</p>	<p><u>Consultant:</u></p> <p>Signature: </p> <p>Date: 22.08.2015</p> <p>Name: MUNIRUL HAQUE</p> <p>Designation: Managing Director, DUL For & on behalf of DUL-AIBL-TechSuS</p>
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APPENDIX 6.2



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AGREEMENT

This agreement is signed between the Project Team member and the Consultants of the project

**"Preparation of Development Plan for Fourteen Upazila"
under Urban Development Directorate (UDD).**

It is agreed that the undersigned Team member has allowed and authorized **Desh Upodesh Ltd., Bangladesh**, in association with **AAIMA International Bd Ltd., Bangladesh** and **Technical Support Services Ltd.** to propose Curriculum Vitae (CV) for the above-mentioned project.

It is confirmed that the Team member will be available, both, in the Central Office as well as at Project Site Office as and when needed and that the Team member shall complete all inputs required for the project for the full period indicated in the RFP.

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APPENDIX 6.2

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

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The brief outline of the responsibility shall be:

- (i) To prepare topographic, physical feature, landuse and other related map of the area;
- (ii) To prepare, supervise, manage and monitor digital database (Spatial and attribute) of the project;
- (iii) Installation and troubleshooting of GIS In UDD project office and head office;
- (iv) Ensure the quality of the map and related work;
- (v) To work with a multi-disciplinary team environment to synchronize the multi-sectoral data into GIS database;
- (vi) Preparation of working paper, reports and plan of the project as assigned by the PD;
- (vii) Any other related jobs as assigned by PD.

That client shall be responsible for making necessary arrangements for travel, per-diem, logistics and remuneration as per agreement between the client and the consultants.

APPENDIX 6.2

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

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The entire agreement or any part of it may be discarded on mutual agreement between the client and the consultant.

Project Team Member:

Signature: *[Signature]*

Date: 22 August, 2015

Name: MD. GOLAM MORTOZA

Designation: **Photogrammetric Expert**

Consultant:

Signature: *[Signature]*

Date: 22.8.2015

Name: MUNIRUL HAQUE

Designation: Managing Director, DUL
For & on behalf of DUL-AIBL-TechSuS

APPENDIX 6.2

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

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The brief outline of the responsibility shall be:

- (i) To prepare topographic, physical feature, landuse and other related map of the area;
- (ii) To prepare, supervise, manage and monitor digital database (Spatial and attribute) of the project;
- (iii) Installation and troubleshooting of GIS In UDD project office and head office;
- (iv) Ensure the quality of the map and related work;
- (v) To work with a multi-disciplinary team environment to synchronize the multi-sectoral data into GIS database;
- (vi) Preparation of working paper, reports and plan of the project as assigned by the PD;
- (vii) Any other related jobs as assigned by PD.

That client shall be responsible for making necessary arrangements for travel, per-diem, logistics and remuneration as per agreement between the client and the consultants.

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APPENDIX 6.2

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The entire agreement or any part of it may be discarded on mutual agreement between the client and the consultant.

<u>Project Team Member:</u>	<u>Consultant:</u>
Signature: <u>Hamida Khatun</u>	Signature: <u>Munirul Haque</u>
Date: <u>19.08.2015</u>	Date: <u>19 Aug 2015</u>
Name: HAMIDA KHATUN POPY	Name: MUNIRUL HAQUE
Designation: GIS Expert	Designation: Managing Director, DUL For & on behalf of DUL-AIBL-TechSuS

APPENDIX 6.2

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

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[Signature]

APPENDIX 6.2



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The brief outline of the responsibility shall be:

- (i) To prepare questionnaire and other necessary arrangements for conducting surveys and studies;
- (ii) To conduct, monitor and supervise agricultural related data collection process and ensure quality of data collected;
- (iii) To classify the agricultural land by land type including cropping pattern, productivity, utilization and other related parameter as directed by the PD;
- (iv) To review and identify the characteristics of agricultural production of the region;
- (v) To determine the agricultural water demand for the region;
- (vi) To identify the potential characteristics of farmland and agro-based industries on the basis of character of the agricultural production of the region, agricultural water demand and other related parameters;
- (vii) To work in a multi-disciplinary team to Integrated agriculture related issues in to the planning package;
- (viii) To work closely with the GIS/RS analyst to include the agriculture related data into GIS database;
- (ix) Preparation of working paper, sand analytical report based on study and survey;
- (x) Any other related jobs assigned by PD.

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APPENDIX 6.2

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

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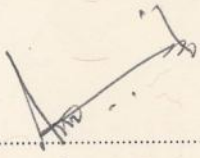
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The entire agreement or any part of it may be discarded on mutual agreement between the client and the consultant.

Project Team Member:

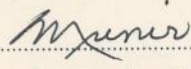
Signature: 

Date: 22 August 2015

Name: MIA ABDUR RASHID

Designation: **Agricultural Scientist**

Consultant:

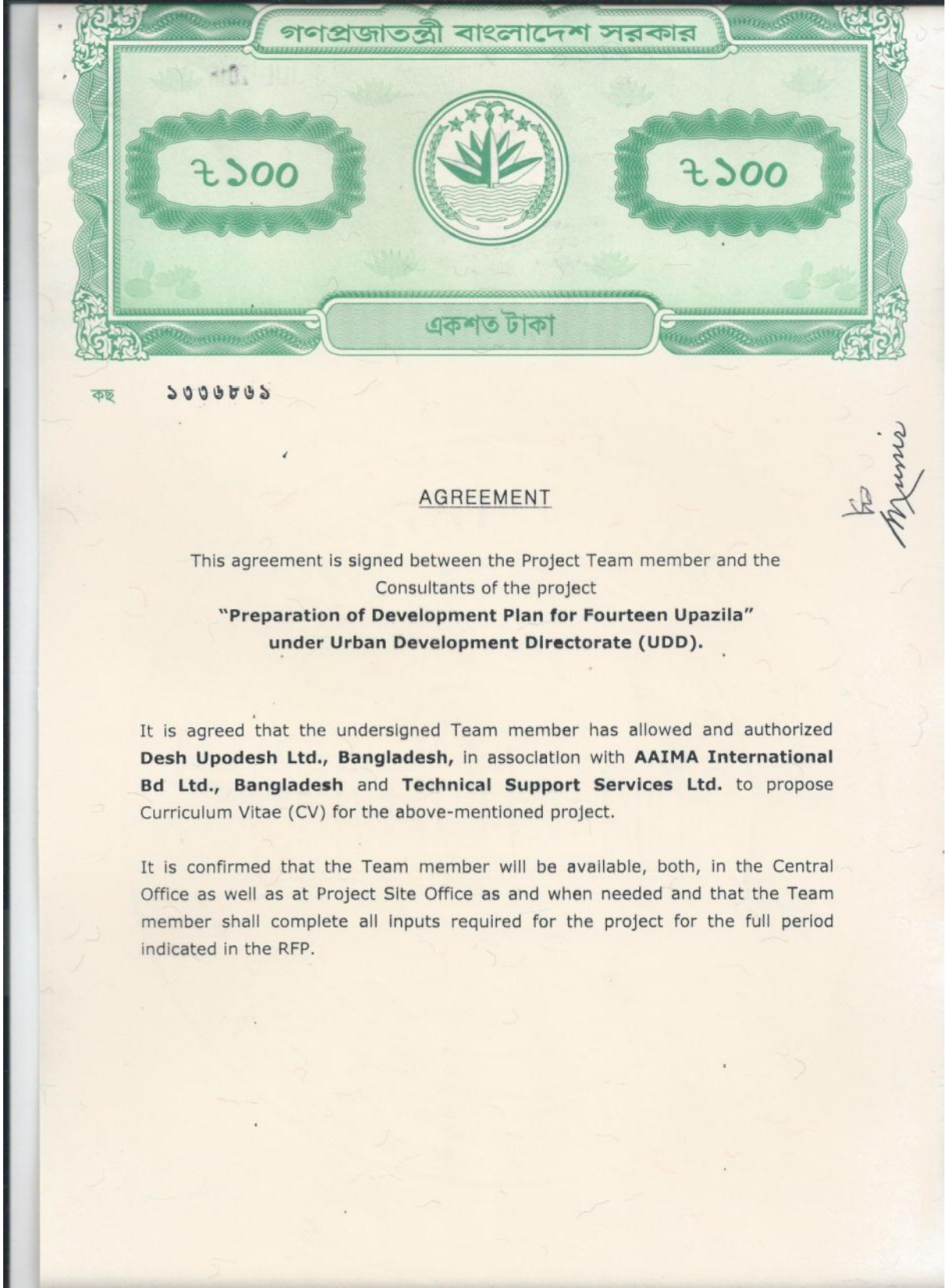
Signature: 

Date: 22.8.2015

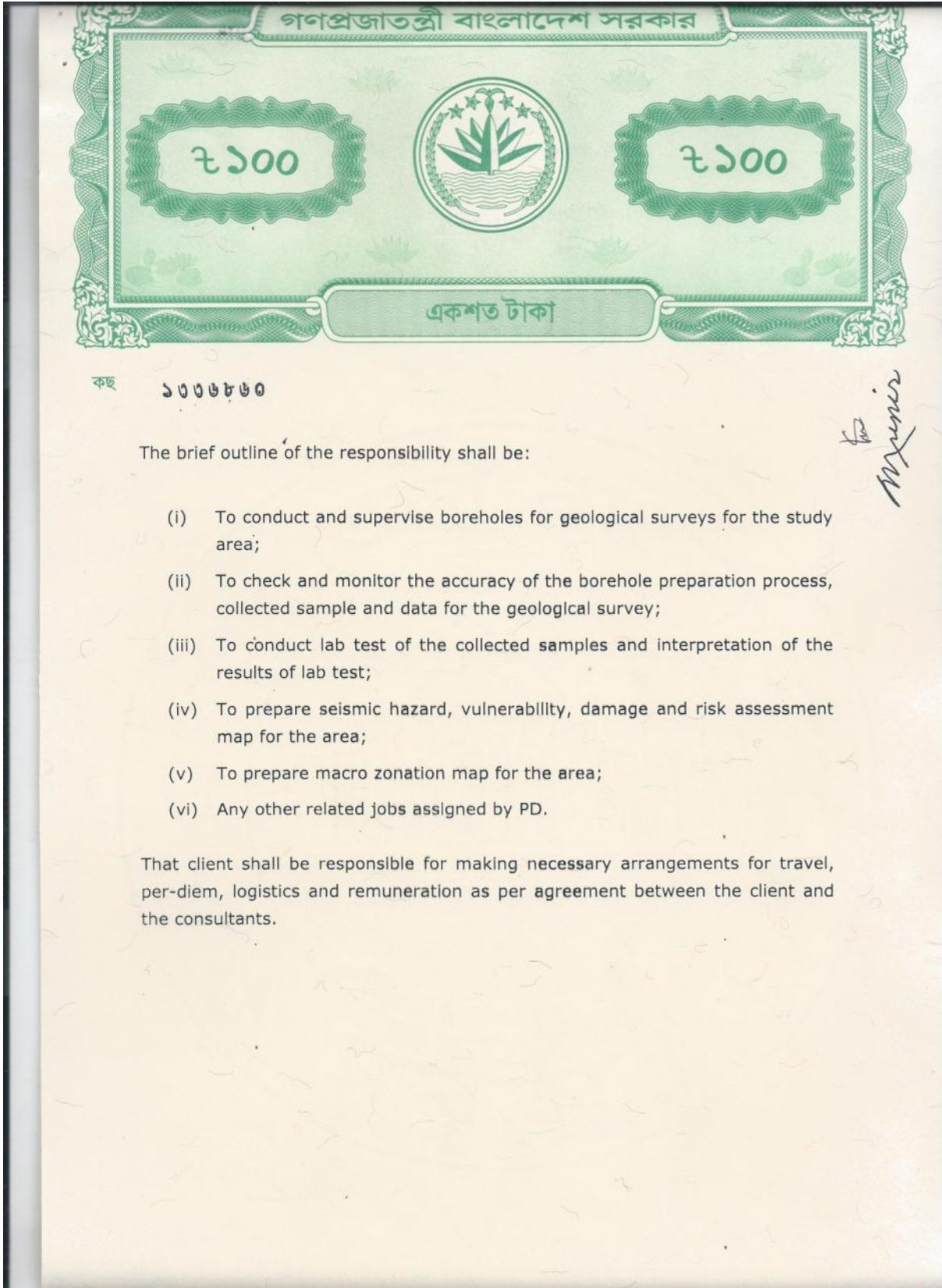
Name: MUNIRUL HAQUE

Designation: Managing Director, DUL
For & on behalf of DUL-AIBL-TechSuS

APPENDIX 6.2



APPENDIX 6.2



APPENDIX 6.2

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

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The entire agreement or any part of it may be discarded on mutual agreement between the client and the consultant.

Project Team Member:

Signature:
Date: 22.08.2015
Name: S.M. MORSHEDUL HASIN
Designation: **Geologist**

Consultant:

Signature:
Date: 22.8.2015
Name: MUNIRUL HAQUE
Designation: Managing Director, DUL
For & on behalf of DUL-AIBL-TechSuS

APPENDIX 6.2

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

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AGREEMENT

This agreement is signed between the Project Team member and the Consultants of the project

"Preparation of Development Plan for Fourteen Upazila"
under Urban Development Directorate (UDD).

It is agreed that the undersigned Team member has allowed and authorized **Desh Upodesh Ltd., Bangladesh**, in association with **AAIMA International Bd Ltd., Bangladesh** and **Technical Support Services Ltd.** to propose Curriculum Vitae (CV) for the above-mentioned project.

It is confirmed that the Team member will be available, both, in the Central Office as well as at Project Site Office as and when needed and that the Team member shall complete all inputs required for the project for the full period indicated in the RFP.

Amunul 02.09.15
Munir

APPENDIX 6.2



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The brief outline of the responsibility shall be:

- (i) To assist the geologist in conducting and supervising boreholes for geologist surveys for the study area;
- (ii) To assist the geologist in checking and monitoring the accuracy of the borehole preparation process, collected sample and data for the geological survey;
- (iii) To assist the geologist in conducting lab test of the collected samples and interpretation of the results of lab test;
- (iv) To assist the geologist in preparation of seismic hazard, vulnerability, damage and risk assessment map for the area;
- (v) To assist the geologist in preparation of macro zonation map for the area;
- (vi) Any other related jobs assigned by PD.


That client shall be responsible for making necessary arrangements for travel, per-diem, logistics and remuneration as per agreement between the client and the consultants.

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Munir

APPENDIX 6.2

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

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The entire agreement or any part of it may be discarded on mutual agreement between the client and the consultant.

<p><u>Project Team Member:</u></p> <p>Signature: <u><i>Mohammad Jahid Alam</i></u></p> <p>Date: <u>22.08.15</u></p> <p>Name: MOHAMMAD JAHID ALAM</p> <p>Designation: Associate Geologist</p>	<p><u>Consultant:</u></p> <p>Signature: <u><i>Munirul Haque</i></u></p> <p>Date: <u>22.8.2015</u></p> <p>Name: MUNIRUL HAQUE</p> <p>Designation: Managing Director, DUL For & on behalf of DUL-AIBL-TechSuS</p>
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APPENDIX 6.2

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

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AGREEMENT

This agreement is signed between the Project Team member and the Consultants of the project

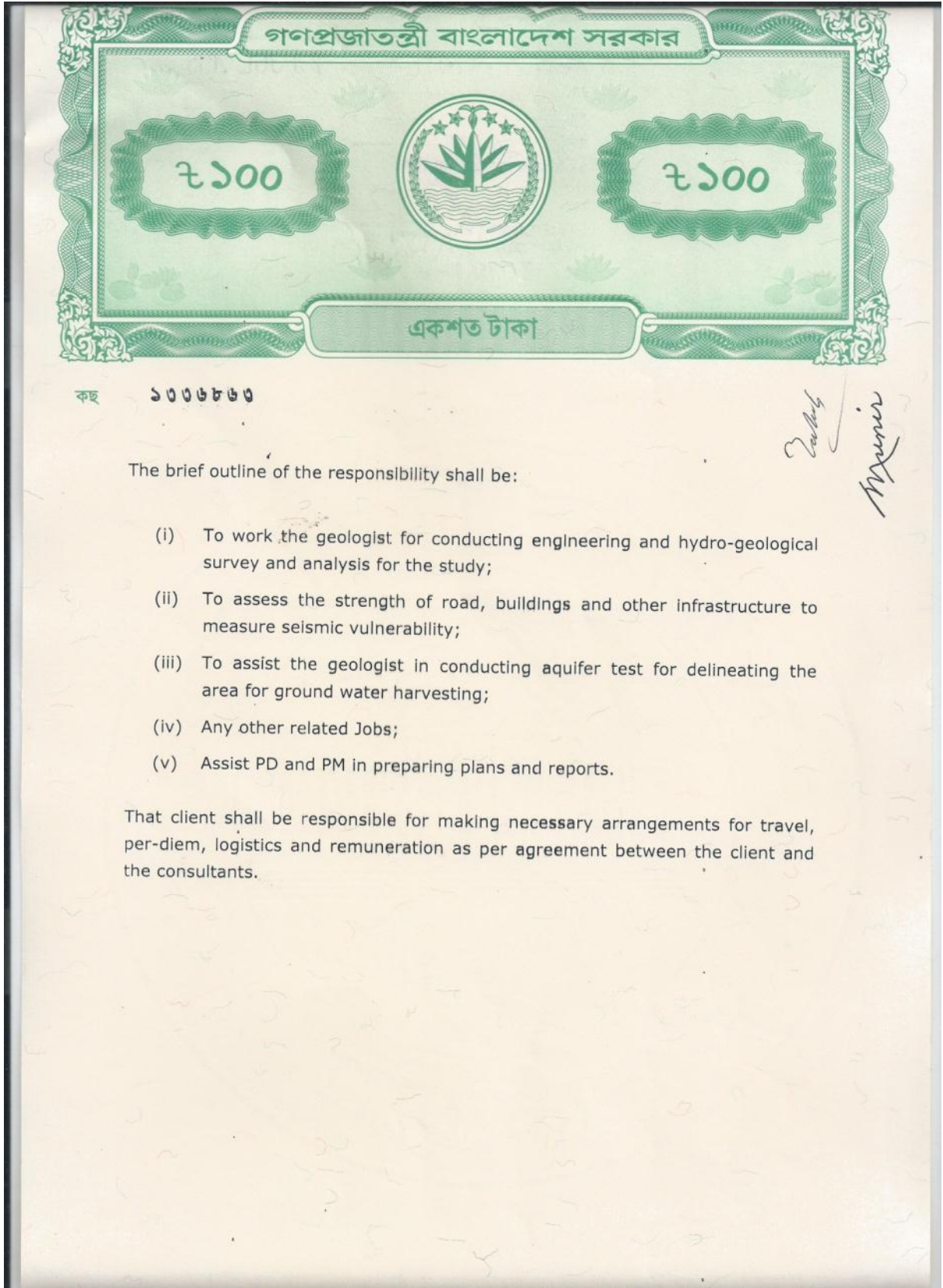
"Preparation of Development Plan for Fourteen Upazila" under Urban Development Directorate (UDD).

It is agreed that the undersigned Team member has allowed and authorized **Desh Upodesh Ltd., Bangladesh**, in association with **AAIMA International Bd Ltd., Bangladesh** and **Technical Support Services Ltd.** to propose Curriculum Vitae (CV) for the above-mentioned project.

It is confirmed that the Team member will be available, both, in the Central Office as well as at Project Site Office as and when needed and that the Team member shall complete all inputs required for the project for the full period indicated in the RFP.


Valley
Munira

APPENDIX 6.2




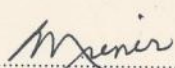
APPENDIX 6.2

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

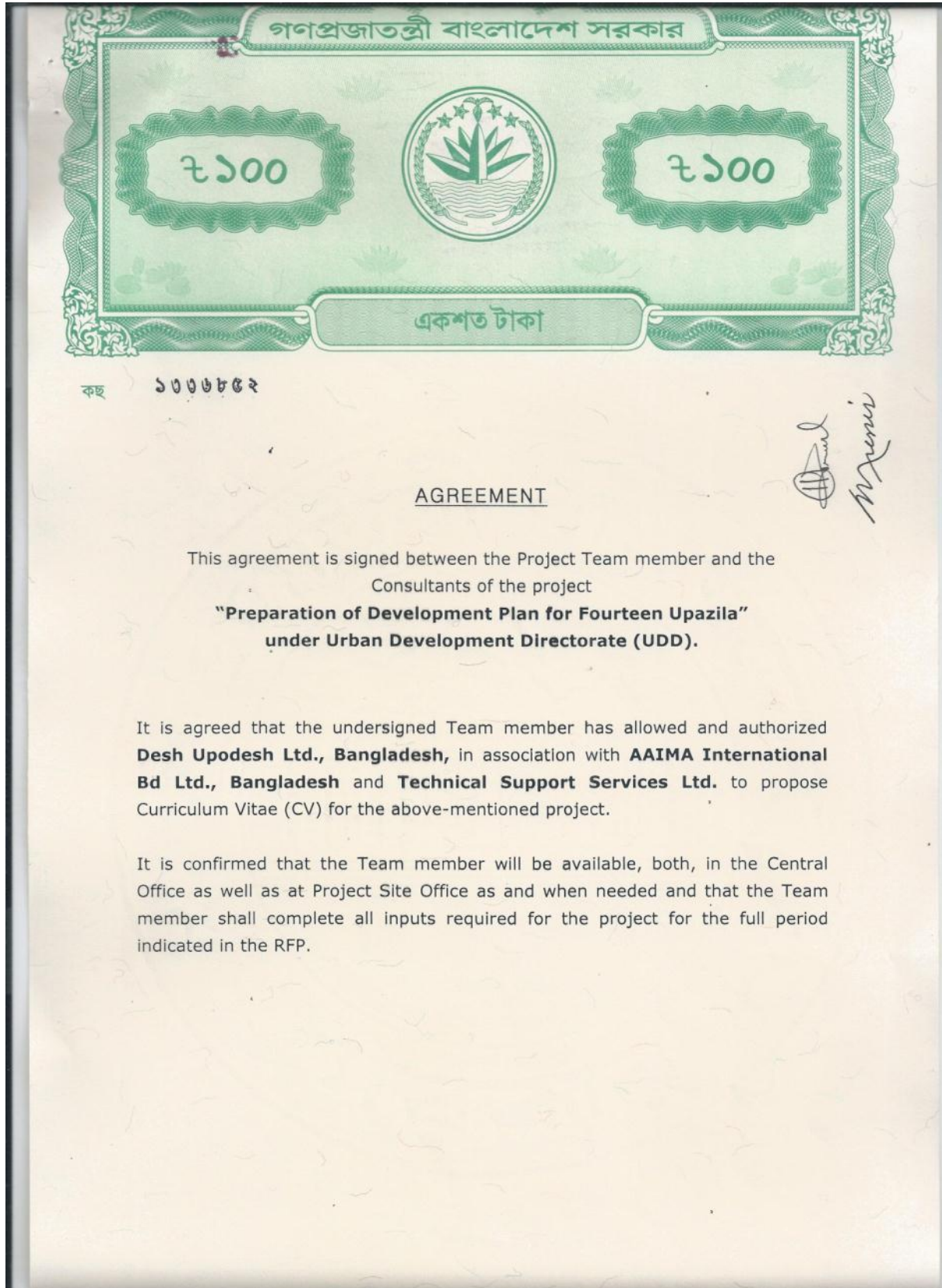


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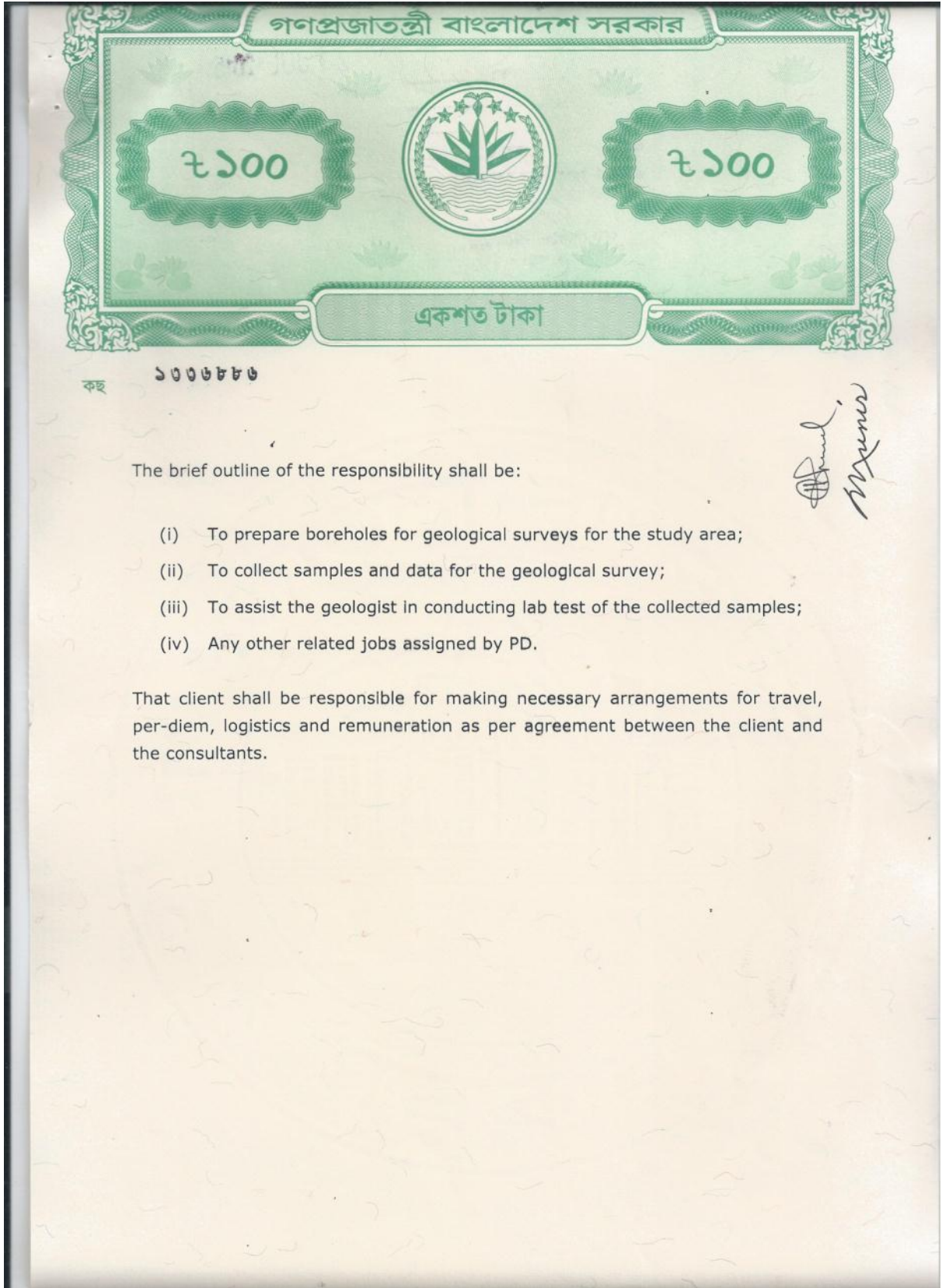
The entire agreement or any part of it may be discarded on mutual agreement between the client and the consultant.

<p><u>Project Team Member:</u></p> <p>Signature: </p> <p>Date:</p> <p>Name: MD. ABUL BASHER</p> <p>Designation: Civil Engineer cum Hydrologist</p>	<p><u>Consultant:</u></p> <p>Signature: </p> <p>Date:</p> <p>Name: MUNIRUL HAQUE</p> <p>Designation: Managing Director, DUL For & on behalf of DUL-AIBL-TechSuS</p>
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APPENDIX 6.2




APPENDIX 6.2



APPENDIX 6.2

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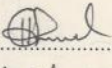
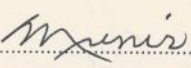


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The entire agreement or any part of it may be discarded on mutual agreement between the client and the consultant.

<p><u>Project Team Member:</u></p> <p>Signature: </p> <p>Date: 19/08/2015</p> <p>Name: HOSSAIN AHMED</p> <p>Designation: Geological Survey Technician</p>	<p><u>Consultant:</u></p> <p>Signature: </p> <p>Date: 19 Aug 2015</p> <p>Name: MUNIRUL HAQUE</p> <p>Designation: Managing Director, DUL For & on behalf of DUL-AIBL-TechSuS</p>
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APPENDIX 6.3

Report Header

Application: Alliance Message Management
Report type: Message File - Instance Report
Operator: RUMANA
Alliance Server Instance: SWP01
Date - Time: 2015/09/17 18:15:55

Instance

Reprint From MFA-0000-000000

Instance Type and Transmission

Notification
(Transmission) of Original sent to SWIFT (ACK)
Network Delivery Status: Network Ack
Priority/Delivery : Normal
Message Input Reference : 1750 150917MDBLBDDHA3550424005826

Message Header

Swift Input: FIN 700 Issue of a Documentary Credit
Sender : MDBLBDDH355
MIDLAND BANK LIMITED
(GULSHAN)
DHAKA BD
Receiver : COBADEFFDOC
COMMERZBANK AG
(TRADE SERVICES)
FRANKFURT AM MAIN DE

Message Text

F27: Sequence of Total
Number: 1/
Total: 1
F40A: Form of Documentary Credit
IRREVOCABLE
F20: Documentary Credit Number
335515010193
F31C: Date of Issue
150917 2015 Sep 17
F40E: Applicable Rules
Applicable Rules: UCP LATEST VERSION
F31D: Date and Place of Expiry
Date: 151211 2015 Dec 11
Place: IN FRANCE
F51A: Applicant Bank - Party Identifier - Identifier Code
Identifier Code:
MDBLBDDH355
MIDLAND BANK LIMITED
(GULSHAN)
DHAKA BD
F50: Applicant
OVERSEAS MARKETING CORPORATION
(PVT.) LTD., UNIQUE TRADE CENTER
(UTC) LEVEL 15,8, PANTHAPATH,

APPENDIX 6.3

DHAKA-1215, BANGLADESH.

F59: Beneficiary
Name and Address:
AIRBUS DS GEO SA
5 RUE DES SATELLITES BP 14 359
31030 TOULOUSE CEDEX 4 FRANCE.

F32B: Currency Code, Amount
Currency: EUR EURO
Amount: [REDACTED]

F41D: Available With ... By ... - Name and Address - Code
Name and Address: ANY BANK IN BENEFICIARY'S COUNTRY
Code: BY NEGOTIATION

F42C: Drafts at ...
AT SIGHT.

F42A: Drawee - Party Identifier - Identifier Code
Identifier Code:
MDBLBDDH355
MIDLAND BANK LIMITED
(GULSHAN)
DHAKA BD

F43P: Partial Shipments
PROHIBITED

F43T: Transshipment
ALLOWED

F44E: Port of Loading/Airport of Departure
ANY AIR PORT OF FRANCE

F44B: Place of Final Destination/For Transportation to .../Place of Delivery
HAZRAT SHAHJALAL INTERNATIONAL AIR PORT, DHAKA, BANGLADESH

F44C: Latest Date of Shipment
151120 2015 Nov 20

F45A: Description of Goods and/or Services
COMMODITY: MEDIA DVD.
.
TOTAL AMOUNT EUR [REDACTED]
.
DESCRIPTION, QUALITY, QUANTITY, RATES AND ALL
OTHER SPECIFICATION AS PER BENEFICIARY'S PROFORMA INVOICE
NO. SO15013678, DATE: 02/09/2015
.
GOODS TO BE SHIPPED AS PER INCOTERM-2010: CPT DHAKA BY AIR.
BANGLADESH

F46A: Documents Required
1) BENEFICIARY'S SIGNED COMMERCIAL INVOICE IN SIX COPIES (FOUR ORIGINAL PLUS 02 COPIES, INDICATING GOODS VALUE AND FREIGHT CHARGE SEPARATELY) IN ENGLISH CERTIFYING MERCHANDISE TO BE OF FRANCE, ORIGIN. INVOICE TO BE PREPARED AS PER DETAILED DESCRIPTION OF THE GOODS AS PER PROFORMA INVOICE NO. SO15013678, DATE: 02/09/2015.
2) DETAILED SIGNED PACKING, WEIGHT MEASUREMENT LIST IN SIX FOLDS.
3) FULL SET OF 'AIR WAY BILL' DRAWN OR ENDORSED TO THE ORDER OF TRADE AND SUPPLY CHAIN, MIDLAND BANK LIMITED, HEAD OFFICE ANNEX ZAHED PLAZA (LEVEL 10), 30 GULSHAN AVENUE, NORTH C/A, DHAKA, BANGLADESH SHOWING FREIGHT PREPAID AND MARKED NOTIFY OPENER AND US GIVING FULL NAME AND ADDRESS.
4) CERTIFICATE OF ORIGIN LEGALIZED BY CHAMBER OF COMMERCE/GOVT. AUTHORITY OF THE EXPORTING COUNTRY IN DUPLICATE
5) COPY OF BENEFICIARY'S SHIPMENT ADVISE TO M/S CONTINENTAL INSURANCE LIMITED, PRAGATI SARANI BRANCH, 63, PRAGATI SARANI (3RD FLOOR), BARIDHARA, DHAKA-1212 PHONE: 880-2-9858391 FAX: 9146187, 8170180 BANGLADESH AND TO THE APPLICANT SHOWING

APPENDIX 6.3

INSURANCE COVER NOTE NO.CIL/PS/MC-1421/09/2015 DATED 16.09.2015

6) A FULL SET OF NON-NEGOTIABLE DOCUMENTS TO BE SENT TO THE OPENER BY COURIER WITHIN 07 (SEVEN) DAYS OF SHIPMENT, RECEIPT OF WHICH MUST ACCOMPANY THE ORIGINAL SHIPPING DOCUMENTS.

7) IMPORTER'S NAME, ADDRESS, TIN VAT REGI NUMBER MUST EITHER BE PRINTED OR WRITTEN IN UN-REMOVABLE INK ON MINIMUM 02 PCT OF TOTAL PACKAGE/COVER/WOODEN BOX/OTHER PACKAGES, OR ON THE BIGGEST PACKAGE/BOX OF SHIPMENT AND A BENEFICIARY'S CERTIFICATE TO THIS EFFECT MUST ACCOMPANY THE ORIGINAL DOCUMENTS.

F47A: Additional Conditions

1) LCA FORM NO-0101, IRC NO.BA-116257, TIN 559322423239, VAT REGI NO.19121011457, H.S.CODE NO.8523.49.21 MIDLAND BANK BIN:18131072707 AREA 180303 AND DOCUMENTARY CREDIT NUMBER MUST APPEAR IN ALL DOCUMENTS.

2) SHIPMENT PRIOR TO L/C DATE NOT ACCEPTABLE.

3) COUNTRY OF ORIGIN TO BE MENTIONED CLEARLY ON ALL GOODS/GOODS PACKAGES/CONTAINER AND BENEFICIARY'S CERTIFICATE TO THIS EFFECT MUST ACCOMPANY THE ORIGINAL DOCUMENTS.

4) ACTUAL DATE OF DISPATCH BEARING THE NAME OF THE CARRIER AND PORT OF SHIPMENT MUST BE EVIDENCED BY A SEPARATE NOTATION ON AIR WAY BILL AND THIS MUST BE AUTHENTICATED UNDER STAMP AND SIGNATURE BY THE ISSUER.

5) AIR WAY BILL MUST BE ISSUED BY THE CARRIER OR BY THEIR AGENT. PRESENTATION OF AIR WAY BILL ISSUED BY A FREIGHT FORWARDER OR BY A CHARTER PARTY ARE PROHIBITED.

6) USD50.00 TO BE DEDUCTED FROM THE PROCEEDS FOR PRESENTATION OF EACH SET OF DISCREPANT DOCUMENTS.

7) PACKING TO BE EXPORT STANDARD PACKING AND A BENEFICIARY'S CERTIFICATE TO THIS EFFECT MUST ACCOMPANY THE ORIGINAL DOCS.

8) NEGOTIATING BANK MUST PROVIDE THEIR AND THEIR COLLECTING BANK'S SWIFT CODE ON THE FORWARDING SCHEDULE OTHERWISE USD100.00 TO BE DEDUCTED AT THE TIME OF PAYMENT.

F71B: Charges

ALL BANKING CHARGES OUTSIDE BANGLADESH INCLUDING REIMBURSEMENT CHARGES ARE ON BENEFICIARY'S ACCOUNT.

F48: Period for Presentation

WITHIN 21 DAYS FROM THE DATE OF SHIPMENT BUT WITHIN THE VALIDITY OF THIS DOCUMENTARY CREDIT.

F49: Confirmation Instructions

WITHOUT

F78: Instructions to the Paying/Accepting/Negotiating Bank

A) DOCUMENTS CONTAINING ANY DISCREPANCY MUST NOT BE NEGOTIATED EVEN AGAINST GUARANTEE OR UNDER RESERVE WITHOUT OUR PRIOR APPROVAL.

+

B) DOCUMENTS TO BE PRESENTED IN ONE LOTS TO TRADE AND SUPPLY CHAIN, MIDLAND BANK LIMITED, HEAD OFFICE ANNEX ZAHED PLAZA (LEVEL 10), 30 GULSHAN AVENUE, NORTH C/A, DHAKA, BANGLADESH

+

C) WE SHALL ARRANGE PAYMENT OF THE BILL AS PER INSTRUCTION OF THE NEGOTIATING BANK ON RECEIPT OF THE DOCUMENTS AT OUR COUNTER STRICTLY IN CONFORMITY WITH CREDIT TERMS

F57A: 'Advise Through' Bank - Party Identifier - Identifier Code

Identifier Code:

NATXFRPP

NATIXIS

APPENDIX 6.3

PARIS FR
F72: Sender to Receiver Information
PLS ADVISE L/C TO THE BENEFICIARY
UNDER INTIMATION TO US QUOTING F20

Message Trailer

{CHK:B3F30076FE67}
PKI Signature: MAC-Equivalent

Interventions

Category : Network Report
Creation Time : 17/09/15 17:38:33
Application : SWIFT Interface
Operator : SYSTEM
Text
{1:F21MDBLBDDHA3550424005826}{4:{177:1509171750}{451:0}}

Report Footer

Number of Entities: 1
End of report

