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

Urban Development Directorate

Preparation of Development Plan for Fourteen Upazilas
Package-02

INCEPTION REPORT

Joint Venture of

SCPL SHELTECH CONSULTANTS PRIVATE LTD. (SCPL)

ARC BANGLADESH LTD. (ABL)

Executive Summary

Realistic planning is the first step towards optimum resource utilization. Land is the basic resource which embraces all the natural and man-made resources. The project on "Preparation of Development Plan for Fourteen Upazilas Project" is the outcome of such effort in Bangladesh which will promote well organized development and use of land to ensure a balanced economic growth and reduce misuse of limited scarce natural resources that are attached to land and environment.

The development at the upazila level can be generated only when they are linked with national development plans for proper use of resources and participation of the people. Unplanned infrastructure development and expansion will fail to achieve ultimate goals of planned development. Thus, the planning proposals will have to be tailored to the basic national strategies related to poverty alleviation, disaster management MDGs and SDGs.

This inception report has been prepared as part of the requirements set out in the Terms of Reference under the project of Preparation of Development Plan for Fourteen Upazilas. The contents of the report are the reflection on the introductory description of the project, methodology and the task with an overview of the planning area and the activities performed during the Inception Period. The report contains the basic concepts of the planning, goals and objectives to be achieved through planning, methods of plan preparation and the output that will be generated.

The locational advantage of these upazilas along with the several highways makes the areas potentially important for all types of economic and social development. The current project will help utilize the natural and man-made resources of these areas in a sustainable way.

The broad objective of development plan preparation of upazilas to provide guidelines for physical development based on future need and opportunities and constraints. Under this project, five tier plans namely Sub Regional Plan, Structure Plan, Urban Area Plan, Rural Area Plan and Action Area Plan will be prepared to focus on land-use, transportation and traffic management and comprehensive drainage and environment and disaster management. It will also propose multi-sectoral investment plan which will help create employment opportunities in the upazila. The plans will be developed on the basis of information and data collected from secondary sources and findings through various physical and socio-economic surveys and is produced through participation of local stakeholders. Physical survey will be conducted with the use of GPS, DGPS, RTK-GPS, Total Station and Optical Level. Cross checking, internal verification and monitoring will be ensured during the survey work.

During the Inception Period FGD, Court yard meeting and Tea Stall meeting was conducted in Ishwargang upazila under Mymensingh District and Shibpur and Raipura under Narsingdi District to initiate the programme where representatives of all upazilas and individual consultant and members of UDD were present and local stakeholders expressed their strong support for the preparation of Development Plan.

Utmost efforts have been made to collect basic data and primary documents during the reconnaissance survey in all the upazila under the package. Yet in spite of all efforts collection could not been made which will later be completed in a short period.

A detailed revised work plan has been developed to carry out the tasks under package 02 which will help smooth execution of the project.

PREPARATION OF DEVELOPMENT PLAN FOR FOURTEEN UPAZILAS
PACKAGE-02

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List of Abbreviations and Acronyms

3D	Three Dimensional
A.D.	Anno Domini
AT	Aerial Triangulation
AAP	Action Area Plan
AAT	Arc Attribute Table
ABL	Arc Bangladesh Ltd
ADP	Annual Development Plan
AIDS	Acquired Immune Deficiency Syndrome
BBS	Bangladesh Bureau of Statistics
BIP	Bangladesh Institute of Planners
BM	Bench Mark
BOI	Board of Investment
BRTA	Bangladesh Road Transport Authority
BS	Bangladesh Survey
BTCL	Bangladesh Telecommunications Company Ltd.
BTM	Bangladesh Transverse Mercator
BUET	Bangladesh University of Engineering and Technology
BWDB	Bangladesh Water Development Board
CPA	Critical Path Analysis
CPM	Critical Path Method
CS	Cadastral Survey
DAP	Detailed Area Plan
DD	Degree Decimal
DM	Disaster Management
DGPS	Differential Global Positioning System
DLRS	Department of Land Records and Survey
DOTS	Directly Observed Treatment, Short-Course
DoE	Department of Environment
DPW	Digital Photogrammetric Workstation
DSHA	Deterministic Seismic Hazard Analysis
ECD	Early Childhood Development
EIA	Environmental Impact Assessment
FDI	Foreign Direct Investment
FFYP	Fifth Five Year Plan

FGD	Focus Group Discussion
FY	Fiscal Year
GCP	Ground Control Point
GDP	Gross Domestic Product
GIS	Geographic Information System
GMPE	Ground Motion Prediction Equation
GO	Government Organization
Govt.	Government
GPS	Global Positioning System
GSB	Geological Survey of Bangladesh
H/Q	Head Quarter
HBB	Haring Bone Bond
HIV	Human Immunodeficiency Virus
ICT	Information and Communication Technology
IMU	Inertial measurement unit
IPM	Integrated Pest Management
IPRSP	Interim Poverty Reduction Strategy Paper
IWTC	Inland Water Transport Corporation
LCC	Lambert Conformal Conic
LCD	Liquid Crystal Display
LGED	Local Government Engineering Department
MDG	Millennium Development Goal
MIDP	Municipal Infrastructure Development Project
MOHPW	Ministry of Housing & Public Works
MSL	Mean Sea Level
MS-DOS	Microsoft Disk Operating System
MTMF	Medium-Term Macroeconomic Framework
NFYP	National Five Year Plan
NGO	Non-Government Organization
NRR	Net Reproduction Rate
O-D	Origin - Destination
PAT	Polygon Attribute Table / Point Attribute Table
PCU	Passenger Car Unit
PD	Project Director
PDB	Power Development Board
PERT	Program Evaluation and Review Technique
PMO	Project Management Office

PMU	Project Management Unit
PPA	Participatory Planning Approach
PRA	Participatory Rural Appraisal
PRS	Poverty Reduction Strategy
PRSP	Poverty Reduction Strategy Paper
PSHA	Probabilistic Seismic Hazard Analysis
PWD	Public Works Department
RD	Relief Division
RL	Reduced Level
RS	Revenue Survey
RHD	Roads and Highways Department
RAP	Rural Area Plan
REB	Rural Electrification Board
RTI	Reproductive Tract Infection
RTK-GPS	Real Time Kinematic Global Positioning System
SCPL	Sheltech Consultant Pvt. Ltd
SME	Small and Medium Enterprise
SP	Structure Plan
SWOT	Strengths, Weaknesses, Opportunities and Threats
STM	Standard Transverse Mercator
TIN	Triangulated Irregular Network
TB	Tuberculosis
ToR	Terms of Reference
TS	Total Station
TFR	Total Fertility Rate
TYRIP	Three-Year Rolling Investment Programme
UN	United Nations
UAP	Urban Area Plan
UDD	Urban Development Directorate
UNO	Upazila Nirbahi Officer
UTC	Coordinated Universal Time
UGIIP	Urban Governance Infrastructure Improvement Project
UHFWCs	Union Health and Family Welfare Centers
UNESCO	United Nations Educational, Scientific and Cultural Organization
UTIDP	Upazila Towns Infrastructure Development Project
WTO	World Trade Organization

CHAPTER ONE: INTRODUCTION

1.1 General

This Inception Report is being submitted as partial fulfillment of the requirement of Terms of Reference for the "Preparation of Development Plan for Fourteen *Upazilas"*. This report is prepared in compliance to an agreement signed between the clients, Urban Development Directorate (UDD) and a joint venture of the Consultants (Sheltech Consultants Pvt. Ltd. and Arc Bangladesh Ltd.) on January 05, 2015.

1.2 Background of the Project

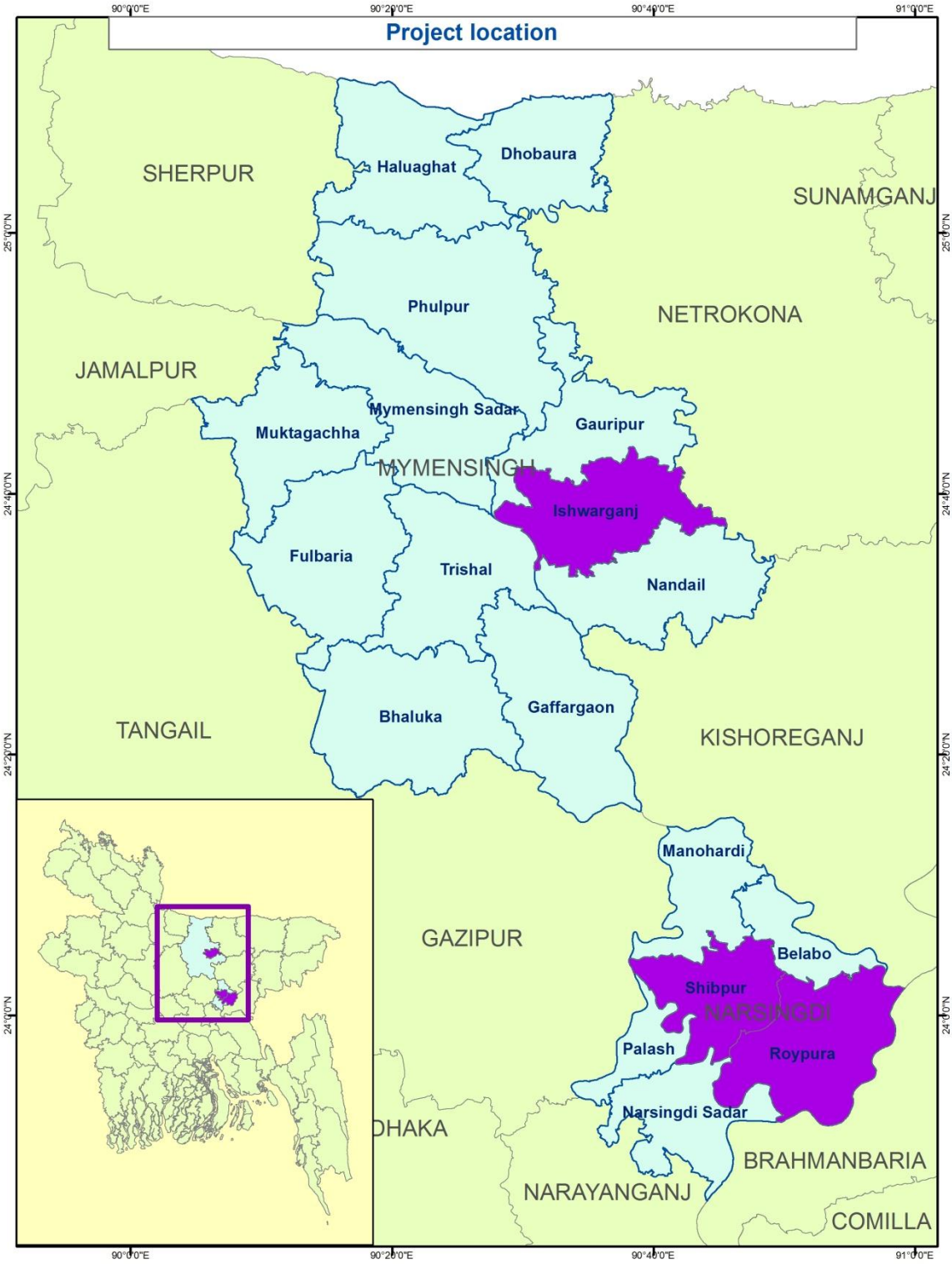
Bangladesh has been showing rapid growth of urban population since the partition of India in 1947, especially since the independence of Bangladesh in 1971. The average growth rate of urban population has been fluctuating in different census decades. Between 1961 and 1980, the growth rates marked roughly 8 percent. Between 1991 and 2001, the rate has been declined to 3.5 percent. At present (2011) about 28.40 percent of the total population of Bangladesh lived in urban areas. This in fact indicates that Bangladesh is a low urbanized country, even if compared with even the Asian Context (50% urban). In absolute terms however the country has a huge number of urban populations. In 1971, the urban population of Bangladesh was 5.5 million while in 2001 the size of urban population rose to about 30 million. This simple statistics represent the clear picture of urban population growth. With the increasing of urban population, cities' physical limits are expanding; many sub-urban and rural areas are becoming urban. With such expansion, urban built environment is increasing. But in context of Bangladesh, such expansions are not being taken place in a planned way. Haphazard and unplanned development are seen everywhere which cost the inhabitants to much in social and economic terms.

Due to lack of practicing effective urban and regional planning, these secondary towns have been failed to put in order especially the most valuable resource i.e., the land in view of the citizens' socio economic and cultural needs. The land is used most haphazardly. As such, the developments are taking place in unplanned and unregulated manner resulting in low living standard of the people living in the cities and towns. This situation depressingly influences the investment patterns in the secondary towns resulting not creating employment opportunities for the urban dwellers and generating funds for development and better maintenance of urban infrastructure such as roads, water supply, drainage, waste disposal and sanitation, electricity, etc. within their boundaries. Thus, the role of the secondary towns in the overall socio-economic development both at the local and the national levels are not much noteworthy. Further, it is to be agreed that the issues concerning urbanization and practicing urban planning at the secondary town level have not been duly addressed as far as the national policies and strategies are concerned.

In this regard a comprehensive development plan is required to address the required land use transformation which will not allow any unauthorized and unplanned-development, either in urban area or in rural area. Due to lack of such plan, it is generally found that most of the *upazilas* in Bangladesh have developed with least coordinated manner possessing very little development control. Measures for the adequate provision of infrastructure, service, utility and modern amenities for maintaining a minimum standard of life, considering environment and sustainability has to be taken. Moreover, in preparing such plan, development constraints and local development potentials are to be identified clearly, and plans should be formulated addressing' such development constraints and potentials of the area to make the plan practicable.

Considering this situation the project on "Preparation of Development Plan for Fourteen Upazilas" has been initiated with a view to prepare (or update existing Master Plans) for a period of next 20 years. The project aims at preparing several plans such as Sub-regional Plan, Structure Plan, Master Plan, Urban Area Plan, Rural Area Plan and Action Area Plan. This new concept of structure planning

gradually replaces old styled Master Plan concept. The Structure Plan provides a longer time guideline for the growth of the entire city, while the Action Plan is an immediately implementable short term plans for implementation in each ward/growth centres. The Action plans cover specific areas of a town where prioritized actions are needed. However, we still keeping the Master Plan concept in our city planning due to its greater familiarity among the Paurashava/*Upazila* level.



Map 1.1: Locational Map of Project Area

1.3 Understanding of the Objectives

Bangladesh is generally considered to be a poor country. The country is poor as the various regions of the country have not yet been developed equally. Some of the regions are lagging behind, while some others are going much ahead of the others. Dhaka is the most developed region in the country; while other upazilas are the poorest. However, in terms of resources this area is rich. Theses upazilas need proper utilization of its resources through planned manner. That is the vision for development, being one of the richest in terms of agro economic, can also be one of the richest in terms of regional development. Its land, resources, people and nature should be utilized rationally for its development in a sustainable manner. Thus, in the present context, upazila town and its surrounding areas to be developed in such a manner that it can provide better living condition for its people and those are coming from the outside. The development should be sustainable futuristic so that the future generation can be benefited from the efforts taken now.
Human settlements have been developed over a long period of time. Settlements that are developed according to a Development Plan based upon a future oriented planning can retain their appeal or effectiveness for a long time. The objectives of present Plan 'preparation' for upazilas (cities and rural area) of Bangladesh can be set out as following:

- Find out the development issues and development potentials of the *upazila* and making a 20-year development vision for the upazila to prepare a Development Plan in line with the vision for the development;
- Plan for the people of the upazila to develop and improve update provisions for better transport network, housing, infrastructures for roads, markets, bus terminals, sanitation, water supply, drainage, solid waste management, electricity, education, leisure and such other infrastructure facilities for meeting the social and community needs of the poor and the disadvantaged groups for a better quality of life;
- Prepare a multi-sector short and long term investment plan through participatory process for better living standards by identifying area based priority-Drainage Development plan, transportation and traffic management plan, other need specific plan as per requirement in accordance with the principle of sustainability;
- Provide control provisions for private sector development, clarity and security with regard to future development;
- Provide guide-line for development considering the opportunity and constrains of future development of *Upazila* Town;
- Prepare a 20-year Development Plan to be used as a tool to ensure and promote growth of the city in line with the guiding principles of the Development Plan and control any unplanned growth by any private and public organization

1.4 Scope of Services

The consultancy services are designed to provide multi-disciplinary activities including collection and collation of available data and information, review of policy and planning concepts, assessment of survey requirement, carrying out detailed survey covering landuse, topographic, socio-economic, traffic and environmental, institutional aspects, data management, stakeholder consultation and formulation of Sub-Regional Plan, Structure Plan, Urban Area Plan, Rural Area Plan and Action Area Plan for Shibpur, Raipura and Ishwarganj Upazila. All necessary works mentioned in the ToR would be done during the planning period based on the methodology of the work, technology available and detailing needed for phasing out plans.

- Determination of study area (approximately 810.90 sq. km) based on suitable physical boundary.

- Explanation of the plan (report) indicating population, density, livelihood and its future plan.
- Collection of socio-economic and demographic information and data both from primary and secondary sources in the study context and to forecast future population, requirement of different services, physical and social infrastructure facilities, employment generation,
- Identifying the exiting natural and man-made drains in the town and investigating the mechanisms of the drainage and local river system to assess the extent and frequency of flood damage and determine areas where flooding or poor drainage is most severe.
- Preparing a conceptual report on the various alternative solutions to the present storm water problems and selecting the most appropriate and economical alternatives.
- Preparing Development Plan of the storm water drainage & sewerage system (with treatment plant) for all areas in the town, which will include discharge calculations for the catchments areas, design of main and secondary drains/sewerage including their sizes, types and gradients and retention areas with preliminary cost estimates for the proposed drainage/sewerage system.
- Preparing a conceptual plan to show the phase-wise implementation schedule in an affordable and practical manner considering the technical, environmental, institutional, economic and social feasibility of the proposed works.
- Conducting on the existing drainage maintenance procedures and budgets, if any including solid waste collection and design and estimate costs for a planned maintenance system to ensure that the drains are kept free from blockages and physical damage.
- Recommending planning, institutional and legal mechanisms to ensure provision of adequate land for rights of way for storm water drainage, which will also determine Demarcation of encroachment areas.
- Assessing additional data requirements, critical additional data not currently available should be collected through reconnaissance and traffic surveys which should estimate present traffic volume and forecast the future traffic growth and identify travels patterns, areas of traffic conflicts and their underlying causes.
- Study the viability of different solutions and develop a practical short term traffic management scheme of implementation, including one way systems, restricted access for large vehicles, improved signal system traffic islands, roundabout, pedestrian crossings, deceleration lanes for turning traffic, suitable turning radius, parking policies and separation of pedestrians and rickshaws.
- Assessing the current land use with regard to transportation, bus and truck terminals, stations, railway stations etc. and recommend actions to optimize this land use.
- Preparing a Long Term traffic and Transportation Plan.
- Surveying and evaluating the urban land capability considering factors such as flood basin, topography, fertility etc.
- Development Plan Package shall indicate/outline possible frameworks/strategy for management and development control, institutional arrangement ensuring people participation etc. for effective implementation of the plan.
- Facilitating Authority and Union Parishads about the publicity of Development Plan, its preparation strategy, function and their role through making, leaflet, newspapers, cable line, FGD etc.
- Allocating zones for as high, middle, low density (including the disadvantaged group), mixed residential and blocks for residential apartment where it is necessary.

- Preparing guidelines for control/promote industries at different locations according to their nature such as heavy industrial, light industrial and service industries including waste disposal/ treatment plants .
- Emphasizing on an implementable disaster management plan
- Preparing guidelines for controlling/guiding location of commercial uses.
- Preparing and submit Development Plan and Report with required standards as specified in the ToR.

1.5 Scope of Work in the Inception Period

Planned development of settlement areas is a prerequisite for proper utilization of natural resources. Bangladesh being a densely populated area with limited land and natural resources needs to value conservation of resources and guided use of them for infrastructure development as technological and financial capability restricts the country to adopt expensive plans. On the other hand, dependence on foreign assistance limits the scope of development to a great extent. The scope of work under this inception report will cover all methodology of survey techniques of all aspects related to the preparation of development plan of Shibpur, Raipura and Ishwarganj Upazila. An assessment of the actual provision of inputs in relation to the expected outputs. Analysis and findings from reconnaissance survey including problems and possible solutions to the survey activities and prospects of development. This also include results of tea stall meeting, courtyard meeting and focus group discussion (FGD) in the project area. Review of all relevant reports, documents and other materials, which items are already acquired and those requiring official assistance for acquisition. An assessment of all additional data collected and survey works to be carried out for completion of the database. Development of methodology for each component of the structure plan. The above mention subjects are the scope of work in this inception report.

1.6 Description of the Project Area

1.6.1 Shibpur Upazila

The upazila occupies an area of 217.71 sq. km (BBS 2011) including 1.09 sq. km river area. It is located between $23^0$56' and $24^0$07' north latitudes and between $90^0$38' and $90^0$50' east longitudes. The upazila is bounded on the north by Monohardi upazila on the east by Shibpur and Belabo upazila on the south by Narsingdi Sadar upazila and on the west by Palash upazila and Kapasia and Kaliganj upazila of Gazipur zila.

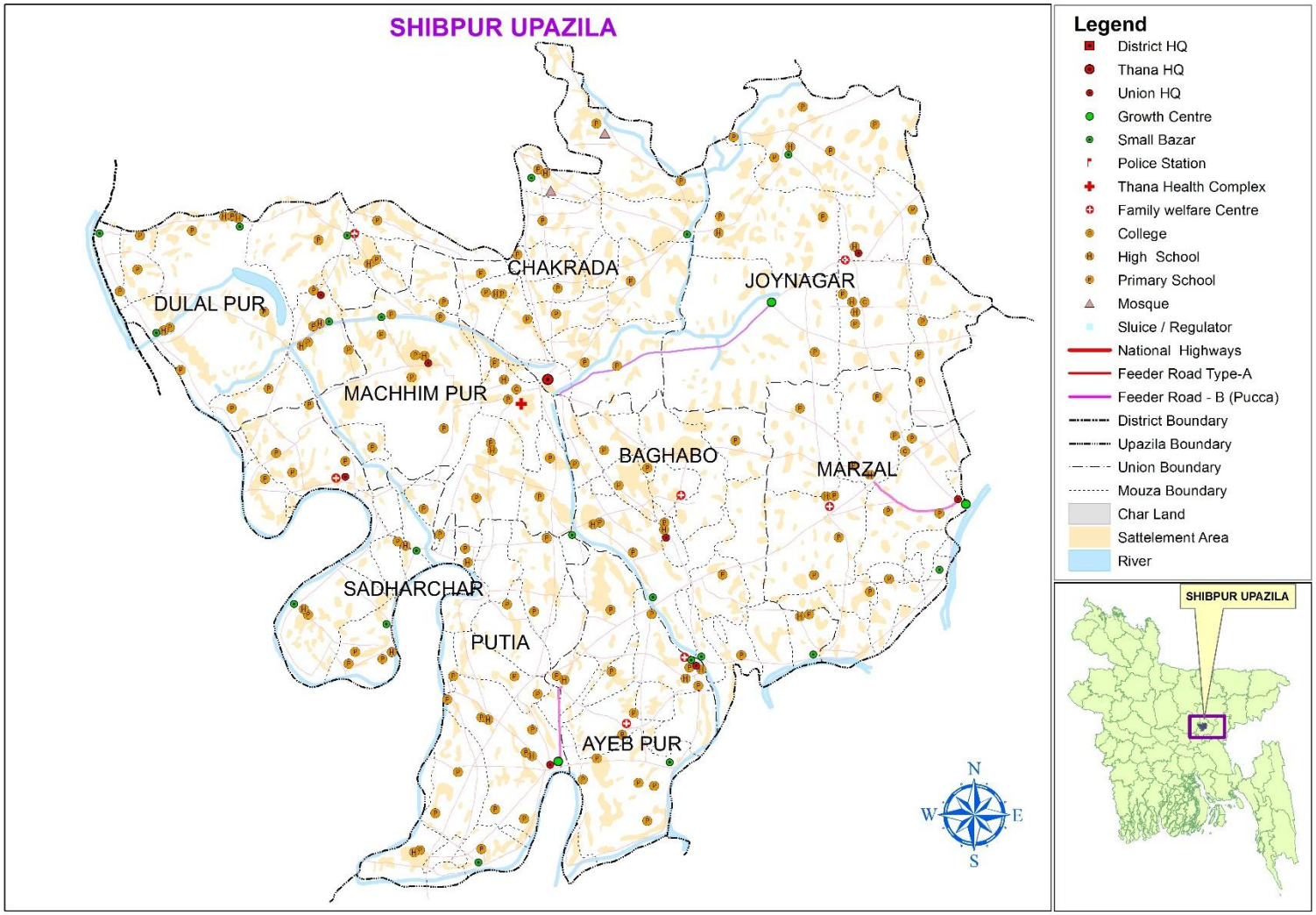
Shibpur came into existence on the 12th January 1918, with nine unions. Presently, added a 'C' class paurashava in this upazila. The upazila came under the influence of the rule of the Kharog dynasty from the middle of the 6th and 7th century A.D. There was five kings in Kharog dynasty namely king Kharogaddam, Maharaj Jatkharag, Maharaj Dev Kharag, Raja Rajvratra and Raja Balvratra. From this dynasty three Raja were Buddhist and after that two Raja were Shaiba Hindu. Nothing is definitely known about the origin of name of the upazila. It is generally believed that in the long past it was a centre for worship of shib. The upazila might have derived its name as Shibpur after the name of Shib a hero of Hindu Mythology. Shibpur has historical glory for long time which can be easily understood by the presence of rich heritage sites. There are many heritage sites stands in Shibpur. Among them Naimuri Pahar, Ashrafpur Gayevi Jame Mosque, Graveyard of Shahid Asad, Jamidar Mohoni Mohon Shaha's home, Lakhpur Jamindar home, Dhupirtech Bauddh Paddn Mandir, Jankhartech Purakriti, Tungirtech Pratattik Nidarshan and Kumardi Shaha Mansur's Masque and Dargah is mentionable.

Shibpur has a population of 303813. Males constitute 48.85% of the population, and females 51.15%. Shibpur has an average literacy rate of 55.7% (7+ years), and the national average of 51.77% literate. (Source: BBS 2011)**.**

The economy of the project area is agro based dominated by trading of various agro-products. Rice, potato, maize are major cash crop of the area. Potato is cultivated throughout the region and has become very popular as a cash crop. Though other vegetables is taking over potato cultivation, in areas like Shibpur upazila and around vegetables is the major crop. On the other hand paddy and wheat are major cereal crops. In recent times cultivation of maize is becoming popular which generally fetches good income for the cultivators. In the rural settlements of the upazila, brinjal, green Chile and Heap are a common picture. The area has potential for production of oil seed like mustard. The main sources of income of this area are Agriculture, Small Business, Wage, Livestock and Poultry, Fisheries, Cottage Industry and Service. Agriculture is the predominant source of income of Shibpur upazila. Most of the people depend on agriculture for their livelihood.

The city of Raipura is served by several highways. The main road transport is Dhaka-Sylhet highway. Mainly three types of roads such as pucca, HBB/ brick soling and kutcha roads connect different parts of the Upazilla. It has 1024.50 km of pucca road, 1350 km of HBB/Soling and 497 km of kutcha road. There are 15 pucca bridges and 1037 culverts and 5 Bailey bridge within the Upazilla. (Source: Banglapedia)

Map 1.2: Map of Shibpur Upazila



Source: JV of SCPL and ABL, 2015

N.B: Based on SOB, Map

1.6.2 Raipura Upazila

The upazila occupies an area of 312.76 sq. km (BBS 2011). It is located between $23^0 52'$ and $24^0 04'$ north latitudes and between $90^0 44'$ and $90^0 59'$ east longitudes. The upazila is bounded on the north by Belabo upazilas on the east by Nabinagar and Brahmanbaria on the south by Narsingdi sadar upazila, Nabinagar and Bancharampur upazilas and on the west by Shibpur and Narsingdi sadar upazila. Raipura distance from Dhaka-79 km and from Narsingdi district - 22 Km.

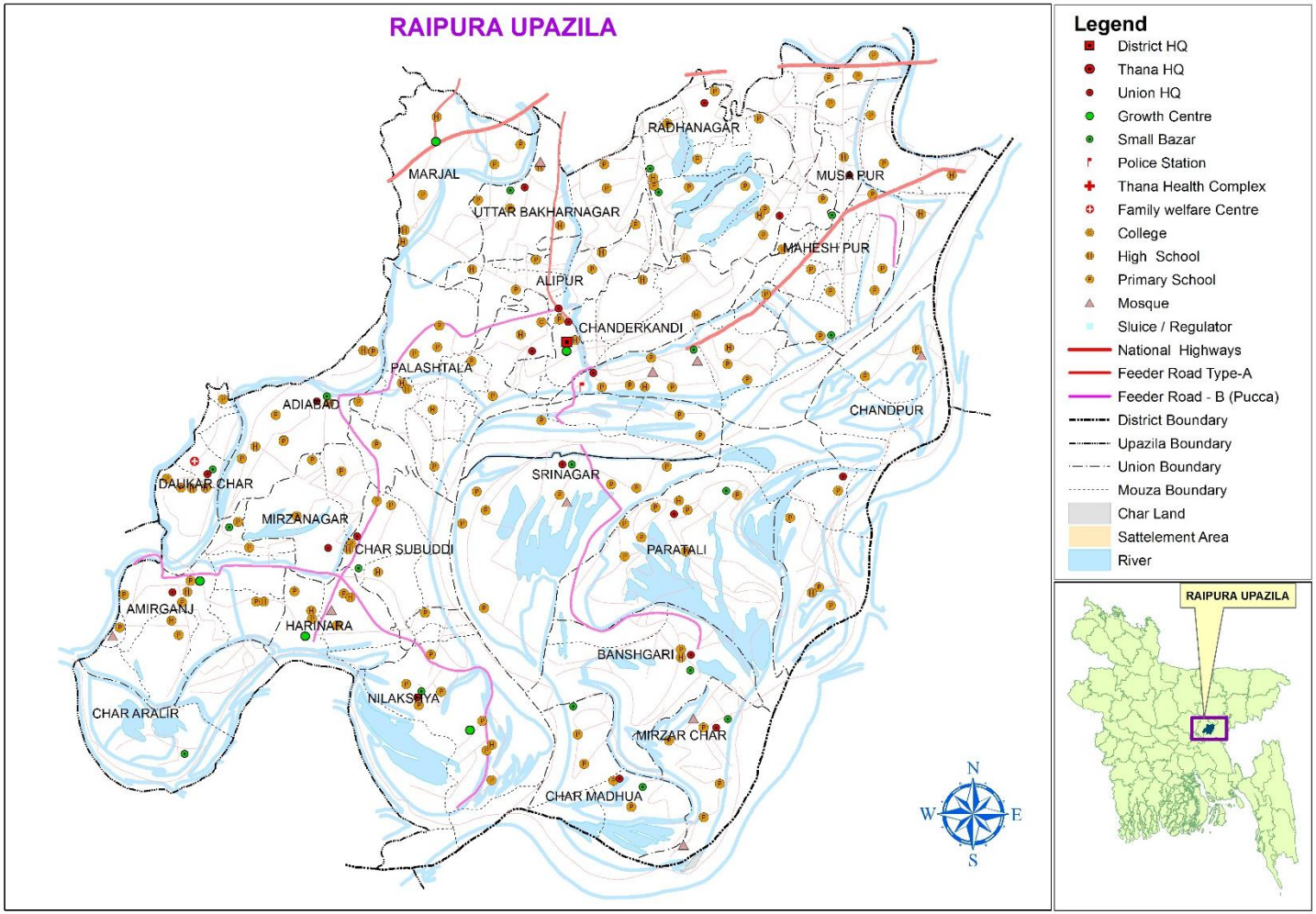
Raipura came into existence in the middle of the nineteenth century. Nothing is definitely known about the origin of the name of the upazila. There is a general belief that in the past this area was under an influential Zamindar of Roy family. The upazila might have been named as Raipura after the name of the Zamindar family. Raipura has historical glory for long time which can be easily understood by the presence of rich heritage sites. There are many heritage sites stands in Raipura upazila. One of the most important heritage site is Panthosala. It is situated near Meghna River which is main attraction of tourist. Another main historical site is Birsestro Shahid Flight Lieutenant Matiur Rahman Home and Kabi Samsur Rahman Home. There is worldwide Red Food in Radhanagar union under Raipura Upazila.

Raipura is the second largest upazila in Bangladesh. It has a population of 535796. Males constituted 48.34% of the population, and females 51.66%. Raipura had an average literacy rate of 40.5% (7+ years), against the national average of 51.77%. (Source: BBS 2011).

The economy of the project area is agro based dominated by trading of various agro-products. Rice, potato, maize are major cash crop of the area. Potato is cultivated throughout the region and has become very popular as a cash crop. Though other vegetables is taking over potato cultivation, in areas like Raipura upazila and around vegetables is the major crop. On the other hand paddy and wheat are major cereal crops. In recent times cultivation of maize is becoming popular which generally fetches good income for the cultivators. In the rural settlements of the city, groves of bamboo and betel nut trees are a common picture. The area has potential for production of bamboo materials

The city of Raipura is served by several highways. The main road transport is Dhaka-Sylhet highway and there is also rail transport with the capital city, Dhaka. Mainly three types of roads such as pucca, HBB/ brick soling and kutcha roads connect different parts of the Upazilla. It has 171.44 km of pucca road, semi-pucca road 123 km, mud road 230 km; waterway 28 nautical miles. But among them the Railway is dominated communication system in Raipura. Daily train service connecting Dhaka is by a pair of trains. Raipura is served by Dhaka-Sylhet section of meter gauge line. There are 24.81km railway line and six railway stations in Raipura upazila.

Map 1.3: Map of Raipura Upazila



Source: JV of SCPL and ABL, 2015
N.B: Based on SOB, Map

1.6.3 Ishwarganj Upazila

The upazila occupies an area of 280.43 sq. km (BBS 2011). It is located between 24º33' and 24º44' north latitudes and between 90º28' and 90º46' east longitudes. The upazila is bounded on the north by Gauripur upazila, on the east by Kendua upazila of Netrokona zila, on the south by Nandail upazila and on the west by Trishal and Mymensingh sadar upazilas. The distance of Ishwarganj is from Dhaka-142 km and from Mymensingh 22 Km.

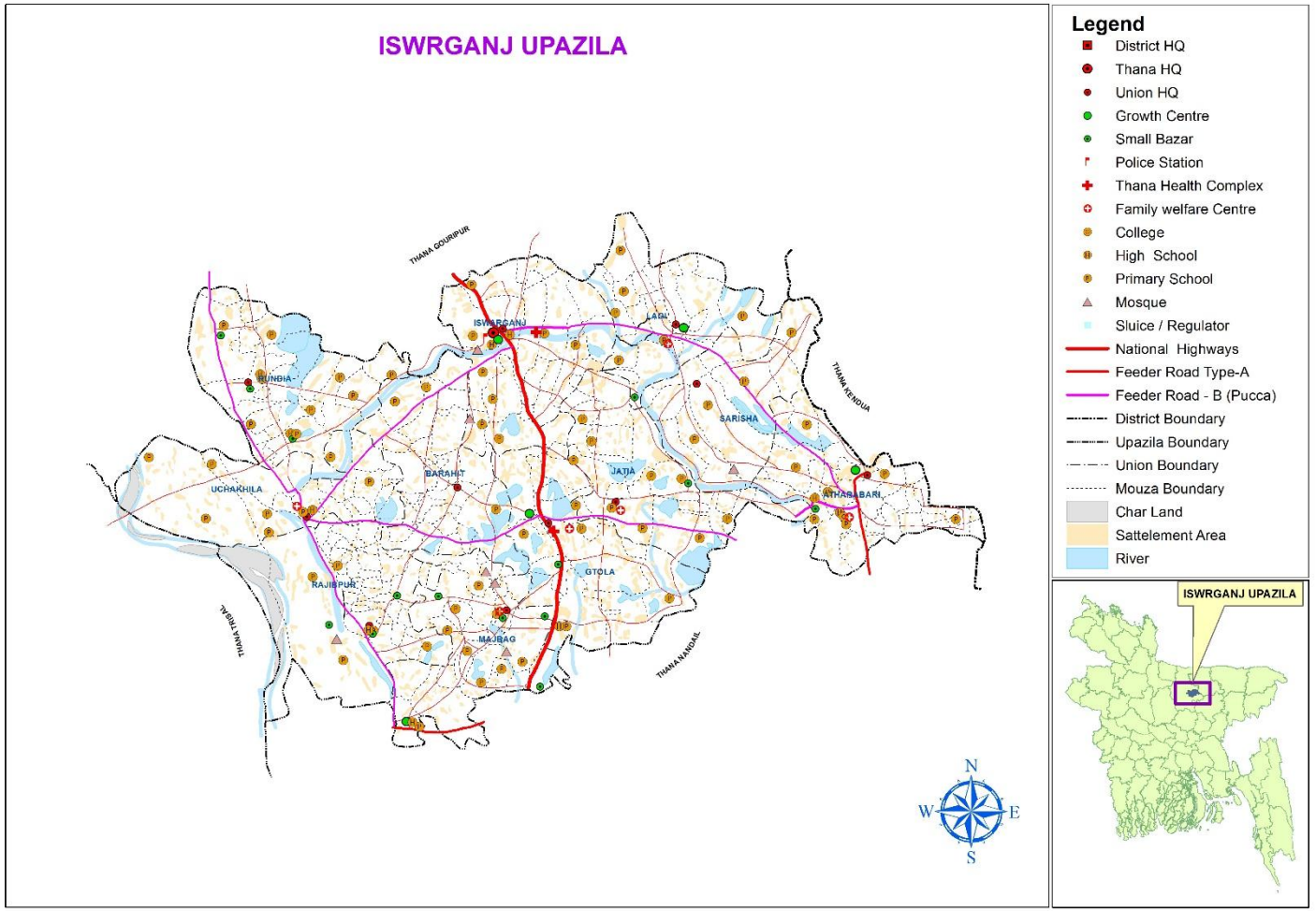
Ishwarganj upazila came into existence as a Thana in 1936 and was upgraded to upazila in 1983. Nothing is definitely known about the origin of the upazila name. It is said that in the long past, there lived an influential man named Ishwar patni at the present place of the upazila. A local bazar was named as Ishwarganj after his name. It is generally believed that the upazila might have derived its name after the name of the bazar where the upazila Head Quarters is located. Atharo Bari is the rich full area in Ishwarganj Upazila under Mymensingh district. From the British period this area is advance of business and communication. Historical glory of abandoned Jamindar Promoth Chandra Ray's home is situated in this upazila which is most heritage sites in this area. It is stands for two hundred and fifty years. Other historical sites in this upazila are Telowari Jame Mosque and Ishwarganj Kali Mandir.

Ishwarganj has a population of 376348. Males constitute 49.74% of the population, and females 50.26%. It has 376293 units of household. Ishwarganj has an average literacy rate of 41.0% (7+ years), and the national average of 51.77% literate. Table 3.1.C. provides ward/union based population and number of households of the project area as found in the 2011 census report. (Source: BBS 2011).

The economy of the project area is agro based dominated by trading of various agro-products. Rice, potato, maize are major cash crop of the area. Potato is cultivated throughout the region and has become very popular as a cash crop. Though other vegetables is taking over potato cultivation, in areas like Ishwarganj upazila and around vegetables is the major crop. On the other hand paddy and wheat are major cereal crops. In recent times cultivation of maize is becoming popular which generally fetches good income for the cultivators. In the rural settlements of the city, groves of bamboo and betel nut trees are a common picture. The area has potential for production of Boar firming.

The city of Ishwarganj is served by several highways. The main road transport is Dhaka-Mymensing highway. Mainly three types of roads such as pucca, HBB/ brick soling and kutcha roads connect different parts of the Upazilla. It has 61.02 km of pucca road, 13.03 km of kutcha road. The total union has 73.72 km of pucca road and 88.16 km of kutcha road. The total rural area has 14.94 km of pucca road and 132.69 km of kutcha road. The river way is about 12 km. Ishwarganj upazila is connected with the railway network. Daily train service connecting Dhaka to Mymensingh is by a pair of trains. Ishwarganj is served by Mymensingh section of meter gauge line. There are 18.97km railway line and three railway station in Ishwarganj upazila. There are three railstations, seventeen busstations and one helipad exist here. (Source: Banglapedia)

Map 1.4: Map of Ishwarganj Upazila



Source: JV of SCPL and ABL, 2015

N.B: Based on SOB, Map

1.7 Organization of the Report

Chapter One: Introduction: it is discuss about background of the project, goals and objective, scope of work in the Inception report, scope of services and activities, description of the project area. *Chapter Two:* Review of National Development Plans and Policies: it is discuss about Sustainable development goal, aspects of spatial consideration in the past, Sixth Five Year Plan. *Chapter Three:* Approach and Methodology: it is discuss about Planning approach, review/assessment of database and planning parameters, collection and review of materials and maps, preparation of base maps through satellite image processing by using photogrammetric method, surveys activities, sector studies and surveys, methodology of data processing and analysis, approaches to plan preparation, institutional capacity building or implementation and training assessments. *Chapter Four:* Output and Deliverables: it is discuss about data management structure, inventory, projection parameter, conversion factors, data precision, data precision of survey equipment, data precision of digitization of mauza maps, map layout, map legend, checklist for survey and studies, monitoring and supervision of project activities. *Chapter Five:* Progress of Work during Inception Period: it is discuss about office establishment, site selection for bench mark pillar, reconnaissance survey and revised work plan. *Chapter Six:* Conclusion: Discuss about conclusion.

CHAPTER TWO: REVIEW OF NATIONAL DEVELOPMENT PLANS AND POLICIES

Comment [A1]:

2. 1 Introduction

Bangladesh's planning model is dominated by a central planning system where the central governments set out relevant plans and policies and implement the goal and objectives of those on sectoral basis. Either a central government body or a local institution of a particular sector under a central ministry initiates the planning process with directives from that higher authority. It can be mentioned here that both the orientation and the process of development planning have been entirely top-down approach. However, this type of plan decision making system is to be followed in undertaking even any planning initiatives at the smaller urban centre levels.

In recent times there appears to be some understanding at the national levels about the importance of physical planning which has been voiced in various national development plans and policies viz. Plans - the Five Year Plans, later Poverty Reduction Strategy Paper (PRSP), Vision 2021, Millennium Development Goals (MDGs); and Policies – land use policy, agriculture policy, water policy, environmental policy, industrial policy, health policy, education policy, disaster policy, transport policy, etc. These documents would be of paramount importance in the process of preparing development plans for Shibpur, Raipura and Ishwarganj Upazilas. It is vitally needed to consider the spatial aspects of these national plans' and policies' goal and objectives so that these are harmonized as well as reflected in the Strategy Plans, the Structure Plans, the Urban Area Plans and the Detailed Area Plans of the above mentioned Upazilas in the context of respective local circumstances.

~~In these~~In these sections, the consultants will carefully consult the penitent national plans and policies which will eventually guide in preparing appropriate development plans for the Shibpur Upazila, Raipura Upazila and Ishwarganj Upazila in line with the To~~O~~R of the consultancy services.

2.2 National Development Plans and Strategies

The following national development plans and strategies will be studied here so as to obtain some guidelines and pertinent information in the preparing the subject development plan highlighting the spatial aspects and identification of inter-linkages and relevancy with the ~~subject plans~~subject plans making processes:

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Development Goals of Bangladesh: Vision 2021

A nation without vision is meaningless. In the case of Bangladesh whose independence in 1971 was the culmination of a people's struggle to attain political freedom as well as their economic emancipation. In keeping with those aspirations, the Government's Vision 2021 is an articulation of where this nation needs to be in 2021 – the year which marks the 50th anniversary of Bangladesh's independence. That milestone, ten years away from 2011, will be a high point in Bangladesh's war against chronic poverty and the struggle to attain middle income country status, from its beginning as a low income country. This "Perspective Plan of Bangladesh (2010-2021): Making Vision 2021 a Reality" is a strategic articulation of the development vision, mission, and goals of the Government in achieving a prosperous Bangladesh grounded in political and economic freedoms a reality in 2021.

It is estimated that by the year 2021 nearly one-third or 33% of the population of Bangladesh will be living in urban areas. The urban population recorded during the 2001 Census was nearly 28.6 million and is currently (2010) estimated at 40 million. The tremendous challenge of absorbing such a massive number of people in urban areas and providing them with shelter, food, employment, healthcare, education, municipal services and recreation facilities is made more difficult given shortage of urban facilities and resources, skilled manpower and good governance. The urbanization

challenge unless managed well could pose a serious problem to the future growth prospects for Bangladesh. Rapid urbanization has been posing serious challenges for sustainable urban development.

Despite the challenges, urban areas demonstrate immense economic potential to generate growth in the country and can be instrumental in enhancing prosperity and increasing per capita income. As income grows and the economy relies more and more on manufacturing and organized services, urbanization will grow. The challenge for public policy is to manage this natural transition of Bangladesh from an agrarian economy to a modern economy well through appropriate institutions, programs and policies. The Government is cognizant of this challenge. It also understands that this is a long-term challenge. The back-log of unmet demand and new demand for basic urban services like housing, sanitation, water supply and urban transport requires huge resources, sound planning, and strong implementation capacity. These require strategic planning and implementation over a long period. Ambitious urban development programs during the perspective plan period will be adopted. These programs will be based on the following policies and strategies:

- Pprocess and the patterns of urbanization in Bangladesh would be achieved through a more balanced distribution of urban centres in terms of population size, employment opportunities, housing and essential infrastructure and services
- Eensuring urban governance focusing on institutional reforms and decentralization of responsibilities and resources to local governments and participation of civil society in decision-making and urban development processes; and facilitating networking at all levels.
- Aachieving urban economic development involving initiative to combine available skills to be suitably upgraded, resources and ideas to stimulate the local economy towards the goals of job creation, economic growth and poverty alleviation
- Mmanaging urban management seeking to promote cleaner environment, control pollution and protect public health from environmental hazards.
- Pproviding accessibility to affordable urban housing through bringing about improvement in terms of quality and quantity of housing units, housing tenure and housing accessibility
- Ddeveloping ~~an integrated~~an integrated and balanced transportation system taking into consideration the needs of the road system, non-motorized transport, public passenger transport and mass transit.
- Ppromoting sustainable land-use planning and innovative land management practices, with the objective of providing for the land requirements for urban development through integrated and environmentally sound physical planning and land use
- Ddelivering safe water, sanitation, waste management, social welfare, transport and communications facilities, energy, health and emergency services, schools, public safety, and the management of open spaces.
- Eensuring equal access to and maintenance of basic services, including those related to education, employment and livelihood; basic healthcare services; safe drinking water and sanitation; adequate shelter; and needs and rights of women and children who often bear the greatest burden of poverty.

Sixth Five Year Plan (SFYP) including Poverty Reduction Strategy Paper

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In recognition of the long-term development challenges, the Government of Bangladesh adopted the Vision 2021. The Vision 2021 and the associated Perspective Plan 2010-2021 have set solid development targets for Bangladesh by the end of 2021. Those targets if achieved will transform socio-economic environment of Bangladesh from a low income economy to the first stages of a middle income economy. The implementation of Vision 2021 will be done through two medium term development plans, with the first spanning FY2011- FY2015. This Five-year Plan is the sixth in the series of development plans in Bangladesh starting in1973. A key focus of the plans will therefore be on strategies, policies and institutions to help guide helping Bangladesh achieve the goals set in Vision

2021. At the operational level the fundamental task of the Sixth Five Year Plan is to develop strategies, policies and institutions that allow Bangladesh to accelerate growth and reduce poverty.

However, a review of past policies, institutions and programs suggest that the urbanization strategy needs to change substantially to meet the challenges of future urbanization in Bangladesh. In the past much of the focus has been on implementing piecemeal programs. Multitudes of local government agencies, weak planning, poor governance, inadequate resources and weak project implementation capacity have limited the progress with meeting the urban challenge. The Sixth Five-Year Plan will internalize these lessons of experience and shift the emphasis to the development of sound urban institutions, improve city governance, emphasize urban resource mobilization, facilitating NGO involvement in housing, better environmental management, developing sustainable urban transportation, promoting balanced development of urban centers, making provision of infrastructure and services, and reducing urban poverty.

Sixth Five Year Plan has also set up objectives and strategies for the Paurashavas and City Corporation. They are:

a. Development of effective road network to setup congestion free, safe and sound communication system.
b. Development of pedestrian facilities in the cities.
c. Reduction of traffic accident.
d. Auto traffic signalization for better traffic management.
e. Sustainable parking management.
f. Improvement of solid waste management.
g. Improvement of environment & infrastructure.
h. Provision of safe water supply for the citizens.
i. Development of recreational facilities (parks, playgrounds etc.)
j. Development of modern street lighting
k. Development of primary health facilities.
l. Improvement of drainage system to address the problems of water logging.
m. Development of Commercial complexes for expanding economic activities.
n. Infrastructure development of low-income settlements.

Sixth Five Year Plan has also set up vision, objectives and strategies for the Rural Infrastructure Development. The vision of Rural Infrastructure Development sub-sector includes, among others, developing, maintaining and managing transport, trading infrastructure at the local level by ensuring LGI and community participation and taking care of environmental and social issues. The objectives of the sub-sector will include the following:

a. Improvement and maintenance of rural infrastructure
b. Create direct employment opportunity for the rural poor and the destitute women through improvement and maintenance rural infrastructure.
c. Create indirect employment opportunity in road transport, trading and other farm and nonfarm sectors. Improve utilization of health and education services/facilities
d. Facilitate participation of community people in development work and promote good local governance.
e. Contribute towards poverty reduction at the local level.

Millennium Development Goals (MDGs)

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The Millennium Development Goals, set forth in the UN Millennium Declaration 2000, are a set of quantified and time-bound goals to reduce extreme poverty, disease, and deprivation of the world's poorest people. The project sets a deadline of 2015 to achieve eight goals, called Millennium Development Goals (MDGs). In fact, the achievement of the social goals under the MDGs is now at the centre of public policy in Bangladesh as in most other developing countries. It is seen that while Bangladesh has achieved considerable success in certain areas like expansion of health and education

facilities, and income earning opportunities for women, sustained efforts will be needed to consolidate these gains and achieve MDGs in these and other areas by 2015.

It is encouraging to note that Bangladesh has already met several targets of the MDGs like reducing headcount poverty and 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 cure rate of TB under DOTS and others. In addition, Bangladesh has made remarkable progress in reducing the prevalence of underweight children, increasing enrolment at primary schools, lowering the infant mortality rate and maternal mortality ratio, improving immunization coverage and reducing the incidence of communicable diseases. On the other hand, areas in need of greater attention are 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.

National Plan for Disaster Management

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The National Plan for Disaster Management is prepared by the Disaster Management and Relief Division. The plan includes the following as minimum:

i. Introduction
ii. Gob Vision for Disaster Management
iii. Hazards profile of Bangladesh
iv. Disaster development linkages: national and international drivers for change
v. Aim of the plan
vi. Strategic goals of the plan
vii. Conceptualizing disaster management in Bangladesh
viii. Disaster management system in Bangladesh
ix. The roles and responsibilities of entities involved in emergency operations and risk reduction
x. Disaster management regulative framework
xi. Action matrix for disaster risk reduction and emergency management in Bangladesh describing the priorities and the strategies
xii. Review and evaluation
xiii. Implementation and follow-up
xiv. Financing of the plan
xv. Other matters relating to disaster management as deemed necessary by appropriate authority for inclusion in the plan

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~~i. Introduction~~
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~~iii. Hazards profile of Bangladesh~~
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~~xiii. Implementation and follow-up~~
~~xiv. Financing of the plan~~
~~xv. Other matters relating to disaster management as deemed necessary by appropriate authority for inclusion in the plan~~

The Plan is to be used to:

a) ~~i.~~ Articulate the long-term strategic focus of disaster management in Bangladesh.
b) ~~ii.~~ Demonstrate a commitment to address key issues: risk reduction, capacity building, information management, climate change adaptation, livelihood security, issues of gender and the socially disadvantaged, etc.
c) ~~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.
d) ~~iv.~~ Detail a road map for the development of disaster management plans by various entities.
e) ~~v.~~ Guide the DM&RD in the development and delivery of guidelines and programmes.
f) ~~vi.~~ Illustrate to other ministries, NGOs, civil society and the private sector how their work can contribute to the achievements of the strategic goals and government vision on disaster management.
g) ~~vii.~~ Provide a framework within which to report performance and success in achieving goals and strategies.

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Sustainable Development Goals (SDGs)

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Sustainable Development Goals are accompanied by targets and will be further elaborated through indicators focused on measurable outcomes. They are action oriented, global in nature and universally applicable. They take into account different national realities, capacities and levels of development and respect national policies and priorities. They build on the foundation laid by the MDGs, seek to complete the unfinished business of the MDGs, and respond to new challenges. These goals constitute an integrated, indivisible set of global priorities for sustainable development. Targets are defined as aspirational global targets, with each government setting its own national targets guided by the global level of ambition but taking into account national circumstances. The goals and targets integrate economic, social and environmental aspects and recognize their inter linkages in achieving sustainable development in all its dimensions. Principal goals of SDG include the following:

- End poverty in all its forms everywhere.
- End hunger, achieve food security and improved nutrition and promote sustainable agriculture.
- Ensure healthy lives and promote well-being for all at all ages.
- Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.
- Achieve gender equality and empower all women and girls.
- Ensure availability and sustainable management of water and sanitation for all.
- Ensure access to affordable, reliable, sustainable and modern energy for all.
- Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.
- Reduce inequality within and among countries.
- Make cities and human settlements inclusive, safe, resilient and sustainable.
- Ensure sustainable consumption and production patterns.

- Take urgent action to combat climate change and its impacts.
- Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.
- Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.
- Strengthen the means of implementation and revitalize the global partnership for sustainable development.

Issues like environmental sustainability, eradication of poverty and hunger, quality education, sustainable industrialization and health related matters are directly related to plan preparation process. In the preparation of Shibpur Upazila, Raipura Upazila and Ishwarganj Upazila development plan land use zoning will endeavor to protect the environmentally sensitive areas through conservation, promote education through allocation of appropriate quantity of land for setting up of academics, industry and health facilities. The plan will be directed to reduce urban and rural deprivation through appropriate proposal for strengthening urban and rural economy and adequate provision of utility services.

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2.3 National Policies

The following national policies have also been studied:

- National Agriculture Policy, 1999
- National Land Use Policy, 2001
- National Fisheries Policy, 1998
- Forestry Policy, 1994
- National Water Policy, 1999
- National Environment Policy, 1992
- Health Policy, 2000
- Population Policy, 2004
- Housing Policy, 2004
- Industrial Policy, 2005
- National Tourism Policy, 1992
- National Policy for Safe Water Supply & Sanitation, 1998
- Urban Management Policy Statement, 1999
- Proposed National Urban Sector Policy

National Agriculture Policy, 1999

In Bangladesh, it is possible to reduce rural poverty and raise the living standard of common people by establishing agriculture as a profitable sector. It is, therefore, necessary to reorganize and develop the agricultural production system into a more dynamic and commercially profitable sector. In this context, the primary goal of the National Agriculture Policy is to modernize and diversify the crop sector, in other words the entire agricultural system, through initiation and implementation of a well-organized and well-coordinated development plan.
The overall objective of the National Agriculture Policy is to make the nation self-sufficient in food through increasing production of all crops including cereals and ensure a dependable food security system for all. The specific objectives of the National Agriculture Policy are to:

- Ensure a profitable and sustainable agricultural production system and raise the purchasing power by increasing real income of the farmers;

- Preserve and develop land productivity;
- Reduce excessive dependence on any single crop to minimize the risk;
- Increase production and supplies of more nutritious food crops and thereby ensuring food security and improving nutritional status;
- Preserve existing bio-diversity of different crops;
- Take up programs for the introduction, utilization and extension of bio-technology;
- Take necessary steps to ensure environmental protection as well as 'Environment-Friendly Sustainable Agriculture' through increased use of organic manure and strengthening of the Integrated Pest Management (IPM) programs;
- Take appropriate steps to develop an efficient irrigation system and encourage farmers in providing supplementary irrigation during drought with a view to increasing cropping intensity and yield;
- Establish agriculture as a diversified and sustainable income generating sector through
- Strengthening of 'Farming System' based agricultural production and agro-forestry programs;
- Take effective steps to ensure input supplies to the farmers at fair prices in a competitive market and remove difficulties at the farmers' level which have arisen out of the privatization of input distribution system;
- Develop marketing system to ensure fair prices of agricultural commodities;
- Introduce an appropriate institutional system of providing credit to ensure the availability of agricultural credit in time;
- Produce and supply of agricultural commodities as required by the industrial sector;
- Reduce imports of agricultural commodities and find out newer opportunities for increasing exports as well;
- Create opportunities for establishing agro-processing and agro-based industries;
- Protect interests of the small, marginal and tenant farmers;
- Update the agricultural system in the light of the Agreement on Agriculture under WTO,
- Develop contingency management system to combat natural disasters.

National Land Use Policy, 2001

It is indispensible to give proper emphasis on the use of land as it is a very scarce resource in a densely populated country like Bangladesh. Major portion of the population of Bangladesh maintain their livelihood on land based agricultural activities. Personal possession of land is also considered as a symbol of social prestige and security. That is why land is still considered as an important source of income and livelihood of the people of the country. Considering dependency of poor and opportunity deprived families on land, Ministry of Land is conducting a range of activities to protect agricultural land and ensure planned use of land.

The objectives of land use policy are governed by what people want or think they should have, and what the functions of government are conceived to be in bringing about better use of land including water bodies. Changes in land use and water bodies are desired only when people are dissatisfied with existing conditions or when people conceive of better use of land and water bodies. These conceptions or notions as to how things ought to be may be called value judgments or goals. Keeping above in view, the specific purposes of land use policy of
Bangladesh may be as follows:

- To ensure suitable or best possible use of land and water bodies and to restrict misuse and inappropriate use of land and water bodies.

- To ensure best utilization of khas land through rehabilitation of landless and marginalized poor.

- To protect the gradual decreasing trend of agricultural land to feed the increasing population.

- To introduce zoning system in order to make demarcation of land and water bodies according to rational criteria for use of land and water bodies for various purposes.
- To ensure legitimate rights of the marginalized community (indigenous peoples) in respect of land and land related issues including community ownership and use.
- To prevent soil and water pollution in order to ensure environment-friendly land utilization.
- To ensure rights of women in land and water bodies.
- To control speculative trading of land by the land grabbers.
- To reduce landlessness, alleviate poverty and promote income generation in the country.
- To conserve national forestry, reduce river erosion and effective utilization of embankments including using as roads for easy communication.
- To prevent cutting and leveling of hills particularly in Chittagong and Sylhet areas to protect environment.
- To ensure best utilization of Char land through rehabilitation of Landless and marginalized poor.

National Fisheries Policy, 1998

The role of fisheries resources in the national economy is very important. Bangladesh is rich in water resources. Inland and marine waters are the main sources of fisheries production and exploitation. Although there is great potential and scope for the fisheries sector in the economy very little national effort has been undertaken in the recent past. Fish is the principal source of animal protein in our food. Increased rates of child mortality have occurred due to deficiencies of balanced protein.

However, there is an acute shortage of food in the country and expansion of livestock production is limited due to a lack of space. For this reason dependency on fish for animal protein-rich food will increase day by day. There are many possibilities for increasing the Contribution of fish to socio-economic development goals such as increasing nutrition, employment opportunities, foreign currency earnings and the establishment of different industrial organisations.

There are many obstacles to the development of the fisheries sector. These are, Conservation of fisheries resources, various natural calamities and man-made problems, lack of proper management and technically skilled manpower and lack of funds. Besides these, lack of a national fish policy is one of the important causes for not developing this sector up to the mark. To get rid of this, the National Fish Policy has been formulated.

Objectives of the National Fisheries Policy

- Enhancement of the fisheries production.
- Poverty alleviation through creating self-employment and improvement of socio- economic conditions of the fishers
- Fulfill the demand for animal protein, Achieve economic growth through earning foreign currency by exporting fish and fisheries products;
- Maintain ecological balance, conserve biodiversity, ensure public health provide recreational facilities.

Forestry Policy, 1994

- To meet the basic needs of the present and future generations and also to ensure greater contribution of the generations and also to ensure greater contribution of the forestry sector in the economic development, about 20% of the total area of the country will be afforested by taking up various afforestation programs.

- By creating employment opportunities, strengthening the rural and national economy, the scope for poverty rural and national economy, the scope for poverty alleviation and trees and forest based rural development sectors will be extended and consolidated.

- Biodiversity of the existing degraded forests will be enriched by conserving the remaining natural habitat of birds and animals.

- Agricultural sector will be strengthened by extending assistance to the sectors related with forest development.

- National responsibilities and commitments will be fulfilled by implementing various international efforts and government ratified agreements relating to global warming, decertification and control of trade and commerce of wild birds and animals.

- Through the participation of the local people, illegal occupation of the forest lands, illegal tree felling and hunting of the wild animals will be prevented.

- Effective use and utilization of the forest goods at various stages of processing will be encouraged.

National Water Policy, 1999

Water is central to the way of life in Bangladesh and the single-most important resource for the well-being of its people. It sustains an extremely fragile natural environment and provides livelihood for millions of people. Unfortunately, it is not infinite and cannot be treated as a perpetual free gift of nature to be used in any manner chosen. The unitary nature of water makes its use in one form affect the use in another. Its availability for sustenance of life, in both quantitative and qualitative terms, is a basic human right and mandates its appropriate use without jeopardizing the interest of any member of the society.

Water resources management in Bangladesh faces immense challenge for resolving many diverse problems and issues. The most critical of these are alternating flood and water scarcity during the wet and the dry seasons, ever-expanding water needs of a growing economy and population, and massive river sedimentation and bank erosion. There is a growing need for providing total water quality management (checking salinity, deterioration of surface water and groundwater quality, and water pollution), and maintenance of the eco-system. There is also an urgency to satisfy multi-sector water needs with limited resources, promote efficient and socially responsible water use, delineate public and private responsibilities, and decentralize state activities where appropriate. All of these have to be accomplished under severe constraints, such as the lack of control over rivers originating outside the country's borders, the difficulty of managing the deltaic plain, and the virtual absence of unsettled land for building water structures.

The water policy provided hereunder, lays down the broad principles of development of water resources and their rational utilization under these constraints. It will help guide both public and private actions in the future for ensuring optimal development and management of water that benefits both individuals and the society at large.

The water policy of the government aims to provide direction to all agencies working with the water sector, and institutions that relate to the water sector in one form or another, for achievement of specified objectives. These objectives are broadly:

a. To address issues related to the harnessing and development of all forms of surface water and ground water and management of these resources in an efficient and equitable manner
b. To ensure the availability of water to all elements of the society including the poor and the under privileged, and to take into account the particular needs of women and children
c. To accelerate the development of sustainable public and private water delivery systems with appropriate legal and financial measures and incentives, including delineation of water rights and water pricing
d. To bring institutional changes that will help ~~decentralise~~decentralize the management of water resources and enhance the role of women in water management
e. To develop a legal and regulatory environment that will help the process of ~~decentralisation~~decentralization, sound environmental management, and improve the investment climate for the private sector in water development and management
~~f.~~ To develop a state of knowledge and capability that will enable the country to design future water resources management plans by itself with economic efficiency, gender equity, social justice and environmental awareness to facilitate achievement of the water management objectives through broad public participation.
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National Environment Policy, 1992

Bangladesh is situated at the unique juxtaposition of the composite, sprawling, interlinked Ganges-Brahmaputra-Meghna river systems, the second largest river system in the world, which drains an area of 1,086,000 square kilometers from China, Nepal, India and Bangladesh. Because of this unique geophysical location, the country has been endowed with rich biological diversity, hosting a rich variety of species superbly evolved to populate the ecosystems of the country.

Bangladesh is recognized to be one of the most susceptible countries in the world, highly vulnerable to climatic manifestations (short-term and long-term impacts of climate change) due to its unique geographic location, hydro-geological characters like dominance of floodplains, low elevation from the sea and lastly the socio-economical characters like high population density, high levels of poverty, and overwhelming dependence on nature.

In the context of the environment, the Government of Bangladesh formulated an Environment Policy in 1992. The objectives of Environment Policy are to:

- Maintain ecological balance and overall development through protection and improvement of the environment;
- Protect the country against natural disasters;
- Identify and regulate activities which pollute and degrade the environment;

- Ensure environmentally sound development in all sectors;
- Ensure sustainable, long term and environmentally sound use of all national resources; and
- Actively remain associated with all international environmental initiatives to the maximum possible extent.

The policy covered all geographical regions and 15 development sectors like Agriculture, Industry, Health & Sanitation, Energy and Fuel, Water Development, Flood Control and Irrigation, Land, Forest, Wildlife and Bio-diversity, Fisheries and Livestock, Food, Coastal and Marine Environment, Transport and Communication, Housing and Urbanization, Population, Education and Public Awareness, Science, Technology and Research, Legal Framework and Institutional Arrangements.

The policy mentioned the suitability of environmentally sound development on proper changes in production management and relations of production of agriculture sector to guaranteeing improvement of environment and sustainable use of its resources (Section 3.1). Moreover, the policy necessitated firmly to review Environmental Impact Assessment (EIA) on industries of public and private sectors and also encompassed the necessity of integrated environmental concerns that shaped into the National Health Policy (Section 3.2.2). The policy also recommends to ensure environmentally sustainable steps in the local, zonal and national levels of Bangladesh on flood control and its related matters such as construction of embankments, dredging of rivers, digging of canals etc and to make certain alleviated measures of adverse environmental impact on flood control projects and water resources development projects. The policy subsequently stated the formulation and application of national land use policy to ensure sound and balance environment and prevention of land erosion, preservation and increase in soil fertility, conservation of environmentally sound management of new accreted land, compatible land use system with various ecosystems, prevention of salinity and alkalinity on land (3.6.1 – 3.6.4). These uphold adaptation mechanisms on land use systems will compress the risks and disasters of climatic change. The policy emphasized the need for sustainable ecological balance on existing forests
Conservation, expansion and development of forests to establish programmers on tree plantation in all relevant development schemes and took measures to stop shrinkage and depletion of forest lands and resources. The policy called for the protection viability of mangrove forests and eco-systems against adverse appliance of fisheries and livestock and suggested alternative fish culture upon environmental friendly conditions and environmentally sound conservation and development of coastal and marine eco-systems and resources (Section 3.8.3, 3.8.4, 3.10.1).

Health Policy, 2000

First**:** To make necessary basic medical utilities reach people of all Upazila as per Section 15 (A) of the Bangladesh constitution and develop the health and nutrition status of the peoples as per Section 18 (1) of the Bangladesh Constitution

Second: To develop system to ensure easy and sustained availability of health services for the people, especially the poor communities in both rural and urban areas

Third: To ensure optimum quality, acceptance and availability of primary health care and governmental medial services at the Upazila and union levels

Fourth: To reduce the intensity of malnutrition among people, especially children and mothers; and implement effective and integrated programs for improving nutrition status of all segments of the population

Fifth: To undertake programs for reducing the rates of child and maternal mortality within the next 5 years and reduce these rates to an acceptable level

Sixth: To adopt satisfactory measures for ensuring improved maternal and child health at the union level, and install facilities for safe and hygienic child delivery in each village

Seventh: To improve overall reproductive health resources and services

Eighth: To ensure the presence of full-time doctors, nurses and other officers/staff, provide and maintain necessary equipment and supplies at each of the Upazila health complexes and Union Health and Family Welfare Centers (UHFWCs)

Ninth: To devise necessary ways and means for the people to make optimum usage of available opportunities in government hospitals and the health service system, and ensure satisfactory quality management, cleanliness of service delivery at the hospitals

Tenth: To formulate specific policies for medical colleges and private clinics, and to introduce laws and regulation for the control and management of such institutions including maintenance of service quality

Eleventh: To strengthen and expedite the family planning program with the objective of attaining the target of Replacement Level of Fertility

Twelfth: To explore ways to make the family planning program more acceptable, easily available and effective among the extremely poor and low-income communities

Thirteenth: To arrange special health services for the mentally retarded, the physically disabled and elderly populations

Fourteenth: To determine ways to make family planning and health management more accountable and cost-effective by equipping it with more skilled manpower

Fifteenth: To introduce systems for treatment of all types of complicated diseases in the country, and minimize the need for foreign travel for medical treatment Road.

The following policy principles have been adopted in order to attain the foregoing goals and objectives:

i. To create awareness among the enable every citizen of Bangladesh irrespective of caste, creed, religion, income and gender, and especially children and women, in any geographical region of the country, through media publicity, to obtain health, nutrition and reproductive health services on the basis of social justice and equality through ensuring everyone's constitutional rights;

ii. To make the essential primary health care services reach every citizen in all geographical regions within Bangladesh; To ensure equal distribution and optimum usage of the available resources to solve urgent health-related problems with focus on the disadvantaged, poor and unemployed persons.

iii. To involve the people in various processes like planning, management, local fund raising, spending, monitoring and review of the procedure of health service delivery etc. with the aim of decentralizing the health management system and establishing people's right and responsibilities in this system.

iv. To facilitate and assist in the collaborative efforts between the government and the non-government agencies to ensure effective provision of health services to all.

v. To ensure availability of birth control supplies through integration, expansion and strengthening of the family planning activities.

vi. To carry out appropriate administrative restructuring, decentralization of the service delivery procedure and the supply system, and to adopt strategies for priority-based human resource development aimed at overall improvement and quality-enhancement of health service, and to create access of all citizens to such services.

vii. To encourage adoption and application of effective and efficient technology, operational development and research activities in order to ensure further strengthening and usage of health, nutrition and reproductive health services.

viii. To provide legal support with regard to the rights, opportunities, responsibilities, obligations and restrictions of the service providers, service receivers and other citizens, in connection with matters related to health service; and

ix. To establish self-reliance and self-sufficiency in the health sector by implementing the primary health care and essential services programs, in order to fulfill the aspirations of the people for their overall sound health and access to reproductive health care.

Population Policy, 2004

Socio-economic development for all citizens is the cornerstone of Bangladesh's constitution. According to the articles 15, 16, 17 and 18 of the constitution, the state has the responsibility to ensure to its citizens certain basic needs such as health, education, food and security. In order to translate these constitutional goals into reality, the Government had undertaken a wide array of public policies. Realizing the importance of population and development, the Government prepared a Population Policy Outline and had identified population problem as the national problem. The Policy stands out as one of the most remarkable achievements of the government.

The objectives of the National Population Policy are to improve the status of family planning, maternal and child health including reproductive health services and to improve the living standard of the people of Bangladesh through making a desirable balance between population and development in the context of Millennium Development Goals (MDGs) and Interim Poverty Reduction Strategy Paper (IPRSP): A National Strategy for Economic Growth, Poverty Reduction and Social Development. The following major policy objectives will help address the future challenge.

1. Reduce Total Fertility Rate (TFR) and increase the use of family planning methods among eligible couples through raising awareness of family planning;
2. Attain NRR equal to one by the year 2010 so as to stabilize population around 2060;
3. Ensure adequate availability and access of Reproductive Health Services, specially family planning services to all including information, counseling and services for adolescents;
4. Improve maternal health with emphasis on reduction of maternal mortality;
5. Reduce RTIs/STIs and prevent spread of HIV/AIDS.
6. Reduce infant and under five mortality rates;
7. Reduce maternal and child malnutrition;

8. Promote and actively support programs for elimination of gender disparity in education, health and nutrition;

9. Ensure Early Childhood Development (ECD) program;

10. Ensure and support gender equity and empower women;

11. Develop the human resource capacity of planners, managers and service providers, including improved data collection, research and dissemination;

12. Actively support measures to provide food and social security and shelter for the disadvantaged including the elderly, destitute, physically and mentally retarded persons;

13. Actively support measures to regulate and reduce rural to urban migration;

14. Support measures for environmental sustainability with emphasis on access to safe drinking water;

15. Support poverty alleviating strategies and conducive environment for improved quality of life;

16. Ensure coordination among relevant Ministries in strengthening population and development linkages and making their respective mandates and implementation strategies more population focused;

Industrial Policy, 2005

Bangladesh is a developing country, and the present government is striving relentlessly to attain rapid economic development in the country. Many programs taken so far have been carried out successfully. Despite a lack of resources faced by the government, development programs in the key sectors have continued. At the same time, considering the importance of the private sector, an all-out support is being provided to initiatives taken in this sector. As a result, a new kind of dynamism is under way in both the public and private sectors. In this backdrop, it is essential to examine various aspects of industrialization and its impacts on overall economic activities.

1. One of the foremost objectives of the Industrial Policy 2005 is to set up planned industries considering the real domestic demand, prospect of exporting goods abroad, and discouraging unplanned industries in the light of past experience.

2. Accept private initiatives as the main driving force of economic development and uphold the government's facilitating role in creating a favorable atmosphere in order to augment private investments in the country's industrialization, given the background of a free market economy and globalization.

3. Arrange for state owned industrial enterprises to be sold/transferred/leased or administered in any other way by the Privatization Commission or concerned ministries in order to accelerate the privatization process.

4. Take necessary initiatives to set up industries with private entrepreneurships, and where that is feasible, establish industries on state initiative in those sectors that are considered very important and essential because of national interest, where private entrepreneurs are not forthcoming.

5. Catering the needs for local and foreign market and also for consumer satisfaction of the local products; Measures to be undertaken (a) produce world class quality products, (b) diversification of goods, (c) introduce cost effective management in the production system, (d) more value addition in the industrial sector, and (e) provide support for enhancing productivity by using continuous, appropriate and advanced technology.

6. Provide assistance to augment the industrial sector's contributions to the GDP of the national economy, meet the general demands of local consumers and earn more foreign exchange so that local industrial entrepreneurs can attain further capacity to establish industries, and industrial goods can have access to the overseas market on a competitive basis.

7. Provide inspiration for the speedy expansion of cottage industries and SMEs and for further investment in these sectors so that new employment opportunities are generated, unemployment reduced and poverty alleviation program made in the country.

8. Prioritize the expansion and development of agro-based and agricultural processing industries, and assist in the expansion of poultry, dairy and goat sheep industry as agricultural industries.

9. Provide women entrepreneurs with all necessary assistance in establishing industries in various sectors.

10. Increase productivity at enterprise level; Produce high value added products step by step through development and application of appropriate technology and increase of export through export diversification.

11. Provide all necessary assistance for producing environment friendly product with the objective for creating a pollution free environment in the industrial sector.

12. Expand the local market and establish more backward linkage industries in order to accelerate the export of high value added garments produced in the export oriented garment industries and other relevant industrial subsectors.

13. Further enrich the industrial sector with the proper utilization of the country's various natural and mineral resources.

National Tourism Policy, 1992

The National Tourism Policy of Bangladesh was declared in 1992. Its main objectives are:

- To create interest in tourism among the people
- To preserve, protect, develop and maintain tourism resources
- To take steps for poverty-alleviation through creating employment
- To build a positive image of the country abroad
- To open up a recognized sector for private capital investment
- To arrange entertainment and recreation
- To strengthen national solidarity and integrity

In line with the policy, the Bangladeshi Government provides incentives to attract private sector partners. The incentives include tax-holiday, loans, concession rates for taxes and duties and in specific cases, allotment of land etc.

National Policy for Safe Water Supply & Sanitation, 1998

The objectives of the "National Policy for Safe Water Supply and Sanitation" are to improve the standard of public health and to ensure improved environment. For achieving these objectives, steps will be taken for:

a) Facilitating access of all citizens to basic level of services in water supply and sanitation;
b) Bringing about behavioral changes regarding use of water and sanitation;
c) Reducing incidence of water borne diseases;
d) Building capacity in local Governments and communities to deal more effectively with problems relating to water supply and sanitation;
e) Promoting sustainable water and sanitation services;
f) Ensuring proper storage, management and use of surface water and preventing its contamination;
g) Taking necessary measures for storage and use of rain water;
h) Ensuring storm-water drainage in urban areas.

Proposed National Urban Sector Policy

In Bangladesh cities and towns are playing a crucial role in the national development despite the adverse socio-economic and environmental consequences resulting from rapid growth of these urban centers.

The National Urban Policy envisions strengthening the beneficial aspects of urbanization and at the same time effectively dealing with its negative consequences so as to achieve sustainable urbanization, keeping in view the multi-dimensional nature of the urbanization process. The policy also envisions a decentralized and participatory process of urban development in which the central government, the local government, the private sector, the civil society and the people all have their roles to play.

The major objectives of National Urban Sector Policy for Bangladesh, therefore, will be to

a. Ensure regionally balanced urbanization through decentralized development and hierarchically structured urban system;

b. Facilitate economic development, employment generation, reduction of inequality and poverty eradication through appropriate regulatory frameworks and infrastructure provisions;

c. Ensure optimum utilization of land resources and meet increased demand for housing and urban services through public-private and other partnerships;

d. Protect, preserve and enhance the urban environment, particularly water bodies;

e. Devolve authority at the local urban level and strengthen local governments through appropriate powers, resources and capabilities so that these can take effective responsibility for a wide range of planning, infrastructure provision, service delivery and regulatory functions;

f. Involve all sectors of the community, including women and the poor, in participatory decision-making and implementation processes;

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g. Ensure social justice and inclusion by measures designed to increase the security of poor people through their access to varied livelihood opportunities, secure tenure and basic affordable services;

h. Take into account particular needs of women, men, children, youth, the elderly and the disabled in developing policy responses and implementation;

i. Assure health, safety and security of all citizens through multifaceted initiatives to reduce crime and violence;

j. Protect, preserve and enhance the historical and cultural heritage of cities and enhance their aesthetic beauty;

k. Develop and implement urban management strategies and governance arrangements for enhancing complementary roles of urban and rural areas in sustainable development; and

l. Ensure good governance by enhancing transparency and establishing accountability.

2.4 Private Sector Developments

During the reconnaissance visit, it has been noticed that a number of structures and establishments have been recently constructed haphazardly along the road sides through the private sector initiatives in various places of Shibpur Upazila, Raipura Upazila and Ishwarganj Upazila. And these are used as weaving factories, dyeing industries, markets and hats, schools, colleges, fish firms, poultry firms, electric sub-stations, and so on. The overall implications of such developments will be studied.

2.5 Concluding Observations

All the above mentioned national development plans, policies and strategies would be ~~instrumental in~~instrumental in addressing ~~their goals~~their goals and objectives, spatial implications and relevancy with preparations of the subject plans.

CHAPTER THREE: APPROACH AND METHODOLOGY

3.1 Consultants' General Understanding of Assignment

To achieve the overall objectives of the consultancy services in an effective and efficient manner, the consultants will review the existing institutional setting to implement the various tasks identified under Scope of Consultancy Services and arranged in a sequential manner. The technical consideration to achieve the project objectives will not only be the recorded and printed form of data and information base rather location specific demand and diverse planning approach of line agencies blending with professional outcomes from investigations and surveys will be the prime basis of formulating strategy and plan. It is obvious that the standard norm and practice will be adopted in preparing all sorts of planning framework with due consideration of technical, social, economic and environmental aspects following people's participatory approach by involving all stakeholders, diverse beneficiaries, communities, public representatives, project affected persons, line agencies, NGOs, etc.

The Team will approach towards the Planning of Shibpur, Raipura and Ishwarganj upazila with the objective of telling less what to do, rather generating a process to find out what need to be done and then how to generate alternatives to achieve the objectives and goals. Based on above understanding of the assignment and taking the ToR into account. The consultant team conceives the activities to be carried out sequentially. The approach and methodology for preparation of Development Plan of Three (03) *Upazilas* comprises the following activities:

1. Collection of existing data and information from secondary sources and surveys
2. Sectoral surveys and studies, investigation and identification of problems and potentials through PRA sessions
3. Preparation of development planning package using findings of sectoral analysis and PRA session in compliance with development objectives.

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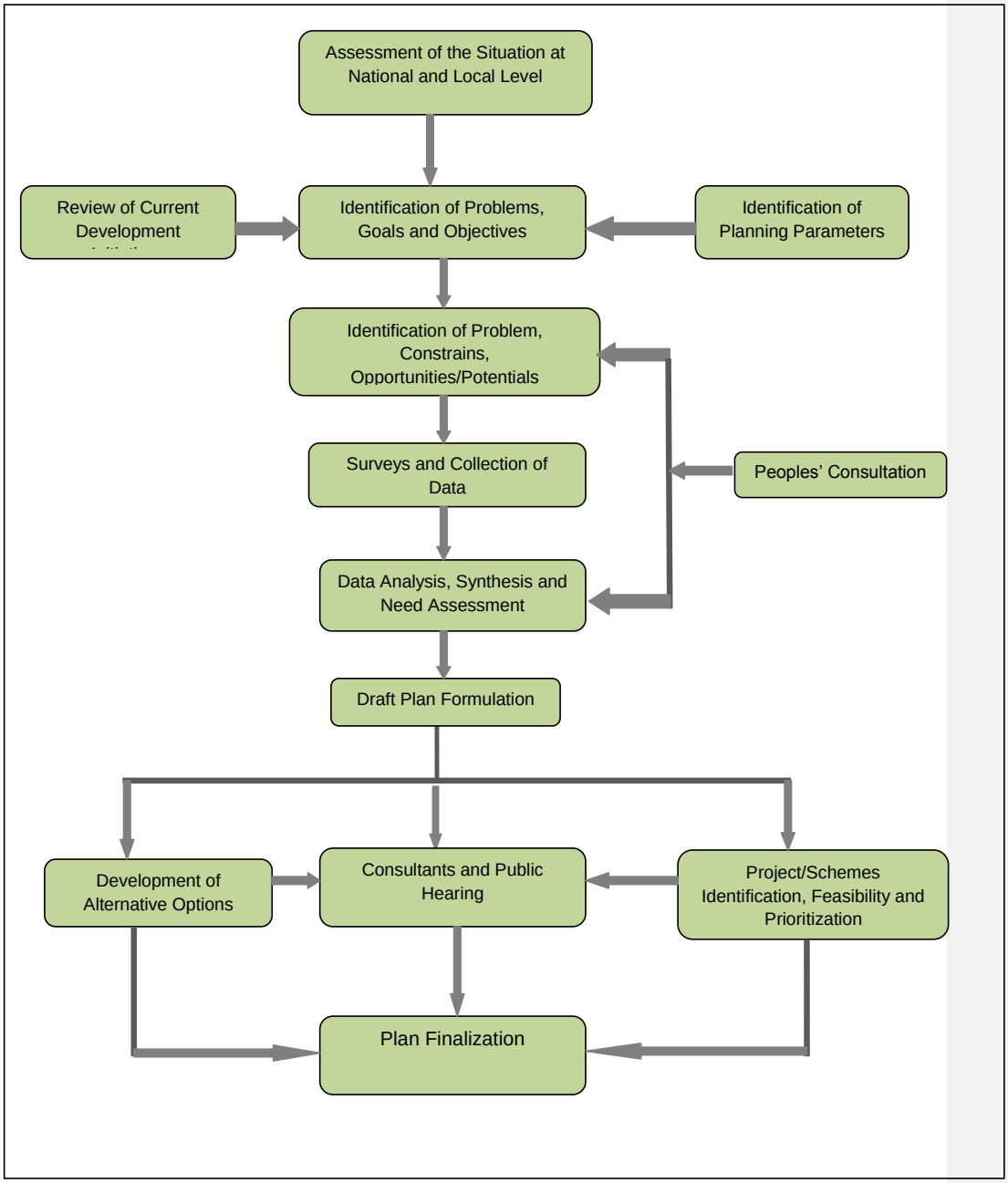

Figure 3.1: General Approach in Plan Making Process

3.2 Review/Assessment of the Situation at National and Local Level

i. *Identification and Assessment of Planning Parameters*

From the national level documents and observations at local levels are assessment would be made to formulate goals and objectives of the tasks. However ToR has already been identified goals and objectives. The consultants will evaluate those and finally make and objective assessment for sharpening the goals.

For plan preparation, basic data will be needed on population and migration, employment, social, economic and physical conditions in the study area, land-use, infrastructure, community and social facilities, environmental conditions etc. Most of this information will be collected from existing studies, plans and programmes, government publications, public authorities, statistical digests, documentation of external agencies as well as the records of UDD, Shibpur, Raipura and Ishwarganj upazila and other development agencies working in the area. Reference will be made to relevant national reports, plans etc. Major data gaps will be identified and will be collected through sector studies/surveys.

ii. *Goals and Objectives of the Plan*

The consultants will review current urban and sectoral policies and programmes, design standards, the institutional arrangements to carryout development in the study area, regulatory and other control tools available and their effectiveness and new initiatives concerning land development and management. Current shortfalls in planning and building legislations; the absence of planning standards; the absence of sub-division regulation; the absence of guidance on detailed area layouts and the absence of methods of funding urban developments, will all be focused by the consultants.
The consultants will also review the inadequate administrative and organizational structures for effective planning and management at *Upazilas* and concerned agencies. The existing mechanism for co-ordination and liaison among the agencies operating in the area will also be reviewed in search of finding a better sustainable coordination mechanism among them. The need for changes in institutional structures over the long run will also be examined.

iii. *Problem Identification*

The consultants will carry out a rapid survey of problems affecting different groups and having different impacts such as existing land use including production process is in the urban and rural areas, health and environment condition, lack of social, utility and services, amenities etc. at different scales through PRA session in each ward and union of every upazila. This will be done through discussions with different interest groups and stakeholders at a preliminary stage. After initial identification of the problem, a further attempt will be made to know the exact nature and quantification of the problems by collecting required data from secondary sources as well as from the inputs of the supporting studies to be carried out under this project or already carried out by other agencies.

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A critical task for the team will be to sort out and analyze the identified problems. Problems will also be classified to identify complementarities and existing or potential responsibility at local or national government level.

Important parameters for immediate action will be environmentally poor areas with the potential for upgrading. Examples of criteria for selection of such area will be:

- Environmental and physical conditions,
- Population distribution and densities

- Service deficiencies,
- Health conditions,
- Location and landuses,
- Existing production practices,
- Income level and poverty situation,
- Shelter condition and land tenure, and
- Community attitudes and organizations.

3.3 Review of Current Development Projects

Sectoral projects planned or under taken in the study area by different organizations, which will have impact on the form and character of urban growth, will be identified. As required in the ToR, projects will be mapped using thematic overlays to help identify complementary and incompatible outputs of different projects, urban expansion implications and other spatial economic or social impacts. Information will be obtained as necessary from public agencies as well as from private formal and informal sources.

The consultants will review current urban and sectoral policies and programmes, design standards, the institutional arrangements to carryout development in the study area, regulatory and other control tools available and their effectiveness and new initiatives concerning land development and management Current shortfalls in planning and building legislations; the absence of planning standards; the absence of sub-division regulation; the absence of guidance on detailed area layouts and the absence of methods of funding urban developments, will all be focused by the consultants.

3.4 Constraints and Opportunities

Assessment of the extent of urban expansion/constraints and opportunities will be carried out using SWOT analysis and people's interview in this respect and incorporate the key spatial impacts of projects identified from the review process of current projects. This task will be assisted, where possible, by the use of information regularly collected by government agencies, field inspection, and verification with the local residents. Key outputs of this task will include identification of critical areas opportunities and constrains in respective areas where, for example, infrastructure costs per capita, distance from main services, dependence on major new transport linkage etc.

3.5 Preliminary Consultation Process

3.5.1 Local Level Participation

The process of planning approach will be carried out through the various stages of consultations involving the concerned agencies and community representatives including potential beneficiaries, project affected people as per requirement of the respective consultation processes. The community level participation in the planning process is the latest demand of the Planners of the Government and Donors to make the development plan rational with respect to accommodation of programs of the line agencies and as well as well distribution of local resources and long term sustainability. The People's Participatory Planning approach will be applied in the formulating Action Area Plan, Bankable Projects and Schemes.

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The potential participants of the stakeholders for the consultation process would include the following:

i. The Local Government/Public Agencies

The consultants will first identify the location specific public agencies likely to be involved in the development process and select the level of the representatives for the consultation process. The potential agencies relevant to the planning of the study area would include, among others, the following: UDD, DPHE, BWDB, LGED, RHD, BTCL, IWTA, PWD, BRTA, REB, Board of Investment, DLRS, and Local Administrations etc. The agencies will be interviewed by the consultants' team members to have the information and status of the existing development activities and future development plans of the respective agencies with objectives and nature of development with targets with respect to benefits and investment, views on impact of the program/plans on social, economic and environmental aspects. After preparation of basic inventory and basic analysis of the database of development plan and programs of reach line/concerned agencies a consolidated summary sheets will be prepared including area of discussion in the consultation process. Based on which the authorized representative of the respective agencies will be invited to participate in the consultation process following approved schedule at agreed venue.

ii. Local Communities

The consultants will identify and assess the potential participation of the local communities in the planning process. The potential local communities with respect to involvement in the consultation process would include, among others, Elected Public Representatives of the respective areas including Members of the Parliament of the respective areas, Zila and concerned Upazila Parishads, Paurashavas, Union Parishad Chairmen, and Ward Commissioners, Community representative, KSS (agricultural cooperative), fishery cooperative, Transport Owners association, Chamber of Commerce and Industries, etc. The community representatives will be discussed in very careful manner so that they become aware of the background and objective of development plan and take part in the planning process through fruitful contribution in the consultation process. Before the consultation, the consultants will interview the identified community representatives separately with the developed format and manuals based on which the consultation outline will be prepared with the aim at making the consultation process appropriate and effective with respect to consensus building.

iii. Private Sectors at Local Level

The Private sectors include the licensed entrepreneurs engaged in the development activities and services providing in the study area. These are transport owners, real estate business, contractors, trader, commerce/industry owners, etc. The agreement already made and license already provided to the various private sectors need to be reviewed and assessed the probable conflict/impact on the Plan Process. The opinions of the private sector need to be carefully examined to avoid the conflict that might hinder the formulation and implementation of the plan. In addition, the present practice of entrepreneurs with respect to land-use, and economic activities following the condition of the agreement and license will be reviewed through physical verification and interview with the entrepreneurs.

iv. NGOs at Local Level

The consultants will identified the active NGOs in the social infrastructure and community development in the Study Area along with status of their development activities and future plan of actions in different social and urban development activities. The potential NGOs will be discussed and their opinion in the planning process will be explored in the planning process, especially for the social development, social infrastructure development, environmental planning, motivation of the communities, etc.

3.5.2 National Level Participation

i. Professional Groups

The relevant professional groups at the national level from where valuable professional advice and guidance can be sought to enrich the plan and policies. The consultants will discuss the identified issues of this programme with Line agencies, private entrepreneurs, and prevailing resources utilization, infrastructure, economic and environmental issues with potential professional groups.

ii. National Level Government Agencies/Stakeholders

In the local context, the national level government agencies/stakeholders' opinion can play a very important role to take different development plan and policies in the project area. Because they have a clear idea about local constrains and opportunities. With the help of local views of the professional groups can easily take further decision for planning and policy level.

3.6 Methodology for Carrying out the Surveys

The consultants will take various steps of activities in the process of preparation of Development Plan for UDD which are described and provided hereunder in a sequential manner under different stage of Reporting and Deliverables. The Consultants present the methodology almost in accordance with the ToR guideline with some adjustment by blending their views based on the experiences gained from recent past completed similar and related projects.

3.6.1 Preparation of Base Maps through Satellite Image Processing by using Photogrammetric Method

3.6.1.1 Collection of Mauza Maps

The CS/RS Mauza maps are the basis of the base map for the project area. The project area will be delineated on Mauza sheets. Mauza maps have been collected from the Assistant Commissioner's Land of Shibpur, Raipura and Ishwarganj upazila and DLRS covering the entire project area. The Mauza sheets having distortion due to rapping or pasting of cloths/tape have been avoided during collection of Mauza maps. Original copies of mauza maps were supposed to be collected. As original mauza sheets were not available, photocopy versions of the same have been collected from DLRS.

3.6.1.2 Collection of Other Materials

Collation of available secondary sources information, data, maps, photographs, satellite images, reports etc. and their review and identification of shortcomings and gaps, and assessment of real data requirement and survey of both primary and secondary sources will be made by the study team

3.6.1.3 Scanning of Mauza Maps

Large line scanning technology, most suitable for map scanning where distortion and deviation is nearly nil, will be used for scanning Mauza maps. During scanning operation, care shall be taken to maintain the geographical north line alignment. Specifications to be used for scanning Mauza maps are tabulated in Table3.1. Necessary processing shall be done to get rid of the noises on the image of unwarranted marks and spots attributed to senile reasons. Also, the technical specifications of the scanner to be used for the purpose are provided in Table 3.2. The scanned image files of each individual mauza shall be saved in JPG format organized and named individually. The tentative nomenclature of image files is provided in Table 3.3. All the image files of scanned mauza maps shall be structurally organized and backed up in sufficient number of CD electronic media and shall be handed over to UDD as end product of this exercise.

Table-3.1: Specifications for Scanned Images

Image type	Grayscale
Image format	JPG
Image Resolution	300 dpi
Bit depth & Level	8 or 16 Bit (256)
Image Scale	100% (1:1)

Table-3.2: Specifications for Scanner to be used for Scanning of Mauza Maps

Brand & Model	HP Design jet 815mfp
Scan Resolution, enhanced	2400x2400 dpi, with variable resolution setting from 50 dpi in increments of 1 dpi
Scan Resolution, hardware	800x800 dpi
Bit depth	24-bit color
Levels of grayscale	256
Maximum scan size	42 x unlimited in

Table-3.3: Nomenclature of Image Files (Example)

File Name	XX_XXX_XX			
	XX			Initial Code used for District & Thana/Upazila (1st digit for District and 2nd digit for Thana/Upazila)
		XXX		JL No. (3 digits string)
			XX	Sheet No. (2 digit string)

Example: *"RS_185_00.jpg" represents the image file in JPG format of Mauza having JL no. 185 & sheet no. 0 of Ishwarganj thana of Mymensingh district. Underscores are used as separators of Initial Code, JL No & Sheet No fields.*

3.6.1.4 Digitization of Mauza Maps

On screen digitization method will be used for digitization of Mauza maps. ArcGIS software will be used for this purpose. All features (Line, Point and Annotation) will be stored in different feature type in shape or geo-database file with separate ID or code number. Proposed manuscripts for digitization of Mauza maps are given in Table 3.5 and 3.6. 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 Mauza maps:

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

A. Preparing the Manuscript

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

Manuscript-1: Point Features- This manuscript will contain all point features of the Mauza Maps like Plot Number, Bench Mark, Travers Station, GT Station, Iron Pillar, Other Pillars, 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 3.4.

Table-3.4: Sample Feature Description for Digitization Manuscript-1

Sl No	Feature Type	Shape Type	Shape Name	Code (ID)
1.	Mauza Name	Point	xx_xxx_xxP	As in mauza sheets
2.	JL No.	Point		As in mauza sheets
3.	Sheet No.	Point		As in mauza sheets
4.	Plot No.	Point		As in mauza 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 Mauza/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
24.	Municipality Pillar	Point		76
25.	CS Iron Pillar	Point		77

Manuscript-2 and 3: Line & Polygon Features- This manuscript will contain all line and/or closed boundary type features such as mauza 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 3.5.

Table-3.5: Feature Description for Digitization Manuscript-2 & 3

Sl No	Feature Type	Shape Type	Shape Name	Code (ID)
1.	Mauza Boundary	Line	xx_xxx_xxL	11
2.	Sheet Boundary	Line		12
3.	Mauza/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 *(Dalan)*	Polygon	xx_xxx_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-3.6: Attribute Database Format for Digitized Mauza Map

Field Name	Description	Data Example
Mz_ver	Mauza Map Version	CS
Layer	Name of the Feature which the field contains	Mauza Boundary Sheet Boundary Mauza/Sheet Match-line Plot Boundary Road Halot, etc
Layer_Code	ID of different Features	11, 12, 22, 31, etc
M_Code	Mauza Code	RS_185_00 This code represents the example for the Mauza having JL no. 185, Sheet no. 00 of Ishwarganj Thana, Mymensingh District.
Mauza	Name of the Mauza (as in Mauza Map)	Charpubail, Bakripara, etc
JL_No	JL Number (as in Mauza Map)	185, 169, etc
Sheet_No	Sheet Number (as in Mauza Map)	01, 02, 03, etc. (this would be '00' where the Mauza is within a single sheet)
M_Thana	Name of Thana (as in Mauza Map)	Ishwarganj
M_Dist	Name of District (as in Mauza Map)	Mymensingh
Scale	Original Scale of the Mauza Map (as in Mauza Map)	16" = 1 Mile, 64" = 1 Mile, etc
Sv_Period	Survey Period (as in Mauza Map)	1980, 1984-2000, etc
Revenue_No	Revenue Survey Number (as in Mauza Map)	728, 730, etc

B. Converting Digitized Maps into Shape/Geo-database Format

Line, point and annotation features of digitized mauza 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 mauza maps using ArcGIS.

C. Edit Plot Check

After digitization of Mauza maps, edit plots of Mauza maps will be produced containing all the features and boundaries with different legend. The digitized Mauza maps will be checked and verified by superimposing on the original Mauza 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 Mauza maps will be prepared. After digitization and necessary edit plot check, both soft and hard copy of all the digital Mauza maps will be supplied to UDD for preservation**.**

D. GCP Survey

Ground control points will be selected by photo identification of existing ground features. Considerable number of GCP will be collected as required for the whole project area. All GCPs will be collected by conducting field survey using DGPS method. After collecting DGPS data of the GCP, post processing will be done day to day in the sites. Accuracy level will be maintained within 10 cm.

Aerial Triangulation is a mathematical process used to determine the position and orientation of each photograph at the moment of exposure.

Input for AT	Output of AT
- IMU data - GPS (on board) - GCP (collected from field) - Image	Geo-referenced Stereo Model

Match AT 5.2 will be used as the software for aerial triangulation.

3.6.1.5 Geo-referencing & Super-imposing of Mauza Maps

After completion of data base preparation, individual maps/ sheets will be geo-referenced with reference to the collected GCP values (Easting and Northing value) in ArcMap using Spatial Adjustment tool. Mouza sheets will be georeferenced with reference to rectified satellite images. After completion of geo-referencing of mouza maps, the total study area can be perceived to Individual plot level.

3.6.1.6. Joining & Edge Matching of Mauza Maps

After geo-referencing, mauza or sheet boundary will be overlapping with each other or there may be gaps among them. So, edge matching is a very important for producing proper landuse plan of any area. To do this operation consultant will create/draw a common mauza or sheet boundary line whether by removing one from two lines in the boundary or by drawing a new line between the gaps. After this operation the whole project area will be a seamless cadastral map.

3.6.1.7. Preparation of Study Area Map

After the edge matching mauza maps layout of study area map will be prepared as per specification suggested by PD, UDD using ArcGIS 10.1 software. All the features of mauza maps including plot, mauza and boundary of the project area will be identified and shown in the base/study area maps in separate color. Later on this study area map will be incorporated in the physical and topographic survey maps. Both soft and hard copy of base/study area map will be supplied to UDD as per specification and scale mentioned in the ToR.

3.6.2 Stereo (3D) Image Collection & Processing Techniques

The field of photogrammetry is a rapid science with new technologies being developed constantly. Within a short period of time, the practice of photogrammetry has been changed from analog to digital. The development of digital aerial cameras/satellite has advanced significantly over the past 4-5 years. The use of digital aerial images would be more advantageous for all map and image production, especially for orthophoto generation.

3.6.2.1 Image Collection

Since the internal precision of extracted DEMs is strictly related to the mean scale of photographs, image quality, pixel dimension and obviously, morphology of the area, Image Collection is a crucial part of the project. Image will be collected from Satellite image provider, Ikonos and GeoEye-1.

3.6.2.2 Satellite Image Acquisition

The GeoEye-1 Satellite image in 0.5-meter panchromatic and 1.0 -meter multi spectral four-band images in stereo pairs will be procured. The 0.5-meter pan and 1.0 meter multi spectral imagery will also be fused to yield 0.5-meter color imagery (pan-sharpened). In appendix X, the work order is attached for image collection.

3.6.2.3 Image Processing

Base map will be prepared combining mauza maps (CS/RS) and using satellite images of the area. Latest possible image will be collected from an authentic source with resolution of 0.5m and 1m depending upon the area concern.

Image processing will be done after collecting raw digital 3D images. The tasks involved in image processing are:

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

3.6.2.4 GPS/ INS Processing

Raw IMU (GPS/INS) data of image will be processed and adjusted to accomplish Aerial Triangulation. Match AT software will be used in processing the aerial triangulation.

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.

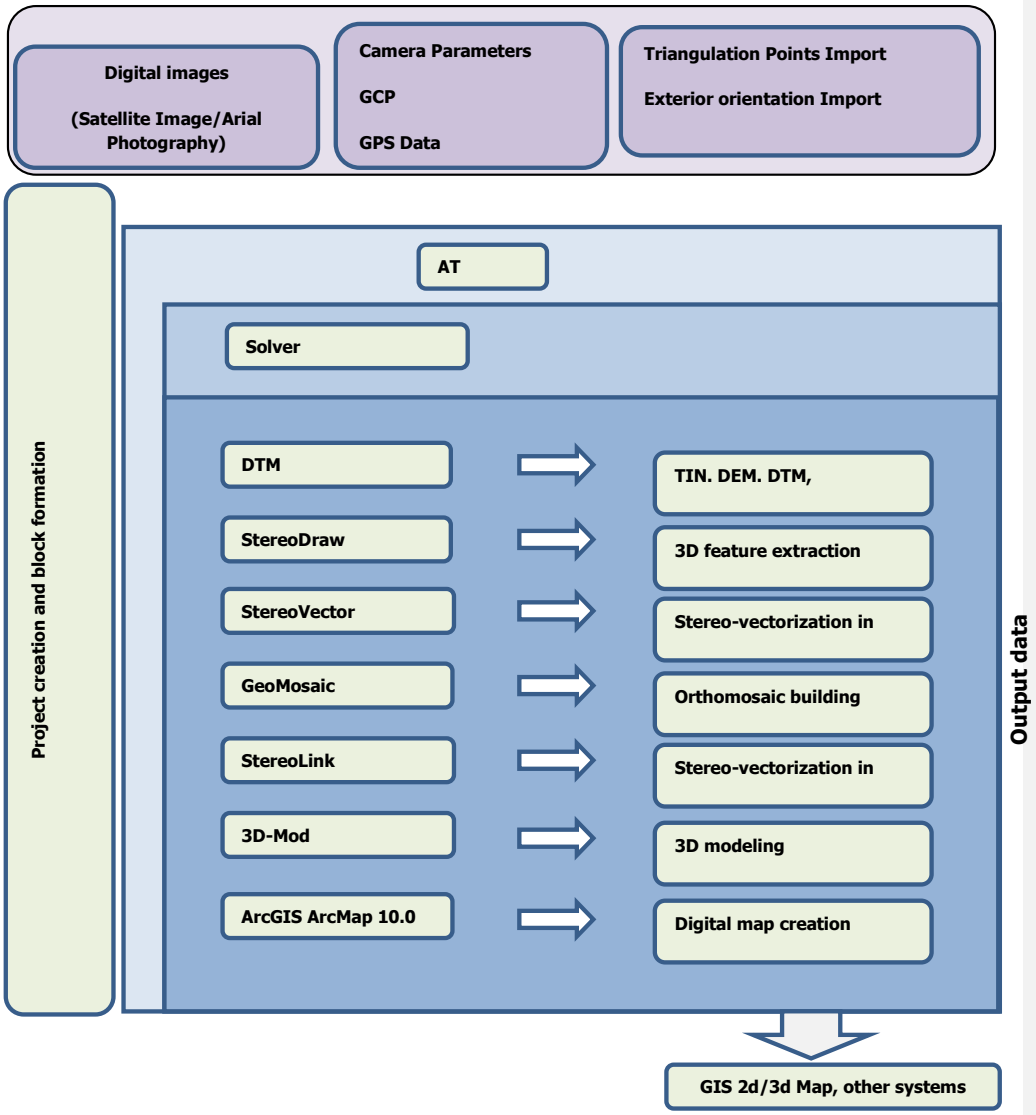


Figure 3.2: Flow Chart of Image Processing Methodology

- AT — aerial triangulation measurements,
- Solver — block adjustment for satellite/Arial images
- DTM — DTM creation
- dDSM — dense DSM generation algorithm
- Stereo Draw — 3D feature extraction in stereo-mode and 3D modeling
- Mosaic — orthomosaicking
- Digital map creation, stereo-editing of digital maps

3.6.2.5 Digital Mapping from Stereo Model

After the orientation of stereo models, digital mapping will be carried out. We propose ArcGIS Geo-database model for storing geo-spatial data. By the photogrammetric technique of feature collection, each vertex of each feature will be registered in three dimension (3D).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

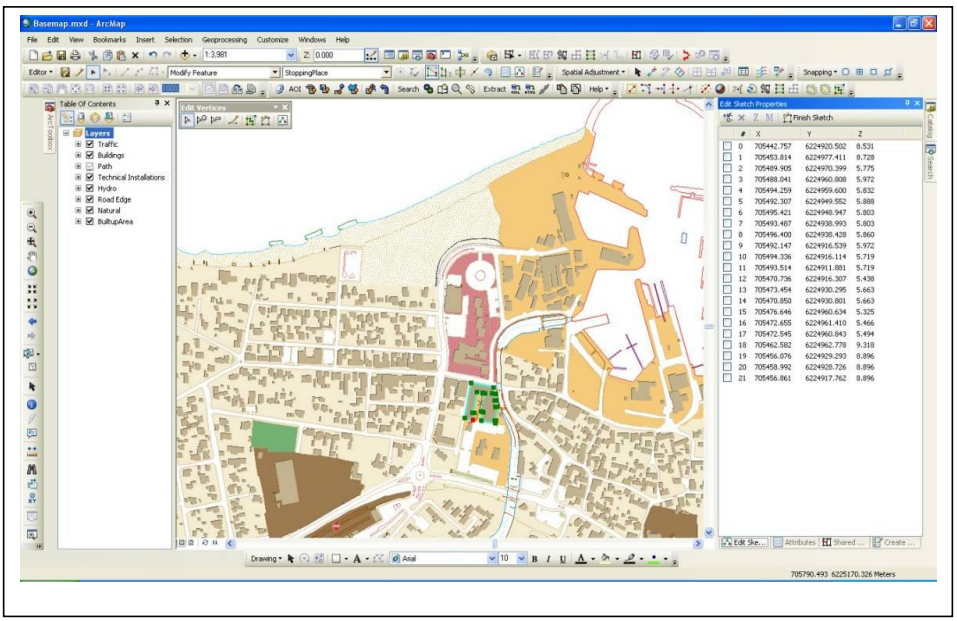


Figure 3.3: 3D Data Structure (Height Value (Z) Enable) and 3D GIS Data Output

3.6.2.6 DTM/DEM/TIN/Contour Generation

DTM Point

Digital photogrammetry is able to acquire 3D points for high spatial resolution DEM generation through semi-automatic procedures, overcoming the problems of process.

In our approach, DTM Points will be generated from Stereo Pair images by the software, and editing of the software generated DTM points will be done by the Photogrammetrist comparing them with stereo model. Creation and editing of Break lines will be done after this stage.

CONTOUR

After creating DTM Points, Contour lines will be produced with 1.0 meter contour interval. The contour lines will be delivered in 1 km x 1 km or 5 km x 5 km blocks for the project area.

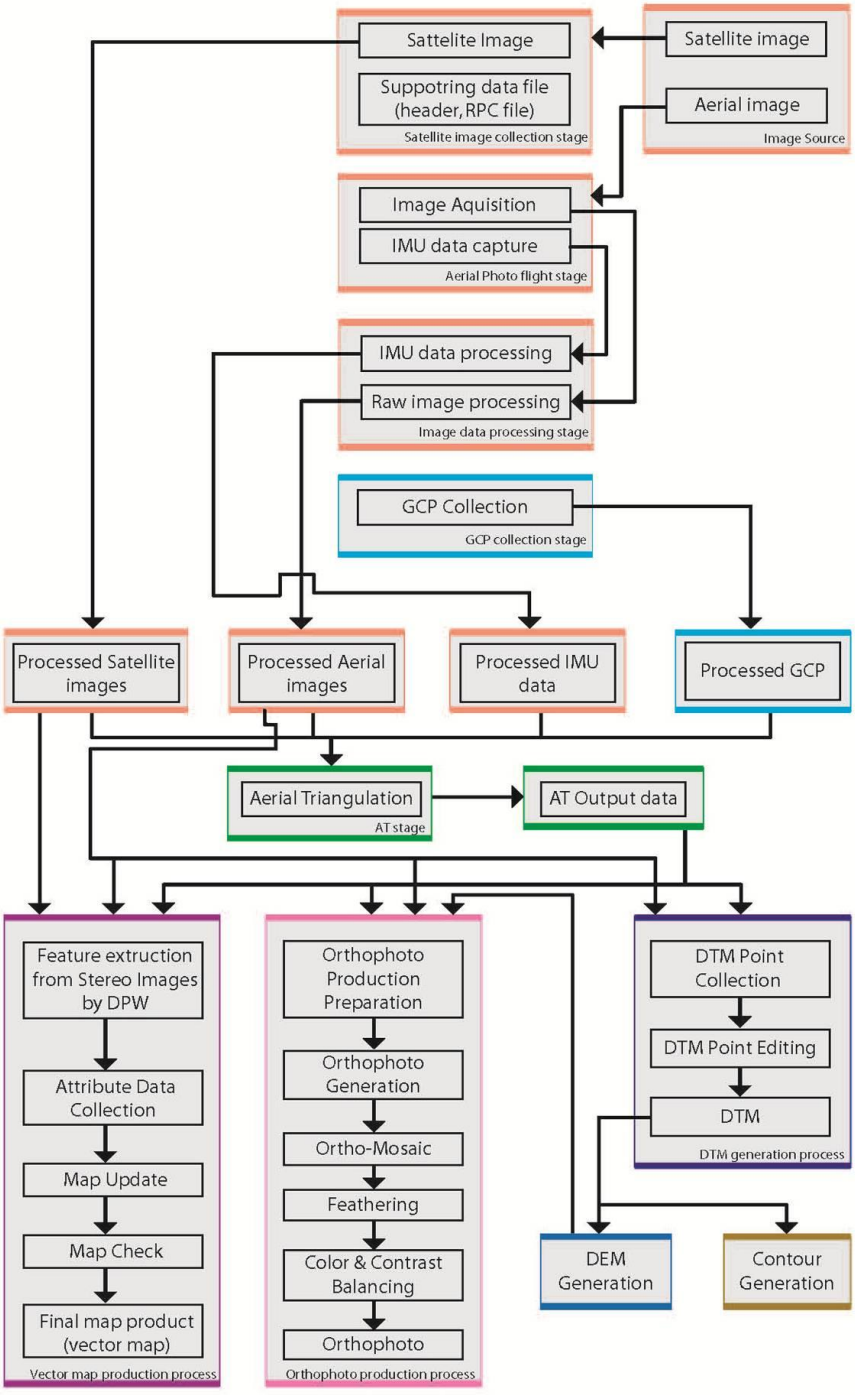


Figure 3.4. Methodology in Flow Chart for DEM and Contour Generation through AT from Satellite Imagery

DEM

Using DTM Points DEM will be generated at a resolution of 10 meters in 1 km x I km or 5 km x 5 km blocks or one single file for the project area.

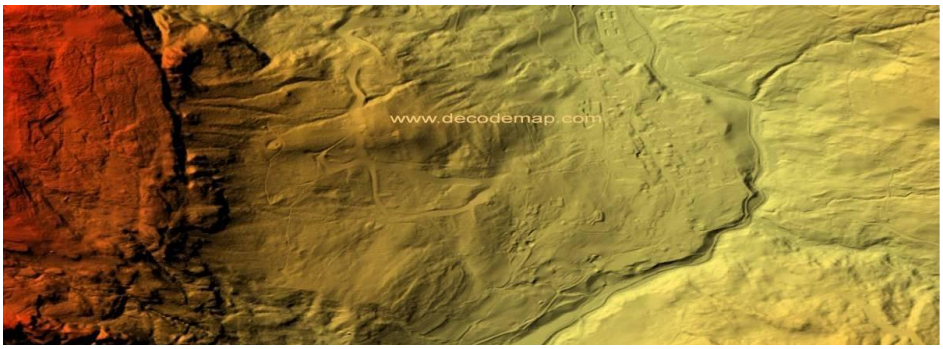


Figure 3.5: Snap Shoot Digital Elevation Model

TIN
Using DTM Points TIN will be generated and delivered in 1 km x 1 km or 5 km x 5 km blocks for the project area.

ORTHOPHOTO

An orthophoto or orthophotograph is a photograph geometrically corrected ("orthorectified") such that the scale is uniform: the photo has the same lack of distortion as a map. Orthophotographs are commonly used in the creation of a Geographic Information System (GIS).

3.6.2.7 Ortho-rectification of Images

Ortho-rectification 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.

3.6.2.8 Mosaic of Orthophoto

- Individual rectified photograph will be assembled to form seamless mosaic.
- Mosaicing of OrthoPhoto includes the following tasks
  - Seam line Drawing: Drawing the boundary of the image delineating which part of the image will go which image.
  - Balancing of Color and Contrast
  - Feathering

Digital Photogrammetric Workstation (DPW) will be used as the platform for acquiring features from digital stereo images (model).

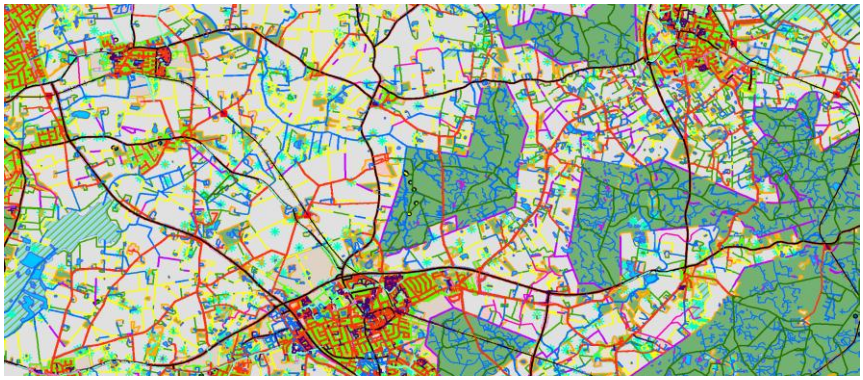


Figure 3.6: 3D Stereo (Photogrammetry) Mapping (Vector Mapping)

3.7 Survey Activities

3.7.1 Mobilization of Survey Team

Survey Manager along with survey and equipment experts, GPS and Total Station surveyors will be mobilized immediately after approval of the Inception Report by the project authority of UDD.

3.7.2 Methodology of Physical Surveys

GPS and Total Station based advanced survey technique will be used for conducting physical feature, topographic, physical infrastructure and landuse survey. Survey techniques to be used for conducting all types of physical surveys are narrated below.

3.7.2.1 Establishment of Bench Marks (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.

As mentioned in the ToR, covering the project area including approximately 1BM pillar per 5 sq.km. grid in urban area and 1BM pillar per 20 sq.km grid rural area (pillar 10"X10", Base 3' X 3', height 5"). RCC pillars are to be constructed marking unique identification number Coordinate X, Y of these pillars along with Z value is to be marked on base map for future reference. Establishment of BMs comprises the following item of works:

- Construction and Installation of BM pillars.
- Establishment of Co-ordinate of BM Pillars (x, y, z i.e. Northing, Easting & RL in mMSL).

Construction and Installation of BM Pillars

The BM pillars will be constructed and installed before the survey work start. The construction design and specification BM pillars will be obtained from the UDD. The BMs will be established with uniformly distributed grid covering the total project area. However, in selecting the sites for BM Pillars following factors will be taken in to consideration.

- Availability of open sky for good satellite signals.
- Secure place for long term preservation.
- Local resistance to installation of pillars at private lands.

Establishment of Co-ordinates (x,y,z) of BM Pillars

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

- Selection of reference BM (x, y, z)
- Baseline survey by RTK-GPS Static Method.
- Network Adjustment

Selection of Reference BM

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, the available SoB BMs of the project area has already been collected.

Baseline Survey by RTK-GPS Static Method

The Baseline survey is the simultaneous data collection in static mode at two or more fixed points using two or more duel 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 emphasis that the configuration of network was based on practical considerations rather than requirements of an ideal network.
The GPS measurements consist of a simultaneous static measurement with dual frequency GPS receivers at the ends of a concerned baseline. Measurement or logging time for a session is usually 15 minutes to 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 Spectrum Survey Suite Software v3.5 (L1/L2). If results from the field measurements found unacceptable, measurements will be repeated.

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. After network adjustment the precise co-ordinates (Latitude/Northing, Longitude/Easting, and Ellipsoidal Height) of each BM will be obtained.

3.7.2.2 GPS Survey Technique

The Global Positioning System (GPS) is worldwide all-weather radio-navigation and positioning system formed from a constellation of 24 satellites and their 5 nos. ground control & monitor stations. GPS receivers use these US Navigation Satellites for Timing and Ranging (NAVSTAR) to calculate positions accurate to mater of meters. GPS receives radio waves, modulated for positioning, transmitted by a maximum number of 24 satellites, which enables to work out the distance between satellite and observation points. By receiving radio waves from four satellites simultaneously it is possible to find out the three-dimensional co-ordinates and time (UTC) of the observation point with an accuracy level which cannot be conceived in traditional ground survey. The facility of GPS has been utilized in different kinds of ground surveys including geodetic, topographic and hydrographic survey in the recent times. GPS based survey with its computer based data storage and processing facility on and off the field offers immense flexibility in map production under a GIS environment. To ensure precision and accuracy in survey work and to facilitate geo-reference/digital map production

by GIS software and finally to complete the whole work in a rather shortened time schedule, GPS technology is the best and logical approach to be followed.

Differential Global Positioning System (DGPS) and Real-Time Kinematic Global Positioning System (RTK-GPS) are different versions of GPS technology, each with its own range of applicability and accuracy level. DGPS option gives about ± one meter accuracy data and RTK option deliver ±centimeter position accuracy data.

3.7.2.3 Total Station Survey Technique

Total Station (TS) is combination of electronic theodolite, distance meter and leveling machine with on-board computer having graphic icon menu with LCD display and built-in MS-Dos operating system. It can measure and store the positioning data of a target point in digital form. It consists of a microprocessor with special software for operation, data capture, storage & processing, transmission and receiving to/from a computer. The data can be stored in internal memory or in external memory card. It transmits ledger beam towards the target where a reflector (i.e. prism) is placed and receives the reflected beam by which calculate the distance, bearing and 3-D coordinate of that target point with respect to the reference points whose coordinates are known. Measurements to be done by a Total Station survey technique are as below:

- Distance measurement.
- 3-dimensional co-ordinate measurement (x, y, z).
- Traverse-style co-ordinate measurement.
- Resection.
- Offset measurement.
- Missing line measurement.
- Remote elevation measurement.

3.7.3 Physical Features Survey

Before deployment of the survey team, base map for conducting field level surveys shall be prepared using both high resolution satellite image and Mauza maps of the project area. Base map shall be compiled with major road network of the project area, important infrastructures, permanent & prominent physical features/structures etc. superimposed on Mauza maps having all Mauza features. Physical features shall be surveyed using RTK GPS and Total Station (TS) survey technique. Location of all existing structures and installations along with types in respect of use, construction and number of storey will be surveyed. Names of structures, type of construction, uses and storey etc will also be recorded during physical feature survey. Survey will also cover location of all existing exposed light/electric, telephone posts and towers, water supply structures, roads etc. Data will be recorded with separate ID or code number for each feature (as Line, Point and Polygon). Later on the survey data will be transferred directly to the GIS database where the feature will be kept in separate layer with specified code or ID. Physical feature survey information will be presented on CS/RS Mauza maps. Physical feature survey format attached in Appendix VIII.

3.7.4 Topographic and Drainage Survey

The Topographic database shall be obtained from geo-referenced 3-D (four band) image and further cross-checked and ground trothing by using RTK-GPS and Total Station to obtain and verify 3-D data (X.Y.Z value) on location and alignment of all data obtained from physical feature survey including roads, flood embankments and other drainage divides. Location and alignment of all drainage and irrigation channels/canals showing depth and direction of flow. Closed boundary/outline of homestead, water bodies, swamps, forest etc. junctions, spot heights or land levels at roughly 10 m intervals for the whole project area and close interval as and when required such as dyke, embankment, roads, rail-roads, river bank, rail line etc.

The Total Station survey groups/teams will be responsible for measurement of spot levels (Northing, Easting, Elevation or RL) for contour generation. In general the spot levels on the land will be taken at 10m interval in urban area and 20m interval in rural area . In addition, most of the physical infrastructures will also be survey by the TS team. The exposed utility pole and alignment of exposed utility lines will be surveyed using both TS & DGPS. The secondary BMs established by RTK-GPS will be used by the Total Station Groups as reference (Station and Back Point). 0.3 m interval contour map (Topographic Map) will be prepared at 1"=330' or 1: 3960 scale. DGPS will be used for surveying the location/alignment of all roads, flood embankments and other drainage divides as well as closed boundary/outline of homestead, water bodies, swamps, forest etc.

DGPS group will measure and store the alignment in x and y co-ordinates of roads, embankment and other line features. The point and closed boundary features also surveyed by the DGPS groups. The optical teams will pick-up the crest level of the road at not exceeding 50m intervals. DGPS group is responsible for taking the position and the information of the structures (hydraulic structures, bridges and culverts etc.). At the end of day's survey, the DGPS data will be downloaded, processed and stored into GIS database. Names of settlements, village, rivers, khals, roads, markers, etc. will be also presented on the topographic map. Topographic survey format attached in Appendix XIII.

3.7.5 Land Use Survey

Landuse survey basically records the use of land by its smallest units of area and functional activity such as residential, industrial or commercial etc. Total Station and DGPS based topographic and physical features survey data will be used for landuse map preparation. During Topographic and physical feature survey, each survey feature/structure will be recorded with individual ID or code. Later on landuse features will be extracted/identified and classified using the recorded code and separated in different layers during data processing stage, from where the category wise landuse map will be drawn using the identification layers of each landuse feature. Later on the landuse map will be updated through field checking and verification. The landuse map will be prepared indicating the broad categories of landuse described in ToR. Broad categories of landuse described in appendix I.

Comment [A4]: Edited

As stated before, utilizing the physical features survey overlay on Mauza map the landuse map will be prepared indicating the categories of land (as mentioned in the format of landuse survey in ToR). The Landuse Map will be prepared on CS Mauza base at 1" = 330' or 1:3960 scale.

3.7.6 GIS Mapping

Geographic information System (GIS) software such as Arc GIS 10.1 will be used for processing of physical survey data. As there is no mention in the ToR regarding the legend, layout and other specification of physical survey maps (layout, size etc.) will be finalized in consultation with the project authority of UDD during map preparation process, The well known Triangulated Irregular Network (TIN) method will be applied to draw contour lines. AS per ToR the consultants will prepare the survey maps incorporating the features of CS/RS Mauza maps and other features as mentioned in the Survey Formats (Physical Feature, Land use, Topographic and Physical Infrastructure Survey Format). Both soft and hard format will be supplied according to format of Base Map, Physical Feature, Land use and others maps as provided in the ToR. Technical Specification of GIS data attached in Appendix XII.

3.7.7 Quality Control of Survey and Mapping Works

After preparation of physical survey maps, one set of colored maps (topographic and physical infrastructure, physical feature and land use) will be plotted in 1:3960 scale for field level verification. For the quality of survey and mapping the field level checking will be supervised and monitored by the joint team of UDD and consultants.

3.8 Sector Studies and Surveys

To fulfill the requirement of the Draft Plan consultant need to address the following issues:

3.8.1 Population and Migration Survey/Study (Census Based)

The consultants are required to generate and analyze demographic and household level data to trace on the past growth rates and current trends of migration for the district and the study area. These analyses are required to consider likely growth factors affecting *upazila* level in particular, and estimate broad population within the district over the next 20 years. The methodology to be followed to carry out these tasks is discussed below.

Data from both the secondary and primary sources will be generated and utilized to accomplish the above specified objectives of the study. The 2011, 2001 and 1991 census publications (the volumes on District and community series) can provide valuable information on demographic structure, migration and other data related to this study. In addition, purposive survey may be conducted to fill in the gaps if necessary with the help of a pre coded questionnaire (with socio-economic survey) to facilitate easy processing by computer.

For these purposes the study area can be divided as established urban, newly urbanized, newly growing area, and rural areas. The localities in the study area will be identified depending on this classification. Depending on the actual number of units, some areas from each of these 4 categories will be selected for the PRA frames. A complete list of households will be prepared for these selected units, which will be our sampling frame.

All relevant data collected through questionnaire survey will be presented in appropriate tabular form. Any change in the trend to that of 2011 or 2001's census report will be analyzed. The survey is also expected to produce evidence on fertility rate in the study area. The population projection will be made both at the aggregate level by time series analysis and at the disaggregate level by cohort survival method. However, monthly national level assumptions regarding survival and fertility rate will be used for disaggregate projections.

There are several methods of projecting population. Normally, population increases either at a arithmetic, geometric or exponential rates. Our experience in Bangladesh shows that the geometric growth of population suits in most of the rural population growth. Exponential growth rate may be applicable for very high rates of growth. On the other hand arithmetic rates are quite slow in adding population. Thus, we prefer to follow geometric growth rate for calculating the growth of population and thus for projection.

The secondary data and those will be collected from primary sources will then be transformed into attribute layers (by assigning data into areal format) for analyzing using GIS tool.

3.8.2 Socio-Economic Survey (Household Based)

Planning is principally directed towards people and their needs such as housing, shopping, employment, education, health and recreation services. Detailed information on population and their characteristics (such as migration behavior, economic activities, etc. is, therefore, will be essential for allocating land requirements for these needs as well as allocating that between various competing uses. The socio-economic consultant must therefore study the existing population in terms of its size, structure, socio-economic characteristics and spatial distribution. He also equip himself to make projections about future population growth in order to assess the probable needs and requirements in terms of number of schools, houses, shops, offices, factories and the like, over forthcoming periods of time. Socio-economic data can be collected from secondary sources and primary source through questionnaire survey and also by using PRA technique.

A socio-economic survey for collection of primary data will be conducted in the proposed project area that can assist in meaningful exercise in planning with proper focus on the household level. It is

clearly understood that the purpose of this socio-economic survey is to obtain the project's objective related socio-economic data on households in the project area. Data on socio-economic condition will be collected from both secondary and primary sources. General information on demography, family size, age, religion, education, employment and occupation pattern, land ownership pattern, land value, land utilization, income level, health and recreation facilities, etc. will be collected from the primary sources through a specially designed socio-economic questionnaire survey.

The sample size will depend on the nature of heterogeneity of population characteristics. In urban areas people are more heterogeneous than the rural areas. Thus the relative strength of the size would be higher in urban areas than the rural areas, as the rural population are more homogeneous. Thus the actual size would be depending on the categories of population. More the number of categories, higher the size of the sample size. The smallest size of the samples is 50, but this size would not help under taking statistical tests. Thus we prefer to choose a sample of 384 from each categories of population (when the population categories are unknown) class which will facilitate all kind of tests with 95 percent confidence level. Detailed would be explained in the study phase.

The following type of data/information will be available for using in the plan preparation: such as on Holding information like area of holding, number and types of housing structure; Household size, age, sex composition, educational, employment and occupational status, income, expenditure, etc; Land tenure structure, nature of land utilization of land, income from land, Holding information like house structure, service provision such as electricity, gas supply, water supply connection, etc; Sanitation information, type of latrine, sewerage, drainage system, etc.; Holding information about urban facilities such as road, telephone, hospital, clinic, community center, etc.; and Information about households attitude towards development works and initiatives.

The socio-economic survey will be conducted at household level, taking households from the study areas. Standard and scientific sampling will be used for selection of the household. Like the population and migration data, the household level information will also be used as GIS attributes for making spatial analysis and decision making. (All attribute data if classified in spatial units can be used as GIS data).

3.8.3 Housing Survey

As per ToR, a separate survey on housing, slums and squatter settlements will be carried out. The main purpose of this study is to prepare an inventory of housing in the study area. For each major housing area, a summary of population, density, housing conditions, provision of services, sanitation, drainage, employment, and tenure and income levels will be determined to facilitate residential planning and addressing housing needs and related issues.

Data from both the primary and secondary sources will be utilized for this study. General conditions regarding housing structure, sanitation and provision of services are available from census data. However, most of the information will have to be collected from the primary source through a specially designed household questionnaire survey. The questionnaire will be designed to capture all the required information in a coded form suitable for fast processing by computer. The questionnaire will focus on housing needs and demands of the households at rural and urban levels so that the problems of housing can be scientifically addressed.

A stratified weighted random sampling method will be used to conduct the household level sample survey. Similar to the population and migration study will be carried out in some representative area which will be selected on discussion with clients. After discussion with PD, UDD a suitable housing typology will be developed for each of the broad types of area. The purpose of these sub-classifications is to ensure that the samples are drawn across the broad classification, and no important type is left out, and also duly represented in the sample size according to their number.

For the slums and squatter settlements survey, first the locations and settlement sizes will be collected from a reconnaissance survey in the study area, supplemented by information collected from

secondary sources such as recent survey by BBS. After their identification on a map, sample survey will be conducted. A stratified weighted random sampling method may be suitable for household level survey of the selected slum and squatter settlements. The questionnaire will be similar to the housing study but will be more elaborate and will include additional information on socio-economic characteristics, demographic characteristics, employment, migration, community organization, attitudes, priorities for development etc. Similar type of analysis as that of housing study will be carried out for the slum and squatter settlements. Most of the results will be presented in tabular form.

A separate report along with land use recommendations and development plans for slum and squatter settlements will be produced.

3.8.4 Traffic and Transportation Survey

Transportation Infrastructure and Facilities: Information on this component is essential for preparation of a transport plan for the whole Upazila. In this regard, an inventory of existing facilities available, in the study area for the transportation of passengers and goods by all the 3 modes of road, rail and river will be prepared. The required information will be collected from the relevant authorities as well as from the field level surveys to be conducted by the consultants. The information will include roadway type, physical condition (ROW, x-sectional elements, pavement type and condition), geometry, truck routes and their loading unloading areas, bus routes and terminals, traffic controlling and management system, parking facilities, etc. for Roadway; existing alignment, physical condition, terminals, yards, stations, etc. for Railway; and location of ghats and terminals, physical condition and facilities, ferry routes, inter-modal transfer facilities, etc. for Waterways/river. In addition to this data gathering exercise from primary and secondary sources, an overview appraisal will be developed for the interaction of modal groups, particularly in relation to the spatial development pattern and proposed or committed strategic infrastructure and future development.

The summarized information collected on completion of this activity will help to classify road network by hierarchy and assess the regional connectivity, accessibility, rural-urban linkage, future urban form, agricultural goods movement/marketing, policies intervention, etc. which will form a part of the report on the proposed traffic and transportation study.

In addition to the physical infrastructure and facilities, information will be obtained on the transportation services and fleets operating within the study area. Most of the information will be collected from various registration authorities for different types of vehicles and from their owners' and operators' associations. However some field surveys and verifications will be required especially related to non-motorized vehicles.

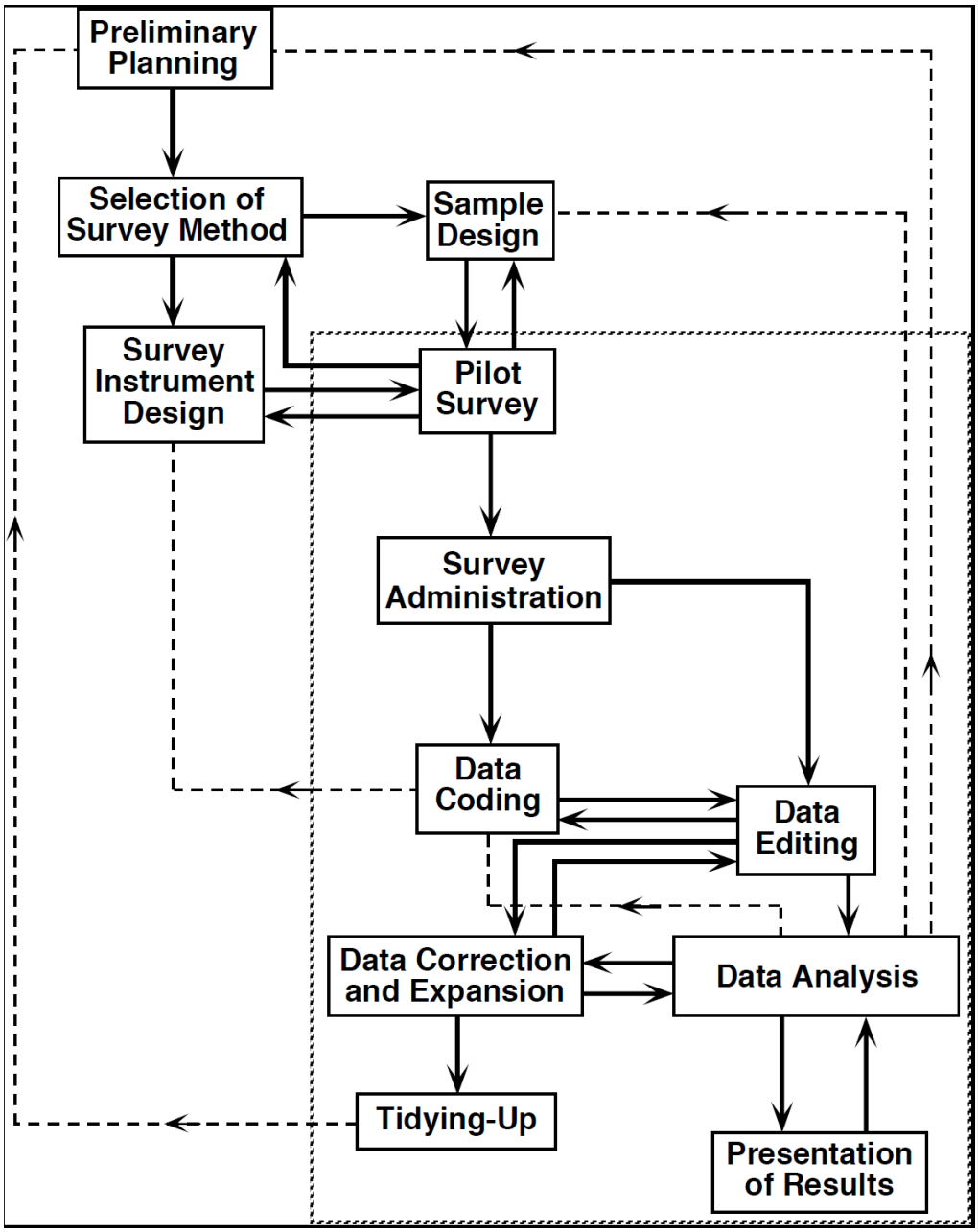
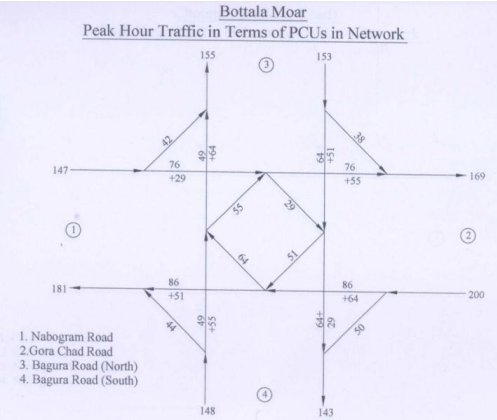


Fig 3.7: The Transportation Survey Process

Volume and Movement Patterns: The volume and movement pattern of people and goods within the study area will be collected through a series of volume and O-D surveys for all the modes - road, rail and river.

Road

Traffic counts will be performed on all major roads and intersections within the study area during both peak and off-peak periods on both week-days and weekend. Existing traffic volume, traffic composition and turning proportions of vehicular movements will be estimated through manual counts during this traffic counts. Traffic counts will be converted to Passenger Car Unit (PCU) by multiplying appropriate Passenger Car Equivalent (PCE). Traffic volume counts will be presented both in tables and figures. A typical representation of traffic volume count is shown in the following figure. Pedestrian counts will also be made at the locations of traffic counts.



In addition to traffic volume study, travel survey will be conducted to know the trip characteristics (i.e., location of the origin and destination of the trip, time at trip started and ended, mode and route of travel, purpose of trip, etc). A comprehensive O-D survey extended to the whole of the study area will be carried out. For this purpose the whole survey area will be divided into a suitable number of Traffic Analysis Zones (TAZs) depending on the homogeneity of activities in the zone. Roadside survey method will be followed for performing the O-D survey. In this method, with the assistance of policemen, vehicles of all types will be stopped and questioned regarding their origin and destination and other journey data. The surveyors will enter all these information in a preceded form. All vehicles that will pass the roadside survey station will be counted, but only a sample of the vehicles will be stopped and interviewed.

The interview sites will be located as near as possible to the TAZs boundaries. Each interview team will consist of at least 5 members (exact number will depend on field condition), two members for each direction and a team leader. In each direction one member for making a classified count of all vehicles and pedestrians passing and the other member conducting the actual interviews. Manual hand-held counters will be used for counting purpose.

Sampling procedure will be used for taking interviews. Sample size and survey hours will be determined from field conditions. Depending on field conditions in most locations, survey hours will be between 12-18 hours.

A total counts will be made for few days at some locations (control stations) to raise the survey data for 24 hours for all other locations. The survey will be conducted on different similar days at different locations. Volume counts may be repeated few times at some major locations.

The consultants would try to accommodate certain important questions regarding people's attitude, preference etc. in the questionnaire for the housing sector study to be carried out under the project.

Trip generation rates of the growth centers will be estimated from the field survey too.

Another important aspect of the road traffic survey will be determining their journey times. On-board observer method will be followed for public transport services. The moving observer and licence plate method will be followed for other types of vehicular traffic. Spot-speed will be measured at strategic locations. A parking survey will also be carried out at major parking locations to determine

accumulation, duration, turnover utilisation, extent of illegal parking and cordon counts to determine net vehicles in core zones.

Rail

Data on rail traffic flows for both passenger and goods traffic will be collected from Bangladesh Railway (BR). To ascertain the flow of passenger traffic, the available data may require to be complemented by direct passenger counts at the terminal. This volume study will be carried out on a typical week-day.

River

Direct counting of arriving and departing passengers in the study area will be made at the Ghats and river terminals. These data will be supplemented by data collected from the service operators (public and private).For goods traffic, a destination survey will be made between traffic in relatively large and small units. In case of large mechanised units, inquires will be made with the shippers, IWTC, jute and other bulk commodity traders. For small units, like country boats, direct and O-D surveys will be made at the Ghats/loading and unloading points. Similar techniques like interview method for road traffic will be applied for the boat or river traffic survey.

Analysis of Volume and Movement Patterns: After completion of the traffic count and transportation surveys as discussed above, sufficient information will have collected and collated to proceed further with the planning activities. The collected information will be collated and analyzed to estimate the past trends in traffic growth with the help of a wide variety of computer software packages, i.e., MS Excel, SPSS. Travel demand model will be developed from O-D survey data and household socio-economic data. The modeling process will consist of four steps: Trip Generation, Trip Distribution, Mode Split and Trip Assignment. Each step of the modeling process will be individual mathematical model. Specific method for each step will be selected later based on the availability and quality of data. The model will be used to predict current and future travel demand within the study area.

The analyses would also reveal which areas within the system are deficient and creating problems. Identification of the problems, their extent and causes would eventually enable consideration of their remedial measures. These are discussed hereunder.

Current Problems and Their causes: As already mentioned, from the analysis of the collected data a detailed assessment of the volume and pattern of traffic movement, the operational performance and the efficiency of use of the existing infrastructure will be made. Traffic volume and performance will be assessed with respect to the following aspects: Traffic projection using past trends in growth, volume of traffic along major arterials/corridors by type, Traffic movement by time of day, Person trips by time and mode, Commodity carried by type of goods vehicles, Congestion point identification, Inadequate capacity locations, Public transport services, capacities, journey times by modes, Modal split for goods and passenger traffic safety conditions, Conditions and facilities for non-motorized transportation including pedestrians, Loading/Unloading of goods, and Parking capacities. Performances of critical roads/intersections will be assessed according to Highway Capacity Manual.

These assessments will provide a clear understanding of the major problems and issues affecting traffic circulation and transport services in the study area. They will also provide an insight to the causes for such problems.

Long Term Policies and Strategies

Future travel demand (both vehicular demand and transit ridership) will be estimated using travel demand model. On the basis of future demand, an overview of traffic and transportation infrastructure and service options will be developed. Special emphasis will be given for the

development/improvement of public transportation system. Strategies and plans will be provided for pedestrian facilities, bicycle track, bus rapid transit, freight transport mode like railway/waterway, etc.

3.8.5 Urban and Rural Economic Study

Comment [A5]: Just title edited as before Soci and Physical Infrastructure survey

An employment and investment survey in the study area is required to be carried out through primary and secondary surveys at the major centres of employment. The ToR requires to project economic activity and workforce by broad employment sectors. The informal sector plays a very significant role in our urban economies, as such; a major proportion of employment is generated in informal sector. The nature, characteristics, growth and other things of this sector is significantly different from those of the formal sector. While most of the required information on the formal sector can be obtained from the secondary sources, information regarding informal sector activities has to be collected from the primary source through sample surveys of the major centres of employment. Accordingly, it is essential that the two sectors be studied separately.

Formal Sector: Information on Formal sector will be collected mostly from the secondary sources. Direct inquiries of large employers, chamber of commerce, trade organizations, owners' associations and labor unions will be conducted. Besides, relevant government agencies (Bureau of Statistics, Ministry of Industry) publish regular reports that contain information on employment, investment, production etc., which will also be a valuable source of such information.

Informal Sector: The objective of this study is to analyze the present economic base of the city and to assess how the significance of its economic base is changing compared to the national economy. This would determine the future growth potential of the city. The Consultants propose to apply standard analytical tools for this purpose such as location quotient and shift and share analysis. The findings of these analyses will depict a clear picture about future employment and investment prospects in the study area.

It would be necessary to identify the nature of informal sector activities in the study area. It is expected that most of these activities will be in the service sector and small manufacturing units. A reconnaissance survey is proposed to identify the nature of activities. While the household surveys will be designed to collect information on employees, type and nature of employment, income level etc. The business unit level survey will be conducted to collect information on investment, production, if locally consumed, or "exported", type of trading, number of employees etc.

All Urban and Rural Economic information will also be used as GIS attributes for making spatial analysis and decision making.

3.8.6 Formal and Informal Industrial Survey

Details of location, present size and capacity, details of labour statistics with the housing conditions and their quality of life, other relevant data and information will be collected through questionnaire and FGD. The consulting firm will be prepared report on the basis of output of the surveyed data showing industrial prosperity and recommendation for Project area. All the collected attribute and spatial industrial data shall be linked with other spatial database.

3.8.7 Agricultural Study

The agricultural land demarcation survey would be based on the levels of land, cropping pattern, cropping type, one coped land, double coped land, land utilization and flood level. Change of agricultural land during the last 10 years should be collected and presented in a report with explanatory notes on the causes for growth or decline covering a possible quality of existing and future agricultural land for the project area. All the collected attribute and spatial transportation data shall be linked with other spatial database by the consulting firm.

One of the important issues is agricultural marketing and storage which will be investigates through PRA method at the study area. All agricultural information will also be used as GIS attributes for making spatial analysis and decision making.

3.8.8 Study on Solid Waste Management

The Consultants will conduct separate study on the scenario of solid waste management in the project area. This issue may not be of same importance for the whole project area but is very important for the built up areas and the areas that are likely to be developed within short time. This study requires identification of formal and informal system of waste type, waste generation rate, solid waste collection, location of dustbins and waste transfer station, formal and informal waste dumping site as well dumping grounds.

3.8.9 Environmental Survey

Environmental pollution is as old as the civilization itself. It has become a major concern in the last few decades. It is the byproduct of the development of civilization and in fact a price for the progress. It is more prone in case of Bangladesh. Air pollution of Bangladesh is mainly caused by the vehicle emission, industrial discharge and burning of fossil fuel. The water resource of Bangladesh becomes a major health hazard due to arsenic contamination, inadequate solid waste and industrial effluent management. Necessary steps are to be taken to protect the environment for our own existence.

The present environmental condition of Bangladesh is not at all equilibrium. Severe air, water and noise pollution are threatening human health, ecosystems and economic growth of Bangladesh. Air pollution caused due to increasing population, burning fossil fuels, industrialization and associated motorization. The water pollution caused due to industrialization. The underground water of Bangladesh has been polluted due to arsenic. The inhabitants of major cities and rural areas of Bangladesh are also exposed to high level of noise pollution. Environmental degradation of Bangladesh is also caused due to poverty, over-population and lack of awareness on the subject. It is manifested by deforestation, destruction of wetlands, soil erosion and natural calamities. Few steps have been taken by the government to improve the environmental degradation and pollution control. These studies identify and analyze the different types of environmental pollution and associated health hazard in these areas. It also discusses the different governmental steps as well as some suggested steps to improve the pollution control.

An environmental examination/survey will be conducted by the Consultant. Environmental safety is of great concern to all. Preparation of Development Plan for the next 20 years for three (03) Upazilas seeks environmental investigation of development activities that will be under taken in next 20 years. The issues/aspects that are to be investigated as per ToR are as follows:-

1) Existing Infrastructures

a) Drainage: exploration of drainage capacity and constraints
   i. Man-made (drainage network, gradient, attachment area, out let) constraints
   ii. Natural (flow direction, hydrology, usability) constraints

b) Water supply (network, coverage) problems and opportunities
c) Sewerage (location/network, condition) and sanitation options
d) Solid waste management-existing system, location of garbage disposal, management aspect

2) Environmental Hazards

a) Identification and risk assessment of hazards.
b) Existing mitigation/coping measures, if any
c) Past Trends
   - Identification of environmental protection laws/regulations
   - Demand of future environmental infrastructure
d) Identification of environmental hot spots

The required information on the above aspects will be collected both from primary questioner surveys and secondary data and will be incorporated with proposals in the Plan.

3) Pollution Study

Environment is the aggregate of conditions affecting the existence or development of life and nature. The overall global environment is declining fast and for Bangladesh it has been doing so more rapidly during the last few decades because of many obvious reasons. In the project areas, apart from fossil fuel combustion, the other sources of air pollution are the brick kilns, fertilizer factories, jute and textile mills, spinning mills, biscuit factories, saw mills and dust from ploughed land. These sources produce an enormous amount of smoke, fumes, gases and dust, which create the condition for the formation of fog and smog. In this way indoor air pollution can be five to ten times that of the dirtiest air outside. This may cause headache and other health problems.

The mostly contributing industries for water pollution are pulp and paper, pharmaceuticals, metal processing, food industry, fertilizer, pesticides, dyeing and painting, textile, tannery etc. Water pollution creates serious health hazard for Bangladesh. The dumping of municipal wastes, hospital wastes and toxic environmental discharges from mostly industries pollute both surface and ground water sources. The most dangerous threat emanating from environmental degradation is the arsenic contamination of ground water. The river water is polluted by food industry, fertilizer, pesticides, and textile industries in the project areas.

In Bangladesh noise pollution (also termed as sound pollution) is a major health hazard. In fact due to noise pollution millions of people in Bangladesh are exposed to a number of health risks -from deafness to heart attack. On city streets noise pollution can be caused by hydraulic horns of vehicles, microphones and cassette players. The hydraulic horns used by buses, trucks and scooters in the crowded city streets are dangerous for human being. This is also how noise pollution is affecting the hearing power of thousands of children every day. The horns especially cause serious damage to children. Experts say, if a child below three years of age hears a horn emitting 100 dB of noise from a close range, he or she might lose his or her hearing power. A child's health may also be adversely affected by loud sounds from the radio, television, cassette players and microphones, the sound of mills and factories and loud noise.

According to a survey of the Department of Environment (DOE), noise causes mental and physical illness among the people. It causes high blood pressure, tachycardia, headache, indigestion, peptic ulcer, and also affects sound sleep. Anyone may become deaf for the time being if 100 dB or more noise pollution occurs for half an hour or more in any place. Working in an atmosphere of loud noise for a long period can cause complete deafness to any person. Any sort of noise pollution seriously affects expecting mothers. It has been observed that pregnant mothers living near big airports give birth to more crippled, deformed and immature children than those living in other places.

One of the directly related consequences of population growth is the increase in waste generation. With the conventional system of collection, transportation and crude dumping of solid waste, areas of Bangladesh are generally faced with rapid deterioration of environmental and sanitation condition. As such, urban solid waste management has become a major concern for the cities and towns of Bangladesh. Municipal services in most cities and towns are already over-burdened, and simply cannot meet the growing demand for municipal services, resulting in unhygienic and filthy living condition in the neighborhoods. Ultimate disposal of urban solid waste is done crudely in open dumps, lowlands or water bodies in an unsanitary manner. As a result, the surrounding environment of the dumpsites is barely hygienic.

3.8.10 Studies on Disaster Management

3.8.10.1 Hydro-Geological Survey

Geographical Investigation

Field geophysical investigation is conducted to achieve the purpose of seismic risk and damage assessment. Seismic site characterization by analyzing seismic wave propagation velocity from acquired shallow seismic wave form data is the main objective. P-S logging, Multi Channel Analysis of Surface Wave (MASW) and Microtremor tools are involved in geophysical investigation.

General purposes of the geophysical survey:

- 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

Geotechnical Investigation

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.

3.8.10.2 Engineering Geological Mapping

Engineering geology refers to the application of geological data, techniques and principles to the study of rock and soil surface materials, and ground water on engineering perspectives. This is important for the proper location, planning, design, construction, operation and maintenance of engineering structures.
An engineering geological map is defined by UNESCO, as a type of geological map, which provides a general representation of all those components of a geological environment of design, construction and maintenance as applied to civil and mining engineering. Engineering geological maps are of different types depending on its scale, purpose and/or content.

The importance of engineering geological mapping is to find out the main obstacles or barriers to construct major structures such as dams, factories, and heavy buildings in a specific area. The consulting firm will prepare report on the basis of output of the obtained data which will help to identify suitable places for further construction of different development projects. The consulting firm collects all necessary data and information from GSB of the study area and prepares geological maps. After that consulting firm submit of all geotechnical and geophysical data as well as report and maps to UDD.

3.8.10.3 Seismic Hazard Assessment

Test detail and Procedure of Downhole Seismic Test (PS Logging)

Field measurement of shear wave velocity profile (Vs profile) will be carried out by seismic down-hole test. Seismic down-hole test is a direct measurement method for obtaining the shear wave velocity profile of soil stratum. The seismic down-hole 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 3 m in horizontal direction from the top of borehole. The plank is hit separately on both ends to generate shear wave energy in opposite directions and is polarized in the direction parallel to the plank. The shear wave emanated from the plank is detected by a tri-axial geophone. The geophone is lowered to 1 m below ground surface and attached to the borehole wall by inflating an air bladder. Then, the measurement is taken at every 1 m interval until the geophone is lowered to 30 m below ground surface. For each elevation, 6 records are taken and then used to calculate the shear wave velocity. In Downhole Seismic Test (PS logging), this method will be used to calculate shear wave velocity for this project.

Test Detail and Procedure of Shallow Seismic Survey (MASW & SSMM)
Shallow seismic survey utilizes the frequency dependent property of surface wave velocity, or the dispersion property, for Vs profiling. It analyses frequency content in the data recorded from a geophone array deployed over a moderate distance. The principle MASW is to employ and arrange a number of sensors on the ground surface to capture propagating Rayleigh waves, which dominates two-thirds of the total seismic energy generated by impact sources.

Geophysical Test Methods

The list of geophysical work that will be done are giving below table

SL No.	Type of Test/Survey	Reason for Testing
1	Down-hole Seismic Test (PS Logging)	To obtain the shear wave velocity profile of soil stratum.
2	Multi-channel Analysis Surface Wave (MASW)	To determine shear wave velocity of soil layer.
3	Small Scale Miccrotremor Measurement (SSMM)	To determine shear wave velocity of soil layer.
4	Single Microtremor	To Calculate Peak Period and Peak Amplitude.
5	Microtremor Array	To determine shear wave velocity of soil layer.

3.8.10.4 Sub-soil Profile

Subsoil is the layer of soil under the top soil on the surface of the ground. The layer is mixture of small particles such as sand, silt and/or clay, but it lacks the organic matter and humus content of top soil. Sub-soil investigation is a process of site explanation consisting of boring, sampling and testing to obtain geotechnical information for safe practical and economical geotechnical evaluation and design. The main purpose of sub-soil investigation is to determine, within practical limits, the depth, thickness, extent and composition of each subsoil stratum, the depth and type of rock, composition and depth of ground water and strength and compressibility and hydraulic characteristics of soil strata required by geotechnical engineers.

Subsoil profile will provide data on surface and underground condition at the proposed site samples and will facilitate visual inspection to determine physical and index properties depending on sites use. The subsoil profile explores the following:

(a) Determining the nature of the soil at the site and its stratification
(b) Finding out the actual site and ground problems with particular reference to terrain problems, vegetation, swamps and water runoff etc. this may help design of human settlements and physical structures in the planning phase.

Subsoil profile can be done by means of boring, sampling and testing, this can be done by stratigraphy. Investigation consist of boring, i.e. drilling the ground; and sampling by removing the soil from the hole. Testing can facilitate determining the properties from the soil

3.8.10.5 Participatory Vulnerability Analysis (PVA) analytical steps

PVA is a systematic process that involves communities and other stakeholders in an in-depth examination of their vulnerability, and at the same time empowers or motivates them to take appropriate actions. The overall aim of PVA is to link disaster preparedness and response to long-term development. PVA is a qualitative way of analyzing vulnerability, which involves participation of vulnerable people themselves. The analysis helps us to understand vulnerability, its root causes and most vulnerable groups, and agree on actions by, with and to people to reduce their vulnerability.
PVA uses a step-by-step approach to systematically analyze the causes of vulnerability by:

Step 1: Situation analysis of Vulnerability analysis of vulnerability
- — Prevalence/extent of vulnerability
- — How different people are able to cope
- — Analyze present threats/vulnerabilities

Tools
- — Focus group discussions.
- — Historical profile/time line.
- — Vulnerability map.
- — Seasonal calendar to map out when most vulnerability occur during the year.
- — Livelihood analysis.

Step 2: Analysis causes of Vulnerability of vulnerability
- — Identification of causes and root causes
- — Prioritization

Tools
- — Problem tree/objective analysis
- — Concept mapping

Step 3: Analysis of community action
- — Establish the existing strategies, resources and assets used to reduce vulnerability
- — External assistance used to reduce vulnerability

Tools
- — Matrix highlighting communities' ability to cope
- — Venn diagrams
- — Problem tree/objective analysis
- — Concept mapping

Step 4: Drawing actions from analysis

Step 5: Prioritize broad interventions
- — Action plans including dates and responsibilities
- — Scenario planning

Tools
- — Overall vulnerability matrix
- — Community action plan – scenario planning

3.8.10.6 Damage and Risk Assessment

Risk as the probability of harmful consequences casualties, damaged property, lost livelihoods, disrupted economic activity, and damage to the environment — resulting from interactions between natural or human-induced hazards and vulnerable conditions. Risk assessment is a process to determine the nature and extent of such risk, by analyzing hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihoods and the environment on which they depend. A comprehensive risk assessment not only evaluates the magnitude and likelihood of potential losses but also provides full understanding of the causes and

impact of those losses. Risk assessment, therefore, is an integral part of decision and policy-making processes and requires close collaboration among various parts of society.

3.8.10.7 Hydrological Study

Identification of water bodies including pond, ditch, beels, haors elc. (both perennial and seasonal), direction of flow of the river, khal/canals, precipitation analysis, delineation of catchments area, encroachments and blockage in the river, khal/canals, identification of wafer control structures including operational condition and reason for non-operational condition (in case of non-operational water control structures).

Bathymetry survey will carried out of underwater depth of the third dimension of ocean floors. Bathymetric (or hydrographical) charts will be produced to support safety of surface or sub-surface navigation, and usually show seafloor relief or terrain as contour lines (called depth contours or isobaths) and selected depths (soundings), and typically also provide surface navigational information.

All hydrology information will also be used as GIS attributes for making spatial analysis and drainage plan.

3.8.10.8 Drainage Master Plan

A. Calculation of Drainage Run-off

The rational method is a relatively simple, internationally used technique for designing storm drainage system in urban areas, and according has been selected for use in estimating the design discharge for the proposed Primary/Secondary/ Tertiary Drains at UZ level. Accordingly, the peak flows at any given point in a drainage system can be calculated by using the following formula:

Q = CIA/360

Where,

Q = peak flow in m3 / sec, C = run-off coefficient , I = design rainfall intensity in mm/hr, A = Catchment area in hectares

Time of Concentration

The time of concentration, tc, is the time required for water to flow from the most remote point of the catchment to the point of investigation. For urban storm water drains, the time of concentration consists of the time required for runoff to flow over the ground surface to the nearest drain, to and the time of flow in the drainage system to the point being investigated, td, thus

$$tc = to + td$$

The time for overland flow depends on several factors, such as the distance, slope, runoff co-efficient, etc. Several methods have been developed to estimate the time for overland flow all of which give more or less the same results. The time of flow in the drainage system, td is estimated from the hydraulic properties of the drains and the following empirical equation is used compute tc:

Kirpich Equation to compute tc:

tc = 0.01947 L^0.77 S^(-0.385)

Where,

tc = time of concentration (minutes),L = maximum length of travel of water (m) and

S = slope of the catchment = ΔH/L in which ΔH = difference in elevation between the most remote point on the catchment and the outlet

Run – off coefficient

The run-off coefficient C is defined as the ratio of the rate of run–off to the rate of rainfall during the same time period and is dimensionless. Because, some rainfall is retained in depression or ponds and the run–off is prevented from reaching the drain due to obstructions, or infiltrates into the soil, the run – off coefficient is less than one. The following table shows the common run – off coefficient used in the rational method for the individual situations for different type of areas.

A representative range of weighted average for fully developed urban areas for each of the UZ will be considered. Common Run–off coefficients for Different Types of Area

Type of Drainage Area		Run – off Coefficient: C
Business	Downtown areas	0.70 – 0.95
	Neighborhood area	0.50 – 0.70
Residential	Single – family areas	0.30 – 0.50
	Multi – units, detached	0.40 – 0.60
	Multi – units, attached	0.60 – 0.75
	Suburban	0.25 – 0.40
	Apartment dwelling areas	0.50 – 0.70
Industrial	Light areas	0.50 – 0.80
	Heavy areas	0.60 – 0.90
	Parks, cemeteries, playgrounds	0.10 – 0.35
	Rail road yard areas	0.20 – 0.40
	Unimproved areas	0.10 – 0.30
	Streets; Driveways and roofs	0.10 – 0.95
Lawns	Sandy soil, flat, 2%	0.05 – 0.10
	Sandy soil, avg, 2 – 7%	0.10 – 0.15
	Sandy soil, steep, 7%	0.15 – 0.20
	Heavy soil, flat, 2%	0.13 – 0.17
	Heavy soil, avg, 2 – 7%	0.18 – 0.22
	Heavy soil, steep, 7%	0.25 – 0.35

Source: Handbook of Hydrology, by - David R. Maidment

Rainfall Intensity:

The daily rainfall data at the nearest Rainfall Station of each UZ for the last 20-years will be collected from the Surface Water Hydrology of BWDB and will be used for the works in connection with the design of proposed drainage system of each of the UZ.

The maximum daily (24 hour) rainfall records of each of the UZ are available in Surface Water Hydrology of BWDB. However, the short duration rainfall figures i.e. rainfall records for storms lasting less than 24 hours- are available only for Dhaka City, and nowhere else Bangladesh.

Accordingly, the short duration rainfall records for Dhaka have been extrapolated in order to develop an approximation of the short duration rainfall characteristics for the UZs. Based upon comparisons of the mean 24 hour rainfalls of the three UZs with respect to Dhaka over the 20 year period, conversion

factors will be used in the determination of the short duration rainfall data at each UZ. Based on this evaluation, the Gumbel Method for estimating probability of occurrences will be used to develop the frequency analysis for rainfall intensities for each of the UZ for the 2 year, 5 year, 10 year and 25 year recurrence intervals.

Based on this, the following curves are developed

- Rainfall Intensity Curve for short duration rainfall for 1.1 -yr, 2-yr, 5-yr, 10-yr, 25-yr and 50-yr return periods using Gumbel Distribution Method

- For design of drain sizes the following return periods have been used:

  Tertiary and Secondary Drains - 2-year return period;
  Primary Drains - 5-year return period

B. Calculation of Drainage Sizes

The size of the storm drainage channels for each of the UZ is calculated using the conventional Manning's formula, as follows:

Q = aV and

V = 1/n R^0.67 S^0.5

Where,

Q = design flow (m3/sec),a = wetted cross-sectional area (m2), V = velocity of flow (m/sec)

R = hydraulic radius (m) = area (a) in m2 / wetted perimeter (p) in m

S = slope of the drain (m/m), n= Manning's roughness co-efficient

= 0.014 for lined drains (concrete/ plaster)

= 0.025 for earthen drains (good condition)

A summary of the design parameters are shown below in tabular form:

Summary of Design Parameters:

I. For flood estimation

A = the catchment area (in ha), Measured by planimeter from the map

C = runoff co-efficient, Taken from the table for different land use, considering possible ultimate development

to =overland flow time. Depends on distance, slope, soil and vegetation characteristic etc.

td = time of flow in the drain, Estimated on the basis of velocity of flow in the drain and the distance to the point under construction

tc = time of concentration = to + td

Return period, 2 yrs for tertiary & secondary drains and 5 yrs for primary drains.

II. Design of Drain

S = slope of the bottom of the drain, determined from the design invert levels of the drain at u/s and d/s.

a = wetted cross-sectional area (m2), determined from the depth of flow and channel section chosen.

p = wetted perimeter (m), determined from the depth of flow and channel section chosen.

n= Manning's roughness co-efficient, 0.025 for earthen drains and 0.014 for lined drains

Max. Flow velocity1.20 m/sec for earthen drain and 2.50 m/sec for pucca drain

3.8.11 Methods of Conducting PRA Participatory Reflection and Action/Participatory Rural Appraisal (PRA) Session in the study Area

Urban Development Directorate (UDD) under Ministry of Housing and Public Works has taken an initiative to prepare a development plan for 20 years of fourteen Upazilas through participatory method. Participatory methods have gained momentum in recent years as field practices and development experts have sought more effective ways to involve local people in decision-making. It is a way of learning from, and with, community members to investigate, and evaluate constraints and opportunities and make timely decisions regarding development projects. It is a method by which a planning team can quickly and systematically collect information for the general analysis of specific topic, question, or problem, needs assessment, feasibility studies, identifying and prioritizing projects, and finally, the project evaluation. The PRA tools are implemented to achieve increased accuracy at low costs both in terms of time and money. Participatory appraisals methods are useful for accelerated knowledge, not just overall speed, but rapid rounds of field relations that result in the increasingly precise knowledge. Participation means involving local people in the development of plans and activities designed to change their lives. Considering the above, project has taken an initiative to conduct Participatory Reflection and Action/Participatory Rural Appraisal (PRA) Session at each Union in the rural areas and at each ward in the urban areas.

Objective

i. To identify the local problems and potentials in study area
ii. To identify the spatial location of problems and potentials in the study area
iii. To identify all features with productivity in the study area
iv. To identify the time trend of positive or negative change for a long duration in the study area
v. To ensure local people participation in all stage of plan preparation

Expected Result

i. Identified problems and possible solutions from the local peoples at union level in rural areas and ward level in the urban areas of the study area.
ii. Identified spatial locations of problems and potentials on the social map at union and ward level in the study area.
iii. Identified the locations of social infrastructures at union and ward level in the study area and located it on the social map.
iv. Identified the local raw materials or main production as well as its location in the study area.
v. Identified the Disaster prone area and coping mechanism of local people through traditional way in the study area.
vi. Identified the time trend of the problems and potentials in the study area.

3.8.11.1. Approach and Methodology to Achieve the Result

The expected result can fulfil through conducting Participatory Reflection and Action/Participatory Rural Appraisal (PRA) at each Union in the rural areas and at each ward level in the urban areas within the study area. The PRA method of problems Preference Ranking (identification and prioritization) can apply for identifying and prioritizing the problems and potentials. The Social mapping method can apply for spatial location of problems with potentials and location of

infrastructures or other resource areas. The project will be designed for 20 years. In this connection, time trend analysis method can apply for time trend analysis of problems and potentials.

In this regard, total 24-27 participants will be selected from different professions for each union and 15-18 participants will be selected from the different professions for each ward. The number of participant varies because the ward unit is smaller than union and problems of ward are almost kwon to all. At least one third of the target participants will be women. A whole day session may arrange for PRA exercise. PRA Expert will clearly explain about the role of participants in large group and what type of information he is expected from the participant?

At first all participants in a large group will identify the problems and prioritize 5 major problems according to the severity and suggest possible solutions. Then the large group will be divided in to 3 small groups. 3 Facilitators (one for each small group) will clearly explain again about their assignment and how they can perform their assignment. Facilitators will supply the necessary papers, documents and equipment before starting the work of small group.

One small group will work on preparation of social mapping. This group will identify all infrastructures and problems as well as potentials within the union/ward and locate those on the map. One small group will work on root cause and effect analysis. This group will identify all causes as well as effects of major 3-5 problems with diagram.

Another one will work on time trend analyses. The old persons will be helpful for time trend analysis. This group will identify the trend of positive or negative change of major 3-5 problems for future 20 years based on analyzing the past 20 years.

After completion of individual group exercise, all groups will sit together and present their individual group output in to the large group. Other individual group may provide input in case of missing anything or add or delete any logical points which will make PRA output resourceful.
PRA Expert will review the findings of Social map, Root cause & effect analysis as well as time trend analysis carefully. He will analyze and synthesis the collected data which will be helpful for getting direction and selecting options.
Expected result i and v will achieve through exercising the Preference Ranking i.e all problems with prioritization will identify. Expected result # ii-iv will achieve through exercising the Social mapping i,e all infrastructures with potentials will identify and locate those on the map. Expected result # vi will achieve through exercising trend analysis i,e the positive or negative changes of the problems with potentials for past and future will identify.

3.9 Approaches to Plan Preparation

The basic to plan preparing would be pro-people participatory planning implementable by all stakeholders. There are a number of ways to ensure participation of the stakeholders and people in this planning exercise (have been discussed at length in this methodology section). However, in summary, it can be said that four basic steps have been utilized. These are:

- Formulation of goals/objectives
- Critical studies through a participatory approach
- Preparing planning options through synthesizing the findings, and
- Preparation of plan and implementation strategies

3.9.1 Preparation of Planning Options

Preparation of planning options is necessary to choose the best options from among the formulated alternatives. Various alternatives can be discussed at the series of stakeholders meetings at grass root levels and can be identified the better alternatives. However, the alternatives should again be cross examined through our legal and policy regimes. By doing this ultimately we can get a better option which is legally adaptable, compatible with policies and acceptable to the people.

The following points are the basic steps which will be followed throughout this exercise and finally come to conclusions to prepare options. Discussion on the basic steps that would be required in preparing the plan package has been made. In the following section, steps of Detailed Plan preparation process have been presented below:

Step 1	Collection of Maps. Basic Statistics and Information
Step 2	Preparation and Compilation of Base Map and Demarcation of Project Area.
Step 3	Higher Level Frameworks: Concern to Government and Other Agency Level Policies and Decision.
Step 4	Communication Plan and First Consultation: Concern to Local Communities/Beneficiaries and Other Agencies/Interested Quarters (Stakeholders) including all basic surveys
Step 5	Formulate Planning Principles/Standards for the study area
Step 6	Second Consultation: Financial Viability, Social, Economic and Environmental Impact Assessment.
Step 7	Integrated Plans: Concern to Local Communities/Local Leaders/Other Beneficiaries and Investors.
Step 8	Third Consultations
Step 9	Priorities and Phasing: Public Sector Action Program.
Step 10	Development Control, Zoning and Land Management.
Step 11	Legal Supporting Documents.
Step 12	Reporting

3.9.2 Sub-Regional Plan

It would be necessary to prepare a plan at sub regional level. For this study, we translate sub-region as the District. Thus a District level plan would be prepared. Since, the studies will not be carried out at District level, we propose prepare a strategic plan at sub region level. Strategic plan means the direction and various policies to be carried out at sub- regional level, where an upazila functions. This functionality to be enhanced to increase more interactions both economically and socially. Sub-Regional Strategic Plan would be prepared for 20 years using secondary data. National policies, formulated and integrated different sectoral strategies at sub regional level, spatially interpreted sectoral strategies at sub regional level, formulated Conservation Plan at sub regional level and formulated Development Plan, for example.

The physical setting and social settings of an upazila must be linked with a greater context, at a sub-regional level, in order to prepare the contexts of planning. For example, roads, drainage shedings, economic interactions and social needs usually do not found confined within an upazila or a city level. These can be better manage in a larger framework, such as Districts or even Divisions. The ultimate aim of sub regional plan is to make upazila level plans more appropriate, contextual and interrelated.

The process of preparing sub regional plan is simple and straight forward. We can make visit to the District headquarters and can meet the key people to know and understand the strategic links.

Sub-regional plans usually encounters the following issues and problems.

a. Economic growth perspectives of the sub-region (such as agriculture growth, industries. services etc.)
b. Emerging new growth points within the sub-regions.

c. Sites of all kinds of major investment within the sub-region.
d. Population growth, migration, and settlements patterns.
e. Physical constraints and features.

The above issues and problems will be examined from secondary data and primary observations in sub-region to highlight economic profile, population distribution, characteristics and movement, man-made improvement (or damage) of nature, transportation and communication and overall socio-economic organization of this region. The discussion on the above issues and problems will lead to identify whether the region is homogenous in nature, its geographic entity and economic aspects. Thus a region comes into being that differs from other neighboring areas/region.

After identification of the sub-regional problems (through analysis of Location Quotient and Shift Share Method) planning measures will be undertaken. This should be mentioned here that this sub-regional plans under the current exercise will address issues and problems to resolve the major planning problems of the upazila under the sub-region (district) to functionally and ecologically improve the overall planning parameters.

3.9.3 Structure Plan

It develops broad strategies for managing and promoting efficient urban development over the medium to long term and takes into account the integration of economic, physical and environmental planning objectives. A structure plan provides a broad framework for development activities in an area. However, as the division in the jurisdiction and functionality of the Strategic and the Structure Plan are rather blurry and sometimes overlapping, the client and the consultant have agreed to work this through as the project gradually matures and resolve the conflict regarding this issue and merge the two in a single tier of Structure Plan.

However, considering the pressure of population on land and environment in Bangladesh, specially in the study areas, an ideal approach to Structure planning would be an appropriate zoning of all land in the study area into broad categories. Such categories may include agriculture, water bodies, forest resources and human settlements. At the second level, human settlements can be further studied and planed for detailed land use under urban and rural settlements. The aim of such broad zoning is to save agricultural land, along with forest and water bodies for sustainability of economy and environment. National land use policy is now being framed in this direction.

Implementation of policy, plans and programs are totally dependent on the ability of the organization on which the responsibility will be entrusted. Ability includes vision, legal coverage, and resources: human and logistics, and leadership. Therefore, the Structure Plan will include a comprehensive institutional and legislative restructuring section for restructuring of the Organization/Authority who will be the guardian of the plan. Structure Plan will be in a scale of RF 1:10000

3.9.4 Urban Area Plan

Urban Area Plan is prepared for managing and promoting development over medium terms following the broad guidelines set by the longer term Structure Plan. It shows the metropolitan structure of different sub-systems in space over the medium term and identifies broad programmes of direct action especially related to infrastructural development, institutional issues as well as broad financing strategies. The plan may also outline more specific area-wise development policies to guide development over the medium terms. One major objective of preparing Urban Area Plan is the consolidation of development activities by various agencies in areas that have strongest potential for growth in the medium term and can accommodate the anticipated volume of growth. Another purpose of preparing Urban Area Plan is to facilitate the development control function. It shows the broad landuse zones on a more detailed scale of maps as derived from Structure Plan. The plan provides details of landuse zoning and building controls, the development control function becomes easier to

implement with an Urban Area Plan. It also shows land reservations required for essential uses and major infrastructure development. Urban Area Plan will be in a scale of RF 1:3960

3.9.5 Rural Area Plan (RAP)

Rural Area Plan (RAP) provides a long-term strategy for 20 years and covers for the development of rural areas within the project area. Generally, RAP contains an explanatory report, resource maps, conservation and management report, planning rules, rural area plan and a multi-sectoral investment program and so on. The intention has been to concentrate on the physical planning aspects of rural areas in one hand and socio-economic growth and spatial development on the other. The rural area plan aims at primarily zoning rural land use. After synthesizing all maps and data gathered under the present study, rural areas will be categorized under four broad land use categories (or zones). These are land under water bodies and forests. These two categories will be considered as conservation zone. The third category will be agriculture areas. Agriculture areas will be identified and mapped and put forward as a zone of no change of land occupation. Agriculture land will remain as agriculture. The fourth category of land will be human settlements. All development dynamics will rotate within this zone. The zone will be planned in detailed for human habitation, industry development and service sector activity. Urban Area Plan will be in a scale of RF 1:3960

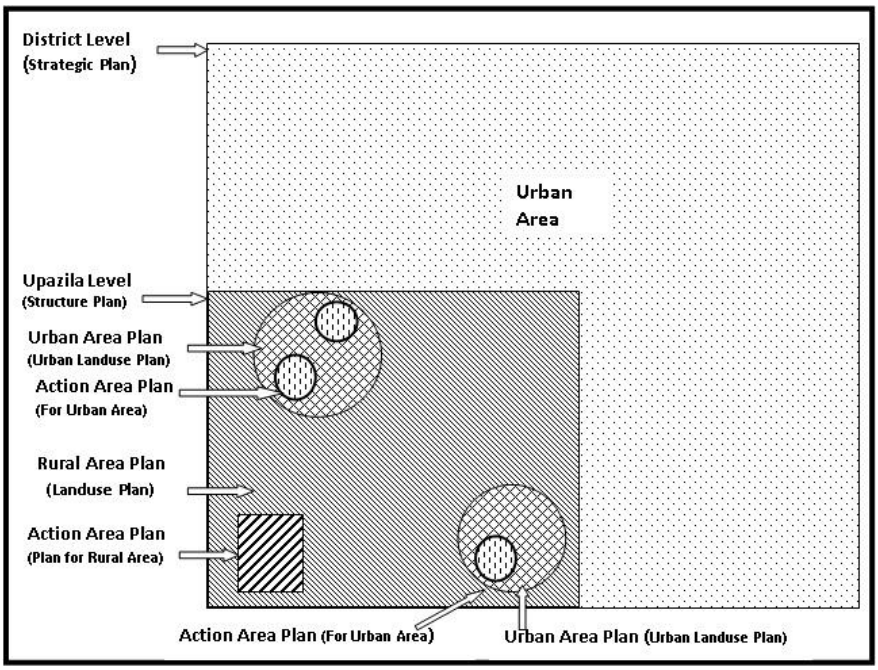


Figure 3.8: Schematic Diagram of Planning Levels

Table 3.7 Goals and Characteristics of Plans at Different Levels

Levels	Type of Plan	Characteristics
District Level	Strategic Plan	Directions and Spatial Policies
Sub District/ Upazila Level	Structure Plan	Spatial Structure of *Upazila* and Sectoral Policies for the *Upazila*
Urban and Rural Area Hierarchical Level	Urban Area Plan/ Rural Area Plans	Generalized landuse plan, infrastructural plan, and inter areas connectivity both physical and economic as well as social / environmental.
Micro Area Level	Action Planning	Detailed implementable action plans for micro areas (ecological units)

3.9.6 Action Area Plan

The Action Plan is a separate document covering the first five-year period of the structure plan. It examines, in the context of the structure plan, those items that might be implemented in this period and thus contains more detail on a more limited range of subjects than the structure plan. It tries to provide the Upazila with guidance in deciding between priorities.

The Action Area Plan (AAP) guides land use and infrastructure within the area potential for immediate intervention based on public demand and necessity. It is prepared on 5 years interval. The preparation of Action Area Plan (AAP) will be formulated through participatory approach involving the local people. It will contains problem analysis using participatory approach, stakeholder analysis, Potential analysis (Basic and derived potentials), identification of possible projects, Priority ranking of projects, Strategy formulation for prioritized projects. Action Area Plan will provide prioritized projects consisting location of project, goal & objectives, activities, tasks, actors, resources, cost and assumptions/constraints.

The action plan consists of three parts, a summary of resources available, project selection and project evaluation. The analysis of available resources looks at the past availability of funds, in so far as this is possible for such a recent institution as an Upazila and attempts to assess funds likely to be available for the Upazila itself for development in the action plan period. Project selection summarizes existing guidelines as they affect five-year plans and lists the criteria used in selection before identifying priorities in each sector and proposing projects to address these priorities. Urban Area Plan will be in a scale of RF 1:3960.

The relationship between Structure Plan (SP), Urban Area Plan (UAP), Detailed Area Plan (DAP) and their major characteristics are depicted in Figure 3.2.

3.9.7 Formulation of Bankable Project & Schemes

Mere plan preparation is not the objective of the project rather it envisages exploring and suggesting implementation strategy for the plan. One of the steps in this regard is selection and identification of Bankable Projects and Schemes. The Bankable Projects and Schemes will identified and priorities

through PRA session. A good number of projects are implemented with external assistance in the form of aid, loan, technical assistance and supplier's credit. The private sector is also being encouraged to invest in the energy and infrastructure development projects. In this situation it is necessary that the projects that will form the major part of the plan implementation process should be developed to an extent, which will help the client to approach the prospective financiers. To develop the inventory of Bankable Projects a list of the projects that are essential to implement the plan will be prepared in the following format.

- Name of the Project,
- Background of the Project,
- Objective of the Project,
- Justification of the Project
- Description of the Project
- Implementing Authority,
- Feasibility Report,
- Project Cost with detail breakup,
- Source of Finance,
- Land Requirement,
- Impact Assessment,
- Implementation Phase,
- Area of Influence of the Project, and
- Projects relation with higher level frame work

Comment [A6]: This point newly added according to comments of UDD

3.9.8 Public Hearing

Public hearing is an important part of the planning process. A public hearing may be a formal meeting for receiving testimony from the public at large on a local issue, or proposed government action. Testimony from both sides of an issue is usually recorded for public record, and a report summarizing the key points is generated. After completion the draft plan an initiative will be taken to display for about a month the plan and reports at upazila level for receiving comments and criticisms (if any) or any complain may be forward to the planning authority to review and corrections.

There are a number of reasons why you may want to hold a public hearing. The main reasons are described below:

- To open discussions about the issue and your advocacy campaign.
- To communicate and clarify needs.
- To communicate a sense of community concern about an issue.
- To increase community awareness about the issue
- To attract media attention
- To bring more of the public over to your way of thinking
- To recruit new members
- To show your side of controversial issues
- To re-open public dialogue on issues that have fallen out of the public mind
- To counter your opponents' arguments against your group or initiative
- To find a solution to a community problem or issue
- To gather information

Comment [A7]: This point newly added according to comments of UDD

3.9.9 Gazette Notification

Implementation of the master plan is an extremely difficult task. There are many elements of the plan implementation process that can not be quantified which restrict determination of an overall status of either individual sector or overall level of implementation of the plan proposals. After finalize the Master Plan it will go for gazette notification to the related ministries and thus the plan will be a legal binding for local level institution to implement the plan.

Comment [A8]: This point newly added according to comments of UDD

3.9.10 Institutional Capacity Building for Implementation

To carry out the project activities and after plan preparation to implement the proposed plans by different authorities there is an ample need for reviewing institutional arrangement and their capacity of the concerned agencies. It will be needed for efficient planning and Implementation of development activities by various public and private organizations. The current approach towards development is overwhelmingly sectoral biased and as such activity is carried out by different sectoral agencies under different controlling ministries. This leaves very little or no room at all for spatial or temporal coordination at local level and creates much of the present confusion, inefficiency and inactivity. The ToR require to review the existing division of responsibilities for guiding and controlling development and make recommendations on any procedural changes and steps needed to bring about such changes to ensure greater coordination of the activities of the various agencies involved.

A variety of activities will be undertaken to accomplish the stated objectives. Key activities to be undertaken in the present task will include:

- Review of existing legal instruments;
- Identify the existing short-comings towards ensuring inter-agency coordination;
- Interview of key persons of all the major development agencies
- Seek the opinion of the key persons of the development agencies regarding an acceptable arrangement for sustainable coordination;
- Examine of the needs for legislative and administrative changes that are required to be carried out to implement the agreed mechanism; and
- Recommendation for all necessary changes in organizational set-up, administrative mechanism, and legal provisions

3.9.11 Training Needs Assessment

With regards to the training requirement of the project, we have to come up with a number of critical parameters for designing a comprehensive training guide line. We have to logically assume some of the complementary and substantive key parameters for the guide line.

SCPL and Arc Bangladesh ltd. standard training methodology will be depicted with the following diagram:

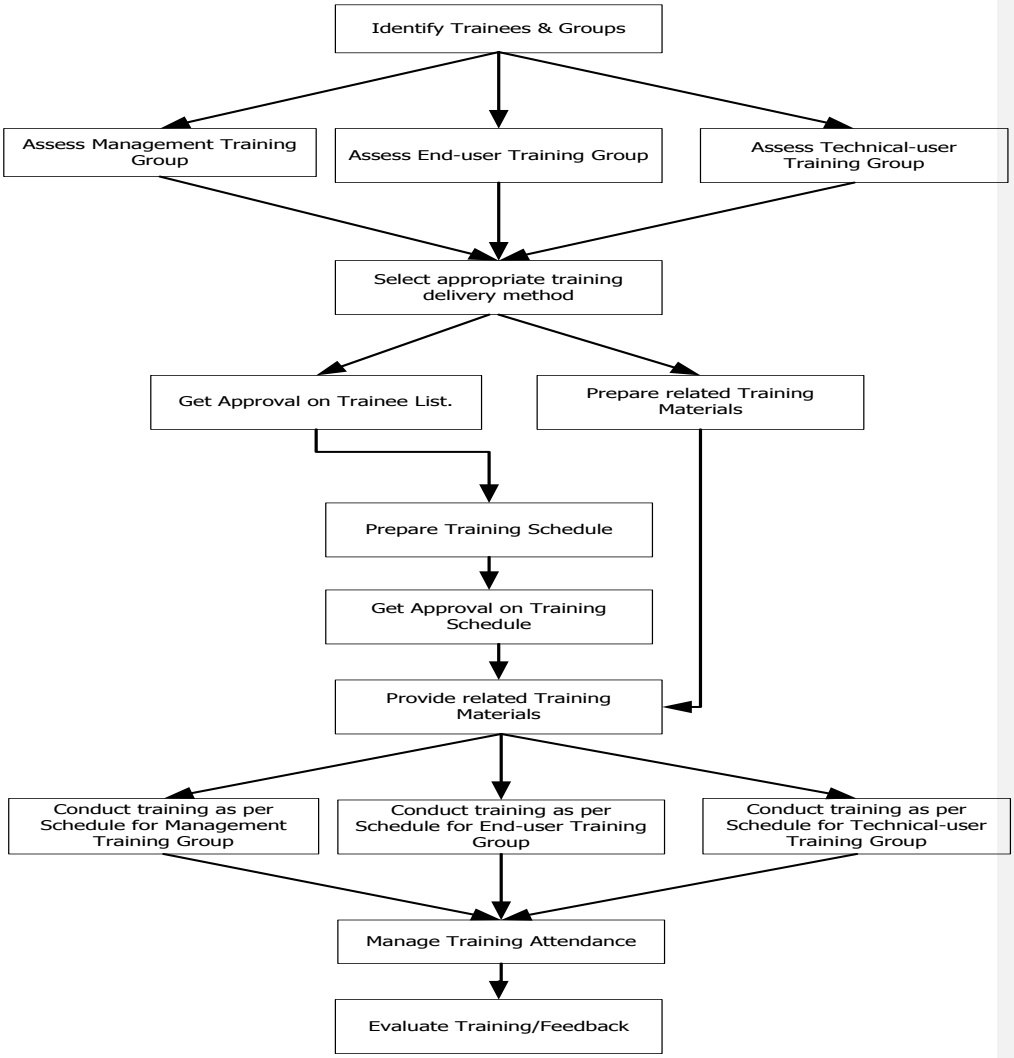
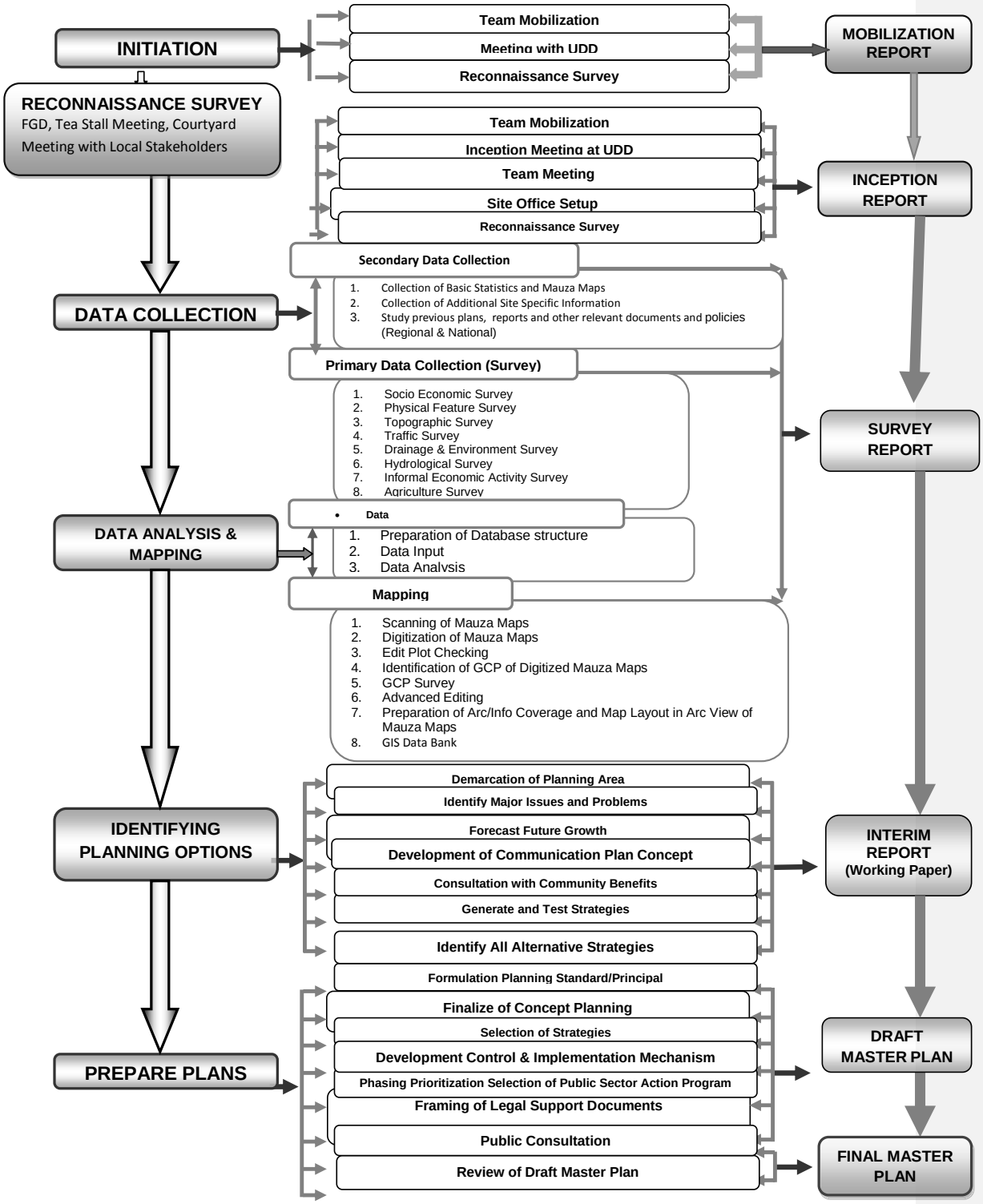


Figure 3.9: Training Methodology

All the activities described in following methodology flow Diagrams

Figure 3.10: Methodology Flow Diagrams



CHAPTER FOUR: OUTPUT AND DELIVERABLES

Reports and maps are the ultimate output of any kind of planning activity, consultants' submission requirements of reports, maps and ancillary materials have been specified in the ToR. The reports and maps have to be submitted in both hard and soft version. On the other hand some ancillary materials like Bench Mark Pillars and Borehole have to be erected in suitable locations of the project area.

4.1. Data Precession

4.1.1 Data Precession of Digitization of Mauza Maps

In Data Precession of Digitization of Mauza Maps with ARC/INFO version 3.5 NT/Arc GIS/Arc View the accuracy level will be considered ±0.002 inches as per ToR.

4.2 Map

4.2.1 Map Layout

The following format will be followed for preparation of all kinds of map:

Sl. No.	Description of Map	Scale
1	Mauza Map	Original Mauza Scale
2	Original collected Mauza maps	Original Mauza Scale
3	Study Area Map (for field survey)	1" = 330' or 1:3960
4	Field Survey (Original survey marking)	1" = 330' or 1:3960
5	Physical Feature Survey Map	1" = 330' or 1:3960
6	Land use Survey Map	1" = 330' or 1:3960
7	Topographic Survey Map	1" = 330' or 1:3960
8	Road network Map	1" = 330' or 1:3960
9	Utility Services Map	1" = 330' or 1:3960
9a	Khal/ Drainage/sewerage	1" = 330' or 1:3960
9b	Gas/Electricity/Water Supply	1" = 330' or 1:3960
10	Base Map (for plan preparation)	1" = 330' or 1:3960
11	Structure Plan	1: 10,000
12	Urban Area Plan	1" = 330' or 1:3960
13	Landuse Plan	1" = 330' or 1:3960
14	Drainage & Environmental Management Plan	1" = 330' or 1:3960
15	Risk Map	1" = 330' or 1:3960
16	Population Density Map	1" = 330' or 1:3960
17	Transportation & Traffic Management Plan	1" = 330' or 1:3960
18	Utility Services Network Plan	1" = 330' or 1:3960
18a	Sewerage/ Drainage network Plan	1" = 330' or 1:3960
18b	Gas/Electricity Plan	1" = 330' or 1:3960
18c	Water Supply Plan	1" = 330' or 1:3960
19	Detailed Area Plan	1" = 330' or 1:3960
19a	Road network Plan	1" = 330' or 1:3960
19b	Sewerage/ Drainage network Plan	1" = 330' or 1:3960
19c	Gas/Electricity Plan	1" = 330' or 1:3960
19d	Water Supply Plan	1" = 330' or 1:3960
19e	Landuse Plan	1" = 330' or 1:3960

4.2.2 Thematic Maps

- Water supply: source, distribution line & installations.
- Drainage & flood protection: storm water, rainwater, in-let, out-let.
- Electricity: source, distribution line & installations (primary, secondary, and tertiary).
- Gas: source, distribution lines & installations (primary, secondary, and tertiary).
- Sanitation: source, distribution lines & installations (primary, secondary, and tertiary).
- Household, industrial, clinical wastes collection, dumping, and treatment & sludge disposal.
- Accessibility: circulation, passenger & goods movement (motorized & non-motorized), walkways, station stoppage, waiting & parking facilities.
- Heritage, open space conservation & maintenance
- Land level: Buildable land, landfill (frame2' and 3' interval).
- Recreation (open, close)
- Housing (High, medium, low income)
- Employment (industry, commerce, informal employment)
- Special area (KPI, military, flood prone, earth quake prone, hazardous industry)
- Social infrastructure (education, health care, community use, religious, bank, post office, police, fire brigade, assembly place)
- Land ownership (private, khas, Govt. acquisition for various agencies, vested)
- Commitment area (Govt. private for development work)

4.3 Map Legend

Map legend will incorporate all categories of features (point, line, and polygon) in map layout to give a clear view. The legend item may increase or decrease as per requirement based on physical survey with prior approval from UDD. The palette name/number (both pen and marker) and size need to be finalized with respect to scale of the map at the inception of the project. The final map legend proposed by the consultant is enclosed herewith in Figure 4. 2.

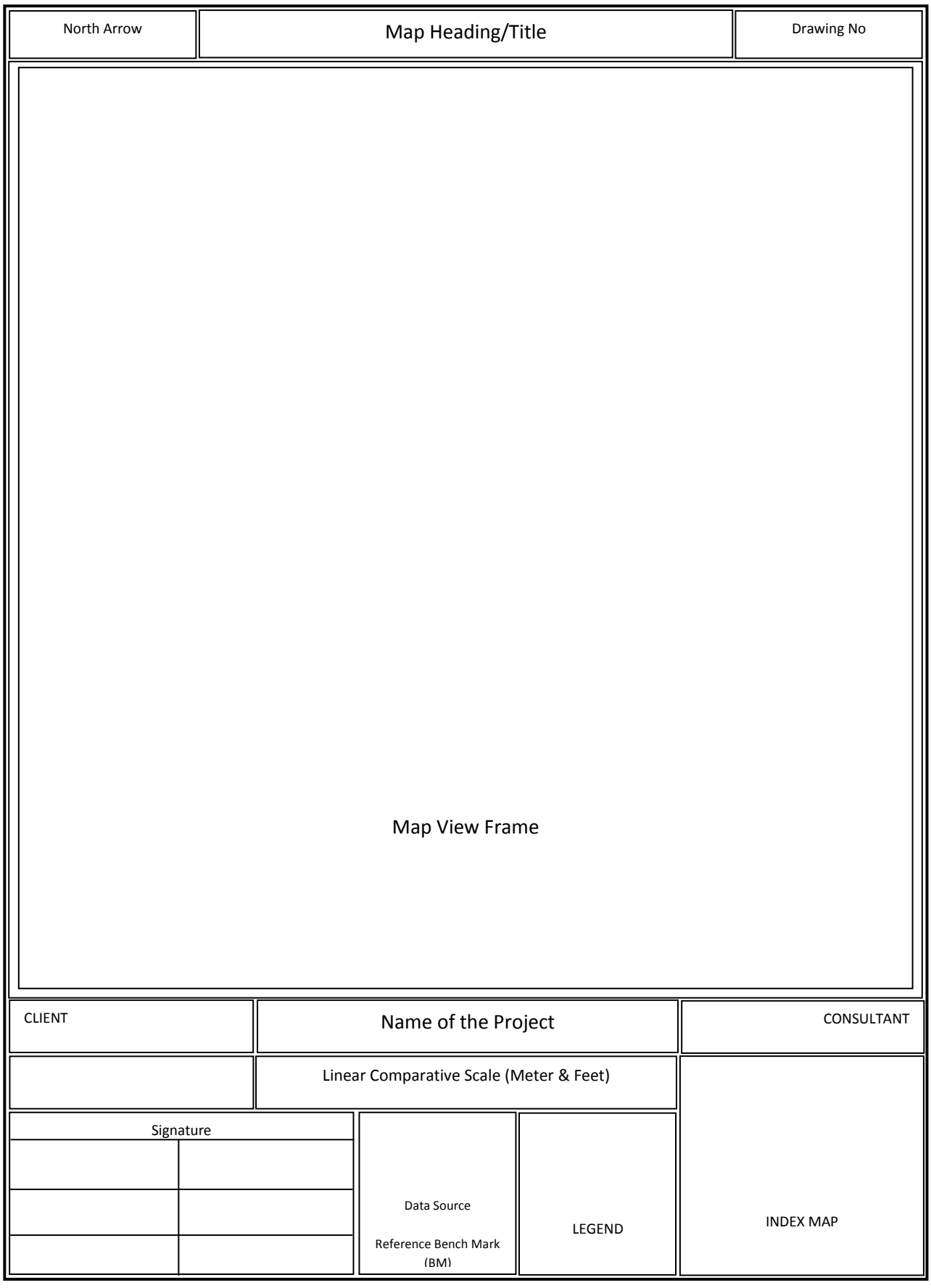


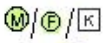
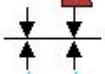
Figure 4.1.: Map Layout

Map Legend

Category	Symbol	Color and Size
Adminstrative/Revenue/ Project Boundaries		
International Boundaries		True Black, Size 6.0, (Size 4.50 , Color Sector R-255, G-190, B-232)
Divisional Boundaries		True Black, Size 1.65, (Size 4.25 , Color Sector R-255, G-190, B-232)
District Boundaries		True Black, Size 1.50, (Size 4.25 , Color Sector R-255, G-190, B-232)
Upazila Boundaries		True Black, Size 1.30, (Size 4.25 , Color Sector R-255, G-190, B-232)
Union Boundaries		True Black, Size 1.20, (Size 4.25 , Color Sector R-255, G-190, B-232)
Mauza Boundaries		True Black, Size 1.00, (Size 4.25 , Color Sector R-255, G-190, B-232)
City Corporation Boundaries		Blue, Size 6.00, (Size 4.25 , Color Sector R-255, G-190, B-232)
Paurashava Boundaries		True Black, Size 1.20, (Size 4.25 , Color Sector R-255, G-190, B-232)
Ward Boundaries		Blue, Size 1.30, (Size 4.25 , Color Sector R-255, G-190, B-232)
Mauza Sheet Boundaries		Blue , Size 1.20, (Size 4.25 , Color Sector R-255, G-190, B-232)
CS/RS/SA/BS Plot Boundaries		True Black, 1.00
Transport Networks		
National Highway		Red, True Black, Size 4.25, (Size 4.25 , Color Sector R-255, G-55, B-55)
Regional Highway		Red, True Black, Size 3.85, (Size 4.25 , Color Sector R-255, G-55, B-55)
Zila Road		Red, True Black, Size 3.85, (Size 3.70 , Color Sector R-255, G-55, B-55)
Pucca Road		Blue, Size 2.4, (Color Sector R-0, G-112, B-255)
Semi Pucca Road		Size 1.15, (Color Sector R-197, G-0, B-255)
Kutcha Road		Size 1.00, (Color Sector R-185, G-0, B-255)
Footpath		Size 2.60, (Color Sector R-115, G-223, B-255) (Color Sector R-223, G-115, B-255)
Road Island		Size 2.60 (R-255, G-255, B-115) (R-223, G-115, B-255)
Railway Line (Broad Gauge)		True Black
Railway Line (Meter Gauge)		True Black
Utility and Services		(R-0, G-255, B-0)
Power Station/Sub-Station		(R-255, G-0, B-0)
Pumphouse		(R-255, G-0, B-0)
Irrigation Wells (Deep & Shallow)	D / S	True Black, 15, (R-255, G-127, B-127)(R-255, G-127, B-127)
Refuelling Station (Gas/Petrol Pump)		Size - 15,(R-0, G-255, B-0)
Tower (Radio/TV/Tele-com/Mobile)		True Black, 16
Telephone Exchange		Size - 15,(R-205, G-46, B-49)
Water Treatment Plant	W	True Black, 15, (R-255, G-127, B-127)
Overhead Tank	T	True Black, 15, (R-255, G-0, B-0)
National Grid Pole		True Black, 15, (R-56, G-168, B-0)
Electricity Pole		True Black, 25
Telephone Pole		True Black, 25
Primary School	P	True Black, 15, (R-209, G-255, B-115)

Figure 4.2: Legend use to Demonstrate the Feature in the Map

Map Legend

Category	Symbol	Color and Size
Utility and Services		
High School		True Black, 15, (R-209, G-255, B-115)
College		True Black, 15, (R-209, G-255, B-115)
University		True Black, 15, (R-209, G-255, B-115)
Madrasa/Fazil/ Kamil		True Black, 15, (R-209, G-255, B-115)
Mosque		True Black, 15, (R-255, G-255, B-115)
Temple		True Black, 15
Church		True Black, 15
Police Station		True Black, 18, (R-255, G-0, B-0)
Fire Fighting Station		True Black, 18, (R-255, G-0, B-0)
Post Office		True Black, 15, (R-255, G-0, B-197)
Bank		True Black, 15, (R-255, G-239, B-164)
Hotel		True Black, 14
Restaurant		True Black, 20
Airport		True Black, 18
Launch Terminal		True Black, 20
Ferry Ghat		True Black, 20
River Port		True Black, 20
Railway Station		True Black, 18, (R-115, G-0, B-0)
Bus Terminal		True Black, 25
Bus Stop		True Black, 25
National Power Grid		True Black, 1
Electricity Line		True Black, 1, (R-223, G-115, B-255)
Telephone Line		True Black, 14
Drainage Line		True Black, 12
Water Supply		Size 12, (R- 0, G-197, B-255)
Gas Pipe Line		Size 12, (R- 245, G-202, B-122)
Structures		
Pucca		True Black, 1, (R-197, G-0, B-255)
Semi Pucca		True Black, 1, (R-255, G-115, B-223)
Kutcha		True Black, 1, (R-115, G-178, B-115)
Tin shed		True Black, 1, (R-255, G-211, B-127)
Geo-technical Features		
Fault Line		True Black, 14
Physical Infrastructures		
Flood Embbankment		True Black, 3, (R-255, G-255, B-0)(R-255, G-167, B-127)

Map Legend

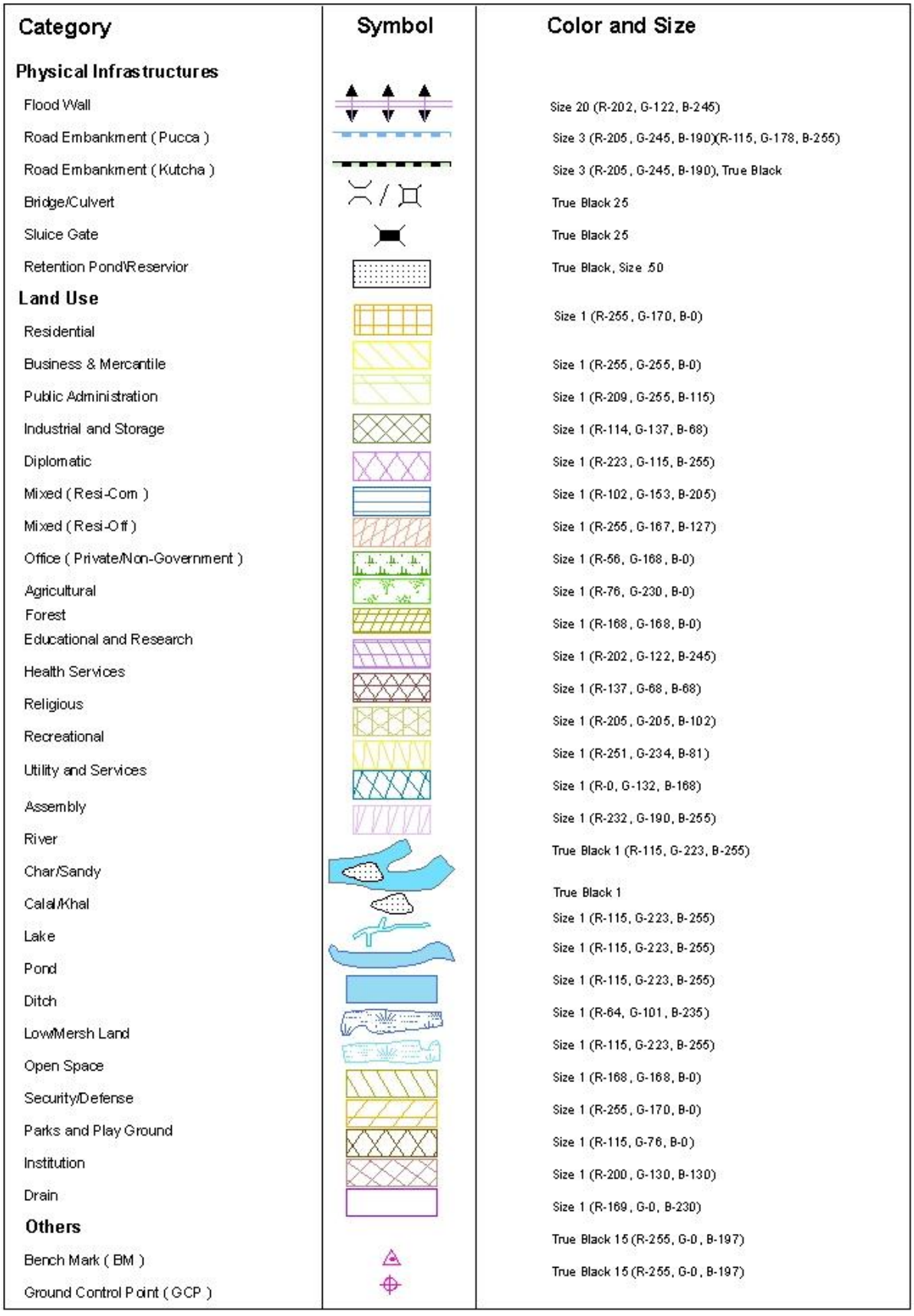


Figure 4.2: Legend use to Demonstrate the Feature in the Map

4.4 Check List for Survey and Studies

In the study different survey techniques have been used such as: Topography and Physical feature survey, Landuse survey, Socio-economic survey, etc. Details about different survey and studies have been attached here with the help of following tables:

Table 4.1: Demarcation of the Study Area

No	Name of Activities	Description
1	Collection RS/CS Mauza Maps	RS / CS mauza sheets/maps will be collected for the entire Planning/study area. The mauza sheets having distortion due to rapping or pasting cloths/tape on the mauza maps will be avoided during the collection. These maps will be collected from the local Upazilas/ Paurashava office and DLRS office.
2	Scanning of Mauza Maps	To minimize the distortion and deviations scanning of mauza maps will be carried out using drum scanner. Extra care will be taken for maintaining the proper rotation and alignment of mauza sheets during scanning
3	Identification of GCP (T.C) on Digitized Maps	At least 4 Ground Control Points (GCP)/Geo-spatial Reference Points (TICs) will be selected on each mauza identical with the real field condition. For accuracy and quality work, maximum efforts will be given to identify as many as GCP for each mauza sheets.
4	Edge Matching and Preparation of study area map	Edge matching will be with the map of GPS reading. The four TIC points on each sheet will enable the work of edge matching with perfection. Layout of study area map will be done as per ToR using based Arc/info 3.5/ NT/ Arc GIS software. All the features of mauza maps including plot, mauza and boundary of the project area will be identified and shown in the base map in separate layer.
5	Digitization of RS/CS Mauza Maps	Screen digitization method will be used for digitization of mauza maps. GIS based Arc/Info software will be used for this purpose. Feature wise manuscripts will be developed for digitizing the mauza maps and all features will be stored as layer coverage with a separate ID or code number of respective features in the GIS database.
6	Edit Plot Check of Digitized Coverage	After digitization of mauza maps, edit plots will be produced containing all the features and boundaries in different colors. The digitized mauza maps will be checked and verified by superimposing on the original mauza maps using the light table. All possible errors will be solved with this edit plot check and final digital mauza maps will be prepared.
7	Geo-referencing of Mauza Maps	Geo-referencing of mauza sheets will be done using GCP points (Northing, Easting) and GIS based software Arc/Info 3.5/ Arc/view and ArcGIS. After geo-referencing of all the mauza sheets of the project area, the mosaic mauza maps will be found having all the mauza features (point, line, and polygon) with GCP points in different layers.

4.5 Reports

There are different types of report will be submitted during project period. Reports will be presented and illustrated in a clear and concise professional manner, including maps, plans, diagrams and other graphics. All types of report are described in table 4.3

Table 4.2: Category of Reports

Report	Language	Copy	Period of Submission	Binding Status
Mobilization Report	English	20	Within 15 days of Signing contract	Spiral Binding
Inception Report	English	20	End of 1st month	Spiral Binding
Progress Report	English	02	Every three month	
Draft Survey Report	English	20	End of 9th month	Spiral Binding
Final Survey Report	English	20	End of 10th Month	Spiral Binding
Draft Final Report	English	20	End of 18th Month	Spiral Binding
Final Report	English & Bengali	20	End of 21th month	Hard Binding

4.6 Plans

There are different types of plan will be submitted to the UDD. The following plans will be submitted to UDD.

- Sub-regional Plan
- Structure Plan
- Urban Area Plan
- Landuse Plan
- Rural Area Plan
- Action Area Plan
- Drainage & Environmental Management Plan
- Transportation & Traffic Management Plan
- Utility Services Network Plan
- Sewerage/ Drainage network Plan
- Road network Plan

Table 4.3: Establishment of Bench Mark (BM)

No	Name of Activities	Description
1	Selection of Reference BM	Selection of reference BM is essential for establishment of BM network for the project area. Reference BM provides geo-reference (x, y) and elevation (z) with respect to a datum. For geo-referencing available SoB BMs in the project area and its periphery will be used as reference.
2	Planning proposed BM	Planning the proposed BM/Control points network and selection of tentative locations for those BM/Control Points
3	Constructions and Installation of BM Pillars	The BM pillars will be constructed and installed before the survey work start. As mentioned in the ToR, covering the project area including approximately 1BM pillar per 5 sq.km. grid in urban area and 1BM pillar per 20 sq.km grid rural area (pillar 10"X10", Base 3' X 3', height 5"). RCC pillars are to be constructed marking unique identification number Coordinate X, Y of these pillars along with Z value is to be marked on base map for future reference. The BM pillars will be constructed and installed before the survey work start. The construction design and specification BM pillars will be obtained from the UDD. The BMs will be established with uniformly distributed grid covering the total project area. • Construction and Installation of BM pillars. • Establishment of Co-ordinate of BM Pillars (x, y, z i.e. Northing, Easting & RL in mMSL). • BM ID and location description of the BM

No	Name of Activities	Description
4	Establishment of Co-ordinates (x, y, z) of BM Pillars/Ground Control Points	Establishment of co-ordinate (northing, easting, and elevation in m PWD) of BM Pillars needs extensive GPS survey, data processing, and development of Local Geoids Model. The total work will be followed by selection of reference BM (x, y, z) and RTK-GPS Static Method.

Table 4.4: Sectoral Studies and Survey

No	Name of Activities	Description
1	Household Survey	▪ Family Size ▪ Age and Sex Structure ▪ Religious Groups ▪ Educational Status of Household Members ▪ Households' Income and Expenditure Levels ▪ Migration ▪ Status of Residence ▪ Occupational Pattern
2	Slum Survey	▪ Age and Sex Structure ▪ Educational status of slum population. ▪ Occupational Status of Slum Population. ▪ Monthly Income of Slum Household ▪ Reasons behind Migration ▪ NGOs working in the Slum Area ▪ Facilities Provided by NGOs
3	Urban and Rural Economic Activity Survey	▪ Findings of Study of Informal Sector Economy ▪ Informal Activities ▪ Initial Capital ▪ Sources of Loan ▪ Rate of Interest ▪ Monthly Income ▪ Monthly Expenditure
4	Transportation and traffic volume survey	▪ Water way ▪ Travel demand forecasting ▪ Number of ghats and their conditions ▪ Road Traffic Survey and Traffic Volume Survey ▪ O-D Survey ▪ Pedestrian facilities ▪ Travel demand forecasting ▪ Identification of traffic accident points and their causes ▪ Right of way
5	Drainage and Environmental Survey	▪ Existing conditions ▪ Drainage Network ▪ Existing policies ▪ Environmental Survey ▪ Hazard identification and mapping ▪ Vulnerability analysis and assessment ▪ Risk Analysis
6	Formal and Informal Industrial Survey	▪ Location of Industry ▪ Type and Size of Industry ▪ details of labor statistics with the housing conditions ▪ quality of life of labor

4.7 Processed Data

While different types of surveys will be conducting a bulk amount of raw data of physical features survey, topographic survey, Landuse survey, socio-economic survey and traffic and transportation survey will be produced and for all surveys GIS based layers will be prepared. For each type of survey this raw data will be processed separately. After processing all types of survey data will be submitted into CDs to UDD.

4.8 Leaflet/Awareness Development

A leaflet has been designed, printed and distributed in order to create mass awareness to the people on plan preparation and its important, necessity and the overview of project area. A leaflet has been attached in Appendix-IX.

4.9 Workshop and Meeting

Two workshops in Shibpur, Raipura and Ishwarganj upazila will have been conducted. One workshop will have been conducted in each upazila during 2nd week of June, 2015. And another workshop will have been conducted after the submission of draft plan. Several types of meeting will be held at union and upazila level. Already twelve numbers of consultation meeting conducted at union and upazila level. The Consultants and implementing organization will organize consultation meetings and workshop with the Upazila and Union level to ensure the participation of stakeholders from all walks of life.

- Consultation Meetings with Stakeholders: Arranging Upazila and Union level meeting and Workshop to disseminate knowledge and initiate the process for Development Plan of project implementation.
- First Consultation: Explanation, discussion and consultation with Upazila and Union leaders/representatives/communities to involve and participate in the process of plan preparation.
- Stakeholder Participation in Planning: Consultation with Local residents at ward level will be conducted to design the Action Area Plan.
- Second Consultation: Analysis of outputs of First consultation meeting and Adoption of Development Strategies, Plan Proposals, Approaches, and Standards appropriate for the Upazilas.
- Preparation of proposal for better land use development control and zoning of development activity as per practical analysis and desire of the Upazilas and following the policies/guidelines proposed in the Structure Plan of the concerned Upazila.
- Submission of Draft Plan Report along with Maps and Figures (Hard and Soft Copy) Detail Description and Design of Development Plans and Planning Proposals with Alternative Development Options and Plan Proposals.
- Incorporation of comments collected from formal public hearing and submission of final plan as specified in ToR.

CHAPTER FIVE: PROGRESS OF WORK DURING INCEPTION PERIOD

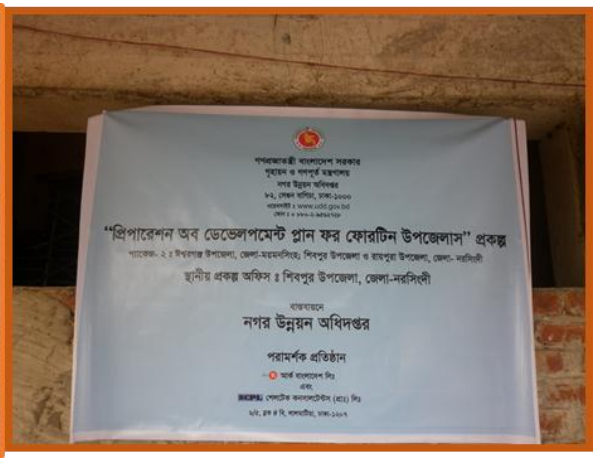
5.1 Introduction

The Development Plan project is commenced on 05th January, 2015. From commencement of the work to the end of the Inception period, the core team members of the project have completed several tasks as identified and designed by the consultants to carry out the preparation of Development Plan project. The progress of the project activities of Shibpur, Raipura and Ishwarganj Upazila during inception period has been presented in the following sections.

5.2 Office Establishment

In the field visit of inception period the consulting firm established two site offices in Ishwarganj upazila at Village: Char Hossenpur (Near Kazi Office), Upazila: Ishwarganj under Mymensingh district and Shibpur upazila at Khan Tower(Premier Bank), Shibpur Bazar under Narsingdi district for completion of field activities

Photograph 5.1: Site Office at Ishwarganj Upazila



Photograph 5.2: Site Office at Shibpur Upazila

5.3 Collection of Satellite Images

The GeoEye-1 Satellite image in 0.5-meter panchromatic and 1.0 -meter multi spectral four-band images in stereo pairs will be procured. The 0.5-meter pan and 1.0 meter multi spectral imagery will also be fused to yield 0.5-meter color imagery (pan-sharpened). In appendix X, the work order is attached for image collection.

5.4 Collection of Mauza Maps

The CS/RS Mauza maps are the basis of the base map for the project area. The project area will be delineated on Mauza sheets. Mauza maps have been collected from the Assistant Commissioner's Land of Shibpur, Raipura and Ishwarganj upazila and DLRS covering the entire project area. The collection status of mauza maps shown in Table 5.1

Table 5.1: Collection status of Mauza maps

Sl No	Upazila Name	Total Mouza		Collection Status		Remaining	
		Mouza	Sheet	Mouza	Sheet	Mouza	Sheet
1	Ishwarganj	303	361	170	212	133	149
2	Raipura	126	268	46	57	80	211
3	Shibpur	121	172	99	137	22	35
Total		***550***	***801***	***315***	***406***	***235***	***395***

5.5. Workshops

Two workshops in Shibpur, Raipura and Ishwarganj upazila will have been conducted. One workshop will have been conducted in each upazila during 2nd week of June, 2015. And another workshop will have been conducted after the submission of draft plan. Several types of meeting will be held at union and upazila level. Already twelve numbers of consultation meeting conducted at union and upazila level. The Consultants and implementing organization will organize consultation meetings and workshop with the Upazila and Union level to ensure the participation of stakeholders from all walks of life

5.6 Reconnaissance Survey

Urban Development Directorate (UDD) under Ministry of Housing and Public Works has taken an initiative to prepare a development plan for 20 years of 14 Upazilas through participatory method. Participatory methods have gained momentum in recent years as field practices and development experts have sought more effective ways to involve local people in decision-making. Participation is the process through which stakeholder's influence and share control over priority setting, policy-making, resource allocation and access to public. Considering the above, the concerned planning team has conducted many Community meetings (Focus Group Discussion-FGD, Tea Stall and Courtyard meeting) and met with key persons as reconnaissance survey at the project areas (Ishwarganj, Raipura and Shibpur Upazila) for creating future working environment with local people as well as institutions.

Objective of Meetings:

- To aware the local people about the project activities.
- To understand the local people's views through collecting their opinions.
- To seek assistance to the local people for upcoming PRA session.

Conduction of Meetings: Total 3 FGDs (not ideal in all cases), 1 Tea stall and 1 Courtyard meetings have been conducted at Ishwarganj Upazila under Mymensingh District during 24-25 February 2015. Total 3 FGDs, (not ideal in all cases) 1 Tea Stall and 1 Courtyard meetings have been conducted at Shibpur Upazila under Narsingdi District on 26 February 2015. 1 Tea Stall meeting has been conducted at Raipura on 27 February 2015 and 2 FGDs (not ideal) and 1 Courtyard meeting has been conducted at Raipura Upazila under Narsingdi District on 27 February 2015.

5.6.1. Focus Group Discussion (FGD)

5.6.1.1 FGD at Ishwarganj:

Place: Upazila Auditorium, Ishwarganj Date: 24 February 2015

Participants:

Total Participants	Male	Female	Occupation
22	21	01	UP chairman-:06, Service-:06, Journalist-:04, Farmer-:03, Businessman-:03

Summary of Discussion: Mr. Uday Sankar Das, Project Manager, Package # 02, Preparation of Development Plan for Fourteen Upazilas has started the meeting through greetings to all participants on behalf of project authority. Then every participant has introduced him/herself in the meeting. Project Manager has informed to the house that the preparation of development plan for fourteen Upazilas is a government funded project which will be implemented by Urban Development Directorate under the Ministry of Housing and Public Works. The main objective of the project is to prepare a master plan for the duration of 20 years of entire upazila which will improve the lifestyle of all peoples under Upazila and surroundings areas.

Photographs 5.3: FGD with local people at Ishwarganj

Mr. Shaheen Ahamed, Project Director, Preparation of Development Plan for Fourteen Upazilas, has highlighted the project background, objectives, preparation period, time span for planning, area under planning, implementation strategy and funding source of Project.

Mr. Azibar Rahman, Socio Economic Expert has explained the people participation approach in project planning and informed the house that it is a bottom up planning approach project where a huge scope to participation of local people in planning stage. In future, a Participatory Reflection and Action/Participatory Rural Appraisal (PRA) session will be arranged at each union in the rural areas and at each ward in the urban areas for accumulating problems and findings possible solutions from the local people.

After that Mr. Mostaque Ahamed, Chairman, Arc Bangladesh Limited has informed the house that different types of survey will be conducted in the project area. GIS technology will also be used for survey. Many experts like Socio Economic, Survey Expert, Photogrammetric Expert, GIS Expert, Agricultural Scientist, Economist, Transport Planning Expert and Urban Planner etc. will involve in preparing master plan. All of these said experts will work under one Team leader who is the Professor of Geography Department under Dhaka University.

Open Discussion: Project Director has asked to the participants whether they have any question or not. The summaries of open discussions are furnished below;

Question/request: One participant has raised question that who will provide fund for implements the plan? One participant has requested to make provision in the plan for at least one kilometre (from UP office to away) road side tree plantation on all union parishad office connecting road. One participant has informed that the gas supply line is existence up to the border of neighbour upazila which is only 3 km far from Ishwarganj Upazila Head Quarter and requested to extend it up to Ishwarganj Upazila Head Quarter.
One participant has informed that the peoples are severely suffering from drinking water during dry season. Hand tube well does not work during dry season due to underground water table goes

to down. For this reason, he has requested to include the water supply provision for Ishwarganj upazila in the plan.

Reply by Project Director:

Project Director has informed the house that UDD will prepare the master plan and will make legal entity as well as control mechanism for implementing the plan which will be monitored. The project will implement in the upazila from this plan as priority basis by different GoB agencies or private institution. He has requested to all for providing assistance in upcoming PRA session which will conduct within very short time.

In absence of Chairman/Vice Chairman of Upazila Parishad and Upazila Nirhahi Officer (UNO), Chairman, Jatia Union Parishad has organized and chaired the meeting. He has given thanks to the Planning Team for conducting meeting with them and giving importance of their opinion. He has requested to the authority to make an ideal plan for Ishwarganj upazila which will be model in Bangladesh. He has given assurance to the team for giving any assistance in upcoming PRA session and adjourned the meeting.

Planning Team has met with the Upazila Nirbahi Officer (UNO), Ishwarganj Upazila in her office room and briefs her on project activities and has made plan for FGD, Tea Stall and Courtyard meeting. Planning Team has also met with the Upazila Chairman, Ishwarganj Upazila in his resident and briefs him on project activities and seeks assistance for preparing master plan.

5.6.1.2 FGD at Ishwarganj

Place: Office Room of UNO, Ishwarganj Date: 24 February 2015

Participants:

Total Participants	Male	Female	Occupation
10	10	0	Jounalist-10

Summary of Discussion:- Mr. Uday Sankar Das, Project Manager, Package # 02, Preparation of Development Plan for Fourteen Upazilas has started the meeting through greetings to all participants from the Project part. Then every participant has introduced himself in the meeting. Project Manager has informed the house that the preparation of development plan for fourteen Upazilas is a government funded project which will be implemented by Urban Development Directorate under the Ministry of Housing and Public Works. The main objective of the project is to prepare a master plan for the duration of 20 years of entire upazila which will improve the lifestyle of all peoples under Upazila and surroundings areas.

Photographs 5.4: FGD with Journalist at Ishwarganj

Mr. Shaheen Ahamed, Project Director, Preparation of Development Plan for Fourteen Upazilas, has highlighted the project background, objectives, preparation period, time span for planning, area under planning, implementation strategy and funding source of Project. He further informed the house that the project will prepare as Participatory Planning Approach (PPA). He has expressed his view that the project related all news will reach to the root level through Journalist.

Mr. Azibar Rahman, Socio Economic Expert (Package # 02), has explained the people participation approach in project planning and has informed the house that it is a bottom up planning approach project where a huge scope to participation of local people in planning stage. In future, a Participatory Reflection and Action/Participatory Rapid Appraisal (PRA) session will be

arranged at each union in the rural areas and at each ward in the urban areas for collecting problems and possible solutions from the local people.

Open Discussion: Project Director has asked to the participants whether they have any question or not. The summaries of open discussions are furnished below;

Question/request: One participant has expressed his opinion that many development plans have prepared but it could not implement due to lack of resources. One participant has requested to include more industry establishment in the Ishwarganj Upazila. One participant has informed that government do not approve any establishment of private educational institute now. Will increase the number of educational institute in line with educational development?

Reply by Project Director:

Project Director has informed that the increase of population within upcoming 20 years will consider for establishing educational institute. He has requested to all for providing assistance in upcoming PRA session which will conduct within very short time.

The president of Press Club, Ishwarganj has given thanks to the Planning and requested to the authority to make an ideal plan for Ishwarganj upazila which will be model in Bangladesh. He has given assurance to the team that they are ready for providing any assistance in upcoming PRA session and adjourned the meeting.

5.6.1.3 FGD at Ishwarganj

Place: Teachers Common Room, Ishwarganj University College, Ishwarganj. Date: 25 February 2015

Participants:

Total Participants	Male	Female	Occupation
41	25	16	Teacher-:41

Summary of Discussion: Mr. Uday Sankar Das, Project Manager, Package # 02, Preparation of Development Plan for Fourteen Upazilas has started the meeting through greetings to all participants from the Project part. Then every participant has introduced him/herself in the meeting. Project Manager has informed the house that the preparation of development plan for 14 Upazilas is a government funded project which will be implemented by Urban Development Directorate under the Ministry of Housing and Public Works. The main objective of the project is to prepare a master plan for the duration of 20 years of entire upazila which will improve the lifestyle of all peoples under Upazila and surroundings areas.

Photographs 5.5: FGD with Teachers at Ishwarganj University College

Mr. Shaheen Ahamed, Project Director, Preparation of Development Plan for Fourteen Upazilas, has highlighted the project background, objectives, preparation period, time span for planning, area under planning, implementation strategy and funding source of Project. He further informed to the house that the project will prepare through Participatory Planning Approach (PPA).

Mr. Azibar Rahman, Socio Economic Expert (Package # 02), has explained the people participation approach in project planning and has informed the house that it is a bottom up planning approach project where a huge scope to participation of local people in planning stage. In future, a Participatory Reflection and Action/Participatory Rapid Appraisal (PRA) session will be

arranged at each union in the rural areas and at each ward in the urban areas for collecting problems and possible solutions from the local people

Open Discussion: Project Director has asked to the participants whether they have any question or not. The summaries of open discussion are furnished below;

Question/request: One participant has informed that water supply activity was functional from 1964 in Ishwarganj. Now, the water supply activity is inactive. He has requested to provide water supply provision in the master plan. One participant has expressed his view that there is a judge court in Ishwarganj upazila which needs to major maintenance and it should to include in the master plan. One participant has expressed his view that Ishwarganj Degree College is prominent College having honours courses but yet not Government College. He has requested to take initiative in the plan which will be easy to be a Government College.

Project Director has requested to all for providing assistance in upcoming PRA session which will conduct within very short time. The principal of the college thanks to the planning team for conducting meeting with them and giving emphasise to their opinions which will be helpful in preparing the plan. He has stressed that local teachers will provide their input in upcoming PRA and he adjourned the meeting.

5.6.1.4 FGD at Shibpur

Place: Jossore Union Office, Shibpur Date: 26 February 2015

Participants:

Total Participants	Male	Female	Occupation
23	21	02	Chairman-:01, UP member-:05, Teacher-:02, Emam-:01, Social Worker-:04 and Businessman-:10

Summary of Discussion: Mr. Uday Sankar Das, Project Manager, Package # 02, Preparation of Development Plan for Fourteen Upazilas has started the meeting through greetings to all participants from the Project part. Then every participant has introduced himself in the meeting. Project Manager has informed to the house that the preparation of development plan for fourteen Upazilas is a government funded project which will be implemented by Urban Development Directorate under the Ministry of Housing and Public Works. The main objective of the project is to prepare a master plan for the duration of 20 years of entire upazila which will improve the lifestyle of all peoples under Upazila and surroundings areas.

Mr. Shaheen Ahamed, Project Director, Preparation of Development Plan for Fourteen Upazilas, has highlighted the project background, objectives, implementation partners, planning and implementation strategy, time span for planning, field work for planning and funding source of Project. He further informed the house that the project will prepare through Participatory Planning Approach (PPA). He has requested to all for providing assistance in upcoming PRA session which will conduct within very short time.

Open Discussion: Mr. Toffazal Hossain, Chairman, Jossore Union, has explained the importance of proper planning. He has raised an example of old town of Dhaka City which has established in unplanned way that could not easily possible to bring in a planned city. We could not say what will be happened within 20 years. That's why we have need to establish or construction any infrastructure according to master plan.

The Chairman thanks to the planning team for conducting meeting with them and giving emphasise to their opinions which will be helpful in preparing the plan. He has stressed that local people including Jossore Union Parishad will provide their input in upcoming PRA and adjourned the meeting.

5.6.1.5 FGD at Shibpur

Place: Joynagar Union Office, Shibpur Date: 26 February 2015

Participants:

Total Participants	Male	Female	Occupation
23	21	02	Chairman-:01, Service-:02, Housewife-:03, Journalist-:02 and Businessman-:10

Summary of Discussion: Mr. Shaheen Ahamed, Project Director, Preparation of Development Plan for Fourteen Upazilas, has highlighted the project background, objectives, implementation partners, planning and implementation strategy, time span for planning, field work for planning and funding source of Project. He further informed to the house that the project will prepare as participatory Planning Approach (PPA). Project Director has requested to all for providing assistance in upcoming PRA session which will conduct within very short time.

Photographs 5.6: FGD with local people at Joynagar union, Shibpur

Open Discussion: Chairman, Joynagar Union, has explained the importance of proper planning. He has ensured to planning team that they will provide full cooperation during PRA. He gave thanks to all and adjourned the meeting.

5.6.1.6 FGD at Shibpur

Place: Sabuj Pahar Degree College, Shibpur Date: 26 February 2015

Participants:

Total Participants	Male	Female	Occupation
15	12	03	Teacher-03

Summary of Discussion: Mr. Uday Sankar Das, Project Manager, Package#02, Preparation of Development Plan for Fourteen Upazilas. He has started the meeting through greetings to all participants from the Project part. Then every participant has introduced himself in the meeting. Project Manager has informed to the house that the preparation of development plan for fourteen Upazilas is a government funded project which will be implemented by Urban Development Directorate under the Ministry of Housing and Public Works. He has also further informed the house project background, objectives, preparation period and time span for planning, area under planning, implementation strategy and funding source of Project. He also informed that the project will prepare through participatory Planning Approach (PPA). He has requested to all for providing assistance in upcoming PRA session which will conduct within very short time.

Open Discussion: The principal of the college thanks to the planning team for conducting meeting with them and giving emphasise to their opinions which will be helpful in preparing the plan. He has stressed that local teachers will provide their input in upcoming PRA and adjourned the meeting.

5.6.1.7 FGD at Raipura

Place: Hairmara Union Office, Raipura Date: 27 February 2015

Participants:

Total Participants	Male	Female	Occupation
16	13	03	Chairman-:01, UP Member-:05, Social Worker-:03 and Businessman-:07.

Summary of Discussion: Mr. Abul Bashar, Urban Planner, Package # 02, Preparation of Development Plan for Fourteen Upazilas, highlighted the project background and objectives. Mr. Shaheen Ahamed, Project Director, Preparation of Development Plan for Fourteen Upazilas has highlighted the preparation period, time span for planning, area under planning, implementation strategy and funding source of Project. He further informed the house that the project will prepare through participatory Planning Approach (PPA). Project Director has requested to all for providing assistance in upcoming PRA session which will conduct within very short time.

Photographs 5.7: FGD with local People at Hairmara union, Raipura

After that Mr. Mostaque Ahamed, Chairman, Arc Bangladesh Limited has informed the house that different types of survey will be conducted in the project area. GIS technology will also be used for survey. Many experts like Socio Economic like Survey Expert, Photogrammetric Expert, GIS Expert, Agricultural Scientist, Economist, Transport Planning Expert and Urban Planner etc. will be involved in preparing the master plan. All experts will work under one Team leader who is the Professor of Geography Department under Dhaka University. Mr. Azibar Rahman, Socio Economic Expert (Package # 02), has explained the people participation approach in project planning and has informed the house that it is a bottom up planning approach project where a huge scope to participation of local people in planning stage. In future, a Participatory Reflection and Action/Participatory Rapid Appraisal (PRA) session will be arranged at each union in the rural areas and at each ward in the urban areas for collecting problems and possible solutions from the local people

Open Discussion: Chairman, Hairmara union has given thanks to all for visiting his union and made commitment for providing future any assistance. He gave thanks to all and adjourned the meeting.

5.4.1.8 FGD at Raipura

Place: Adiabad Eastpara Mosque, Raipura Date: 27 February 2015

Participants:

Total Participants	Male	Female	Occupation
07	07	0	Ex. Chairman-:01, Service-:02, Farmer-:02 and Businessman-:02

Summary of Discussion: Mr. Shaheen Ahamed, Project Director, Preparation of Development Plan for Fourteen Upazilas, has highlighted the project background, objectives, implementation partners, planning and implementation strategy, time span for planning, field work for planning and funding source of Project. He further informed the house that the project will prepare through participatory Planning Approach (PPA). Project Director has requested to all for providing assistance in upcoming PRA session which will conduct within very short time.

After that Mr. Mostaque Ahamed, Chairman, Arc Bangladesh Limited has informed the house that different types of survey will be conducted in the project area. GIS technology will also be used for survey.

Mr. Azibar Rahman, Socio Economic Expert (Package # 02), has explained the people participation approach in project planning and has informed the house that it is a bottom up planning approach project where a huge scope to participation of local people in planning stage. In future, a Participatory Reflection and Action/Participatory Rapid Appraisal (PRA) session will be arranged at each union in the rural areas and at each ward in the urban areas for collecting problems and possible solutions from the local people

Open Discussion: Ex, Chairman, Hairmara union has given thanks to all for visiting his union and made commitment for providing future any assistance. He gave thanks to all and adjourned the meeting.

5.6.2. Tea Stall meeting

5.6.2.1 Tea Stall meeting at Ishwarganj

Place: Sutia Bazaar, Ishwarganj Date: 24 February 2015

Participants:

Total Participants	Male	Female	Occupation
87	86	01	UP Chairman-:01, UP member-:04, Businessman-:42, Farmer-:33, Teacher-:03, Service-:04

Summary of Discussion: Mr. Uday Sankar Das, Project Manager, Package # 02, Preparation of Development Plan for Fourteen Upazilas has started the meeting through greetings to all participants from the Project part. All team members introduced him. Project Manager has informed to the participants that the preparation of development plan for fourteen Upazilas is a government funded project which will be implemented by Urban Development Directorate under the Ministry of Housing and Public Works. The main objective of the project is to prepare a master plan for the duration of 20 years of entire upazila which will improve the lifestyle of all peoples under Upazila and surroundings areas.

Photographs 5.8: Meeting with people at Sutia bazar, Ishwarganj

Mr. Shaheen Ahamed, Project Director, Preparation of Development Plan for Fourteen Upazilas, has highlighted the project background, objectives, preparation period, time span for planning, area under planning, implementation strategy and funding source of Project. He further informed to the house that the project will prepare through participatory Planning Approach (PPA).

Open Discussion: Project Director has asked to the participants whether they have any question or not. The summaries of open discussion are furnished below;

Question/request: Chairman, Jatia Union Parishad has informed that the peoples are severely suffering from drinking water during dry season. Hand tubewell does not work during dry season due to underground water table goes to down. For this reason, he has requested to include the water supply provision for Jatia union in the Master plan. One UP member has requested to include all roads under Jatia union for better improvement. The chairman of Sutia Bazaar Committee has informed that all roads in the bazaar are herring bone bone/brick soling. No drain has constructed in the bazaar. So, he has requested to include road and drain in the plan.

Project Director has requested to all for providing assistance in upcoming PRA session which will conduct within very short time. Chairman, Jatia union has given thanks to all for visiting his union and made commitment for providing future any assistance. He gave thanks to all and closed the meeting.

5.6.2.2 Tea Stall Meeting at Shibpur

Place: Etakhola Bus Stand Date: 26 February 2015

Participants:

Total Participants	Male	Female	Occupation
12	12	0	Farmer-:08, Businessman-:04

Summary of Discussion: Mr. Azibar Rahman, Socio Economic Expert, Package # 02, Preparation of Development Plan for Fourteen Upazilas has started the meeting through greetings to all participants from the Project part. All team members introduced him. He has informed the participants that the preparation of development plan for fourteen Upazilas is a government funded project which will be implemented by Urban Development Directorate under the Ministry of Housing and Public Works. The main objective of the project is to prepare a master plan for the duration of 20 years of entire upazila which will improve the lifestyle of all peoples under Upazila and surroundings areas. He has also informed the participants that the project will prepare through participatory Planning Approach (PPA).

Photographs 5.9: Meeting with people at Etakhola BS, Shibpur

Open Discussion: Socio Economic Expert has asked to the participants whether they have any question or not. The summaries of open discussion are furnished below;

Question/request: One participant has asked that is it Govt. Program or NGO program? Socio Economic Expert has informed them this program is absolutely GoB program. One participant asked that this organization will collect subscription during PRA. Socio Economic Expert has informed that no subscription will collect from this organization. If anybody try to collect subscription on behalf of us, in that case you will inform to the concerned Chairman or Police Station. One participant has asked that this organization will implement the plan or not? Socio Economic Expert has informed them this organization will only prepare the plan and other organizations will implement the plan. He has requested to all for providing assistance in upcoming PRA session which will conduct within very short time. All participants spontaneously are agreed to provide future assistance. He gave thanks to all and adjourned the meeting.

5.6.2.3 Tea Stall Meeting at Raipura

Place: Nilkuthi Bazaar (Rajur Bazaar) Date: 26 February 2015

Participants:

Total Participants	Male	Female	Occupation
11	11	0	Farmer-:03, Day Labour-:04, Ex. Chairman-:01, Businessman-:03

Photographs 5.10: Meeting with people at Nilkuthi Bazar, Raipura

Summary of Discussion: Mr. Azibar Rahman, Socio Economic Expert, Package # 02, Preparation of Development Plan for Fourteen Upazilas has started the meeting through greetings to all participants from the Project part. All team members introduced him. He has informed the participants that the preparation of development plan for fourteen Upazilas is a government funded project which will be implemented by Urban Development Directorate under the Ministry of Housing and Public Works. The main objective of the project is to prepare a master plan for the duration of 20 years of entire upazila which will improve the lifestyle of all peoples under Upazila and surroundings areas. He has also informed the participants that the project will prepare through participatory Planning Approach (PPA).

Open Discussion: Socio Economic Expert has asked to the participants whether they have any question or not. The summaries of open discussion are furnished below;

Question/request: One participant (Ex. Chairman) has expressed his opinion that many plans prepared by many organizations but could not implement due to lack of resources. He has also risen that many infrastructures have constructed in an unplanned way. He has informed that the area is agro based, that's why agro industry should be constructed in this area. Socio Economic Expert has requested to all for providing assistance in upcoming PRA session which will conduct within very short time. All participants spontaneously are agreed to provide future assistance. He gave thanks to all and ended the meeting.

5.6.3. Courtyard session

5.6.3.1 Courtyard session at Ishwarganj

Place: Maijbagh Union Office Date: 25 February 2015

Participants:

Total Participants	Male	Female	Occupation
32	8	32	UP member-:03, Farmer-:04, Housewife-:24, Service-:01

Photographs 5.11: Courtyard session at Maijbagh Union, Ishwarganj

Summary of Discussion: Mr. Azibar Rahman, Socio Economic Expert, Package # 02, Preparation of Development Plan for Fourteen Upazilas has started the meeting through greetings to all participants from the Project part. All team members introduced him. He has informed the participants that the preparation of development plan for fourteen Upazilas is a government funded project which will be implemented by Urban Development Directorate under the Ministry of Housing and Public Works. The main objective of the project is to prepare a master plan for the duration of 20 years of entire upazila which will improve the lifestyle of all peoples under Upazila and surroundings areas.

Mr. Shaheen Ahamed, Project Director, Preparation of Development Plan for Fourteen Upazilas, has highlighted the project background and objectives which will provide the scope of income

sources of distress men/women. He further informed the participants that the project will prepare as participatory Planning Approach (PPA).

Open Discussion: Project Director has asked to the participants whether they have any question or not. The summaries of open discussion are furnished below;

Question/request: Most of the participants has expressed that they do not want relief but they want to work and earn money. Approximately 80% latrines are Kantcha in the area which need to be replaced by sanitary latrine. Most of the participants have reported that they do not get medicine from the Upazila Health Complex. In this connection, sufficient medicine should be arranged and distributed to the patient free of cost.

Project Director has requested to all for providing assistance in upcoming PRA session which will conduct within very short time. All participants spontaneously are agreed to provide future assistance. He gave thanks to all and ended the meeting.

5.6.3.2 Courtyard session at Shibpur

Place: Ayubpur Union Office Date: 26 February 2015

Participants:

Total Participants	Male	Female	Occupation
29	9	20	UP member-:05, Business-:02, Housewife-:17, Service-:05

Summary of Discussion: Mr. Abul Bashar, Urban Planner, Package # 02, Preparation of Development Plan for Fourteen Upazilas has started the meeting through greetings to all participants from the Project part. All team members introduced him. He has informed to the participants that the preparation of development plan for 14 Upazilas is a government funded project which will be implemented by Urban Development Directorate under the Ministry of Housing and Public Works. The main objective of the project is to prepare a master plan for the duration of 20 years of entire upazila which will improve the lifestyle of all peoples under Upazila and surroundings areas.

Photographs 5.12: Courtyard session at Ayubpur Union, Shibpur

Mr. Azibar Rahman, Socio Economic Expert, Package#02, Preparation of Development Plan for Fourteen Upazilas, has highlighted the project background and objectives which will be generated the income sources. As a result, relief will not be required in future. He further informed to the participants that the project will prepare as participatory Planning Approach (PPA).

Local elite land donor for union complex, has expressed his opinion that the preparation of master plan of their upazila is wonderful news for them and will get maximum benefit from this plan.

Open Discussion: Socio Economic Expert has asked to the participants whether they have any question or not. The summaries of open discussion are furnished below;

Question/request: Most of the participants have expressed that they do not want relief but they want to work and earn money. Most of the participants have expressed their opinion that they have needed resources to establish Poultry firm or agro based cottage industries where they can work and earn money.

Socio Economic Expert has requested to all for providing assistance in upcoming PRA session which will conduct within very short time. All participants spontaneously are agreed to provide future assistance. He gave thanks to all and ended the meeting.

5.6.3.3 Courtyard session at Raipura

Place: Moheshpur Bazaar Date: 27 February 2015

Participants:

Total Participants	Male	Female	Occupation
21	21	0	Chairman-:01, UP member-:02, Businessman-:05, Farmer-:13

Summary of Discussion: Mr. Azibar Rahman, Socio Economic Expert, Package # 02, Preparation of Development Plan for Fourteen Upazilas has started the meeting through greetings to all participants from the Project part. All team members introduced him. He has informed the participants that the preparation of development plan for fourteen Upazilas is a government funded project which will be implemented by Urban Development Directorate under the Ministry of Housing and Public Works. The main objective of the project is to prepare a master plan for the duration of 20 years of entire upazila which will improve the lifestyle of all peoples under Upazila and surroundings areas.

Photographs 5.13: Courtyard session at Maheshpur bazaar, Raipura

Mr. Shaheen Ahamed, Project Director, Preparation of Development Plan for Fourteen Upazilas, has highlighted the project background, objectives, preparation period, time span for planning, area under planning, implementation strategy and funding source of Project. He further informed the house that the project will prepare as participatory Planning Approach (PPA). He has requested to all for providing assistance in upcoming PRA session which will conduct within very short time.

Open Discussion: Project Director has asked to the participants whether they have any question or not. The summaries of open discussion are furnished below;

Question/request: Most of the participants has expressed that they have earthen road which is silty sand. That's why road could not sustained during monsoon. In this regard, carpeting road should be constructed with necessary protection measures. Most of the participants has expressed that their area is located at the right bank of the Meghna River and also adjacent to the river which is cause of frequent flood. There is no embankment and flood centre in the area. In this regard, kakon embankment and flood shelter should be included in the master plan and to be constructed as early as possible. Most of the participants has expressed that the area is vegetable production area but there is no vegetable processing system in area. So, vegetable processing industry should be included in the plan and to be constructed as early as possible.

Chairman, Mohespur union thanks to the planning team for visiting his union and has informed that the union setting is mostly charland and have no necessary infrastructure even union parishad bhabon. He has requested to the planning team to include all necessary infrastructure in the master plan. All participants are spontaneously agreed to assist in the upcoming PRA session. Chairman adjourned the meeting.

Summary of findings of FGD/Tea Stall Meeting/ Courtyard Session

The findings of FGD/Tea Stall Meeting/ Courtyard Session are same in some cases. The findings are as follows;

Ishwarganj Upazila: The entire Upazila is medium level flood plain and agro based setting. Most of the peoples are dependence on agriculture. Most of the lands are fit for 2-3 times cultivation. There have scope for women employment on agriculture only because no industry has established except few boiler rice mills. Gas distribution line is existence up to last border of neighbour (Gouripour) upazila which is only 3 Km far from the Ishwarganj Upazila H/Q. People both urban and rural areas have suffering from drinking water during dry season. Ground water table seriously falls during dry season which is the cause of Hand tube well disorder. The rural bazaars are established in unplanned way and internal road communication is still inadequate. There is one degree college in the Upazila town which has no scope for higher education except Bangla. As per local people, 70-80% latrines in the rural area are still kancha which is the of cause illness. Peoples are not getting health services from Upazila Health Complex due to lack of medicine and specialized doctor.

Shibpur Upazila: The entire Upazila is hilly land and agro based setting. Most of the peoples are dependence on agriculture. Most of the lands are fit for 2-3 times cultivation. There have scope for women employment on agriculture only because no industry has established. The entire upazila famous for vegetable and fruit production but no industry has established. Some roads are still katcha which becomes muddy and slippery during monsoon.

Raipura Upazila: The northern part of Upazila is medium level flood plain and the southern part of the upazila is char area and entire upazila is agro based setting. Most of the peoples are dependence on agriculture but once most of the peoples were dependent on handloom. Most of the lands are fit for 2 times cultivation. The northern part is famous for vegetable cultivation and no industry has established for vegetable/fruit processing. The roads could not sustain due to sandy soil and wash out by flood water. People of Moheshpur union are often suffering from flood water during monsoon due to lack of kakon embankment. The standing crops on the land and katcha houses are often damaged by the flood water. This is the real scenario of char area also. People stay in the educational institution during flooding due to lack of flood shelter.

Solutions: People demands will be emphasized and included in the master plan and implemented by different GoB and private agencies as priority basis. People will be involved in the implementation, monitoring and evaluation process.

Conclusion: A working environment has created with local peoples and institutions through conducting FGD, Tea Stall and Courtyard meeting which will be helpful for conducting upcoming PRA in the area.

CHAPTER SIX: CONCLUSION

6.1 Conclusions

With the background situation prevailing all over the Upazila of the country, planned development has become an essential paramount task of the concerned authority. The Urban Development Directorate (UDD) under the Ministry of Housing and Public Works (MoHPW) has initiated the preparation of a fresh set of development plans of fourteen Upazilas through active participation of the stakeholders with projection for a period of 20 years applying the concept of new generation five tier plans Sub Regional Plan, *Structure Plan, Urban Area Plan, Rural Area Plan and Action Area Plan*.

The plan preparation process will follow an attempt by using modern technology. This is a bold departure from the traditional time consuming manual procedures. It ensures the degree of accuracy which makes monitoring, control and mid-course correction or evaluation immensely easier. Survey findings make up the back bone of the plans. Accuracy of survey findings will depend on planning and designing of the survey activities and scheduling of the tasks. The TOR prescriptions are being followed in every step which helped to avoid pitfalls to a great extent in the process of project area map preparation.

Plan preparation is a team work. The guidelines provided by UDD justifiably expands the roles of individual team members. The consultants also believe that overall cooperation and linkage with implementing agency can ensure timely completion of the tasks involved.

It is believed that this initial effort taken by the consultants will be appreciated by the client and be treated as an immense incentive for conducting forthcoming works of the project. Let us proceed with next steps of activities.

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Appendix I-Broad Categories of Land use

Land uses	Illustrated
Residential	Planned Residential Area, Govt. Quarters, Private Housing, Rest/Guest/Circuit House, Banglow, Mess, Orphanage/Old Home, Rural Homestead, Slum, Squatters
Commercial	Residential Hotel/ Hotel & 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 & Magazine, Stationery Shop, Shoe Shop, Bag & Leather Goods, Cosmetics, Spectacles, Electronic Goods, Audio Video Cassette, Utensils/Crockery, Sports Goods, Computer Goods, Motor Car Parts, Jewelry shops, Show Room, Furniture Shop, Department Store, Mobile Sales Center, Hardware Goods, Sweet Shop, Bakery Shop, Gift Shop, Press & Printing, Grocery Shop, Gun Shop, Iron & Steel Shops, Shopping Center/Mall, Shopping 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 Parlor/Hair dresser, Govt. Food Godown, Cold Storage, Others Godown
Mixed Use	Commercial–Residential, Office–Residential, Commercial–Industrial, Two or more use
Transport	R & H Road/LGED Road, Primary Road/Major Through fare, Secondary Road (Pucca), Secondary Road (Kutcha), Local Road (Pucca), Local Road (Kutcha), Access Road (Pucca), Access Road (Kutcha), Footpath (Paved), Footpath (Unpaved), Walkway, Embankment cum Road, Airport/Bus terminal/Truck terminal/BRTC bus Depot/Tempo stand/Rickshaw stand/Railway station/BIWTA Terminal/Launch Terminal etc, Broad gauge, Meter gauge, River.
Administrative	Deputy Commissioner's Office, Zila Parishad 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 & Cooperatives, 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, Labor Union
Industrial	Dairy Products, Fish & Sea Food, Salt Crushing Mill, Soft Drink, Bakery Product, Cotton Textile, Jute Textile, Silk & Artificial Textile, Dyeing Industry, Coconut Fiber Industry, Knitting Industry, Hosiery Products, Readymade Garments, Tannery & Finishing, Leather Buying House, Leather Footwear, Compressed Natural Gas, Fertilizers, Insecticides Industry, Soap & Detergent, Paints & Varnishes, Medicine and Drugs Company, Paper Product (all kind), Newspaper, Rubber Footwear, Cycle & Tyre Tube, PVC Product, Glass Product, Bricks Kiln/Fields, Cement, Iron & Steel, Re rolling mills, Hand & Edge tools, Bland &, Knives, Heating & Lighting, Plumbing, Equipment, Machinery Equipment, Wire & Cables, Electric Lamps, Electrical, Apparatus, Fruits & Vegetables, Oil Products, Edible Salt, Molasses, Atta, Maida & Suji (Flour Mill), Spice Industry, Rice

Land uses	Illustrated
	Mill, Boiler (Rice), Handicrafts, Pottery, Carpets, Fabrics, Sewing/Hand loom Products, Wooden Furniture, Cane Furniture, Steel Furniture, Ship Building, Lime Stone, Sports & Athletics
Agriculture	Single crop land, Double crop land, Triple crop land, Barren land, Mango garden/Lichi/Jackfruit/Banana/Lemon/others, fruits garden etc, Different types of flower garden, Tree cultivation, Hatchery/Gher, Livestock/Poultry Farm/Diary Farm, Agricultural Research Area
Education	Kindergarten and Nursery, Primary School, High School, College, Public University, Private University, Public Medical College, Private 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 College, Computer Training Institute, Dakhil Madrasa, Alim Madrasa, Fazil Madrasa, Kamil Madrasa, Hafezia Madrasa, Tutorial/ Coaching Center, Government Training Institute, Library, Museum, Social Welfare Institution
Health	Govt. Hospital/Pvt Hospital/Mental Hospital/ Maternity/Children Hospital/Clinic/ Diagnostic Center, Veterinary Hospital
Recreational	Cinema Hall, Theater Hall, Museum & Art gallery, Auditorium/Community Center/Town Hall, Park/Playground/Amusement Park/Theme Park, Stadium/ Gymnasium/Swimming Pool, Tennis Complex
Places of Worship	Mosque, Eidgah/Mazar/Dargha, Temple, Church, Pagoda
Restricted Area	Cantonment/BDR/Navy, Police Station, Ansar Camp, Jailkhana, TV Station, Radio Station, T&T Board, Power Supply Station
Open space	Historic Sites, National Park/Botanical Garden, Zoological Park, Forest Land/Urban Green, Ecological park/sites, River Bank
Water bodies	Pond, Tank, Beels, Lakes, River, Khals, Streams, Drain
Graveyard	Graveyard, Cemetery, Cremation place
Miscellaneous	Solid Waste Dumping Ground, Slaughter House, Water Pump House, Hazardous Area, Overhead Tank, Monument, Shahid Minar

Appendix II- Status of Mauza in Shibpur Upazila

Sl No	Upazila Name	Total Mouza		Collection Status		Remaining	
		Mouza	Sheet	Mouza	Sheet	Mouza	Sheet
1	Shibpur	121	172	99	137	22	35

Sl No	Union	Mouza Name	Mauza Name Bangla	JL No	Total Sheet No	Collected	Remaining	Comments
1	Ayubpur	Trisha	ত্রিশা	58	1	1	0	
		Ghasirdia	ঘাসিরদিয়া	64	2	2	0	
		Gorargaon	গোরারগাঁও	63	1	1	0	
		Saspur	শাসপুর	61	1	1	0	
		Adgatia	আডগাটিয়া	62	1	1	0	
		Dakshin Noadia	দক্ষিন নোয়াদিয়া			0		
		Chandandia	চন্দনদিয়া	59	1	1	0	
		Khaishakhali	খৈইশাখালি	56	1	1	0	
		Ayerpur	আয়েরপুর	54	1	1	0	
		Bangsirdia	বংশিরদিয়া	55	3	3	0	
2	Baghaba	Panchpaika	পাচপাইকা	73	1	1	0	
		Lampur	লামপুর	103	1	1	0	
		Chaupat	চৌপট	102	1	1	0	
		Kunder Para	কুন্দার পাড়া	101	1	1	0	
		Bahirdia	বাহেরদিয়া	71	1	1	0	
		Bangpur	বংপুর	99	1	1	0	
		Joymangal	জয়মঙ্গল	95	3	3	0	
		Hamirdia	হামিরদিয়া	69	1	1	0	
		Brahmandi	ব্রাক্ষ্মনদি	68	3	3	0	
		Birajnagar	বিরাজনগর	94	2	2	0	
		Baghaba	বাঘাবা	72	1	1	0	
		Sreephalia	শ্রীফলিয়া	100	2	2	0	
		Paschim Gobindapur	পশ্চিম গোবিন্দপুর	96	1	1	0	
		Sapharia	সফারিয়া	70	1	1	0	
		Nawala	নওয়ালা	98	1	1	0	
		Khainkut	খৈনকুট			0		
		Chandpasha	চাদপাশা	104	1	1	0	
		Itna	ইটনা	106	1	1	0	
		Bil Ichhamati	বিল ইছামতি	105	1	1	0	
3	Chak Radha	Bangal Satpara	বাঙ্গাল সাতপারা	78	1	1	0	
		Ghusu	ঘুসু			0		
		Lakurshichhapa	লাকুরসিছাপা	79	1	1	0	

Sl No	Union	Mouza Name	Mauza Name Bangla	JL No	Total Sheet No	Collected	Remaining	Comments
		Arali	আড়ালিয়া			0		
		Satpara	সাতপাড়া	80	1	1	0	
		Asatia	আসটিয়া	19	1	1	0	
		Bilsaran	বিলসরন			0		
		Majlispur	মজলিসপুর	23	1	1	0	
		Purbergaon	পূবের গাও	24	1	1	0	
		Bara Asrafpur	বড় আশরাফপুর	77	1	1	0	
		Shibpur	শিবপুর	27	1	1	0	
		Bailaba	বৈলাব	83	4	4	0	
		Chandal Banda (Sonakora)	চন্ডালবন্দ (সোনাকোড়া)			0		
		Ningaon	নিনগাঁও	84	1	1	0	
		Baraigaon	বারৈগাঁও	81	1	1	0	
4	Dulalpur	Kazir Char	কাজীর চর	4	2	2	0	
		Dulalpur	দুলালপুর	11	2	2	0	
		Nandirgaon	নন্দীরগাঁও	16	1	1	0	
		Chandibardi	চন্ডিবরদি	12	1	1	0	
		Baherkhola	বাহেরখোলা	17	1	1	0	
		Manikdi	মানিকদি	13	2	2	0	
		Satpaika	সাতপাইকা	18	2	2	0	
		Alinagar	আলীনগর	3	5	1	4	
		Char Lakhpur	চর লাখপুর	1	1	1	0	
		Khurda Maheshwardi	খোদ মহেশ্বরদী	15	1	1	0	
		Nagar Maheshwardi	নগর মহেশ্বরদী	14	1	1	0	
		Lakhpur	লাখপুর	2	1	1	0	
5	Josar	Naoghata	নাওঘাটা	93	1	1	0	
		Nandertek	নন্দেরটেক	112	1	1	0	
		Agarpur	আগরপুড়	109	1	1	0	
		Chhutaband	ছুটাবন্দ	92	1	1	0	
		Maliara	মালিয়ারা			0		
		Letarba	লেটাবা			0		
		Josar	যোশর	111	3	3	0	
		Bhiti Khainkut	ভিটি খৈনকুট			0		
		Kaziara	কাজীয়ারা	114	1	1	0	
		Ranitani	রানিটানি	120	1	1	0	
		Sreerampur	শ্রীরামপুর	117	1	1	0	

Sl No	Union	Mouza Name	Mauza Name Bangla	JL No	Total Sheet No	Collected	Remaining	Comments
		Sreeshtighar	সৃস্টিঘর	110	2	2	0	
		Ranitani	রানিটানি			0		
6	Joynagar	Gilaber	গিলাবের	89	1	1	0	
		Pahar Jaynagar	পাহাড় জয়নগর	91	3	3	0	
		Ajkitala	আজকিতলা	90	1	1	0	
		Sujatpur	সুজাতপুর	87	2	1	1	
		Ashtani	অষ্টআনী	85	3	2	1	
		Maishartek	মৈষারটেক	88	1	1	0	
		Kamraba	কামরাব	86	4	4	0	
7	Masimpur	Dhanua	ধনুয়া	22	2	2	0	
		Sunandi (Saidargaon)	সুনান্দি(সাইদারগাওঁ)	26	1	1	0	
		Kharia	খরিয়া	30	2	2	0	
		Paikardia	পাইকারদিয়া	21	1	1	0	
		Miargaon	মিয়ারগাঁও	9	1	1	0	
		Dattagaon	দত্তগাঁও	10	5	4	1	
		Masimpur	মাছিমপুর	20	1	1	0	
		Bandardia	বান্দারদিয়া	29	2	2	0	
		Baniadi	বানিয়াদী	28	1	1	0	
8	Putia	Palpara	পালপাড়া	67	1	1	0	
		Baraialgi	বারৈআলগী	65	2	2	0	
		Jawakandi	ঝাওয়াকান্দী	41	1	1	0	
		Char Pitambardi	চর পিতাম্বরদী	46	1	1	0	
		Ghoradia	ঘোড়াদিয়া			0		
		Purundia	পুরুন্দিয়া	66	1	1	0	
		Kamarkosha	কামারকসা			0		
		Munsefer Char	মুনসেফের চর	45	2	2	0	
		Telia	তেলিয়া	42	1	1	0	
		Kamargaon	কামারগাঁও	53	3	3	0	
		Mollakanda	মোল্লাকান্দি	60	1	1	0	
		Salurdia	শালুরদিয়া	44	1	1	0	
		Kumaradi	কুমারদি	43	2	2	0	
		Uttar Karardi Char	উত্তর কারারদি চর			0		
		Karardi	কারারদী	47	2	2	0	
		Bharaterkandi	ভরতেরকান্দী	52	1	1	0	
		Gupta Para	গুপ্ত পাড়াৎ	51	1	1	0	
		Dakshin Karai Char	দক্ষিন কড়াইচর	49	1	1	0	
9	Sadhar	Dakshin	দক্ষিন সাধারচর	37	2	1	0	

Sl No	Union	Mouza Name	Mauza Name Bangla	JL No	Total Sheet No	Collected	Remaining	Comments
	Char	Sadhar Char						
		Maishadi	মৈষাদী			0		
		Harihardi	হরিহরদি	35	1	1	0	
		Gobindi	গোবিন্দী			0		
		Saiderkhola	সৈয়দের খোলা	38	1	1	0	
		Bhababdi	ভবাদী			0		
		Madabdi	মাধবদি	36	1	1	0	
		Dosardi	দোসরদি	7	1	1	0	
		Kaluarkandi	কালুয়ারকান্দী	32	1	1	0	
		Peti Palashi	পেতি পলাশী	33	1	1	0	
		Sirarkanda	সিরার কান্দী	31	1	1	0	
		Khupi	খুপি			0		
		Brajerkandi	ব্রজেরকান্দী			0		
		Uttar Sadhar Char	উত্তর সাধার চর	8	2	2	0	
		Sankardi	শংকরদী					
Total Collected Mouza & Sheet				**99**		**137**		

Source- Upazilla Land Office

Appendix III- Status of Mauza in Raipura Upazila

Sl No	Upazila Name	Total Mouza		Collection Status		Remaining	
		Mouza	Sheet	Mouza	Sheet	Mouza	Sheet
1	Raipura	126	268	46	57	80	211

Sl No	Union	Mouza Name	Mauza Name Bangla	JL No	Total Sheet No	Collected	Remaining	Comments
1	Adiabad	Adiabad	আদিয়াবাদ	89	6	2	4	
2	Alipura	Nabiabad	নাবিয়াবাদ	63	3	3	0	
		Tulatuli	টুলাটুলি	72	1	1	0	
		Alipura	আলিপুরা	49	1	1	0	
		Bahadurpur	বাহাদুরপুর	64	2	2	0	
3	Amirganj	Rahimabad	রহিমাবাদ	88	2	2	0	
		Mamudnagar	মামুদনগর			0		
		Hasnabad	হাসনাবাদ	95	5	3	2	
		Dakshin Mirzanagar	দক্ষিন মির্জানগর					
		Baluakandi	বালুয়াকান্দি	97	2	1	1	
		Bhati Badarpur	ভাটি বদরপুর	96	1	1	0	
		Alinagar Chak	আলিনগর চক			0		
4	Banshgari	Banshgari	বাশঁগাড়ী	121	3	1	2	
		Char Meghna	চর মেঘনা			0		
5	Chanderkandi	Sreenidhi	শ্রী নিধী	50	1	1	0	
		Pachha Boalia	পাচঁ বোয়ালিয়া			0		
		Manoharpur	মনোহরপুর	57	1	1	0	
		Najirpur	নাজিরপুর	58	1	1	0	
		Meratali (Part)	মিরাটালী (পার্ট			0		
		Paschim Haripur	পশ্চিম হরিপুর			0		
6	Chandpur	Char Safar Ali	চর সফর আলী			0		
		Majher Char	মাঝীর চর	30	3	1	2	
		Kalikapur	কালিকাপুর			0		
		Katlar Char	কাতলার চর			0		
		Purba Hossainnagar	পূব হোসেইন নগর	117	3	1	2	
		Bagh Duariakandi	বাগ দুয়ারিয়া কান্দি	116	2	2	0	
7	Char Aralia	Char Aralia	চর আরালিয়া	98	3	1	2	
		Battali	বাট্টালি			0		
8	Char Madhua	Samibad Char	সামিবাদ চর	122	4	1	0	
		Char Madhua	চর মাদুয়া			0		
		Samibad	সামিবাদ			0		
9	Char Subuddi	Bhaishber	বাইশবের			0		
		Char Subuddi	চর সুবুদ্দি	84	2	1	1	

Sl No	Union	Mouza Name	Mauza Name Bangla	JL No	Total Sheet No	Collected	Remaining	Comments
		Lalpur	লালপুর			0		
		Abdullapur	আবদুল্লাপুর	104	1	1	0	
10	Daukar Char	Teli Para	টেলি পাড়া			0		
		Kabirpur	কবিরপুর	91	1	1	0	
		Char Khainkut (Noabad)	চর খাইনকুট (নোয়াবাদ)	92	1	1	0	
		Kashimnagar	কাশিমনগর			0		
		Daukar Char	ডাউকার চর			0		
11	Hairmara	Birkandi	বিরকান্দি			0		
		Saudmara	সউদমারা	103	1	1	0	
		Hairmara	হাইরমারা	102	2	2	0	
12	Maheshpur	Mandalia	মান্দালিয়া			0		
		Maniknagar	মানিকনগর			0		
		Joynagar	জয়নগর			0		
		Algi	আলগি			0		
		Maheshpur	মহেষপুর			0		
		Saindhadoba	সাইন্দাডোবা	41	2	1	1	
		Sapmara	সাপমারা			0		
		Begamabad	বেগমাবাদ	29	3	1	2	
13	Marjal	Marjal	মরজাল	68	5	1	4	
14	Mirzanagar	Bangalinagar	বাঙ্গালীনগর			0		
		Hatubhanga	হাটুভাঙ্গা			0		
		Uttar Mirzanagar	উত্তর মির্জানগর	86	3	1	2	
15	Mirzapur	Pirajkandi	পিরাজকান্দি			0		
		Anwarabad	আনোয়ারাবাদ			0		
		Sadhunagar	সাধুনগর			0		
		Chhota Mirzapur	ছোট মির্জানগর			0		
		Pirpur	পীরপুর			0		
		Mamudabad	মামুদাবাদ	21	2	1	0	
16	Mirzar Char	Mirzar Char	মির্জার চর			0		
		Chaura Para	চওড়া পাড়া			0		
17	Musapur	Musapur	মুসাপুর	25	1	1	0	
		Char Begamabad	চর বেগমাবাদ			0		
		Gauripur	গৌরিপুর			0		
		Paharkharkandi	পাহাড় খারকান্দি	23	1	1	0	
		Ramnagar	রামনগর			0		
		Purba Haripur (Anorabad)	(আনোয়ারাবাদ)			0		
18	Nilakhya	Char Gauripur	চর গৌরীপুর	111	1	1	0	
		Nilakhya	নীলাখিয়া			0		

Sl No	Union	Mouza Name	Mauza Name Bangla	JL No	Total Sheet No	Collected	Remaining	Comments
		Sonatala	সোনাতোলা			0		
		Fatehpur	ফতেহপুর			0		
		Latia	লাটিয়া			0		
19	Palashtali	Phuldi	ফুলদি	71	3	1	2	
		Seoratali	সেওরাতালি	75	1	1	0	
		Palashtali	পলাশতালি			0		
		Asarampur	আশ্রমপুর			0		
		Khalilabad	খলিলাবাদ			0		
		Dakshin Gobindapur	দক্ষিন গোবিন্দপুর			0		
		Sahapur	সাহাপুর	79	1	1	0	
		Khag Char	খাগচর	74	1	1	0	
		Birampur	বিরামপুর			0		
		Mallikpur	মল্লিকপুর			0		
		Methikanda	মিথিকান্দা	73	3	2	1	
20	Paratali	Char Baliakandi	চর বালিয়াকান্দি			0		
		Char Baluakandi	চর বালুয়াকান্দি	118	1	1	0	
21	Radhanagar	Chhota Lakshmipur	ছোট লক্ষিপুর			0		
		Nijgaon	নিজগাঁও	12	3	1	2	
		Manoharabad	মনোহারাবাদ			0		
		Sahar Char	সাহার চর			0		
		Radhanagar	রাধানগর	48	2	1	1	
22	Raipura	Raipura	রায়পুরা	53	3	1	2	
		Chhota Asrafpur	ছোট আশরাফপুর			0		
		Dari Sapmara	দড়ি সাপমারা			0		
		Rajprasad	রাজপ্রাসাদ			0		
		Mamudpur	মামুদপুর	52	2	1	1	
		Char Bakharnagar	চর বখরনগর			0		
		Bakharnagar	বখরনগর	34	1	1	0	
23	Sreenagar	Rangpur	রংপুর			0		
		Sreenagar	শ্রীনগর	112	5	1	4	
		Fakirer Char	ফকিরের চর			0		
		Char Sadarland	চর সাদারল্যান্ড	55	2	2	0	
24	Uttar Bakharnagar	Bahadurpur (Part)	বাহাদুরপুর(পার্ট)			0		
		Bara Char	বড় চর			0		
		Uttar Bakharnagar	উত্তর বখরনগর	65	3	1	2	

Source- DLRS office

Appendix IV- Status of Mauza in Ishwarganj Upazila

Sl No	Upazila Name	Total Mouza		Collection Status		Remaining	
		Mouza	Sheet	Mouza	Sheet	Mouza	Sheet
1	Ishwarganj	303	361	170	212	133	149

Sl	Mouza	Mauza Name (Bangla)	JL No	Total Sheet No	Collected	Remaining	Comments
1	Bakripara	বাকরিপাড়া	1	1	**1**	0	
2	Sokhua	সখুয়া	2	2	**1**	1	
3	Bhabanipur	ভবানীপুর	3	1	**1**	0	
4	Mamdhipur	মামদীপুর	4	1	**1**	0	
5	Punail	পুনাইল	5	1	**1**	0	
6	Sulari	সুলারী	6	1	**1**	0	
7	Polashkanda	পলাশকান্দা	7	1	**1**	0	
8	Ramnagar	রামনগর	8	1	**1**	0	
9	Konapara	কোনাপাড়া	9	1	**1**	0	
10	Podur Boyra	পদুর বয়রা	10	1	**1**	0	
11	Bil Kella	বিল কেল্লা	11	2	**2**	0	
12	Nandi Para	নন্দীপাড়া	12	1	**1**	0	
13	kandulia	কান্দুলিয়া	13	1	**1**	0	
14	Giridhpur	গিরিধরপুর	14	1	**1**	0	
15	Sripur Jithor	শ্রীপুর জিথর	15	1	**1**	0	
16	Chotta Rakhobpur	ছোট রাখবপুর	16	1	**1**	0	
17	Ram Bhadrapur	রামভদ্রপুর	17	1	**1**	0	
18	Indrajit Khila	ইন্দ্রজিতখিলা	18	1	**1**	0	
19	Sartaj boyra	সরতাজবয়রা	19	1	**1**	0	
20	Madhur boyra	মধুর বয়রা	20	1	**1**	0	
21	Mirjapur	মির্জাপুর	21	1	**1**	0	
22	Kajir Boyra	কাজির বয়রা	22	1	**1**	0	
23	Taherpur	তাহেরপুর	23	1	**1**	0	
24	Nagar Jatrapur	নগর যাত্রাপুর	24	1	**1**	0	
25	Begunbari	বেগুনবাড়ী	25	1	**1**	0	
26	Gopalpur 1st Part	গোপালপুর ১ম খন্ড	26	1	**1**	0	
27	SathiKhola	সাথিখোলা	27	1	**1**	0	
28	Alladir Algi	আল্লাদির আলগী	28	1	**1**	0	
29	Haser Algi	হাসের আলগী	29	1	**1**	0	
30	Bholar Algi	ভোলার আলগী	30	1	**1**	0	
31	Naobhanga	নাওভাঙ্গা	31	3	**3**	0	
32	khodaboxpur	খোদাবক্সপুর	32	2	**2**	0	
33	Char Bhabvkhali	চরভাবখালী	33	2	**1**	1	
34	Maricha Char	মরিচারচর	34	6	**3**	3	

Sl	Mouza	Mauza Name (Bangla)	JL No	Total Sheet No	Collected	Remaining	Comments
35	Natun Char Algi	নতুন চরআলগী	35	1	**1**	0	
36	Char Ram Mohon	চর রাম মোহন	36	4	**4**	0	
37	Char Khewar ali	চর খেওয়ার আলগী	37	1	**1**	0	
38	Char Noupara	চর নওপাড়া	38	6	**1**	5	
39	Char Algi	চর আলগী	39	2	**1**	1	
40	Bapiar Algi	বাপিয়ার আলগী	40	1	**0**	1	
41	Bali Ata	বালি আটা	41	1	**0**	1	
42	Narantia	নারানটিয়া	42	1	**0**	1	
43	Alinagar	আলী নগর	43	1	**0**	1	
44	Uchhakhila	উচাখিলা	44	2	**0**	2	
45	Mogha	মঘা	45	1	**0**	1	
46	Ishwarpur Gobindra Nagar	ঈশ্বরপুর গোবিন্দ্র নগর	46	1	**0**	1	
47	Shibpur	শিবপুর	47	1	**0**	1	
48	Haripur 2nd Part	হরিপুর ২য় খন্ড	48	1	**0**	1	
49	Amudpur 2nd part	আমুদপুর ২য় খন্ড	49	1	**0**	1	
50	Rampur	রামপুর	50	1	**0**	1	
51	Kazir Balsha	কাজির বলসা	51	1	**0**	1	
52	Narayanpur 2nd Part	নারায়নপুর ২য় খন্ড	52	1	**0**	1	
53	Amodpur 2nd Part	আমোদপুর ২য় খন্ড	53	1	**0**	1	
54	Haripur 1st Part	হরিপুর ১ম খন্ড	54	1	**0**	1	
55	Tarundia	তারুন্দিয়া	55	1	**0**	1	
56	Golla Joypur	গোল্লাজয়পুর	56	1	**0**	1	
57	Haria Khali	হারিয়া খালী	57	1	**0**	1	
58	Goal Para	গোয়ালপাড়া	58	1	**0**	1	
59	Char Jithor	চর জিথর	59	1	**1**	0	
60	Gabor Boali	গাবর বোয়ালী	60	1	**0**	1	
61	Terosira	তেরশিরা	61	1	**0**	1	
62	Dharua	ধরুয়া	62	3	**0**	3	
63	Bandhanpara	বন্ধনপাড়া	63	1	**0**	1	
64	Biswanathpur	বিশ্বনাথপুর	64	1	**0**	1	
65	Pumbail	পুম্বাইল	65	2	**0**	2	
66	Char Pumbail	চর পুম্বাইল	66	1	**0**	1	
67	Paikura Boronagar	পাইকুড়া বড়নগর	67	1	**0**	1	
68	Bhadrasram	ভদ্রাশ্রম	68	1	**0**	1	
69	Nij Pumbail	নিজ পুম্বাইল	69	1	**0**	1	
70	Borohit	বড়হিত	70	1	**0**	1	
71	Bri-Pachasi	বৃ-পাচাশি	71	1	**0**	1	

Sl	Mouza	Mauza Name (Bangla)	JL No	Total Sheet No	Collected	Remaining	Comments
72	Pura Pachasi	পোড়া পাচাশি	72	1	**1**	0	
73	Posthori	পস্থরী	73	2	**1**	1	
74	Pora Dangori]	পাড়া ডাঙ্গরী	74	1	**0**	1	
75	Maddhapala	মধ্যপালা	75	1	**0**	1	
76	Peri Narayanpur	প্যারী নারায়নপুর	76	1	**0**	1	
77	Kesobpur	কেশবপুর	77	1	**0**	1	
78	Bil Sakrail	বিল সাকরাইল	78	1	**0**	1	
79	Rajendrapur	রাজেন্দ্রপুর	79	1	**0**	1	
80	Debsram	দেবশ্রম	80	1	**0**	1	
81	Baniatpur	বানিয়াতপুর	81	1	**0**	1	
82	Khairat Bhulsoma	খৈরত ভুলসোমা	82	1	**0**	1	
83	Sayedbad	সৈয়দবাদ	83	1	**1**	0	
84	Mustafapur	মুস্তফাপুর	84	1	**0**	1	
85	Para Narayanpur	পারা নারায়নপুর	85	1	**0**	1	
86	Nasti	নসতি	86	1	**0**	1	
87	Jogia Khali	জগিয়া খালী	87	1	**1**	0	
88	Porahata	পোড়াহাতা	88	1	**1**	0	
89	Shibpur	শিবপুর	89	1	**0**	1	
90	Isouabad	ঈসুয়াবাদ	90	1	**0**	1	
91	Narayanpur 1st Part	নারায়নপুর ১ম খন্ড	91	1	**1**	0	
92	Chandipur	চন্ডিপুর	92	1	**0**	1	
93	Narayanpur 2nd Part	নারায়নপুর ২য় খন্ড	93	1	**0**	1	
94	Gopalpur 2nd Part	গোপালপুর ২য় খন্ড	94	1	**0**	1	
95	Bri Charkona	বৃ চরকোনা	95	1	**0**	1	
96	Ramkrisnapur	রামকৃষ্ণপুর	96	1	**0**	1	
97	Raghunathpur	রঘুনাথপুর	97	1	**0**	1	
98	Laksmipur	লক্ষীপুর	98	1	**0**	1	
99	Ramchandrapur	রামচন্দ্রপুর	99	1	**1**	0	
100	Gatipara	গাতিপাড়া	100	1	**0**	1	
101	Besthan	বেস্থান	101	1	**1**	0	
102	Ghagra Gopalpur	ঘাগড়া গোপালপুর	102	1	**0**	1	
103	Ghagra Narayanpur	ঘাগড়া নারায়নপুর	103	1	**0**	1	
104	Bisnupur	বিষ্ণুপুর	104	1	**0**	1	
105	BhulhatSoma	ভুলহাটসোমা	105	1	**0**	1	
106	Bri Ghagra	বৃ ঘাগড়া	106	1	**0**	1	
107	Votrupur	ভট্টপুর	107	1	**0**	1	
108	Rajibpur	রাজিবপুর	108	1	**0**	1	

Sl	Mouza	Mauza Name (Bangla)	JL No	Total Sheet No	Collected	Remaining	Comments
109	Charkona	চরকোনা	109	1	**0**	1	
110	Chandra Nagar	চন্দ্র নগর	110	1	**0**	1	
111	Brahmongati	ব্রাহ্মণগাতি	111	1	**0**	1	
112	Sahebnagar	সাহেবনগর	112	1	**0**	1	
113	Radhabollabpur	রাধাবল্লভপুর	113	1	**0**	1	
114	Uday Rampur	উদয় রামপুর	114	1	**0**	1	
115	Ram Gobindrapur	রাম গোবিন্দ্রপুর	115	1	**0**	1	
116	Umanathpur	উমানাথপুর	116	1	**0**	1	
117	Haripur	হরিপুর	117	1	**0**	1	
118	Momrojpur	মোমরোজপুর	118	1	**0**	1	
119	Shalpa Ghagra	স্বল্প ঘাগড়া	119	1	**0**	1	
120	Bhabanipur	ভবানীপুর	120	1	**1**	0	
121	Ghagra	ঘাগড়া	121	1	**0**	1	
122	Behargati	বেহারগাতি	122	1	**1**	0	
123	Majhihati	মাঝিহাটি	123	2	**1**	1	
124	Rudrapur	রুদ্রপুর	124	1	**0**	1	
125	Shalpa Charpara	স্বল্প চরপাড়া	125	1	**0**	1	
126	Tarup Charpara	তরপ চরপাড়া	126	1	**0**	1	
127	Bri Debsthan	বৃ দেবস্থান	127	1	**0**	1	
128	Kabil Baksi	কাবিল বাকসী	128	1	**0**	1	
129	Mogtola Tarup Pachail	মগতোলা তরপ পাচাইল	129	2	**0**	2	
130	Ramnagar	রামনগর	130	1	**0**	1	
131	Sri Nagar	শ্রী নগর	131	1	**0**	1	
132	Uchargati	উচারগাতী	132	1	**0**	1	
133	Narayanpur	নারায়নপুর	133	1	**0**	1	
134	Datter Danguri	দত্তের ডাঙ্গুরী	134	1	**0**	1	
135	Kathal Danguri	কাঠাল ডাঙ্গুরী	135	1	**0**	1	
136			136	1	**0**	1	
137	Raghudebpur	রঘুদেবপুর	137	1	**0**	1	
138	Ballabpur	বল্লভপুর	138	1	**0**	1	
139	Dubli	ডুবলী	139	1	**0**	1	
140	Tarup Sonasoni	তরপ সোনাসনী	140	1	**0**	1	
141	Mogtola Dhaniakandi	মগটোলা ধনিয়কান্দি	141	1	**0**	1	
142	Mogtola Para Basati	মগটোলা পাড়া বাসাটি	142	1	**0**	1	
143	Durgapur	দুর্গাপুর	143	1	**0**	1	
144	Srirampur	শ্রীরামপুর	144	1	**0**	1	
145	Bil Kherua	বিলখেরুয়া	145	1	**0**	1	
146	Mogtula 1st Part	মগটোলা ১ম খন্ড	146	1	**0**	1	

Sl	Mouza	Mauza Name (Bangla)	JL No	Total Sheet No	Collected	Remaining	Comments
147	Subundi	সুবন্দি	147	1	**0**	1	
148	Ram Gopalbari	রামগোপালবাড়ী	148	1	**0**	1	
149	Rajarampur	রাজারামপুর	149	1	**0**	1	
150	Naopara	নওপাড়া	150	1	**1**	0	
151	Modhupur	মধুপুর	151	1	**0**	1	
152	Tajpur	তাজপুর	152	1	**0**	1	
153	Nardari	নার্ডরি	153	2	**2**	0	
154	Bagber Abdullapur	বাগবেড় আব্দুল্লাপুর	154	1	**0**	1	
155	Gauripur	গৌরীপুর	155	1	**0**	1	
156	Ghorakandia	গড়াকান্দিয়া	156	1	**0**	1	
157	Nagar Danguri	নগর ডাঙ্গুরী	157	1	**1**	0	
158	Galahar	গালাহার	158	1	**1**	0	
159	Chatiantola Boirati	ছাতিয়ানতোলা বৈরাটি	159	2	**1**	1	
160	Baghber Abdullapur	বাগবেড় আব্দুল্লাপুর	160	1	**1**	0	
161	Dhitpur	ধিতপুর	161	1	**0**	1	
162	Barmma	বর্ম্মা	162	1	**1**	0	
163	Banasram	বানাশ্রম	163	1	**1**	0	
164	Khorddasaia	খোর্দ্দসাইয়া	164	1	**1**	0	
165	Shadur Gola	সাধুর গোলা	165	1	**0**	1	
166	Bhasa Gakul Nagar	ভাসা গকুল নগর	166	1	**0**	1	
167	Char Sankar	চর সঙ্কর	167	1	**1**	0	
168	Uttamkpur	উত্তমপুর	168	1	**1**	0	
169	Maijbagh	মাইজবাগ	169	6	**3**	3	
170	Tarati	তারাটি	170	2	**1**	1	
171	karimpur	করিমপুর	171	1	**1**	0	
172	Dattagaon	দত্তগাঁও	172	2	**1**	1	
173	Boroibari	বরইবাড়ী	173	1	**1**	0	
174	Jatia	জটিয়া	174	2	**1**	1	
175	Kabir Bhulsoma	কবির ভুলসোমা	175	1	**1**	0	
176	Pitamborpara	পিতাম্বরপাড়া	176	1	**1**	0	
177	Uttampur	উত্তমপুর	177	1	**1**	0	
178	Harua	হারুয়া	178	1	**0**	1	
179	Terochati	তেরচাটি	179	1	**1**	0	
180	Mollikpur	মল্লিকপুর	180	1	**1**	0	
181	Mujatia	মুজাটিয়া	181	1	**1**	0	
182	Borojhora	বড়জোড়া	182	2	**0**	2	
183	Boro Danguri	বড়ডাঙ্গুরী	183	2	**2**	0	
184	Noupara	নওপাড়া	184	1	**0**	1	
185	Char Pubaiol	চরপুবাইল	185	1	**1**	0	
186	Char Sehari	চর সেহারী	186	1	**1**	0	

Sl	Mouza	Mauza Name (Bangla)	JL No	Total Sheet No	Collected	Remaining	Comments
187	Char Hossainpur	চর হোসেনপুর	187	4	**2**	2	
188	Joypur	জয়পুর	188	1	**0**	1	
189	khairati	খৈরাটী	189	1	**1**	0	
190	Sharsi	শর্শি	190	1	**1**	0	
191	Asrabpur	আশ্রবপুর	191	1	**0**	1	
192	Majiakandi	মাঝিয়াকান্দি	192	1	**1**	0	
193	Kumra Shason	কুমড়া শাসন	193	1	**1**	0	
194	Shadrpara	সাদারপাড়া	194	1	**1**	0	
195	Durgapur	দুর্গাপাড়া	195	1	**1**	0	
196	Khulatia	খুলিয়াটী	196	1	**1**	0	
197	GhagraPara	ঘাগড়াপাড়া	197	1	**1**	0	
198	Majiakandi	মাঝিয়াকান্দি	198	1	**1**	0	
199	Shaktapur	সাকতাপুর	199	1	**1**	0	
200	Eoajnagar	এওয়াজনগর	200	1	**1**	0	
201	Balisita	বালিসিতা	201	1	**0**	1	
202	Tarakandi	তারাকান্দি	202	1	**1**	0	
203	Bhaigaon	ভাইদগাও	203	1	**1**	0	
204	Naya Shimul	নয়া শিমুল	204	1	**1**	0	
205	Sayed Bhakuri	সৈয়দ ভাকুরী	205	1	**1**	0	
206	Char Sayed Bhakurui	চর সৈয়দ ভাকুরী	206	1	**1**	0	
207	Charti	চর্টী	207	1	**1**	0	
208	Hatulia	হাটুলিয়া	208	1	**1**	0	
209	Darun borobagh	দারুণ বড়ভাগ	209	1	**1**	0	
210	Ruhi	রুহি	210	1	**1**	0	
211	Boro tarakandi	বড় তারাকান্দি	211	1	**1**	0	
212	Chota tarakandi	ছোট তারাকান্দি	212	1	**1**	0	
213	Ramnathlila	রামনাথখিলা	213	1	**1**	0	
214	Dakshin Borovog	দক্ষিণ বড়ভাগ	214	1	**1**	0	
215	Dori Pachhasi	দড়ি পাচাসী	215	1	**1**	0	
216	Kakon Hati	কাকন হাটি	216	2	**1**	1	
217	Pat bhakuri	পাট ভাকুরী	217	1	**1**	0	
218	Para Pachhasi	পাড়া পাচাসী	218	1	**1**	0	
219	Dhamdi	ধামদী	219	1	**1**	0	
220	Char Nikla	চর নিকলা	220	3	**1**	2	
221	Dattapara	দত্তপাড়া	221	5	**5**	0	
222	Shimrail	শিমরাইল	222	1	**1**	0	
223	Dari Borobhag	দড়ি বড়ভাগ	223	1	**1**	0	
224	Muktapur	মুক্তাপুর	224	1	**1**	0	
225	Suniakandi	সুনিয়াকান্দি	225	1	**1**	0	
226	Baroigaon	বারইগাঁও	226	1	**1**	0	

Sl	Mouza	Mauza Name (Bangla)	JL No	Total Sheet No	Collected	Remaining	Comments
227	Bri Kathalia	বৃ কাঠালিয়া	227	1	**0**	1	
228	Kathalia	কাঠালিয়া	228	1	**1**	0	
229	Bogaputi	বগাপুটি	229	1	**1**	0	
230	Momrojpur	মোমরোজপুর	230	1	**1**	0	
231	Sohagi	সোহাগী	231	2	**2**	0	
232	Maijhati	মাইজহাটি	232	1	**1**	0	
233	Bhalukber	ভালুকবেড়	233	2	**0**	2	
234	Baroikandi	বারইকান্দা	234	1	**1**	0	
235	Rameshwarpur	রামেশ্বরপুর	235	2	**1**	1	
236	Chapilkanda	চাপিলকান্দা	236	1	**1**	0	
237	Mahespur	মহেশপুর	237	3	**3**	0	
238	Kasipur	কাশিপুর	238	1	**0**	1	
239	Boirati	বৈরাটী	239	1	**1**	0	
240	Shaheb nagar	সাহেব নগর	240	2	**2**	0	
241	Monoharpur	মনোহরপুর	241	1	**1**	0	
242	Nij Tulandar	নিজ তুলন্দর	242	1	**0**	1	
243	Tanga Tangia	টঙ্গটাঙ্গিয়া	243	1	**1**	0	
244	Moliati	মালিয়াটী	244	1	**0**	1	
245	Tangongati	টাঙ্গনগাতী	245	1	**1**	0	
246	Harishwar	হরিশ্বর	246	1	**1**	0	
247	Koroikandi	করইকান্দি	247	1	**1**	0	
248	Haripur	হরিপুর	248	1	**1**	0	
249	Paiksha	পাইকসা্	249	1	**1**	0	
250	Phanur	ফানুর	250	1	**1**	0	
251	Doriunda	দড়িউন্দ	251	1	**1**	0	
252	Khalilnagar	খলিলনগর	252	1	**1**	0	
253	Inayetpur	ইনায়েতপুর	253	1	**1**	0	
254	Langail	লাঙ্গাইল	254	1	**1**	0	
255	Enayet Nagar	এনায়েত নগর	255	1	**1**	0	
256	Machimpur	মাছিমপুর	256	1	**1**	0	
257	Kusipara	কুশিপাড়া	257	1	**1**	0	
258	Suthia	সুথিয়া	258	1	**1**	0	
259	Hiradhar	হিরাধর	259	1	**1**	0	
260	Sathia	সাথিয়া	260	1	**1**	0	
261	Makarjhap	মাকরঝাপ	261	1	**1**	0	
262	Bausati	বাউসটী	262	1	**1**	0	
263	Kahetgaon	কাহেতগাঁও	263	1	**1**	0	
264	Rampur	রামপুর	264	1	**1**	0	
265	Kumaruli	কুমারুলি	265	1	**1**	0	
266	Saguli	সাগুলি	266	1	**1**	0	
267	Bijoypur	বিজয়পুর	267	1	**1**	0	
268	Rokonpur	রোকনপুর	268	1	**1**	0	
269	Fatehpur	ফতেপুর	269	1	**1**	0	

Sl	Mouza	Mauza Name (Bangla)	JL No	Total Sheet No	Collected	Remaining	Comments
270	Palan	পালান	270	1	**1**	0	
271	Khalbola 1st Part	খালবোলা ১ম খন্ড	271	1	**1**	0	
272	Palandor	পালান্দর	272	1	**1**	0	
273	Sarisa	সরিষা	273	3	**2**	1	
274	Bisnupur	বিষ্ণুপুর	274	2	**2**	0	
275	Mri Gali	মৃ গালী	275	1	**1**	0	
276	Fatehnagar	ফতেনগর	276	1	**1**	0	
277	Itaulia	ইটাউলিয়া	277	1	**1**	0	
278	Madhupur	মধুপুর	278	1	**1**	0	
279	Golkunda	গলকুন্ড	279	3	**3**	0	
280	Gaborkailan	গাবরকাইলান	280	1	**1**	0	
281	Bongaon	বনগাঁও	281	1	**1**	0	
282	Teorail	তেওরাইল	282	1	**1**	0	
283	Sriphaltola	শ্রীফলতলা	283	1	**1**	0	
284	Pathalia	পাথালিয়া	284	1	**1**	0	
285	Khalbola 2nd Part	খালবোলা ২য় খন্ড	285	1	**1**	0	
286	Dhigalia	দিঘলিয়া	286	1	**1**	0	
287	Mohes Chatol	মহেষ চাতল	287	1	**1**	0	
288	Behaori	বেহাওরি	288	1	**1**	0	
289	Atharobari	আঠারবাড়ী	289	1	**1**	0	
290	Bongaon	বনগাঁও	290	1	**1**	0	
291	Katiar Haor	কাটিয়ার হাওর	291	1	**1**	0	
292	Chorgaon	চোরগাঁও	292	1	**1**	0	
293	Sarati	সরাটী	293	1	**1**	0	
294	rajibpur	রাজিবপুর	294	1	**1**	0	
295	Sondailpara	সোনদাইলপাড়া	295	1	**1**	0	
296	Char Achia	চর আসিয়া	296	1	**1**	0	
297	Sahilati	সহিলাটী	297	1	**1**	0	
298	Chair Asia	চাইর আসিয়া	298	1	**1**	0	
299	Dosasia	দশাশিয়া	299	1	**1**	0	
300	Gorail	গড়াইল	300	1	**1**	0	
301	Sridebpur	শ্রীদেবপুর	301	1	**1**	0	
302	Raypur	রায়পুর	302	1	**1**	0	
303	Bhagra	বাগড়া	303	1	**1**	0	
	Total Collected Mouza & Sheet		**188**		**212**		

Source- DLRS office

APPENDIX V- CONTACT AGREEMENT OF SITE OFFICE AT SHIBPUR UPAZILA

কড ৯৫৪৭২৭৯

ভাড়াটিয়া চুক্তিপত্র

মোঃ মোজাম্মেল হক(আ:রব), পিতা: মফিজউদ্দিন রিকাবদার, শরিফ মার্কেট, কলেজ গেইট, শিবপুর, জেলা: নরসিংদী। – প্রথম পক্ষ।

আর্ক বাংলাদেশ লিঃ ও শেলটেক কনসালটেন্ট প্রাইভেট লিঃ,জয়েন্ট ভেঞ্চার, ৬/৫, ব্লক # বি, লালমাটিয়া, ঢাকা। – দ্বিতীয় পক্ষ।

১ম পক্ষ তার খান টাওয়ার (৪র্থ তলা পশ্চিম দিক), শিবপুর বাজার বাসাটি ভাড়া দেয়ার প্রস্তাব করিলে দ্বিতীয় পক্ষ অফিস পরিচালনার জন্য তাহা নিম্নলিখিত শর্তসাপেক্ষে ভাড়া নিতে সম্মত হয়।

শর্তসমুহ

১। এই চুক্তিনামা স্বাক্ষরের তারিখ থেকে তিন মাস বলবৎ থাকিবে।

২। দ্বিতীয় পক্ষ মাসিক ভাড়া ৪০০০/- (চার হাজার) টাকা মাত্র প্রতিমাসের ১০ (দশ) তারিখের মধ্যে প্রথম পক্ষকে অগ্রিম পরিশোধ করবেন। ভাড়া ব্যতিত মালিক কর্তৃক নির্ধারিত বিদ্যুত বিল ও নির্ধারিত গ্যাস বিল সংশ্লিষ্ট কর্তৃপক্ষকে দ্বিতীয় পক্ষ আলাদাভাবে প্রদান করিবেন।

৩। দ্বিতীয় পক্ষ নিরাপত্তা জামানত (ফেরতযোগ্য) হিসেবে এক মাসের ভাড়ার সমপরিমান অগ্রিম ৪০০০/- (চার হাজার) টাকা প্রথম পক্ষকে পরিশোধ করবেন। এই ফেরতযোগ্য নিরাপত্তা জামানত চুক্তির মেয়াদ শেষে প্রথম পক্ষ দ্বিতীয় পক্ষকে পরিশোধ করিবেন।

পাতা-1/3

কড ৯৫৪৭২৮০

৪। উভয় পক্ষ প্রয়োজনে বাতিল করিতে পারিবেন। তবে তাহা বাতিলের তারিখ থেকে একমাস পূর্বে লিখিতভাবে / মৌখিক ভাবে অন্যপক্ষকে অবহিত করিবেন। এক্ষেত্রে কোনোপ্রকার বিলম্ব করা যাবেনা।

৫। উভয় পক্ষের আলোচনার ভিত্তিতে নুতন ভাড়া নির্ধারন করিয়া চুক্তিটি নবায়ন করা যাইবে। তবে চুক্তির মেয়াদ শেষ হওয়ার একমাস আগে দ্বিতীয় পক্ষ প্রথম পক্ষকে কাংখিত নবায়নের কথা জানাইবেন।

৬। চুক্তির মেয়াদকালীন সময়ে প্রথম পক্ষ দ্বিতীয় প্রক্ষের কাছে কোন বর্ধিত ভাড়া দাবি করিতে পারিবেনা।

৭। বাসায় কোনপ্রকার অসামাজিক বা অবৈধ ব্যবসা পরিচালনা করা যাবেনা।

৮। দ্বিতীয় পক্ষ বাসাটি অন্য কাউকে কিংবা উপভাড়া দিতে পারবেন না।

৯। দ্বিতীয় পক্ষ বাসাটি প্রথম পক্ষ থেকে যেভাবে বুঝিয়া নিবেন চুক্তির মেয়াদান্তে ঠিক সেইভাবে ফেরত দিবেন।

১০। দ্বিতীয় পক্ষ বাসাটি কোন ব্যক্তি বা প্রতিষ্ঠানের কাছে লিজ কিংবা বন্ধক দিতে পারবেন না।

পাতা-2/3

কড ৯৫৪৭২৮১

১১। বাসার কোনপ্রকার ক্ষতি সাধন করিলে দ্বিতীয় পক্ষ তা নিজ খরচে মেরামত করিবেন। তবে মেরামতের পূর্বে প্রথম পক্ষের অনুমতি নিবেন।

১২। দ্বিতীয় পক্ষ মালিক এর নিয়মকানুন সম্পূর্ণরূপে মেনে চলতে বাধ্য থাকবেন।

আমরা উভয়পক্ষ চুক্তিনামার সকল শর্ত মেনে স্বাক্ষীগনের উপস্থিতে অদ্য ১৯-০৪-২০১৫(উনিশ এপ্রিল, দুইহাজার পনের) স্বাক্ষর করিলাম।

প্রথম পক্ষ

দ্বিতীয় পক্ষ

স্বাক্ষীগন:

2/ আনওয়ারুল আলম-

পাতা-3/3

APPENDIX VI- CONTACT AGREEMENT OF SITE OFFICE AT ISHWARGANJ UPAZILA

কচ ১৫০০৩৬৬

ভাড়াটিয়া চুক্তিপত্র

মোঃ সেলিম, পিতা- মৃত আব্দুল হামিদ, গ্রামঃ চর শিহারী, থানাঃ ঈশ্বরগঞ্জ, জেলাঃ ময়মনসিংহ। – প্রথম পক্ষ।

আর্ক বাংলাদেশ লিঃ ও শেলটেক কনসালটেন্ট প্রাইভেট লিঃ,জয়েন্ট ভেঞ্চার, ৬/৫, ব্লক # বি, লালমাটিয়া, ঢাকা। – দ্বিতীয় পক্ষ।

১ম পক্ষ তার গ্রাম: চর হোসেনপুর, থানাঃ ঈশ্বরগঞ্জ, জেলাঃ ময়মনসিংহ, (কাজী অফিস সংলগ্ন) বাসাটি ভাড়া দেয়ার প্রস্তাব করিলে দ্বিতীয় পক্ষ অফিস পরিচালনার জন্য তাহা নিম্নলিখিত শর্তসাপেক্ষে ভাড়া নিতে সম্মত হয়।

শর্তসমূহ

১। এই চুক্তিনামা স্বাক্ষরের তারিখ থেকে একবছর বলবৎ থাকিবে।

২। দ্বিতীয় পক্ষ মাসিক ভাড়া ৫০০০/- (পাঁচ হাজার) টাকা মাত্র প্রতিমাসের ১০ (দশ) তারিখের মধ্যে প্রথম পক্ষকে অগ্রিম পরিশোধ করবেন । ভাড়া ব্যতিত মালিক কর্তৃক নির্ধারিত বিদ্যুত বিল ও নির্ধারিত পানির বিল সংশ্লিষ্ট কর্তৃপক্ষকে দ্বিতীয় পক্ষ আলাদাভাবে প্রদান করিবেন।

৩। দ্বিতীয় পক্ষ নিরাপত্তা জামানত (ফেরতযোগ্য) হিসেবে দুই মাসের ভাড়ার সমপরিমান ১০০০০/- (দশ হাজার) টাকা প্রথম পক্ষকে পরিশোধ করবেন। এই ফেরতযোগ্য নিরাপত্তা জামানত চুক্তির মেয়াদ শেষে প্রথম পক্ষ দ্বিতীয় পক্ষকে পরিশোধ করিবেন।

পাতা 1/3

কচ ১৫০০৩৬৭

৪। উভয় পক্ষ প্রয়োজনে চুক্তি বাতিল করিতে পারিবেন। তবে তাহা বাতিলের তারিখ থেকে দুইমাস পূর্বে লিখিতভাবে অন্যপক্ষকে অবহিত করিবেন। এক্ষেত্রে কোনোপ্রকার বিলম্ব করা যাবেনা।

৫। উভয় পক্ষের আলোচনার ভিত্তিতে নুতন ভাড়া নির্ধারন করিয়া চুক্তিটি নবায়ন করা যাইবে। তবে চুক্তির মেয়াদ শেষ হওয়ার দুইমাস আগে দ্বিতীয় পক্ষ প্রথম পক্ষকে কাংখিত নবায়নের কথা জানাইবেন।

৬। চুক্তির মেয়াদকালীন সময়ে প্রথম পক্ষ দ্বিতীয় প্রক্ষের কাছে কোন বর্ধিত ভাড়া দাবি করিতে পারিবেনা।

৭। বাসায় কোনপ্রকার অসামাজিক বা অবৈধ ব্যবসা পরিচালনা করা যাবেনা।

৮। দ্বিতীয় পক্ষ বাসাটি অন্য কাউকে কিংবা উপভাড়া দিতে পারবেন না।

৯। দ্বিতীয় পক্ষ বাসাটি প্রথম পক্ষ থেকে যেভাবে বুঝিয়া নিবেন চুক্তির মেয়াদান্তে ঠিক সেইভাবে ফেরত দিবেন।

১০। দ্বিতীয় পক্ষ বাসাটি কোন ব্যক্তি বা প্রতিষ্ঠানের কাছে লিজ কিংবা বন্ধক দিতে পারবেন না।

১১। বাসার কোনপ্রকার ক্ষতি সাধন করিলে দ্বিতীয় পক্ষ তা নিজ খরচে মেরামত করিবেন। তবে মেরামতের পূর্বে প্রথম পক্ষের অনুমতি নিবেন।

পাতা-2/3

কচ ১৫০০৩৬৮

১২। দ্বিতীয় পক্ষ মালিক এর নিয়মকানুন সম্পূর্ণরূপে মেনে চলতে বাধ্য থাকবেন।

আমরা উভয়পক্ষ চুক্তিনামার সকল শর্ত মেনে স্বাক্ষীগনের উপস্থিতে অদ্য ১৩-০৪-২০১৫(তেরই এপ্রিল, দুইহাজার পনের) স্বাক্ষর করিলাম।

প্রথম পক্ষ

দ্বিতীয় পক্ষ

স্বাক্ষীগন:

১। মো: শফিকুল ইসলাম

২। তারেক খান

পৃষ্ঠা-3/3

APPENDIX VII- PROJECT ACTIVITIES NEWS ON LOCAL NEWS PAPER

১ম বর্ষ, সংখ্যা-৩৩
সোমবার
পৃষ্ঠা ঃ ৪ মূল্য ঃ ৫ ৳
সাপ্তাহিক আমাদের ময়মনসিংহ
আমরা আছি উন্নয়নের সাথে...
E-mail : amadermymensingh2014@gmail.com
The Weekly Amader Mymensingh

ময়মনসিংহে গণমাধ্যম কর্মীদের সাথে নগর উন্নয়ন অধিদপ্তরের মতবিনিময়

সোহাগ ইশ্বরগঞ্জ থেকে ঃ গত ময়মনসিংহের ঈশ্বরগঞ্জে গণমাধ্যম কর্মীদের সাথে নগর উন্নয়ন অধিদপ্তরের মতবিনিময় সভা অনুষ্ঠিত হয়। উপজেলা পরিষদ মিলনায়তনে অনুষ্ঠিত নগর উন্নয়ন অধিদপ্তর কর্তৃক বাস্তবায়নাধীন "প্রিপারেশন অব ডেভেলপমেন্ট প্ল্যান ফর ফোরটিন উপজেলাস" প্রকল্পের (প্যাকেজ-০২) মহাপরিকল্পনা (২য় পাতায়)

ময়মনসিংহে গণমাধ্যম

(১ম পাতার পর) প্রণয়ন কার্যক্রম পরিচিতি শীর্ষক মতবিনিময় সভায় উপস্থিত ছিলেন অধিদপ্তরের সিনিয়র প্ল্যানার উদয় শংকর দাসের নেতৃত্বে সংশ্লিষ্ট কর্মকর্তাগণ সহ স্থানীয় সাংবাদিকদের মধ্যে আবুল কালাম আজাদ,সাইফুল ইসলাম তালুকদার, রতন ভৌমিক, আতাউল করিম দুলু, আজিজুল হাই সোহাগ, আব্দুল আউয়াল, মোহাম্মদ সেলিম,রেজাউল করিম বিপ্লব প্রমূখ।

বর্ষ-১৯ ❖ সংখ্যা-২৫৫ ❖ ময়মনসিংহ, বৃহস্পতিবার ❖ ২৬ ফেব্রুয়ারি ২০১৫ ইং ❖ ১৪ ফাল্গুন ১৪২১ বাংলা ❖ পৃষ্ঠা -৪ ❖ মূল্য ঃ ৩ টাকা

পথ চলায় ১৯ বছর ...

দৈনিক সবুজ

মুক্ত চিন্তার জাতীয় সংবাদ পত্র

রেজি নং- ডি এ ১৬৮৪ THE DAILY SABUJ সরকারী বিজ্ঞাপন তালিকা ভুক্ত

ঈশ্বরগঞ্জে নগর উন্নয়ন অধিদপ্তরের মতবিনিময় সভা অনুষ্ঠিত

মোঃ সেলিম ঃ 'প্রিপারেশন অব ডেভেলাপমেন্ট প্ল্যান ফর ফোরটিন উপজেলাস' শীর্ষক প্রকল্পের আওতায় ময়মনসিংহের ঈশ্বরগঞ্জে নগর উন্নয়ন অধিদপ্তর স্থানীয় সাংবাদিক ও সুশীল সমাজের সঙ্গে মতবিনিময় সভা করেছেন। গত ২৪ ফেব্রুয়ারি সন্ধ্যায় উপজেলা পরিষদ সম্মেলন কক্ষে এই সভা অনুষ্ঠিত হয়। এতে আলোচনা করেন, গৃহায়ণ ও গণপূর্ত মন্ত্রনালয়ের নগর উন্নয়ন অধিদপ্তর, 'প্রিপারেশন অব ডেভেলাপমেন্ট প্ল্যান ফর ফোরটিন উপজেলাস' প্রকল্পের পরিচালক, (২য় পাতায়)

ঈশ্বরগঞ্জে নগর উন্নয়ন

(শেষের পাতার পর) শাহীন আহাম্মেদ, প্রকল্প ব্যবস্থাপক উদয়ন শংকর দাস, শেলটেক ডেভেলাপমেন্ট প্রাঃ লিঃ এর নগর পরিকল্পনাবীদ কে. এম আবুল বাশার, আর্ক বাংলাদেশ লিঃ এর সোসাল এক্সপার্ট মজিবুর রহমান, বেলায়েত হোসেন প্রমুখ।

আলোচনায় বক্তারা বলেন, বড় বড় শহর ও এর আশ- পাশে উন্নয়ন হয় যার স্বাদ গ্রহণ করে ওই শহরের সমস্ত জনগণ। তাই বাংলাদেশের ভবিষ্যতে উন্নয়নের জন্যে ছোট এবং মধ্যমসারীরর শহর গুলোর উন্নয়ন অত্যন্ত জরুরি। গ্রাম ও শহরের মধ্যেসেতু বন্ধন থাকলেও গ্রামগুলো অত্যন্ত অনুন্নত যাতে আধুনিক জীবনযাত্রা অনুপস্থিত। এ কারণে অপেক্ষাকৃত উন্নত জীবন যাপনের উদ্দ্যেশে অতি সহজেই এ সমস্ত শহরে অবস্থান নিয়ে থাকে সাধারণ মানুষ।

অপর দিকে শহরের রাজস্ব আয়ের একটা বড় অংশ আসে এসমস্ত ছোট ও মাঝারী শহর থেকে তাই, মাঝারী শহর গুলো হতে পারে ছোট ও মাঝারী মানের ব্যবসা ও শিল্প উৎপাদন কেন্দ্র যেখানে সহজেই কর্মসংস্থানের সুযোগ সৃষ্টি হবে এবং প্রশাসনিক ব্যবস্থাসহ উন্নত নাগরিক সুবিধা থাকবে।

এ লক্ষ্যে বাংলাদেশ সরকার ১১টি জেলার ১৪ টি উপজেলাকে নগর উন্নয়ন পরিকল্পনার আওতায় এনেছে এর একটি ময়মনসিংহের ঈশ্বরগঞ্জ উপজেলা। 'প্রিপারেশন অব ডেভেলাপমেন্ট প্ল্যান ফর ফোরটিন উপজেলাস' নামের এই প্রকল্পটি পরিকল্পনা প্রনয়নের জন্যে কাজ হতে নয়েছে। চারটি ধাপে পরিকল্পনাটি সাজিয়ে আগামী ২০ বছরের জন্যে জাতীয় উন্নয়ন নীতিমালা প্রনয়ন করা হবে বলে জানিয়েছেন বক্তারা।

তাজা খবর পড়তে চোখ রাখুন লোক লোকান্তর অনলাইনে www.daily loklokantor.com

লোক লোকান্তর

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রেজি: নং- ডিএ ৬০১৯ • ৮ম বর্ষ ঃ সংখ্যা ১২•ময়মনসিংহ, বাংলাদেশ,বৃহস্পতিবার•২৬ ফেব্রুয়ারী ২০১৫•১৪ ফাল্গুন ১৪২১•৬ জমাদিউল আওয়াল ১৪৩৬•পৃষ্ঠা-৪ মূল্য ৩.০০ টাকা

ঈশ্বরগঞ্জে সাংবাদিক ও সুশীল সমাজের মতবিনিময় সভা

ঈশ্বরগঞ্জ প্রতিনিধিঃ ময়মনসিংহের ঈশ্বরগঞ্জে সাংবাদিক ও সুশীল সমাজের সঙ্গে নগর উন্নয়ন অধিদপ্তর কর্তৃক বাস্তবায়নাধীন প্রকল্প 'প্রিপারেশন অব ডেভেলাপমেন্ট প্ল্যান ফর ফোরটিন উপজেলাস' এর কর্মকর্তাদের এক মতবিনিময় সভা অনুষ্ঠিত হয়েছে। মঙ্গলবার সন্ধায় উপজেলা পরিষদ সম্মেলন কক্ষে 'প্রিপারেশন অব ডেভেলাপমেন্ট প্ল্যান ফর ফোরটিন উপজেলাস' এর আয়োজনে উক্ত মত বিনিময় সভা অনুষ্ঠিত হয়। এ সময় প্রকল্পের সার্বিক দিক নিয়ে আলোচনায় অংশগ্রহন করেন গৃহায়ণ(৩য় পাতায়)

ঈশ্বরগঞ্জে সাংবাদিক ও সুশীল

(১ম পাতার পর)ও গণপুর্ত মন্ত্রনালয়ের নগর উন্নয়ন অধিদপ্তর 'প্রিপারেশন অব ডেভেলাপমেন্ট প্ল্যান ফর ফোরটিন উপজেলাস' প্রকল্পের পরিচালক শাহীন আহাম্মেদ, প্রকল্প ব্যবস্থাপক উদয়ন শংকর দাস, শেলটেক ডেভেলাপমেন্ট প্রাঃ লিঃ এর নগর পরিকল্পনাবীদ কে. এম আবুল বাশার, আর্ক বাংলাদেশ লিঃ এর সোসাল এক্সপার্ট মজিবুর রহমান, বেলায়েত হোসেন। এ সময় উপস্থিত ছিলেন প্রেসক্লাব সভাপতি আতাউল করিম দুলু, সাধারণ সম্পাদক মোঃ সেলিম সহ প্রেসক্লাবের সদস্যবৃন্দ ও সুশীল সমাজের লোকজন। আলোচনায় বক্তারা বলেন, বড় বড় শহর ও এর আশ-পাশে উন্নয়ন হয় যার স্বাদ গ্রহণ করে ওই শহরের সমস্ত জনগণ। তাই বাংলাদেশের ভবিষ্যতে উন্নয়নের জন্যে ছোট এবং মধ্যমসারীর শহর গুলোর উন্নয়ন অত্যন্ত জরুরি। গ্রাম ও শহরের মধ্যে সেতু বন্ধন থাকলেও গ্রামগুলো অত্যন্ত অনুনন্নত। যার ফলে সেখানে আধুনিক জীবনযাত্রা অনুপস্থিত। এ কারণে অপেক্ষাকৃত উন্নত জীবন যাপনের উদ্দ্যেশে অতি সহজেই এ সমস্ত শহরে অবস্থান নিয়ে থাকে সাধারণ মানুষ। অপর দিকে শহরের রাজস্ব আয়ের একটা বড় অংশ আসে এ সমস্ত ছোট ও মাঝারী শহর থেকে। তাই, মাঝারী শহর গুলো হতে পারে ছোট ও মাঝারী মানের ব্যবসা ও শিল্প উৎপাদন কেন্দ্র। যেখানে সহজেই কর্মসংস্থানের সুযোগ সৃষ্টি হবে এবং প্রশাসনিক ব্যবস্থাসহ উন্নত নাগরিক সুবিধা থাকবে। এ লক্ষ্যে বাংলাদেশ সরকার ১১টি জেলার যে ১৪ টি উপজেলাকে নগর উন্নয়ন পরিকল্পনার আওতায় আনা হয়েছে তার একটি ময়মনসিংহের ঈশ্বরগঞ্জ উপজেলা। 'প্রিপারেশন অব ডেভেলাপমেন্ট প্ল্যান ফর ফোরটিন উপজেলাস' নামের এই প্রকল্পটি উন্নয়ন পরিকল্পনা প্রনয়নের জন্যে কাজ হাতে নিয়েছে। চারটি ধাপে পরিকল্পনাটি সাজিয়ে আগামী ২০ বছরে তা বাস্তবায়নের লক্ষ নির্ধারন করে জাতীয় উন্নয়ন নীতিমালা প্রনয়ন করা হবে বলে বক্তারা জানান। এসময় উপস্থিত ঈশ্বরগঞ্জ প্রেস ক্লাব ও সাংবাদিক সমিতির সদস্যবৃন্দ।

APPENDIX-VIII: PHYSICAL INFRASTRUCTURE SURVEY FORMAT

Sl. No	Physical Feature Name	Data Type			Z Value (Z measurement level)			Description
		Point	Line	Polygon	On Top	On Ground/ Level	Not Required	
1A. Water Bodies								
1	1. River Edge			X		X		
2	2. Khal Edge			X		X		
3	3. Drainage Channels			X		X		Name, width
4	4. River/khal centreline		X			X		Name, width
5	5. Flow direction	X					X	
6	6.onds/Tanks/Dishes			X		X		
7	7. Coastline		X			X		
B. Building/Structure		**Pucca/Semi pucca/stories, Building area>1.5 sqm (Depending on map Scale)**						
8	1. House			X	X			Residential Building
9	2. Industry			X	X			Industrial Building
10	3. Commercial			X	X			Commercial Building
n	4. Mixed			X	X			Mixed Use
12	5. Boundary Wall		X		X			Wall use as boundary
C. Roads								
13	1. Road Pucca		X	X		X		Asphalt Road
14	2. Road HBB		X	X		X		HBB Road
15	3,.Road Katcha		X	X		X		Katcha Road
16	4. Path Pucca		X	X		X		Pucca Path
17	5. Path Katcha		X	X		X		Katcha Path
18	6. Traffic Island/ Divider		X	X		X		
19	8. Road/Path Centreline		X			X		Name, width
D. Railways								
20	1. Railway Row Line		X			X		
21	2. Railway centreline		X			X		

22	3. Railway Junction Points	X				X		
E. Other Structure and Flood works				**Length, width, condition of abutments and wing-walls**				
23	1. Bridge / Culverts			X	X			Type, area, Name
24	2. Embankments			X	X			Name, length
25	3. Pump Station for Flood			X		X		Name
26	4. Sluice Gates		X		X			Name
27	5. Bus/Trucks Terminals			X		X		Indicate right way and areas
28	Harbor/ Bathing/boat Jetty		X		X			Harbor, Boat jetty
F. Natural Features								
29	1. Forest			X	X			Area > 2500 Sqm
30	2. Group of trees			X	X			Area < 2500 Sqm
31	3. Group of Trees Point	X			X			
32	4. Wetlands / Bog/ Marshland/ Flood prone area			X		X		Area > 2500 Sqm
33	5. Sand/Sand Dunes			X		X		Area > 2500 Sqm
34	Significant Single Tree	X				X		Easily identified single tree
E. Utility Services								
35	1. High voltage Electric Line		X		X			National/regional grid
36	2. Telephone Line		X		X			
37	3. Gas Line		X			X		
38	4. Utility Substation	X				X		Electric, Telephone exchange, Gas
39	5. Overhead Water Tank			X	X			Name, Capacity
40	4. Waste disposal and treatment points	X				X		A dustbin of municipality and other informal points
41	3. Water work			X		X		
42	5. Deep Tube well Stations	X				X		R.C.C EPHE and other deep tube well stations and output
F. Area Polygon								
43	Residential Area			X		X		Planned, Unplanned, Density (High, Middle, Low)
44	Commercial Area			X		X		Established markets 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		Mosques, Temples, Church, Mazar and others
49	Graveyard. Cemetery			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 Rea, pineapple etc.
56	Disaster prone areas			X		X		Flood, (indicating the flood affected area in 1998) Earthquake and fault line

APPENDIX-IX: LEAFLET

গ্রামীন এলাকার পরিকল্পনা

রুরাল এরিয়া প্ল্যান হবে উপজেলার গ্রামাঞ্চলের জন্য একটি ভূমি ব্যবহার ও উন্নয়ন পরিকল্পনা যা স্ট্রাকচার প্ল্যানে নির্দেশিত গ্রামীণ এলাকা নিয়ে প্রণীত হবে। রুরাল এরিয়া প্ল্যান করা হবে ২০ বছর মেয়াদের জন্য।

এ্যাকশন এরিয়া প্ল্যান

প্যাকেজের সর্বশেষ স্তর হচ্ছে এ্যাকশন এরিয়া প্ল্যান যা ৫ বছর মেয়াদের জন্য করা হয়। স্ট্রাকচার প্ল্যান থেকে অগ্রাধিকারমূলক প্রকল্পসমূহকে বাস্তবায়নের জন্য নির্দিষ্ট ক্ষুদ্র এলাকা ভিত্তিক ৫ বছর মেয়াদী এ্যাকশন প্ল্যান তৈরী করা হবে। এই প্ল্যানে মহাপরিকল্পনায় নির্ধারিত ভূমি ব্যবহার অনুযায়ী সড়ক, আবাসিক / বাণিজ্যিক এলাকা, পার্ক, খেলার মাঠ, বাজার ও অন্যান্য সুযোগ সুবিধাদি, কৃষি এলাকা প্রভৃতি বিস্তারিতভাবে প্রদর্শিত থাকবে।

১. প্রকল্প এলাকা সরেজমিনে পরিদর্শন ও পর্যবেক্ষন।
২. প্রকল্প এলাকার (মৌজা ও অন্যান্য মানচিত্র, সাধারণ পরিসংখ্যান ও তথ্যাদি সংগ্রহ।
৩. ডিজিটাল ম্যাপ প্রস্তুতকরণ এবং সীমানা নির্ধারণ।
৪. স্যাটেলাইট ইমেজ সংগ্রহ ও ফটোগ্রামেট্রিক (Photogrammetry) পদ্ধিতিতে প্রক্রিয়াকরণ।
৫. প্রকল্প এলাকায় বিভিন্ন প্রকার জরিপ (ভূমি বন্ধুরতা জরিপ, ভৌত অবকাঠামো জরিপ, ভূমি ব্যবহার জরিপ, আর্থসামাজিক জরিপ, যানবাহন সমীক্ষা, জল-ভূতত্ব, কৃষি, পরিবেশ ও দূর্যোগ ব্যবস্থাপনা জরিপ ইত্যাদি)।
৬. সংগ্রহকৃত তথ্য উপাত্ত ও জনগণের মতামতের ভিত্তিতে প্রকল্প এলাকার সমস্যা চিহ্নিতকরণ ও বিশ্লেষন।
৭. প্রক্ষেপণ ও পরিকল্পনার মানদন্ড নির্ধারণ।
৮. প্রকল্প এলাকার খসড়া উন্নয়ন পরিকল্পনা প্রণয়ন ও নীতিমালা তথা মহাপরিকল্পনা প্রস্তুতকরণ।
৯. গণশুনানী আয়োজন ও প্রয়োজনীয় সংযোজন, বিয়োজন, সংশোধন।
১০. প্রকল্প এলাকার চূড়ান্ত মহাপরিকল্পনা প্রণয়ন।
১১. প্রণীত মহাপরিকল্পনা অনুমোদন ও গেজেট নোটিফিকেশন।

প্রকল্প এলাকা পরিচিতি

রায়পুরা উপজেলা

মেঘনা, পুরাতনব্রহ্মপুত্র, আড়িয়ালখাঁ ও কাঁকন নদী বিধৌত বাংলাদেশের দ্বিতীয় বৃহত্তম উপজেলা রায়পুরা নরসিংদী জেলার দক্ষিণ-পূর্বাংশে অবস্থিত। এই উপজেলার উত্তরে বেলাব উপজেলা, পূর্বে কিশোরগঞ্জ ও ব্রাহ্মনবাড়িয়া জেলা, দক্ষিণে ব্রাহ্মণবাড়িয়া জেলার নবীনগর ও বাঞ্ছারামপুর এবং নরসিংদী সদর উপজেলা, পশ্চিমে নরসিংদী সদর ও শিবপুর উপজেলা অবস্থিত।এই উপজেলা প্রায় ২৩°৫২ ৩২৪°০৪ উত্তর-অক্ষাংশ এবং ৯০°৫৯ পূর্ব দ্রাঘিমাংশের মধ্যে অবস্থিত। রাজধানী ঢাকা ও নরসিংদী জেলা সদর থেকে রায়পুরা উপজেলা সদরের দূরত্ব যথাক্রমে ৭৯কিঃমিঃ এবং ৩২কিঃমিঃ। এর মোট আয়তন ৩১২.৭৭ বর্গকিলোমিটার। তন্মধ্যে জলাশয় ও প্রশস্ত নদী ৪৩.৭৭ বর্গকিলোমিটার, লোকসংখ্যা-৪,৫৪,৮৬০ জন, ইউনিয়ন- ২৪টি, পৌরসভা -১টি, গ্রাম-২৩৪টি, মৌজা-১১৩টি।

শিবপুর উপজেলা

নরসিংদী জেলাধীন শিবপুর উপজেলা ২৩.৫৬ হতে ২৪.০৭ ডিগ্রী উত্তর অক্ষরেখা এবং ৯০.৩৮ ডিগ্রী হতে ৯০.৫০ ডিগ্রী পূর্ব দ্রাঘিমা রেখার মধ্যে অবস্থিত। শিবপুর উপজেলা ২০৬.৮৯ বর্গকিলোমিটার জায়গা নিয়ে গঠিত। এউপজেলার দক্ষিণে রায়পুরা, নরসিংদী সদর ও পলাশ উপজেলা, পূর্বে বেলাব ও রায়পুরা উপজেলা, উত্তরে মনোহরদী উপজেলা এবং পশ্চিমে পলাশ ও গাজীপুর জেলার কাপাসিয়া উপজেলা অবস্থিত। আয়তন- ২১৭.৭১ বর্গকিলোমিটার, জনসংখ্যা-৩,১৫,৬৬৭জন, পুরুষ ১,৫৪,২২৩ জন ও মহিলা ১,৬১,৪৪৪ জন, জনসংখ্যা বৃদ্ধির হার-১.৩৫%, জনসংখ্যার ঘনত্ব -১,৪৫০ জন /বর্গকিঃমিঃ ,থানারসংখ্যা-৬৫,০৯৪টি ,পৌরসভা-১টি ,ইউনিয়ন৯টি ,গ্রামসংখ্যা-১২৪টি মৌজা-১১৫টি

ঈশ্বরগঞ্জ উপজেলা

ঈশ্বরগঞ্জ ময়মনসিংহ জেলার একটি প্রাচীন উপজেলা। ঈশ্বরগঞ্জ উপজেলার উত্তরে গৌরীপুর উপজেলা, পূর্বে নেত্রকোনা জেলার কেন্দুয়া উপজেলা, দক্ষিণে নান্দাইল উপজেলা এবং পশ্চিমে ত্রিশাল উপজেলা। জিলা সদর হতে দূরত্ব -সড়কপথে ২৪কিঃমিঃ ও রেলপথে ৩২কিঃমিঃ, আয়তন-২৮৬ বর্গকিঃমিঃ, পৌরসভার সংখ্যা-১টি, ইউনিয়নের সংখ্যা-১১টি, মৌজার সংখ্যা-২৯৩টি, গ্রামের/মহল্লারসংখ্যা-৩০৪টি, জনসংখ্যা-৩,৩৮,০৮০জন, পুরুষ- ১৭২৯৫২ জন এবং মহিলা-১,৬৫,১২৮ জন। মোট ভোটার সংখ্যা-২,৪৯,৮২১ জন। শিক্ষার হার-৩৫.২০%।

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার এর অর্থায়নে

নগর উন্নয়ন অধিদপ্তর কর্তৃক বাস্তবায়নাধীন

"প্রিপারেশন অব ডেভেলপমেন্ট প্ল্যান ফর ফোরটিন উপজেলাস" প্রকল্পের আওতায়

প্যাকেজ-০২ (রায়পুরা ও শিবপুর উপজেলা, জেলা নরসিংদী; ঈশ্বরগঞ্জ উপজেলা, জেলা-ময়মনসিংহ) এর অধীনে

মহাপরিকল্পনা প্রণয়ন কার্যক্রম পরিচিতি

পরামর্শক প্রতিষ্ঠান
SCPL শেলটেক কন্সালটেন্টস (প্রাঃ) লিঃ
এবং
আর্ক বাংলাদেশ লিঃ

মহাপরিকল্পনা তথা দীর্ঘ মেয়াদী ভৌত পরিকল্পনা

জনসংখ্যার দিক থেকে বাংলাদেশ পৃথিবীর ৮ম বৃহৎ দেশ। ২০১১ সালের আদমশুমারী অনুযায়ী যার (মোট জনসংখ্যা ১৪.৯৭ কোটি। দারিদ্র, আয়ের সীমিত সুযোগ, প্রাকৃতিক দুর্যোগসহ (বেশ কিছু কারণে বাংলাদেশে গ্রাম থেকে মানুষের শহরে স্থানান্তর হার অত্যন্ত বেশী। যেখানে সারা বিশ্বের নগরায়নের হার ৫২.১% সেখানে বাংলাদেশে বর্তমান নগরায়নের হার মাত্র ২৮% (আদমশুমারী, ২০১১)। প্রয়োজনীয় ও পরিকল্পিত অবকাঠামোর অভাবে বড়-ছোট সকল শহর এবং সংলগ্ন অঞ্চলসহ এমনকি প্রত্যন্ত গ্রামাঞ্চলেও সমস্যা বাড়ছে। কেবলমাত্র পরিকল্পিত উন্নয়নের মাধ্যমে একদিকে যেমন শহরএলাকাকে অর্থনৈতিকভাবে সমৃদ্ধ ও আশেপাশের গ্রামাঞ্চলকে অর্থনৈতিক ও বাণিজ্যিক কেন্দ্রে পরিনত করা ও নান্দনিকভাবে

আকর্ষণীয় করে গড়ে তোলা যায়। বাংলাদেশের সকল শহর ও অঞ্চল বিশেষতঃ প্রতিটি উপজেলাকে পরিকল্পিতভাবে গড়ে তোলা বর্তমান সরকারের অন্যতম একটি অঙ্গীকার যা বাংলাদেশের বিভিন্ন উন্নয়ন নীতি পরিকল্পনা তথ্যঃ প্রেক্ষিত পরিকল্পনা, ৬ষ্ট পঞ্চবার্ষিক পরিকল্পনা প্রভৃতিতে বিবৃত হয়েছে। উক্ত লক্ষ্য বাস্তবায়নে বাংলাদেশে মহাপরিকল্পনা প্রণয়নে নিয়োজিত প্রতিষ্ঠান নগর উন্নয়ন অধিদপ্তর প্রাথমিক পর্যায়ে ১৪টি উপজেলার মহাপরিকল্পনা প্রণয়নের উদ্যোগ গ্রহন করেছে। সমগ্র উপজেলার ভৌত উন্নয়ন পরিকল্পিত উপায়ে গড়ে তোলার লক্ষ্যে **২০ বছর** মেয়াদি মহাপরিকল্পনা প্রণয়ন করা হবে যা পরবর্তীতে বাস্তবায়ন করা হবে। এ সকল অঞ্চলে স্বাস্থ্য সম্মত পরিবেশ সৃষ্টির মাধ্যমে সামাজিক ও অর্থনৈতিক উন্নয়নে গুরুত্বপূর্ণ ভূমিকা রাখবে, একই সাথে সারা দেশে বৈষম্যহীন উন্নয়নে সম্পদের সুষম বন্টন নিশ্চিত করবে।

মহাপরিকল্পনার উদ্দেশ্য

১. পরিকল্পনার মাধ্যমে উপজেলার উন্নয়নে গুনগত পরিবর্তন আনয়ন করা যাতে ঐ সব শহরে বসবাসকারী জনগণের জীবন মানের উন্নয়ন ত্বরান্বিত হয়;

২. উপজেলা পরিকল্পনার মাধ্যমে সরকারী ও বেসরকারী খাতের উন্নয়নে সমন্বয় সহায়তা প্রদান করা;

৩. জনগণের চাহিদা মোতাবেক তাদের অংশগ্রহনমূলক প্রক্রিয়ার মাধ্যমে বহুমুখী বিনিয়োগ পরিকল্পনা তৈরী করা যাতে নগরবাসীর জীবনমানের উন্নয়ন ঘটে। এসব বিনিয়োগ পরিকল্পনায় শহরের জলনিস্কাশন, ভৌত অবকাঠামো নির্মাণ, পরিবহন ও ট্রাফিক ব্যবস্থাপনার বিষয়সমূহ প্রাধান্য পাবে;

৪. শহরে (বেসরকারী বা ব্যক্তিখাত উন্নয়নের জন্য এমন একটি নিয়ন্ত্রণ রুপরেখা (Control Mechanism) তৈরী করা যেখানে ভবিষ্যতে উন্নয়ন নিরাপত্তা ও পরিবেশ সংরক্ষণের সুবিধা থাকবে; এবং

৫. শহর উন্নয়ন পরিকল্পনায় এমন দিক নির্দেশনা দেয়া যাতে উন্নয়নের ক্ষেত্রে বিরাজমান সুবিধাসমূহের পরিপূর্ণ ব্যবহার করা যায় এবং বাঁধাসমূহ সহজে দূর করা যায়।

মহাপরিকল্পনা প্রণয়নে নগর উন্নয়ন অধিদপ্তর কর্তৃক গৃহীত পদক্ষেপসমূহ

উপজেলা পর্যায়ে যে স্থানীয় সরকার কর্তৃপক্ষ রয়েছে (যেমন; উপজেলা পরিষদ, পৌরসভা, ইউনিয়ন পরিষদ প্রভৃতি), স্থানীয় সরকার (পৌরসভা/সিটি কর্পোরেশন/উপজেলা পরিষদ/ইউনিয়ন পরিষদ) আইন অনুযায়ী সংশ্লিষ্ট কর্তৃপক্ষের অধিভূক্ত এলাকার মহাপরিকল্পনা প্রণয়নের দায়িত্ব মূলতঃ তাদেরই। কিন্তু বাংলাদেশে এসকল স্থানীয় সরকার কর্তৃপক্ষের প্রয়োজনীয় লোকবলের অভাব, প্রযুক্তি ব্যবহারের সীমাবদ্ধতা, অর্থের স্বল্পতাসহ বিভিন্ন কারণে পরিকল্পনা প্রণয়নের মত জটিল কাজটি তারা এখনো হাতে নিতে পারছে না। এমতাবস্থায় বাংলাদেশ সরকারের আর্থিক সহায়তায় নগর উন্নয়ন অধিদপ্তর ১৪টি উপজেলার মহাপরিকল্পনা প্রণয়নের কাজ শুরু করেছে। পাঁচটি প্যাকেজের আওতায় ১৪টি উপজেলার মহাপরিকল্পনা প্রণয়নের কাজ করা হবে। এর মধ্যে প্যাকেজ-০২ এর আওতায় ০৩ (তিন) টি উপজেলা যথাঃ রায়পুরা ও শিবগঞ্জ উপজেলা, জেলা নরসিংদী; ঈশ্বরগঞ্জ উপজেলা, জেলা- ময়মনসিংহ এর মহাপরিকল্পনা প্রণয়নের কাজ করা হবে।

পরিমর্শক প্রতিষ্ঠান নিয়োগ

১৪-টি উপজেলার আয়তন বিবেচনা করে ৫-টি প্যাকেজে ভাগ করা হয়েছে। নগর উন্নয়ন অধিদপ্তর যথাযথ প্রক্রিয়া অনুসরণ করে ইতোমধ্যে ৬-টি প্যাকেজের জন্য ৬টি পরামর্শক প্রতিষ্ঠানকে সংশ্লিষ্ট উপজেলার মহাপরিকল্পনা প্রণয়নের দায়িত্ব দিয়েছে। এর মধ্যে প্যাকেজ-০২ এর অর্ন্তভুক্ত রায়পুরা ও শিবগঞ্জ উপজেলা, জেলা নরসিংদী; ঈশ্বরগঞ্জ উপজেলা, জেলা- ময়মনসিংহ এর মহাপরিকল্পনা প্রণয়নের জন্য নির্বাচিত হয়েছে- শেলটেক কন্সালটেন্টস (প্রাঃ) লিঃ এবং আর্ক বাংলাদেশ লিঃ।

মহাপরিকল্পনা প্রণয়ন কাজের পরিধি ও পদ্ধতি

উপজেলার মহাপরিকল্পনা প্রণয়ন পদ্ধতিকে প্রধানত ছয়টি পর্বে ভাগ করা হয়েছে।
পর্ব-১: প্রারম্ভিক কার্যক্রম (ইনসেপশন এ্যাকটিভিটিজ)
পর্ব-২: বিভিন্ন প্রকার প্রেক্ষাপট সমীক্ষা (সার্ভে)
পর্ব-৩: শহরের বর্তমান অবস্থা ও প্রাক্কলন নির্ণয়
পর্ব-৪: উন্নয়ন কৌশল নির্ধারণ ও বিকল্প উন্নয়ন পরিকল্পনা সম্বলিত মাষ্টার প্লান প্রণয়ন
পর্ব-৫: গণশুনানি ও সংশোধন, অনুমোদন এবং গেজেট নোটিফিকেশন

পরিকল্পনার স্তর

উপজেলার মহাপরিকল্পনা ৫টি স্তরে করা হবে। এগুলো হলো:
১. সাব রিজিওনাল প্ল্যান / উপ-অঞ্চল পরিকল্পনা (Sub-Regional Plan)
২. স্ট্রাকচার প্ল্যান (Structure Plan)
৩. আরবান এরিয়া প্ল্যান (Urban Area Plan)
- ভূমি ব্যবহান পরিকল্পনা (Land Use Plan)
- ড্রেনেজ ও পরিবেশ ব্যবস্থাপনা পরিকল্পনা (Drainage & Environ- mental Management Plan)
- ট্রান্সপোর্ট ও ট্রাফিক ব্যবস্থাপনা পরিকল্পনা (Transport & Traffic Management Plan)
- ডিজাস্টার ম্যানেজমেন্ট প্ল্যান (Disaster Management Plant)

৪. গ্রাম পরিকল্পনা প্ল্যান (Rural Area Plan)
৫. এ্যাকশন এরিয়া প্ল্যান (Action Area Plan)

সাব রিজিওনাল প্ল্যান / উপ-অঞ্চল পরিকল্পনা

পরিকল্পনার প্রথম স্তর হলো জেলা পর্যায়ে ২০ বছর মেয়াদী সাব রিজিওনাল প্ল্যান বা উপ-অঞ্চল পরিকল্পনা। সাব রিজিওনাল প্ল্যান বা উপ-অঞ্চল পরিকল্পনা করা হবে সংশ্লিষ্ট জেলার ভূমি ব্যবহার, জলবায়ু, পরিবেশ, আর্থ-সামাজিক চিত্র ইত্যাদি বিবেচনায় নিয়ে। এর আওতায় Conservation Plan করা হবে যা জাতীয় নীতি ও নীতিমালার ভিত্তিতে তৈরী হবে এবং এতে বিভিন্ন বিভাগীয় কৌশল অর্ন্তভূক্ত করা হবে।

স্ট্রাকচার প্ল্যান বা কাঠামো পরিকল্পনা

স্ট্রাকচার প্ল্যান করা হবে উপজেলা পর্যায়ে। এক একটি দীর্ঘমেয়াদী নীতিনির্ধারনী পরিকল্পনা যেখানে সমগ্র উপজেলার ভবিষ্যত ২০-বছর সময়ের পরিকল্পনার রুপরেখা ও যাবতীয় নীতিনির্ধারনী বিষয়সমূহ নির্ধারিত থাকবে। স্ট্রাকচার প্ল্যানে বিদ্যমান শহর, গ্রাম ও অন্যান্য অঞ্চলের আগামী ২০ বছরের উন্নয়ন (কৌশল বিশেষ করে যোগাযোগ ব্যবস্থা, ভূমির ব্যবহার, আঞ্চলিক উন্নয়ন সমন্বয়, দুর্যোগ ও পরিবেশ সহ অন্যান্য সকল প্রকার ভৌত অবকাঠামো উন্নয়নের কৌশল, পরিকল্পনা ও এ সংক্রান্ত নীতিমালা প্রণয়ন করা হয়। এই পরিকল্পনার বৈশিষ্ট্য হচ্ছে যে, বাস্তবায়ন শুরু হলে ধীরে ধীরে শহরের বৃদ্ধি, নিয়ন্ত্রন ও আর্থ-সামাজিক বিকাশের স্বরুপ পর্যবেক্ষনের মাধ্যমে নির্দিষ্ট মেয়াদে পর্যালোচনা ও নিরীক্ষা করে সময়োপযোগী ব্যবস্থা নেওয়া যায় যাতে এলাকার জনগণের মতামত প্রতিফলিত হয়।

আরবান এরিয়া প্ল্যান

উপজেলার অন্তর্গত শহর এলাকার জন্য নগর পরিকল্পনা প্ল্যান করা হবে। নগর পরিকল্পনা প্ল্যান ১০ বছর মেয়াদের জন্য করা হবে। মৌজা ম্যাপে অংকিত এটি হবে উপজেলার শহরাঞ্চলের জন্য একটি ভূমি ব্যবহার ও উন্নয়ন পরিকল্পনা যা স্ট্রাকচার প্ল্যানে নির্দেশিত শহর এলাকা নিয়ে প্রণীত হবে। এতে স্ট্রাকচার প্ল্যানে নির্দেশিত উন্নয়ন কৌশল ও নীতিমালা বাস্তবায়ন নির্দেশনা এবং সকল প্রকার প্রস্তাবিত ভূমি ব্যবহার নির্দিষ্ট করা থাকবে।

Appendix-X: Progress of Satellite Image Collection

WORK ORDER

To	WORK ORDER NO. & Date	CONTRACTOR'S REFERENCE
Source & Service Mahabub Mansion 4th Floor 71, Mothijheel C/A Dhaka-100	ABL/SS/WO/2015/016 Date: 14/05/2015	SS-SI-15/061 Dated: 25/03/2015

SECTION 1: PARTIES

This Work Order ("Contract") is entered into by Arc Bangladesh Ltd., located 6/5,Block-B, Lalmatia, Dhaka-1207, and Source & Service, located at Mahabub Mansion, 4th Floor, 71, Mothijheel C/A, Dhaka-1000 for the purpose of supplying Satellite Image.

SECTION 2: Supply of Stereo (3D) satellite image

SECTION 3: STATEMENT OF WORK

Products	Unit Price Tk/Sqkm	Total Area	Total Cost	Satellite
4 Band (0.5M)	4,100.00	300 Sq. km	1,230,000.00	WV2, GE-1
4 Band (1.0M)	2,952.00	627 Sq. km	1,850,904.00	Ikonos

START DATE: **17/05/2015** *END DATE 31/12/2015.*

SECTION 5: SPECIAL TERMS & CONDITIONS

- Cloud coverage maximum 15%

WORK PERIOD OF PERFORMANCE

IN WITNESS WHEREOF, the parties have executed this Work Order.

By signing below Purchaser and the Contractor acknowledge that this Work. The services authorized are within the scope of services set forth in the Purpose of the Master Contract SECTION 2. All rights and obligations of the parties are subject to and governed by the Contract including any subsequent modifications incorporated herein. The persons signing below warrant that they have the authority to execute this Work Order.

On behalf of Arc Bangladesh Ltd

Shamim Hasan
Managing Director

House No. 6/5 (1st Floor), Block-B, Lalmatia, Dhaka-1207 ★ ARC BANGLADESH LTD.

On behalf of Source & Service

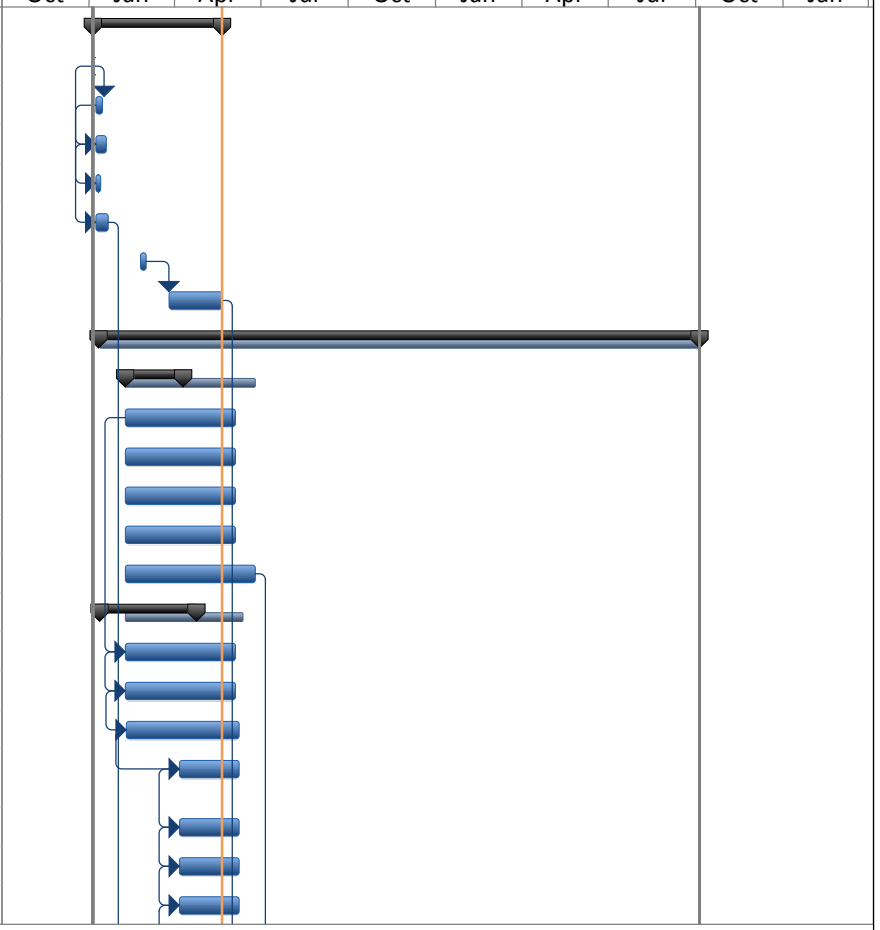
Md. Abul Kalam Azad
CEO

Arc Bangladesh Ltd. | 6/5 Lalmatia, Block- B, Dhaka-1207, Bangladesh, Tel: 9116835, Fax:+880 2 9116835, Email: info@arcbangladesh.com

Preparation of Development Plan for Package-2: Ishwarganj Upazila, Raipura Upazila, Shibpur Upazila under "Preparation of Development Plan for Fourteen Upazilas" Project.

Form 5A5 : Work Schedule

ID	Task Name	Duration	Start	Finish
1	Mobilization Stage	98 days	Mon 05/01/15	Wed 20/05/15
2	Commencement of the Assignment (Contract Agreement)	1 day	Mon 05/01/15	Mon 05/01/15
3	Team Mobilization	5 days	Thu 08/01/15	Wed 14/01/15
4	Assessment of the Project (Boundary) Area	7 days	Thu 08/01/15	Sun 18/01/15
5	Reconnaissance Field Survey	3 days	Thu 08/01/15	Mon 12/01/15
6	Preparation of Mobilization Report	9 days	Thu 08/01/15	Tue 20/01/15
7	FGD, Courtyeard, tea stall meeting	4 days	Tue 24/02/15	Sun 01/03/15
8	Praparation of inception Report	40 days	Thu 26/03/15	Wed 20/05/15
9	Operational Stage	453 days	Sun 11/01/15	Tue 04/10/16
10	Collection and Review Preliminary Database	45 days	Sun 08/02/15	Thu 09/04/15
11	Collection of Mauza Maps	84 days	Sun 08/02/15	Wed 03/06/15
12	Collection of Geo-Physical Maps and Reports	84 days	Sun 08/02/15	Wed 03/06/15
13	Collection of Topographical Maps and Reports	84 days	Sun 08/02/15	Wed 03/06/15
14	Collection of Basic Statistics with Present Activities	84 days	Sun 08/02/15	Wed 03/06/15
15	Procurement of Satellite Image	99 days	Sun 08/02/15	Wed 24/06/15
16	Preparation of Study Area Base Map	74 days	Mon 12/01/15	Thu 23/04/15
17	Scanning of Mauza Maps	84 days	Sun 08/02/15	Wed 03/06/15
18	Digitization of Mauza Maps	84 days	Sun 08/02/15	Wed 03/06/15
19	Edit Plot Checking by Joint Team of UDD and Consultants	85 days	Mon 09/02/15	Sun 07/06/15
20	Selection of GCP on Mauza Sheets by Joint Team of UDD and Consultants	45 days	Mon 06/04/15	Sun 07/06/15
21	GCP Survey	45 days	Mon 06/04/15	Sun 07/06/15
22	Geo-referencing of Mauza Maps	45 days	Mon 06/04/15	Sun 07/06/15
23	Joining of Mauza Maps and Demarcation of SP and AAP area	45 days	Mon 06/04/15	Sun 07/06/15



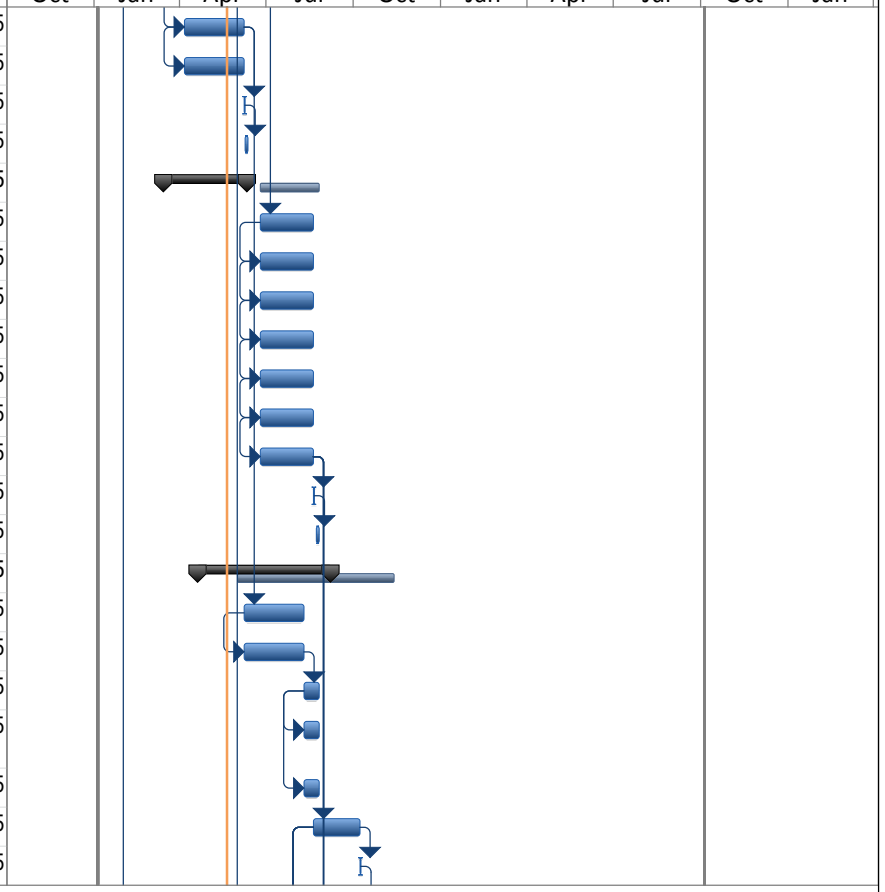
Package-2

Task
Split
Milestone
Summary
Project Summary
External Tasks
External Milestone
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
Deadline
Progress

Preparation of Development Plan for Package-2: Ishwarganj Upazila, Raipura Upazila, Shibpur Upazila under "Preparation of Development Plan for Fourteen Upazilas" Project.

Form 5A5 : Work Schedule

ID	Task Name	Duration	Start	Finish
24	Preparation of GIS Map Lay Out	45 days	Mon 06/04/15	Sun 07/06/15
25	Finalization of Study Area Map with Project Boundary	45 days	Mon 06/04/15	Sun 07/06/15
26	Submission of Working Paper on GIS Maping	1 day	Mon 08/06/15	Mon 08/06/15
27	Training of UDD Officels and Staff on GIS Based Maping	3 days	Tue 09/06/15	Thu 11/06/15
28	RS Analysis of Satellite Image	64 days	Sun 15/03/15	Wed 10/06/15
29	Image Pan Sharpening	40 days	Thu 25/06/15	Wed 19/08/15
30	Image Processing & Georeferencing	40 days	Thu 25/06/15	Wed 19/08/15
31	Aerial Triangulation using Info Match AT	40 days	Thu 25/06/15	Wed 19/08/15
32	Digital feature Mapping from Stereo Model using DATEM/ARCGIS	40 days	Thu 25/06/15	Wed 19/08/15
33	DTM/DEM/TIN/Contour Generation	40 days	Thu 25/06/15	Wed 19/08/15
34	Ortho-rectification of Images	40 days	Thu 25/06/15	Wed 19/08/15
35	Mosaicking of OrthoPhoto	40 days	Thu 25/06/15	Wed 19/08/15
36	Submission of Working Paper on RS Analysis of Satellite Image	1 day	Thu 20/08/15	Thu 20/08/15
37	Training of UDD Officials and Staff on RS Analysis of Satellite Image	3 days	Sun 23/08/15	Tue 25/08/15
38	Preparation of Survey	100 days	Mon 20/04/15	Sun 06/09/15
39	Identification/selection of BM Location/Control Points	45 days	Mon 08/06/15	Sun 09/08/15
40	Construction and Installation of BM Pillars	45 days	Mon 08/06/15	Sun 09/08/15
41	Establishment of BM/Control Point Network	12 days	Mon 10/08/15	Tue 25/08/15
42	Baseline Survey using RTK-GPS Static Method/and from Satellite Image	12 days	Mon 10/08/15	Tue 25/08/15
43	Baseline Data Processing and Network Adjustment	12 days	Mon 10/08/15	Tue 25/08/15
44	Topographical Survey	35 days	Thu 20/08/15	Wed 07/10/15
45	Submission of Working Paper on Tropographic & RTK GPS Survey	1 day	Thu 08/10/15	Thu 08/10/15



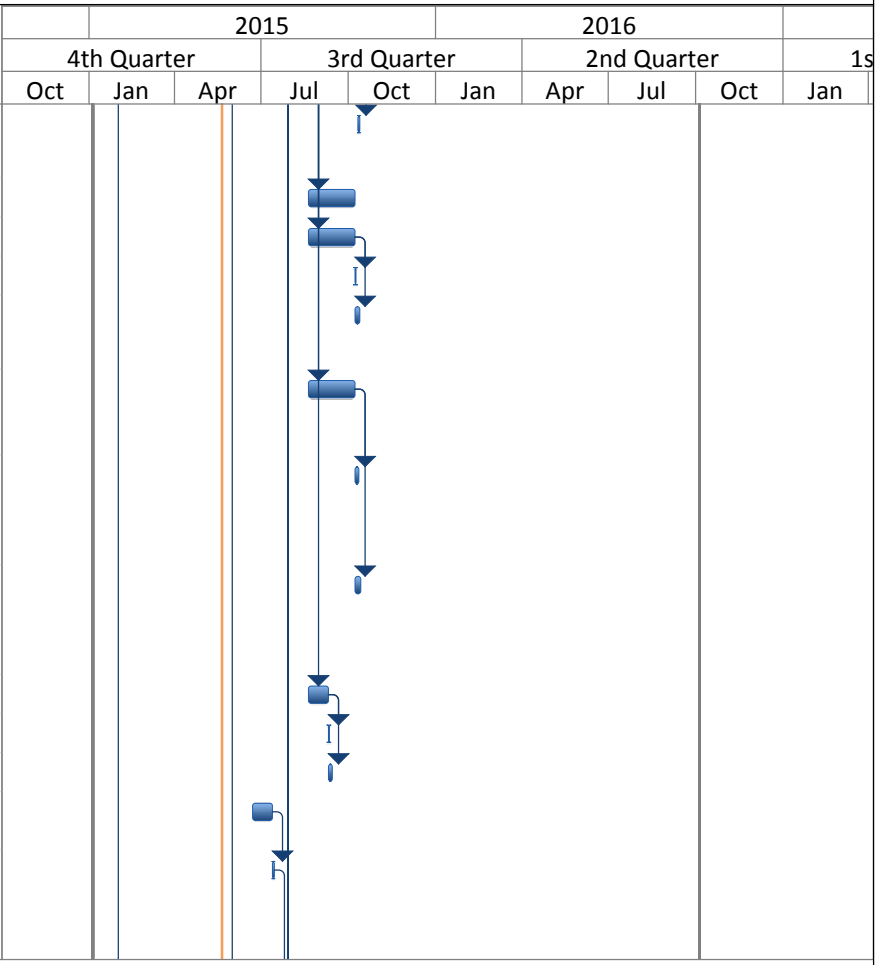
Package-2

Task		External Tasks		Manual Task		Finish-only	
Split		External Milestone		Duration-only		Deadline	
Milestone		Inactive Task		Manual Summary Rollup		Progress	
Summary		Inactive Milestone		Manual Summary			
Project Summary		Inactive Summary		Start-only			

Preparation of Development Plan for Package-2: Ishwarganj Upazila, Raipura Upazila, Shibpur Upazila under "Preparation of Development Plan for Fourteen Upazilas" Project.

Form 5A5 : Work Schedule

ID	Task Name	Duration	Start	Finish
46	Training of UDD Officials and Staff on Tropographic & RTK GPS Survey	2 days	Sun 11/10/15	Mon 12/10/15
47	Physical Infrastructure Survey	35 days	Thu 20/08/15	Wed 07/10/15
48	Landuse Survey Updating	35 days	Thu 20/08/15	Wed 07/10/15
49	Submission of Working Paper on Physical Feature & Landuse Survey	1 day	Thu 08/10/15	Thu 08/10/15
50	Training of UDD Officials and Staff on Physical Feature & Landuse Survey	3 days	Thu 08/10/15	Mon 12/10/15
51	Socio-Economic Survey (considaring housing and squatter setelment survey, investment & employment survey, and population & migrationsurvey)	35 days	Thu 20/08/15	Wed 07/10/15
52	Submission of Working Paper on Socio-Economic Survey (considaring housing and squatter setelment survey, investment & employment survey, and population & migrationsurvey)	2 days	Thu 08/10/15	Sun 11/10/15
53	Training of UDD Officials and Staff on Socio-Economic Survey (considaring housing and squatter setelment survey, investment & employment survey, and population & migrationsurvey)	4 days	Thu 08/10/15	Tue 13/10/15
54	Traffic and Transport Survey	15 days	Thu 20/08/15	Wed 09/09/15
55	Submission of Working Paper on Traffic and Transport Survey	1 day	Thu 10/09/15	Thu 10/09/15
56	Training of UDD Officials and Staff on Traffic and Transport Survey	2 days	Thu 10/09/15	Sun 13/09/15
57	Geological Survey, Environmental Studies, Hydrological Studies, Disester Related Survey & Studies, Bathymetric report and Studies	15 days	Mon 22/06/15	Sun 12/07/15
58	Submission of Working Paper on Geological Survey, Environmental Studies, Hydrological Studies, Disester Related Survey & Studies, Bathymetric report and Studies	2 days	Mon 13/07/15	Tue 14/07/15



Package-2

Task
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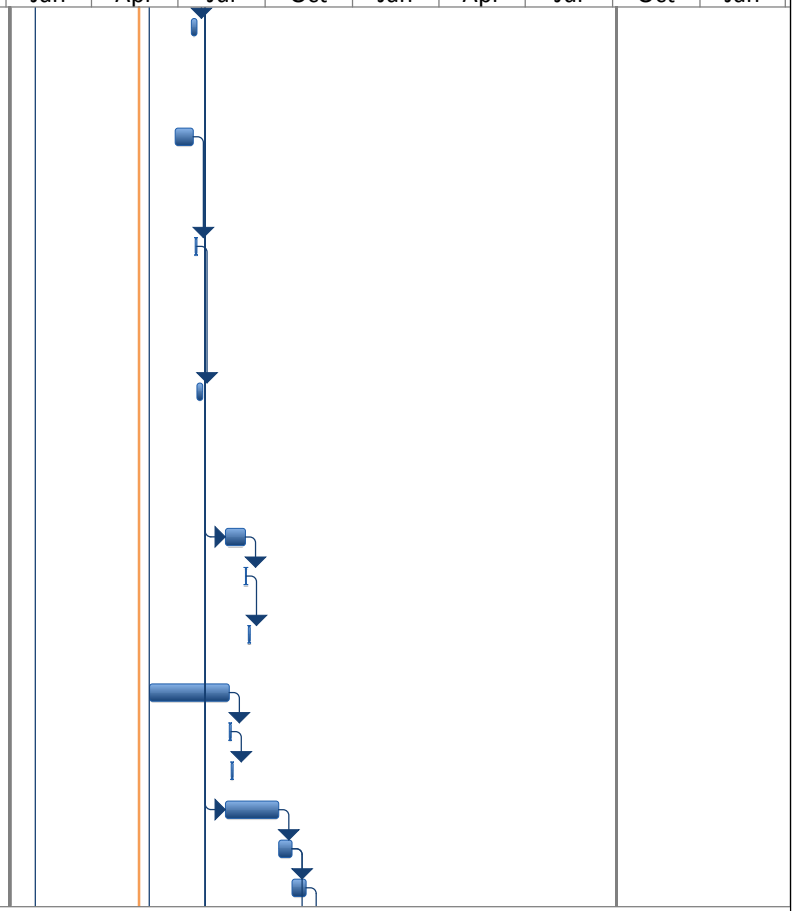
Milestone
Summary
Project Summary
External Tasks
External Milestone
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
Deadline
Progress

Preparation of Development Plan for Package-2: Ishwarganj Upazila, Raipura Upazila, Shibpur Upazila under "Preparation of Development Plan for Fourteen Upazilas" Project.

Form 5A5 : Work Schedule

ID	Task Name	Duration	Start	Finish
59	Training of UDD Officials and Staff on Geological Survey, Environmental Studies, Hydrological Studies, Disester Related Survey & Studies, Bathymetric report and Studies	4 days	Wed 15/07/15	Mon 20/07/15
60	Survey of Urban and Rural Economy, Formal and Informal Industrial Survey, Archaeological Study, Agriculture Survey, Population Survey, Social Space Studies, Groth of the Human Settlement	15 days	Sun 28/06/15	Thu 16/07/15
61	Submission of Working Paper on Survey of Urban and Rural Economy, Formal and Informal Industrial Survey, Archaeological Study, Agriculture Survey, Population Survey, Social Space Studies, Groth of the Human Settlement	2 days	Sun 19/07/15	Mon 20/07/15
62	Training of UDD Officials and Staff on Survey of Urban and Rural Economy, Formal and Informal Industrial Survey, Archaeological Study, Agriculture Survey, Population Survey, Social Space Studies, Groth of the Human Settlement	4 days	Tue 21/07/15	Sun 26/07/15
63	Boreholes 3 boreholes/sq. km. of urban area (total 98 Boregole)	15 days	Thu 20/08/15	Wed 09/09/15
64	Submission of Working Paper on Boreholes 3 boreholes/sq. km. of urban area (total 98 Boregole)	1 day	Thu 10/09/15	Thu 10/09/15
65	Training of UDD Officels and Staff on Boreholes 3 boreholes/sq. km. of urban area (total 98 Boregole)	2 days	Sun 13/09/15	Mon 14/09/15
66	PRA Session (one in each Union/Ward, total 53)	60 days	Mon 01/06/15	Sun 23/08/15
67	Submission of Working Paper on PRA Session	2 days	Mon 24/08/15	Tue 25/08/15
68	Training of UDD Officels and Staff on PRA Session	2 days	Wed 26/08/15	Thu 27/08/15
69	Preparation of database and GIS Map Layout	40 days	Thu 20/08/15	Wed 14/10/15
70	Preparation of Draft Survey Report	10 days	Thu 15/10/15	Wed 28/10/15
71	Preparation of Final Survey Report	11 days	Thu 29/10/15	Thu 12/11/15



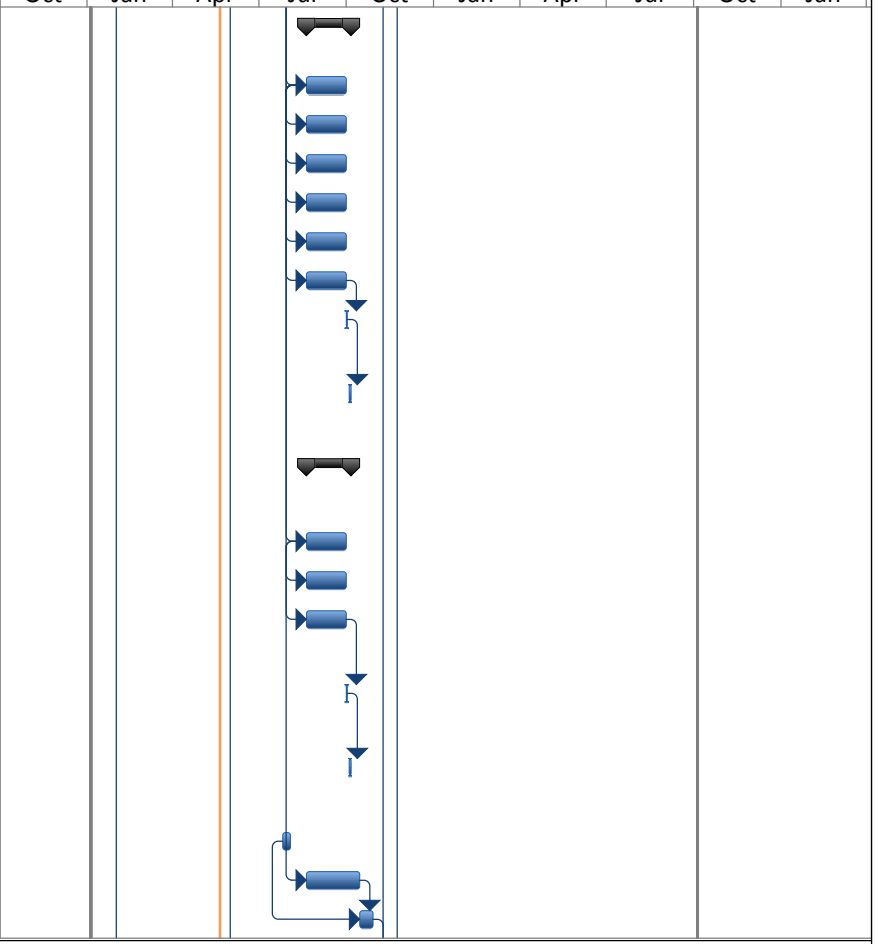
Package-2

Task		External Tasks		Manual Task		Finish-only	
Split		External Milestone		Duration-only		Deadline	
Milestone		Inactive Task		Manual Summary Rollup		Progress	
Summary		Inactive Milestone		Manual Summary			
Project Summary		Inactive Summary		Start-only			

Preparation of Development Plan for Package-2: Ishwarganj Upazila, Raipura Upazila, Shibpur Upazila under "Preparation of Development Plan for Fourteen Upazilas" Project.

Form 5A5 : Work Schedule

ID	Task Name	Duration	Start	Finish
72	Seismic hazard vulnerability and risk assessment of urban areas	33 days	Thu 20/08/15	Mon 05/10/15
73	Morphotectonic and neotectonic mapping	30 days	Thu 20/08/15	Wed 30/09/15
74	Time- predictable fault modeling	30 days	Thu 20/08/15	Wed 30/09/15
75	Engineering geological mapping	30 days	Thu 20/08/15	Wed 30/09/15
76	Seismic Hazard assessment	30 days	Thu 20/08/15	Wed 30/09/15
77	Vulnerability assessment	30 days	Thu 20/08/15	Wed 30/09/15
78	Risk assessment	30 days	Thu 20/08/15	Wed 30/09/15
79	Submission of Working Paper on Seismic hazard vulnerability and risk assessment of urban areas	1 day	Thu 01/10/15	Thu 01/10/15
80	Training of UDD Officels and Staff on Seismic hazard vulnerability and risk assessment of urban areas	2 days	Sun 04/10/15	Mon 05/10/15
81	Detailed building inventory database preparation particularly in urban areas	33 days	Thu 20/08/15	Mon 05/10/15
82	Building and lifeline inventory in Project area	30 days	Thu 20/08/15	Wed 30/09/15
83	Building inventory mapping in Project Area	30 days	Thu 20/08/15	Wed 30/09/15
84	Landuse mapping and guideline preparation to integrate disaster risk reduction with landuse map	30 days	Thu 20/08/15	Wed 30/09/15
85	Submission of Working Paper on Detailed building inventory database preparation particularly in urban areas	1 day	Thu 01/10/15	Thu 01/10/15
86	Training of UDD Officels and Staff on Detailed building inventory database preparation particularly in urban areas	2 days	Sun 04/10/15	Mon 05/10/15
87	Workshop (one in each upazila)	6 days	Sun 26/07/15	Sun 02/08/15
88	Preparation of database and GIS Map Layout	40 days	Thu 20/08/15	Wed 14/10/15
89	Preparation of Draft Survey Report	10 days	Thu 15/10/15	Wed 28/10/15



Package-2

Task
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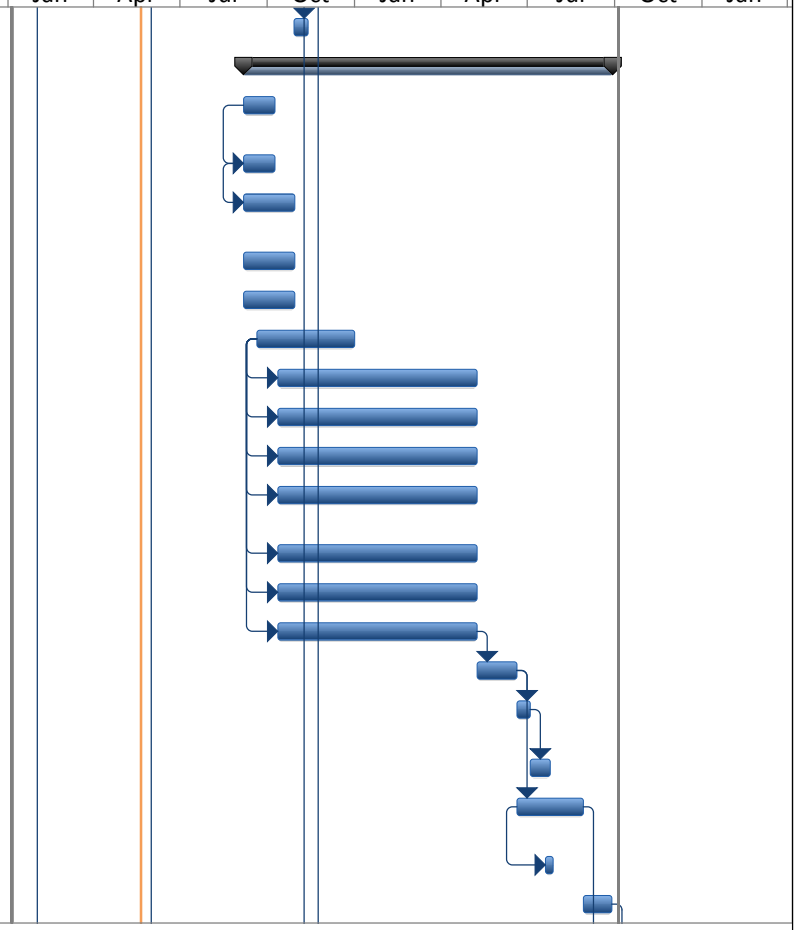
Summary
Project Summary
External Tasks
External Milestone
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
Deadline
Progress

Preparation of Development Plan for Package-2: Ishwarganj Upazila, Raipura Upazila, Shibpur Upazila under "Preparation of Development Plan for Fourteen Upazilas" Project.

Form 5A5 : Work Schedule

ID	Task Name	Duration	Start	Finish
90	Preparation of Final Survey Report	11 days	Thu 29/10/15	Thu 12/11/15
91	Approach to Plan Preparation	279 days	Sun 06/09/15	Wed 28/09/16
92	Analysis of the surveys for structure plan, urban area plan and action plan	25 days	Sun 06/09/15	Thu 08/10/15
93	Formulation of Strategies for structure plan and action plan	25 days	Sun 06/09/15	Thu 08/10/15
94	Review of Previous Plans and Success and Assessment of Failure with Lession Learing	40 days	Sun 06/09/15	Thu 29/10/15
95	Interpretation of Higher Level Frameworks	40 days	Sun 06/09/15	Thu 29/10/15
96	Review of the Exsisting Problems and Proposed Initiatives	40 days	Sun 06/09/15	Thu 29/10/15
97	Stakholder's Consultation	75 days	Sun 20/09/15	Thu 31/12/15
98	Sub-Regional Plan	150 days	Mon 12/10/15	Sun 08/05/16
99	Regional Structure Zoning Category	150 days	Mon 12/10/15	Sun 08/05/16
100	Conservation Plan	150 days	Mon 12/10/15	Sun 08/05/16
101	Determination of Present and Future Functional Structure of the Town/Study Area and Formulation of the Structure Plan	150 days	Mon 12/10/15	Sun 08/05/16
102	Urban Area Plan	150 days	Mon 12/10/15	Sun 08/05/16
103	Rural Area Plan	150 days	Mon 12/10/15	Sun 08/05/16
104	Action Area Plan	150 days	Mon 12/10/15	Sun 08/05/16
105	Public Hearing	30 days	Mon 09/05/16	Sun 19/06/16
106	Stakeholder's (Beneficiaries and Utilty Providing Agencies) Consultation	10 days	Mon 20/06/16	Sun 03/07/16
107	Formulation of Bankable Project	15 days	Mon 04/07/16	Sun 24/07/16
108	Preparation of Draft final Report Including Structure Plan and Master Plan	50 days	Mon 20/06/16	Sun 28/08/16
109	Workshop (one in each upazila)	6 days	Wed 20/07/16	Wed 27/07/16
110	Preparation of Final Report Including Structure Plan and Master Plar	22 days	Mon 29/08/16	Tue 27/09/16



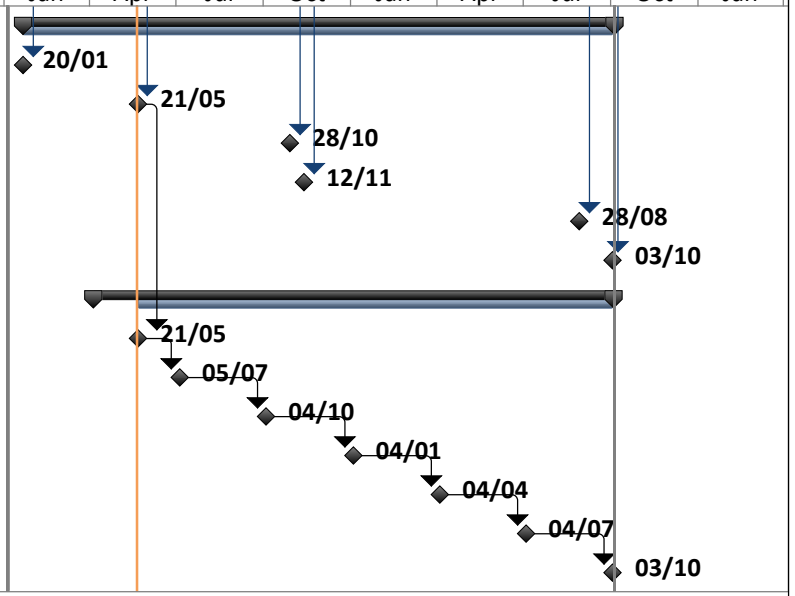
Package-2

Task		External Tasks		Manual Task		Finish-only	
Split		External Milestone		Duration-only		Deadline	
Milestone		Inactive Task		Manual Summary Rollup		Progress	
Summary		Inactive Milestone		Manual Summary			
Project Summary		Inactive Summary		Start-only			

Preparation of Development Plan for Package-2: Ishwarganj Upazila, Raipura Upazila, Shibpur Upazila under "Preparation of Development Plan for Fourteen Upazilas" Project.

Form 5A5 : Work Schedule

ID	Task Name	Duration	Start	Finish
111	Submission of Reports	445 days	Tue 20/01/15	Tue 04/10/16
112	Mobilization Report	0 days	Tue 20/01/15	Tue 20/01/15
113	Inception Report	0 days	Thu 21/05/15	Thu 21/05/15
114	Draft Survey Report	0 days	Wed 28/10/15	Wed 28/10/15
115	Final Survey Report	0 days	Thu 12/11/15	Thu 12/11/15
116	Draft Final Report	0 days	Sun 28/08/16	Sun 28/08/16
117	Final Report (English and Bengali)	0 days	Mon 03/10/16	Mon 03/10/16
118	Progress Reports	392 days	Sun 05/04/15	Mon 03/10/16
119	1st Progress Report	0 days	Thu 21/05/15	Thu 21/05/15
120	2nd Progress Report	0 days	Sun 05/07/15	Sun 05/07/15
121	3rd Progress Report	0 days	Sun 04/10/15	Sun 04/10/15
122	4th Progress Report	0 days	Mon 04/01/16	Mon 04/01/16
123	5th Progress Report	0 days	Mon 04/04/16	Mon 04/04/16
124	6th Progress Report	0 days	Mon 04/07/16	Mon 04/07/16
125	7th Progress Report	0 days	Mon 03/10/16	Mon 03/10/16



Package-2

Task		External Tasks		Manual Task		Finish-only	
Split		External Milestone		Duration-only		Deadline	
Milestone		Inactive Task		Manual Summary Rollup		Progress	
Summary		Inactive Milestone		Manual Summary			
Project Summary		Inactive Summary		Start-only			

APPENDIX XII: TECHNICAL SPECIFICATIONS OF GIS DATA

This document contains the technical specifications for the development of GIS database. It has two sections: Section-A and Section-B. In Section-A, specifications for mauza map scanning and digitization has been provided. Section-B contains the specifications of GIS layers of Survey and Plan Maps

Section-A: Specifications for Mauza Map Scanning & Digitization

This section contains the scanning specifications and digitization of mauza maps.

Scanning Specifications of Mouza Maps

The scanning specification of mauza maps specifies Image Type, Image Format, Image Resolution and Image scale as follows:

Image Type	Color or Grayscale
Image Format	JPEG
Image Resolution	300 dpi
Image Scale for Digitization period will be required Map unit & Display unit select inches from drop down Icon. Otherwise, when you will give the Mouza map sheet print as per same scale that time will not get the print copy of your mouza map scale.	(1:10-15)

Classification of Scanned Mouza Maps\GIS Data Management

A systematic classification will be followed for naming the scanned image files of the mauza maps and GIS Data Management.

Location Path	Example: D:\Division\(Rajshahi.div)\District(Rajshahi.dis)\Upazila(Bagmara)\Union_Ward(Nardash) D:\Division\Rajshahi.div\Rajshahi.dis\Bagmara\Nardash							
	Drive: D:\	Division						First Double click on My Computer and go to Drive D:\ and create the Division folder under Division, District, Upazila and Union_Ward Name folder. If we prepare the union_Ward Map then we will make the Union_Ward folder otherwise the folder do not need of Union_Ward. Mouza Image will appropriately store up the mouza Image sheet under Union_Ward folder.
		dhaka.div						2nd time will create the dhaka.div and so on.
File Name	KAP_078_00							
					XXX			JL No. of the Mouza (3 digits)
						_		An underscore to separate JL No. and Sheet No.
							XX or xxx	Number of Sheet No of the mauza map. (2 or 3 digits)

Example: KAP_078_00 or 01……..99 or KAP_078_001….999.jpeg represents the image file in JPEG format of Sheet no. 00 of Koali Para Mouza having JL no. 78 of Shibpur Upazila of narsingdi District.

Digitization of Scanned Mouza Maps

Digitization of Mauza map will be done in four layers/Coverage (two point shapefiles/Coverage, one line shapefile/Coverage and one polygon shapefile/Coverage) to capture all the features in the existing map. Name and attribute structure of these layers will be as follows:

1) Shape file\Coverage name: PN_XXX_XX or XXX.shp (PN = Plot Number)
Type: Point

This shape file\Coverage will contain dag number (plot number) of the Mouza maps as point features. It must contain the field as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Division	String	25	-	To put or Type name of the current Division.
District	String	25	-	To put or Type name of the current District.
Upazila	String	25	-	To put or Type name of the current Upazila.
Union	String	25	-	To put or Type name of the current Union.
Plot_No	Long Integer	-	-	To contain dag number (plot number)
MZ_Name	String	100	-	To contain name of the Mouza name
JL_No	String	3		To contain JL Number of the Mouza
Sheet_No	String	2	-	To contain sheet no the Mouza
Mouza_JL_S	String	100	-	To contain Mouza name+single space+JLno(3-digits)+single space+sheet no(2-digits)
MZ_Verion	String	6	-	To contain Mouza version of the mouza sheet E.g. CS, RS, BS and so on.
Scale	String	20	-	To contain scale of the mouza sheet.
Revenue_No	String	100	-	To contain survey number of the mouza map
SV_Period	String	20	-	To contain survey period of the mouza map. E.g 1973-85
Plot_desc	String	20	-	To contain following plot types - "Plot" - "Katcha Road" - "Semi-Pucca Road" - "Pucca Road" - "Halot" - "Pond" - "Canal" - "River"
Remarks	String	100	-	To contain remarks, if any.

2) Shape file/Coverage name: ML_XXX_XX or XXX.shp (ML = Mouza Line)
Type: Polyline

This shape file/Coverage will contain all line features of the mauza map. It must contain the field as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Division	String	25	-	To put or Type name of the current Division.
District	String	25	-	To put or Type name of the current District.
Upazila	String	25	-	To put or Type name of the current Upazila.
Union	String	25	-	To put or Type name of the current Union.
Plot_No	Long Integer	-	-	To contain dag number (plot number)
MZ_Name	String	100	-	To contain name of the Mouza Name
JL_No	String	6		To contain JL Number of the Mouza
Sheet_No	String	6	-	To contain sheet no the Mouza
Mouza_JL_S	String	100	-	To contain Mouza name+single space+JLno(3-digits)+single space+sheet no(2-digits)
MZ_Ver	String	6	-	To contain Mouza version of the mouza sheet E.g. CS, RS, BS and so on.
Scale	String	25	-	To contain scale of the mouza sheet.
Revenue_No	String	100	-	To contain survey number of the mouza map
SV_Period	String	25	-	To contain survey period of the mouza map. E.g 1973-85
Line_Code	Long Integer	10	-	To contain feature code or unique ID of different line feature. For example 11, 12 and 14 are the codes for Mouza boundary, Sheet boundary and Plot boundary features respectively.
Line_Desc	String	30	-	To contain the type of plot boundaries and other line features such as - "Mouza boundary" - "Sheet boundary" - "Plot boundary" - "Katcha Road" - "Semi-Pucca Road" - "Pucca Road" - "Halot" - "Khal" - "Thoka/Adjacent line or Boundary" - "North line" - "Unknown line"
Remarks	String	100	-	To contain remarks, if any.

3) Shape file\Coverage name: MP_XXX_XX or XXX.shp (MP = Mouza Polygon)
Type: Polygon

This shape file\Coverage will contain dag number (plot number) of the Mouza maps as point features. It must contain the field as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Division	String	25	-	To put or Type name of the current Division.
District	String	25	-	To put or Type name of the current District.
Upazila	String	25	-	To put or Type name of the current Upazila.
Union	String	25	-	To put or Type name of the current Union.

Plot_No	Long Integer	-	-	To contain dag number (plot number)
MZ_Name	String	100	-	To contain name of the Mouza name
JL_No	String	3		To contain JL Number of the Mouza
Sheet_No	String	2	-	To contain sheet no the Mouza
Mouza_JL_S	String	100	-	To contain Mouza name+single space+JLno(3-digits)+single space+sheet no(2-digits)
MZ_Verion	String	6	-	To contain Mouza version of the mouza sheet E.g. CS, RS, BS and so on.
Scale	String	20	-	To contain scale of the mouza sheet.
Revenue_No	String	100	-	To contain survey number of the mouza map
SV_Period	String	20	-	To contain survey period of the mouza map. E.g 1973-85
Layer_Code	Long Integer	10	-	To contain feature code or unique ID of different line features. For example 11, 12 and 14 are the codes for Mouza boundary, Plot boundary and Pond features respectively.
Layer_desc	String	20	-	To contain following plot types - "Plot Boundary" - "Katcha Road" - "Semi-Pucca Road" - "Pucca Road" - "Halot" - "Pond" - "Canal" - "River"
Remarks	String	100	-	To contain remarks, if any.

4) Shape file/Coverage name: PF_xxx_xx or xxx.shp (PF = Point Feature)

Feature Type: Point

This shape file/Coverage will contain all line point features except the plot numbers of the mauza map. It must contain the field as described in the following table:

Field Name	**Field Type**	**Width of the field**	**Purpose of the field**
Division	String	25	To put or Type name of the current Division.
District	String	25	To put or Type name of the current District.
Upazila	String	25	To put or Type name of the current Upazila.
Union	String	25	To put or Type name of the current Union.
Plot_No	Long Integer	-	To contain dag number (plot number)
MZ_Name	String	100	To contain name of the Mouza Name
JL_No	String	6	To contain JL Number of the Mouza
Sheet_No	String	6	To contain sheet no the Mouza
Mouza_JL_S	String	100	To contain Mouza name+single space+JLno(3-digits)+single space+sheet no(2-digits)
MZ_Ver	String	6	To contain Mouza version of the mouza sheet E.g. CS, RS, BS and so on.
Scale	String	25	To contain scale of the mouza sheet.

Revenue_No	String	100	To contain survey number of the mouza map
SV_Period	String	25	To contain survey period of the mouza map. E.g 1973-85
Line_Code	Long Integer	10	To contain feature line code or unique ID of different line feature. For example 15, 16 and 17 are the codes for Mouza boundary, Sheet boundary and Plot boundary features respectively.
Point_Code	String	3	To contain the user ID of different point features. For example: 45 is the ID of Traverse Station (New)
Point_Desc	String	50	To contain Point description of point features such as - "Traverse Station [Old]" - "Traverse Station [New]" - GT Station, etc. And also to contain texts of label features such as "Sheet No. 2", "Shaktola No. 101", etc.
PF_Name	String	100	To put or type the Adjacent name of Mouza, JL No, Sheet No, River and so on.
Remarks	String	100	To contain remarks, if any.

4) Shape file/Coverage name: ST_xxx_xx or xxx.shp (ST = Structure)

Feature Type: Polygon

This shape file will contain all line area features such as Structures (Building), Waterbody (Pond), etc. of the mauza map. It must contain the field as described in the following table:

Field Name	Field Type	Field Width	Purpose of the field
Division	String	25	To put or Type name of the current Division.
District	String	25	To put or Type name of the current District.
Upazila	String	25	To put or Type name of the current Upazila.
Union	String	25	To put or Type name of the current Union.
Plot_No	Long Integer	-	To contain dag number (plot number)
MZ_Name	String	100	To contain name of the Mouza Name
JL_No	String	6	To contain JL Number of the Mouza
Sheet_No	String	6	To contain sheet no the Mouza
Mouza_JL_S	String	100	To contain Mouza name+single space+JLno(3-digits)+single space+sheet no(2 or 3 -digits)
MZ_Ver	String	6	To contain Mouza version of the mouza sheet E.g. CS, RS, BS and so on.
Scale	String	25	To contain scale of the mouza sheet.
Revenue_No	String	100	To contain survey number of the mouza map
SV_Period	String	25	To contain survey period of the mouza map. E.g 1973-85
OthersName	String	100	To put or type the Adjacent name of Mouza, JL No, Sheet No, River and so on.
ST_Code	Long Integer	6	To contain the user ID of different polygon features. For example: 31 is the ID of Permanent Structure (Dalan), 32 is for Tinshed Structure, etc.
ST_Desc	String	50	To contain type of features such as - "Permanent Structure [Dalan]" - "Tinshed Structure" - "Other Structure" - "Pond/Waterbody" - "Pan Baraz" - "Graveyard"
Remarks	String	100	To contain remarks, if any.

Feature Codes

The following feature codes (Unique ID) will be used in mauza map digitization.

Feature Type/Item	Shape File/Coveragre Name	Feature Code (ID)
International Boundary	ML_xxx_xx or xxx	10
Division Boundary		11
District Boundary		12
Upazila Boundary		13
Union Boundary		14
Mouza Boundary		15
Sheet Boundary		16
Plot Boundary		17
Thoka/Adjacent\Match Line		18
Embankment		19
Hill		20
Road		21
Halot		22
Khal (Canal)		23
River		24
Rail Line		25
Slope		26
North Line		27
Pucca Road		28
Semi-Pucca Road		29
Katcha Road		30
Unknown Line		99
Permanent Structure [Dalan]	ST_xxx_xx or xxx	31
Tin Shed Structure		32
Other Structure		33
Pan Baraz		34
Pond/Water Body		35
Graveyard		36
Missing or not readable plot number	PN_xxx_xx or xxx	99999
Boundary Pillar	PF_xxx_xx or xxx	41
Bench Mark		42
Iron Pillar		43
Traverse Station(Old)		44
Traverse Station (New)		45
GT Station		46
Other Pillars		47
Pucca Well		51
Tube Well		52
Mosque		53
Temple		54
Adjacent Mouza/Sheet		61
0tier Info		62
Demarcation Pillar		71
Settlement Pillar		72
Stone		73
Station		74
Pucca Pillar		75

Municipality Pillar		76
CS Iron Pillar		77
Other Point Feature		88
Plot Boundary	ML_xxx_xx or xxx	14
Katcha Road		30
Semi-Pucca Road		29
Pucca Road		28
Halot		22
Pond		14
Canal		23
River		24

Section-B: Specifications for Layers of Survey and Plan Maps

It specifies name of the spatial layers and the structure of their attribute tables.

1) Shape file\Coverage name: **Adb11601.shp(Standard Code such as Thana\Upazila)**
Type: **Polyline**

This shape file\Coverage will contain administrative boundaries of project area. It must contain the field as described in the following table:

Field Name	**Field Type**	**Width of the field**	**No. of Decimal Places**	**Purpose of the field**
Type	Long Integer	**10**		To Contain Polyine ID
Line_Desc	String	100	-	To contain the following administrative boundaries "International Boundary" "District Boundary" "Upazila Boundary" "Union boundary" "Ward Boundary" "Mauza boundary" "Sheet boundery"

2) Shape file\Coverage name: AdbP**11601.shp (Standard Code such as Thana\Upazila)**
Type: **Polygon**

This shape file\Coverage will contain plots of merged BS Mouza maps of project area as polygon features. It must contain the field as described in the following table:

Field Name	**Field Type**	**Width of the field**	**No. of Decimal Places**	**Purpose of the field**
Division	String	25		To put or Type name of the current Division.
District	String	25		To put or Type name of the current District.
Upazila	String	25		To put or Type name of the current Upazila.
Pourashava				To put or Type name of Paurashava.
Union_Ward	String	25		To put or Type name of the current Union\Ward.

Plot_no	Long Integer	-	-	To contain *dag* number (plot number)
Layer_Desc	String	20	-	To contain following plot types - "Plot" - "Katcha Road" - "Semi-Pucca Road" - "Pucca Road" - "Halot" - "Pond" - "Canal" - "River
Mouza	String	100	-	To contain name of the Mouza
JL_No	String	3		To contain JL Number of the Mouza
Sheet_No	String	2	-	To contain sheet no the Mouza
Mouza_JL_S	String	100	-	To contain Mouza name+single space+JLno(3-digits)+single space+sheet no(2-digits)
Mouza_JL	String	100	-	To contain Mouza name+single space+JLno(3-digits)
Scale	String	20		To contain scale of the mouza sheet.
Revenue_No	String	100		To contain survey number of the mouza map
Survey_Period	String	20		To contain survey period of the mouza map. E.g 1973-85
Landuse	String	50	-	To contain name of the Land use Categories e.g. Waterbody.
Crop_Land1				To contain name of the 1st crop land phase-1 from the project area.
Crop_Land2				To contain name of the 2nd crop land phase-2 from the project area.
Crop_Land3				To contain name of the 3rd crop land phase-3 from the project area.
Sq_meters				To contain area in Square meters.
Hectares	Double	0		To contain area in Hectares.
Acres	Double	0		To contain area in Acres.
Katha	Double	0		To contain area in Katha.
Decimal	Double	0		To contain area in Decimal.
Geo-Code	String	16	-	To contain Nine-digited BBS Geocode of Mouza as District+Thana+Union/Ward+Mauza
Remarks	String	100	-	To contain remarks, if any.

2) Shape file\Coverage name: AdbP**11601.shp (Standard Code such as Thana\Upazila)**
Type: **Polygon**

This shape file\Coverage will contain plots of merged BS Mouza maps of project area as polygon features. It must contain the field as described in the following table:

Field Name	**Field Type**	**Width of the field**	**No. of Decimal Places**	**Purpose of the field**
Division	String	25		To put or Type name of the current Division.
District	String	25		To put or Type name of the current District.
Upazila	String	25		To put or Type name of the current Upazila.
Pourashava				To put or Type name of Paurashava.
Union_Ward	String	25		To put or Type name of the current Union\Ward.

Plot_no	Long Integer	-	-	To contain *dag* number (plot number)
Layer_Desc	String	20	-	To contain following plot types - "Plot" - "Katcha Road" - "Semi-Pucca Road" - "Pucca Road" - "Halot" - "Pond" - "Canal" - "River
Mouza	String	100	-	To contain name of the Mouza
JL_No	String	3		To contain JL Number of the Mouza
Sheet_No	String	2	-	To contain sheet no the Mouza
Mouza_JL_S	String	100	-	To contain Mouza name+single space+JLno(3-digits)+single space+sheet no(2-digits)
Mouza_JL	String	100	-	To contain Mouza name+single space+JLno(3-digits)
Scale	String	20		To contain scale of the mouza sheet.
Revenue_No	String	100		To contain survey number of the mouza map
Survey_Period	String	20		To contain survey period of the mouza map. E.g 1973-85
Landuse	String	50	-	To contain name of the Land use Categories e.g. Waterbody.
Crop_Land1				To contain name of the 1st crop land phase-1 from the project area.
Crop_Land2				To contain name of the 2nd crop land phase-2 from the project area.
Crop_Land3				To contain name of the 3rd crop land phase-3 from the project area.
Sq_meters				To contain area in Square meters.
Hectares	Double	0		To contain area in Hectares.
Acres	Double	0		To contain area in Acres.
Katha	Double	0		To contain area in Katha.
Decimal	Double	0		To contain area in Decimal.
Geo-Code	String	16	-	To contain Nine-digited BBS Geocode of Mouza as District+Thana+Union/Ward+Mauza
Remarks	String	100	-	To contain remarks, if any.

3) Shape file\Coverage name: AdbL**11601.shp (Standard Code such as Thana\Upazila)**
Type: **Polyline**

This shape file\Coverage will contain line features of merged BS Mouzas of project area as polyline features. It must contain the field as described in the following table:

Field Name	**Field Type**	**Width of the field**	**No. of Decimal Places**	**Purpose of the field**
ID	Long Integer	16	-	To Contain Mouza polyline ID.
Type	String	20	-	"Plot Boundary" "Sheet Boundary" "Mauza Boundary" "Katcha Road"

				"Semi-Pucca Road" "Pucca Road" "Halot" "Pond" "Canal" "River"
Remarks	String	100	-	To contain remarks, if any.

4) Shape file\Coverage name: AdbN**11601.shp (Standard Code such as Thana\Upazila)**
Type: **Point**

This shape file\Coveragre will contain Plot numbers of merged BS Mouzas of project area as point features. It must contain the field as described in the following table:

Field Name	**Field Type**	**Width of the field**	**No. of Decimal Places**	**Purpose of the field**
Division	String	25		To put or Type name of the current Division.
District	String	25		To put or Type name of the current District.
Upazila	String	25		To put or Type name of the current Upazila and Pourashava.
Pourashava				To put or Type name of Paurashava.
Union_Ward	String	25		To put or Type name of the current Union\Ward.
Plot_no	Long Integer	-	-	To contain *dag* number (plot number)
KhasLand	String	3	-	Whether the Khas land exist in the plot. - "Yes" - "No"
Mouza	String	100	-	To contain name of the Mouza
JL_No	String	3		To contain JL Number of the Mouza
Sheet_No	String	2	-	To contain sheet no the Mouza
Mouza_JL_S	String	100	-	To contain Mouza name+single space+JLno(3-digits)+single space+sheet no(2-digits)
Mouza_JL	String	100	-	To contain Mouza name+single space+JLno(3-digits)
Scale	String	20		To contain scale of the mouza sheet.
Revenue_No	String	100		To contain survey number of the mouza map
Survey_Period	String	20		To contain survey period of the mouza map. E.g 1973-85
Plot_Desc	String	20	-	To contain following plot types - "Plot" - "Katcha Road" - "Pucca Road" - "Halot" - "Pond" - "Canal" - "River
Geocode	String	9	-	To contain Nine-digited BBS Geocode of Mouza as

				District+Thana+Union/Ward+Mauza
Remarks	String	100	-	To contain remarks, if any.

5) Shape file\Coverage name: Str**11601.shp (Standard Code such as Thana\Upazila)**
Type: **Polygon**

This shape file\Coverage will contain the information of each structure in the area under project. It must contain thirteen fields as described in the following table:

Field Name	**Field Type**	**Width of the field**	**No. of Decimal Places**	**Purpose of the field**
Division	String	25		To put or Type name of the current Division.
District	String	25		To put or Type name of the current District.
Upazila	String	25		To put or Type name of the current Upazila and Pourashava.
Pourashava				To put or Type name of Paurashava.
Union_Ward	String	25		To put or Type name of the current Union\Ward.
ID	Long Integer	16	-	To Contain Structure ID.
Area_Sqft	Double	0		To Contain Structure area in square feet.
Str_Type	String	20	-	To contain the type of the structure as follows - "Pucca" - "Semi-pucca" - "Katcha"
Storied	Short Integer	-	-	To contain the number of floors of the structure.
Str_Use1t	String	100	-	1. To contain the use (1st) of the structure. 2. The attributes should be according to the given "Existing_Landuse" categories.
Str_Use2t	String	100	-	To contain the use (2nd) of the structure.
Str_Use3t	String	100	-	To contain the use (3rd) of the structure.
Str_name	String	100	-	To contain the name of the structure.
Cons_Year	Short Integer	-	-	To contain the year of construction.
Undercons	String	3	-	To contain the information if it was being under construction during the feature survey. - Yes/No ; True/False ; 1/0
Struc_Owner	String	100	-	To contain the owner name of the structure.
Struc_Use	String	100	-	To contain the structure use of the Government or private and so on.
Cell_No	String	50		To contain the mobile number.
Family_Size	Short Integer	10		To contain the family members.
Male	Short Integer	10		To contain the male family members.
Female	Short Integer	10		To contain the female family members.
Hyperlink	String	100		To contain the owner picture with the structure.
Holding_no	String	50	-	To contain Holding number of the structure.
Road_ID	String	50	-	To contain adjacent road number, if any
Road_name	String	100	-	To contain the name of the nearby road

Locality (Mauza/ Ward)	String	50	-	To contain the name of the Mauza_JL_Sheet.

6) Shape file\Coverage name: **RdP11601.shp (Standard Code such as Thana\Upazila)**
Type: **Polygon**

This shape file\Coverage will contain the existing roads as polygon features in the area under project. It must contain three fields as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Road_name	string	100		To contain the name of the road, if any
Road_ID	string	20	-	To contain the ID of Road
Road_type	string	20	-	To contain the physical type of the road as follows - "Pucca" - "WBM" - "HBB" - "Katcha"
Road_Class	string	100		To contain the Class of road according to RHD & LGED in the followings: RHD Road Class - "National Highways " - "Regional Highways" - "District\Zila Road" LGED Road Class - "Upazila Road(Pucca" - "Upazila Road(Katcha)" - "Union Road(Pucca)" - "Union Road(Katcha)" - "Village Road A (Pucca)" - "Village Road A (Katcha)" - "Village Road B (Pucca)" - "Village Road B (Katcha)"

7) Shape file\Coveragre name: **RdE11601.shp (Standard Code such as Thana\Upazila)**Type: **Polyline**

This shape file\Coverage will contain the existing roads as polyline features in the area under project. It must contain three fields as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Road_name	string	100		To contain the name of the road, if any
Road_ID	string	20	-	To contain the ID of Road
Road_Type	string	20	-	To contain the physical type of the road as follows - "Pucca" - "WBM" - "HBB" - "Katcha"

Road_Class	string	100		To contain the Class of road according to RHD & LGED in the followings: RHD Road Class - "National Highways " - "Regional Highways" - "District\Zila Road" LGED Road Class - "Upazila Road(Pucca" - "Upazila Road(Katcha)" - "Union Road(Pucca)" - "Union Road(Katcha)" - "Village Road A (Pucca)" - "Village Road A (Katcha)" - "Village Road B (Pucca)" - "Village Road B (Katcha)"

8) Shape file name: **Road**L**11601.shp (Standard Code such as Thana\Upazila)**
Type: **Polyline**

This shape file will contain the centerlines of existing roads as polyline features in the area under project. It must contain the following fields compatible to network analysis:

Field Name	**Field Type**	**Width of the field**	**No. of Decimal Places**	**Purpose of the field**
Road_name	string	100		To contain the name of the road, if any
Road_no	string	20	-	To contain road number, if any
Road_ID	string	20	-	To contain the ID of Road
Road_type	string	20	-	To contain the physical type of the road as follows - "Pucca" - "WBM" - "HBB" - "Katcha"
Road_Class	string	100		To contain the Class of road according to RHD & LGED in the followings: RHD Road Class - "National Highways " - "Regional Highways" - "District\Zila Road" LGED Road Class - "Upazila Road(Pucca" - "Upazila Road(Katcha)" - "Union Road(Pucca)" - "Union Road(Katcha)" - "Village Road A (Pucca)" - "Village Road A (Katcha)" - "Village Road B (Pucca)" - "Village Road B (Katcha)"
Road_width	numeric		-	To contain average width of the road segment in meter

Road_length	numeric		-	To contain calculated length of the road segment in meter
Num_Lanes	numeric		-	To contain number of lanes on the road segment such as 1, 2, etc.
Road_own	string	100		To contain the name of the department or organization to which the road segment belongs.
METERS	Double	-	-	To contain length of the road in meters
FT_MINUTES	Float	-	-	To contain the time duration needed to travel the arc from the start node unto the end node, measured in minutes.
TF_MINUTES	Float	-	-	To conation the time duration needed to ravel the arc from the end node unto the start node of the arc, measured in minutes,
Oneway	string	2		To contain the value to represent the possible directions to travel an arc
Hierarchy	Long			To contain order or rank assigned to road network elements.

8) Shape file name: **Road**L**11601.shp (Standard Code such as Thana\Upazila)**
Type: **Polyline**

This shape file will contain the centerlines of existing roads as polyline features in the area under project. It must contain the following fields compatible to Road Inventory sets with Road shapefiles:

Field Name	**Field Type**	**Width of the field**	**No. of Decimal Places**	**Purpose of the field**			
Rd_Length	Double	**0**		To contain the area in meters			
Road_ID	string	20	-	To contain the ID of Road			
Remarks	To prepare completely the road, Electricity, Telephone, drain and pipe line inventory so that the inventory can to use properly with road shapefiles.I have given an example data table right side……..						
				Chainage	Road_ Condition	Type	Additional +Field
				0-500 meters	Pucca	Pucca	To add more field as per your Required.
				500-500m	Culvert	Culvert	To add more field as per your Required.
				500-1000m	Katcha	Katcha	To add more field as per your Required.
				1000-1012m	Bridge	Bridge	To add more field as per your Required.

9) Shape file\Coverage name: **RdFP11601.shp (Standard Code such as Thana\Upazila)**
Type: **Polygon**
Surface
This shape file\Coverage will contain footpath of project area. It must contain the field as described in the following table:

Field Name	**Field Type**	**Width of the field**	**No. of Decimal Places**	**Purpose of the field**
Road_name	string	50	-	To contain road name
Road_ID	string	20	-	To contain the adjacent Road ID

FP_Width	numeric		-	To contain width of Footpath
FP_Type	string	50	-	To contain footpath conditions.
Footpath				-Yes; true; 1

10) Shape file\Coverage name: **RdIL11601.shp (Standard Code such as Thana\Upazila)**
Type: **Polygon**

This shape file\Coverage will contain road islands of the project area. It must contain the field as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Road_name	string	50	-	To contain road name
Road_No	string	20	-	To contain road number if any
Road_ID	string	20	-	To contain the adjacent Road ID
IL_Width	Long integer	20	-	To contain width of Island
IL_Type	string	50	-	To contain footpath conditions.

11) Shape file\Coverage name: **Wbd11601.shp (Standard Code such as Thana\Upazila)**
Type: **Polygon or polyline**

This shape file will contain water bodies of project area. It must contain the field as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
WBD_ID	Long integer	20	-	To contain Water body ID.
WBD_Type	string	50	-	To contain following type of water bodies - "River" - "Khal" - "Irrigation Canal" - "Swamp" - "Pond" - "Ditch" - "Borrow Pits"
Use_Type	string	50	-	To contain the use of water body such as Private or Public use

12) Shape file\Coverage name: **Emb11601.shp (Standard Code such as Thana\Upazila)**
Type: **Polyline**

This shape file\Coverage will contain embankment features of project area. It must contain the field as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Emb _name	string	100		To contain the name of the road, if any
Emb_ID	string	20	-	To contain the ID of Road
Emb_Type	string	20	-	To contain the physical type of the Embankment to follow the road preparing

				method.
Emb_Class	string	100		To contain the Class of the Embankment -"Road cum Embankment" -"Embankment"
Emb_width	numeric		-	To contain average width of the road segment in meter
Emb _width	numeric		-	To contain average width of the embankment segment in meter
Emb _length	numeric		-	To contain calculated length of the road segment in meter
Num_Lanes	numeric		-	To contain number of lanes on the road segment such as 1, 2, etc.
Owner	string	100		To contain the name of the department or organization to which the embankment segment belongs.

13) Shape file name: **DTM11601.shp (Standard Code such as Thana\Upazila)**
Type: **Point**

This shape file will contain 3D points at regular interval (10m x 10m) in project area. It must contain four fields as described in the following table:

Field Name	**Field Type**	**Width of the field**	**No. of Decimal Places**	**Purpose of the field**
ID	Sort Integer	**10**		To contain the ID
RL	Double	0	0	To contain Reduced Level (RL) of a point in meter as referenced with PWD
Easting	Double	0	0	To contain X-coordinate of the point
Northing	Double	0	0	To contain Y-coordinate of the point

14) Shape file name **BM11601.shp (Standard Code such as Thana\Upazila)**
Type: **Point**

This shape file will contain BM Pillars established in the project area. It must contain four fields as described in the following table:

Field Name	**Field Type**	**Width of the field**	**No. of Decimal Places**	**Purpose of the field**
RL	Double	0	0	To contain Reduced Level (RL) of a point in meter as referenced with PWD
Easting	Double	0	0	To contain X-coordinate of the point
Northing	Double	0	0	To contain Y-coordinate of the point
organization	String	100	-	To contain name of the organization
Remarks	String	100	-	To contain remarks, if any.

15) Shape file name: **CTR11601.shp (Standard Code such as Thana\Upazila) (CTR = Contour)**
Type: **Polyline**

This shape file will contain the contour lines of the area under project area. It must contain three fields as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Contour	Double	0	0	To contain the value (RL) of the contours up to three decimal places.
Label	Double	0	0	To contain the value of contour up to one decimal place. This can be used to label the contours in map.
Type	String	7	-	To contain the value of this field as follows: - "Index" - "Intermediate" The purpose of this field is to symbolize and label the contours only. (The values must be calculated in such way that after successive 4 thin (Regular) contours there should be one thick (Index) contour in map. That is if 0.00 is a thick (Index) contour then 0.3, 0.6, 0.9, and 1.2 will be (Regular) contours and 1.5 will be thick contour.

16) Shape file name: **ELU11601.shp (Standard Code such as Thana\Upazila) (ELU = Existing Landuse)**
Type: **Polygon**
This shape file will contain existing land use of project area which will be prepared on the basis of physical feature and land use survey. It may contain the field as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Land_use	string	50	-	To contain existing land use as - "Administrative" - "Agriculture" - "Commercial" - "Circulation Network" - "Institutional" - "Flood Flow Zone" - "Industrial" - "Mixed Use" - "Recreational" - "Restricted / Special Use" - "Socio-Cultural" - "Transport & Communication" - "Urban Residential" - "Urban Services" - "Vacant Land" - "Water Body"
Remarks	string	100	-	To contain remarks, if any.

17) Shape file name: **HTD11601.shp (Standard Code such as Thana\Upazila) (HTD = Homestead)**
Type: **Polygon**

This shape file will contain rural homestead areas in project area as polyline features. It must contain the field as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Location	String	20	-	To contain the name of Mauza (Mauza_JL_Sheet) or the locality in which homestead areas lies.
Type				To contain the type of homestead area (Accordingly structures) -Urban -Rural

18) Shape file name: **BRD11601.shp (Standard Code such as Thana\Upazila) (BRD = Bridge)**
Type: **Polygon**

This shape file will contain Bridge/Culvert/Box culvert/Over bridge/Railway Bridge etc as polygon features in project area. It must contain the field as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Length	Double	0	0	To contain the length of the bridge/culvert
Width	Double	0	0	To contain the width of the bridge/culvert
Abutment	Long integer	20	0	To contain the number of abutment
Span	Double	0	0	To contain the span of the bridge/culvert
Location	String	30	-	To contain the area name (Mauza_JL_Sheet or locality)
Remarks	String	254	-	To contain comments about the bridge such as conditions of abutment, deck, wing wall, etc. *** To follow the road preparing methods.

19) Shape file name: BREL**11601.shp (Standard Code such as Thana\Upazila) (BREL = Bridge Edge Line)**
Type: **Polyline**

This shape file will contain Bridge/Culvert/Box culvert/Over bridge/Railway Bridge etc as polyline features in project area. Each feature must be a multipart feature. It must contain the field as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Length	Double	0	0	To contain the length of the bridge/culvert
Width	Double	0	0	To contain the width of the bridge/culvert
Abutment	Double	0	0	To contain the number of abutment
Span	Double	0	0	To contain the span of the bridge/culvert
Location	String	20	-	To contain the area name (locality)
Remarks	String	254	-	To contain comments about the bridge such as conditions of abutment, deck, wing wall, etc. *** To follow the road preparing methods.

20) Shape file name: BRDP**11601.shp (Standard Code such as Thana\Upazila) (BRDP = Bridge Point)**
Type: **Point**

This shape file will contain Bridge/Culvert/Box culvert/Over bridge/Railway Bridge etc as point features in project area. It is expected that this shape file will be generated/produced from converting the **Bridge_CL.shp** file into centroids. It must contain the field as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Length	Double	0	0	To contain the length of the bridge/culvert
Angle				To contain the Geographic angle of the bridge/culvert
Width	Double	0	0	To contain the width of the bridge/culvert
Abutment	numeric	20	0	To contain the number of abutment
Span	Double	0	0	To contain the span of the bridge/culvert
Location	String	20	-	To contain the area name (Mauza_JL_Sheet or locality)
Remarks	String	254	-	To contain comments about the bridge such as conditions of abutment, deck, wing wall, etc. *** To follow the road preparing methods.

21) Shape file name: **EDRN11601.shp (Standard Code such as Thana\Upazila) (EDRN = Existing Drain Line)**
Type: **Polyline**

This shape file will contain the information of existing drains in the project area. It must contain three fields as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Type	string	20	-	To contain the (construction) type of the drain. The value of the field may be any of the following two - Surface (Katcha) - Surface (Uncovered) - Surface (Covered) - Pipe
Drain_width	Double	0	0	To contain the width of the drain
Drain_depth	Double	0	0	To contain the depth of the drain
Drain_radios	Double	0	0	To contain the radios of the drain
Road_ID	string	20	-	To contain the adjacent Road ID
Remarks	String	254	-	*** To follow the road preparing methods.

22) Shape file name:BWL**11601.shp (Standard Code such as Thana\Upazila) (BWL=Boundary Wall Line)**
Type: **Polyline**

This shape file will contain boundary walls as line features of project area. It must contain the field as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Type	string	50	-	To contain line features such as Boundary wall.

23) Shape file name: WSL**11601.shp (Standard Code such as Thana\Upazila) (WSL= Water Supply Line)**
Type: **Polyline**

This shape file will contain water distribution pipe network as line features in project area. It must contain the field as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Type	string	20	-	To contain type of pipe (Steel, PVC, etc)
Dia	Double	0	0	Diameter of pipe in mm
Remarks	String	254	-	*** To follow the road preparing methods.

24) Shape file name: OHT**11601.shp (Standard Code such as Thana\Upazila) (OHT = Overhead Tank)**
Type: **Point**

This shape file will contain overhead water tanks as point features in project area. It must contain the field as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Capacity	Double	0	0	To contain the capacity of the overhead tank.
Catchment	Double	0	0	To contain the catchment area in sq. meter
Owner				Contains the owner name

25) Shape file name: ESL**11601.shp (Standard Code such as Thana\Upazila) (ESL = Electricity Supply Line)**
Type: **Polyline**

This shape file will contain High Voltage Electric Lines as line features in project area. It must contain the field as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
capacity	string	20	-	Contains the capacity of each line as 11KV, 33 KV etc.
Owner	string	20		Contains the name of Organization
Remarks	String	254	-	*** To follow the road preparing methods.

26) Shape file name: ULT**11601.shp (Standard Code such as Thana\Upazila) (ULT = Utilities)**
Type: **Point**

This shape file will contain locations of various utility features as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Type	string	20	-	To contain - "Electric Pole" - "Electric Tower" - "High Volt Electric Tower" - "Electric Box" - "Power Station" - "Power Sub-station" - "Transformer" - "Gas Transmission Center - "Light Post" - "Telephone Pole" - "Telephone Box" - "Fire Service Station" - "Traffic Signal Pole"
Owner				Contains the name of the owner
Remarks	String	100	-	*** To follow the road preparing methods.

27) Shape file name: SRL**11601.shp (Standard Code such as Thana\Upazila) (SRL = Sewerage Line)**
Type: **Polyline**

This shape file will contain sewerage network as line features in [project area. It must contain the field as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Size	string	20	-	To contain pipe diameter of sewerage line
Type	string	25	-	Contains type of waste water carried by the sewerage line such as storm sewerage or household sewerage line etc.
Location	string	20	-	Contains location of sewerage line
Owner				Contains the name of the owner
Remarks	String	100	-	*** To follow the road preparing methods.

28) Shape file name: OHP**11601.shp (Standard Code such as Thana\Upazila) (OHP = Other polygon)**
Type: Polygon
This shape file will contain polygon features of project area. It must contain the field as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Type	string	50	-	To contain boundary of following features - "Graveyard" - "Crematorium" - "Cemetery" - "Eidgah" - "Restricted Area" - "Airport"

				- "Brick Field" - "Rikshaw Garage" - "Automobile Garage" - "Slum" - "Monument" - "Open Space" - "Parks" - "Playground" - "Stadium" - "Golf Course" - "Botanical Garden" - "Zoological Park" - "Power Plant/Station" - "Bus Terminal" - "Truck Terminal" - "Water Treatment Plant" - "Sewerage Treatment Plant" - "Waste Disposal Plant" - "Railway Station" - "Bazaar Boundary" - "Forest Land" - "Sand Fill" - "Swimming Pool" - *- Other if necessary*
Owner				Contains the name of the owner

29) Shape file name: AP**11601.shp (Standard Code such as Thana\Upazila) (AP = All point)**
Type: **Point**

This shape file will contain point features of project area. It must contain the field as described in the following table:

Field Name	**Field Type**	**Width of the field**	**No. of Decimal Places**	**Purpose of the field**
Type	string	50	-	- "Airport" - "Bazar" - "Government Bank" - "Private Bank" - "Brickfield" - "Bridge" - "Bus Terminal" - "Cemetery" - "Church" - "Cinema Hall" - "College" - "Crematorium" - "Deep tube well" - "Dustbin" - "Filling Station" - "Graveyard" "Growth Center"

				- "Hand tube well" - "Historic site" - " Government High School" " Registered High School" " Non-Registered High School" - "Hospital/Clinic" - "Madrasa" - "Registered Madrasa" - "Non-Registered Madrasa" - "Mazar/Dargah" - "Monument" - "Mosque" - "Museum" - "Oil Reservoir/Depot" - "Over Bridge" - "Pagoda" - "Police Box" - "Police Station" - "Post Office" - "River Port" - "Government Primary School" - "Registered Primary School" - "Non-Registered Primary School" - "Sluice gate" - "Temple" - "Theater Hall" - "Truck Terminal" - "Under Pass" - "University" - "Private University" - "Well" - "Culvert" - *Other if necessary*
Name	string	50	-	To contain name of the feature, if any
PointType	string	50	-	To contain short name "GPS" of the feature, e.g. Government Primary School (GPS)
Owner				Contains the name of the owner
Remark	string			Contains Further Explanation

30) Shape file name: **ITN11601.shp (Standard Code such as Thana\Upazila) (ITN = Important Names)**

Type: **Point**

This shape file will contain the names of important places and structures as point features in project area.

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Name	String	100	-	To contain - Name of locality, market, bazaar, important structure, historic site, university, play ground, poultry farm, river, khal, lake, pond, etc.

31) Shape file name: **RN11601.shp (Standard Code such as Thana\Upazila) (RN = Road Name)**

Type: **Annotation/Line**

This shape file will contain the names of important places and structures as point features in project area.

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Name	String	100	-	To contain the name of road segment.

32) Shape file name: **PRL11601.shp (Standard Code such as Thana\Upazila) (PRL = Proposed Road Line)**

Type: **Polyline**

This shape file will contain center lines of proposed roads as line features in the project area.

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Width_m	Double	0	0	To contain width of the proposed road in meter
Width_ft	Double	0	0	To contain width of the proposed road in foot
From_To	String	100	-	To contain the names (of road/place) from where the road starts and to where the road ends.
Prop_type	String	20	-	To contain any of the two - "New" - "Widening"
Type	String	20	-	To contain any of the following - "Underground" - "Ground" - "Flyover" - "Viaduct"
Remarks	String	254	-	*** To follow the road preparing methods.

41) Shape file name: **PPL11601.shp (Standard Code such as Thana\Upazila) (PPL = Population)**
Type: **Polygon**
This shape file will contain polygon features of unions and wards derived from dissolved Mouzas of the project area area. It must contain the field as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Union_Ward	String	50	-	To contain name of the Mouza
Area_BBS	Double	0	0	
Area_GIS	Double	0	0	
Pop_2001	Double	0	0	
Pop_2011	Double	0	0	
Pop_2021	Double	0	0	
Pop_2035	Double	0	0	
Pop_den_2011				
Thana				
Union				
Geocode	String	11	-	To contain BBS geocode of the Union
Remarks	String	254	-	*** To add more field.

42) Shape file name: **STP11601.shp (Standard Code such as Thana\Upazila) (STP = Structure Plan)**
Type: **Polygon**
This shape file will contain proposed policy on the **merged mouza map** of the project area. It must contain the fields as described in the following table:

Field Name	Field Type	Width of the field	No. of Decimal Places	Purpose of the field
Policy_Zone	String	50	-	To contain proposed policy on the plots.
Remarks	String	100	-	To contain remark, if any.

Point Feature Codes

The following Point feature codes (Unique ID) will be used as follows.

Point Feature Categories	Unique ID
- "Airport"	255
- "Bazar"	260
- "Government Bank"	265
- "Private Bank"	270
- "Brickfield"	275
- "Bridge"	280
- "Bus Terminal"	285
- "Bus Stand"	290
- "Cemetery"	295
- "Church"	300
- "Cinema Hall"	305
- "Government Medical College"	245
- "Private Medical College"	250
- "Government College"	145
- "Government Woman College"	150
- "Registered College"	155
- "Non-Registered College"	160
Government Poly Technical Institute	165

Private Poly Technical Institute	170
Vocational Institute	175
Jubo Unnayan Kendra	310
Government Teacher's Training College	235
Private Teacher's Training College	240
- "Crematorium"	315
- "Deep tube well"	320
- "Dustbin"	325
- "Filling Station"	330
- "Graveyard"	335
"Growth Center"	340
- "Hand tube well"	345
- "Arsenic Hand tube well"	350
- "Tara Pump"	355
- "Historic site"	360
- " Government High School"	125
- " Government Girl's High School"	130
" Registered High School"	135
" Non-Registered High School"	140
- "Hospital/Clinic"	365
- "Government Kamel Madrasa"	180
- "Registered Kamel Madrasa"	185
- "Government Fazel Madrasa"	190
- "Registered Fazel Madrasa"	195
- " Government Alem Madrasa"	200
- " Registered Alem Madrasa"	205
- "Government Eftedayee Madrasa"	210
- "Registered Eftedayee Madrasa"	215
- "Non-Registered Madrasa"	220
- "Mazar/Dargah"	370
- "Monument"	375
- "Mosque"	380
- "Museum"	385
- "ASA NGO"	390
- "BRAC NGO"	395
- "Proshikha NGO"	400
- "TMSS NGO"	405
- "Other's NGO"	410
- "Insurance Company"	415
- "Life Insurance Company"	420
- "Oil Reservoir/Depot"	425

- "Over Bridge"	430
- "Pagoda"	435
- "Police Box"	440
- "Police Station"	445
- "Post Office"	450
- "River Port"	455
- "Government Primary School"	100
- "Registered Primary School"	105
- "Non-Registered Primary School"	110
- "K.G. School"	115
- "Kindergarten School"	120
- "Sluice gate"	460
- "Temple"	465
- "Theater Hall"	470
- "Truck Terminal"	475
- "Under Pass"	480
- "Government University"	225
- "Private University"	230
- "Well"	485
- "Culvert"	490
- *Other if necessary*	To put or add the Unique ID accordingly 5 interval

Appendix XIII: Topographic Survey Format

SI. No	Survey Item	Illustrated			
	Special DEM Object	Map object 'which may be used if registered with a view to DEM use			
		As break line	As terrain points	For delimitation of unsurveyed	For Mask Areas
	Spot height	Road Pucca		Coastline	Building
	Special elevation point	Road Katcha		Pond	Pond
	Contour line	Path Pucca			Wetland/bog/ marsh land
	Break line	Path Katcha			
	Mask Area	River Edge			
	Unsurveyed Area	Khal Edge			
	DEM Boundary	Pond			
		Drain channel			