



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

## **Preparation of Development Plan for Fourteen Upazilas**

**Package 05:**  
**Ramu Upazila, District: Cox's Bazar &**  
**Rangunia Upazila, District: Chittagong**

# **FINAL DEVELOPMENT PLAN REPORT**

## **Ramu Upazila**

**May 2018**

Joint venture of

 **HOUSE OF CONSULTANTS LIMITED (HCL)**

and

 **dm.Watch Disaster Management Watch (dm. Watch)**

## **Final Plan - Ramu Upazila**

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

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### **EXECUTIVE SUMMARY**

This report provides a detailed draft final plan prepared for Ramu Upazila, Cox's Bazar District under the project of Preparation of Development Plan for Fourteen Upazilas conducted by the Urban Development Directorate (UDD), Ministry of Housing and Public Works, Government of the People's Republic of Bangladesh.

The draft final plan contains five-tier plan: sub-regional, structure, urban area, rural area and action area plans. Sub-regional plan is a long term indicative policy plan. In sub-regional plan three indicative broad based policies are determined which manifested a growth direction with a view to assimilate regional characteristic features of Ramu. On the other hand, structure plan is devised into a broad spectrum land use planning structures/zones prepared through the process of land suitability analysis. A policy framework for each structural zone is suggested accordingly. Urban and rural areas are demarcated after the structure plan is prepared. For the future development infrastructure, amenities and services facilities are allocated in conformity with planning standards for urban and rural areas based on the demand perceived by the PRA survey of local dwellers of Ramu. Finally some action plans for both urban and rural areas are indicated as well as located in the maps.

This draft final report incorporates fourteen chapters. First chapter provides an introduction and discusses about the background of the plan preparation. The second chapter illustrates study area profile of Ramu Upazila. Third chapter reviews the development related policies, laws and regulations and planning standards which give a feedback to the planning process in line with integration of policies and standards suitable for Ramu Upazila. Fourth chapter reviews critical planning issues that includes population projection of Ramu Upazila that calculated number of population with different exponential rates for 20 years to forecast the demand of services needs to be allocated in the region and also Analyzing shift-share components chapter four gives an idea about employment structure of Ramu, whether changes in employment in this region is increasing or decreasing. Fifth chapter represents and planning standards which give a feedback to the planning process in line with integration of policies and standards suitable for Ramu Upazila. Five-tier draft final plan i.e. sub-regional, structure, urban, rural and action plans are illustrated in chapter 6 to 13. Fact sheets for all thematic maps and structure plans are also given in the respective chapters sequentially. Chapter fourteen concludes the report suggesting a future guideline.

This report has been incorporated with the comments from public consultation, public hearing and workshop.

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Team Leader, Package-5

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## CHAPTER 1 INTRODUCTION

### 1.1 General

The world is incubating the largest wave of urban growth in the history and the population growth is spurred more than half the world's population in towns and cities. World population has grown exponentially in the 20th century from around 1.6 billion in 1900 to around 6.1 billion today, with each additional billion people being added more rapidly than the last (Cohen, 2006). The vast majority of this growth has occurred in the developing world which is mainly concentrated in Africa and Asia, and most of the new growth occurs in smaller towns and cities.

Although the population growth rate of Bangladesh has somewhat decreased to moderate level in recent era, it has experienced as one of the world's most densely populated country. The country is going to witness a rapid spread of urbanization over the next decade but there are fewer resources to response this change. According to an estimate, by 2020, nearly every other man, woman and child will live in an urban area (World Bank ed., Bangladesh 2020). At its birth, Bangladesh had an urban population less than 5 million. By 1990, this had increased to 22.4 million and a decade and a half later, urban population stood at 42.3 million. At an annual growth rate of 3.7%, urban population growth in Bangladesh has been higher than all other countries in South Asia barring Nepal (Rahman, 2014). Bangladesh's urban population has been growing at a yearly average rate of 6 percent since independence, at a time when the national population growth was 2.2 percent. As a result, urban population has grown six-fold, compared with a 70 percent increase in rural population (World Bank, 2007).

Urbanization refers to the process by which rural areas become urbanized as a result of economic development and industrialization. Demographically, the term urbanization denotes the redistribution of populations from rural to urban settlements over time. However, it is important to acknowledge that the criteria for defining what is urban may vary from country to country, which cautions us against a strict comparison of urbanization cross-nationally. The fundamental difference between urban and rural is that urban populations live in larger, denser, and more heterogeneous cities as opposed to small, sparser, and less differentiated rural places.

The urbanization and development relationship is inevitable for developing countries like Bangladesh. Urbanization is interlinked with the economic development, social development and environmental protection. The urbanization of the developing world began to accelerate in late twentieth century (Timberlake, 1987), although there was no clear trend in overall urban growth in less developed countries due to inconsistent definition of urban and the lack of quality in their census data. From experiencing of Bangladesh, it has been observed as predominately rural nation but urban is now kept in pace. The following table gives a notion about the urbanization trend of Bangladesh.

**Table: Trends of Urbanization in Bangladesh**

Census year	Total national population (million)	Growth rate of national population (%)	Total urban population (million)	Level of urbanization (%)	Decadal increase in urban population (%)	Annual Exponential Growth rate of urban population (%)
1951	44.17	0.50	1.82	4.33	18.38	1.69
1961	55.22	2.26	2.64	5.19	45.11	3.72

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1974	76.37	2.48	6.27	8.87	137.57	6.66
1981	89.91	2.32	13.23	15.18	110.68	10.66
1991	111.45	2.17	20.87	19.63	57.79	4.56
2001	123.10	1.47	28.61	23.10	37.05	3.15
2011	150.04	1.37	33.55	23.30	17.27	1.59
2011*	150.40	1.37	42.11	28.40	47.19	4.12

**Source:** Government of Bangladesh: Bangladesh Population Census. Census, 1991. BBS, 2003 1981; Report on Urban Areas, 1997; and Preliminary Report.

Urbanization worldwide has been observed to be an effective agglomeration of economic growth and socio-cultural development. In pure economic terms, urbanization contributes significantly to the national economy. Even in Bangladesh (at 28 percent urban), this sector contributes to more than 60 percent of the GDP. This has grown from as low as 25 percent in 1972-73 and 45 percent in 1995-96 (Islam, 2005). This trend obviously may lead one to delineate that urbanization on a macro-scale would be beneficial to the economy of Bangladesh. Urbanization also impacts social development in terms of higher literacy rate, improvement in the quality of education, and better health indicators. To keep pace with greater urbanization, some institutional or developmental change is necessary to utilize the resources. A well-documented and visionary constitution is needed to survive with the change and to make the urban and rural place liveable.

## 1.2 Objectives

According to the Terms of Reference the objectives of Ramu and Rangunia Upazila Development Plan are to:

### 1.2.1 National Objectives

To find out development issues and potentials of the Upazila and make a 20 years development vision for the Upazila (both urban and rural area) and prepare a Master Plan in line with the vision for the development;

1. Prepare plan for the people of whole upazila to develop and 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 better quality of life and at the same time ensure the development of rural area within the project area.
2. Prepare a multi-sector short and long term investment plan through participatory process for better living standards by identifying the area based priority-drainage master plan, transportation and traffic management plan, other specific plan need as per requirement in accordance with the principle of sustainability;
3. Provide controls for private sector development, clarity and security with regard to future development;
4. Provide guidelines for development considering the opportunity and constraints of future development of Upazilla town; and rural area.
5. Prepare 20 years Development Plan to be used as a tool to ensure and promote growth of the city in line with the guiding principles of the Master Plan and control any unplanned growth by any private and public organizations.

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6. Facilitating the urban growth to protect the valuable farmland and at the same time provide space and facilities for non-agricultural activities.
7. Provision of standards for use by public bodies.
8. Supporting the livelihood of the inhabitants of Ramu and Rangunia Upazila.
9. Protecting the eco-system with the understanding that we are a component of the system rather than the consumer of the system.
10. Discouraging the involuntary displacement of the inhabitants in the name of development.
11. Control of undesired development in all areas for which plans have been prepared.

### **1.2.2 Immediate Objectives**

The immediate objectives of the project are:

#### **Objective 1: Determination of Present and Future Function of the Upazila**

Preparation of Sub Regional Plan, Structure Plan, Urban Area Plan, Rural Area Plan and Action Area Plan (AAP) are to be based on PRA sessions, land use survey, topographical survey, environmental, disasters/hazards and agricultural studies. The major studies are related to traffic and transportation, drainage and environmental, formal and informal economic studies, slums and squatters, unauthorized encroachment, recreational facilities and stakeholders participation for planning and development control.

#### **Objective 2: Mechanism for Improving and Guiding Development**

The mechanisms for improving and guiding development are:

- Preparation of five tier Development Plans namely: Sub Regional Plan, Structure Plan, Urban Area Plan, Rural Area Plan and Action Area Plan.
- Development of mechanisms for stakeholders, especially communities, who control over all development initiatives.
- Preparation of a set of Institutional and Legislative Restructuring Proposals.
- Selection of appropriate standards and guidelines for improving present conditions and guiding future development.

#### **Objective 3: Review of Existing Problems and Propose initiatives**

Review of existing problems and proposed initiatives are stated below:

- Detailed analysis of problems presently hampering development, which can be eliminated by action in the short term.
- Development of sectoral programs to alleviate poverty problems.
- Prepare a minimum number of action area plans for early area development or area upgrading of parts of the town that exhibits a representative cross section of development problems.

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- Undertake initiative at Upazila level to promote sustainable economic activity by formal private sector and individuals, groups, GOB and NGOs.

### **Objective 4: Formulation of Bankable Projects**

The factors for formulation of bankable projects areas are mentioned below:

- To determine methodology for identifying Multi-sectoral Investment Projects (MSIP) with their major priorities.
- Prepare a multi-sector investment plan through participatory process for better living standards by identifying areas based on the priority such as Drainage Master Plan, Transportation and Traffic Management Plan and other specific plan as per requirement.
- Providing controls for private sector development and clarity and security with regard to future development for inhabitants and investors. The targeted objectives and guidelines of the development projects would be to initiate and implement through participation.
- To identify a range of projects suitable in both sectoral and spatial terms.
- To develop a package for the priority to a level suitable for financial appraisal.

### **Objective 5: Increasing Capacity/formulation of Local Authorities for Urban and Rural Management and Development**

The factors to be considered in regard to increasing the capacity/formulation of local authorities for urban management and development are:

- To prepare a detailed analysis of the past budgets, their expenditure, liabilities and sources of funds of Pourashava, Upazila Prishad and Union Parishad.
- Providing Land use maps and information at Mouza dag level (parcel) as a professional manner for efficient updating, exchange, dissemination and decision support use.
- To prepare practical and detail proposal for increasing the income of the local authorities with reference to any forthcoming donors proposal to assist financial management and paying particular attention to the possibilities of increasing revenue from existing and proposed development activities.
- Providing guidelines for development considering the opportunity and constraints of future development. Moreover for the betterment of the community, actions would be taken through government, public private partnership, private and non-government initiatives as indicated in AAP.
- To prepare proposal for rationalizing the roles and divisions of responsibilities between Upazila and other development agencies.
- To prepare priority list of projects which can be funded from local resources and examine any new forms of funding for such developments.
- To assist Upazila, Pourashava and Union in drawing up schemes within the framework of Strategic Plan and Action Plans for inclusion in Development Programs.



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- To strengthen the technical capabilities of local authorities involved in urban management and development.
- Providing Planned Development to ensure Sustainable Environment Action Area Plan (AAP) should be undertaken with the cooperation of other development agencies. So all the agencies should cooperate, coordinate and participate in the process of preparation of Master Plan for proper planning and development. The Plan would be the guiding document for implementation by all concern. GIS based data; map and information would be the resource which could be easily updated when necessary.

### **1.3 Rationale of the Project**

At the present age development plan is the demand of time. The upazilas are the main developing sectors of the country. For the planned development a masterplan is the prerequisite. It will guide the future development of this areas. Master plan will direct the upazila towards a right path of development. With the population growth it will calculate the future demand of that growing population. It will trigger the way of new employment for the inhabitants of this area.

### **1.4 Scope of the Project**

The scope of Consultancy Services encompasses for Preparation of five tiers Development Plan for Rangunia Upazila, which includes Sub Regional Plan, Structure Plan, Urban Area Plan, Rural Area Plan and Action Area Plan. The study will cover surveys of physical features and preparation of Land use Plan, Traffic and Transportation Management Plan, Drainage and Environmental Plan and Ward Action Plans for the project area.

Considering the above scope of services and to prepare an efficient Development Plan for Rangunia Upazila, the specific tasks to be performed by the consultants in realization of the scope of services as spelled out in the TOR are given below in brief:

- Determination of study area (755 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 to forecast future population, requirement of different services, physical and social infrastructure facilities, employment generation.
- Identify 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.
- Prepare a Development Plan of the storm water drainage & sewerage system treatment plant for all areas in the town, which will include discharge calculations for the catchment 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.

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- Prepare a conceptual plan to show the phase-wise implementation schedule in an affordable and practical manner considering the technical, environment, institutional, economic and social feasibility of the proposed works.
- Proposal for preparation of hydraulic and structural designs for the priority areas of the study area and preparing a first phase implementation program.
- Study of 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.
- Recommend planning, institutional and legal mechanisms to ensure provision of adequate land for rights of way for storm water drainage, which will also determine illegal encroachments.
- Investigate methods to find the other phases of the storm water drainages and sewerage master plan.
- Assess 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 travel 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.
- Assess the current land use with regard to transportation, bus and truck terminals, stations, railway stations etc. and recommend actions to optimize this land use.
- Assess existing plot information.
- Prepare a Long Term traffic and Transportation Plan.
- The Development/Master Plan shall assess major investments and activities of the various development agencies/Ministries and indicate the stages of development preferably through 5 year programming approach. Consultants shall be making to liaison with all government and semi-government and other agencies concerned with their development at the Study area. Contract should also be made with the headquarters of such agencies and full details of such plans should be referenced in the plan.
- Survey and evaluate Urban Land Capabilities considering factors such as flood basin, topography, fertility etc.
- The Development/Master Plan Package shall indicate/outline possible frameworks/strategy for management and development control, institutional arrangement ensuring people's participation etc. for effective implementation of the plan.

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- Development of Proposal of By-laws for Land Development, Real Estate Development. Urban Plan Development control and Natural Resources/Green belt and places of historical interest.
- In line with the Master Plan, propose a Detailed Area Plan with a list of priority schemes for the development of roads, drains, traffic management and other social infrastructure for implementation during the first five years of plan period.
- Facilitate City Authority, Union Parishad about the publicity of Master Plan, its preparation strategy, function and their role through making, leaflet, newspapers, cable line, FGD etc.
- Allocating zones for as high, middle and low density areas.
- 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.
- Guidelines for controlling/guiding location of commercial use.
- To identify the areas reserved for agriculture, flood flow, public / private open spaces, parks, play grounds, play-lots and other recreational uses like green belts, retention pond, water bodies, water front, natural reservoirs, historical monuments.
- Detailed Area/Action Area Plan will cover all related issues to bring about expected result.
- Allocating the zones where public utilities, institutions and civic services will be established. Moreover zones of urban deferred areas, for future development expanded areas and areas for new development have to be considered.
- To ensure planning principles/standards, gross/net densities, guideline for future development and development control.
- To exercise control over architectural features, elevations, frontage of buildings and structures including zoning regulations to regulate locations, preservation of heritage, and type of buildings within each zone.
- Earthquake hazard, vulnerability, risk and loss assessment for project area.
- Development of scenario based spatial earthquake contingency plan for project area.
- Prepare and submit Development Plan and Report with required standards as specified in the TOR.

## CHAPTER 2

### STUDY AREA PROFILE

#### 2.1 Introduction

The current chapter describes the basic information about Ramu Upazila. The information presents in this chapter has been collected directly from the field as well as from many other secondary sources including National Population Census Reports of BBS.

#### 2.2 Brief Description of the Project Area

Cox's Bazaar is home to the longest beach in the world is situated at the southernmost point of Bangladesh. It's a beautiful district, surrounded by scenic views of mountains and the sea. The district is comprised of 8 upazilas; Ramu is one of these upazilas. This upazila of Cox's Bazar is oldest human habitation and once it was a center place for king of the Arakan and Mog. Ramu lies 15 kilometers to the northeast of Cox's Bazar District Sadar. Endless natural beauty, ancient Buddha antique, Ashoka temple/shrine, tunnel of king Kana, high bank and other natural resources as well as the multifarious/variety/diversity livelihood of indigenous people are remarkable/prominent of this upazila. Ramu is comprised of 11 unions. The mountain, river, canal, and channel enriched this upazila.

##### 2.2.1 Location and Geography

Ramu Upazila with an area 391.71 sq km, located in between 21°17' and 21°36' north latitudes and in between 92°00' and 92°15' east longitudes. It is bounded by Chakaria and Cox's Bazar Sadar upazilas on the north, Naikhongchhari and Ukhia upazilas on the south, Naikhongchhari upazila on the east, Cox's Bazar Sadar and the Bay of Bengal on the west.

**Map 2.1: Map of Ramu Upazila**



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### 2.2.2 History of the Upazila

Tradition goes that Ramu was named after the royal Ramu dynasty of Arakan n. At the time of the conquest of Chittagong by the M Mughals (1666) a thirteen feet high bronze image of Buddha was found at Ramu. This is the biggest of the Buddha images hitherto discovered in Bangladesh. It is said that Ramachandra met Sita at Ramkot after her abduction by Ravana and that the stone-grinder used by Sita had once been preserved at Ramkot. Ramu Thana was formed in 1908 and it was turned into an upazila in 1983. Different communities live in this area like-Muslim, Buddhist, Hindu & Rakliain and the relationship between them is very good.



Figure 2.1: Historical Places of Ramu Upazila

### 2.2.3 Administrative and Cadastral Boundaries

The area of Ramu upazila is 2388.39 square kilometers, it is comprised of 11 Unions, 35 mouzas, 99 wards and 402 villages. The information of union based mouza and village are given below:

Table 2.1: Union based Mouzas and Villages of Ramu Upazila

Name of Unions	Name of Villages( Ward No)	Village based Administrative Units
	Goniacata, Miazir Para (Ward No.9)	
Khuniapalong Total number of villages: 47	West Dariardighi, East Dariardighi, South Dariardighi, Thoanggacata, Guttaguinna (Ward No.1), Kaluarghona, Headman Para, Kechubnia, Tongardeba, Kalar Para, Tulabagan (Ward No.2), North Khuniapalong, Middle Khuniapalong, South Khuniapalong, Zokriakata (Ward No.3), Abul Bondor, Zumkata, Hospital Para, North Para, Middle Para, Sikdar Para, Chorpara, Telkhola, Madrasa Para, Hakimali Baper Para (Ward No.4), West Dhechua Palong, North Dhechuapalong, North Chadirkata, South Borua Para (Ward No.5), Dhoapalong Noapara, Jungle Dhoapalong, Dhoapalong Office Para, Dhoapalong Rabeta Hospital Para, Dhoapalong East Para, (Ward No.6), Chainda Ghona, East Goalia, South Goalia, Pahar Para (Ward No.7), West Goalia, Kohar Para, Middle Goalia, South Goalia Thoangakata, Jungle Goalia (Ward No.8), South Para, Mangla Para, Korachi Para, Himchori (Ward No.9)	Pachar Dip Mouza Goaliapalong Mouza Dhoapalong Mouza Khuniapalong Mouza Dhechuapalong Mouza Dariardighi Mouza
Zoarianala Total number of	Chowdhuri Para, Zain Para, Azgorkhil, North Mithachori Murapara, North Mithachori (Ward	Zoarianala Mouza Nonachori Mouza

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villages: 40	No.1),Borua Para, Hospital Para, Kulal Para, Tea Garden, Tea Garden Murapara(Ward No.2),Nondakhali,Boropara, Nondakhali North Para, Nondakhali Murapara (Ward No.3),Nunachori, West Nunachori, Middle Nunachori Murapara (Ward No.4),East Murapara, Ghonar Para, Sikdar Para,Longer Para, Nathar Para,Gucchogram (Ward No.5), Elisha Para,East Nunachori,East Nunachori,Murapara(Ward No.6), Haldar Para, Sowdagor Para, Moulovi Para, Takepara, Mala Para, Rabar Garden,Zumchori, New Para (Ward No.7) East Zoarianala, East Murapara, Bangdeba ( Ward No.8) and Bhorachorarkul,Chorpara, Gorgonia( Ward No.9)	North Mithachori Mouza Nondakhali Mouza
Kocchopia Total number of villages: 47	Ghilatoli, Cocchopia North Para,Cocchia South Para, Cocchia Takepara, Cocchia Murapara, Mogbil (Ward No.1), Dochori Northkul, Lamar Khamar, Dochori Southkul, Golachipa, Dochori Hindupara, East Titar Para (Ward No.2) ,East Titar Para, West Titar Para, New Titar Para (Ward No.3),Boro Zangchori, Balubasha, Gudaikata, Vangadepa, Sukhmonia, Highschool Para (Ward No.4),Zangchori Notun Para, Notun Miazir Para, Chakmarkata, Boro Zangchori,Fakricata, Murapara, Tulatuli (WardNo.5),	Kocchopia Mouza South Kocchopia Mouza
<b>Name of Unions</b>	<b>Name of Vi Villages( Ward No)</b>	<b>Village base Units ed Administrative</b>
Eidgor Total number of villages: 28	Camper Ch hor, Kuddus Miar Zum, Dhumchakata, West Para( (Ward No. 1), West Hasna Kata, East Hasna Ka Bodormoka 3), Leinga Pa Sharif Para (Ward N Chengchori Zalaler Zum Kata, Chog Ward No.9) Kata, Noapara(WardNo.2),Maiz Para, am, Guinna Para, Chor Para, (Ward No. Para, East Razghat (WardNo. 4), North a, Kata Jungle, Sikdar Para, Chor Para No.5),Borobil, Boughat,Alikhkhong, ri (Ward No.6), Tutharbil, Panisaghona, m ( Ward No.7) , Konar Para , Kotalia girakata (Ward No.8), Boiddopara ( )	Zungle Eidgoor Mouza Eidgor Mouz za
Cauarkhop Total number of villages: 30	West Monirz rzhil, Dorga Pahar Para (Ward No.1), Moddhom Monirzhil, South Shonaichori (Ward No.2), Eas No.3) , Villa Para, Ca No.5),WestPa (WardNo.6) Ukhiarghan Fulnirchor(W West Goni (Ward No.8 st Monirzhil, East Pahar Para (Ward ager Para, Moishkum, Cauarkhop Dail auarkhop Middle Para (Ward Para, Chorpara, Fulnirchor ),Gachua Para, Borua Para, Lord na, Khengchorghona, Ward No.7), Tilapara, Schoolpara, iakata, Showdagor Para,Dikkul Para 8), Lamar Para,Fakir Para, Godamcata,	Monirzhil Mo ouza Shonaichori Mouza Moishkum M Kauarkhop M Lord Ukhiarg Ukhiarghona Mouza Mouza ghona Mouza a Mouza

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Name of Unions	Name of Villages( Ward No)	Village based Administrative Units
	Para, South Shikdar( Ward No.3),West Noia Para, Chowkider Para, West Ghonarpara, Villager Para(Ward No.4), Noiapara, Zoldash Para, Khathalia Para, Chaglikata (Ward No.5), Deang Para, Boiddorkhil (Ward No.6), Dhalaimukh , Middle Ghonar Para, Napiter Kata, Ramkot, Paharkata, Nasirkul (Ward No.7), South Para, Pahar Para,HazirPara,NaiaPara(Ward No.8),Hazir Para, Borua Para, Fulnir Chor(Ward No.9)	
Chakmarkul Total number of villages: 29	Ali Hossain Shikder Para, Saleh Ahmod Para, West Para ( Ward No.1),Miazi Para, Mouzimer Dip, Noiachor Para ( Ward No.2),Matbor Para,Mistri Para, Dumer Chor(Ward No.3), Techchipul, North Farirkul, Kuner Para, Azgor Para, Khondokar Para, Mali Para (Ward No.4), Zaraillatoly , Bonik Para, Borua Para (Ward No.5), East Mohammad Pura, Noiapara (Ward No.6) , Srimura, Nasira Para ( Ward No.7), East Shamoder Para, West Shamoder Para, South Shamoder Para (Ward No.8), West Chakmerkul, Dainga Para, Noiachor Para, Vhutpara( Ward No.9)	Chakmerkul Mouza
Rashidnagar Total number of villages:16	Shikdar Para, Shandhip Para, North Kahatia Para (Ward No.1), Kahatia Para (Ward No.2), Boro Dholirchora (Ward No.3), Pahartoli (Ward No.4), Kadmor Para, Hamid Para (Ward No.5),Tholiaghona.North Nasira Para, South Nasira Para( Ward No.6), Panir Chora, Horitola( Ward No.7), Panir Chora Murapara, Dholirchora,Murapara, Getipara (Ward No.8),Ultakhali( Ward No.9)	Dholir Chora Mouza Zungle Dholirchora Mouza Ultakhali Mouza
Fotekharkul Total number of villages :37	Officer Chor, Chorpara, Eastdip, South Dip Fotekharkul(Ward No.1),Shipahir Para, Hazarikul, Nathpara, Rampara, Zulekhar Para, Shikdar Para, Officer Chor Lamar Para (Ward No.2),Khondoker Para, Lombori Para, Techchipul (Ward No.3), Mondol Para (Ward No.4), Haitupi ,North Srikul, South Srikul, Dip Srikul( Ward No.5),East Merongloa, Hitupi,Vhootpara, Hitupi Khenchur Ghona, Hitupi Gachoa Para(Ward No.6), Merongloa, Sridhon Para, Amtolia Para, Middle Merongloa ( Ward No.7), West Merongloa, West Merongloa Doana Para, Middle Merongloa , Amtolia Para (Ward No.8),North Fotekharkul ( Muslim Para), Bonik Para, Borua Para, Chalna Para,Satgoriar Para (Ward No.9)	Fotekharkul Mouza Hitupi Mouza Merongloa Mouza Srikul Mouza

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Name of Unions	Name of Villages( Ward No)	Village based Administrative Units
	Dakvhanga, Shibatoli , Shohor Ali Chor , Fakirnir Chor, Tulatoli, Fakrikata Murapara (Ward No.6), Hazir Para, East Hazir Para, Choto Zangchori (Ward No.7), Moulavi Kata Komla Para, Moulavi Kata Bodhu Para, Moulavi Kata Shaira Para, Moulavi Kata Master Para, Moulavi Kata Chairman Para, Boro Zangchori Nodi Ubhoikul( Ward No.8), South Moulavi kata, Miazir Para, Takepara, Zaichori Nodi Poshchimkul( Ward No.9)	
South Mithachori Total number of villages: 49	Mithachori Kacha, Khondokar Para , Ghat Para, Pukur Para, Chorpara, Chainda Chorpara, Napit Para (Ward No.1), West Umkhali , Abdu Salam Miazir Para, Kazir Para, Mo. Hazir Para, Dainga Para (Ward No.2), Azimuddin Para, Abubakkar Baper Para, Goni Sowdagor para, West Dhor Para, Zonu Matobbor Para (Ward No.3), Mokter\ Baper Para, East Dhor Para, Borua Para, Zinur Ghona , Koroillachori ( Ward No.4), West Paner Chora , East Paner Chora, Bolir Para, Shia Para, Zonua Para, Mog/Rakhain Para(Ward No.5), Kala Khondokar Para, Nizer Para, Shomity Para, Tetoia Para, Baria Para (Ward No.6), Fakiramura , East Chorarkul, Huari Ghona , Asmar Ghona , Chengchori(Ward No.7) , Chainda Khondokar Para, Ghonar Para, Chainda Chorpara, Lar Para( Ward No.8), Kimar Ghona, Pahar Toli , Mombru Chor, Westkul Sador Para, Lombaghona, Muslimabad (Ward No.9)	South Mithachori Mouza Chainda Mouza Umkhali Mouza
<b>Gorzonias</b> Total number of villages: 46	Hazi Para, Lohar Zhiri, Kachir khola, Ziranikhola, North Bil, North Borobil , South Borobil, West Borobil( Ward No.1), Zumchori, Nozu Matobbor Para , Boroichora, Moinnakata, East Zumchori, West Zumchori, Middle Zumchori(Ward No.2), Thoangerkata, Shiepara, Ghonar Para, Horin Para, South Thoangakata, North Thoangakata (Ward No.3), Thimchori, East Thimchori, North Thimchori , South Thimchori , Sha Mohammad Para (Ward No.4), Zauch Para, Fakir Para, Lombashia, Moillakata, Razghat, Edris Nogor , Lombamura (Ward No.5), Mazhirkata, Borochor, Beltoli , South Mazhirkata (Ward No. 6), East Bomangkhil, Hindu Para (Napit Para), Konar Para (Ward No.7), West Bomangkhil, Shikdar Para, Kala Shikdar Para ( Ward No.8), Kazorbil, Dengachor, Khalika Para (Ward No.9)	Gorgonia Mouja Zungle Gorgonia Mouza West Gorgonia Mou
Razarkul Total number of villages: 33	Palpara, Hafez Para, Moulavi Para, Dhorpara(Ward No.1), Haldarkul, Noia Pal Para, Pahartoli (Ward No.2), Shikdar Para, Shorma	Razarkul Mouza

### 2.2.4 Local Authorities

Ramu Thana was formed in 190 08 and it was turned into an upazila in 1983. And it is comprised of 11 Unions. There is no municipality in this upazila

### 2.2.5 Demography & Social Co Composition



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According to the census, 2011, the total population of the upazila amounts to 26 65640 people, among which 135000 are male and 1300460 are female. Total number of household 47 7914. Out of the total population, 90% Muslim, 5% Buddhist and 5% Hindu. Table 2.2 shows the distribution of urban and rural population and literacy rate in urban and rural of Ramu upazila.

**Table 2.2: Distribution Urban and Rural Population and its Literacy Rate of Ramu Upazila**

Population		Density (per sq km)		Literacy rate (%)	
Urban	Rural	Upazila	Urban Area	Urban	Rural
33334	169349	517	1513	38.84	23.31

Source: Ramu Upazila Disaster Management Plan, CDMP

The following table shows the union wise population distribution and literacy rate of Ramu upazila.

**Table 2.3: Union Wise Population Distribution and Literacy Rate**

Name of Union	Area (acre)	Population		Literacy rate (%)
		Male	Female	
Idgar 28	12865	6409	5982	27.40
Kachhapia 47	10770	10430	9847	21.97
Kauarkhop 66	6144	10218	10135	21.87
Khuniapalong 57	19018	14054	13566	19.37
Garjania 19	15929	8794	8472	21.96
Chakmarkul 06	874	6187	5658	35.73
Joarianala 38	12914	8934	8641	25.70
Dakshin Mithachhari 85	10088	10692	10245	21.82
Fatekharkul 09	2435	13595	11965	42.03
Rashid Nagar 70	1804	6339	6013	21.77
Rajarkul 76	5087	8520	7987	24.55

### 2.2.6 Infrastructure and Social Service

#### Houses and Accommodation

Most of the houses and infrastructure of this upazila is building, semi-pucca and katcha. The number of concrete houses very few at out of sadar and different unions and village level. Though the school, Mosque and various infrastructures are semi-pucca and katcha but most of the houses are semi metalled, hut.

#### Number of Dam

There are in total, 41dams in Ramu upazila which stretches over nearly 158 8.5 km. These dams protect the farming lands, roads, houses and very institutions from natural disasters, such as river bank erosion, floods, inland flooding during tide, tidal surges, etc.

#### Roads

Most of the roads within Ramu upazila are paved; the communication system has improved significantly over the last 5-10 years. But the road system within the unions of the upazila is not better. All most villages connected to main road with herring bone road and earthen road. In most cases, travels are troublesome for loss of bricks on these roads.

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Around 97.5 Killo meter are metaled, around 216.5 km are HBB road a and around 543.5 km are earthen road.



Figure 2.2: Road Network of Ramu Upazila

### Irrigation System

For irrigation purposes, shallow w and deep tube-wells and shallow machine are used. The following table contains information on irrigation practices according to unions:

Table 2.4: Union Wise Distribution of Deep, Shallow Tube Well and Shallow Machine

Union	Deep Tube Well	Shallow Tube Well	Shallow Machine
Eidgor	17	275	15o
Kaurkhop	20	50	13
Khuniapalong	150	50	5
Zoarianala	8	12	1
Cocchopia	10	20	16
South Mithachori	15	12	13
Gorgonia	10	20	16
Razarkul	13	10	20

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### **Haat Bazaar**

In the past, people were dependent on only weekly haat in this Ramu Upazilla. The number of small and big bazar has been increased within last 10 to 15 year gradually along with weekly haat. Usually the people are used to purchase and sale the daily necessary goods in the haat bazar, there are 25 hats in Ramu upazila.

### **Sewerage System**

The inhabitants of the all union of Ramu upazila are lag behind when it come to usage of proper and hygienic toilets. The upazila has nearly 40145 hygienic/metalled toilets, 212 235 pit toilets out of 40145. Most of the pit and permanent toilets can be found in the houses of educated and conscious people's houses which have been built by various organizations. During flood 7 7682 latrins are above flood level and 7553 are active. So far near 5% people are not aware to use latrin properly and used to go open place for their natural defecation which are very unhealthy/un-hygienic.

### **Schools/Educational Institutions**

Over the last 10-15 years, the general condition of education has improved noticeably. The percentage of child education has increased significantly since 1991. There are 75 primary school, 3 registered primary school, 6 non-government primary school, 1 satellite school, 1 4 KG school, 12 high school, 2 boys school, 2 college, 2 girls school, 2 college, 18 madrasa 1 teaching institute in Ramu upazila.

### **Religious Institution**

The Ramu upazila has 493 mosques, 32 Temples and 17 Keyangs/Pagoda.

### **Health care**

There is only 1 sub-district health complex (Government Hospital), 10 Union Health and Family Welfare Center (Government), 19 Community Clinic (Government), 3 NGO operated Healthcare Center and 2 Private Healthcare Center. Apart from this people from many of the unions depend upon pharmacy, Ojha, Kabiraj and Herbal medicine to cure illness. If the diseases are of complicated nature then the well to do people travel to Cox's Bazaar, Chakaria or Chittagong for healthcare services



**Figure 2.3: Health Service Facilities of Ramu Upazila**

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### Number of Banks

There are 7 banks in Ramu Upazila, given bellow:

**Table 2.5: Bank at Ramu Upazila**

Union	Ward	Name of the Bank	Types s of Services
Kocchopia	Krishi Bank: 1	Ward No.5	Provide on distribution allowance money agricultural loans conditions, government money deposits
Fatherkharkul	Krishi Bank Islami Bank Rupali Sonali Janata Bank Bank:2 Bank-1 Bank 1 a Bank-1	Ward No. 7 Ward No.4& 6 Ward No. 5 Ward No.5 Ward No.6	Money ,DPS, loans o conditions allowance govern Officer deposits provides on easy ,provides salary to non- governments

*Source: Ramu Upazila Disaster Management Plan, CDMP*

### Post Office

There are 8 post offices in Ramu u upazila. Union based information post offices ar re given bellow:

**Table 2.6: Post Office at Ramu Upazila**

Union	Name of the Post Office	Ward (Location)	Types of Services
Kawerkhope	Middle Post O Kauarkhop Office	Ward No.5	Exchange regular letters,Money order opportunity,Dak bima, Deposits Scheme etc
Khuniapalong	Rabeta a Post Office	Ward No. 6	
Joarianala	Zoarian Post O nala Bazar Office	Ward No.8	
Kocchopia	Gorzon Post O nia Bazar Office	Ward No. 5	
Gorjonia	Borobill Gorzonia	Ward No.1	
Rajarkul	Noapara Post Office	Ward No.5	
Rashidnagar	Boro Dholirchora Post Office	Ward No. 3	
Fatehkharkul	Officer Chor Post Office	Ward No.1	

### Club / Cultural Center

Ther are 25 club/ cultural centers in Ramu upazila.

### GO/Voluntary Organization

Government institutions including different NGOs or volunteers organizations are working to development of soci-economic of the people of this upazila. The table shows the information:

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**Table 2.7: GO/Voluntary Organization**

NGO	Areas of their Activities	Number of beneficiaries	Duration of the Programs	Union
RIC	Micro Credit Program related to CDMP Disaster Program	11 Union's People	Ongoing July 2014	Eidgor, Kauarkhop, Khuniapalong, Zoarianala, Cocchopia, South Mithachori, Gorzonia, Razarkul, Chakmerkul, Rashidnigor, Fatekharkul
BRAC	Micro Credit Programme, Education Programme and Wash Programme	11 Union's People	Ongoing	Eidgor, Kauarkhop, Khuniapalong, Zoarianala, Cocchopia, South Mithachori, Gorzonia, Razarkul, Chakmerkul, Rashidnigor, Fatekharkul
ASHA	Micro Credit Programme	9 Union's People	Ongoing	Eidgor, Kauarkhop, Khuniapalong, Zoarianala, Cocchopia, South Mithachori, Gorzonia, Razarkul, Chakmerkul, Rashidnigor, Fatekharkul
Grameen Bank	Micro Credit Programme	11 Union's People	Ongoing	Eidgor, Kauarkhop, Khuniapalong, Zoarianala, Cocchopia, South Mithachori, Gorzonia, Razarkul, Chakmerkul, Rashidnigor, Fatekharkul
Songjog Bangladesh	VGD	11 Union's People	Till December 2014	Eidgor, Kauarkhop, Khuniapalong, Zoarianala, Cocchopia, South Mithachori,

NGO	Areas of their Activities	Number of beneficiaries	Duration of the Programs	Union
				Gorzonia, Razarkul, Chakmerkul, Rashidnigor, Fatekharkul
CODEC	Education	11 Union's People	Till December 2015	Eidgor, Kauarkhop, Khuniapalong, Zoarianala, Cocchopia, South

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				Mithachori, Gorzonia, Razarkul, Chakmerkul, Rashidnagar, Fatekharkul
MUKTI	Malaria Program me	9 Union's People	Till December 2014	Eidgor, Kauarkhop, Khuniapalong, Zoarianala, Cocchopia, South Mithachori, Gorzonia, Razarkul, Chakmerkul, Rashidnagar, Fatekharkul
Gono Shastho ,	Health and Education Program me	2 Union's People	Ongoing	Eidgor, Khuniapalong
Proshika	Micro Credit Program me	1 Union's People	Ongoing	Fatekharkul
Anondo	Health Program me	3 Union's People	till December, 2014	Eidgor, Khuniapalong, Cocchopia
IDF	Micro Credit Program	1 Union's People	Ongoing	Cocchopia
BLAST	Legal Support Prgramme	5 Union's People	till December, 2014	South Mithachori, Razarkul, Chakmerkul, Fatekharkul, Zoarianal
Jago Nari	Women Empowerment	11 Union's People	On going	Eidgor, Kauarkhop, Khuniapalong, Zoarianala, Cocchopia, South Mithachori, Gorzonia, Razarkul, Chakmerkul, Rashidnagar, Fatekharkul
PHD	Service development of Community clinic	11 Union's People	On going	Eidgor, Kauarkhop, Khuniapalong, Zoarianala, Cocchopia, South Mithachori, Gorzonia, Razarkul, Chakmerkul, Rashidnagar, Fatekharkul

## Main Sports

Football, Cricket, Volleyball, Ha-do-do and Pole game are local sports.

## Playing Ground

There are 16 big play ground in this upazilla, every primary school has a small playing field and every higher secondary school has football fields. There are smaller fields in open areas.

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### Graveyard/ Crematorium:

Graveyard: 285, Hindu Crematorium: 23 and Buddhist Crematorium: 3

### 2.2.7 Agricultural Land

The Ramu upazila covers in total, 65330 acres of land. Out of which 20111 acres of land is engaged in farming. 3140 acres of land for single crop, 13455 acres of land for bi-crop/season, 1895 acres land for tri-seasonal crop cultivation, 1625 acres land for tobacco and 4200 acres land for housing. Agriculture and food related information of Ramu Upazilla are given below:

**Main crops:** Paddy, Vegetable, Betel leaf, betel nut, Sugar cane, tobacco etc.

**Vegetables:** Tomato, Potato, Brinjal, Raddish, Flower cauli, Cabbage, Bean, Chili, Betel leaf, Betel nut, Lalshakh, Loncho, Kolmi, Peas, Kochu, Turmeric, Bitter Melons, Ginger, Felon, Pumpkins, Gourd, Rai Shakh, Ladies finger, Palong, Spinach, Cucumber etc.

**Fruits:** Mango, Damson Plum, Jackfruit, Pomelo, Orange, Olive, Star fruit, Banana, Wood Apple, Coconut, Dates, Areca Nut, Country Goose Berry, Bel, Golap Jum. Guava, Pineapple, Tuma, Papaya, etc.

### 2.2.8 Bio-Diversity

Ramu Upazila is experiencing the positive population growth and population is increasing gradually every year. It has been seen that population is increasing from decade to decade gradually and it also indicates that different factors are prominent thus increase the population. The bar chart represents the population of previous four censuses.

**Birds:** Moyna, Oriental Magpie Robin, Vulture, Common Myna, Sparrow, Shyama, Crane, Waterhen, Parrot, Crow, Pigeon, Wood pecker, Tailor Bird, King Fisher, Weaver Bird, Gugu, Drongo, Bulbuli etc.

**Wild animal:** Wild cat, monkey, elephant, wild cock, deer, common mongoose, Squirrel, Gecko, fox, bear cat, wild boar, Chittagong bison, water monitor, bat etc

**Reptile:** Cobra, lizard, Water Monitor, Russel's Viper, Pangolin, Daras etc

**Amphibians:** Different types of frogs such as sona, kuno, kola etc

**Domestic animals:** Cow, goat, buffalo, ram, hen, pigeon, cat, dogs etc

**Fishes:** Tilapia, carp, catla, African catfish, Nile tilapia, yellow tail catfish, Mrigal, Rohita, Barbe, Taki, Tengra, shrimp, Pursh, stinging catfish, etc. Due to human gripping above said animal, fishes, trees have decreased jeopardized comparing to the past. Most of the specimen will be extinct in future

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### 2.2.9 Geo-Physical Profile

#### 2.2.9.1 Geology and Soil

This upazila is surrounded by 40% plain, 10% low and 50% mountain and high land. Type/nature of soil is 25% mixed soil, 25% clay, 30% sediment, 20% sand.

#### 2.2.9.2 Hydrology and River Hydraulics

Main river is Bakkhali river of Ramu Upazila and others stream and small rivers. Short descriptions of major rivers of Ramu upazila are given in below.

**Bakkhali River:** The Bakkhali River is flowing through Kawrarkhop, Rajarkul union and entered at



**Figure 2.4: Agricultural Activities of Ramu Upazila**

**Fatherkharkul union:** Due to flash flood nearest villages flooded and damaged the houses and crops. Lands are fertile for sedimentation after yielding water.

**Eidgor-Edgaon River:** The Eidgor-Edgaon River starts from the 3, 4, 5 and 66 no ward Borobil of Eidgor union flows through to 1 no ward Kuddus Mian Joom and meets at the Eidgor union. Due to flash flood nearest villages flooded and damaged the houses and crops. Lands are fertile for sedimentation after yielding water.

**Goalia Palong River:** The Goalia Palong River starts from the Khunia Palong union of 7 no ward east Goalia flows through to 9 no ward of Goalia Palong and meets with Goalia River. Due to flash flood nearest villages are affected flooded and damaged the houses and crops. Lands are fertile for sedimentation after yielding water.

**Dochori River:** Dochori River starts from the canal of Kocchopia union flows through to 1, 2, 3, and 6 no ward of Bakkhali River. Due to flash flood nearest villages are affected flooded and damaged the houses and crops. Lands are fertile for sedimentation after yielding water.

**Ramaita River:** The Ramaita River starts from 1 no ward of Rashidnagar union and flows through to Dholirchora canal. Due to flash flood nearest villages are affected flooded and damaged the houses and crops. Lands are fertile for sedimentation after yielding water.

**Ponds:** In total there are 1174 ponds in Ramu upazila comprised of both big and small ponds. Out of this abadi ponds are 857 and anabadi 317. Most of the ponds contain water but during the monsoon season, they all get filled up. Water from the ponds is used for everyday activities, fish farming, irrigation, etc. Most of the fishes grown in the pond are Rui, Katla, Tilapia and other different types of carps although there has been a growth in the small fish production thus fulfilling nutritional demands as well as providing financial



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security. The fish farmers are contributing to the national economy by growing fishes in the ponds.

**Canals:** 28 Canals flows or pass s by Ramu upazila.

**Marsh/Bill:** Total number of Bill of upazila: 162. Out of these 27 in Eidgor, 13 at Khuniapalong, 47 at Kocchopia, 30 at Mithachori, 3 G Gorjonia, 2 at Rajarkul, and 40 at Chakmarkul union. Use and useful: Paddy and vegetables are cultivating/harvesting here and playing in national economic through the collection of different types of fishes from these marsh/bill. And also contributing to meet the demands of fish as well as nutrition.

**Haoar:** There are no haoars.

**Salinity:** This area is far away from the sea shore; so there is no probability of salinity. Salinity occurred for 2/3 months in Rashid Nagaar, Chakmarkul, South Mithachori and Khuniappalang unions of this upazilla for very near to –shore. Nevertheless, river bank crops are destroyed by saline water through overflowing sea water in sea adjacent rivers, rest of the years salinity not found.

**Arsenic Pollution:** In 2000 the Local Health Engineering Department and NGOs implemented a program that tested the ground water for presence of arsenic. Traces of arsenic were found in some areas. In the last 13 years there had been no initiative to test the ground water for arsenic either by the government or other partner organizations. Thus, at present the local government or the Upazilla administration has no idea whether the ground water of the area is contaminated or not.



**Figure 2.5: River and Canal of Ramu Upazila**

### 2.2.10 External Linkage

Roadway communication is the major communication of Ramu Upazilla with Cox's Bazar Sadar as well as other subdistricts of Cox's Bazar Districts (Chokoria, Pekua, Ukhia, Teknaf and Cox's Bazar Sadar upazilla) and also using Cox's Bazar Channel for Moheshkhali and Kutubdia upazilla.

Types of transport used in this subdistrict: minibus, jeep, taxi, tom-tom, auto-rickshaw and engine boat.

People are travelling usually by foot, rickshaw on earthen road, rickshaw, autorickshaw and taxi in metalled road and boat in river among different unions and different wards of unions of this upazilla.

The roads in the Ramu sub-district town are in good condition. Most of the roads are either paved or bricks built. Taxi, tom-tom or rickshaw are used for local travel. Going to Cox's Bazar crossing over Ramu from Chittagong. One can go to Cox's Bazar district and Chokoria, Pekua, and Teknaf upazilla from Ramu by road. Nevertheless, Moheshkhali or

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Kutubdia upazilla can be reached by speed boat/shallow machine powered wooden boat through Cox's Bazar channel. There is no severe problem for travelling for local people of Ramu Sadar during monsoon for metallic road.

There are paved roads from the sub-district to the unions but not all wards of the unions have paved roads, which makes travelling in the monsoon season risky.

The above figure represents the Crude Birth Rate per 1000 in Bangladesh where the data is aligned according to the National, Urban and Rural area. The current CBR is 19.2 nationally, 17.4 at urban area and 20.2 at rural area.

### **2.2.11 Local Stockholder of the Project Area**

1. Upazila Parishad
2. Union Parishad
3. Paurashava/Municipality
4. Upazila Agricultural Office
5. Upazila Health and Family Planning Office
6. Upazila Animal Resource Office
7. Upazila Office, LGED
8. Upazila Education Office
9. Upazila Office of Food Controller
10. Fire Service and Civil Defense
11. Upazila Social Service Office
12. Upazila Youth Development Office
13. Upazila Ansar and VDB Office
14. Local Level Police Authority
15. Upazila Somobay Office
16. Press Club
17. Project Implementing Office
18. Local Office of Ministry of Environment and Forest
19. Roads and Highways Department
20. Bangladesh Forest Department
21. Department of Disaster Management
22. Bangladesh Small and Cottage Industry Corporation
23. Bangladesh Bureau of Statistics
24. Bangladesh Tourism Board
25. Department of Archeology of Bangladesh

## **CHAPTER 3**

### **DEVELOPMENT RELATED POLICIES, LAWS AND REGULATIONS**

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#### **3.1. Introduction**

National policies and laws broadly cover the aspects of intervention necessary for the development of the diverse areas within an Upazilla. The related policies and laws are considered in the Preparation of Development Plan for Fourteen Upazilas and its sector wise development. This review highlights the important legal issues in acts, rules and regulations relevant to planning.

The aim of the project is to prepare five tier of development plan such as- Sub-Regional Plan, Structure Plan, Urban Area Plan, Rural Area Plan and Action Area Plan to facilitate the improvement of infrastructure and services of the upazilla.

These plans include several sectoral components such as- socio-economic, housing, population, urban and rural economy, hydrology, geology, disaster, environment, agriculture etc.

Objectives of the study

- The aim of the policy review is to highlight the special features of the relevant legal documents.
- Point out necessary areas of intervention to make them effective facilitators for future regional development.
- Issue identification and attention that need for actions.

#### **3.2. Terminology**

##### **Policy**

A policy is a deliberate system of principles to guide decisions and achieve rational outcomes. A policy is a statement of intent, and is implemented as a procedure or protocol. The declared objectives that the government seeks to achieve and preserve in the interest of national community.

##### **Law**

Law is a system of rules that are enforced through social institutions to govern behavior. Laws can be made by a collective legislature or by a single legislator, resulting in statutes, by the executive through decrees and regulations, or by judges through binding precedent, normally in common law jurisdictions

Planning law must clearly define the extent and content of the rights of the Government and the people. Thus, legislative measures can help to frame policies for best use of land and its policies to control. Law should aim at a clear definition of the responsibilities and functions of various Government departments and its respective powers.

##### **Act**

An Act is the final form of any legislation passed by a legislature.

##### **Sub-Regional Plan**

Sub-Regional Plan of the study area would be prepared for 20 years according to the guidelines of national policies, formulated and integrated different sectoral strategies at sub

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regional level, spatially interpreted sectoral strategies at sub regional level, formulated Conservation Plan at sub regional level and formulated Development Plan.

It is also necessary to figure it out the economic disparity by using “shift-share analysis” or “input-output analysis” technique among the Upazila within districts under study for drawing the future socio-economic development scenario.

The sub-region may overlap local authority boundaries relating more to specific problems than administrative convenience. It is a more localized area with its own particular structure, problems and potentials.

### **Structure Plan**

The term Structure Plan is derived from British planning practice but has been internationally adopted. The principal components of such a plan are:

- An inventory of existing physical, demographic, economic, social and infrastructure features.
- An analysis of the major existing problems.
- An estimation of trends and changes likely in future (for the next 20 years).
- The identification of the major constraints on and opportunities for development.
- Consideration of the major development options and policies.
- An indication of the most suitable areas for such development.
- The identification of the priorities in each sector and the major activities needed to implement the development strategy.

The structure plan concentrates on the broad structure of the Upazila and is not concerned with the details of physical layout or individual development details which cannot be implemented until the later stages of the planning period.

### **Urban Area Plan**

Urban Area Plan (UAP) provides an interim mid-term strategy for 10 years and covers for the development of urban areas within the project area. Generally, UAP contains an explanatory report, resource maps, interim management report, planning rules, urban area plan and a multi-sectoral investment program.

### **Rural Area Plan**

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.

### **Action Area Plan**

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.

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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, insofar 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.

### 3.3 Reviewed Policies, Acts and Rules

Policy document usually follows a staged approach for development. Identify specific issues that could trigger the need for a policy review or new policy development or an identification of policy gap. The list of reviewed policies, acts and rules are given below:

1. Climate Change Policies
2. The Sendai Framework for Disaster Risk Reduction 2015-2030
3. Quito Implementation Plan for the New Urban Agenda
4. Sustainable Development Goals (SDG)
5. The United Nations Framework Convention on Climate Change
6. Seventh Five Year Plan((FY2016 – FY2020)
7. National Urban Sector Policy, 2011
8. National Land Use Policy 2001
9. National Housing Policy, 2008 (Draft)
10. Population Policy 2004
11. National Environment Policy 1992
12. Disaster Management Act 2012
13. National Plan for Disaster Management 2008-2015
14. The Climate Change Strategy and Action Plan 2009
15. Industrial Policy 2005
16. National Tourism Policy 1992
17. National Agriculture Policy, 1999
18. National Forest Policy 1994
19. National Fisheries Policy 1998
20. National Water Policy 1999
21. Bangladesh National Building Code (BNBC) 1993
22. The Building Construction Act 1952
23. Building Construction Rules 1996
24. Private Residential Land Development Rule-2004
25. Real Estate Development and Management Act 2010
26. Burning of Bricks (Control) Act 1989
27. National policy for safe water supply and sanitation 1998

### 3.4 Five Tier Plan wise policy Review

#### 3.4.1 Framework of Five Tier plan

Table 3.1: Strategy and Time Frame of Five Tier Plan

Five Tier Plan	Duration	Strategy
Sub-Regional Plan	20 years	Long term
Structure Plan	20 years	Long term
Urban Area Plan	10 years	Mid-term
Rural Area Plan	20 years	Long term

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Action Area Plan	5 years	Short term
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Among 22 policies, the policies are reviewed according to duration and strategy. So, according to duration and strategic point of view some policies are shortlisted.

**Table 3.2: List of policies according to five tier plan**

Five Tier Plan	Review policies
<b>Sub-regional Plan</b>	<ul style="list-style-type: none"><li>• Climate Change Policies</li><li>• The Sendai Framework for Disaster Risk Reduction 2015-2030</li><li>• National Agriculture Policy 1999</li><li>• Climate Change Strategy 2009</li><li>• Disaster Management Act 2012</li><li>• National Plan for Disaster Management 2008-2015</li><li>• Population Policy 2004</li><li>• National policy for safe water supply and sanitation 1998</li><li>• National Water policy 1999</li><li>• Industrial Policy 2005</li><li>• National Urban Sector Policy 2011</li><li>• National Fisheries Policy 1998</li></ul>
<b>Structure Plan</b>	<ul style="list-style-type: none"><li>• Climate Change Policies</li><li>• The Sendai Framework for Disaster Risk Reduction 2015-2030</li><li>• Quito Implementation Plan for the New Urban Agenda</li><li>• Sustainable Development Goals (SDG)</li><li>• The United Nations Framework Convention on Climate Change</li><li>• National Agriculture Policy 1999</li><li>• Climate Change Strategy 2009</li><li>• National Plan for Disaster Management 2008-2015</li><li>• Population Policy 2004</li><li>• National policy for safe water supply and sanitation 1998</li><li>• The Building Construction Act, 1952</li><li>• National Water policy 1999</li><li>• Industrial Policy 2005</li><li>• National Urban Sector Policy 2011</li><li>• National Fisheries Policy 1998</li></ul>
<b>Urban Area Plan</b>	<ul style="list-style-type: none"><li>• Quito Implementation Plan for the New Urban Agenda</li><li>• Sustainable Development Goals (SDG)</li><li>• Climate Change Strategy 2009</li><li>• National policy for safe water supply and sanitation 1998</li><li>• The Building Construction Act, 1952</li><li>• National Water policy 1999</li><li>• National Urban Sector Policy 2011</li><li>• Bangladesh National Building Code 1993</li></ul>
<b>Rural Area Plan</b>	<ul style="list-style-type: none"><li>• Population Policy 2004</li><li>• National policy for safe water supply and sanitation 1998</li></ul>

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Five Tier Plan	Review policies
	<ul style="list-style-type: none"> <li>National Water policy 1999</li> </ul>
<b>Action Area Plan</b>	<ul style="list-style-type: none"> <li>Quito Implementation Plan for the New Urban Agenda</li> <li>Sustainable Development Goals (SDG)</li> <li>National Agriculture Policy 1999</li> <li>Climate Change Strategy 2009</li> <li>National Plan for Disaster Management 2008-2015</li> <li>Population Policy 2004</li> <li>National policy for safe water supply and sanitation 1998</li> <li>The Building Construction Act, 1952</li> <li>National Water policy 1999</li> <li>Industrial Policy 2005</li> <li>Burning Bricks Act 1989</li> <li>National Urban Sector Policy 2011</li> <li>National Fisheries Policy 1998</li> <li>Seventh Five Year Plan</li> </ul>

(To find the key issues please see the Appendix- A)

The issues or the key factors which identify in these policies according to five tier plan are listed in Appendix A.

### 3.5 Sector wise policy Review

In the project, the survey was conducted according to the following sectors:

- |  |                                      |
|--|--------------------------------------|
| 1. PRA (Participatory Rural Appraisal) | 7. Topographic Survey                |
| 2. Socio-economic Survey               | 8. Photogrammetric works Survey      |
| 3. Agricultural Survey                 | 9. Traffic and Transportation Survey |
| 4. Formal-informal Economic Survey     | 10. Geological & geophysical Survey  |
| 5. Physical Features Survey            | 11. Hydrological Survey              |
| 6. Landuse Survey                      |                                      |

But in the policy review from the 11 sectors, some sectors are merged as they are identified as same category. So as per the benefits of policy review and for the asperity of work, the sectors are categorized. And same policies are reviewed in different sectors so to remove repeatness, the sectors are categorized.

**Table 3.3: Sectors are categorized as per policy review**

<b>Sectors</b>	<b>Agriculture</b>
	<b>PRA and Socio-Economic, Formal-informal Economic Sector</b>
	<b>Geology</b>
	<b>Hydrology</b>
	<b>Transport</b>
	<b>Physical, Landuse and Topographic Features</b>

**Table 3.4: Summary of Policies according to sectors**

Sector Wise Policy List					
<b>Agriculture Sector</b>	<b>PRA and Socio-Economic Formal-informal Sector</b>	<b>Physical, Landuse and Topographic Features</b>	<b>Geology</b>	<b>Hydrology</b>	<b>Transport</b>

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Sector Wise Policy List					
Agriculture Sector	PRA and Socio-Economic Formal-informal Sector	Physical, Landuse and Topographic Features	Geology	Hydrology	Transport
<ol style="list-style-type: none"> <li>1. National Agriculture Policy 1999</li> <li>2. Climate Change Strategy 2009</li> <li>3. National Plan for Disaster Management 2008-2015</li> <li>4. Population Policy 2004</li> <li>5. Safe Water Supply and Sanitation 1998</li> <li>6. National Water policy 1999</li> <li>7. Seventh Five Year Plan</li> <li>8. National Environment Policy 1992</li> <li>9. Industrial Policy 2005</li> <li>10. National Urban Sector Policy 2011</li> <li>11. The United Nations Framework Convention on Climate Change</li> </ol>	<ol style="list-style-type: none"> <li>1. National Agriculture Policy 1999</li> <li>2. Climate Change Strategy 2009</li> <li>3. Disaster Management Act 2012</li> <li>4. National Plan for Disaster Management 2008-2015</li> <li>5. Population Policy 2004</li> <li>6. Safe Water Supply and Sanitation 1998</li> <li>7. National Water policy 1999</li> <li>8. Industrial Policy 2005</li> <li>9. National Urban Sector Policy 2011</li> <li>10. Seventh Five Year Plan(FY2016 – FY2020)</li> <li>• Quito Implementation Plan for the New Urban Agenda</li> <li>• Sustainable Development Goals (SDG)</li> </ol>	<ol style="list-style-type: none"> <li>1. National Agriculture Policy 1999</li> <li>2. Climate Change Strategy 2009</li> <li>3. National Plan for Disaster Management 2008-2015</li> <li>4. Population Policy 2004</li> <li>5. The Building Construction Act, 1952</li> <li>6. National Water policy 1999</li> <li>7. Industrial Policy 2005</li> <li>8. Burning Bricks Act 1989</li> <li>9. National Urban Sector Policy 2011</li> <li>10. National Fisheries Policy 1998</li> <li>11. Seventh Five Year Plan (FY2016 – FY2020)</li> </ol>	<ol style="list-style-type: none"> <li>1. Climate Change Strategy 2009</li> <li>2. National Plan for Disaster Management 2008-2015</li> <li>• The Sendai Framework for Disaster Risk Reduction 2015-2030</li> <li>3. The United Nations Framework Convention on Climate Change</li> </ol>	<ol style="list-style-type: none"> <li>1. Population Policy 2004</li> <li>2. National Water policy 1999</li> <li>3. National Urban Sector Policy 2011</li> <li>4. National Fisheries Policy 1998</li> <li>• Climate Change Policies</li> <li>5. The United Nations Framework Convention on Climate Change</li> </ol>	<ol style="list-style-type: none"> <li>1. Population Policy 2004</li> </ol>

(To find the key issues please see the Appendix- B)

Among the 26 policies, the sectors are identified. So, here is the summary of the sectors which are identified among the policies.

**Table 3.5: Summary of sectors according to policies**

Policy	Sector
<b>National Agriculture Policy 1999</b>	<ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> <li>• Physical, Landuse and Topographic Features</li> </ul>



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Policy	Sector
<b>Climate Change Strategy 2009</b>	<ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> <li>• Physical, Landuse and Topographic Features</li> <li>• Geology</li> </ul>
<b>Disaster Management Act 2012</b>	<ul style="list-style-type: none"> <li>• Formal-informal Sector</li> </ul>
<b>National Plan for Disaster Management 2008-2015</b>	<ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> <li>• Physical, Landuse and Topographic Features</li> <li>• Geology</li> </ul>
<b>Population Policy 2004</b>	<ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> <li>• Transport</li> <li>• Hydrology</li> </ul>
<b>Safe Water Supply and Sanitation 1998</b>	<ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> </ul>
<b>The Building Construction Act, 1952</b>	<ul style="list-style-type: none"> <li>• Physical, Landuse and Topographic Features</li> </ul>
<b>National Water policy 1999</b>	<ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> <li>• Physical, Landuse and Topographic Features</li> <li>• Hydrology</li> </ul>
<b>Industrial Policy 2005</b>	<ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> <li>• Physical, Landuse and Topographic Features</li> <li>• Formal-informal Sector</li> </ul>
<b>Burning Bricks Act 1989</b>	<ul style="list-style-type: none"> <li>• Physical, Landuse and Topographic Features</li> </ul>
<b>National Urban Sector Policy 2011</b>	<ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> <li>• Formal-informal Sector</li> <li>• Physical, Landuse and Topographic Features</li> <li>• Hydrology</li> </ul>
<b>National Fisheries Policy 1998</b>	<ul style="list-style-type: none"> <li>• Physical, Landuse and Topographic Features</li> <li>• Hydrology</li> </ul>
<b>Seventh Five Year Plan(FY2016 – FY2020)</b>	<ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> <li>• Physical, Landuse and Topographic Features</li> </ul>
<b>National Land Use Policy 2001</b>	<ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> <li>• Physical, Landuse and Topographic Features</li> <li>• Hydrology</li> <li>• Transport</li> </ul>
<b>Climate Change Policies</b>	<ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> <li>• Physical, Landuse and Topographic Features</li> <li>• Geology</li> <li>• Hydrology</li> </ul>
<b>The Sendai Framework for Disaster Risk</b>	<ul style="list-style-type: none"> <li>• Agriculture</li> <li>• Physical, Landuse and Topographic Features</li> </ul>

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Policy	Sector
<b>Reduction 2015-2030</b>	<ul style="list-style-type: none"><li>• Geology</li><li>• Hydrology</li></ul>
<b>Quito Implementation Plan for the New Urban Agenda</b>	<ul style="list-style-type: none"><li>• PRA and Socio-Economic Formal-informal Economic Sector</li><li>• Physical, Landuse and Topographic Features</li></ul>
<b>Sustainable Development Goals</b>	<ul style="list-style-type: none"><li>• Agriculture</li><li>• PRA and Socio-Economic Formal-informal Economic Sector</li><li>• Physical, Landuse and Topographic Features</li><li>• Geology</li><li>• Hydrology</li></ul>
<b>The United Nations Framework Convention on Climate Change</b>	<ul style="list-style-type: none"><li>• Agriculture</li><li>• Geology</li><li>• Hydrology</li></ul>

(To find the key issues please see the Appendix- B)

## **CHAPTER 4**

### **CRITICAL PLANNING ISSUES**

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#### **4.1 Introduction**

Demographic factors are essential components of both the causes of and responses to future economic, environmental, and social change or development. In a country, population can increase or decrease upon which the whole development can vary. For the better implication of Government policies, it is necessary to know the current population as well as future growth of population of the country or an area with sufficient aspects. For that reason, the role of population projection is inevitable for utilizing the scarce resources. To serve major economic and social objectives of the society, population projection is momentous to sustain planning of a region.

#### **4.2 Population Projection**

Population projection is a scientific approach to fathom the future population growth by making certain assumptions, using the related past available data at the point of time. To forecast the future population several methods have been used. Some are very sophisticated and rigorous while others are simple and less sophisticated. The primary needs of the people cannot be gauged rationally without regard to the expected size and composition of the population, at the same time national resources cannot be appraised adequately without considering population size and structure. Many studies rely on a projection assumed to be the “most likely” outcome, and for this reason it seems widely agreed that it is important to provide users with such a projection. However, while it seems equally important to provide users with an indication of the uncertainty associated with the most likely projection. But there is no generally accepted approach to characterize this uncertainty (Ezra, 2001). For that reason, population projection can switch depending on the situation. Projections for small areas are more uncertain because of greater possibility of migration which is totally uncertain. Uncertainty also depends on some external factors such as war, epidemic, HIV/AIDS, climate change, natural hazards.

##### **4.2.1 Methods of Population Projection**

After knowing the present and past census data, the following methods can be applied to project the population for desired year.

- ❖ Arithmetical Increase Method
- ❖ Geometrical Increase Method
- ❖ Incremental Increase Method
- ❖ Exponential Growth Method
- ❖ Compound Rate of Growth Method
- ❖ Cohort Component Method

##### **4.2.2 Review of Projection Methods**

In the development of a rural area or city or region, designing of different factors or provisions such as water supply or sanitation scheme is based on the projected population which is estimated for the design period. Any underestimated value will make system inadequate for the purpose intended; similarly, overestimated value will make it costly. For determining a better projection for 20 years, the following methods are reviewed and on the basis of observation the best method has been adopted for the population projection of Ramu Upazila for next 20 years.

### **1. Arithmetical Increase Method**

The arithmetic method is suitable for large and old city with considerable development. If it is used for small, average or comparatively new cities, it will give lower population estimate than actual value. In this method, the average increase in population per decade is calculated from the past census reports. This increase is added to the present population to find out the population of the next decade.

### **2. Geometrical Increase Method**

In this method, the percentage increase in population from decade to decade is assumed to remain constant. Geometric mean increase is used to find out the future increment in population. Since this method gives higher values and hence should be applied for a new industrial town at the beginning of development for only few decades.

### **3. Incremental Increase Method**

This method is modification of arithmetical increase method and it is suitable for an average size town under normal condition where the growth rate is found to be in increasing order. While adopting this method the increase in increment is considered for calculating future population. The incremental increase is determined for each decade from the past population and the average value is added to the present population along with the average rate of increase.

### **4. Cohort Component Method**

The standard used in projecting populations is the Cohort Component Method. This method projects the population in a way that duplicates how populations grow or decline. For projection, the following data will be required:

1. Base population by age and sex
2. Time series of life expectancy at birth by sex
3. Times series of total fertility rates and fertility rates by age of mother
4. Time series on net migration, total net amount and/or by age and sex

### **5. Exponential Growth Method**

The exponential growth is assumed to occur on a continuous basis. Geometric extrapolation is desirable for short intervals and it will be adoptable more when forecasting for a new city and geometric rates are preferable to arithmetic rates for the extrapolation of decreases in population over a series of years.

### **6. Compound Growth Method**

A compound rate of growth is more realistic in terms of national experience, because most population increase is due to natural increase rather than to an increase in net migration. When working with smaller level of geographic area such as state or country, the role of migration becomes increasingly important factor in respect of population change. Population growth due to net migration is not necessarily better described by compound growth rate method and in fact, growth due to migration is likely to occur at sporadic periods following perceived economic opportunities in the area. The estimate obtained with compound growth rate assumption varies by a variable absolute amount from year to year but by a fixed percentage from year to year.

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### 4.2.3 Justification of Methods Selection

After reviewing the projection methods, it has been determined that three methods out of six as mentioned above are comparatively suitable for the population projection of Ramu Upazila. The justifications of selected methods are given below:

**Table 4.1: Justifications of Reviewed Projection Methods**

Methods	Data Sufficiency or Adaptability	Justification
<b>Cohort Component method</b>	<ol style="list-style-type: none"><li>1) Requires more detailed data<ul style="list-style-type: none"><li>• Fertility and mortality rates by tenure are approximations</li><li>• Needs a census for full validation</li></ul></li><li>2) Inflow/outflow concept are more difficult to interpret</li><li>3) Issues of consistency such as all tenure household projection</li></ol>	As Ramu Upazila is under Coxs Bazar Zila, the required data such as birth rate, death rate and migration rate cannot be adoptable in Upazila level. So, the related data are available in either country or region or division or district. The use of such average data may create inconsistent result.
<b>Arithmetical Increase Method</b>	Simple method and it will generate projection based on previous censuses.	It is adaptable for short time and results are generated based on decade and gives low projection for developing areas. In Ramu Upazila, the projection will be done for next 20 years, thus the projection may not provide the desired result.
<b>Incremental Increase Method</b>	This method is modification of arithmetical increase method and it is suitable for an average size town under normal condition where the growth rate is found to be in increasing order.	Though Ramu Upazila has increased growth rate, the growth rate will be more varied for future developments.
<b>Geometrical Increase Method</b>	Previous census data and more decadal census data will create the result more accurate and it is suitable for new area is to be developed.	As it gives the higher values, in adverse situation it may not correct. In respect of Ramu Upazila where new development will be taken place, it is suitable for projection.
<b>Compound Growth Method</b>	This method is viable for long term projection. This method delineates the future projection more accurately if net migration rate is not high enough.	In Ramu Upazila, net migration is negligible compared to Bangladesh. As the projection is done on compound rate and under different circumstances it will create far better projection for long term period.
<b>Exponential Growth Method</b>	Based on previous census, it will be suitable for short period, large population and historically high growth rate.	In Ramu Upazila, it is suitable for projection from 5 to 10 years. After considering merits, it can be accepted for population projection.

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### 4.2.4 Validation of the Projection Method

Based on justification, Comparative Growth Rate Method, Exponential Growth Rate Method and Geometrical Increase Method have been accepted to project the future population of Ramu Upazila for next 20 years. The projected population for Ramu Upazila as a whole are outlined below:

**Table 4.2: Projected Population based on BBS, 1991-2011.**

Compound Growth Method	Geometrical Growth Method	Exponential Growth Method
Growth Rate-2.35	Geometrical Mean -1.26	Growth Rate-2.32
Population of Ramu Upazila will be <b>444485</b> (Year, 2033)	Population of Ramu Upazila will be <b>475173</b> (Year, 2035)	Population of Ramu Upazila will be <b>424070</b> (Year, 2033)

*Source: Projected by Planning Team based on BBS, 1991-2011*

Ramu Upazila has the population of 266640 based on the census of BBS, 2011. For projecting 20 years, Compound and Exponential methods have given the same result. As Geometrical method gives the projection based on decade, for next 2 decades from 2011 the projected population is 475173 which is larger than the other two methods based on census from 1991 to 2011.

For the better projection, the census data of BBS for 1981-2001 has cross checked. If it has been taken the base year 1981 and target year 2001, the growth rate has been calculated for the separate methods and on the basis of calculated growth rate the population of Ramu Upazila in 2011 would have been according to the Compound, Geometrical and Exponential respectively 260212, 259434 and 259990. So, the three methods have been given almost the same results. In fact, the growth rates of three methods from 1981 to 2001 have not been observed in 2011. If it has been considered the growth rate from 1991 to 2001, the calculated population projection would have been 245379 and 245340 in 2011 respectively for Compound and Exponential growth method. And considering the latest growth rate on the basis of 1991 and 2001 is quite satisfactory and result has tended to the actual population in 2011. In this case, Geometrical method cannot be applied as it requires minimum three decades. Lastly, it has been seen that the population of Ramu Upazila according to the BBS, 2011 is 266640. So, it is clear that the growth rate is increasing after 1991. As a result, in any times of period Compound and Exponential will give more valid data than Geometrical Method. The projection of Ramu Upazila will be done for 5 years' intervals which will be given the next 20 years as Exponential is more accurate for short time period and Geometrical is bounded for decades and short time period. After reviewing all methods, Compound Growth rate method is the best for projecting population of Ramu Upazila but it has also been observed that compound growth rate method will be more accurate if it can count more deriving factors in determining its compound growth rate. The following table summarized the projected results for adopted three methods and outlined the best method.

**Table 4.3: Cross Checking according to BBS Data and Projection for 2011**

Compound Growth Method	Geometrical Growth Method	Exponential Growth Method	Remarks
Population in 2011 would be <b>260212</b> (1981-2001)	Population in 2011 would be <b>259434</b> (1981-2001)	Population in 2011 would be <b>259990</b> (1981-2001)	Almost same result and three methods are perfect.

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Population in 2011 would be <b>245379</b> (1991-2001)		Population in 2011 would be <b>245340</b> (1991-2001)	For any time period, only two methods are compatible.
Can provide result for long term period		Adaptable for short time period	Compound rate give comparatively better result than Exponential and suitable for any period and will provide more better result if attributing factors count.

*Source: Projected by Planning Team based on BBS, 1981-2001*

### 4.2.5 Adopted Population Projection Method

Compound Growth Method has been applied for population projection of Ramu Upazila. The formula is outlined below:

$$P_n = P_o (1 + r)^n$$

Where,

$P_o$  = Population in the base year

$P_n$  = Population in the projected year

$n$  = Number of intermediate years

$r$  = Annual rate of growth

#### 4.2.5.1 Basic Assumptions

- The recent trend of change of development are expected to be continued into future
- The existing population, growth rate, density, literacy rate, urbanization rate reveal that Ramu Upazila will be developed in near future
- For determining the growing trend of development, it is necessary to calculate viable growth rate for projecting population for next 20 years.

#### 4.1.5.2 Attributing Factors

There are several factors which may vary the population projection are:

- Increase due to births
- Decrease due to deaths
- Increase/decrease due to migration
- Increase due to annexation

#### 4.2.5.3 Results

Population projection has been conducted based on the following factors and techniques:

- The base year for such above mentioned projection is 2011 as per available census data.
- Future population is estimated for the future year 2018, 2023, 2028 and 2033 considering 20 years planning period.
- Population projection based on age specific group per the influential areas.
- Finally, Compound Population Projection is used to conduct the Population Projection. Projected growth rate will be considered after reviewing different attributing factors.

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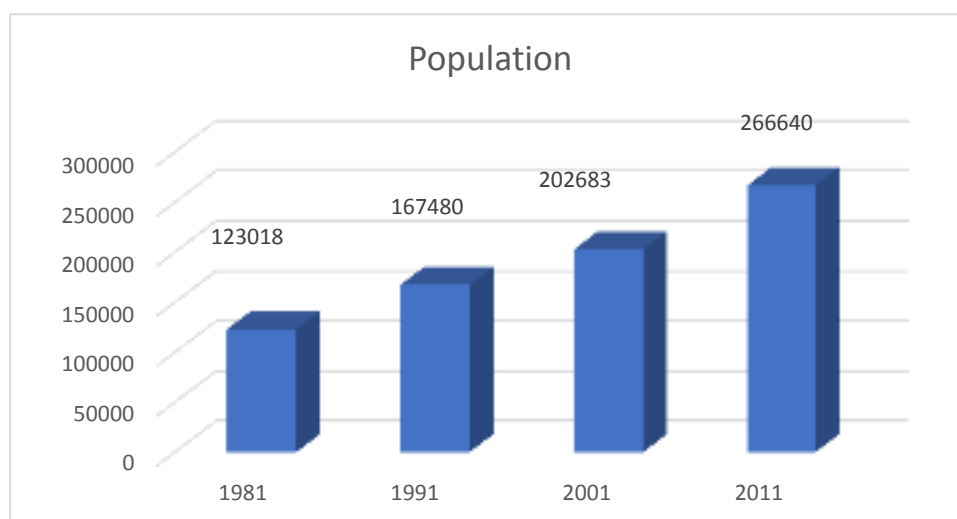
### 4.2.6 Determination of Compound Growth Rate

Population and demographic change are among the most prominent measures to delineate growth and its likely impact on land uses in a community. Therefore, it is helpful to recognize the community's population and growth trends in preparing a realistic and meaningful Master Plan or Development Plan. If it has been projected well, the projection will be resulted in cost efficiency in providing facilities which is necessary for an Upazila. The determination of growth rate will be followed by following ways:

- Calculation of observed compound growth rate based on the census year 1981, 1991, 2001 and 2011.
- Factor Analysis which can vary our projection result.
- Analysis of Natural Birth Rate and Decadal Growth Rate.
- Growth rate determination on the basis of sector wise analysis for Urban, Suburban and Rural area.

#### 4.2.6.1 Calculation of Observed Compound Growth Rate

Ramu Upazila is experiencing the positive population growth and population is increasing gradually every year. It has been seen that population is increasing from decade to decade gradually and it also indicates that different factors are prominent thus increase the population. The bar chart represents the population of previous four censuses.



**Figure 4.1: Number of Population from 1981 to 2011**

Source: BBS, 1981-2011.

Population is expecting the different population growth in every year in Ramu Upazila. As the population census has been done in every 10 years, it has been enabled to get decadal growth rate of Ramu Upazila. Based on previous census, the following growth rates have been calculated on the basis Compound Growth Rate Method.

**Table 4.4: Calculation of Compound Growth rate**

Year	Compound Growth Rate	Remarks
1981-2011	2.61%	Medium
1991-2011	2.35%	Low
2001-2011	2.78%	High

Source: Projected by Planning Team based on BBS, 1981-2011.



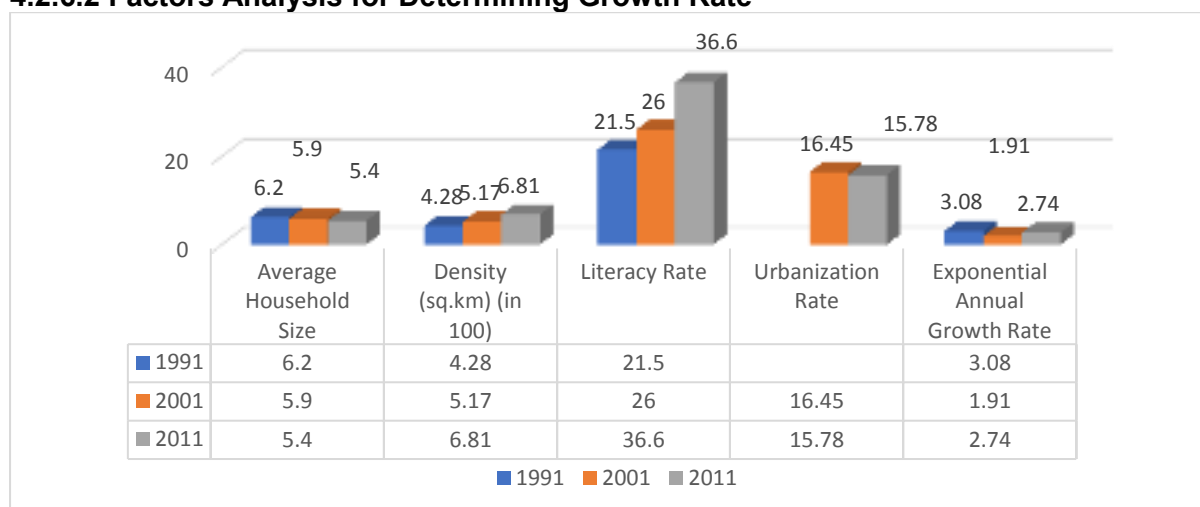
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From the above table, the population growth rate will be lower if it has been considered the previous four decadal census. The growth rate is considerably higher which 2.61% is for Ramu Upazila if it has been taken the last two censuses. The last three censuses have also indicated the growth rate is closer to the last two censuses which is 2.35% From the above table, it is clear that the recent growth rate is higher than previous censuses. And the growth rate is increasing greatly after 1991. And it can be said that the growth rate 2.61 on the basis of base year 1981 will not imply in near future so it is rephrased as lower growth rate. If it takes base year 1991 and 2001, the population growth rate is respectively 2.35 and 2.78. So, the population growth rate is gradually increasing after 1991. So, it has been taken the recent growth rate for the population projection but not the exactly 2.78% because it is gradually increasing not steadily increasing. So, the growth rate will be considered greater than 2.78% for the population projection of Ramu Upazila.

### 4.2.6.2 Factors Analysis for Determining Growth Rate



**Figure 4.2: Different Attributing Factors from 1991 to 2011**

*Source: BBS, 1991-2011.*

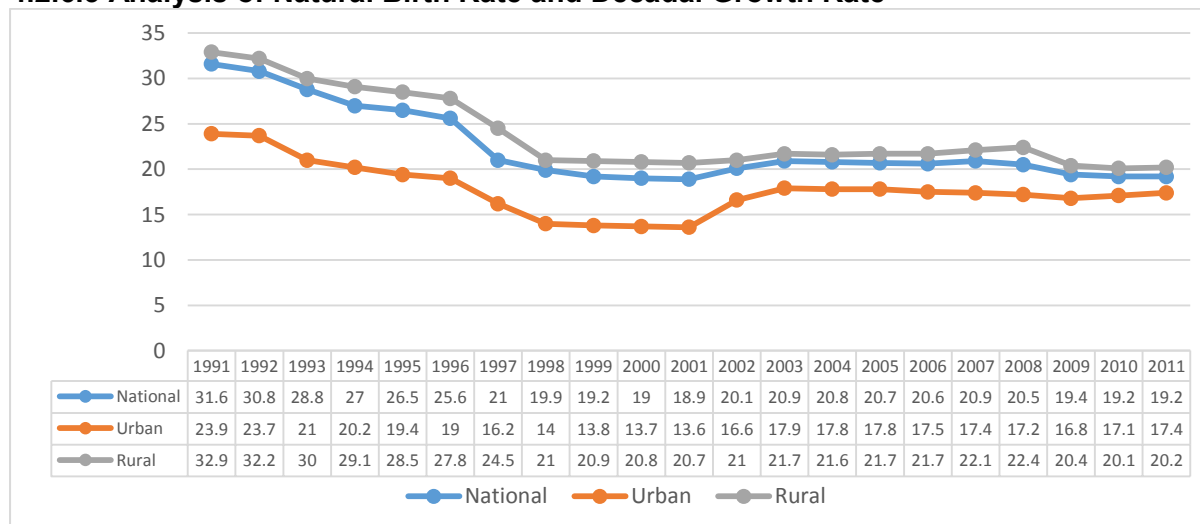
The above chart represents some factors which have impact on the population distribution or change. This can vary the growth rate so that the population projection may fluctuate. From the chart, it has been shown that average household size is decreasing but density is increasing in last three census which imply that people agglomeration is increasing as increased opportunities, employments or service facilities. Population is increasing and urbanization is also going on the pace now at the rate of 15.78 based on BBS,2011. It suggests that population is increasing due to different attributing factors. Though the literacy rate apparently has decreased from 2001 to 2011, it is visible that more than 30% population is now getting access to the educational opportunity than the before. If an area has higher density, lower average household size but increased population, higher literacy rate and urbanization also keeping its pace, the growth rate will not be as same as the previous census. It has been shown that the recent annual growth rate is 2.74% according to the BBS, 2011 and calculated compound growth rate is 2.78 % (**Table: 4.4**). The growth rate for projecting population for next 20 years will be amenable to consider more than 2.78 % according to the above attributing factors.

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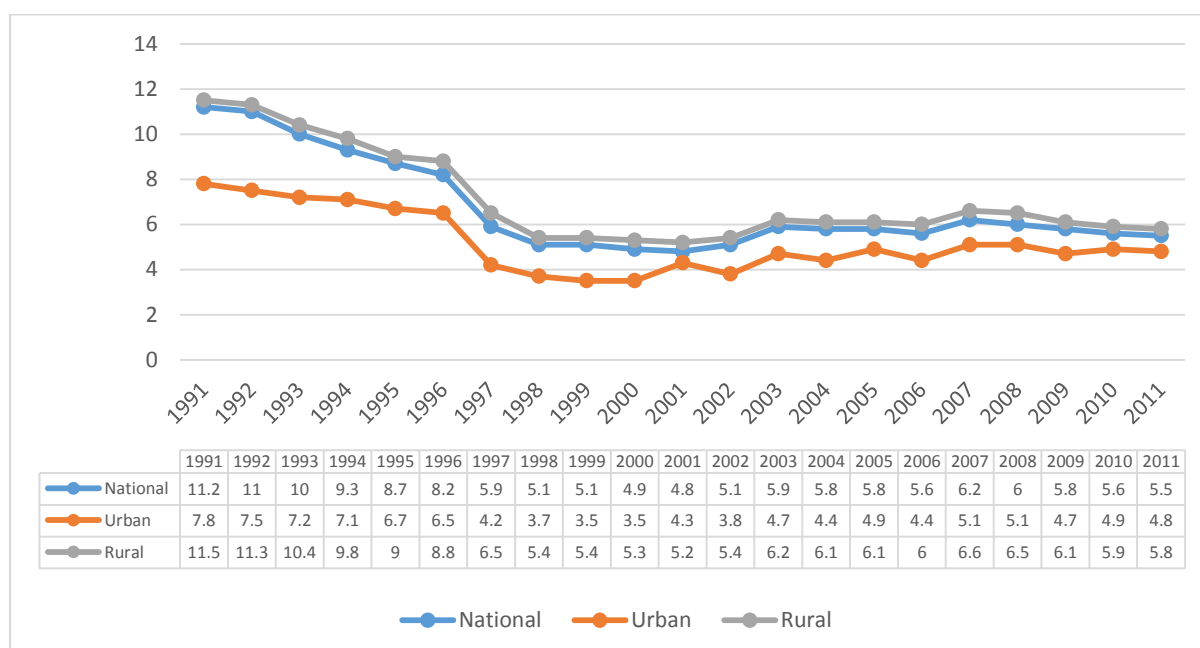
### 4.2.6.3 Analysis of Natural Birth Rate and Decadal Growth Rate



**Figure 4.3: Crude Birth Rate (CBR) per 1000**

Source: SVRS, BBS, 2011.

The above figure represents the Crude Birth Rate per 1000 in Bangladesh where the data is aligned according to the National, Urban and Rural area. The current CBR is 19.2 nationally, 17.4 at urban area and 20.2 at rural area.



**Figure 4.4: Crude Death Rate (CDR) per 1000**

Source: SVRS, BBS, 2011

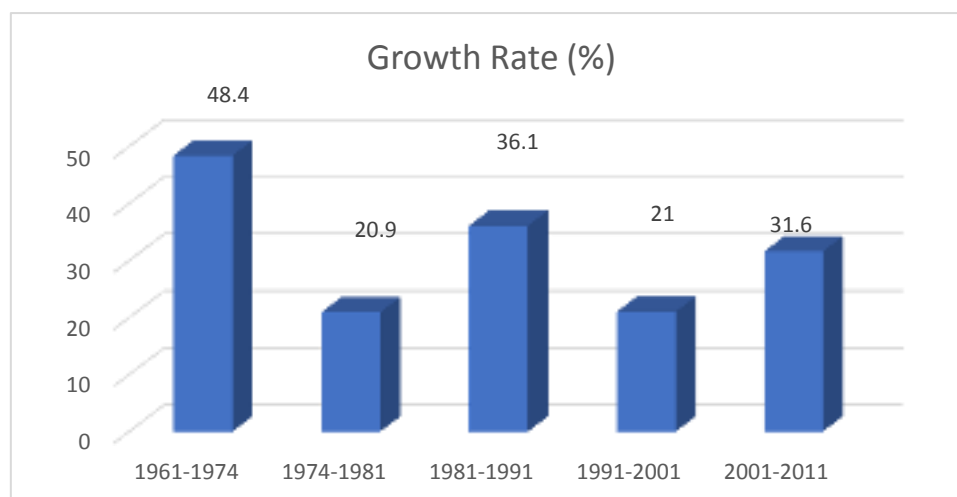
The line graphs represent the Crude Death Rate per 1000 in Bangladesh from 1991-2011. The graph is indicating CDR respectively in urban and rural. On an average, the current crude death rate is 5.5 in national which is 4.8 and 5.8 respectively in urban and rural area.

From the CBR and CDR Figure, it has been shown that natural growth rate in Bangladesh is 1.37. And the urban natural growth rate and rural natural rate is respectively 1.26 and 1.44. As Ramu Upazila is located at a distant region in Cox's Bazar Zila, it is advisable that the natural growth rate can be maximum limit after ignoring net migrants.

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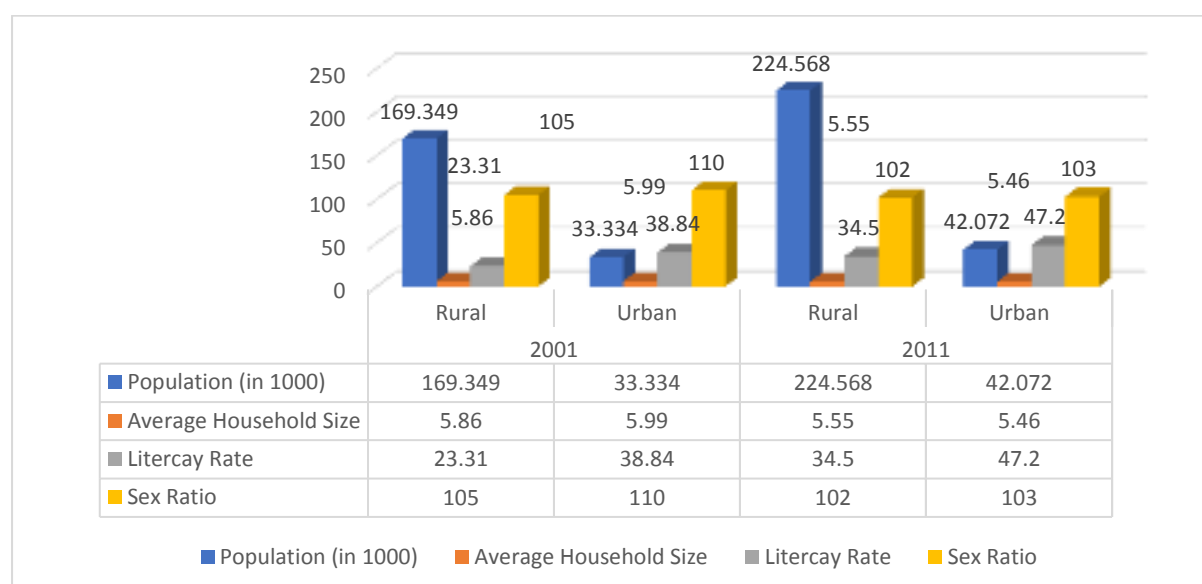


**Figure 4.5: Decadal Growth Rate (%)**

Source: BBS, 2011

From the above bar diagram, it has been shown that decadal growth rate was higher indiscriminately before 1981 but population growth rate was lower between 1974- 1981. After 1981, population is increasing gradually where it has been seen that 36.1, 21 and 31.6 respectively for 1981-1991, 1991-2001 and 2001-2011. But between 1991-2001 population growth rate was lower than 1981-1991 & 2001-2011. So, population is marking a steep accretion for last three decades.

### 4.2.6.4 Sector wise Analysis for Determination of Growth Rate



**Figure 4.6: Attributing Factors in Influential Areas**

Source: BBS, 2001 & 2011

From the chart, it has been shown that population is increasing in every jurisdictional area such as rural, urban based on the BBS 2001 and 2011. Literacy rate is higher at urban area in 2001 and 2011. Sex ratio is fluctuating in every jurisdiction area at different period. As Ramu Upazila has a considerable number of population in urban and rural, different

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agglomeration of average household size, varying sex ratio and literacy rate, it will be advisable to consider separable growth rate for urban and rural because of deriving factors in different areas.

### **4.2.6.5 Area wise Change of Growth Rate**

Ramu Upazila has 11 Unions (Formed in 1983) during the census of 2001. In 2011, it has 11 Unions The following table represents the area wise population change rate according to the adjustment of 2001 and 2011 census.

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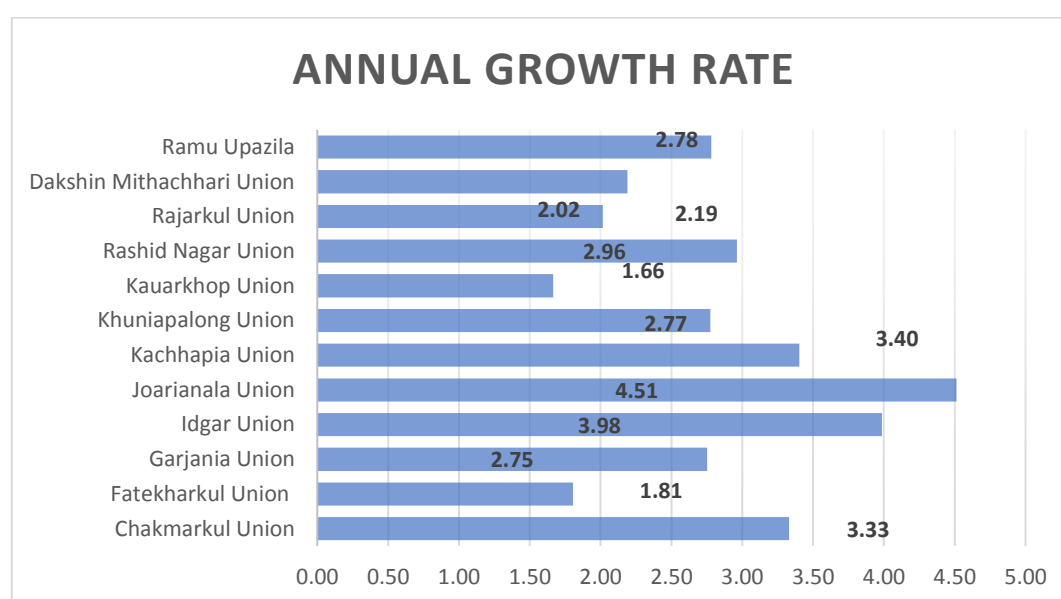
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**Table 4.5: Percentage of Change in Unions and Upazila**

Union	Population (2001)	Population (2011)	Increase	% Change
Chakmarkul Union	11845	16438	4593	39
Fatekharkul Union	25560	30569	5009	20
Garjania Union	17266	22651	5385	31
Idgar Union	12391	18315	5924	48
Joarianala Union	17575	27323	9748	55
Kachhapia Union	20277	28336	8059	40
Khuniapalong Union	27620	36315	8695	31
Kauarkhop Union	20353	24004	3651	18
Rashid Nagar Union	12352	16538	4186	34
Rajarkul Union	16507	20153	3646	22
Dakshin Mithachhari Union	20937	25998	5061	24
Ramu Upazila	202683	266640	63957	32

Source: Estimated by Planning Team based on BBS, 2001-2011.

From the table, it is seen that Ramu upazila and Unions have the increasing population. It is seen that different areas are expecting different population. For projecting population, it is advisable that different growth rate should be taken based on the above table different annual growth rates have been observed which is shown in below figure.



**Figure 4.7: Annual Growth Rate in Unions and Upazila**

Source: Estimated by Planning Team based on BBS, 2001-2011.

From the figure, it is seen that Ramu upazila has the annual growth rate of 2.78. The Unions have the annual growth more than 2%.

As it is seen that growth rates are varied according to the influential areas, it is clear that different separable growth rates have to be identified and the following table represents the annual growth rate according to the influential areas namely Urban and Rural areas.

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**Table 4.6: Change of Annual Growth Rate in Influential Areas**

Union/Pourashava	Population (2001)	Population (2011)	Growth Rate
<b>Urban</b>	<b>33334</b>	<b>42072</b>	2.36
<b>Rural</b>	<b>169349</b>	<b>224568</b>	2.86
<b>Ramu Upazila</b>	<b>202683</b>	<b>266640</b>	2.78
Fatekharkul (Urban)	24788	29266	1.67
Joarianala (Urban)	8546	12806	4.13
Chakmarkul Union	11845	16438	3.33
Garjania Union	17266	22651	2.75
Idgar Union	12391	18315	3.98
Fatekharkul (Rural)	772	1303	5.37
Joarianala (Rural)	9029	14517	4.86
Kachhapia Union	20277	28336	3.40
Khuniapalong Union	27620	36315	2.77
Kauarkhop Union	20353	24004	1.66
Rashid Nagar Union	12352	16538	2.96
Rajarkul Union	16507	20153	2.02
Dakshin Mithachhari Union	20937	25998	2.19

*Source: Estimated by Planning Team based on BBS, 2001-2011.*

The above table represents the recent growth rate 2.36 for Urban areas and 2.86 for Rural areas. At a glance, it is seen that highest growth rate 4.86 has been observed at Joarianala (Rural) and 4.13 at Joarianala (Urban) Union. The population was higher at rural areas and Ramu Upazila

### 4.2.6.6 Adjustment and Determination of Compound Annual Growth Rate

From previous analysis, it is clear that some area has extensive growth rate where developments and other facilities have increased. As different attributing factors are visible and prominently increasing the opportunities which may mark the inflow in near future.

**Table 4.7: Determination of Growth Rate**

Union	Population (2001)	Population (2011)	Increase	% Change	CAGR	Compound Growth Rate
Ramu Urban (Fatekharkul Union, Joarianala Union)	43135	57892	14757	34	0.029862	<b>2.99</b>
Ramu Rural (9 Union)	159548	208748	49200	31	0.027243	<b>2.72</b>
Ramu Upazila	202683	266640	63957	32	0.027805	2.78

*Source: Estimated by Planning Team based on BBS, 2001-2011.*

### 4.2.7 Population Projection and Distribution

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Ramu Upazila is now growing in diverse sites and its development will be flourished in near future. After considering different aspects, it has been considered low, medium and high growth rate respectively in Urban and Rural areas. The following table represents the projected population on the basis of low, medium and high growth rate in the respective areas.

**Table 4.8: Projected Population according to the Different Growth Rate**

Jurisdiction Area	Compound Annual Growth Rate		
	Low	Medium	High
Urban	2.74	2.99	3.01
Rural	2.70	2.72	2.75
Justification	As usual growth rate	Calculated Growth Rate	1% adjustment for attributing factors

Source: Projected by Planning Team based on BBS, 2011.

The recent compound annual growth rate of rural areas of Ramu Upazila is 2.74 and 2.70 which is then adjusted on the basis of different criteria and three different viable growth rates have been calculated for three influential areas. If it is considered overall development of Ramu Upazila, it will be optimised that the medium growth rate will be allowable to indicate the future growth. For the projection of future population in Ramu Upazila, medium growth rates have been determined for Urban and Rural areas and the projected results are summarised in below tables respectively Urban Rural Areas.

**Table 4.9: Projected Population of Ramu Upazila (with Urban & Rural)**

Jurisdiction Area	Population (Base Year 2011)	Growth Rate	Year 2018	Year 2023	Year 2028	Year 2033
Urban	42072	Low-2.74	35754	38158	40724	43462
		Medium-2.99	35779	38204	40793	43557
		High-3.01	35829	38294	40930	43746
Rural	224568	Low-2.70	304563	324560	345870	368580
		Medium-2.72	304773	324945	346451	369382
		High-2.75	305195	325716	347616	370990
Ramu Upazila	266640	Low	340317	362719	386595	412043
		Medium	340552	363149	387244	412939
		High	341023	364010	388546	414736

**Table 4.10: Projected Population in Rural Areas (Ramu Upazila)**

Unions	Annual Growth Rate	Years	0-4	5-9	10-14	15-19	20-24	25-29	30-49	50-59	60-64	65+	Total
Chakmarkuli Union	2.72	2011 (Base Year)	1973	2219	2334	1956	1594	1414	3189	789	378	592	16438
		2018	2380	2678	2817	2360	1924	1706	3848	952	456	714	19835
		2023	2722	3062	3221	2699	2200	1951	4401	1089	522	817	2268

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Unions	Annual Growth Rate	Years	0-4	5-9	10-14	15-19	20-24	25-29	30-49	50-59	60-64	65+	Total
Fatekharku I Union													3
		2028	3113	3502	3684	3087	2516	2231	5033	1245	597	934	25941
		2033	3560	4005	4213	3530	2878	2551	5755	1424	682	1068	29666
		2011 (Base Year)	152	143	141	149	122	120	302	96	34	44	1304
		2018	184	173	170	179	148	145	365	116	41	53	1574
		2023	210	198	194	205	169	165	417	133	47	61	1800
		2028	241	226	222	234	193	189	477	152	53	70	2058
		2033	275	259	254	268	221	216	546	174	61	80	2354
Garjania Union		2011 (Base Year)	3624	3851	3081	1993	1857	1971	3964	1110	476	725	22651
		2018	4373	4646	3717	2405	2241	2378	4783	1339	574	875	27332
		2023	5001	5314	4251	2751	2563	2719	5470	1532	656	1000	31257
		2028	5719	6077	4861	3146	2931	3110	6255	1752	751	1144	35746
		2033	6541	6949	5560	3597	3352	3556	7154	2003	858	1308	40879
		2011 (Base Year)	2546	3040	2656	1740	1593	1484	3443	861	385	568	18315
Idgar Union		2018	3072	3669	3204	2099	1923	1790	4155	1039	464	685	22100
		2023	3513	4195	3665	2401	2199	2047	4751	1188	531	783	25274
		2028	4018	4798	4191	2746	2515	2341	5434	1358	607	896	28903
		2033	4594	5487	4793	3140	2876	2677	6214	1554	694	1025	33053
		2011 (Base Year)	2003	2250	1989	1582	1307	1248	2642	726	305	479	14532
		2018	2417	2715	2400	1909	1577	1506	3188	876	368	578	17535
Joarianala Union		2023	2764	3105	2744	2184	1803	1723	3646	1002	421	661	20053
		2028	3161	3551	3139	2497	2062	1970	4169	1145	481	756	22932
		2033	3615	4061	3589	2856	2358	2253	4768	1310	550	865	26225
		2011 (Base Year)	4449	4789	3825	2692	2352	2267	5157	1332	595	878	28336
		2018	5368	5778	4616	3248	2838	2735	6223	1607	718	1060	34192
		2023	6139	6608	5279	3715	3245	3128	7117	1838	821	1212	39102
Kachapia Union		2028	7021	7557	6037	4248	3712	3577	8139	2102	939	1386	44717
		2033	8029	8642	6904	4858	4245	4091	9307	2404	1074	158	5113



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Unions	Annual Growth Rate	Years	0-4	5-9	10-14	15-19	20-24	25-29	30-49	50-59	60-64	65+	Total
Khuniapalong Union												5	9
		2011 (Base Year)	5593	6065	5120	3450	3523	3159	6464	1416	654	908	36351
		2018	6748	7318	6179	4163	4251	3812	7800	1709	789	1095	43864
		2023	7717	8369	7066	4761	4861	4360	8920	1954	902	1253	50163
		2028	8826	9571	8081	5444	5559	4986	10201	2235	1032	1433	57366
		2033	10093	10945	9241	6226	6357	5702	11666	2556	1180	1638	65604
Chakmarkuli Union		2011 (Base Year)	3361	4081	3409	2352	2040	1896	4585	1104	528	648	24004
		2018	4055	4924	4113	2839	2462	2288	5532	1332	637	782	28965
		2023	4637	5631	4704	3246	2816	2617	6327	1524	729	894	33124
		2028	5303	6440	5379	3712	3220	2993	7235	1743	833	1023	37881
		2033	6065	7364	6152	4245	3682	3422	8274	1993	953	1170	43321
Rashid Nagar Union		2011 (Base Year)	2381	2596	2431	1720	1588	1356	3010	761	281	413	16538
		2018	2874	3133	2933	2075	1916	1636	3632	918	339	499	19956
		2023	3286	3583	3355	2373	2191	1871	4154	1050	388	571	22821
		2028	3758	4097	3837	2714	2505	2140	4750	1201	444	652	26099
		2033	4298	4686	4387	3104	2865	2447	5432	1373	507	746	29846
Rajarkuli Union		2011 (Base Year)	2499	2962	2862	1915	1874	1773	4091	1068	423	685	20153
		2018	3015	3575	3453	2310	2262	2140	4937	1289	511	827	24318
		2023	3448	4088	3949	2642	2586	2447	5645	1474	584	946	27810
		2028	3944	4675	4516	3021	2958	2799	6456	1686	668	1081	31803
		2033	4510	5346	5165	3455	3382	3201	7383	1928	764	1237	36371
Dakshin Mithachhari Union		2011 (Base Year)	3458	4212	3848	3016	2132	2054	4602	1274	494	910	25998
		2018	4172	5082	4643	3639	2572	2478	5553	1537	596	1098	31371
		2023	4771	5812	5310	4162	2942	2834	6350	1758	682	1256	35876
		2028	5457	6646	6072	4759	3364	3241	7262	2010	780	1436	41028
		2033	6240	7601	6944	5443	3847	3707	8305	2299	891	164	4691

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Unions	Annual Growth Rate	Years	0-4	5-9	10-14	15-19	20-24	25-29	30-49	50-59	60-64	65+	Total
												2	9

Source: Projected by Planning Team based on BBS, 2011.

**Table 4.11: Projected Population in Urban Areas (Ramu Upazila)**

Ramu Urban	Annual Growth Rate	Years	0-4	5-9	10-14	15-19	20-24	25-29	30-49	50-59	60-64	65+	Total
Fatekharkuli	2.99	2011 (Base Year)	3102	3512	3717	3424	3131	2663	6292	1639	644	1141	29266
		2018	3813	4316	4568	4208	3849	3273	7733	2014	791	1403	35969
		2023	4418	5001	5293	4876	4460	3793	8961	2334	917	1625	41678
		2028	5119	5795	6133	5650	5167	4395	10383	2704	1062	1883	48292
		2033	5931	6715	7107	6547	5987	5092	12031	3134	1231	2182	55957
Joarianala		2011 (Base Year)	1716	1947	1882	1447	1229	1024	2139	653	295	474	12806
		2018	2109	2392	2314	1779	1511	1259	2628	803	362	582	15739
		2023	2444	2772	2681	2061	1751	1459	3046	930	419	675	18237
		2028	2832	3212	3106	2388	2029	1691	3529	1078	486	782	21131
		2033	3281	3722	3599	2767	2351	1959	4089	1249	563	906	24485

Source: Projected by Planning Team based on BBS, 2011.

## **4.3 SHIFT SHARE ANALYSIS**

### **4.3.1 Introduction**

Shift share is a standard regional analysis method that attempts to determine how much of regional job growth can be attributed to national trends and how much is due to unique regional factors. Shift share helps answer why employment is growing or declining in a regional industry, cluster, or occupation (EMSI, 2011). To conduct shift share analysis, regional job growth has been divided into three components: (1) national share component, (2) industry mix component, and (3) regional shift component. In addition, a time frame (start year and end year) is required to perform shift share analysis, since shift share deals with job growth over time.

The aim of the project is to prepare five tier of development plan such as- sub-regional plan, structure plan, urban area plan, rural area plan and action area plan to facilitate the improvement of infrastructure and services of the Upazila. The study also tends to find out how much of the change in a given industry happens due to some unique competitive advantage that the region possesses. The study also tends to find out competitiveness and potentiality of the sector itself.

### **4.3.2 Objectives**

- 1) To determine the contribution of different sectors in the growth of Ramu Upazila by using shift share components from year 2003 to 2013.
- 2) To compare the regional growth status of the Ramu Upazila and also identify progressive and less progressive industries with respect to the employment of the selected industrial sectors.

### **4.3.3 Concept of Shift Share Analysis**

Shift share analysis is a regional economic growth tool. This process helps in order to determine the trend of local economy, prioritizing the industry which has to developed, use of public funds efficiently. The dynamic and changing regional economies have been capturing the attention of policy makers, community leaders, and researchers (McNamara 1991; Knudsen, 2000.). However, a regional economy consists of firms and industries with a variety of economic potentials. Growth or decline in any of these sectors occurs by technological innovation, capital and labor productivity, location, changes in product demand, and shifts in input costs, which directly or indirectly affect the overall growth of the economy (Gebremedhin and Lass, 1995; Bartik 2004). As various sectors affect economic growth of a particular region differently, understanding the comparative advantage of these sectors becomes important in development decisions of the region (Deming, 1996; Melachroinos, 2002).

As a regional planning tool shift share analysis explores the scenario of economic growth of a region which is generated by a national growth in that sector, supportive industry mix and comparative advantage of that particular region. The shift-share analysis divides the change in local industry employment into three components:

- National share (NS)
- Proportionality Shift /Industry mix (IM)
- Local Share/Regional Shift/Differential Shift (RS)

### **National Share (NS) Component**

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Share of regional job growth attributable to growth of the national economy. The share of local job growth can be attributed to growth of the national economy. Specifically, if the nation as a whole is experiencing employment growth ("a rising tide lifts all boats"), one would expect total national growth to exert a positive growth influence on the local area.

### Industry Mix (IM)/Proportionality Shift Component

The industrial mix or proportionality shift component reflects differences in industry "mix" between the local and national levels. The mix-factor examines how national growth or decline of a particular industry translates into local growth or decline of that industry. It illustrates how much growth can be attributed to the region's mix of industries. Also estimates how many jobs were created/not created in each industry due to differences in industry and total national growth rates

### Regional Shift (RS)/Differential Shift Component

This share of local job growth describes the extent to which factors unique to the local area have caused growth or decline in regional employment of an industrial group. Even during periods of general prosperity, some regions and some industries grow faster than others do. This component usually attributed to some local comparative advantage such as natural resources, linked industries or favorable local labor situations. It identifies how many jobs are created/not created as a result of the region's competitiveness and the region's progressive and less progressive industries.

### Calculation of shift share components

The shift share component for each industry in the region has been determined using the following formulas:

$$\text{National Share, } N_j = \sum_i [E_{ijto} (E_t/E_o) - E_{ijto}]$$

$$\text{Proportionality Shift Component, } P_j = \sum_i [(E_{ijt}/E_{ijo}) - (E_{it}/E_{io})] E_{ijto}$$

$$\text{Differential Shift Component, } D_j = \sum_i [(E_{ijt}/E_{ijo}) - (E_{it}/E_{io})] E_{ijto}$$

$$\text{Total Regional Growth, } G_j = E_{jto} - E_{jto} = N_j + P_j + D_j$$

$$\text{Total Net Shift Component, } (P+D)_j = E_{jto} - (E_t/E_o) E_{jto} = G_j - N_j$$

Where,  $E_j$  = total employment in region j

$E$  = total national employment

$o, t$  = initial and terminal period

$i$  = industry subscript

### Identification of fast growing and slow growing sectors

In the above equations, if the proportionality shift component is found to be positive, the region is specialized in nationally fast growing sectors and if this component is negative, the region is specialized in nationally slow growing sectors.

### **Identification of progressive and less progressive sectors**

The progressive and less progressive sectors of a region are identified from the differential shift component. The progressive sectors for a region has been identified by the positive differential shift component and the less progressive sectors have been identified by the negative differential shift component. Positive differential shift component for an industry implies the region has advantage (e.g. natural resources, favorable location and an efficient labor market) for flourishing of the industry. Differential shift component with negative value means there exists locational disadvantage for the industry to grow in the region.

The economic growth of the Upazila has been compared in terms of national share component, industry mix component and regional shift component and growth rate for every industrial sector.

#### **4.2.4 Scope of the Study**

Shift share is a standard regional analysis method that attempts to determine how much of regional job growth can be attributed to national trends and how much is due to unique regional factors. It helps answer why employments are growing or declining in a regional industry, cluster, or occupation. It is the tool to study the components of economic growth. Its popularity is mainly its simplicity and easy to use. Here its scopes are mention below that -

- Showing the connection between different regions and their success.
- Polarizing the indication of regional growth rate decline if negative and increase if positive.
- Differentiating in the sectoral structure of regions on the differences in their success.
- Identifying the progressive and less progressive industries.

#### **4.3.5 Analysis**

There have been used the employment data of 2003 and 2013 representing the time for economic growth and economic crisis respectively. Data for employment growth in Ramu Upazila and the national employment growth in Bangladesh have been taken from the Economic Census District Report – Cox's Bazar 2001 & 2003 and 2013 respectively from Bangladesh Bureau of Statistics.

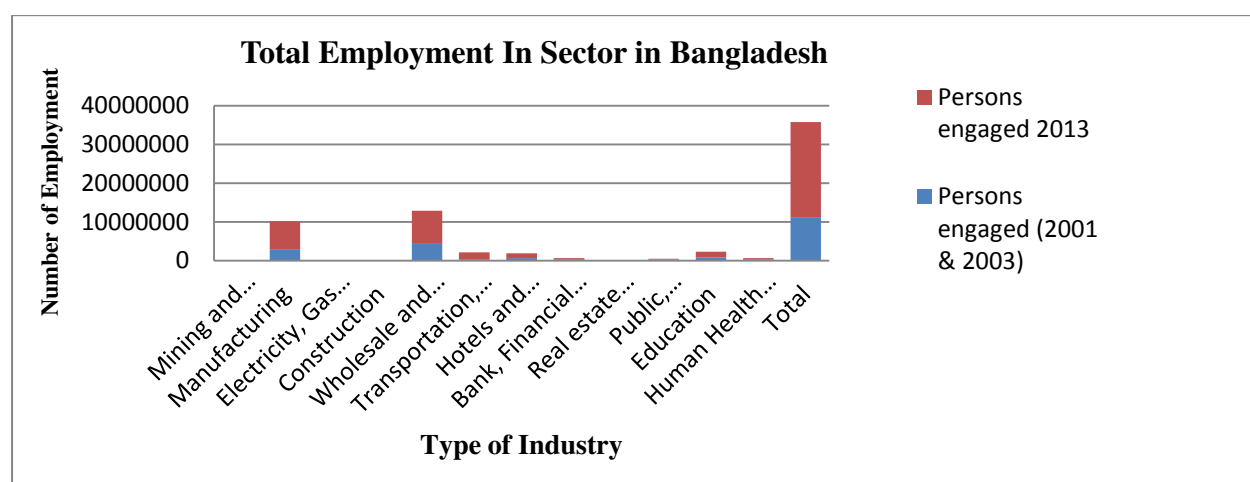
National growth rate with comparison to the growth rate of Ramu Upazila in the following chart shows that national growth rate of industrial sector wise category.

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### National growth rate analysis



**Figure 4.8: Distribution of industries according to growth of employment in national level between 2001 & 03 and 2013**

The figure shows that employment growth rate increases in 2013 in respect of 2001 & 03. The figure shows that manufacturing and wholesale retail industries are the most fast growing industries among all the industries in the national context. The employment generations in these sectors are higher than any other sectors over the years.

### Shift Share Analysis in Ramu Upazila

In sector wise analysis, the aim is to compare the employment growth rate of each sector in Ramu Upazila in respect of Bangladesh. Employment growth rate has been calculated for each sector of this Upazila with respect to the national employment of that sector.

**Table 4.12: Employment Data for Ramu Upazila: 2003 and 2013.**

Employment Category	2003	2013	Change in Jobs	% Change
Mining and quarrying	0	81	81	-
Manufacturing	2805	3597	792	0.28
Electricity, Gas and water supply	0	4	4	-
Construction	3	0	-3	-1.00
Wholesale and Retail Trade, Repair of motor vehicles & motorcycle	4452	11323	6871	1.54
Transportation, storage and communication	53	244	191	3.60
Hotels and Restaurants	1066	1593	527	0.49
Bank, Financial and insurance Activities	69	430	361	5.23
Real estate activities	47	0	-47	-1.00
Public, administration and Defense, Compulsory Social security	195	542	347	1.78
Education	852	1613	761	0.89
Human Health and Social work	179	359	180	1.01
<b>Total</b>	<b>10859</b>	<b>21918</b>	<b>10065</b>	<b>1.02</b>

Source: BBS, Economic Census 2003 & 2013

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According to the analysis, from table 1 it shows that the Upazila only added 10065 jobs during the period of a decade (2003-2013). This suggests that the area is not performing compared with the national average.

**Table 4.13:** Shift Share Components of Ramu Upaila in context of national: 2003 and 2013.

Employment Category	National share	Industrial Mix	Regional Shift	Total Regional Growth	Net Shift
Mining and quarrying	0	0	0	0	0
Manufacturing	3068	898	-3175	792	-2276
Electricity, Gas and water supply	0	0	-	0	0
Construction	3	-2	-4	-3	-6
Wholesale and Retail Trade, Repair of motor vehicles & motorcycle	4870	-1032	3033	6871	2001
Transportation, storage and communication	58	326	-193	191	133
Hotels and Restaurants	1166	-369	-270	527	-639
Bank, Financial and insurance Activities	75	-2	288	361	286
Real estate activities	51	-82	-16	-47	-98
Public, administration and Defense, Compulsory Social security	213	-322	455	347	134
Education	932	-303	132	761	-171
Human Health and Social work	196	-51	35	180	-16
<b>Total</b>	<b>10633</b>	<b>-938</b>	<b>285</b>	<b>9980</b>	<b>-653</b>

**Source: BBS, Economic Census 2003 & 2013**

From Table 2 it shows that the overall national growth component shows that, if the local economy was identical to the national economy, then the number of jobs in the county should have grown by 10633 between 2003 and 2013.

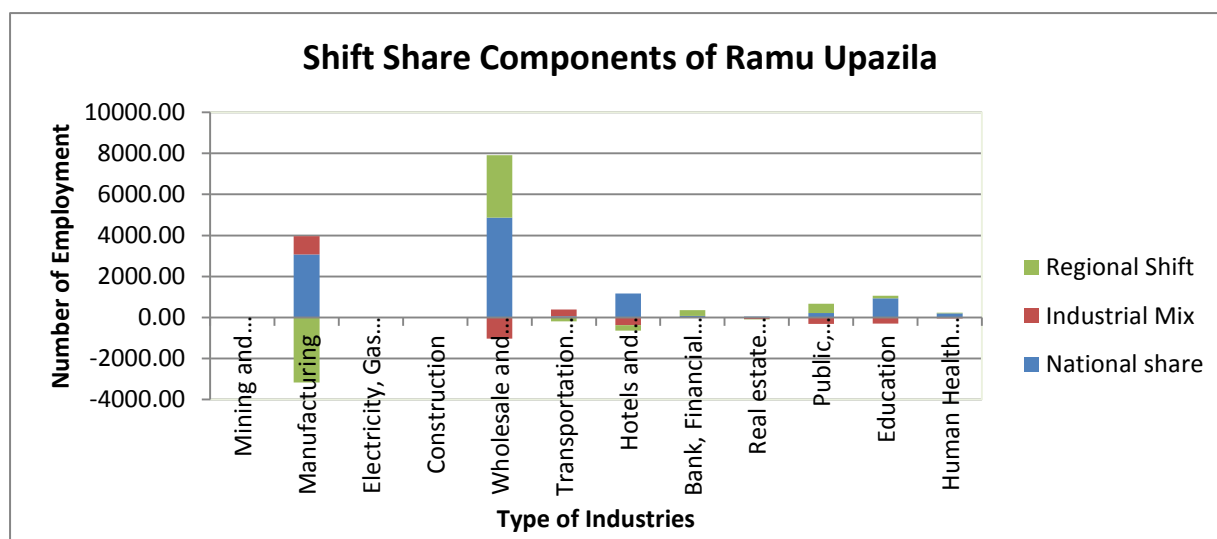
Mining and quarrying, electricity, gas and water supply and sectors added less jobs than expected if they performed at the national average. Obviously, the changes (gains or losses) in employment that occur at the local level do not exactly follow the overall national trend.

The overall industrial mix component of -938 means that Ramu Upazila has nearly 938 less jobs than it would have if its structure was identical to the nation. However, mining and quarrying, human health and social work, construction, hotels and restaurants, real estate activities, public, administration and defense, compulsory social security, education, wholesale and retail trade, repair of motor vehicles & motorcycle sectors are growing slowly. The negative industrial mix means that the local economy grew faster if there is national influence. According to the local share component, 285 new jobs in Ramu Upazila are generated.

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**Figure 4.9: Distribution of industries according to shift share components in Ramu Upazilla**

The analysis has been carried out by comparing the change values of the national share, proportionality shift, differential shift and regional growth with respect to the total employment in the respective region considering employment data in the year 2003 and 2013

In Ramu Upazilla, most of employment growth has been generated because of national employment growth. Regional Shift/ Differential shift has a very mild impact on regional employment growth but Proportionality shift/industrial mix has negatively influenced in employment growth. It could be recognized that employment in this Upazilahas grew more slowly than the nation because of industrial mix effects.

In Ramu Upazila, differential shift for bank, financial and insurance activities has a positive value which implies that this sector has been nourishing in this Upazila for any local advantage. This advantage is may be the large quantity of in Ramu which generates many employments in this sector. Employment growth of this sector is also fast growing in this Upazila than the national employment growth in the sector. Because the services of wholesale and retail trade, repair of motor vehicles & motorcycle, public, administration and defense, compulsory social security sectors have been also increased. Besides education and human health and social work sector also increased for regional shift and others have negative impact.

In this figure, it shows that except Transportation, storage and communication and manufacturing sector, all other sectors have negative industrial mix component. So, these sectors have some slow growing industries which generate employment at a lower rate.

### 4.3.6 Comparison of Employment Growth among Industries

The aim of sector wise analysis is to compare the employment growth of each sector in Ramu Upazila. From the calculation it could be easily recognized that which sector is progressive and which sector is less progressive in this sector by using Net Shift Component. If the value of Net Shift Component is positive it indicates regional growth of this sector is better than national growth. If the value is negative, it indicates less regional growth of this sector than national growth. Table 1 shows progressive and less progressive sectors of Ramu Upazila as per Shift-share analysis. Net Shift Component for Ramu Upazila provides negative value which means overall economic growth of Ramu Upazila is less progressive than national growth.



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**Table 4.14: Progressive and Less Progressive Sectors of Ramu Upazila.**

Activity Sector	Progressive	Less Progressive
Mining and Quarrying		✓
Manufacturing		✓
Electricity, Gas, Water, Steam, and Air Conditioning Supply		✓
Construction		✓
Wholesale and Retail Trade, Repair of Motor Vehicles & Motorcycles	✓	
Transportation, Storage, Information and Communication	✓	
Accommodation and Food Services Activities (Hotel & Restaurants)		✓
Financial and Insurance Activities	✓	
Real estate activities		✓
Public Administration and Defense	✓	
Education		✓
Health and Social Works		✓
<b>Total</b>		✓

It is important to keep in mind that this is a descriptive tool rather than a diagnostic one. The shift-share analysis does not tell us why some local industries are more competitive and why some are less competitive—differences may be due to technology, management, or worker productivity. A more in-depth analysis of local versus national industries is required to sort out the sources of these differences. Potential factors could include access to natural resources, local wage rates, workforce productivity, or regional transportation networks.

## CHAPTER 5 PLANNING STANDARD REVIEW

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### 5.1. Introduction

Facilities and services are the main features of a development plan. Depending on the demand and population projection facilities and services are calculated. For this purpose planning standard is formulated for this specific project.

### 5.2 Components of Planning Standard

**SITE** density includes only the residential component of the land area. It is the most concentrated measure of density.

**NET** residential density includes the residential component plus local roads.

**GROSS** residential density includes residential uses, local roads plus local non-residential land uses such as parks and schools.

**URBAN** residential density includes all the above land uses plus regional land uses such as employment, transport and regional open space.

**METROPOLITAN** density is a macro measure, often used in international comparisons and includes all land (i.e. including non-urbanised land within what are often arbitrary administrative boundaries)

### Use of Density Measures

- Estimate the intensity of built form on a particular site or a place.
- Model the impacts of development standards.
- Keep track of how well a development is performing against the original 'vision'.
- Calculate population densities.

### Working with Density Measures

- Density measures are only indicators, not design tools
- The 'right' density evolves over time
- Higher density does not always equal higher buildings
- Higher net residential density does not always equal more people
- The same building type can yield different net residential densities
- Density is not intensity

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### 5.3 Formulation of Planning Standard

**TABLE 5.1: RECOMMENDED STANDARD FOR MAJOR LAND USES**

Types of Land Uses	Recommended Standard
<b>1. Residential</b>	
General residential	150 persons/1 acre
Real Estate-Public/Private	200 population/ 1 acre
<b>2. Roads</b>	
Upazila primary roads	70 feet and above
Upazila secondary roads	40 feet
Upazila local/Tertiary roads	32 feet
Access Road	20 feet
<b>3. Education</b>	
Nursery	0.5 acre/10,000 population
Primary School/ kindergarten	2.00 acres/5000 population
Secondary/High School	5.00 acres /20,000 population
College	10.00 acres/20,000 population
Vocational Training Centre	5 - 10 acres / Upazila
Other	5.00 acres / 20,000 population
<b>4. Open Space</b>	
Play field/ground	3.00 acres/20,000 population
Park	1.00 acre /10000 population
Neighborhood park	1.00 acre /10000 population
<b>5. Recreational</b>	
Stadium/sports complex	5 – 10 acres/Upazila HQ
Cinema/ Theatre	1.0 acre /20,000 population
<b>6. Health</b>	
Upazila health complex	10 -20 acres/Upazila HQ
health centre/Maternity clinic	1.00 acre/ 5,000 population
<b>7. Community Facilities</b>	

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Types of Land Uses	Recommended Standard
Mosque/Church/Temple	0.5 acre /20,000 population
Eidgah	1.0 acre/20,000 population
Graveyard	1.00 acre /20,000 population
Community centre	1.00 acre /20,000 population
Police Station	3 – 5 acres/Upazila HQ
Police Box/outpost	0.5 acre/ per box
Fire Station	1.00 acre/ 20,000 population
Post office	0.5 acre /20,000 population
<b>8. Utilities</b>	
Water supply	1.00 acre /20,000 population
Gas	1.00 acre /20,000 population
Solid waste disposal site	5– 10 acres/Upazila HQ
Waste transfer station	0.25 acres/per waste transfer station
Electric sub-station	1.00 acre/20,000 population
Telephone exchange	0.5 acre/20,000 population
Fuel Station	0.5 acre/20,000 population
Others	-
<b>9. Commerce and Shopping</b>	
Wholesale market	1.0 acres/ 10000 population
retail sale market	1.0 acres/ 1000 population
Corner shops	0.25 acre/per corner shop
Neighborhood market	1.00 acre/per neighborhood market
Super Market	1.50 – 2.50 acres/per super market
<b>10. Industry</b>	
small scale	1.50 acres /1000 population
Heavy Industry	5.0 acres /10000 population
<b>11. Transportation</b>	
Bus terminal	1.0 acre /20,000 population
Truck terminal	0.50 acre /20,000 population
Launch/steamer terminal	1.00 acre /20,000 population
Rickshaw/van/Tempoo stand	0.25 acre /one baby taxi/tempo stand

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Types of Land Uses	Recommended Standard
Passenger Shed	0.25 acre /one baby taxi/tempo stand
Others	-
<b>12. Administration/Govt. Service</b>	
Upazila complex	10-15.00 acres
Paurashava office	3 – 5 acres
Others	-

### 5.4 Residential Density Control

Residential density can be measured in five ways: site, net, gross, urban and metropolitan. All five residential density measures are calculated using the same basic ratio formula: the number of dwellings divided by the area of land they occupy.

#### Residential Standard

Public Sector Housing Site/Estate	Private Sector Housing Site/Estate	Neighbourhood Size	Rural/Scattered Housing Area
Calculate the Gross and Net density	Calculate the Gross and Net density	Calculate the Housing Unit Show the FAR aspects Determine the maximum and minimum area size	

#### Public Sector Housing Estate

It is proposed that all public-sector housing estates should develop 55% for residential area and reserve at least 45% of its area for community service facilities including road. Density of public sector is determined in the following manner:

Assuming that,

- ✓ There is 2 units in each floor of each 3 katha plot (Comfortable housing with respect of our country) area on average,
- ✓ Each building having maximum 3 storied in height (If the distance is 7.6 meter to 10.59 meter between front side road and mandatory open space of the building, the height of the building will be maximum 9.50 meter, Building Construction Rules, 1996)
- ✓ 6 families will be living in each 3 katha,
- ✓ Total population in each 3 katha will be (Average household size is 4.9 in Rangunia Upazila, converting to 5 as average H/H size):  $5 \times 6 = 30$  persons,
- ✓ Net density per acre  $(30 \div 3 \times 55) = 550$  persons,
- ✓ Assuming 55 acres as net residential area of a 100 acre residential area estate,
- ✓ Total population of the housing area:  $55 \times 550 = 30,250$ ,
- ✓ Gross density of public sector housing area  $(30250 \div 100) = 302$  persons/acre.

GROSS RESIDENTIAL DENSITY/ACRE: 302 persons

NET RESIDENTIAL DENSITY/ACRE: 550 persons

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**Means of Implementation:** incorporation of density standard as rules under Section 18 of EBBC Act, 1952.

### Private Sector Housing Estate-Cooperative and Commercial

Due to profit motive of the private housing companies it would be difficult to achieve the same density standard as suggested for public sector housing estates. The amount of saleable land percentage is 60% and minimum land for services and facilities can be fixed at 40%. This would give following gross and net densities for privately organized housing estates:

Assuming that,

- ✓ 2 units in each floor of each 3 katha plot on average,
- ✓ each building having 3 storied in height,
- ✓ 6 families living (2 x 3) in each 3 katha,
- ✓ total population in each 3 katha (assuming 5 as average family size):  $5 \times 6 = 30$  persons,
- ✓ net residential density per acre ( $30 \div 3 \times 60$ ) = 600 persons
- ✓ gross residential density can be calculated as follows:
- ✓ assuming 60 acre as net residential area of a 100 acre residential area estate,
- ✓ total population of the area:  $60 \times 600 = 36000$  persons.
- ✓ gross residential density of the private organized housing area:  $36000 \div 100 = 360$  persons/acre.

GROSS RESIDENTIAL DENSITY/ACRE: 360 persons

NET RESIDENTIAL DENSITY/ACRE: 600 persons

### Neighbourhood Size

According to the Private Residential Land Development Rule, 2004, the following issues have to be considered:

- There will be minimum 5 acres land for development of private residential land in Dhaka City Corporation Area and outside of City Corporation and Pourashava there will be minimum 10 acres land.
- There will be gross density maximum 350/acre for the development of private residential land.
- Maximum 70% area of the total land are allowable to sell and 30% of the land will be preserved for providing civic facilities and utility facilities according to the private residential development rule, 2004.

- **limit all public and private sector housing estates (plot) units to 50 acres maximum and minimum 5 acres for Urban Area and 10 acres for Rural Area.**

This would give an estimated maximum population size of 15,100 persons (at 302 persons /acre gross density) for public sector housing estates and 18,000 persons (at 360 persons / acre gross density) for private sector housing estates including cooperative housing.

### Housing Unit Calculation

#### Given:

1 acre = 43,560 square feet (sq. ft.) and 20 units/acre as a **minimum density**

Example Plot Size = 5,000 sq. ft. plot

$$\text{Plot Size} = \frac{\text{Total Land}}{\text{Desired Unit}}$$

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$$= \frac{43560}{20} = 2178 \text{ sq. ft.} \approx 2160 \text{ sq. ft.}$$

Example Plot Size	Plot Size	Allowable Unit	Round up to
5000	2160	2.31	2
7500		3.47	4
10000		4.63	5

The thresholds for whole units at 20 units per acre are as follows:

2160 sq. ft. == 1 unit

4320 sq. ft. = 2 units

6480 sq. ft. = 3 units

1 acre = 43,560 square feet (sq. ft.) and 30 units/acre as a **minimum density**

Example Plot Size = 5,000 sq. ft. plot

$$\text{Plot Size} = \frac{\text{Total Land}}{\text{Desired Unit}}$$
$$= \frac{43560}{30} = 1452 \text{ sq. ft.} \approx 1450 \text{ sq. ft.}$$

Example Plot Size	Plot Size	Allowable Unit	Round up to
5000	1450	3.45	4
7500		5.17	5
10000		6.90	7

The thresholds for whole units at 20 units per acre are as follows:

1450 sq. ft. = 1 unit

2900 sq. ft. = 2 units

4350 sq. ft. = 3 units

### Building Construction Rules for Density Control

**Section 12(1)** of Building Construction Rules, 1996 sets a formula for building height determination based on the width of the front road. This rule imposes a limit on the building height as long as the front road is less than 75 ft. (22.87 meter). Indirectly this limits the number of family or the size of population in a building.

### Building Height

According to the Building Construction Rules (1996), the maximum height of a building will not be more than the summation of front side road width and the mandatory open space between road and building site. According to the law, the following decisions can be summarized

Distance between Front side road and space of the building	Building's Highest Height (meter)
7. 60-10.59 m	9.5 m
10. 60-13.59m	12. 50m

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13. 60-16.59m	15.50m
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According to the rules, the building's height doesn't less than the above values, if the width of adjacent road of the site tends to the following conditions, the estimated building's height will be the correspondent value according to the following table.

Width of the Road of Adjacent Site	Building's Highest Height (meter)
4.55-7.59m	18.50m
7.60-10.66m	27. 50m
10. 67-15.24m	42.50m
15.25-22.99m	60.50m

Here is also one condition, if the width of the Road of the adjacent Site is 23.50 or more then there is no limit of the height of the building.



## CHAPTER 6

### TECHNICAL PROCESS OF PLAN PREPARATION

---

#### 6.1 Introduction

In order to prepare the structure plan and sub-regional plan for Ramu Upazila upazila 8 types of survey has been conducted. These surveys are : Participatory Rural Appraisal (PRA), Socio-Economic survey, Agricultural survey, Formal-Informal Economic survey, Traffic and Transportation survey, Geological survey, Physical feature, land use, Topographical survey and photographic works and Hydrological survey. The derived data from that survey has represented in different thematic maps.

#### 6.2 Formulation of Thematic Maps

During the survey stage 11 types survey has been conducted. Which are: PRA, Socio-Economic survey, Formal-Informal survey, Agricultural survey, Transportation survey, Physical Feature survey, Landuse survey, Topographic survey, Geological & Geo-physical survey and Hydrological survey. Each survey has distinct output. These outputs are presented in the form of thematic maps. Here is a list of thematic maps:

- Slope
- DEM
- Geological-Geo-physical survey
  - PGA
  - Shear wave
  - Foundation depth
  - Microzonation map
- Landuse survey
  - Existing Landuse plan
- Physical-Feature survey
  - Existing road network in terms of type
  - Existing road network in terms of width
  - Existing Structure type
- Agricultural Survey
  - Cropping Intensity map
- Hydrological Survey
  - Flooding Scenario map
  - Main and Sub Flood Flow Zone map

##### 6.2.1 Connectivity Map

Ramu Upazila is bounded by Chakaria and Cox's Bazar Sadar upazilas on the north, Naikhongchhari and Ukhia upazilas on the south, Naikhongchhari upazila on the east, Cox's Bazar Sadar and the Bay of Bengal on the west.

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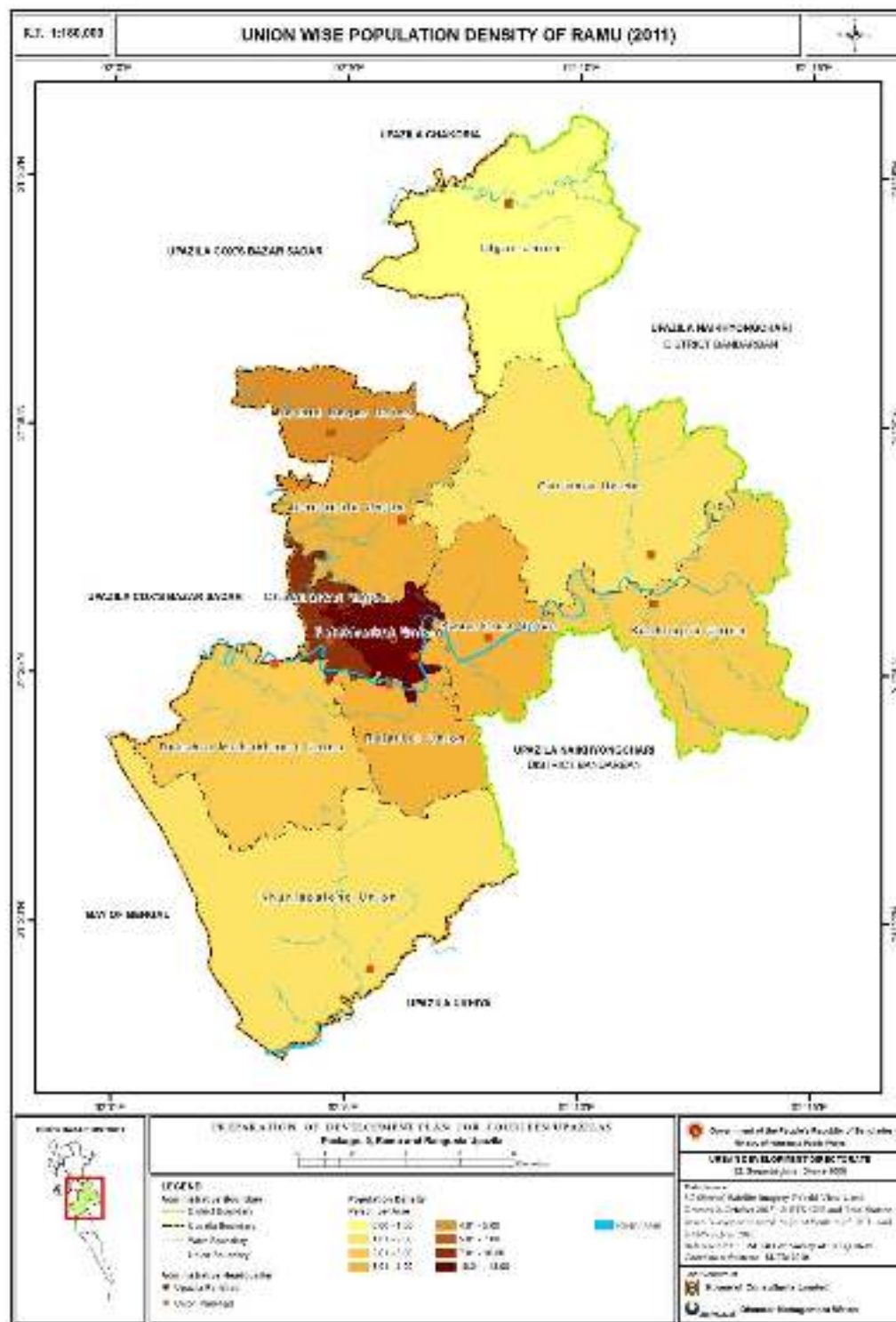
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### 6.2.2.1 Density Map According to 2011



Map 6.2: Union wise Population Density in Ramu Upazila (2011)

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[illegible]

### 6.2.3 Existing Land Use

The existing land use statistics has been summarized in the below table:

Existing Land use					
Land use	Area (Sq. Meter)	Area (Sq. Kilometer)	Area (Hectare)	Area (Acre)	%

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Agricultural Zone	116629868.24	116.63	11662.99	28844.58	30.36
Beach	1462155.40	1.46	146.22	361.31	0.38
Circulation Network	2380183.46	2.38	238.02	588.16	0.62
Commercial Zone	643148.15	0.64	64.31	158.93	0.16
Community Facilities	32654.51	0.03	3.26	8.06	0.01
Education & Research Zone	263929.55	0.26	26.39	66.69	0.06
General Industrial Zone	25024.42	0.03	2.50	6.18	0.01
Government Services	96556.06	0.10	9.66	23.86	0.03
Graveyard	265089.06	0.28	26.51	66.98	0.06
Health Services	53896.11	0.05	5.39	13.32	0.01
Heavy Industrial Zone	996832.32	1.00	99.68	246.56	0.26
Hilly Area	194462208.25	194.46	19446.22	48055.13	50.59
Miscellaneous	5022.42	0.01	0.50	1.24	0.00
Mixed Use Zone	205164.64	0.21	20.52	50.60	0.05
Natural Forest	25938801.36	25.94	2593.88	6409.62	6.65
Non Government Services	6284.31	0.01	0.63	1.55	0.00
Open Space	109233.10	0.11	10.92	26.99	0.03
Orchards and Groves	582311.96	0.58	58.23	143.89	0.15
Planted Forest	1640096.66	1.64	164.01	405.28	0.43
Recreational Facilities	10944.23	0.01	1.09	2.60	0.00
Religious	285305.18	0.29	28.53	60.50	0.06
Restricted Area	434486.48	0.43	43.45	106.36	0.11
Rural Settlement	18885115.46	18.89	1888.51	4666.61	4.91
Transportation Facilities	36488.61	0.04	3.65	9.02	0.01
Urban Residential Zone	4596248.88	4.60	459.62	1135.66	1.20
Utility Services	8435.65	0.01	0.84	2.08	0.00
Vacant Land	1320859.26	1.32	132.09	326.39	0.34
Water body	12893440.99	12.89	1289.34	3186.04	3.35
<b>TOTAL</b>	<b>384400696.88</b>	<b>384.40</b>	<b>38440.08</b>	<b>94986.51</b>	<b>100.00</b>

*Source: Field Survey, 2016*



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### 6.2.4 Existing Physical Feature

#### 6.2.4.1 Existing Circulation Network

From the Physical feature survey the road network of the study area has been summarized in the below table:

**Table 6.2: Existing Circulation Network**

Union	Type	Length in meter	Length in kilometer	Total	Percentage
Chakmarkul Union	HBB	21365.35	21.36	54.81	6.11
	Katcha	20669.81	20.68		
	Pucca	12662.16	12.66		
Dakshin Mithachhari Union	HBB	9618.25	9.62	61.63	6.98
	Katcha	46342.95	46.34		
	Pucca	15664.63	15.66		
Fatekharkul Union	HBB	34694.84	34.69	63.33	6.06
	Katcha	14320.33	14.32		
	Pucca	14212.90	14.21		
Garjania Union	HBB	28669.10	28.66	69.12	8.82
	Katcha	38923.15	38.92		
	Pucca	11531.93	11.53		
Idgar Union	HBB	10689.93	10.69	64.86	8.35
	Katcha	56261.42	56.26		
	Pucca	6819.38	6.82		
Joarianala Union	HBB	38906.64	38.91	129.16	14.40
	Katcha	69560.91	69.56		
	Pucca	10696.01	10.60		
Kachhapia Union	HBB	28699.60	28.80	85.44	9.53
	Katcha	46522.39	46.52		
	Pucca	9121.96	9.12		
Kauarkhop Union	HBB	21998.33	22.00	64.56	8.31
	Katcha	42699.16	42.60		
	Pucca	9859.52	9.86		
Khuniapalong Union	HBB	3268.02	3.26	106.31	11.96
	Katcha	86906.60	86.91		
	Pucca	16132.91	16.13		
Rajarkul Union	HBB	16661.41	16.66	59.53	6.64
	Katcha	28933.50	28.93		
	Pucca	12921.53	12.92		
Rashid Nagar Union	HBB	18686.56	18.69	96.26	10.84
	Katcha	58091.60	58.09		
	Pucca	20469.22	20.48		
<b>Total</b>		<b>896013.15</b>	<b>896.01</b>	<b>896.01</b>	<b>100</b>

*Source: Field Survey, 2026*

#### 6.2.4.2 Road Network according to Type

From the Physical feature survey the road network of the study area has been summarized in the Table 6.3 & 6.4. From the survey it is found that there are total 1161.776 km roads in which HBB roads are 235.551, katcha roads are 753.833 and number of pucca roads are 172.393 km.

**Table 6.3: Existing Circulation Network of Upazila**

Type	Length in	Length in
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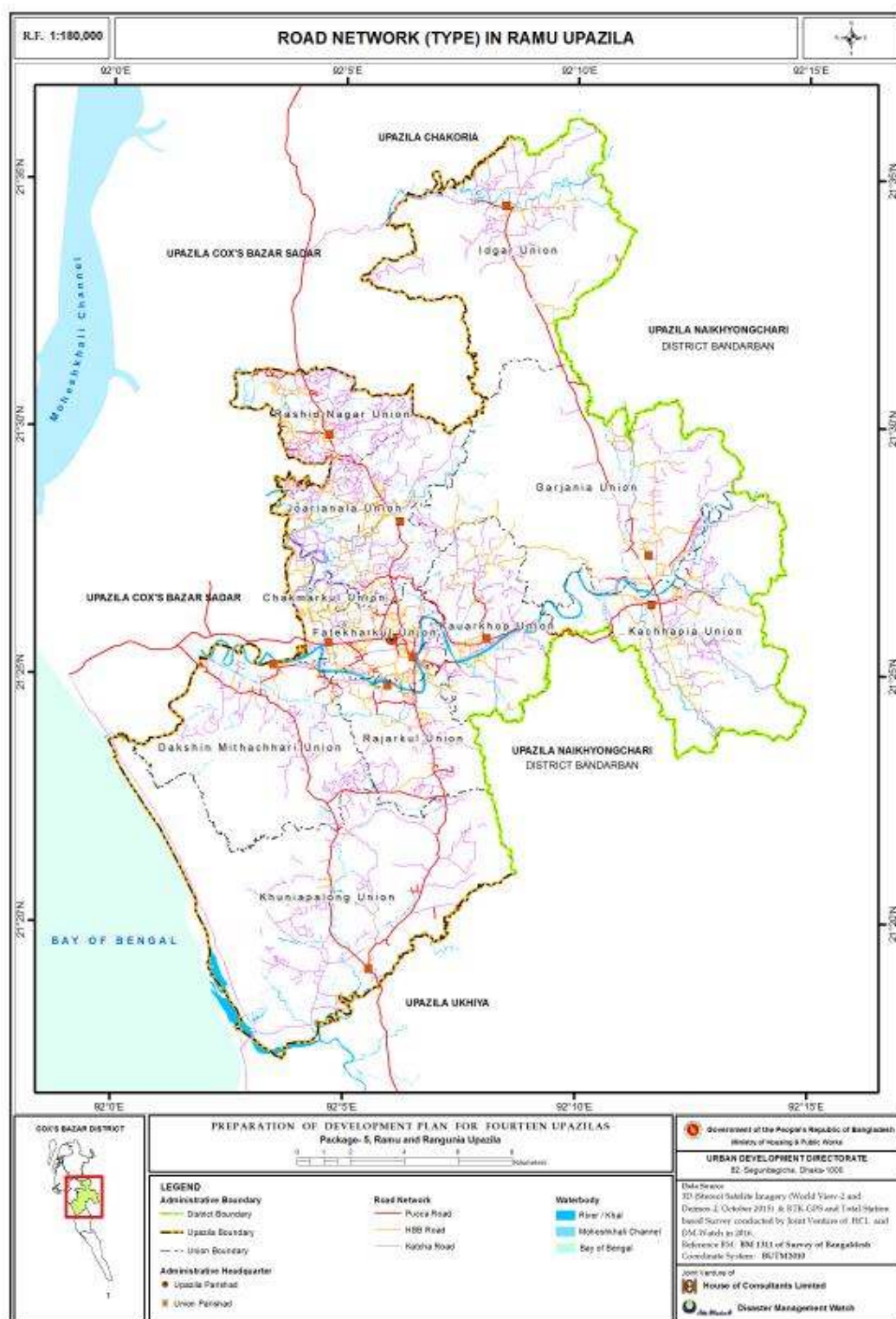
	Meter	Km
HBB Road	235550.9853	235.551
Katcha Road	647239.1125	753.833
Pucca Road	172392.5408	172.393
Total	1055182.639	1161.776



## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)



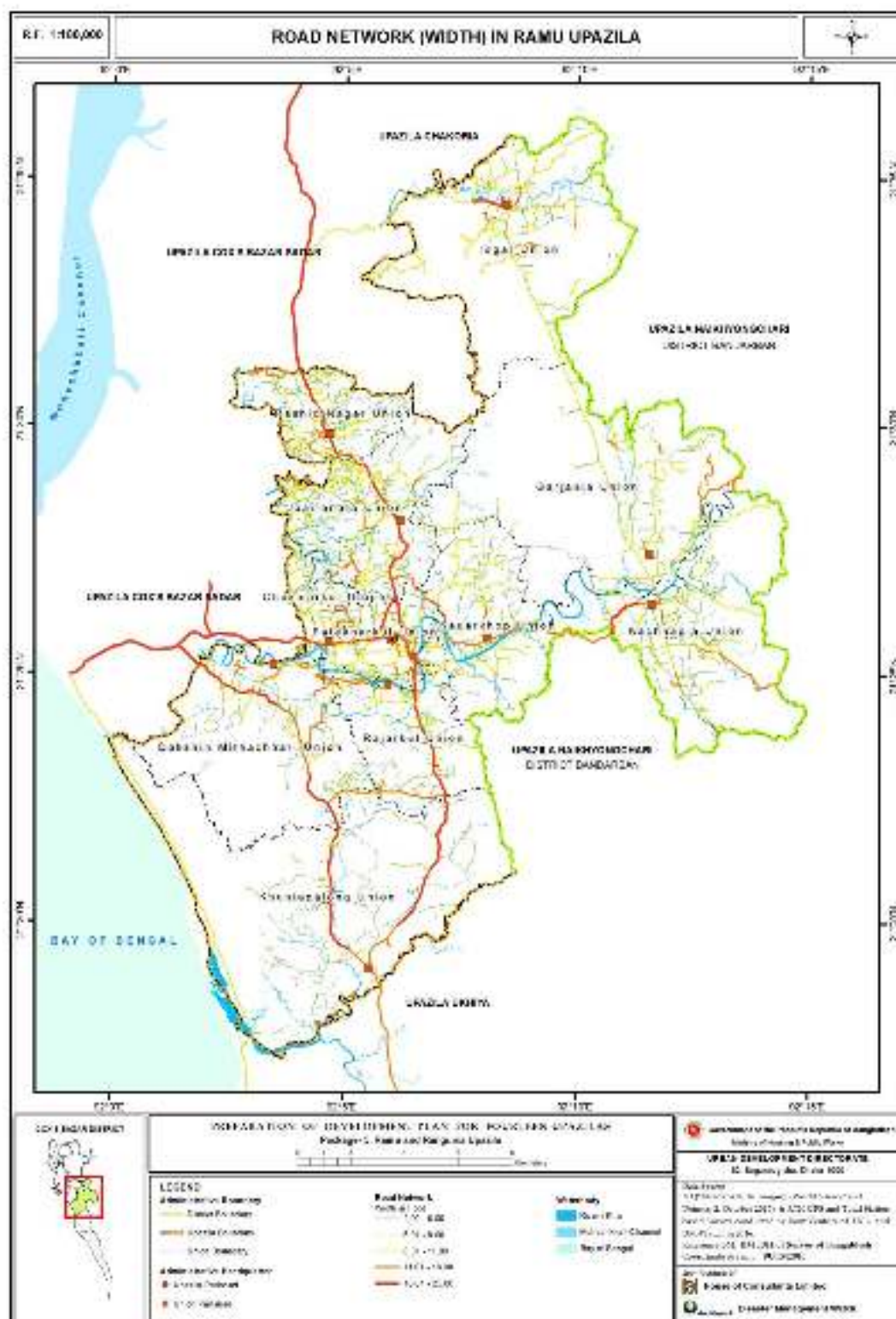
**Source: Prepared by Consultant Team Based on Field Survey, 2016**  
**Map 6.5: Existing Road Network (Type) of Ramu Upazila**

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

### 6.2.4.3 Road Network according to Width



Source: Prepared by Consultant Team Based on Field Survey, 2016  
Map 6.6: Existing Road Network (Width) of Ramu Upazila

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

### 6.2.4.4 Waterbody

**Table 6.4: Existing waterbody**

Waterbody Type	FREQUENCY	Area (sq.m )	Area (sq.km )	Area (Acre)
Ditch	380	671940.316	0.671940316	166.0400681
Khal	151	4962460.9	4.9624609	1226.250794
Pond	2001	3672435.159	3.672435159	907.4784909
River	18	4001996.828	4.001996828	988.9149529
Wet Land	132	2471364.335	2.471364335	610.6874267
Total	2682	15780197.54	15.78019754	3899.371732

### 6.2.4.5 Structure Type in Ramu Upazila

According to the interpretation of satellite image and field survey there are 36025 structures within the Ramu Upazila. The statistic has been shown below in the table:

**Table 6.5: Structure Type in Ramu Upazila Upazila**

Union	Structur Type	No. of Structure	Total	Percentage
Chakmarkul	Katcha	1282	2819	6.83
	Pucca	468		
	Semi Pucca	1044		
	Under Construction	25		
Dakshin Mithachhari	Katcha	838	1692	4.60
	Pucca	164		
	Semi Pucca	684		
	Under Construction	6		
Fatekharkul	Katcha	2368	5825	16.16
	Pucca	855		
	Semi Pucca	2559		
	Under Construction	43		
Garjania	Katcha	1938	2634	6.59
	Pucca	62		
	Semi Pucca	633		
	Under Construction	1		
Idgar	Katcha	1161	2202	6.11
	Pucca	120		
	Semi Pucca	919		
	Under Construction	2		
Joarianala	Katcha	3626	5245	14.56
	Pucca	463		
	Semi Pucca	1036		
	Under Construction	9		
Kachhapia	Katcha	2221	3382	9.39
	Pucca	156		
	Semi Pucca	999		
	Under Construction	5		
Kauarkhop	Katcha	3482	4601	12.66
	Pucca	168		
	Semi Pucca	929		
	Under Construction	12		
Khuniapalong	Katcha	323	1232	3.42
	Pucca	15		

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

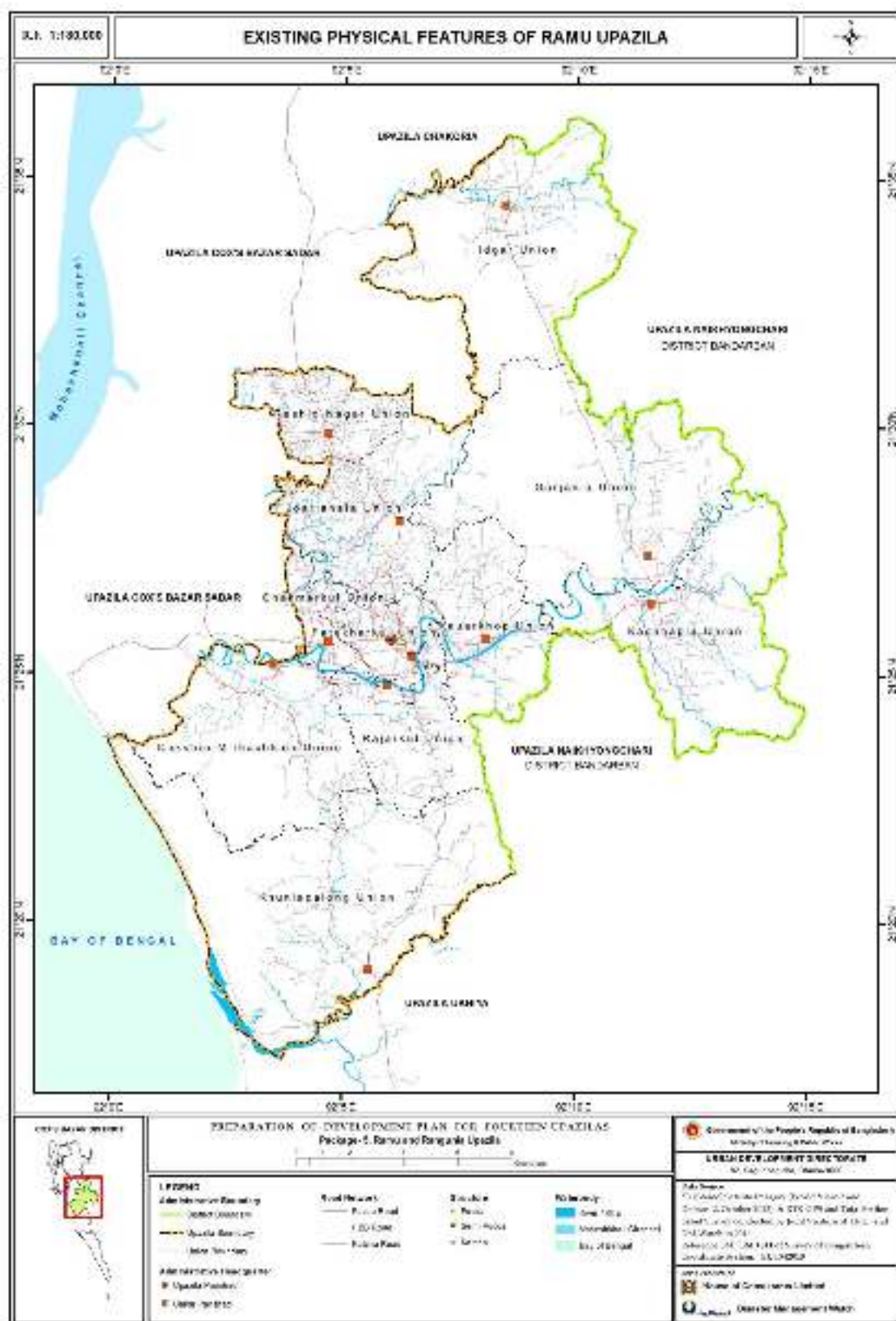
	Semi Pucca	893		
	Under Construction	1		
Rajarkul	Katcha	1605	2602	6.50
	Pucca	158		
	Semi Pucca	926		
	Under Construction	12		
Rashid Nagar	Katcha	2260	3591	9.96
	Pucca	283		
	Semi Pucca	1034		
	Under Construction	14		
<b>Total</b>		<b>36025</b>	<b>36025</b>	<b>100</b>

**Source: Field Survey, 2016**

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## Final Plan - Ramu Upazila

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### 6.2.5 Agricultural Map

#### 6.2.5.1 Cropping Pattern and Intensity of Ramu Upazila

Cropping pattern of 11 unions of Ramu Upazila has been identified through consultation with the Sub-Assistant Agricultural Officer. From the consultation it has been found that there are single cropping, double cropping and triple cropping land which comprises 2.51%, 19.11% and 8.64% of total area respectively.

**Table 6.6: Cropping Intensity**

Cropping Intensity	Acre(sq.m)	Area(Acre)	Percentage
Single	9660866.41	2386.25	2.51
Double	63468832.14	18154.54	19.11
Triple	33600168.66	8302.68	8.64

*Source: Field Survey, 2016*

#### 6.2.5.2 Vegetation

The vegetation scenario of Ramu Upazila has been summarized in the table given below:

**Table 6.7: Vegetation Scenario**

Vegetation	Area (sq. m)	Area(Acre)	Area(sq. km))	Percentage
Natural Forest	186439459.6	46060.2	186.44	48.50
Planted Forest	1640096.66	405.28	1.64	0.43
Orchards and Groves	582311.96	143.89	0.58	0.15

*Source: Field Survey,*

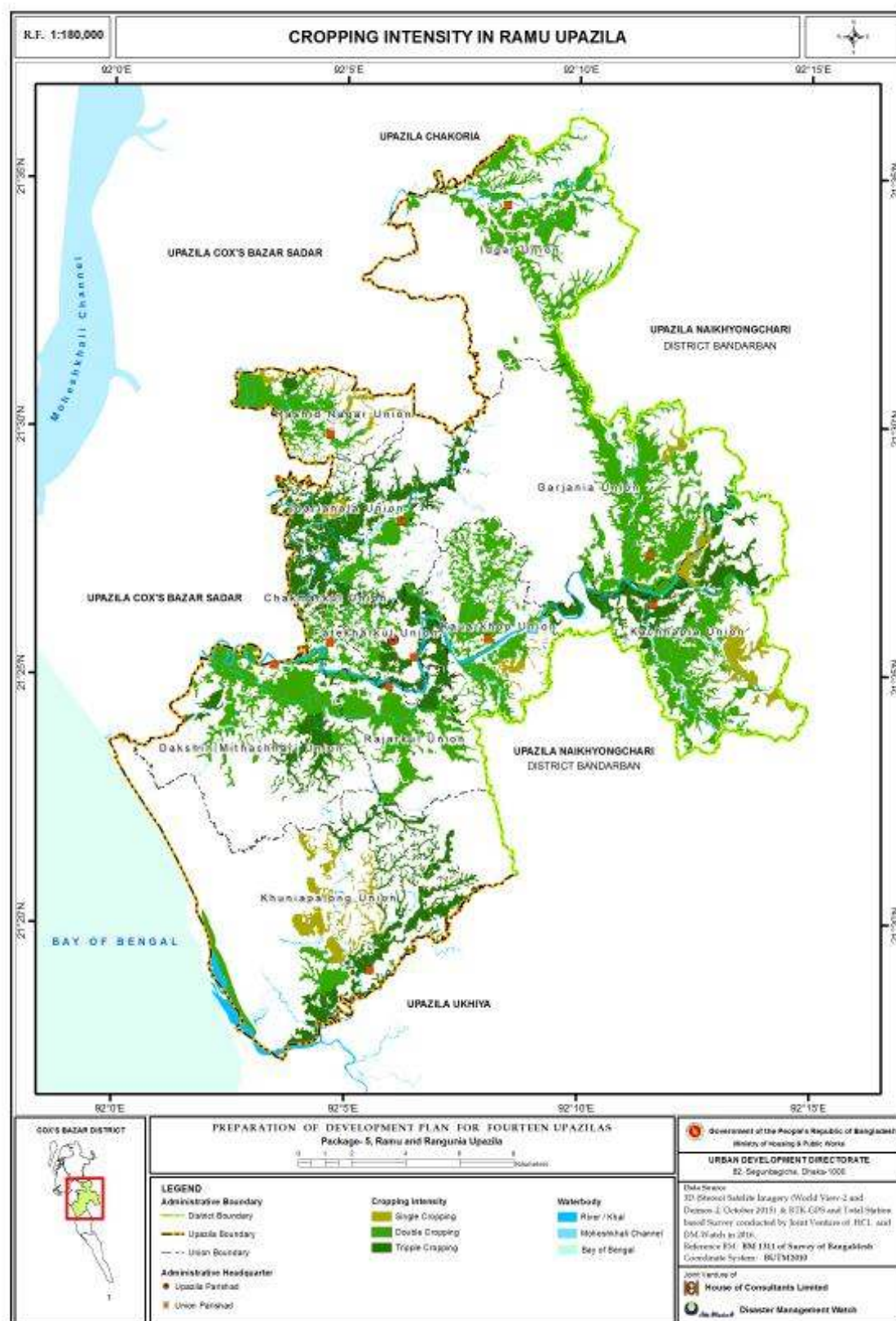
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Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)



**Source: Prepared by Consultant Team Based on Field Survey, 2016**  
**Map 6.8: Cropping Intensity of Ramu Upazila**

**Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)**

[illegible]

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**6-16**

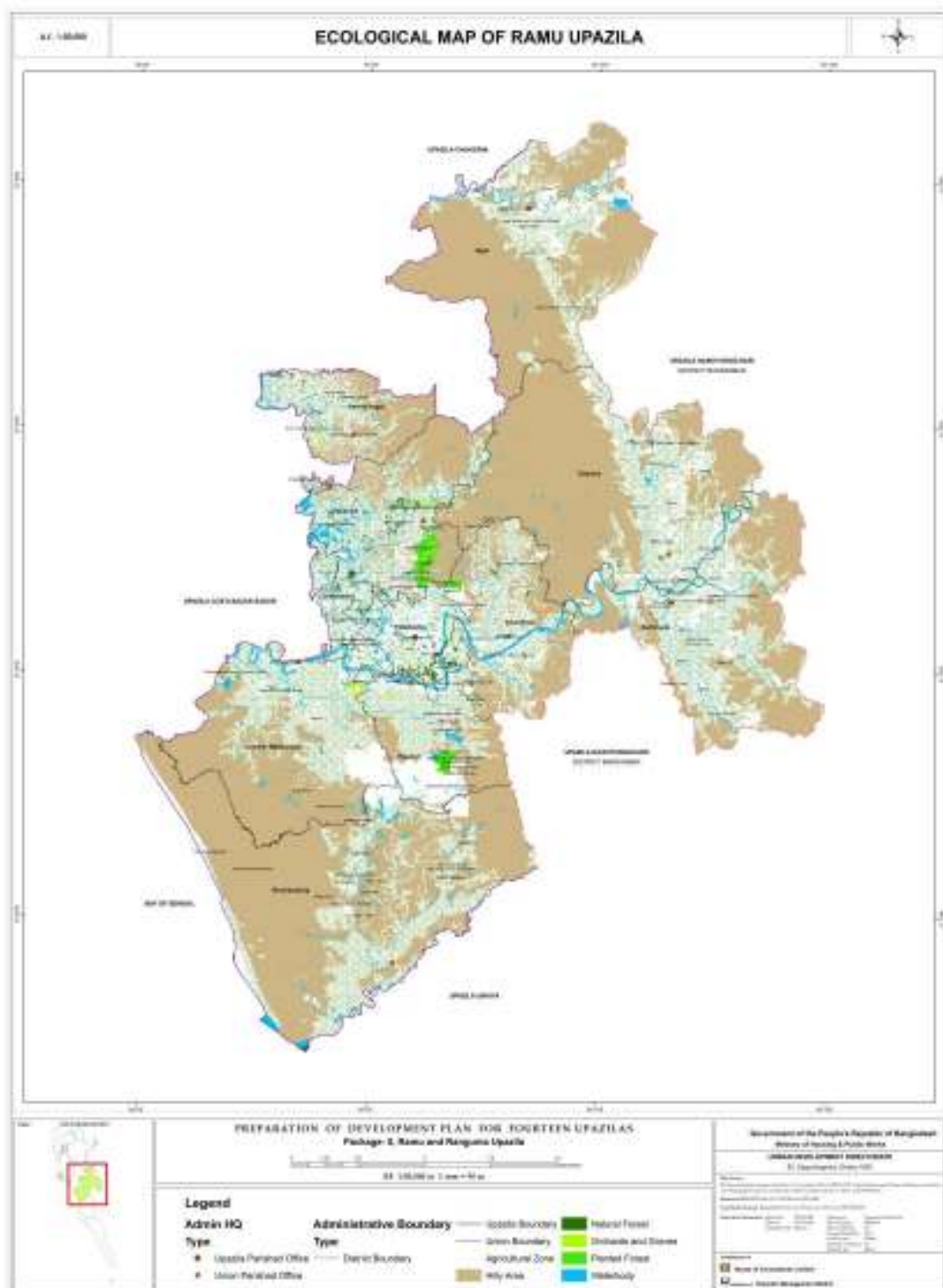


## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

### 6.2.6 Ecological Map



Source: Prepared by Consultant Team Based on Field Survey, 2016  
Map 6.10: Ecology of Ramu Upazila

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

### 6.2.8 Flooding Scenario

The project area has been divided into five categories depending on the flooding scenario which are 1<sup>st</sup> degree flooded area, 2<sup>nd</sup> degree flooded area, 3<sup>rd</sup> degree flooded area, 4<sup>th</sup> degree flooded area and 5th degree flooded area. The statistics has been summarized in the table:

**Table 6.8: Different Flooding Scenario**

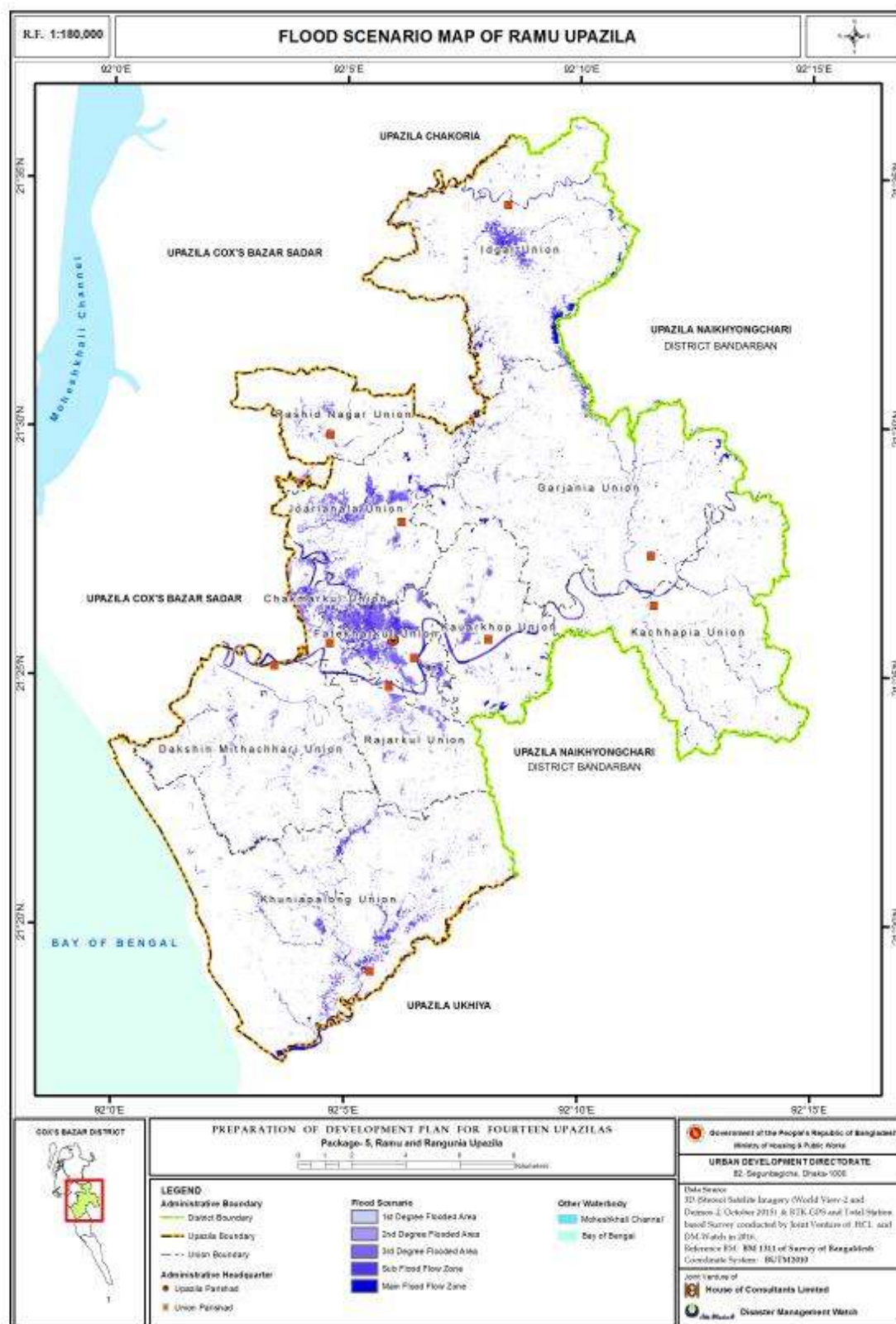
Different Flooding Scenario				
Flooded Land Category	Area(sq.m)	Area(sq.km)	Area(Acre)	Remarks
1st Degree Flooded area	100	0.00	0.02	
2nd Degree Flooded area	9992500	9.99	2469.20	
3rd Degree Flooded area	10644900	10.64	2655.12	
4th Degree Flooded area	5964900	5.96	1466.43	Sub Flood Flow Zone
5th Degree Flooded area	4406400	4.41	1088.85	Main Flood Flow Zone
<b>Total</b>	<b>31118800</b>	<b>31</b>	<b>6690</b>	

**Source: Field Survey, 2016**

## Final Plan - Ramu Upazila

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Source: Prepared by Consultant Team Based on Field Survey, 2016  
Map 6.11: Flooding Scenario of Ramu Upazila

## Final Plan - Ramu Upazila

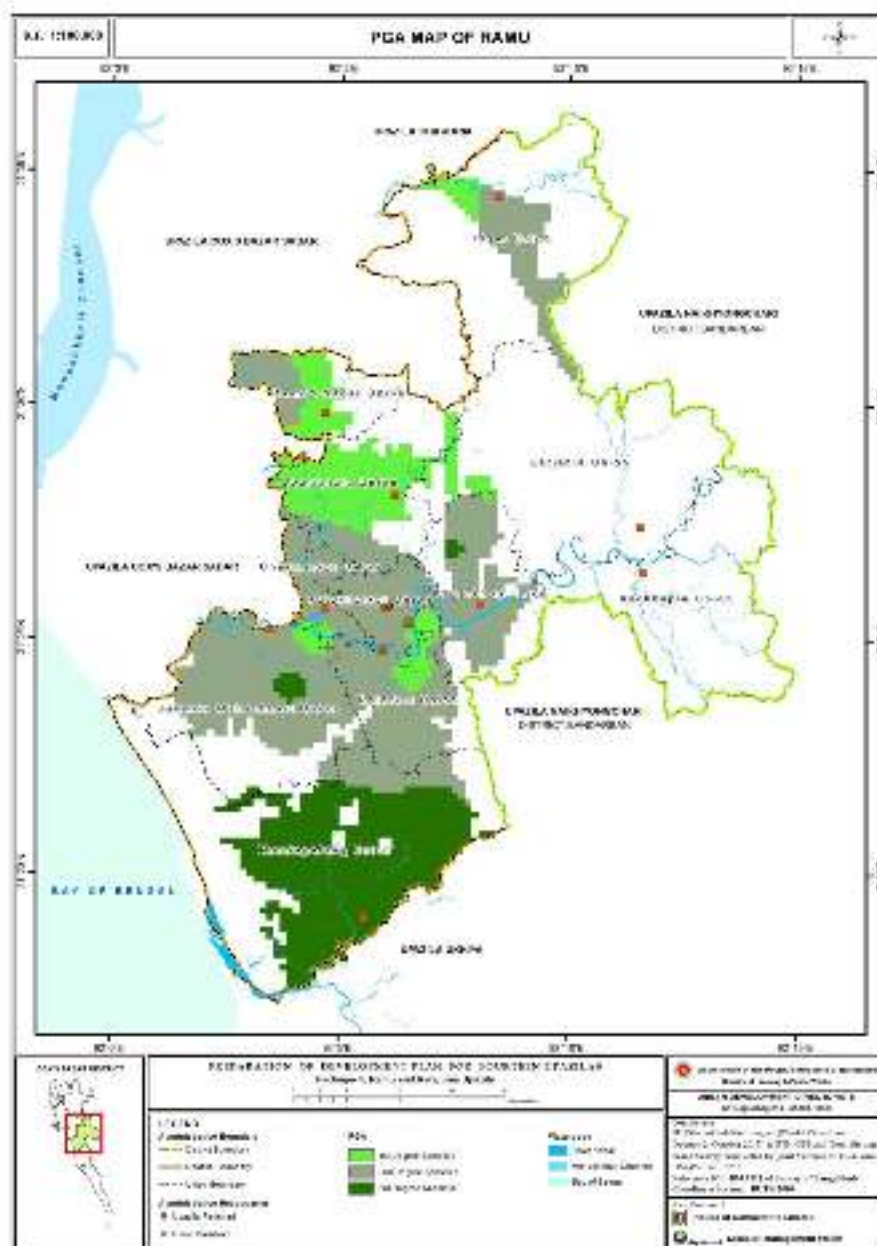
Preparation of Development Plan for Fourteen Upazilas

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### 6.2.9 Geology

For the identification of the geologically suitable area of Ramu Upazila Upazila an analysis has been adopted where PGA, soil type, shear wave data area used. On the basis of the survey data and analysis geological suitable area has been identified. With the compilation of these three criteria micro zonation map has been derived.

#### 6.2.9.1 PGA



Source: Prepared by Consultant Team Based on Field Survey, 2016  
Map 6.12: PGA of Ramu Upazila

Table 6.9: PGA

PGA	Area(Sq.m)	Area(Acre)
1st Degree Sensitive	32000000	6906.36

## Final Plan - Ramu Upazila

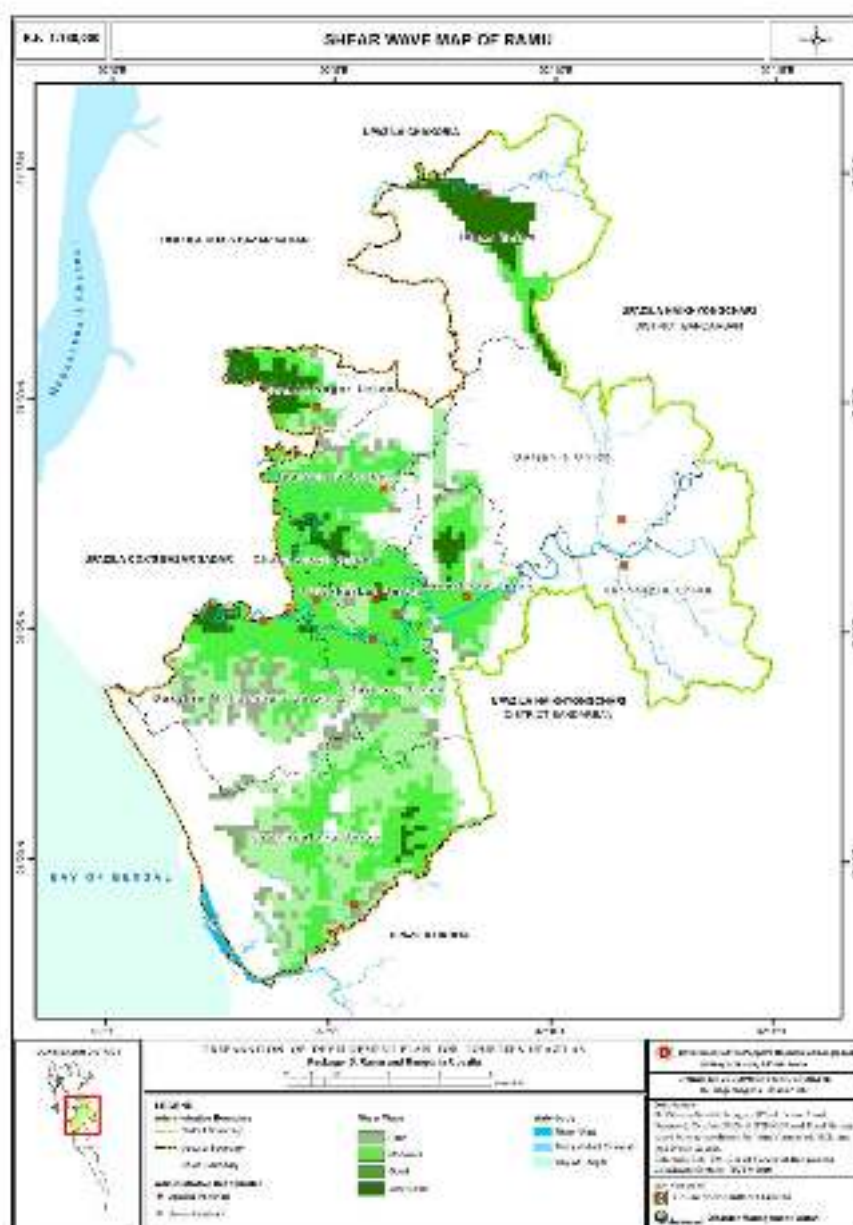
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2nd Degree Sensitive	99186500	24509.66
3rd Degree Sensitive	46312500	11444.06

Source: Field Survey, 2016

### 6.2.9.2 Shear Wave



Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.13: Shear Wave of Ramu Upazila

Table 6.10: Shear Wave

Shear Wave	Area(Sq.m)	Area(Acre)
Very Poor	10686500	2640.94
Poor	69312500	19598.55
Moderate	55500000	13614.35
Good	32000000	6906.36

Source: Field Survey, 2016



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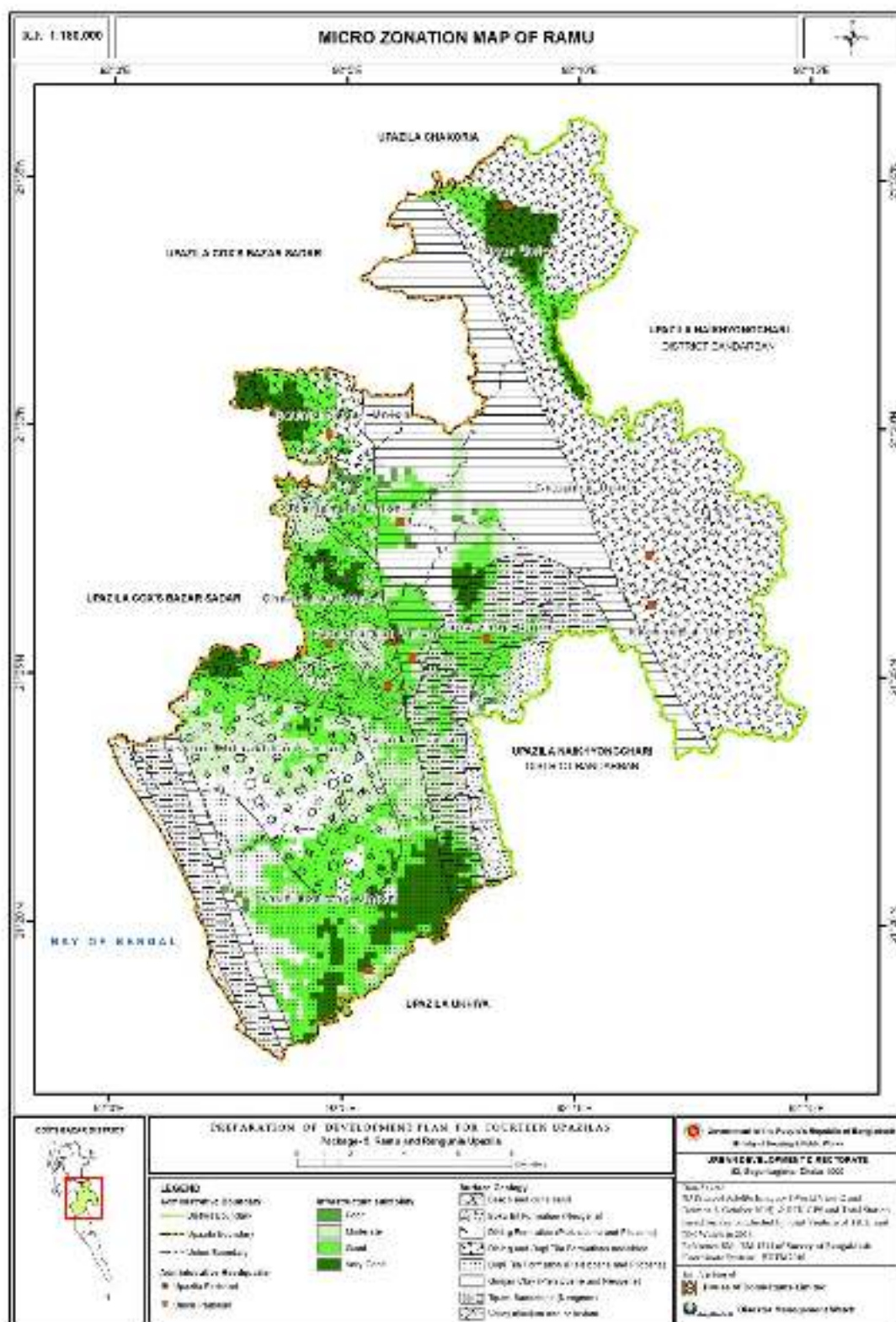
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## Final Plan - Ramu Upazila

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### 6.2.9.4 Micro Zonation

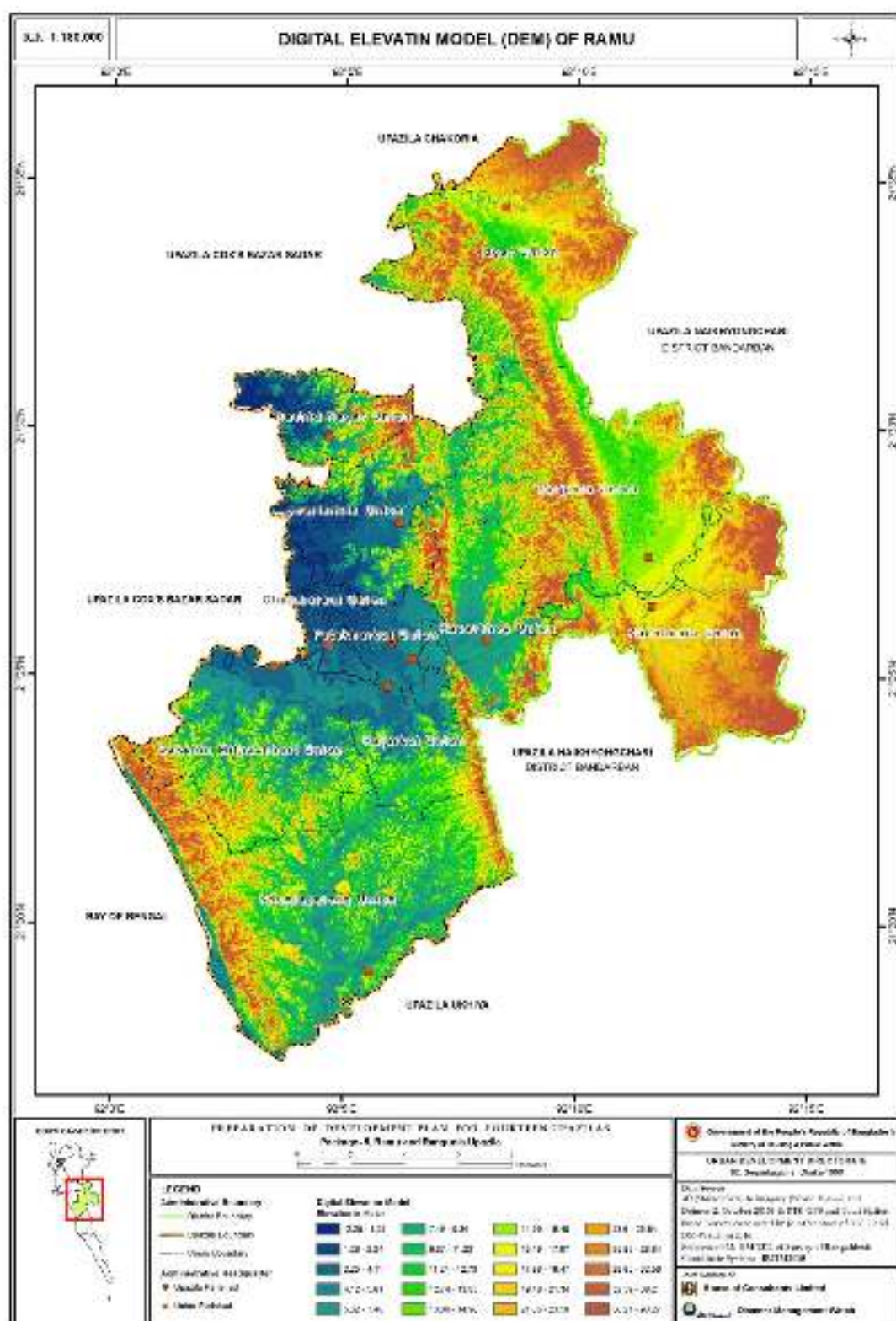


## Final Plan - Ramu Upazila

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### 6.2.8 DEM (Digital Elevation Model)



Source: Prepared by Consultant Team Based on Field Survey, 2016  
Map 6.16: Digital Elevation Model (DEM) of Ramu Upazila

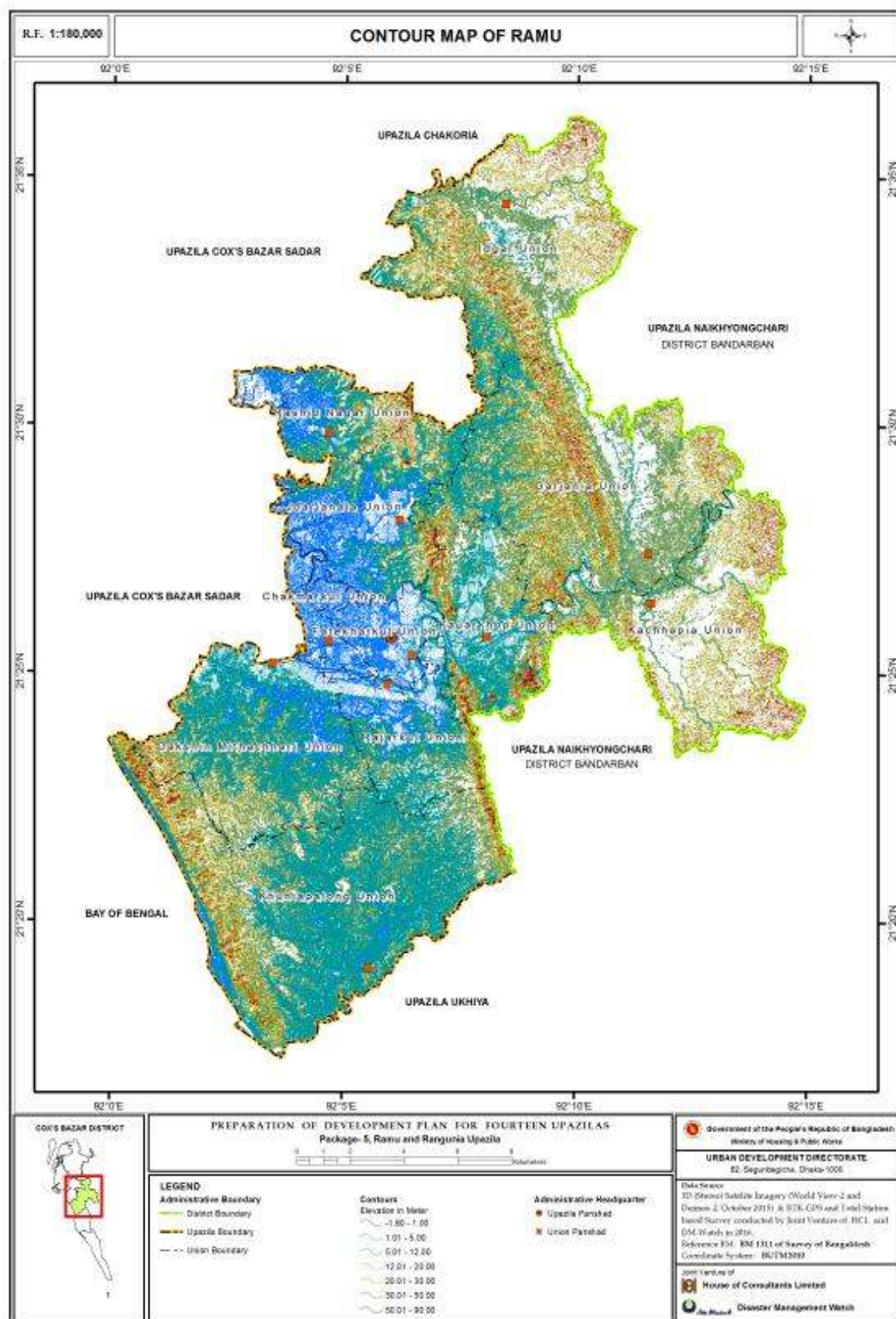
### 6.2.9 Contour Map



## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)



Source: Prepared by Consultant Team Based on Field Survey, 2016  
Map 6.17: Contour Map of Ramu Upazila

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Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

**SLOPE MAP OF RAMU**

Scale: 1:100,000

Map showing the Slope of Ramu District, Bangladesh. The map displays the boundaries of various upazilas and their corresponding slope percentages. The legend indicates the following categories:

- Slope (%)**
  - 0.00 - 5.00
  - 5.01 - 10.00
  - 10.01 - 20.00
  - 20.01 - 30.00
  - 30.01 - 40.00
  - 40.01 - 50.00
  - 50.01 - 60.00
  - 60.01 - 70.00
  - 70.01 - 80.00
  - 80.01 - 90.00
  - 90.01 - 100.00
- Land Use**
  - Forest
  - Cultivated
  - Barren
  - Water
  - Settlement
  - Other

The map also shows the location of Ramu District within Bangladesh, with a small inset map in the bottom left corner.

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## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

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### 6.3 Suitability Analysis

For the plan preparation of Ramu Upazila Upazila suitability analysis is an essential step. Through this analysis suitable area for agriculture, urban and infrastructure development will be identified. In this step firstly undesirable area for planning this is the area with slope more than 5%.

#### 6.3.1 Agricultural suitability

To identify the best suitable area for agriculture an analysis has been done. It is derived from the data of water depth, slope and cropping intensity. The main reason of this analysis is to identify the most suitable agricultural land for conservation. The statistic has been given below:

**Table 6.11: Agricultural Suitability**

Agricultural Suitability			
Category	Area (sq. m)	Area(Acre)	Percentage
Poor	5625000	1389.96	1.46
Moderate	40000000	9884.22	10.41
Good	30125000	6444.05	6.84

**Source: Field Survey,**

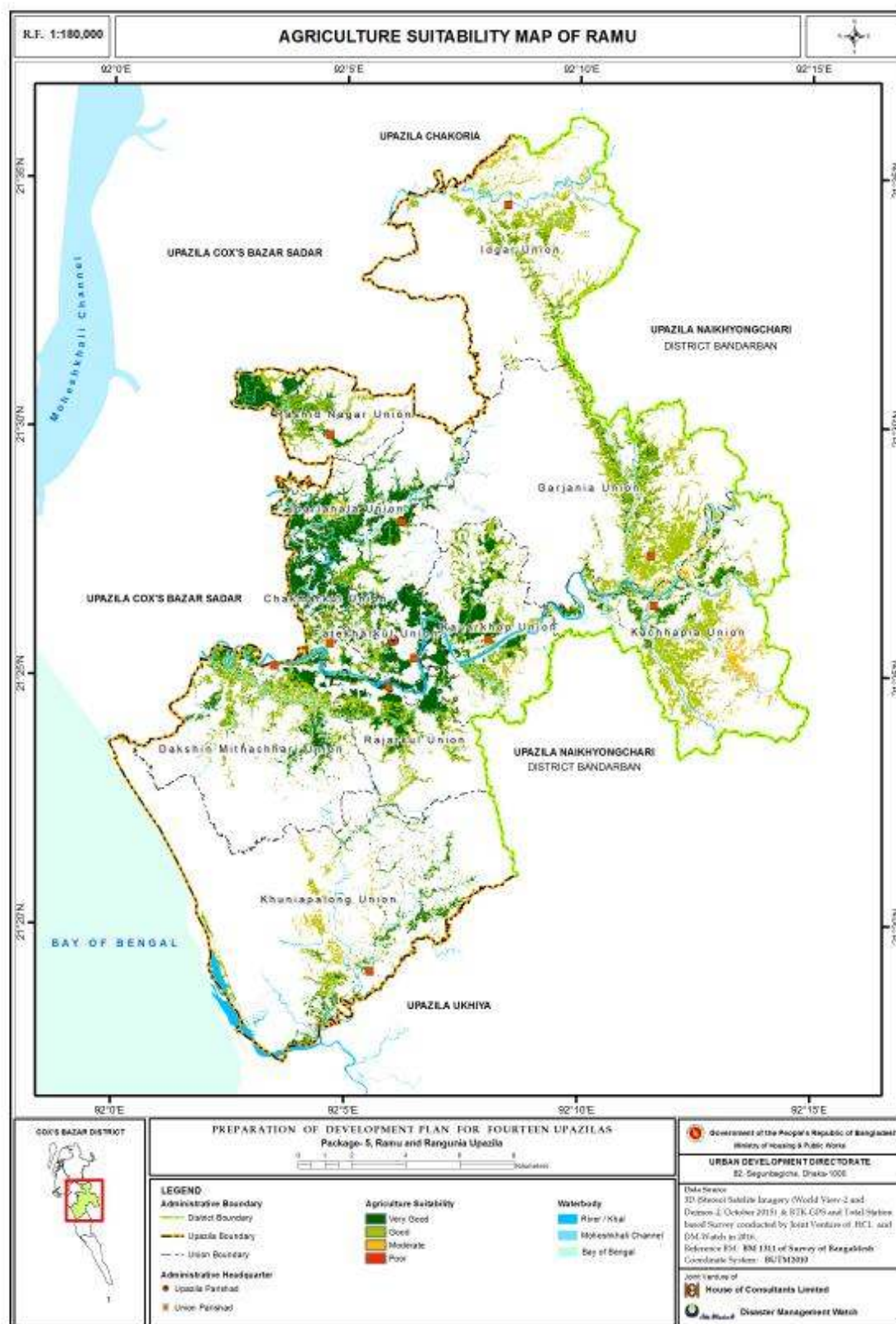
**2016**



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**Source: Prepared by Consultant Team Based on Field Survey, 2016**  
**Map 6.19: Agricultural Suitability of Ramu Upazila**

## Final Plan - Ramu Upazila

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### 6.3.2 Urban Suitability

For the identification of the urban suitable area some criteria has been fixed which are slope less than or equals to 5%, DEM, Geological suitability and major road. In which areas these four criteria has met the consideration those areas are the urban suitable areas. From the analysis it is found that 31.89% Of the project area are urban suitable.

**Table 6.12: Urban Suitability**

Urban Suitability				
Category	Area(sq.m)	Area(sq.km)	Area(Acre)	Percentage
Poor	1650000	1.65	432.43	0.46
Moderate	16650000	16.65	4386.12	4.62
Good	31812500	31.81	6861.04	8.28
Very Good	26865000	26.88	6888.06	6.25

*Source: Field Survey,*

**2016**

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## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

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### 6.3.3 Infrastructure Suitability

In order to identify the area for zoning an analysis has been carried out. For this analysis the criteria are shear wave, PGA and foundation layer. From this analysis most and least suitable areas for infrastructure has been identified which will help for further development.

**Table 6.13: Infrastructure Suitability**

Infrastructure Suitability			
Category	Area (sq. m)	Area (Acre)	Percentage
Very Poor	2562500.00	633.21	0.66
Poor	56500000.00	13961.45	14.60
Moderate	86500000.00	21621.62	22.66
Good	30936500.00	6644.82	8.05

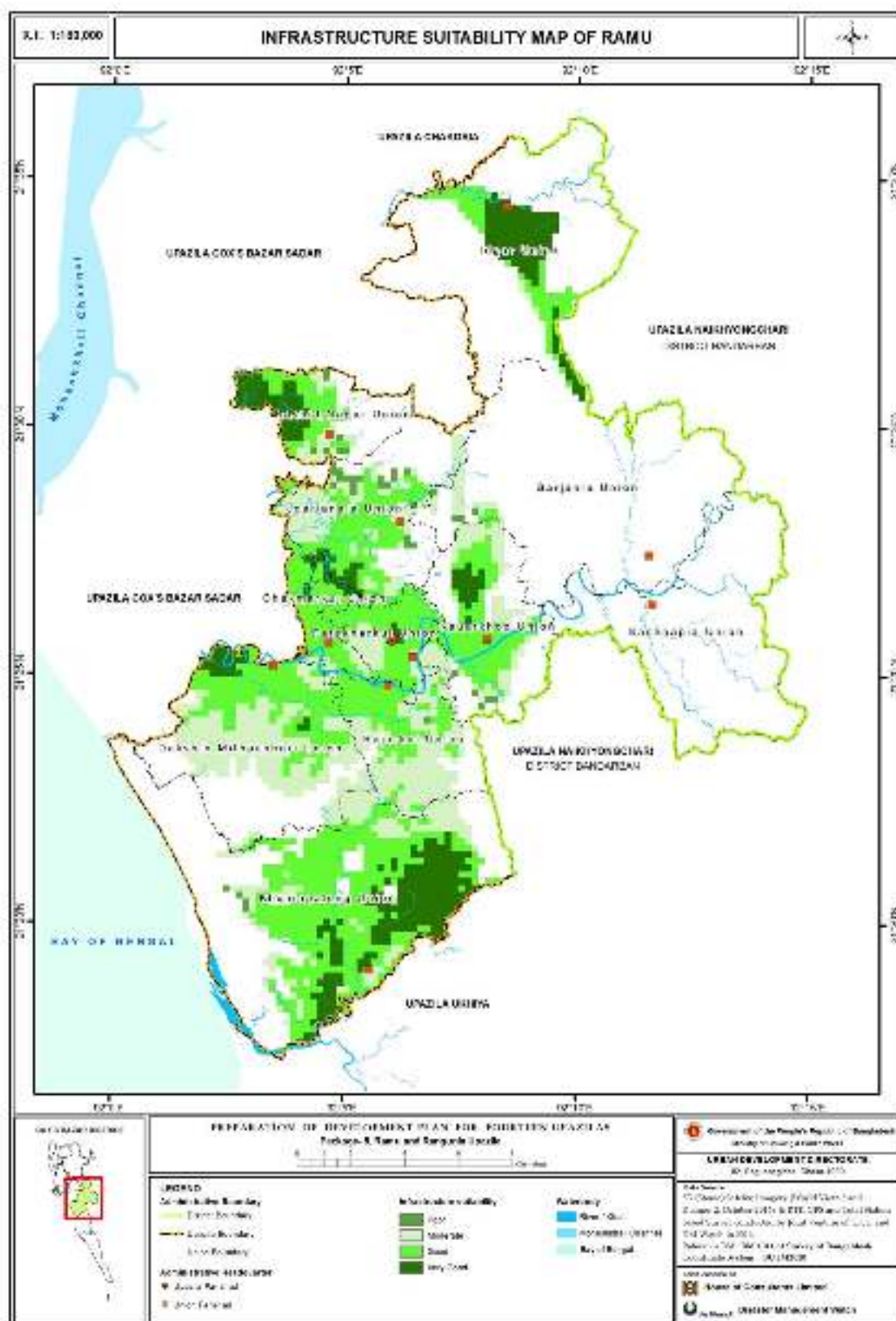
**Source: Field Survey,**

**2016**

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Preparation of Development Plan for Fourteen Upazilas

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Source: Prepared by Consultant Team Based on Field Survey, 2016  
Map 6.21 : Infrastructure Suitability of Ramu Upazila



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### 6.3.4 Undesired Area for Planning

There are some affecting factors to plan the Ramu Upazila Upazila. The factors are slope more than 5%, main flood flow zone and sub-flood flow zone. In these three types of areas development cannot take place. But these areas can be used for other purposes such as agriculture, afforestation, water retention area etc. Any kind of development is prohibited in this 69.61% area which comprises slope more than 5 %, main and Sub-flood flow zone.

**Table 6.14: Consideration of Affecting Factors for Planning**

Consideration of Affecting Factors for Planning				
Factors	Area (sq.m)	Area (sq.km)	Area (Acre)	Percentage
Slope more than 5%	256599100	256.60	63654.12	66.01
Main Flood Flow Zone	4406400	4.41	1088.85	1.15
Sub Flood Flow Zone	5964900	5.96	1466.43	1.55

**Source: Field**

**Survey, 2016**

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**PRIME FLOOD AFFECTED AREA OF RAMU UPAZILA**

Scale: 1:100,000

Map showing the Prime Flood Affected Area of Ramu Upazila, including the Bay of Bengal, Ramu River, and various unions (Uga Union, Baranagar Union, Chakraborty Union, Chakraborty Union, Chakraborty Union, Chakraborty Union, Chakraborty Union, Chakraborty Union, Chakraborty Union, Chakraborty Union, Chakraborty Union, Chakraborty Union, Chakraborty Union, Chakraborty Union, Chakraborty Union).

**LEGEND**

- Administrative Boundary
- Union Boundary
- Water Body
- Prime Flood Affected Area
- High Flood Risk Zone
- Other Features

**PREPARATION OF DEVELOPMENT PLAN FOR FOURTEEN UNIONS**  
 Panchajanya, Baranagar, Chakraborty, Chakraborty, Chakraborty, Chakraborty, Chakraborty, Chakraborty, Chakraborty, Chakraborty, Chakraborty, Chakraborty, Chakraborty, Chakraborty

**GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH**  
 MINISTRY OF PLANNING AND ECONOMIC DEVELOPMENT  
 STATE DEVELOPMENT CORP. LTD.  
 Dhaka, Bangladesh

**PROJECT INFORMATION**  
 Project Title: Preparation of Development Plan for Fourteen Unions  
 Project Location: Ramu Upazila, Barisal District  
 Project Period: 2010-2011  
 Project Budget: Tk. 100.00 Lakhs  
 Project Manager: Mr. [Name]  
 Project Officer: Mr. [Name]

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## Final Plan - Ramu Upazila

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### 6.10 Water Supply Protection Zone

Water supply protection zone comprises river, canal/chara/khal. 50 meter buffer from the edge of the rivers, 3 meter buffer from the chara/khal will be preserved for water supply protection zone.

Due to buffer some structures get affected. The statistics of affected structures are given below in the table (6.16):

**Table 6.15: Water Supply Protection Zone and No. of Affected Structure**

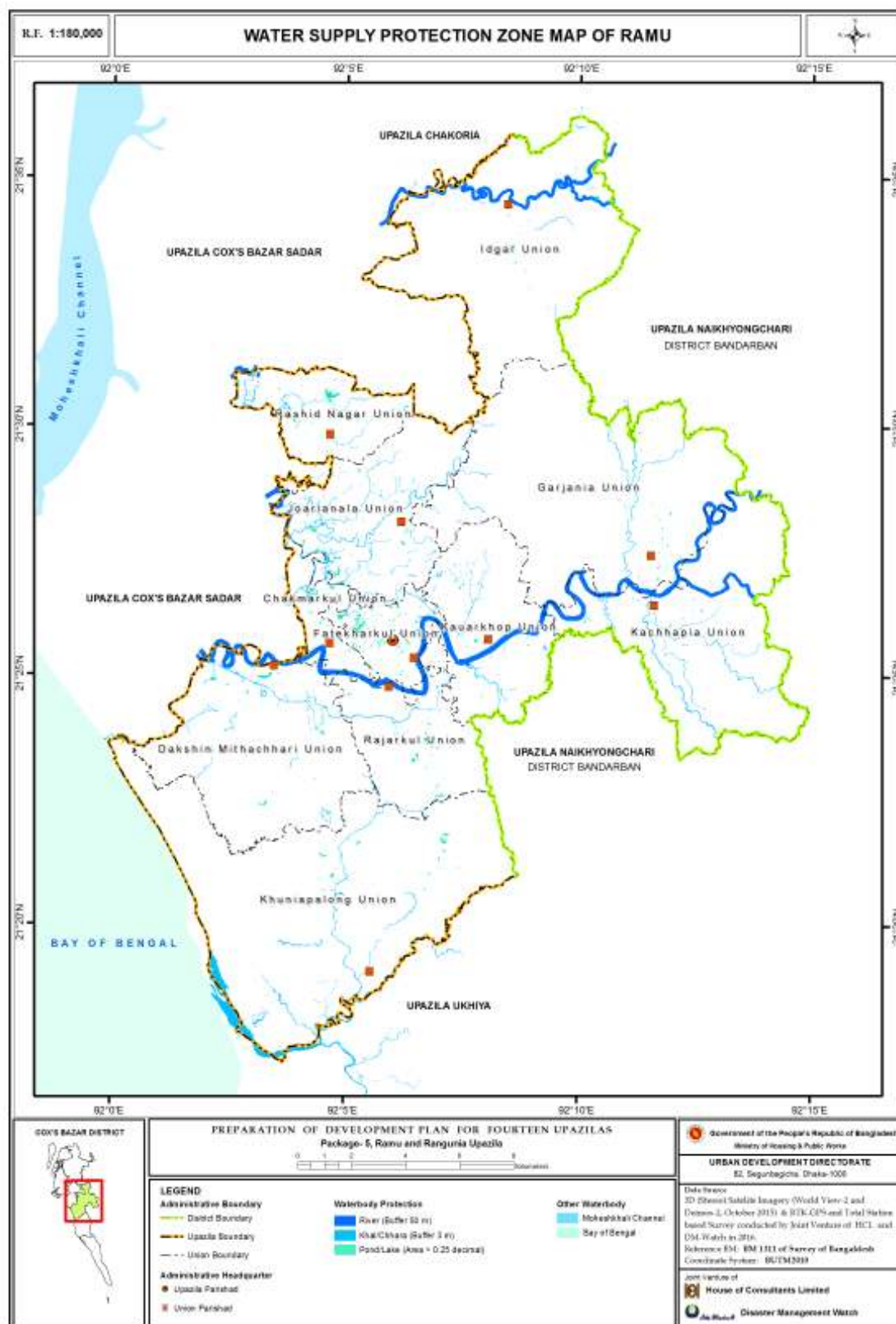
Category	Buffer Width	No. of Affected Structure			
		Pucca	Semi Pucca	Katcha	Total
Bakkhali River	50 meter	68	201	896	1165
Chara/Khal/Canal	3 meter	3	9	52	64
Total Affected Structure		81	210	948	1239

*Source: Field Survey, 2016*

## Final Plan - Ramu Upazila

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**Source: Prepared by Consultant Team Based on Field Survey, 2016**  
**Map 6.24: Water Supply Protection Zone of Ramu Upazila**



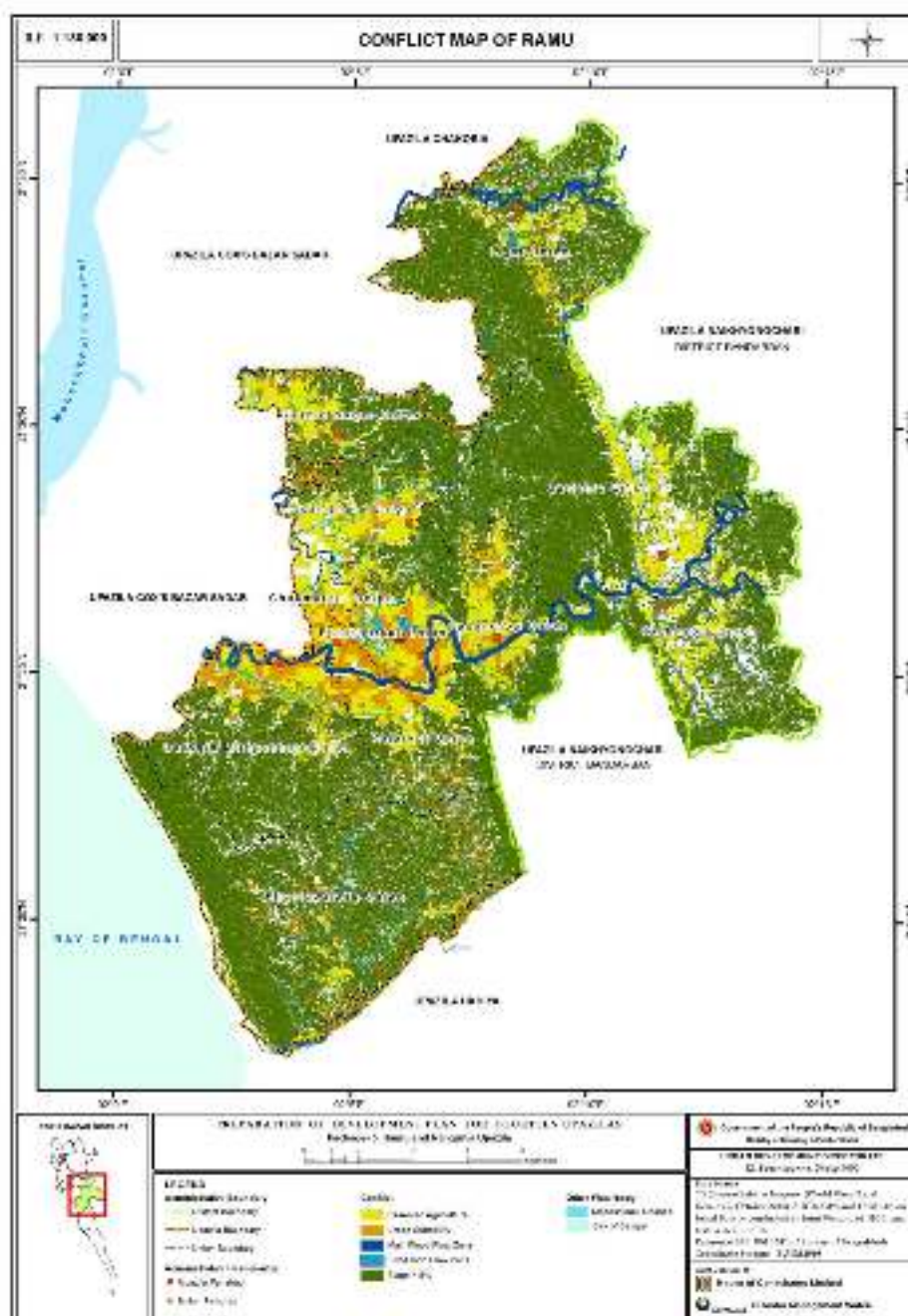
## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

### 6.8 Conflict Map

After the identification of suitable areas a conflict map has derived by compiling agricultural suitable area, urban suitable area and infrastructure suitable area as well as the prime flood affected areas and undesirable area for planning. This conflict map is the base for structure plan preparation of Ramu Upazila which will help for zoning.



Source: Prepared by Consultant Team Based on Field Survey, 2016  
Map 6.25: Conflict Map of Ramu Upazila

## Final Plan - Ramu Upazila

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### 6.3.8 Formulation of Zoning

#### Restricted Special

Any kind of development is prohibited in the hilly areas whose slope is more than 5 %. These areas will be declared as reserved forest. Restricted special zone comprises the reserved forest and the eco-park.

#### Urban Settlement and Rural Settlement

Depending on the urban suitability analysis a future urban settlement zone has been identified. This area will be identified as urban settlement zone. In future this area will be developed as an urban area where different types of development works will take place for the betterment of the project area.

The areas where the density of population is relatively low and located outside the paurashava area are declared as rural settlement. Another significant of these areas is agricultural land.

#### Agriculture

From the agricultural suitability analysis the most suitable area for agriculture has been identified and those areas are declared as agriculture zone.

#### Circulation Network

Depending on the existing roads circulation network has been proposed. The proposed circulation network is divided into primary, secondary and tertiary road. These roads have been proposed in order to save some prime areas of structure plan zoning. These roads serve the major areas of the project area.

#### Main Flood Flow Zone

After the hydrology analysis it is derived that areas where water depth from the surface above 1.8meter or 5.9 feet are declared as main flood flow zone.

#### Sub Flood Flow Zone

After the hydrology analysis it is derived that areas where water depth from the surface 0.9 meter to 1.8meter or 2.9 feet to 5.9 feet are declared as sub flood flow zone.

#### Restricted Military

Restricted military comprises the army cantonment and BGB area.

#### Water Supply Protection Zone

Water supply protection zone comprises river, canal/chara/khal.50 meter buffer from the edge of the rivers, 3 meter buffer from the chara/khal will be preserved for water supply protection zone.

#### Water body

The water bodies which area is more than 0.25 acre are shown in the structure plan.

**Table 6.15: Area Coverage of Structure Plan Zoning**

Zoning	Area in Sq.m	Area in Sq.km	Area in Acre	Percentage
Agriculture Suitability	55810304.49	55.81030449	13791.02658	14.51879505
Existing Circulation Network	2525145.286	2.525145286	623.9769891	0.656904979
Industrial Zone	1392553.141	1.392553141	344.1073752	0.362266321
Main Flood Flow Zone	1865406.824	1.865406824	460.9520648	0.48527704
Proposed Circulation	4640663.122	4.640663122	1146.732831	1.207247252

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Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

Network				
Restricted Special	240812442.8	240.8124428	59506.05054	62.64625384
Restricted Special-Military	7181516.076	7.181516076	1774.591269	1.868238509
Rural Settlement	32872990.2	32.8729902	8123.092783	8.551757811
Sub Flood Flow Zone	4207248.083	4.207248083	1039.633643	1.094496316
Urban Settlement	19261347.54	19.26134754	4759.582632	5.010751328
Water Supply Protection Zone	8049408.127	8.049	1988.951215	2.093910478
Waterbody	5781770.356	5.781770356	1428.706569	1.504101072
Total	384400796	384.4003879	94987.40449	100

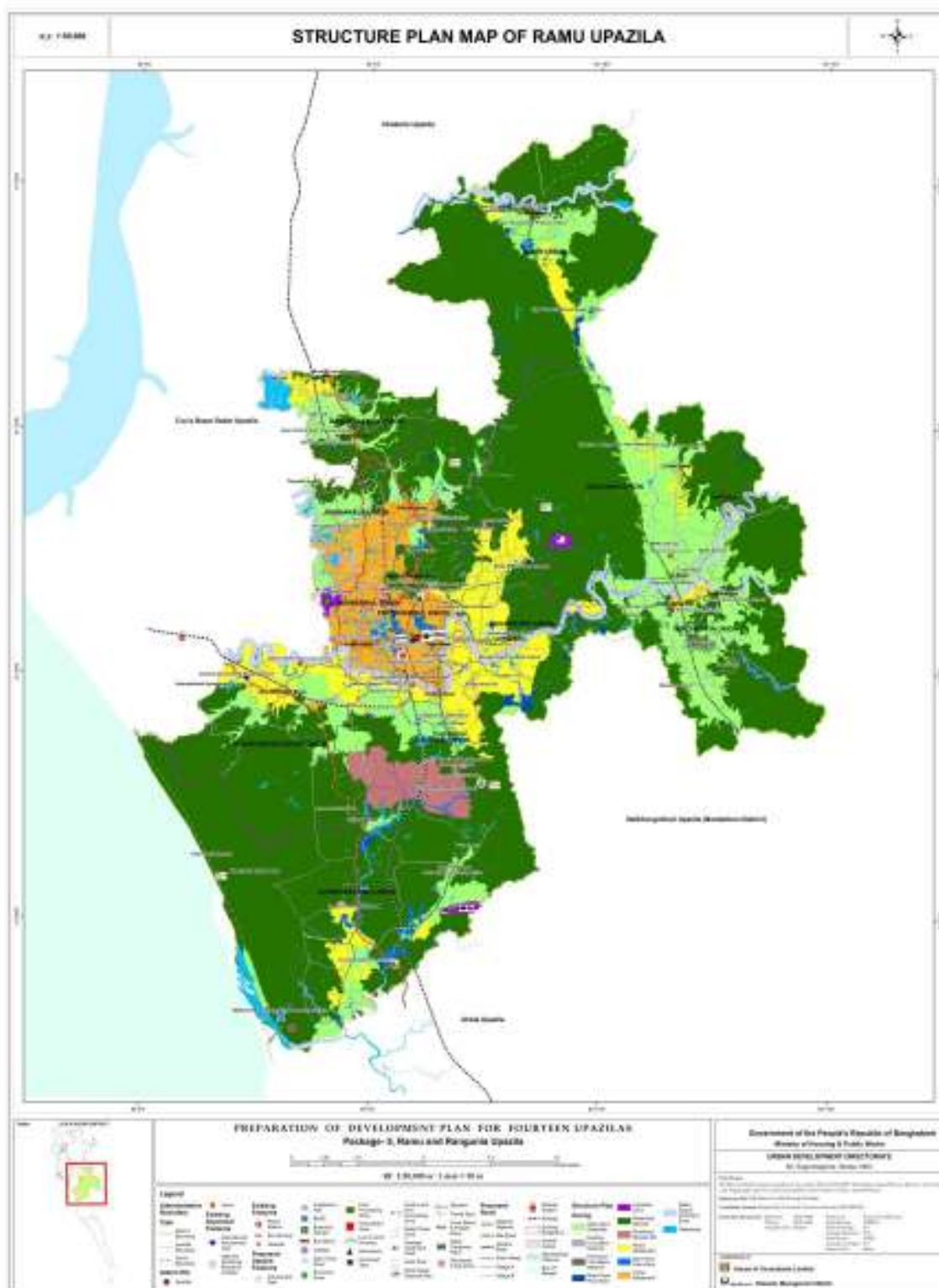
**Source: Field Survey, 2016**



## Final Plan - Ramu Upazila

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**Source: Prepared by Consultant Team Based on Field Survey, 2016**  
**Map 6.25: Structure Plan of Ramu Upazila**

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### 6.4 Demand and Facilities Calculation

#### 6.4.1 Urban Area

Chakmarkul Union-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	6	12	Ward-03 (1);Ward-04(1);Ward-06 (1);Ward-08 (1);Ward-09 (2)
	Secondary/High School	20000	5	1	5	
	College	20000	10	1	10	
Open Space	Play field/ground	20000	3	1	3	
	Neighborhood park/Park	10000	1	3	3	Ward-09 (1)
Health	Health centre/Maternity clinic	5000	1	6	6	Ward-03 (1);Ward-04(1);Ward-06 (1);Ward-08 (1);Ward-09 (2)
Community Facilities	Mosque/ Church/Temple	20000	0.5	1	0.5	
	Eidgah	20000	1	1	1	
	Graveyard	20000	1	1	1	
	Community centre	20000	1	1	1	
	Post office	20000	0.5	1	0.5	
Utilities	Water supply	20000	1	1	1	
	Gas	20000	1	1	1	
	Electric sub-station	20000	1	1	1	
Commerce and Shopping	Wholesale market	20000	1	1	1	
	Retail sale market	20000	1	1	1	
	Corner Shop	2500	0.25	12	3	Ward-01 (1);Ward-02 (1);Ward-03 (2);Ward-04 (1);Ward-05

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Chakmarkul Union-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
						(1);Ward-06 (1);Ward-06 (1);Ward-08 (1);Ward-09 (4);
	Neighborhood Market	10000	1	3	3	Ward-09 (1)
Industry	Small scale	1000	1.5	30	45	Ward-01 (2);Ward-02 (2);Ward-03 (4);Ward-04 (3);Ward-05 (2);Ward-06 (3);Ward-06 (2);Ward-08 (3);Ward-09 (9);
	Heavy Industry	10000	5	3	15	Ward-09 (1)
Transportation	Bus terminal	20000	1	1	1	
	Truck terminal	20000	0.5	1	0.5	

### Fatekharkul Union-Proposed Facilities

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Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
<b>Education</b>	Primary School/ kindergarten	5000	2	12	24	Ward-02(1); Ward-03 (1); Ward-04 (2); Ward-05 (1); Ward-06 (2); Ward-06 (2); Ward-08 (1); Ward-09 (1)
	Secondary/ High School	20000	5	3	15	Ward-04 (1)
	College	20000	10	3	30	Ward-04 (1)
<b>Open Space</b>	Play field/ground	20000	3	3	9	Ward-04 (1)
	Neighborhood park/Park	10000	1	6	6	Ward-04(1); Ward-05 (1); Ward-06 (1); Ward-06 (1); Ward-08 (2); Ward-09 (1)
<b>Health</b>	Health centre/Maternity clinic	5000	1	12	12	Ward-02(1); Ward-03 (1); Ward-04 (2); Ward-05 (1); Ward-06 (2); Ward-06 (2); Ward-08 (1); Ward-09 (1)
<b>Community Facilities</b>	Mosque/Church/Temple	20000	0.5	3	1.5	Ward-04 (1)
	Eidgah	20000	1	3	3	Ward-04 (1)
	Graveyard	20000	1	3	3	Ward-04 (1)
	Community centre	20000	1	3	3	Ward-04 (1)
	Post office	20000	0.5	3	1.5	Ward-04 (1)
<b>Utilities</b>	Water supply	20000	1	3	3	Ward-04 (1)
	Gas	20000	1	3	3	Ward-04 (1)
	Electric sub-station	20000	1	3	3	Ward-04 (1)

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Fatekharkul Union-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
<b>Commerce and Shopping</b>	Wholesale market	20000	1	3	3	Ward-04 (1)
	Retail sale market	20000	1	3	3	Ward-04 (1)
	Corner Shop	2500	0.25	23	5.65	Ward-01(1);Ward-02 (2);Ward-03 (1);Ward-04 (5);Ward-05 (3);Ward-06 (3);Ward-06 (4);Ward-08 (2);Ward-09 (3);
	Neighborhood Market	10000	1	6	6	Ward-04(1);Ward-05 (1);Ward-06 (1);Ward-06 (1);Ward-08 (2);Ward-09 (1)
<b>Industry</b>	Small scale	1000	1.5	58	86	Ward-01 (2);Ward-02 (5);Ward-03 (3);Ward-04 (11);Ward-05 (6);Ward-06 (9);Ward-06 (9);Ward-08 (6);Ward-09 (6)
	Heavy Industry	10000	5	6	30	Ward-04(1);Ward-05 (1);Ward-06 (1);Ward-06 (1);Ward-08 (2);Ward-09 (1)
<b>Transportation</b>	Bus terminal	20000	1	3	3	Ward-04 (1)
	Truck terminal	20000	0.5	3	1.5	Ward-04 (1)

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### 6.4.2 Rural Area

Khuniapalong Union-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
<b>Education</b>	Primary School/ kindergarten	5000	2	13	26	Ward-01 (1);Ward-02 (5);Ward-04 (1);Ward-05 (1);Ward-08(4)
	Secondary/ High School	20000	5	3	15	Ward-02 (1),Ward-08 (1)
	College	20000	10	3	30	Ward-02 (1),Ward-08 (1)
<b>Open Space</b>	Play field/ground	20000	3	3	9	Ward-02 (1),Ward-08 (1)
	Neighborhood park/Park	10000	1	6	6	Ward-02(3);Ward-08(2)
<b>Health</b>	Health centre/Maternity clinic	5000	1	13	13	Ward-04 (1);Ward-03 (1);Ward-02 (1);Ward-06 (1);Ward-09 (1)
<b>Community Facilities</b>	Mosque/Church/Temple	20000	0.5	3	1.5	Ward-02 (1),Ward-08 (1)
	Eidgah	20000	1	3	3	Ward-02 (1),Ward-08 (1)
	Graveyard	20000	1	3	3	Ward-02 (1),Ward-08 (1)
	Community centre	20000	1	3	3	Ward-02 (1),Ward-08 (1)
	Post office	20000	0.5	3	1.5	Ward-02 (1),Ward-08 (1)
<b>Utilities</b>	Water supply	20000	1	3	3	Ward-02 (1),Ward-08 (1)
	Gas	20000	1	3	3	Ward-02 (1),Ward-08 (1)
	Electric sub-station	20000	1	3	3	Ward-02 (1),Ward-08 (1)

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Khuniapalong Union-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
<b>Commerce and Shopping</b>	Wholesale market	20000	1	3	3	Ward-02 (1), Ward-08 (1)
	Retail sale market	20000	1	3	3	Ward-02 (1), Ward-08 (1)
	Corner Shop	2500	0.25	26	6.5	Ward-01(1); Ward-02 (11); Ward-03 (1); Ward-04 (2); Ward-05 (1); Ward-06 (1); Ward-08 (8); Ward-09 (1)
	Neighborhood Market	10000	1	6	6	Ward-02(3); Ward-08(2)
<b>Industry</b>	Small scale	1000	1.5	66	99	Ward-01(3); Ward-02 (26); Ward-03 (2); Ward-04 (4); Ward-05 (3); Ward-06 (1); Ward-06 (2); Ward-08 (21); Ward-09 (2);
	Heavy Industry	10000	5	6	35	Ward-02(3); Ward-08(2)
<b>Transportation</b>	Bus terminal	20000	1	3	3	Ward-02 (1), Ward-08 (1)
	Truck terminal	20000	0.5	3	1.5	Ward-02 (1), Ward-08 (1)

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Dakshin Mithachhari Union-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
<b>Education</b>	Primary School/ kindergarten	5000	2	9	18	Ward-01(1);Ward-02 (3);Ward-03(1);Ward-04 (1);Ward-06 (1);Ward-06 (1)
	Secondary/ High School	20000	5	2	10	Ward-02 (1)
	College	20000	10	2	20	Ward-02 (1)
<b>Open Space</b>	Play field/ground	20000	3	2	6	Ward-02 (1)
	Neighborhood park/Park	10000	1	5	5	Ward-01 (1);Ward-02 (1);Ward-04 (1);Ward-06 (1)
<b>Health</b>	Health centre/Maternity clinic	5000	1	9	9	Ward-01(1);Ward-02 (3);Ward-03(1);Ward-04 (1);Ward-06 (1);Ward-06 (1)
<b>Community Facilities</b>	Mosque/Church/Temple	20000	0.5	2	1	Ward-02 (1)
	Eidgah	20000	1	2	2	Ward-02 (1)
	Graveyard	20000	1	2	2	Ward-02 (1)
	Community centre	20000	1	2	2	Ward-02 (1)
	Post office	20000	0.5	2	1	Ward-02 (1)
<b>Utilities</b>	Water supply	20000	1	2	2	Ward-02 (1)
	Gas	20000	1	2	2	Ward-02 (1)
	Electric sub-station	20000	1	2	2	Ward-02 (1)
<b>Commerce and Shopping</b>	Wholesale market	20000	1	2	2	Ward-02 (1)



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Dakshin Mithachhari Union-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
	Retail sale market	20000	1	2	2	Ward-02 (1)
	Corner Shop	2500	0.25	19	4.65	Ward-01 (3);Ward-02 (6);Ward-03 (2);Ward-04 (3);Ward-05 (1);Ward-06 (1);Ward-06 (2);Ward-08 (1)
	Neighborhood Market	10000	1	5	5	Ward-01 (1);Ward-02 (1);Ward-04 (1);Ward-06 (1)
Industry	Small scale	1000	1.5	46	60.5	Ward-01 (9);Ward-02 (14);Ward-03 (4);Ward-04 (6);Ward-05 (2);Ward-06 (3);Ward-06 (6);Ward-08 (2)
	Heavy Industry	10000	5	5	25	Ward-01 (1);Ward-02 (1);Ward-04 (1);Ward-06 (1)
Transportation	Bus terminal	20000	1	2	2	Ward-02 (1)
	Truck terminal	20000	0.5	2	1	Ward-02 (1)

Kauarkhop Union-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)

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Kauarkhop Union-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	9	18	Ward-02(1);Ward-03 (1);Ward-04(1);Ward-05 (1);Ward-05 (1);Ward-06(1);Ward-08 (2);Ward-09 (1);
	Secondary/ High School	20000	5	2	10	Ward-08 (1)
	College	20000	10	2	20	Ward-08 (1)
Open Space	Play field/ground	20000	3	2	6	Ward-08 (1)
	Neighborhood park/Park	10000	1	4	4	Ward-02 (1);Ward-03 (1);Ward-04 (1);Ward-06 (1);Ward-08 (1)
Health	Health centre/Maternity clinic	5000	1	9	9	Ward-02(1);Ward-03 (1);Ward-04(1);Ward-05 (1);Ward-05 (1);Ward-06(1);Ward-08 (2);Ward-09 (1);
Community Facilities	Mosque/Church/Temple	20000	0.5	2	1	Ward-08 (1)
	Eidgah	20000	1	2	2	Ward-08 (1)
	Graveyard	20000	1	2	2	Ward-08 (1)
	Community centre	20000	1	2	2	Ward-08 (1)
	Post office	20000	0.5	2	1	Ward-08 (1)
Utilities	Water supply	20000	1	2	2	Ward-08 (1)
	Gas	20000	1	2	2	Ward-08 (1)
	Electric sub-station	20000	1	2	2	Ward-08 (1)
Commerce and Shopping	Wholesale market	20000	1	2	2	Ward-08 (1)
	Retail sale market	20000	1	2	2	Ward-08 (1)
	Corner Shop	2500	0.25	16	4.25	Ward-01(1);Ward-02 (2);Ward-03 (2);Ward-04 (3);Ward-05 (1);Ward-06 (3);Ward-

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Kauarkhop Union-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
						08(4);Ward-09 (1);
	Neighborhood Market	10000	1	4	4	Ward-02 (1);Ward-03 (1);Ward-04 (1);Ward-06 (1);Ward-08 (1)
Industry	Small scale	1000	1.5	43	64.5	Ward-01 (2);Ward-02 (5);Ward-03 (5);Ward-04 (6);Ward-05 (3);Ward-06(1);Ward-06 (6);Ward-08 (11);Ward-09 (3)
	Heavy Industry	10000	5	4	20	Ward-02 (1);Ward-03 (1);Ward-04 (1);Ward-06 (1);Ward-08 (1)
Transportation	Bus terminal	20000	1	2	2	Ward-08 (1)
	Truck terminal	20000	0.5	2	1	Ward-08 (1)

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Garjania Union-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	8	16	Ward-01 (1); Ward-03 (2); Ward-04 (1); Ward-05 (1); Ward-08 (2); Ward-09 (1)
	Secondary/ High School	20000	5	2	10	Ward-08 (1)
	College	20000	10	2	20	Ward-08 (1)
Open Space	Play field/ground	20000	3	2	6	Ward-08 (1)
	Neighborhood park/Park	10000	1	4	4	Ward-03(1); Ward-08 (1); Ward-09 (1);
Health	Health centre/Maternity clinic	5000	1	8	8	Ward-01 (1); Ward-03 (2); Ward-04 (1); Ward-05 (1); Ward-08 (2); Ward-09 (1)
Community Facilities	Mosque/Church/Temple	20000	0.5	2	1	Ward-08 (1)
	Eidgah	20000	1	2	2	Ward-08 (1)
	Graveyard	20000	1	2	2	Ward-08 (1)
	Community centre	20000	1	2	2	Ward-08 (1)
	Post office	20000	0.5	2	1	Ward-08 (1)
Utilities	Water supply	20000	1	2	2	Ward-08 (1)
	Gas	20000	1	2	2	Ward-08 (1)
	Electric sub-station	20000	1	2	2	Ward-08 (1)
Commerce and Shopping	Wholesale market	20000	1	2	2	Ward-08 (1)
	Retail sale market	20000	1	2	2	Ward-08 (1)
	Corner Shop	2500	0.25	16	4	Ward-01(2); Ward-02 (1); Ward-03 (3); Ward-04 (2); Ward-05(2); Ward-06 (1); Ward-08(5); Ward-09(2);
	Neighborhood	10000	1	4	4	Ward-

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Garjania Union-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
	od Market					03(1);Ward-08 (1);Ward-09 (1);
Industry	Small scale	1000	1.5	41	61.5	Ward-01 (4);Ward-02 (1);Ward-03 (6);Ward-04 (4);Ward-05 (5);Ward-06(2);Ward-08 (12);Ward-09 (6);
	Heavy Industry	10000	5	4	20	Ward-03(1);Ward-08 (1);Ward-09 (1);
Transportation	Bus terminal	20000	1	2	2	Ward-08 (1)
	Truck terminal	20000	0.5	2	1	Ward-08 (1)

### Idgar Union Proposed Facilities

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Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
<b>Education</b>	Primary School/ kindergarten	5000	2	6	14	Ward-02 (2); Ward-05(1); Ward-06 (2)
	Secondary/High School	20000	5	2	10	Ward-02 (1)
	College	20000	10	2	20	Ward-02 (1)
<b>Open Space</b>	Play field/ground	20000	3	2	6	Ward-02 (1)
	Neighborhood park/Park	10000	1	3	3	Ward-02 (1); Ward-05 (1); Ward-06 (1)
<b>Health</b>	Health centre/Maternity clinic	5000	1	6	6	Ward-02 (2); Ward-05(1); Ward-06 (2)
<b>Community Facilities</b>	Mosque/Church/Temple	20000	0.5	2	1	Ward-02 (1)
	Eidgah	20000	1	2	2	Ward-02 (1)
	Graveyard	20000	1	2	2	Ward-02 (1)
	Community centre	20000	1	2	2	Ward-02 (1)
	Post office	20000	0.5	2	1	Ward-02 (1)
<b>Utilities</b>	Water supply	20000	1	2	2	Ward-02 (1)
	Gas	20000	1	2	2	Ward-02 (1)
	Electric sub-station	20000	1	2	2	Ward-02 (1)
<b>Commerce and Shopping</b>	Wholesale market	20000	1	2	2	Ward-02 (1)
	Retail sale market	20000	1	2	2	Ward-02 (1)
	Corner Shop	2500	0.25	13	3.25	Ward-01 (1); Ward-02(5); Ward-05(2); Ward-06 (3); Ward-08(1); Ward-09 (1)
	Neighborhood	10000	1	3	3	Ward-02

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	Market					(1);Ward-05 (1);Ward-06 (1)
<b>Industry</b>	Small scale	1000	1.5	33	49.5	Ward-01 (2);Ward-02 (12);Ward - 03(1);Ward-05 (5);Ward-06 (8);Ward-08 (2);Ward-09 (2)
	Heavy Industry	10000	5	3	15	Ward-02 (1);Ward-05 (1);Ward-06 (1)
<b>Transportation</b>	Bus terminal	20000	1	2	2	Ward-02 (1)
	Truck terminal	20000	0.5	2	1	Ward-02 (1)

Joarianala Union-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
<b>Education</b>	Primary School/ kindergarten	5000	2	14	28	Ward-01 (2);Ward-02 (1);Ward-06 (2);Ward-06(3);Ward-09(6);
	Secondary/High School	20000	5	4	20	Ward-06(1);Ward-09(1);
	College	20000	10	4	40	Ward-06(1);Ward-09(1);
<b>Open Space</b>	Play field/ground	20000	3	4	12	Ward-06(1);Ward-09(1);
	Neighborhood park/Park	10000	1	6	6	Ward-01(1);Ward-02(1);Ward-06(1);Ward-06(1);Ward-09(3);

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Joarianala Union-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Health	Health centre/Maternity clinic	5000	1	14	14	Ward-01 (2);Ward-02 (1);Ward-06 (2);Ward-06(3);Ward-09(6);
Community Facilities	Mosque/Church/Temple	20000	0.5	4	2	Ward-06(1);Ward-09(1);
	Eidgah	20000	1	4	4	Ward-06(1);Ward-09(1);
	Graveyard	20000	1	4	4	Ward-06(1);Ward-09(1);
	Community centre	20000	1	4	4	Ward-06(1);Ward-09(1);
	Post office	20000	0.5	4	2	Ward-06(1);Ward-09(1);
Utilities	Water supply	20000	1	4	4	Ward-06(1);Ward-09(1);
	Gas	20000	1	4	4	Ward-06(1);Ward-09(1);
	Electric sub-station	20000	1	4	4	Ward-06(1);Ward-09(1);
Commerce and Shopping	Wholesale market	20000	1	4	4	Ward-06(1);Ward-09(1);
	Retail sale market	20000	1	4	4	Ward-06(1);Ward-09(1);
	Corner Shop	2500	0.25	28	6	Ward-01(4);Ward-02 (3);Ward-06 (4);Ward-06 (5);Ward-08 (1);Ward-09 (12)
	Neighborhood Market	10000	1	6	6	Ward-01(1);Ward-02(1);Ward-06(1);Ward-06(1);Ward-09(3);
Industry	Small scale	1000	1.5	60	105	Ward-01 (10);Ward-02



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Joarianala Union-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
						(6);Ward-05 (1);Ward-06 (10);Ward-06 (13);Ward-08(1);Ward-09(29);
	Heavy Industry	10000	5	6	35	Ward-01(1);Ward-02(1);Ward-06(1);Ward-06(1);Ward-09(3);
Transportation	Bus terminal	20000	1	4	4	Ward-06(1);Ward-09(1);
	Truck terminal	20000	0.5	4	2	Ward-06(1);Ward-09(1);

Kachapia Union-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)

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Kachapia Union-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
<b>Education</b>	Primary School/ kindergarten	5000	2	10	20	Ward-02(4);Ward-03 (1);Ward-05(1);Ward-08 (1);Ward-09 (4);
	Secondary/ High School	20000	5	3	15	Ward-02(1);Ward-09 (1)
	College	20000	10	3	30	Ward-02(1);Ward-09 (1)
<b>Open Space</b>	Play field/ground	20000	3	3	9	Ward-02(1);Ward-09 (1)
	Neighborhood park/Park	10000	1	5	5	Ward-09(2);Ward-02 (2)
<b>Health</b>	Health centre/Maternity clinic	5000	1	10	10	Ward-02(4);Ward-03 (1);Ward-05(1);Ward-08 (1);Ward-09 (4);
<b>Community Facilities</b>	Mosque/Church/Temple	20000	0.5	3	1.5	Ward-02(1);Ward-09 (1)
	Eidgah	20000	1	3	3	Ward-02(1);Ward-09 (1)
	Graveyard	20000	1	3	3	Ward-02(1);Ward-09 (1)
	Community centre	20000	1	3	3	Ward-02(1);Ward-09 (1)
	Post office	20000	0.5	3	1.5	Ward-02(1);Ward-09 (1)
<b>Utilities</b>	Water supply	20000	1	3	3	Ward-02(1);Ward-09 (1)
	Gas	20000	1	3	3	Ward-02(1);Ward-09 (1)

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Kachapia Union-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
	Electric sub-station	20000	1	3	3	Ward-02(1);Ward-09(1)
<b>Commerce and Shopping</b>	Wholesale market	20000	1	3	3	Ward-02(1);Ward-09(1)
	Retail sale market	20000	1	3	3	Ward-02(1);Ward-09(1)
	Corner Shop	2500	0.25	20	5	Ward-01(1);Ward-02(6);Ward-03(1);Ward-05(1);Ward-08(2);Ward-09(6)
	Neighborhood Market	10000	1	5	5	Ward-09(2);Ward-02(2)
<b>Industry</b>	Small scale	1000	1.5	51	66.5	Ward-01(2);Ward-02(19);Ward-03(4);Ward-05(3);Ward-06(1);Ward-08(5);Ward-09(18)
	Heavy Industry	10000	5	5	25	Ward-09(2);Ward-02(2)
<b>Transportation</b>	Bus terminal	20000	1	3	3	Ward-02(1);Ward-09(1)
	Truck terminal	20000	0.5	3	1.5	Ward-02(1);Ward-09(1)

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Kauarkhop Union-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
<b>Education</b>	Primary School/ kindergarten	5000	2	9	18	Ward-02(1);Ward-03 (1);Ward-04(1);Ward-05 (1);Ward-05 (1);Ward-06(1);Ward-08 (2);Ward-09 (1);
	Secondary/ High School	20000	5	2	10	Ward-08 (1)
	College	20000	10	2	20	Ward-08 (1)
<b>Open Space</b>	Play field/ground	20000	3	2	6	Ward-08 (1)
	Neighborhood park/Park	10000	1	4	4	Ward-02 (1);Ward-03 (1);Ward-04 (1);Ward-06 (1);Ward-08 (1)
<b>Health</b>	Health centre/Maternity clinic	5000	1	9	9	Ward-02(1);Ward-03 (1);Ward-04(1);Ward-05 (1);Ward-05 (1);Ward-06(1);Ward-08 (2);Ward-09 (1);
<b>Community Facilities</b>	Mosque/Church/Temple	20000	0.5	2	1	Ward-08 (1)
	Eidgah	20000	1	2	2	Ward-08 (1)
	Graveyard	20000	1	2	2	Ward-08 (1)
	Community centre	20000	1	2	2	Ward-08 (1)
	Post office	20000	0.5	2	1	Ward-08 (1)
<b>Utilities</b>	Water supply	20000	1	2	2	Ward-08 (1)
	Gas	20000	1	2	2	Ward-08 (1)
	Electric sub-station	20000	1	2	2	Ward-08 (1)
<b>Commerce and Shopping</b>	Wholesale market	20000	1	2	2	Ward-08 (1)
	Retail sale market	20000	1	2	2	Ward-08 (1)
	Corner Shop	2500	0.25	16	4.25	Ward-01(1);Ward-02 (2);Ward-03 (2);Ward-04 (3);Ward-05 (1);Ward-06 (3);Ward-

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Kauarkhop Union-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
						08(4);Ward-09 (1);
	Neighborhood Market	10000	1	4	4	Ward-02 (1);Ward-03 (1);Ward-04 (1);Ward-06 (1);Ward-08 (1)
Industry	Small scale	1000	1.5	43	64.5	Ward-01 (2);Ward-02 (5);Ward-03 (5);Ward-04 (6);Ward-05 (3);Ward-06(1);Ward-06 (6);Ward-08 (11);Ward-09 (3)
	Heavy Industry	10000	5	4	20	Ward-02 (1);Ward-03 (1);Ward-04 (1);Ward-06 (1);Ward-08 (1)
Transportation	Bus terminal	20000	1	2	2	Ward-08 (1)
	Truck terminal	20000	0.5	2	1	Ward-08 (1)

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Rashid Nagar Union Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	6	12	Ward-01 (1); Ward-02 (1); Ward-08 (1); Ward-09 (2)
	Secondary/High School	20000	5	1	5	
	College	20000	10	1	10	
Open Space	Play field/ground	20000	3	1	3	
	Neighborhood park/Park	10000	1	3	3	Ward-02(1); Ward-08 (1); Ward-09(1)
Health	Health centre/Maternity clinic	5000	1	6	6	Ward-01 (1); Ward-02 (1); Ward-08 (1); Ward-09 (2)
Community Facilities	Mosque/Church/Temple	20000	0.5	1	0.5	
	Eidgah	20000	1	1	1	
	Graveyard	20000	1	1	1	
	Community centre	20000	1	1	1	
	Post office	20000	0.5	1	0.5	
Utilities	Water supply	20000	1	1	1	
	Gas	20000	1	1	1	
	Electric sub-station	20000	1	1	1	
Commerce and Shopping	Wholesale market	20000	1	1	1	
	Retail sale market	20000	1	1	1	
	Corner Shop	2500	0.25	12	3	Ward-01 (1); Ward-02 (3); Ward-03 (1); Ward-06 (1); Ward-08 (3); Ward-09 (3)
	Neighborhood Market	10000	1	3	3	Ward-02(1); Ward-08 (1); Ward-09(1)
Industry	Small scale	1000	1.5	30	45	Ward-01 (3); Ward-02 (6); Ward-03 (2); Ward-06(1); Ward-08 (6); Ward-09 (9)
	Heavy Industry	10000	5	3	15	Ward-02(1); Ward-08 (1);

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Rashid Nagar Union Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
						Ward-09(1)
Transportation	Bus terminal	20000	1	1	1	
	Truck terminal	20000	0.5	1	0.5	

Rajarkul Union-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	6	14	Ward-01 (2);Ward-02 (2);Ward-06 (1);Ward-09(1);
	Secondary/ High School	20000	5	2	10	Ward-02(1)
	College	20000	10	2	20	Ward-02(1)
Open Space	Play field/ground	20000	3	2	6	Ward-02(1)
	Neighborhood park/Park	10000	1	4	4	Ward-01 (1);Ward-02 (1);Ward-06(1);Ward-09 (1)
Health	Health centre/Maternity clinic	5000	1	6	6	Ward-01 (2);Ward-02 (2);Ward-06 (1);Ward-09(1);
Community Facilities	Mosque/Church/Temple	20000	0.5	2	1	Ward-02(1)
	Eidgah	20000	1	2	2	Ward-02(1)
	Graveyard	20000	1	2	2	Ward-02(1)
	Community centre	20000	1	2	2	Ward-02(1)
	Post office	20000	0.5	2	1	Ward-02(1)
Utilities	Water supply	20000	1	2	2	Ward-02(1)
	Gas	20000	1	2	2	Ward-02(1)
	Electric sub-station	20000	1	2	2	Ward-02(1)
Commerce and Shopping	Wholesale market	20000	1	2	2	Ward-02(1)
	Retail sale market	20000	1	2	2	Ward-02(1)
	Corner	2500	0.25	15	3.65	Ward-

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Rajarkul Union-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
	Shop					01(3);Ward-02 (5);Ward-04 (1);Ward-06 (3);Ward-06 (3);Ward-09 (2)
	Neighborhood Market	10000	1	4	4	Ward-01 (1);Ward-02 (1);Ward-06(1);Ward-09 (1)
Industry	Small scale	1000	1.5	36	54	Ward-01 (8);Ward-02 (12);Ward-04(1);Ward-06 (1);Ward-06 (6);Ward-08 (1);Ward-09(6);
	Heavy Industry	10000	5	4	20	Ward-01 (1);Ward-02 (1);Ward-06(1);Ward-09 (1)
Transportation	Bus terminal	20000	1	2	2	Ward-02(1)
	Truck terminal	20000	0.5	2	1	Ward-02(1)



### 6.5 Scenario Analysis

Ramu upazila is surrounded by hills. Landslide is a burning phenomenon nowadays. upazila. Scenario analysis on landslide and building vulnerability assessment has been conducted.

#### 6.5.1 Landslide Analysis

##### 6.5.1.1 Introduction

Landslide is a common phenomenon especially in hilly region. It happened in the many hilly areas of the different countries. Many researchers are involved to find out the reasons of the hill slope landslide. Hundreds of people were died in the different countries over the long tenure due to hill slope landslide where habitation exist. Generally, it is caused due to geological, morphological, physical reasons and human intervention. Hill slope landslide due to only human intervention could be minimized by providing appropriate measure based on the topography, hydro-geology and nature of human intervention. Hill slopes are normally steep that are not suitable for habitation especially if they are formed by fine silt-mica or similar nature of soil. Hills are naturally formed and act as an anchor of the earth through balancing the weight of the earth. Therefore, human interventions and habitation tendency should be kept as minimum considering soil properties of the hilly areas.

##### 6.5.1.2 Objectives of the Study

A Consulting team were visited the hill landslide affected area to observe the real phenomenon, pattern and behavior of failure. The objectives of the study were as below:

- a. to identify the reason, nature of landslide,
- b. assessment of extent of damage, and
- c. to develop a policy for urbanization near the hill side.

##### 6.5.1.3 Causes of Failure of Hill Slope

The **causes of landslides** of hill slopes are usually related to instabilities in slopes. It is usually possible to identify one or more landslide causes and one landslide trigger. The difference between these two concepts is subtle but important. The landslide causes are the reasons that a landslide occurred in that location and at that time climate condition. Landslide causes are based on geological factors, morphological factors, physical factors and factors associated with human activity. Causes may be considered to be factors that made the slope vulnerable to failure, that predispose the slope to becoming unstable. The trigger is the single event that finally initiated the landslide. Thus, causes combine to make a slope vulnerable to failure, and the trigger finally initiates the movement. Landslides can have many causes but can only have one trigger as shown in the next figure. Usually, it is relatively easy to determine the trigger after the landslide has occurred. Although it is generally very difficult to determine the exact nature of landslide triggers ahead of a movement event. The trigger was in fact a slow but steady decrease in material strength associated with the weather. At some point the material becomes so weak that failure must occur. Hence the trigger is the weathering process, but this is not detectable externally. In most cases, it is apprehended that a trigger as an external stimulus that induces an immediate or near-immediate response in the slope, in this case in the form of the movement of the landslide. Generally this movement is induced either by the altered stresses in the slope, perhaps by increasing shear stress or decreasing the effective normal stress or by reducing the resistance to the movement perhaps by decreasing the shear strength of the materials within the hill slope.

The factors are induced in the hill side landslide failure caused in Ramu and Rangunia are as below:

#### a. Physical causes:

- i) Topography:
  - Slope aspects and gradient

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- Discontinuity factors

### ii) Hydrogeological Factors:

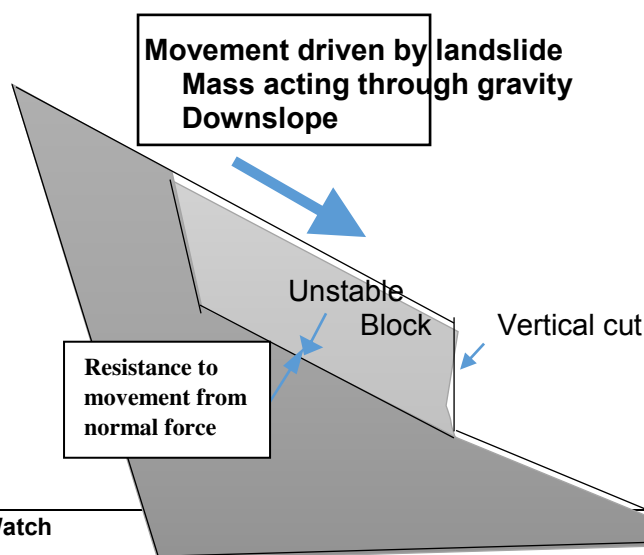
- Intense rainfall and thunderbolt
- Prolonged rainfall
- Soil pore water pressure
- Surface runoff

### b. Human causes:

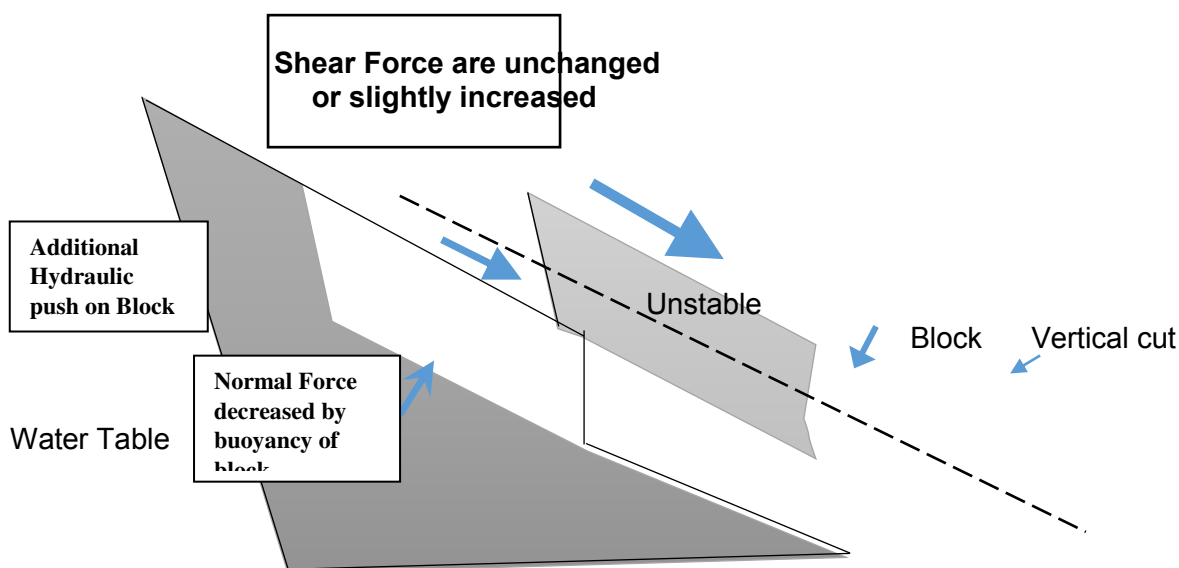
- i) Deforestation
- ii) Excavation
- iii) Land use (construction of house, road etc.)

In the majority of cases the main trigger of landslides is heavy or prolonged rainfall. Generally this takes the form of either an exceptional short lived event, such as the passage of a tropical cyclone or even the rainfall associated with a particularly intense thunderstorm or of a long duration rainfall event with lower intensity, such as the cumulative effect of monsoon rainfall in Bangladesh. It is usually required to have very high rainfall intensities or moderate intensity of rainfall - it is the duration and existing pore water pressure conditions that are important. Principally this is because the rainfall drives an increase in pore water pressure within the soil. The **Figure-1** illustrates the forces acting on an unstable block on a slope. Movement is driven by shear stress, which is generated by the mass of the block acting under gravity down the slope. Resistance to movement is the result of the normal load. When the slope fills with water, the fluid pressure provides the block with buoyancy, reducing the resistance to movement. In addition, in some cases fluid pressures can act down the slope as a result of ground water flow to provide a hydraulic push to the landslide that further decreases the stability. **Figure-1** and **Figure-2** illustrated clearly an artificial situation that the mechanics are essentially involved as per a real landslide.

Many Researchers found that storm with a total precipitation of 100–200 mm, about 14 mm of rain per hour for several hours, or 2–3 mm of rain per hour for about 100 hours can trigger landslides in that environment. Rainfall of short duration (about 1 hour) intensities or greater than 36 mm/h were required to trigger landslides. On the other hand, for long rainfall durations, low average intensities of about 3 mm/h appeared to be sufficient to cause land sliding as the storm duration approached approximately 100 hours. A rainfall threshold of around 190 mm in 24 h initiated failures whereas more than 300 mm in 24-48 h is needed to cause widespread shallow land sliding. With antecedent rain, moderate intensity precipitation of at least 40 mm in 24 h reactivated mudslides and both rotational and translational slides affecting clayey and silty-clayey formations. In this case, several weeks and 200 mm of precipitation were needed to cause landslide reactivation. A similar approach was found that if the 24-hour antecedent rainfall exceeded 200 mm then the rainfall threshold for a large landslide event was  $70 \text{ mm} \cdot \text{h}^{-1}$ .



**Figure 1: Diagram Illustrating the Resistance to, and causes of movement in a Slope System consisting of an Unstable Block**



**Figure 2: Diagram Illustrating the Resistance to, and causes of movement in a Slope System consisting of an Unstable Block**

An established worldwide threshold:

$$I = 14.82 D - 0.39$$

Where,  $I$  is the rainfall intensity ( $\text{mm} \cdot \text{h}^{-1}$ ),  $D$  is duration of rainfall ( $h$ )

This threshold applies over time periods of 10 minutes to 10 days.

There were occurred heavy rainfall in Ramu for consecutive days in the month of July, August 2017 with heavy thunder bolts. Daily rainfall data is available but rainfall duration is not recorded properly because all the rainfall stations are operated and recorded manually.

## 6.5.1.4 Location of Hill Landslide

**Table 6.16 :Location of Hill Landslide**

Ramu Upazila						
Location	Area	Victims	Loss	Elevation of Hill TOP (From where the hill has fallen)	Elevation of Hill TOE (Where the debris has settled)	Horizontal Distance
Dakshin	Chainda		2 people	20.78 meter	7.304	118.04

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Mitahchari Union, Ramu Upazila			died		meter	feet
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**Map 6.25: Location of Hill Landslide in Ramu**

### 6.5.2 Vulnerability Analysis

Vulnerability assessments are done according to the following criterias:

1. Structural Condition Variable
2. Structure Age variable
3. Historical Time Period of Structure
4. Peripheral impact of Structure
5. Quality Assessment /Physical Condition of Structure

#### Vulnerability Assessment

**Table 6.17: Criterias for Vulnerability Assessment**

No.	Scale	Explanation
0	Not Sensitive	No existance of variables
10	Less Sensitive	Existance of any 1 variable
20	Average Sensitive	Existance of any 2 variables
30	Moderate Sensitive	Existance of any 3 variables
40/50/60	Most Sensitive	Existance of 4/5/6 variables

**Table 6.18: Structural Condition Variable**

Structural Condition Variable	Weightage
Soft Story	10

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Short Column	10
Overhanging	10
Pounding Possibilities	10
Tilting	10
Ground Set	10

**Table 6.19: Structure Condition Sensitivity**

Structure Condition Sensitivity	Frequency
Averagely Sensitive	163
Less Sensitive	154
Moderately Sensitive	91
Mostly Sensitive	26
Not Sensitive	104

**Table 6.20: Structure Age variable**

Structure Age	Weightage
Above 30 Years	3
10 to 30 Years	2
0 to 10 Years	1

**Table 6.21: Age Sensitivity**

Age Sensitivity	Frequency
Averagely Sensitive	125
Less Sensitive	268
Moderately Sensitive	18
Mostly Sensitive	2
Not Sensitive	96

**Table 6.22: Historical Time Period of Structure**

Historical Time Period of Structure	Weightage
British Period	3
Pakistan Period	2
Bangladesh Period	1

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**Table 6.23: Structure Period Sensitivity**

Structure Period Sensitivity	Frequency
	31
Averagely Sensitive	32
Less Sensitive	365
Moderately Sensitive	3
Not Sensitive	96

**Table 6.24: Peripheral impact of Structure**

Peripheral impact of Structure	Weightage
Mobile Tower	10
Set back	10

**Table 6.25: Peripheral Impact Sensitivity**

Peripheral Impact Sensitivity	Frequency
Averagely Sensitive	62
Less Sensitive	142
Moderately Sensitive	2
Not Sensitive	322

**Table 6.26: Quality Assessment of Structure**

Visible Physical Condition of Structure	Weightage
Poor Structure	3
Average Structure	2
Good Structure	1

**Table 6.27: Quality Sensitivity**

Quality Sensitivity	Frequency
	115
Averagely Sensitive	48
Less Sensitive	288
Moderately Sensitive	10
Not Sensitive	66

**Table 6.28: Final Vulnerability Sensitivity**

Final Vulnerability Sensitivity	Frequency
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	136
Averagely Sensitive	5
Less Sensitive	269
Not Sensitive	126

**Table 6.29: Vulnerable Buildings of Ramu Upazila**

Frequency Sensitivity	Sensitivity Sale	Frequency	Percentage
Not Sensitive	0	69	12.83
Less Sensitive	0 to 20	130	24.16
Averagely Sensitive	40 to 60	61	11.34
Sensitive	20 to 40	257	47.77
Moderately Sensitive	60 to 80	21	3.90
Mostly Sensitive	80 to 100	0	0.00
Total		538	100.00

## **CHAPTER 7**

### **COMPONENTS OF DEVELOPMENT PLAN**

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#### **7.1 Sub-Regional Plan**

##### **7.1.1 Conceptualization of Sub-Regional Plan**

Sub-Regional Planning Framework is one of the five tiers of development plan for the Ramu Upazila. The framework aims to establish a long-term integrated planning framework for land use and infrastructure, with a focus on guiding future infill growth. Sub-Regional plan builds upon the principles of Directions 2033 and Beyond and is a key instrument for achieving a more consolidated urban form that will reduce dependence on new urban greenfield developments. It provides the strategic spatial framework which will guide local governments in achieving optimal urban consolidation over the long term. It has been comprised of three sectors:

- a) Strategic Plan
- b) Regional Structure Zoning
- c) Conservation Plan

##### **7.1.2 Extent and Nature of Sub-regional plan**

###### **I) Strategic Plan at Sub-Regional Level**

Strategic plan determines a long-term vision for the development of an area where the area is going over the next several years as say 20 years, how it's going to there and how it will know if it got there or not. The strategic plan includes the clear goal envisioning the future growth and developments which will be directed with country's development activities and different policies of the country. Country's development systems can be enhanced by developing a clear vision, objectives, strategies and detailed actions plans. It enables a global sense of purpose and direction capable of guiding implementers in making everyday choices what actions should be taken to produce the expected results. Strategic plan identifies the following steps:

- Assesses needs and resources;
- Defines a target audience and a set of goals and objectives;
- Plans and designs coordinated strategies with evidence of success;
- Logically connects these strategies to needs, assets, and desired outcomes;
- Measures and evaluates the process and outcomes.

Strategic Plan would be prepared for 20 years for Ramu Upazila according to the guidelines form which will dictate the development plan such policies as 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.

###### **II) Regional Structure Zoning Category**

Zoning generally allows the authority to control the use of land and development of land. Zoning is an important tool for guiding the private development, so that land is used in a way that promotes both the best utilization of the land and the prosperity, health and welfare of the residents. Naturally, Zoning is enacted by the law by following respective procedures. Regional Structure Zoning is comprehensive planning process that allows a city or region to develop a plan for creating and maintaining a desirable environment and safe and healthy community. Once a plan is adopted, it guides local officials in making their day to day decisions and becomes a factor in their decision-making process. By creating zoning



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categories that separate uses, the city assures that adequate space is provided for each use and that a transition area or buffer exists between distinct and incompatible uses. Adequate separation of uses prevents congestion, minimizes fire and other health and safety hazards, and keeps residential areas free of potential commercial and industrial nuisances such as smoke, noise and light.

Regional Structure Zoning can be adopted by ensuring the following mundane purposes:

- ✓ Minimising adverse effect resulting from the inappropriate location or use of sites and structures,
- ✓ Conserving limited land resources and encouraging their efficient use.

To carry out the purposes and provisions of the project within the context of the Regional Structure Plan, the following land zoning category would be followed:

- Main flood flow zone
- Sub flood flow zone
- Forest
- Agricultural land
- Urban area
- Rural settlements
- Industrial moderate hazards
- Industrial low hazards
- Water supply protection zone
- Restricted flood protection reserve
- Restricted military / public safety
- Restricted special

### III) Conservation Plan

A conservation plan can be a vision for the future ecological health of an area. It typically includes reference to a natural resources inventory, a description of important features and an action plan to protect these features over a long period of time.

Major land use pressure is heavily depending on the ecosystems and resources of the existing nature. Land-use conflicts and clearly unsustainable uses may be found in planning areas. There is a clear need for broad-based, multi-sectoral and long term development management, including community-based initiatives in sanitation, biomass preservation and collective management of natural resources, including more detailed priorities such as ecosystem preservation of fisheries habitat, maintenance of biological diversity and productivity, forestry management, containment of saltwater intrusion and population risk management. Also needed are institutional and regulatory actions.

Contrary to some current impressions, conservation and economic development are not conflicting ideas. In fact, well-planned conservation-oriented development will add to the general economic and social prosperity of a coastal community, while bad development will sooner or later have a negative effect. With innovative management based upon sustainable use, communities may be able to achieve a desirable balance without serious sacrifice to either short-term development progress or longer-term conservation needs. In broad sense, Conservation Plan would cover ecology and environment, land forms: forest, wetland, rivers and agricultural land, Major infrastructures, area of archaeological/ anthropological interest. Conservation plan will derive the following issues:

- ✓ Articulate the most important natural features within the Geographic Area.
- ✓ Flourish conservation of these important natural features.
- ✓ Dictate local government or private voluntary to develop land conservation planning
- ✓ Document conservation priorities and recommend policies in Upazila Development Plan
- ✓ Suggest viable regulatory process for some resources and features.

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### **7.1.3 Objectives**

- Control unauthorized development throughout the city.
- Providing suitable economic base for future growth of the city.
- To provide a rational land use pattern in order to protect and conserve agricultural land and other unproductive land as well as the water bodies.
- To develop selected areas with infrastructural facilities.
- Ensuring sustainability without violating the environmental concerns.

### **7.1.4 Area coverage under Sub-Regional Plan**

In sub-regional plan the main focus was to make Ramu Upazila well connected in terms of communication with the surrounding upazilas. Rangunia Upazila is an hilly and agri-based upazila. The communication among the surrounding upazila will help to grow the economy of this area. It is bounded by Chakaria and Cox's Bazar Sadar upazilas on the north, Naikhongchhari and Ukhia upazilas on the south, Naikhongchhari upazila on the east, Cox's Bazar Sadar and the Bay of Bengal on the west.

### **7.1.5 Development Strategies and Policies**

#### **Components of Sub-regional Plan**

1. Connectivity and Transportation Network
2. Biodiversity and Nature Conservation
3. Community Resilience through Disaster Management

#### **Policies for Sub-regional Planning**

##### **Connectivity and Transportation Network**

- Policy 1: Prioritize inter- (Chakaria-Ramu-Cox's Bazar) and intra- (Fatekharkul-Kacchapia-Garjania Bazar) regional connectivity.
- Policy 2: Accelerate high standard road links through widening of primary and secondary and construction of new tertiary roads.
- Policy 3: Build an integrated (land, rail and water) transportation network.
- Policy 4: Protect Ramu Upazila from negative impacts such as haphazard urban growth, informal settlements, waterlogging etc. by Trans Asian Railway Connectivity.

##### **Biodiversity and Nature Conservation**

- Policy 1: Conserve natural/environmental resources like hills, reserve forests and water bodies.
- Policy 2: Conserve ecosystem through the delineation or demarcation of eco-sensitive zones.
- Policy 3: Execute land use planning for the enhancement of ecosystem and species diversity.

##### **Community Resilience through Disaster Management**

- Policy 1: Identification of seismic hazard prone zones.
- Policy 2: Identification of flood hazard prone zones and river erosion areas.
- Policy 3: Provision and implementation of a risk sensitive land use planning.

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### 7.2.1 Conceptualization of Structure Plan

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Structure plan typically shows how broad scale development or change in a Geographical area will be physical organized on the ground. It provides long term statutory framework to guide the development and redevelopment of land which contains a development concept and policies by establishing the general pattern for land use, densities, major roads and utilities with the goal of ensuring that subdivision or development occur in an orderly, economic and efficient manner. The Structure Plan consists of a report and plans that comprises of a broad policy guideline. The report is supported by a number of maps of 1:10,000 scales.

The term Structure Plan is derived from British planning practice but has been internationally adopted. The principal components of such a plan are:

- An inventory of existing physical, demographic, economic, social and infrastructure features.
- An analysis of the major existing problems.
- An estimation of trends and changes likely in future (for the next 20 years).
- The identification of the major constraints on and opportunities for development.
- Consideration of the major development options and policies.
- An indication of the most suitable areas for such development.
- The identification of the priorities in each sector and the major activities needed to implement the development strategy.

The structure plan concentrates on the broad structure of the Upazila and is not concerned with the details of physical layout or individual development details which cannot be implemented until the later stages of the planning period. In those areas and sectors where action is anticipated or proposed within a relatively short time however, more detail may be needed than is provided in the structure plan. Such appropriate level of detail is provided in the action plan

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action is anticipated or proposed within a relatively short time however, more detail may be needed than is provided in the structure plan. Such appropriate level of detail is provided in the action plan.

### 7.2.3 Objectives

- (i) The main objective of Structure Plan is to demarcate the future growth areas and set a strategy for future development of Ramu Upazila.
- (ii) To identify the urban areas and different rural centres of the upazila; and determine the planning requirements for the urban area, rural centers and rural area.
- (iii) Identification of urban growth area based on analysis of patterns and trends of development, and projection of population, land use and economic activities for next 20 years
- (iv) Formulation and Integration of different sectoral strategies for the Upazila.

### 7.2.4 Area Coverage Under Structure Plan

The total area of Ramu Upazila is 384.41sq.km. The total area is under structure plan coverage. The area has re-structured into some planning zones.

**Table 7.1 : Area Coverage of Structure Plan Zoning**

Zoning	Area in Sq.m	Area in Sq.km	Area in Acre	Percentage
Agriculture Suitability	55810304.49	55.81030449	13791.02658	14.51
Existing Circulation Network	2525145.286	2.525145286	623.9769891	0.65
Industrial Zone	1392553.141	1.392553141	344.1073752	0.36
Main Flood Flow Zone	1865406.824	1.865406824	460.9520648	0.46
Proposed Circulation Network	4640663.122	4.640663122	1146.732831	1.21
Restricted Special	240812442.8	240.8124428	59506.05054	62.65
Restricted Special-Military	7181516.076	7.181516076	1774.591269	1.87
Rural Settlement	32872990.2	32.8729902	8123.092783	8.55
Sub Flood Flow Zone	4207248.083	4.207248083	1039.633643	1.01
Urban Settlement	19261347.54	19.26134754	4759.582632	5.01
Water Supply Protection Zone	8049408.127	8.049	1988.951215	2.09
Waterbody	5781770.356	5.781770356	1428.706569	1.50
Total	384400796	384.4003879	94987.40449	100

### Planning Zones

#### Restricted Special

Any kind of development is prohibited in the hilly areas whose slope is more than 5 %. These areas will be declared as reserved forest. Restricted special zone comprises the reserved forest and the eco-park.

#### Urban Settlement and Rural Settlement

Depending on the urban suitability analysis a future urban settlement zone has been identified. This area will be identified as urban settlement zone. In future this area will be developed as an urban area where different types of development works will take place for the betterment of the project area.

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The areas where the density of population is relatively low and located outside the paurashava area are declared as rural settlement. Another significant of these areas is agricultural land.

### **Agriculture**

From the agricultural suitability analysis the most suitable area for agriculture has been identified and those areas are declared as agriculture zone.

### **Circulation Network**

Depending on the existing roads circulation network has been proposed. The proposed circulation network is divided into primary, secondary and tertiary road. These roads have been proposed in order to save some prime areas of structure plan zoning. These roads serve the major areas of the project area.

### **Main Flood Flow Zone**

After the hydrology analysis it is derived that areas where water depth from the surface above 1.8meter or 5.9 feet are declared as main flood flow zone.

### **Sub Flood Flow Zone**

After the hydrology analysis it is derived that areas where water depth from the surface 0.9 meter to 1.8meter or 2.9 feet to 5.9 feet are declared as sub flood flow zone.

### **Restricted Military**

Restricted military comprises the army cantonment and BGB area.

### **Water Supply Protection Zone**

Water supply protection zone comprises river, canal/chara/khal.50 meter buffer from the edge of the rivers, 3 meter buffer from the chara/khal will be preserved for water supply protection zone.

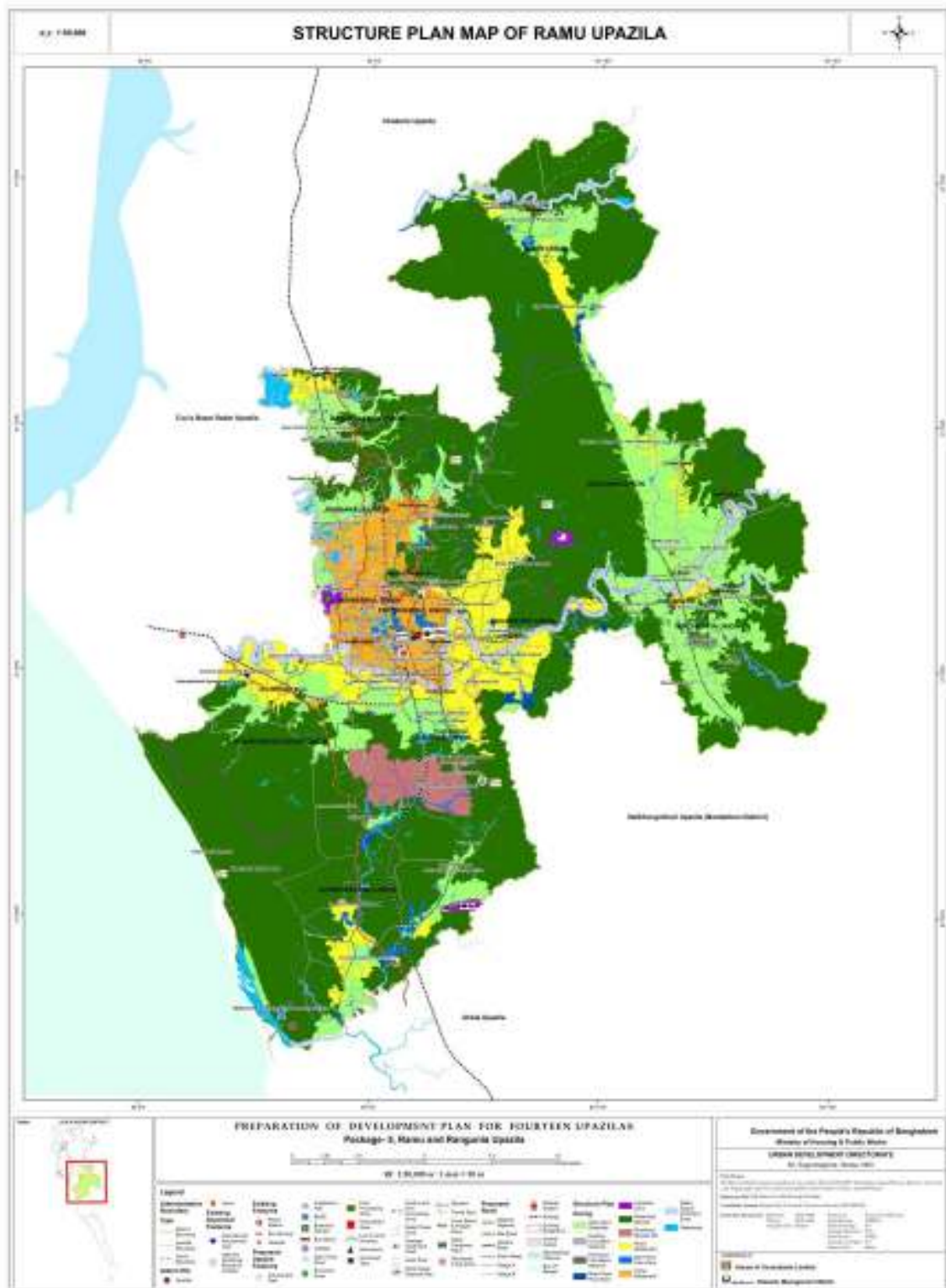
### **Water body**

The water bodies which area is more than0.25 acre are shown in the structure plan.

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**Source: Prepared by Consultant Team Based on Field Survey, 2016**  
**Map 7.2: Structure Plan of Ramu Upazila**

### 7.2.5 Policies for Planning Zones

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### **Policies for Structure Plan**

#### **Restricted Special**

Policy 1: Protect and preserve available hilly area.

Policy 2: Protect and preserved forest on the hilly area.

#### **Urban Settlements**

Policy 1: Promote urban area to buildable lands.

Policy 2: Restrict urban growth in seismic and flood prone zones.

Policy 3: Provide better transportation connectivity throughout urban areas linking rural hinterlands.

Policy 4: Provision of appropriate infrastructure and service facilities (road, drain, bridge, culvert, water supply, sewerage and sanitation, garbage disposal, energy, education and health etc.) with equity to the urban dwellers.

#### **Rural Settlements**

Policy 1: Save agriculture lands in rural areas by encouraging nucleated/clustered villages.

Policy 2: Provision of better infrastructure and service facilities to the rural dwellers.

Policy 3: Promote integrated rural development connecting growth centres and villages.

#### **Agriculture**

Policy 1: Save and protect at least double and triple cropped agriculture lands.

Policy 2: Keep suitable agriculture lands free from any kind of encroachments particularly from human settlements.

Policy 3: Ensure surface water irrigation keeping water bodies (canals and rivers) active for the sustainable agriculture development.

Policy 4: Protect existing agricultural set-up keeping production uninterrupted in the project area.

#### **Circulation Network**

Policy 1: Connect union headquarters, market places, growth centres and hats/bazars through better transportation network.

Policy 2: Establishment of hierarchy among primary, secondary and tertiary roads.

Policy 3: Encourage development of sidewalk and bicycle lane/route.

Policy 4: Ensure integration of bus, rail and water transportation networks.

#### **Flood Flow, Water Body and Water Supply Protection Zone**

Policy 1: Protect main flood flow zone from encroachment.

Policy 2: Discourage development on the influence area of main flood flow zone.

Policy 3: Protect existing and newly buildable urban growth from river erosion.

Policy 4: Ensure utilization of surface water for irrigation and supply of water to the urban residents.

#### **Restricted Military**

Policy 1: Restrict the entire area for security purpose.

Policy 2: Discourage additional development in this restricted zone.

#### **Geology**

Policy 1: Discourage development of urban and industrial agglomeration, headquarters, market place and growth centres in seismic hazard prone zone.

Policy 2: Promote and ensure alternation utilization (e.g. agriculture, forestry) in geologically vulnerable zone.

#### **Tourism Development**



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Policy 1: Promote tourism as a mean of economic development.

Policy 2: Encourage creation of tourist spots such as eco-park (Himchhari), wild-life sanctuary (Idgor) and safari park (Khuniapalong) at the restricted special area without disturbing nature.

### Economic Development

Policy 1: Promote technology-driven agriculture practices for intensive and extensive cultivation.

Policy 2: Encourage agro-based industries through agricultural development.

Policy 3: Develop advanced rural marketing mechanism for the quick shipment of agri-products.

Policy 4: Ensure proper utilization of grey zone so as to generate employment opportunity to the local people.

## 7.3 Urban Area Plan and Rural Area Plan

### 7.3.1 Conceptualization of Urban and Rural Area Plan

**Urban Area Plan:** Urban Area Plan is concerned with the planned sustainable development of the urban area of a town or settlement and the protection of its environs. In establishing the limits of the urban area, this Plan is complacent of existing development, projects approved for development but not yet built, and of development in progress. Urban Area Plan includes those areas which require economic, physical and social renewal and for areas likely to be subject to large scale development over the lifetime of the plan.

**Rural Area Plan:** Rural Area Plan enables planning policies in rural areas that are below the strategic level of Development Plan and are more local in nature. It also includes those rural areas which require economic, physical and social renewal and for areas likely to be subject to large scale development over the lifetime of the plan.

### 7.3.2 Extent and Nature of Urban Area Plan

**Urban Area Plan (UAP):** Urban Area Plan (UAP) provides an interim mid-term strategy for 10 years and covers for the development of urban areas within the project area. Generally, UAP contains an explanatory report, resource maps, interim management report, planning rules, urban area plan and a multi-sectoral investment program. The Urban Area Plan has been comprised as follows:

1. Existing Land Use Survey
2. Survey of Development Activities
3. Population Survey
4. Traffic and Transportation Survey
5. Industrial Surveys
6. Recreational and Open Space
7. Utility Facilities
8. Growth of the Town
9. Health Facilities
10. Educational Facilities
11. Shopping
12. Municipal Budget
13. Municipal Achievements
14. Disposal Services
15. Physical Feature Surveys

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Ramu Upazila has no Pourashava but some certain areas have great impact of urban growth. According to the structure plan, Fatekharkul, Chakmarkul and some part of Joarianala is experiencing probable urban growth. Urban Area Plan is included Transport Network, Drainage Plan and Future Facilities. In this chapter, Future Demand has been calculated as per derived planning standard and proposal has been made based on existing facilities (Please See Appendix-C). The future service allocation proposals has been outlined in this chapter.

**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. In the present project, Content of Rural Area Plan has been comprised as follows:

1. Existing Land Use Survey
2. Survey of Development Activities
3. Population Survey
4. Traffic and Transportation Survey
5. Industrial Surveys
6. Agricultural
7. Sources of Potable Water
8. Power Supply
9. Growth of the village
10. Health Facilities
11. Educational Facilities
12. Hats/Bazars/Shopping
13. Sanitation Facilities
14. Graveyard/Cremation Facilities
15. Physical Feature Surveys

Rural Area Plan is included Transport Network, Agricultural Land Development and Future Facilities. In this chapter, Future Demand has been calculated as per derived planning standard and proposal has been made based on existing facilities (Please See Appendix-D). The future service allocation proposals has been outlined in this chapter.

### 7.3.3 Purpose and Role of Urban and Rural Area Plan

Urban Area Plan and rural area plan is a statutory planning document to guide future development of Urban and rural up to 2033. The plan will play an important role of enabling upazila parishad to play greater role as a facilitator for promoting private sector development initiatives. These plans guidance to how it can develop the roles i.e. to promote development, to co-ordinate development and to control development.

### 7.3.4 Area Coverage Under Urban and Rural Area Plan

On the basis of existing landuse, population projection and paurashava area the future urban area has been identified. As Ramu Upazila has 11 Upazilas.

### 7.3.5 Urban and Rural Area Plan Proposals

#### 7.3.5.1 Plan for Road Network Development

##### 7.3.5.1.1 Existing Road Network

Table 7.2: Existing Circulation Network

Type	Length (km)
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Pucca	138.8742
HBB	265.148
Katcha	523.7906
Total	927.8128

**Table 7.3: Existing Circulation Network of Union**

Union	Type	Length in Meter	Length in Km
Chakmarkul Union	HBB Road	21365.355	21.365
	Katcha Road	19838.597	19.839
	Pucca Road	3071.841	3.072
Dakshin Mithachhari Union	HBB Road	9618.246	9.618
	Katcha Road	46342.954	46.343
	Pucca Road	15664.633	15.665
Fatekharkul Union	HBB Road	34794.838	34.795
	Katcha Road	13379.120	13.379
	Pucca Road	14212.902	14.213
Garjania Union	HBB Road	28669.102	28.669
	Katcha Road	38923.150	38.923
	Pucca Road	11531.933	11.532
Idgar Union	HBB Road	10789.929	10.790
	Katcha Road	56261.418	56.261
	Pucca Road	7819.381	7.819
Joarianala Union	HBB Road	38906.640	38.907
	Katcha Road	79560.908	79.561
	Pucca Road	10696.014	10.696
Kachhapia Union	HBB Road	28799.595	28.800
	Katcha Road	47522.395	47.522
	Pucca Road	9121.964	9.122
Kauarkhop Union	HBB Road	21998.334	21.998
	Katcha Road	42699.173	42.699
	Pucca Road	9859.516	9.860
Khuniapalong Union	HBB Road	3268.023	3.268
	Katcha Road	92237.763	92.238
	Pucca Road	35031.230	35.031
Rajarkul Union	HBB Road	17671.406	17.671
	Katcha Road	28933.502	28.934
	Pucca Road	12531.986	12.532
Rashid Nagar Union	HBB Road	18686.559	18.687
	Katcha Road	58091.697	58.092
	Pucca Road	9332.836	9.333

### 7.3.5.1.2 Proposed Road Network

PRA survey has been done through out the Upazila. During the session and survey most of the people demanded for road network improvement. Road network hierarchy has been developed for the proposed roads of this Upazila according to the LGED and RHD. National highway and Regional highway has been proposed to upgraded into four lane roads. The significant roads inside the Upazila has been proposed to make pucca.

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**Table 7.4: Description of the Types, Definitions and Definitions and Agencies Responsible****for various Roads of the Country (2003)**

Sl. No.	Type	Definition	Ownership and Responsibility
1	National Highways	Highways connecting National Capital with Divisional HQ/s or seaports or land ports or Asian Highways.	RHD*
2	Regional Highways	Highways connecting District HQ/s or main river or land ports or with each other not connected by National Highways.	RHD
3	Zila Road	Roads connecting District HQ/s with Upazila HQ/s or connecting one Upazila HQ to another Upazila HQ by a single main connection with National/Regional Highway, through shortest distance/route.	RHD
4	Upazila Road	Roads connecting Upazila HQ/s with Growth Center/s with another Growth Center by a single main connection or connecting Growth Center to Higher Road System**, through shortest distance / route.	LGED*/LGI*
5	Union Road	Roads connecting Union HQ/s with Upazila HQ/s, Growth Centers or Local Markets or with each other.	LGED*/LGI*
6	Village Road	a) Roads connecting Villages with Union HQ/s, local markets, farms and ghats or with each other. b) Roads within a Village.	LGED*/LGI*

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**Source: LGED 200**

### Design Classes

Roads in Bangladesh are divided into the following six design types:

**Table 7.5: Road Cross-Section Standards**

Design Type	Design year traffic volume PCU / peak hour (typical AADT)	Cross-section widths in metres			Indicative Road Classification
		Crest width	Carriageway (no. of lanes)	Paved shoulders	
1	4500 - 8500 (19,000-36,000)	36.2	2x 11 (6)	1.8	
2	2100-4500 (7,000- 19,000)	21.6	2x7.3 (4)	1.8	
3	1600-2100 (5,000-7,000)	16.3	7.3 (2)	1.5	
4	800- 1600 (1,000-5,000)	12.1	6.2 (2)	1.5	
5	400 - 800 (500 -1,000)	9.8	5.5 (2)	1.2	
6	<400 (<500)	9.8	3.7 (1)	1.2	

**Source: RHD 2004**

**Table 7.6: Proposed Road Width**

Sl. No.	Road Category	Buffer Width	Lane	Design Type
1	National Highways	21.6	4	Type 2
2	Regional Highways	16.3	2	Type 3
3	Zila Road	12.1	2	Type 4
4	Upazila Road	7.3	1	
5	Union Road	5.5	1	
6	Village Road	4.8	1	

**Source: RHD 2004**

**Design Type 2 Dual 2 lane 7.3m carriageway**

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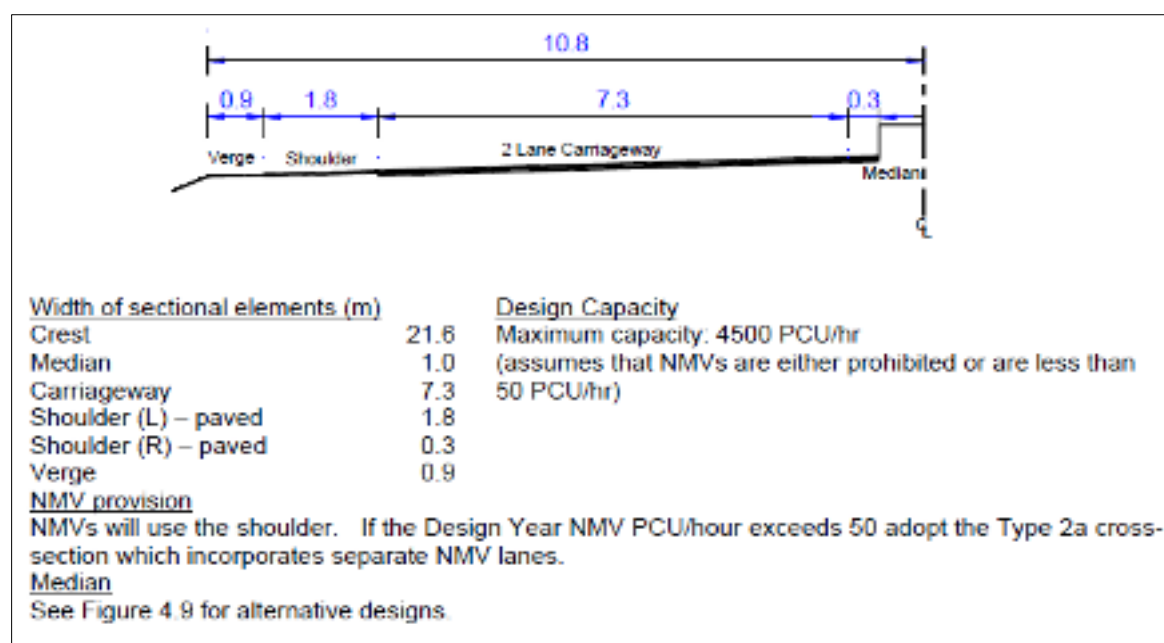


Figure 7.1: Design Type 2 Dual 2 lane 7.3m carriageway

### Design Type 3 7.3m carriageway

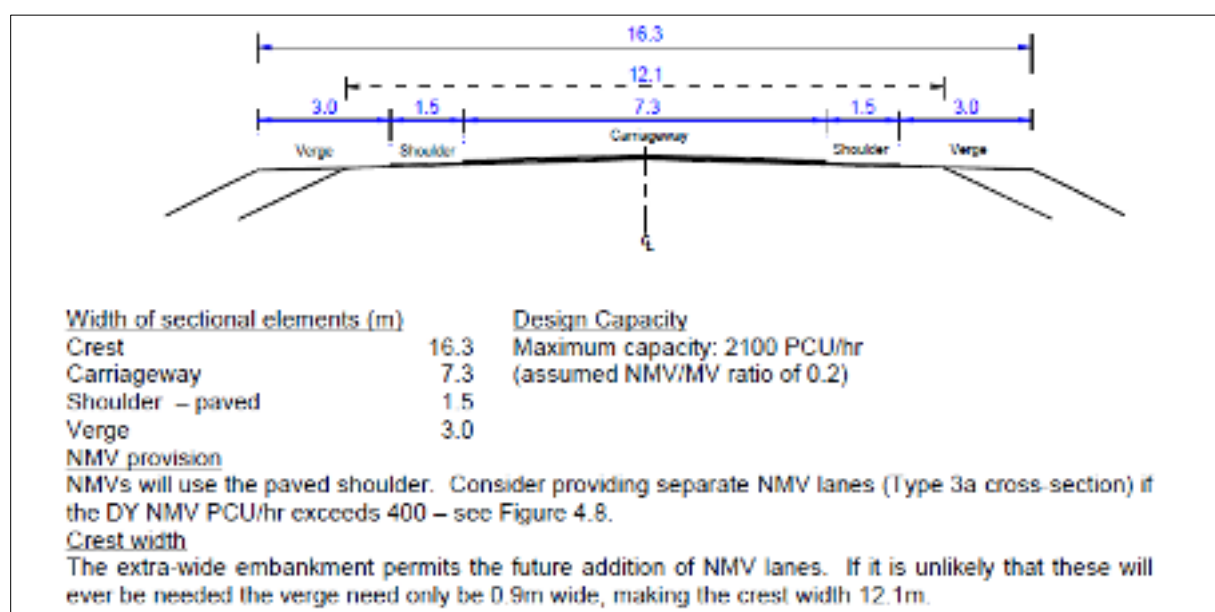


Figure 7.2: Design Type 3 7.3m carriageway

### Design Type 4 6.2m carriageway

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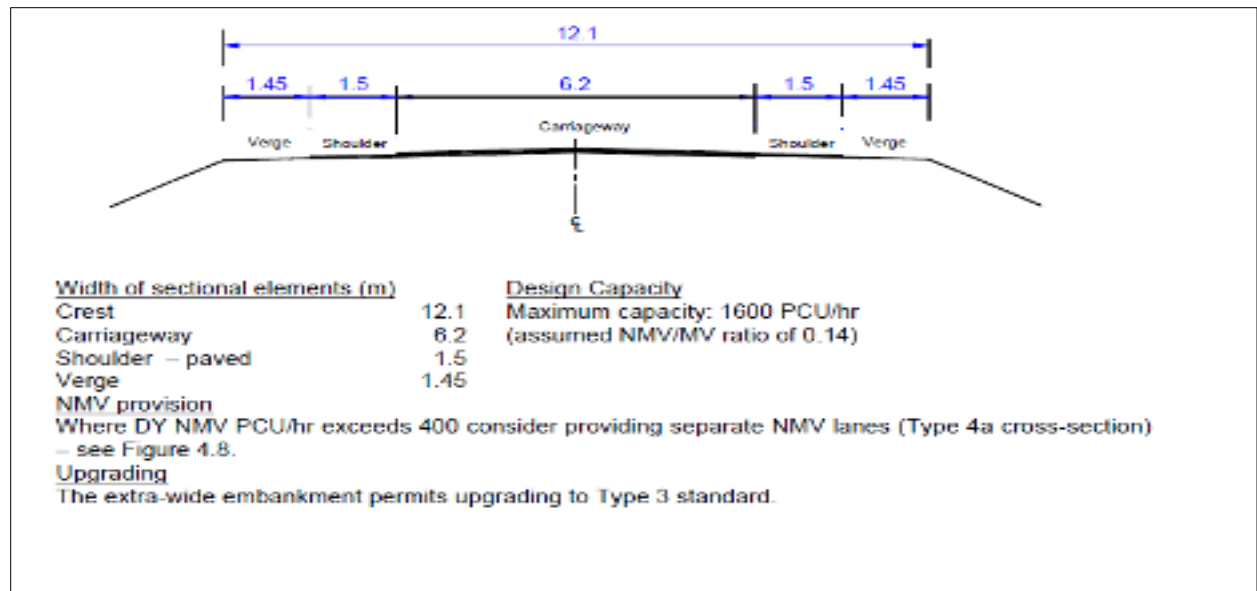


Figure 7.3: Design Type 4 6.2m carriageway

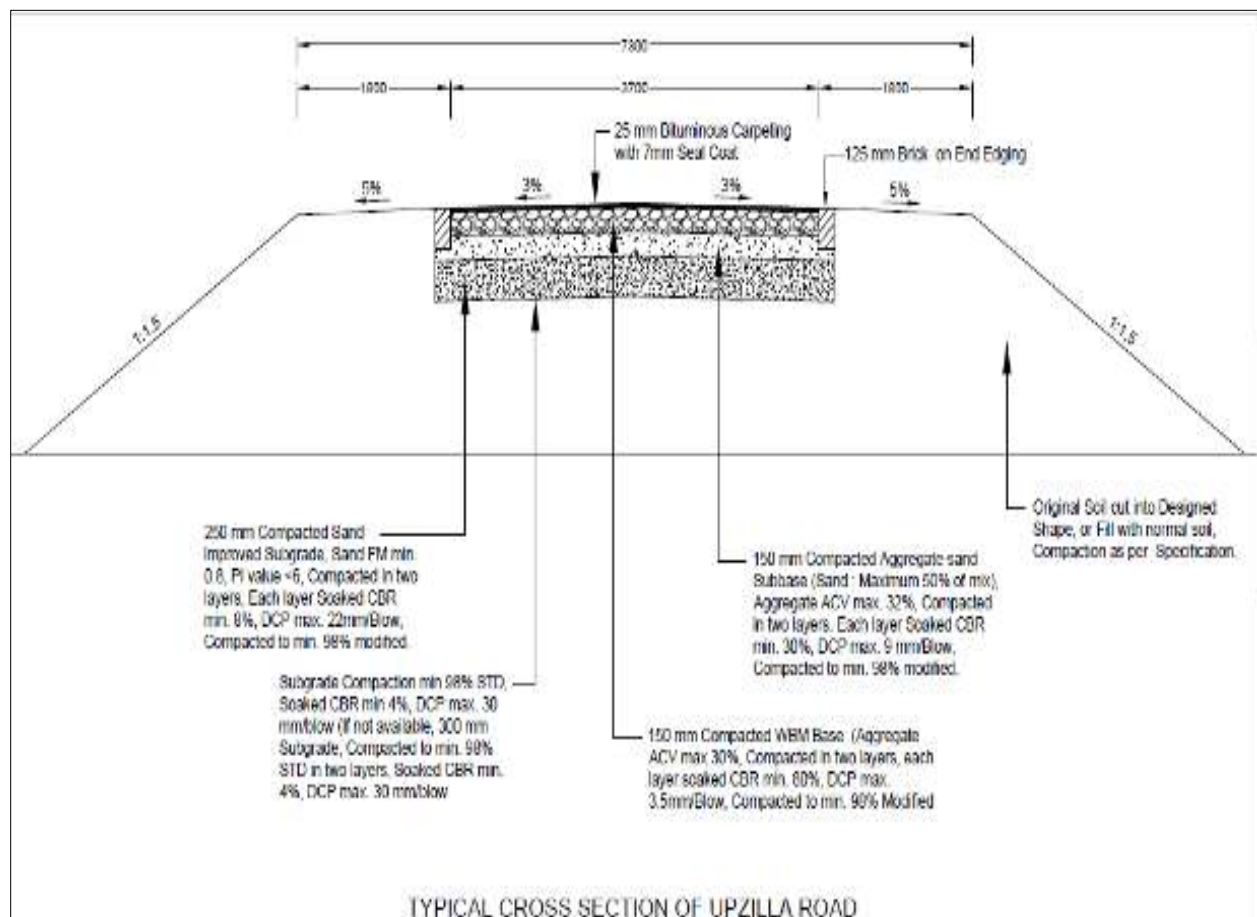


Figure 7.4: Typical Cross Section of Upazilla Road

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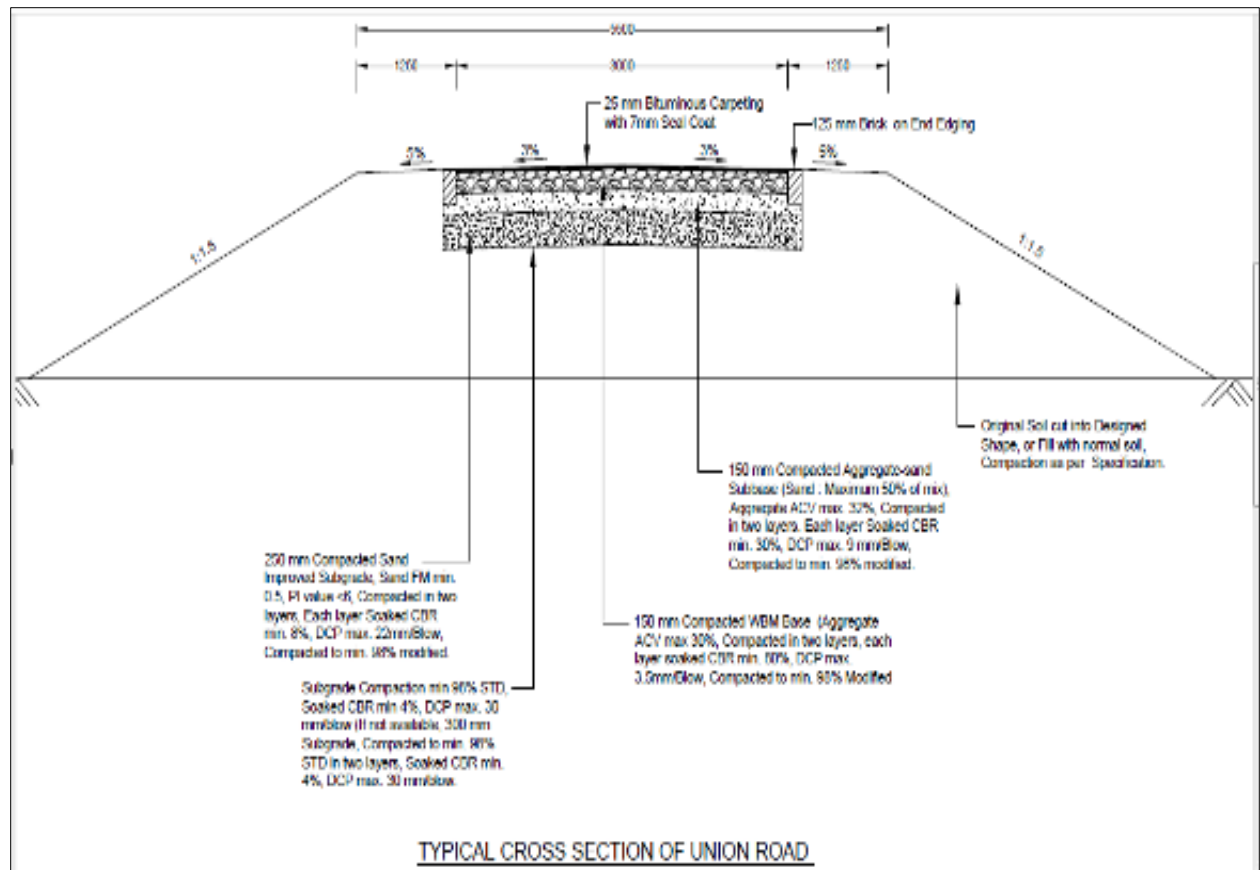


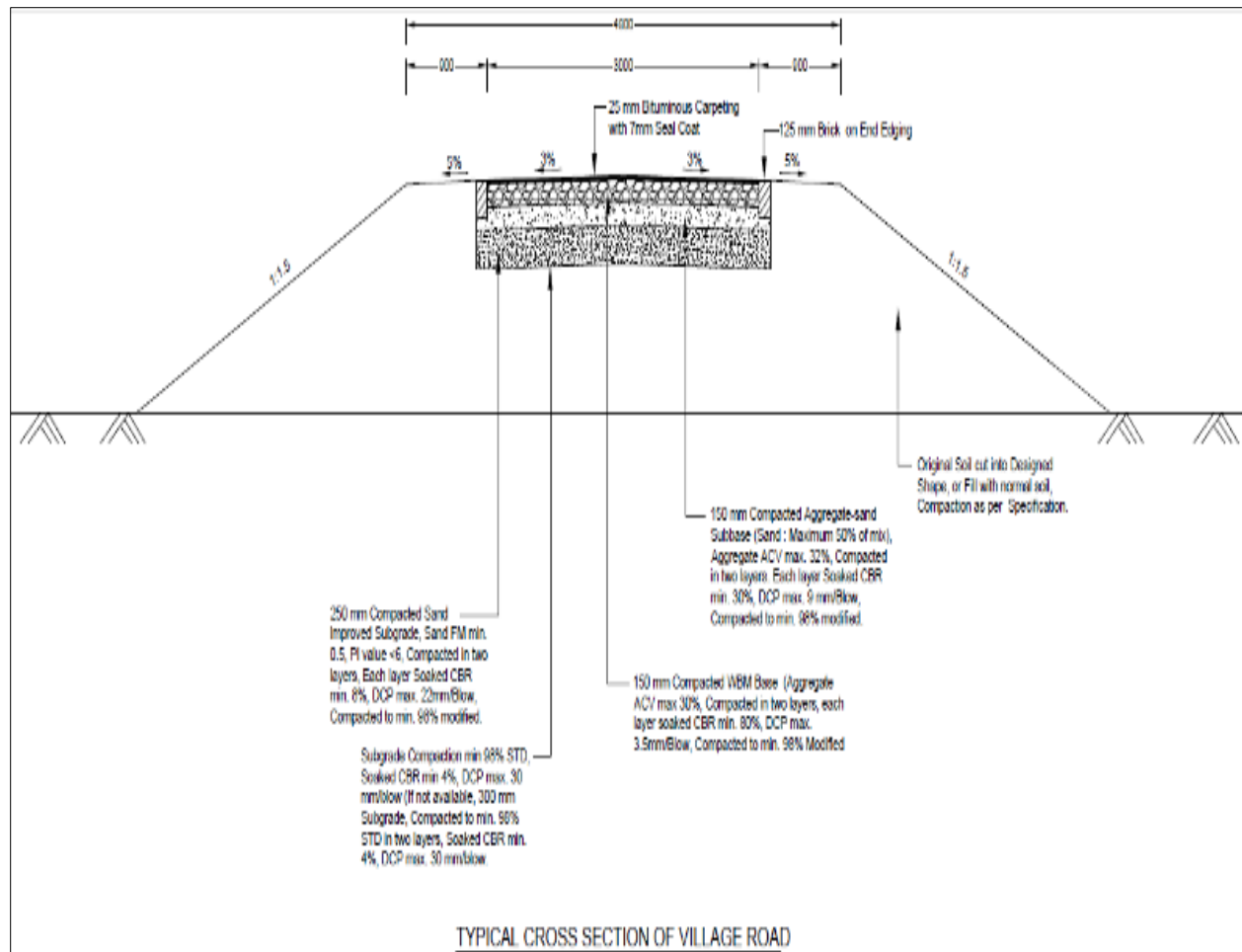
Figure 7.5: Typical Cross Section of Union Road



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**Figure 7.6: Typical Cross Section of Village Road**

The below table will show the statistics of differences between existing road network and the proposed road network:

**Table 7.7: Comparison Between Existing & Proposed Circulation Network**

Circulation Network	Length in Km	Area in Sq.km	Area in Percentage	Remarks
Existing	1685.171	2.379	0.619	According to Existing Landuse
Proposed	875.543	4.641	1.207	According to Structure Plan

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**7.3.4.2 Drainage Network****7.3.4.2.1 Existing Drainage Network**

During the physical feature survey, it was detected that only the existing pourashava area has a drainage system. Though the existing drainage system is not well designed. There are some manmade drains and natural drainage networks. The natural drainage network is mainly the two rivers and numerous number of channels are passing through this Upazila.

**7.3.4.2.2 Proposed Drainage Network**

According to the road alignment a drainage network has been proposed for the urban area. Outfalls of these manmade drainages have been identified. In case of rural areas, the existing natural channels need to keep navigable for the passing of water. From the existing natural drainage network, the direction of flow can be easily recognisable.

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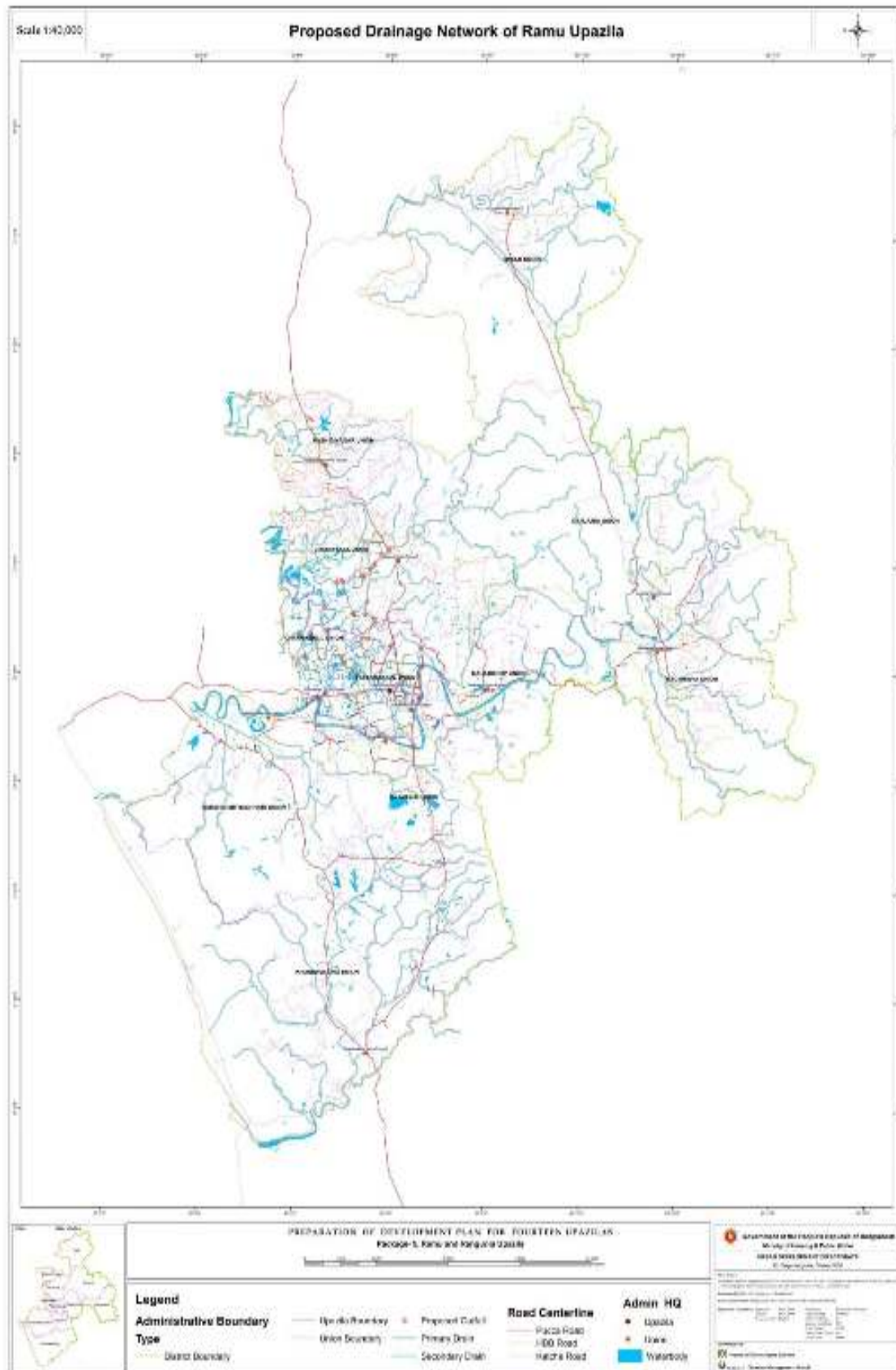


**Source: Prepared by Consultant Team Based on Field Survey, 2017**  
**Map 7.4: Natural Drainage in Ramu Upazila**

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Source: Prepared by Consultant Team Based on Field Survey, 2017  
Map 7.5: Proposed Drainage in Ramu Upazila

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### 7.3.4 Plan for Urban and Rural Services

On the basis of existing facilities and population projection and PRA demand different features have been proposed which are important for the development of this Upazila in near future.

**Table 7.8: Proposed Features for Urban and Rural area plan**

Rural/Union	Urban/Built up Area	Upazila
<ul style="list-style-type: none"> <li>• Growth Center</li> <li>• Wholesale Market</li> <li>• Retail Market</li> <li>• CNG/Tempo/Auto Rickshaw /Rickshaw Stand</li> <li>• Primary School/Kindergarten</li> <li>• High School</li> <li>• Health Center/Maternity Clinic</li> <li>• Play Ground/Field</li> <li>• Eidgah</li> <li>• Graveyard</li> <li>• Mosque/Pagoda/Temple</li> <li>• Community Center</li> <li>• Post Office</li> <li>• Electric Substation</li> <li>• Small Scale Industry</li> </ul>	<ul style="list-style-type: none"> <li>➤ Primary School/Kindergarten</li> <li>➤ High School</li> <li>➤ College</li> <li>➤ Neighborhood Park</li> <li>➤ Play Ground/Field</li> <li>➤ Health Center/Maternity Clinic</li> <li>➤ Mosque/Pagoda/Temple</li> <li>➤ Eidgah</li> <li>➤ Graveyard</li> <li>➤ Community Center</li> <li>➤ Post Office</li> <li>➤ Water Reservoir</li> <li>➤ Waste Secondary Transfer Station</li> <li>➤ Electric Substation</li> <li>➤ Wholesale Market</li> <li>➤ Retail Market</li> </ul>	<ul style="list-style-type: none"> <li>✓ Retail Trade Zone</li> <li>✓ Wholesale Trade Zone</li> <li>✓ Dairy Food Zone</li> <li>✓ Fruit processing Zone</li> <li>✓ Hi Tech Park</li> <li>✓ Hotel Motel Zone</li> <li>✓ Economic Zone</li> <li>✓ Poultry and Fish Processing Zone</li> <li>✓ Amusement park</li> <li>✓ IT Park</li> <li>✓ Low Income/Landless Affordable Housing</li> <li>✓ Stadium</li> <li>✓ Water Treatment Plant</li> <li>✓ Textile and Sweetmeat Zone</li> <li>✓ Bus Stand</li> <li>✓ Truck Stand and Freight Zone</li> <li>✓ Solid Waste Disposal</li> <li>✓ Botanical Garden</li> <li>✓ Tourist Zone</li> <li>✓ Eco Park</li> <li>✓ Auditorium/Cinema Hall</li> <li>✓ Monument</li> </ul>

**Table 7.9: Union & Plotwise Proposed Upazila Facilities**

Features	Union	Mouza	JL_No	Sheet_No	Mauza_JL_S	Plot_No
Hotel Motel Zone	Khuniapalong Union	Jungle Goalia Palong	032	000	Jungle Goalia Palong_032_000	19
Monument	Khuniapalong Union	Dhechua Palong	036	003	Dhechua Palong_036_003	3042
Dairy Food Zone	Khuniapalong Union	Dariar Dighi	037	007	Dariar Dighi_037_007	4385
Dairy Food Zone	Khuniapalong Union	Dariar Dighi	037	007	Dariar Dighi_037_007	4388
Dairy Food Zone	Khuniapalong Union	Dariar Dighi	037	007	Dariar Dighi_037_007	4384
Poultry and Fish	Khuniapalong	Dariar Dighi	03	007	Dariar	461

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Processing Zone	Union		7		Dighi_037_007	1
Poultry and Fish Processing Zone	Khuniapalong Union	Dariar Dighi	037	007	Dariar Dighi_037_007	4612
Tourist Spot	Khuniapalong Union	Jungle Khunia Palong	029	000	Jungle Khunia Palong_029_000	41
Botanical Garden	Dakshin Mithachhari Union	Dakshin Mithachhari	027	011	Dakshin Mithachhari_027_011	12542
Tourist Spot	Rajarkul Union	Rajarkul	025	007	Rajarkul_025_007	7776
Amusement Park	Rajarkul Union	Rajarkul	025	006	Rajarkul_025_006	7670
Amusement Park	Rajarkul Union	Rajarkul	025	007	Rajarkul_025_007	7776
College	Kauarkhop Union	Kauarkho	008	002	Kauarkho_008_002	606
Overhead Tank	Fatekharkul Union	Fotekharkul	022	003	Fotekharkul_022_003	4601
Auditorium/Cinema Hall	Fatekharkul Union	Fotekharkul	022	003	Fotekharkul_022_003	4601
Bus Stand	Fatekharkul Union	Fotekharkul	022	002	Fotekharkul_022_002	1787
Retail Trade Zone	Fatekharkul Union	Fotekharkul	022	003	Fotekharkul_022_003	5560
Monument	Fatekharkul Union	Fotekharkul	022	003	Fotekharkul_022_003	5555
Truck Stand & Frieight Zone	Fatekharkul Union	Hightupi	020	000	Hightupi_020_000	658
Water Treatment Plant	Fatekharkul Union	Hightupi	020	000	Hightupi_020_000	395
Water Treatment Plant	Fatekharkul Union	Hightupi	020	000	Hightupi_020_000	394
Fruit Processing Zone	Kachhapia Union	Kachhapia	0405	05	Kachhapia_0405_05	2978
Fruit Processing Zone	Kachhapia Union	Kachhapia	0405	05	Kachhapia_0405_05	2979
Economic Zone	Chakmarkul Union	Chakmarkul	018	003	Chakmarkul_018_003	3607
Economic Zone	Chakmarkul Union	Chakmarkul	018	003	Chakmarkul_018_003	3605
Economic Zone	Chakmarkul Union	Chakmarkul	018	003	Chakmarkul_018_003	3649
Monument	Joarianala Union	Uttar Mithachhari	019	002	Uttar Mithachhari_019_002	2021
Solid Waste Disposal Site	Fatekharkul Union	Maronglowa	021	001	Maronglowa_021_001	601
Solid Waste Disposal Site	Fatekharkul Union	Maronglowa	021	001	Maronglowa_021_001	590
Solid Waste Disposal Site	Fatekharkul Union	Maronglowa	021	001	Maronglowa_021_001	600
Sewage Treatment	Chakmarkul	Chakmarkul	0103	003	Chakmarkul_0103_003	318



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Plant	Union		8		_003	4
Sewage Treatment Plant	Chakmarkul Union	Chakmarkul	01 8	003	Chakmarkul_018_003	310 7
Stadium	Fatekharkul Union	Hightupi	02 0	000	Hightupi_020_000	11
Wholesale Trade Zone	Joarianala Union	Uttar Mithachhari	01 9	002	Uttar Mithachhari_019_002	192 6
Low Income Housing	Kauarkhop Union	Lot Ukhiarghona	03 9	006	Lot Ukhiarghona_039_006	252 7
Low Income Housing	Kauarkhop Union	Lot Ukhiarghona	03 9	001	Lot Ukhiarghona_039_001	675
Low Income Housing	Kauarkhop Union	Lot Ukhiarghona	03 9	001	Lot Ukhiarghona_039_001	563
Solar Park	Garjania Union	Jungle Garjania	01 0	000	Jungle Garjania_010_000	119
BKSP	Joarianala Union	Nonachhari	01 7	003	Nonachhari_017_003	343 2
BKSP	Joarianala Union	Nonachhari	01 7	003	Nonachhari_017_003	343 1
BKSP	Joarianala Union	Nonachhari	01 7	003	Nonachhari_017_003	343 6
College	Joarianala Union	Joarianala	01 2	005	Joarianala_012_005	729 5
Tourist Spot	Garjania Union	Jungle Garjania	01 0	000	Jungle Garjania_010_000	56
Tourist Spot	Garjania Union	Jungle Garjania	01 0	000	Jungle Garjania_010_000	119
Tourist Spot	Joarianala Union	Joarianala	01 2	007	Joarianala_012_007	999 99

### 7.3.4.1 Educational Facility

**Table 7.10: Union wise Existing Facilities**

	Union	No of Primary School	No of High School	No of College	No of Madrasa
Education Facilities	Chakmarkul Union	5	2		6
	Dakshin Mithachhari Union	5	3		2
	Fatekharkul Union	12	5	1	10
	Garjania Union	6	1		3
	Idgar Union	5	1		6
	Joarianala Union	6			4
	Kachhapia Union	6	1	1	7



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	Kauarkhop Union	8	2		8
	Khuniapalong Union	1			1
	Rajarkul Union	5	1		7
	Rashid Nagar Union	3	1	1	8
	Total	62	17	3	62

**Table7.11: Plotwise Proposed Educational Facilities**

Type	Location	Union	Mouza	JL_N o	Shee t_No	Plot _No
Proposed_Primary_School (33)	Idgar_W_07	Idgar Union	Idgar	002	007	8132
	Idgar_W_05	Idgar Union	Idgar	002	004	4923
	Garjania_W_09	Garjania Union	Garjania	003	012	9770
	Kacchapia_W_08	Kacchapia Union	Dakshin Kacchapia	005	007	11159
	Kacchapia_W_03	Kacchapia Union	Kacchapia	004	002	344
	Kawarkhop_W_07	Kauarkhop Union	Manirjhil	007	001	527
	Kawarkhop_W_09	Kauarkhop Union	Sonaichhari	024	005	937
	Kawarkhop_W_08	Kauarkhop Union	Ukhiarghona	009	003	4274
	Kawarkhop_W_02	Kauarkhop Union	Ukhiarghona	009	001	33
	Kawarkhop_W_08	Kauarkhop Union	Lot Ukhiarghona	039	007	3177
	Khuniapalong_W_02	Khuniapalong Union	Khuniapalong	035	004	1328
	Khuniapalong_W_08	Khuniapalong Union	Dariar Dighi	037	005	2585
	Rajarkul_W_01	Rajarkul Union	Rajarkul	025	009	10779
	Rajarkul_W_09	Rajarkul Union	Rajarkul	025	002	1919
	Dakshin_Mithachari_04	Dakshin Mithachhari Union	Dakshin Mithachhari	027	004	7118
	Dakshin_Mithachari_01	Dakshin Mithachhari Union	Dakshin Mithachhari	027	001	718
	Chakmarkul_W_07	Chakmarkul Union	Chakmarkul	018	004	7720
	Chakmarkul_W_09	Chakmarkul Union	Chakmarkul	018	005	10072
	Chakmarkul_W_09	Chakmarkul Union	Chakmarkul	018	003	4701
	Fatekharkul_W	Fatekharkul	Fotekhhar	022	004	8182

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	_03	I Union	Kul			
	Fatekharkul_W_03	Fatekharku I Union	Fotekhar Kul	022	004	7798
	Fatekharkul_W_05	Fatekharku I Union	Sreekul	023	000	9999 9
	Fatekharkul_W_07	Fatekharku I Union	Maronglowa	021	002	2414
	Fatekharkul_W_08	Fatekharku I Union	Maronglowa	021	001	472
	Fatekharkul_W_07	Fatekharku I Union	Hightupi	020	000	519
	Jowarianala_W_09	Joarianala Union	Uttar Mithachhari	019	001	514
	Joarinala_W_01	Joarianala Union	Nandakhali	015	002	757
	Joarinala_W_02	Joarianala Union	Joarianala	012	002	204
	Joarinala_W_07	Joarianala Union	Joarianala	012	005	7177
	Rashidnagar_W_08	Rashid Nagar Union	Dhalichora	014	004	9839
	Rashidnagar_W_09	Rashid Nagar Union	Dhalichora	014	003	7477
	Rashidnagar_W_02	Rashid Nagar Union	Dhalichora	014	002	3191
	Rashidnagar_W_02	Rashid Nagar Union	Dhalichora	014	002	2121
Proposed_High_School (14)	Idgar_W_02	Idgar Union	Idgar	002	003	2197
	Garjania_W_08	Garjania Union	Garjania	003	011	7773
	Kacchapia_W_09	Kachhapia Union	Dakshin Kachhapia	005	005	8552
	Kacchapia_W_02	Kachhapia Union	Kachhapia	04	05	3284
	Kawarkhop_W_08	Kauarkhop Union	Kauarkho	008	002	547
	Khuniapalong_W_02	Khuniapalong Union	Khuniapalong	035	004	1328
	Khuniapalong_W_08	Khuniapalong Union	Dariar Dighi	037	005	2584
	Rajarkul_W_02	Rajarkul Union	Rajarkul	025	008	8877
	Dakshin_Mithachari_09	Chakmarku I Union	Chakmarkul	018	004	8818
	Fatekharkul_W_04	Fatekharku I Union	Fotekhar Kul	022	003	4885
	Jowarianala_W_09	Joarianala Union	Uttar Mithachhari	019	001	519
	Fatekharkul_W	Joarianala	Joarianala	012	004	4911

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	07	Union				
	Chakmarkul_W_09	Chakmarkul Union	Chakmarkul	018	004	8440
	Rashidnagar_W_02	Rashid Nagar Union	Dhalichora	014	002	2780

### 7.3.4.2 Health Facility

Table 7.12: Proposed Health/Clinic

	Existing Health_Clinic	Proposed Health_Clinic (34)					
		Location	Union	Mouza	JL_No	Sheet_No	Plot_No
Health_Clinic	20	Idgar_W_05	Idgar Union	Idgar	002	004	4990
		Idgar_W_07	Idgar Union	Idgar	002	007	8189
		Garjania_W_09	Garjania Union	Garjania	003	012	9777
		Garjania_W_08	Garjania Union	Garjania	003	011	7773
		Garjania_W_04	Garjania Union	Garjania	003	009	4570
		Kacchapia_W_08	Kachhapia Union	Dakshin Kachhapia	005	007	11159
		Kawarkhop_W_07	Kauarkhop Union	Manirjhil	007	001	803
		Kawarkhop_W_09	Kauarkhop Union	Sonaichhari	024	005	937
		Kawarkhop_W_03	Kauarkhop Union	Lot Ukhiarghona	039	004	1911
		Kawarkhop_W_02	Kauarkhop Union	Ukhiarghona	009	001	58
		Kawarkhop_W_04	Kauarkhop Union	Ukhiarghona	009	002	1531
		Kawarkhop_W_08	Kauarkhop Union	Lot Ukhiarghona	039	007	3177
		Khuniapalong_W_02	Khuniapalong Union	Khuniapalong	035	004	1328
		Rajarkul_W_01	Rajarkul Union	Rajarkul	025	009	10779
		Rajarkul_W_09	Rajarkul Union	Rajarkul	025	002	1871
		Dakshin_Mithachhari_04	Dakshin Mithachhari Union	Dakshin Mithachhari	027	004	7117
		Dakshin_Mithachhari_01	Dakshin Mithachhari Union	Dakshin Mithachhari	027	001	723
		Chakmarkul_	Chakmark	Chakmark	018	003	4324

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		W_03	ul Union	ul			
		Chakmarkul_W_04	Chakmarkul Union	Chakmarkul	018	001	748
		Fatekharkul_W_03	Fatekharkul Union	Fotekharkul	022	004	8181
		Fatekharkul_W_03	Fatekharkul Union	Fotekharkul	022	004	7793
		Fatekharkul_W_04	Fatekharkul Union	Fotekharkul	022	003	4782
		Fatekharkul_W_05	Fatekharkul Union	Sreekul	023	000	99999
		Fatekharkul_W_07	Fatekharkul Union	Maronglowa	021	002	2428
		Fatekharkul_W_08	Fatekharkul Union	Maronglowa	021	001	472
		Fatekharkul_W_07	Fatekharkul Union	Hightupi	020	000	519
		Jowarianala_W_09	Joarianala Union	Uttar Mithachhari	019	001	517
		Fatekharkul_W_09	Joarianala Union	Joarianala	012	004	5557
		Jowarianala_W_01	Joarianala Union	Nandakhal	015	002	757
		Jowarianala_W_02	Joarianala Union	Joarianala	012	002	204
		Jowarianala_W_07	Joarianala Union	Joarianala	012	005	7175
		Rashidnagar_W_08	Rashid Nagar Union	Dhalichora	014	004	9805
		Rashidnagar_W_09	Rashid Nagar Union	Dhalichora	014	003	7477
		Rashidnagar_W_02	Rashid Nagar Union	Dhalichora	014	002	2280

### 7.3.4.4 Existing Other Facilities

**Table 7.13: Existing Other Facilities**

Other Facilities	
Type	No of Facilities
Hindu Temple	20
Mosque	331
Hindu Temple	20
Buddhist Temple	16
Graveyard	93
Electric Pole	2083
Electric Tower	25
Electric Transformer	9

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Fueling Station	4
Fire Service	1
Police Station	1
Post Office	3

### 7.3.4.5 Proposed Other Facilities

Table 7.14: Proposed Tempo-CNG Stand

Type	Location	Union	Mouza	JL No.	Sheet No.	Plot No.
Proposed Tempo CNG Stand	Idgar_W_02	Idgar Union	Idgar	002	003	2582
	Garjania_W_09	Garjania Union	Garjania	003	012	10063
	Kacchapia_W_02	Kachhapia Union	Kachhapia	04	05	99999
	Kawarkhop_W_08	Kauarkhop Union	Kauarkho	008	002	1829
	Khuniapalong_W_07	Khuniapalong Union	Dhechua Palong	036	003	3357
	Rajarkul_W_07	Rajarkul Union	Rajarkul	025	003	3928
	Fatekharkul_W_05	Fatekharkul Union	Fotekhar Kul	022	003	5555
	Jowarianala_W_06	Joarianala Union	Joarianala	012	005	7259
	Rashidnagar_W_08	Rashid Nagar Union	Dhalichora	014	004	9114
	Chakmarkul_W_08	Chakmarkul Union	Chakmarkul	018	004	8964
	Dakshin_Mithachari_W_01	Dakshin Mithachhari	Dakshin Mithachari	027	001	712

Table 7.15: Proposed RSSC and Neighborhood Market

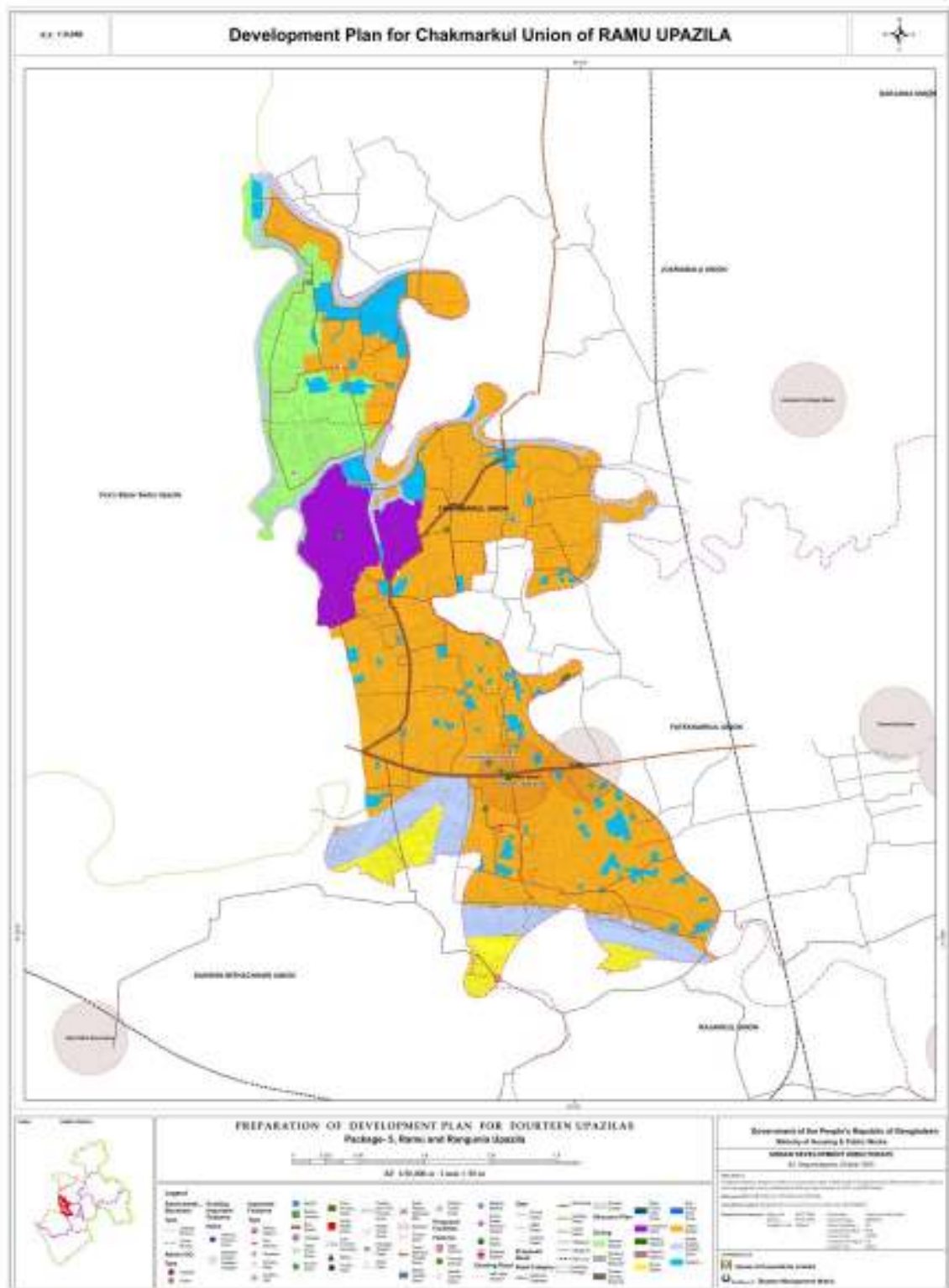
Type	Location	Union	Mouza	JL No.	Sheet No.	Plot No.
Proposed Rural Sales Service Center (RSSC)	Idgar_W_05	Idgar Union	Idgar	002	004	4929
	Idgar_W_07	Idgar Union	Idgar	002	006	8192
	Idgar_W_02	Idgar Union	Idgar	002	003	2191
	Garjania_W_03	Garjania Union	Garjania	003	004	1408
	Garjania_W_08	Garjania Union	Garjania	003	011	6702
	Garjania_W_09	Garjania Union	Garjania	003	012	9045
	Kacchapia_W_09	Kachhapia Union	Dakshin Kachhapia	005	005	8521
	Kawarkhop_W_07	Kauarkhop Union	Manirjhil	006	001	803
	Kawarkhop_W_08	Kauarkhop Union	Ukhiarghona	009	003	4265
	Kawarkhop_W_03	Kauarkhop Union	Lot Ukhiarghona	039	005	2102
	Kawarkhop_W_02	Kauarkhop Union	Ukhiarghona	009	001	33
	Kawarkhop_W_04	Kauarkhop Union	Ukhiarghona	009	002	1531
	Khuniapalong_W_02	Khuniapalong Union	Khuniapalong	035	002	122
	Khuniapalong_W_08	Khuniapalong Union	Dariar Dighi	037	005	2757
	Rajarkul_W_02	Rajarkul Union	Rajarkul	025	008	8946
	Rajarkul_W_01	Rajarkul Union	Rajarkul	025	009	10445
	Rajarkul_W_09	Rajarkul Union	Rajarkul	025	002	1897
	Dakshin_Mithachari_04	Dakshin Mithachhari	Dakshin Mithachari	027	004	6124
	Dakshin_Mithachari_01	Dakshin Mithachhari	Dakshin Mithachari	027	001	715
	Dakshin_Mithachari_09	Rajarkul Union	Rajarkul	025	002	1706
	Dakshin_Mithachari_07	Dakshin Mithachhari	Chainda	028	001	1020
	Jowarianala_W_01	Joarianala Union	Nandakhali	015	001	56
	Jowarianala_W_02	Joarianala Union	Joarianala	012	002	204
	Rashidnagar_W_09	Rashid Nagar Union	Dhalichora	014	003	6467
	Rashidnagar_W_02	Rashid Nagar Union	Dhalichora	014	002	3151
Neighborhood Market	Chakmarkul_W_09	Chakmarkul Union	Chakmarkul	018	005	11033
	Chakmarkul_W_09	Chakmarkul Union	Chakmarkul	018	005	10073

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Chakmarkul_W_08	Chakmarkul Union	Chakmarkul	018	004	7567
Fatekharkul_W_04	Fatekharkul Union	Fotekhar Kul	022	003	4682
Fatekharkul_W_05	Fatekharkul Union	Sreekul	023	000	338
Fatekharkul_W_06	Fatekharkul Union	Maronglowa	021	002	2411
Jowarianala_W_09	Joarianala Union	Uttar Mithachhari	019	001	752
Jowarianala_W_07	Joarianala Union	Joarianala	012	004	4953



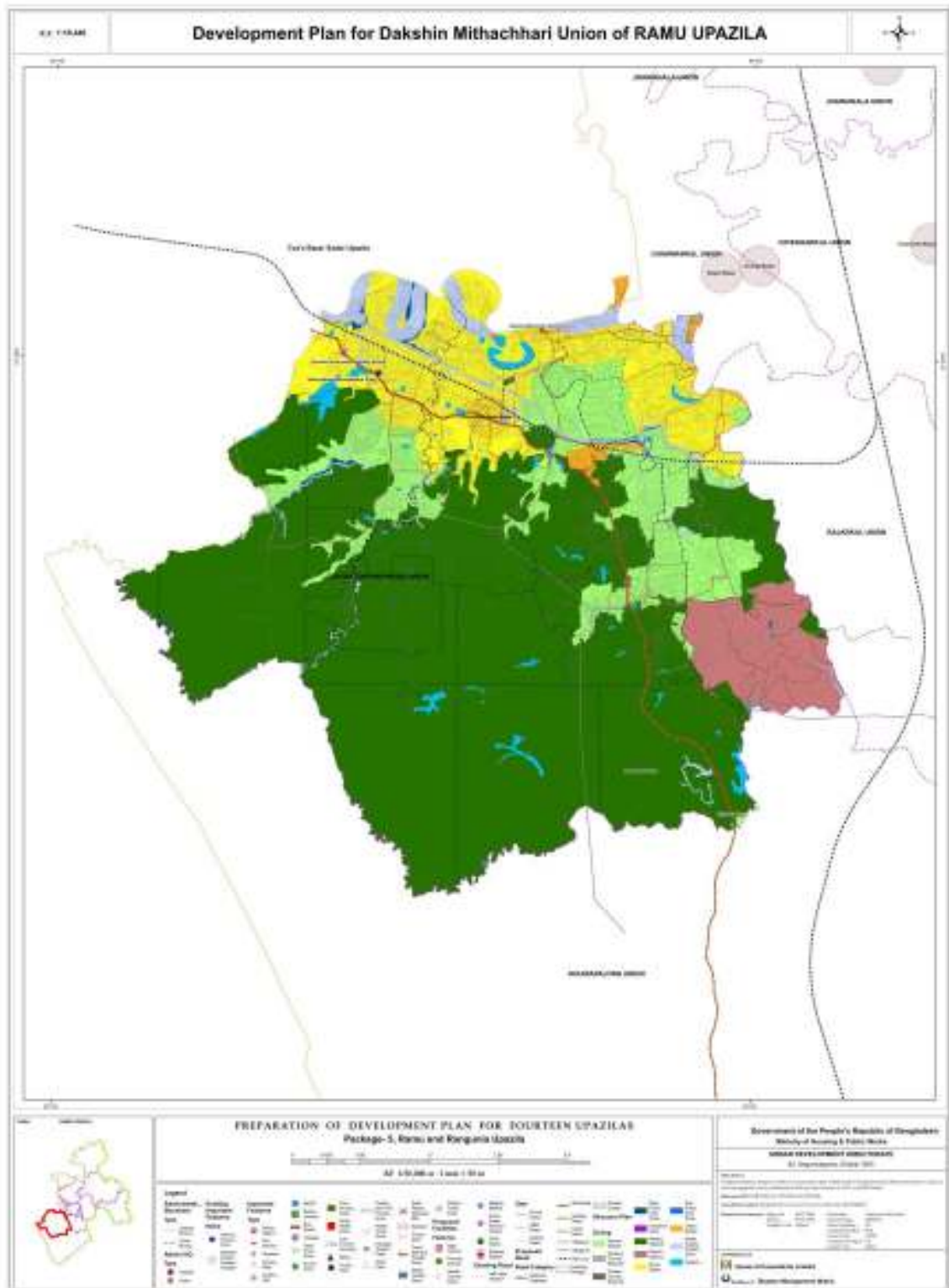
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**Map 7.6: Development Plan for Chakmarkul Union**

*Source: Prepared by Consultant Team Based on Field Survey, 2016*



**Map 7.7: Development Plan for Mithachari Union**

**Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)**

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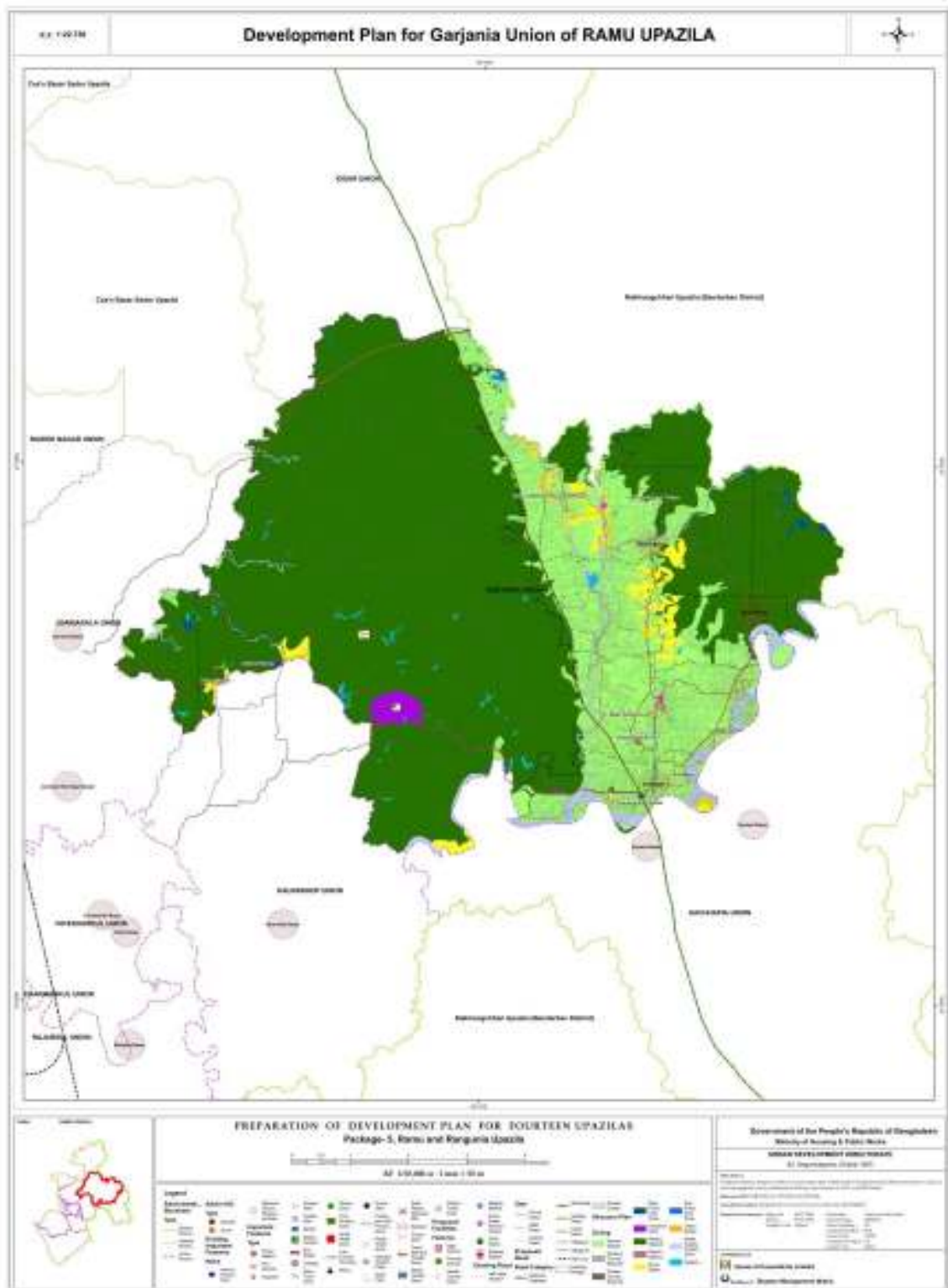
**Source: Prepared by Consultant Team Based on Field Survey, 2016**



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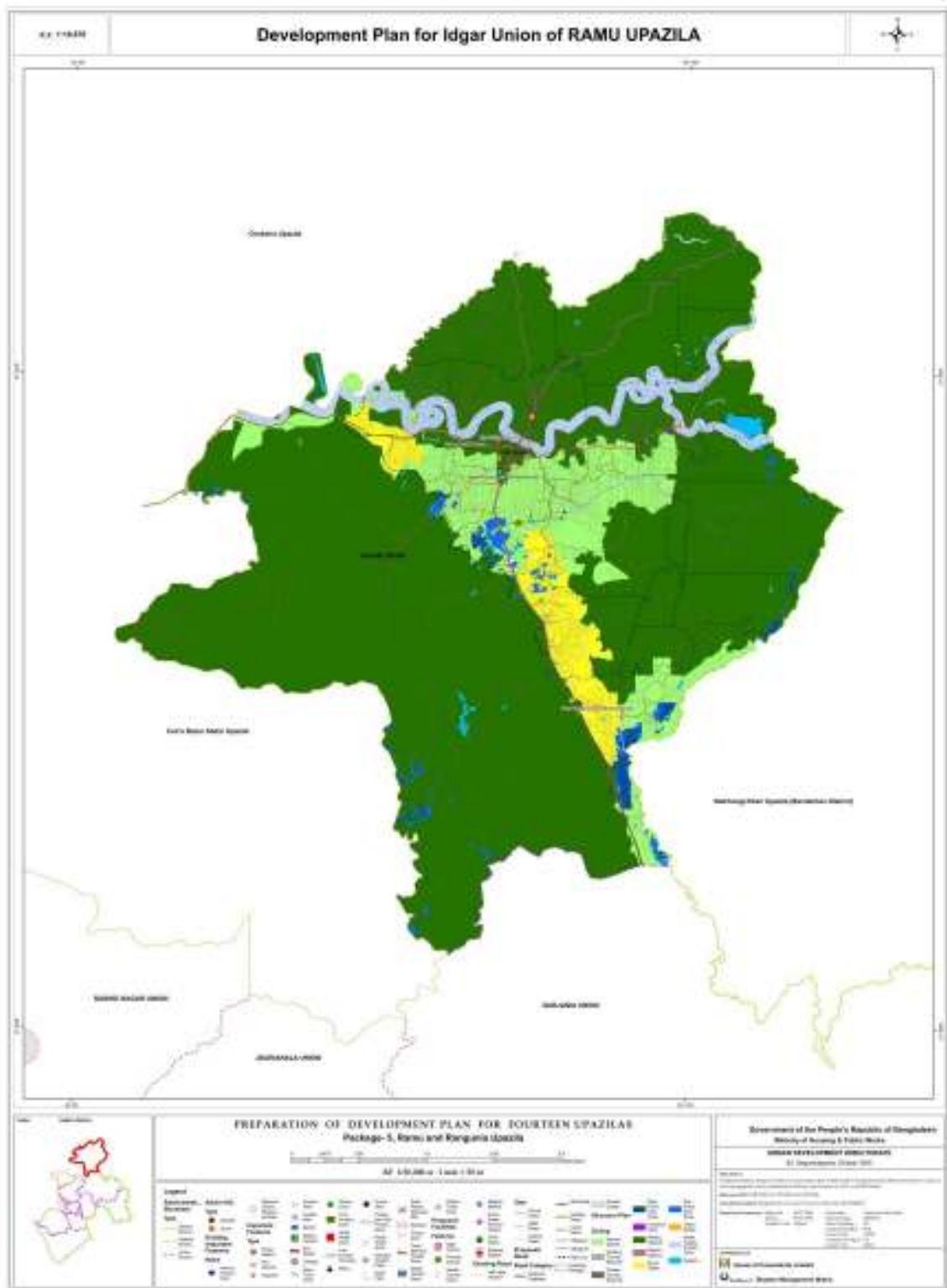
Map 7.9: Development Plan for Garjania Union

Source: Prepared by Consultant Team Based on Field Survey, 2016

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**Map 7.10: Development Plan for Idgar Union**

**Source: Prepared by Consultant Team Based on Field Survey, 2016**

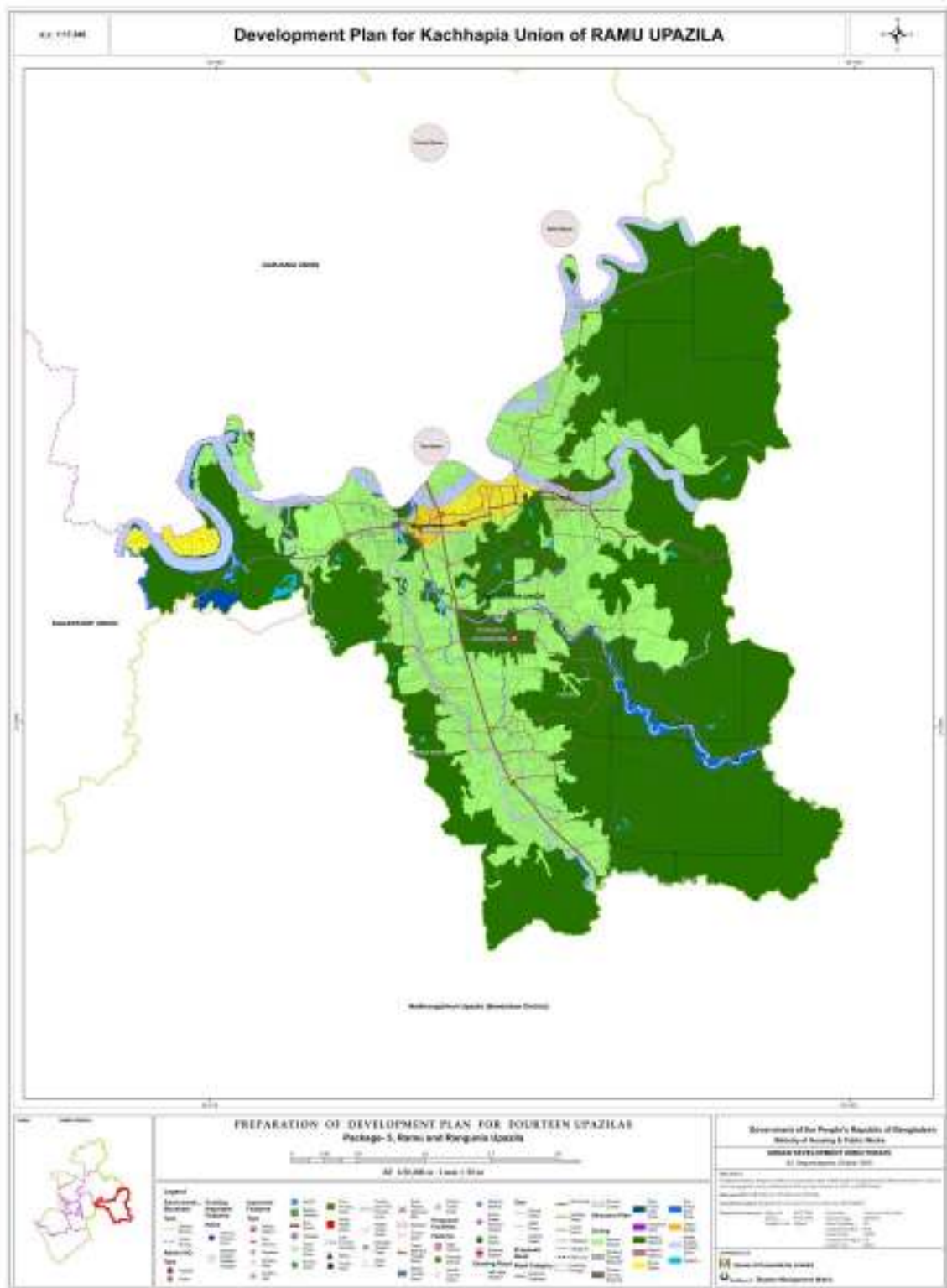
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Map 7.12: Development Plan for Kachhapia Union

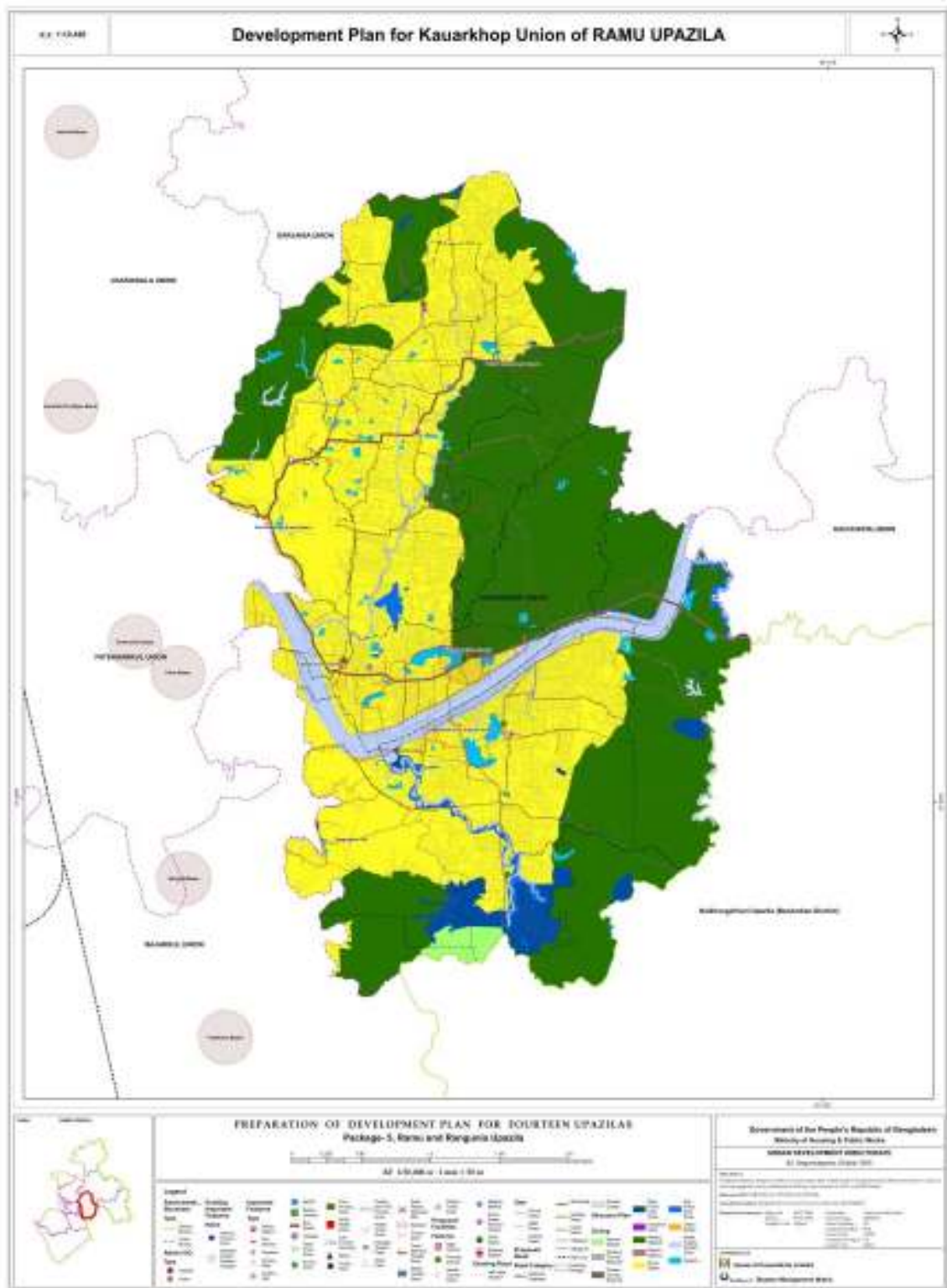
Source: Prepared by Consultant Team Based on Field Survey, 2016



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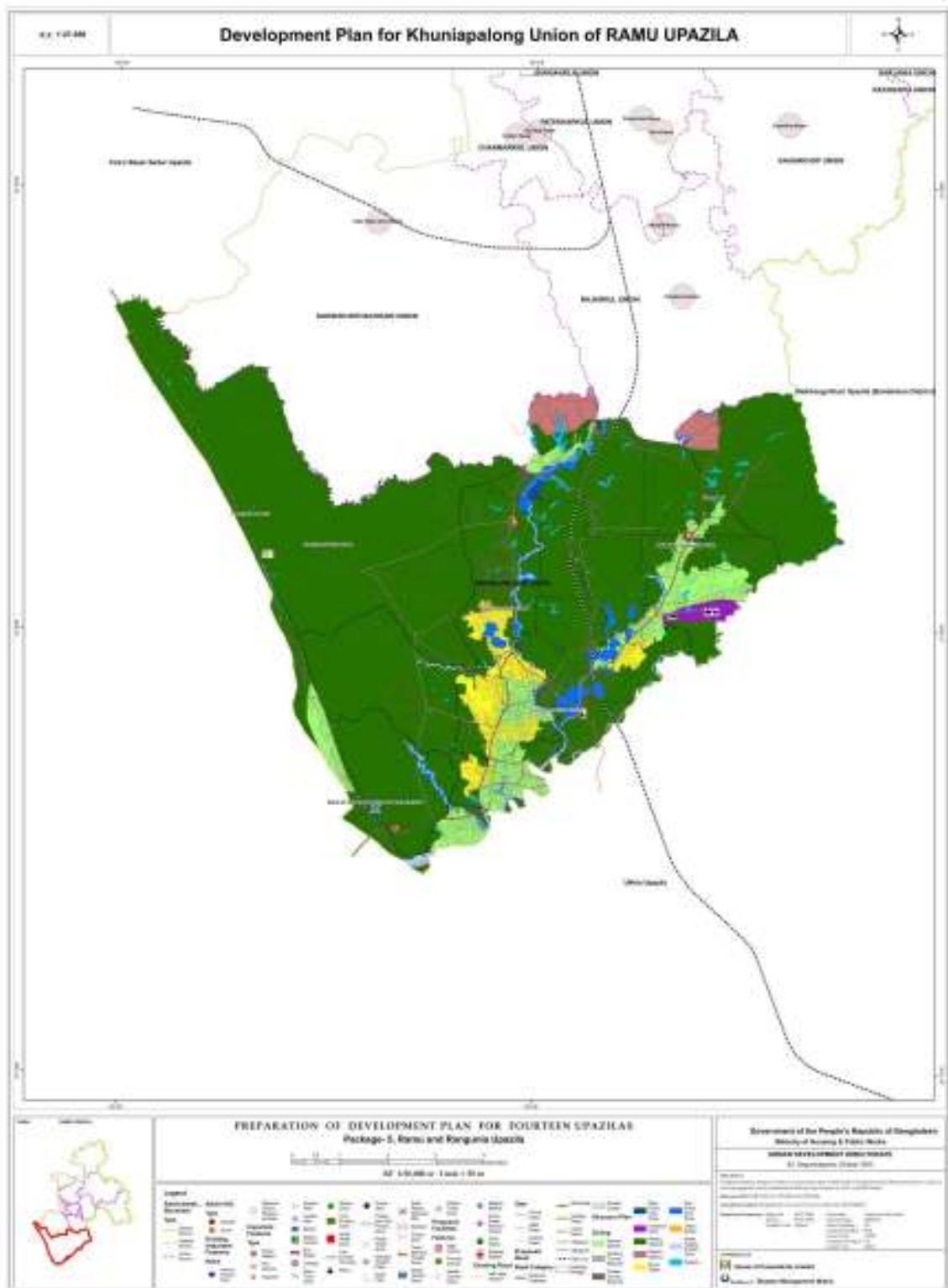
**Map 7.13: Development Plan for Kauarkhop Union**

**Source: Prepared by Consultant Team Based on Field Survey, 2016**

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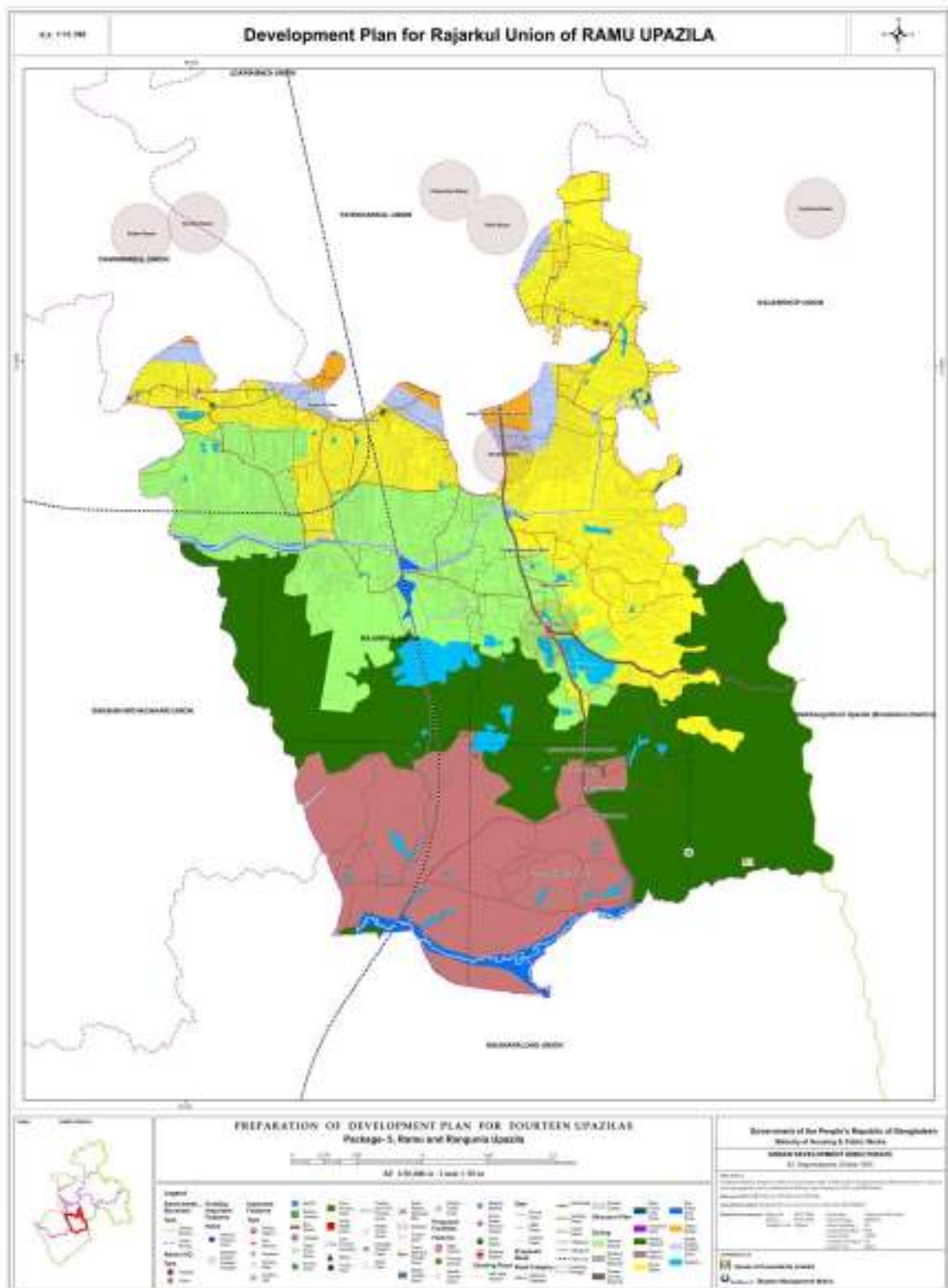
**Map 7.14: Development Plan for Khuniapalong Union**

*Source: Prepared by Consultant Team Based on Field Survey, 2016*

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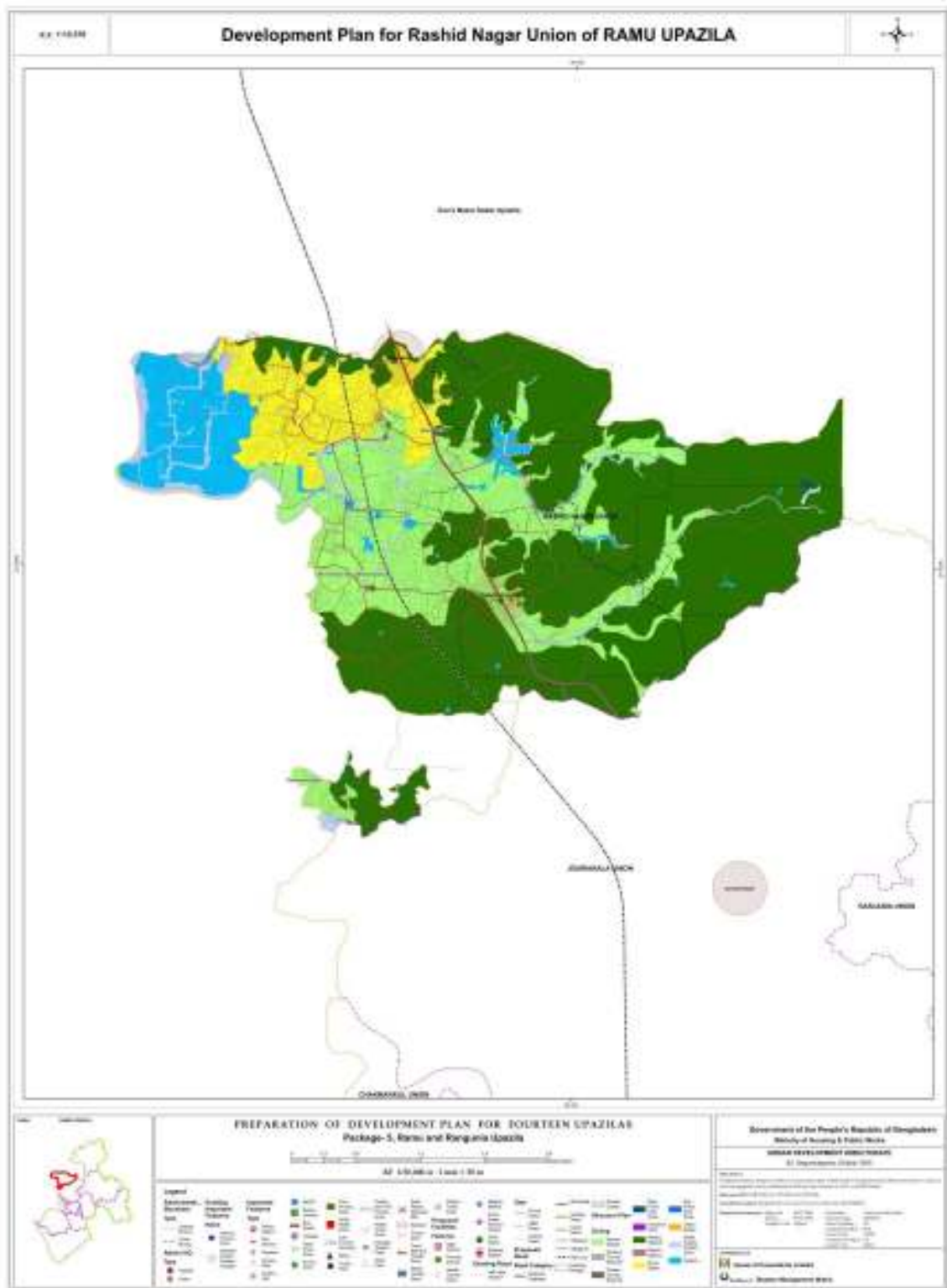
**Map 7.15: Development Plan for Rajarkul Union**

**Source: Prepared by Consultant Team Based on Field Survey, 2016**

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**Map 7.16: Development Plan for Rashid Nagar Union**

*Source: Prepared by Consultant Team Based on Field Survey, 2016*



**7.5 Action Area Plan****7.5.1 Conceptualization of Action Area Plan**

Action Area Plan is not a statutory plan and it provides detail consideration of areas that are required consolidated planning in order to ensure a coordinated approach in development. Action Plan assists to clarify what resources are required to achieve the goal, formulate a timeline for when specific tasks need to be completed and delineate what resources are required.

**7.5.2 Extent and Nature of Action Area Plan**

The Action Area Plan for Ramu Upazila 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 contain 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 summarises 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.

Project evaluation looks at projects, which might be locally funded over the five-year period, given budgetary and other constraints, looks at projects which cannot be locally funded but which might be considered by national agencies operating locally and makes preliminary assessments of larger scale projects, which would need larger investment.

The purpose of a plan is to lessen uncertainty about what presently exists and what is likely to happen in future and to provide a basis for different agencies, public and private, to proceed on the basis of a common goal by providing a framework for overall development.

The structure plan examined the existing situation, drew attention to key problems, assessed likely changes and their implications and proposed how some major problems might be tackled. Very briefly, the structure plan notes an anticipated population increase of some 30% in the Upazila by the end of the plan period and assesses the implications of this growth. Amongst its major proposals are the needs for more modern inputs to sustain agricultural productivity, the need for new non-agricultural jobs, improved infrastructure. It concentrates on the framework and not the details of layout or individual development. Where action is proposed within a relatively short time however, more detail may be needed than is provided in the structure plan. The structure plan identified the major actions needed to bring about development in accordance with its recommendations. Its final chapter consists of a development programme, listing, for five-year phases, the projects needed in each sector to bring about development along the lines proposed. This programme for the first five-year period forms the starting point for the action plan.

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The objective of the action plan is to evaluate those projects, which should be implemented during the first five years' life of the structure plan. It thus contains more detail on a more limited range of subjects.

It consists of four parts:

- ✓ Project Selection
- ✓ Project Evaluation
- ✓ Analysis of Resource
- ✓ Establishing Priorities

Two or Three bankable projects will be proposed in next phase. Preliminarily, Tourism Development of Himchari and Establishment of Industry have been considered for allowable bankable project. The detail outline of these project will be derived in next phase of planning. The summarized PRA demand has been outlined below:

**Table 7.16: PRA Demand of Ramu Upazila**

Unions	PRA Demand 1	PRA Demand 2	PRA Demand 3	PRA Demand 4	PRA Demand 5
Idgor Union	Education	Transport	Health facilities	River Erosion	
Garjania Union	Transport	River Erosion	Electricity	Health facilities	Education
Kocchopia Union	Electricity	Transport	Education	Health	River Erosion
Kawarkhop Union	River Erosion	Transport	Education	Electricity	
Fatekharkul Union	River Erosion	Drainage	Transport	Education	Gas
Jowarianala Union	Employment Opportunity	Education	Transport	Water Logging	Electricity Connection
Rajarkul Union	River Erosion	Transport	Education	Agriculture Development	
Daskhin Mithachari Union	River Erosion	Transport	Hill Cutting		
Khuniar Palong Union	Transport	Health facilities	Education	Employment Opportunity	
Chakmarkul Union	Flood	Transport	Health	Education	Employment Opportunity
Rashid nagar Union	Transport	Flood	Employment Opportunity	Electricity Connection	

**Source: Field Survey, 2015**

### 12.2 Priority Development Projects for Ramu Upazila

Some development activities are to be undertaken in Ramu Upazila on priority basis within the first five years of the plan period. These are listed below:

#### Priority Development Projects

- Low cost housing
- Redevelopment plan for growth centres
- Regulator design

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- Embankment for the protection from river bank erosion

### 12.3 River Bank Erosion

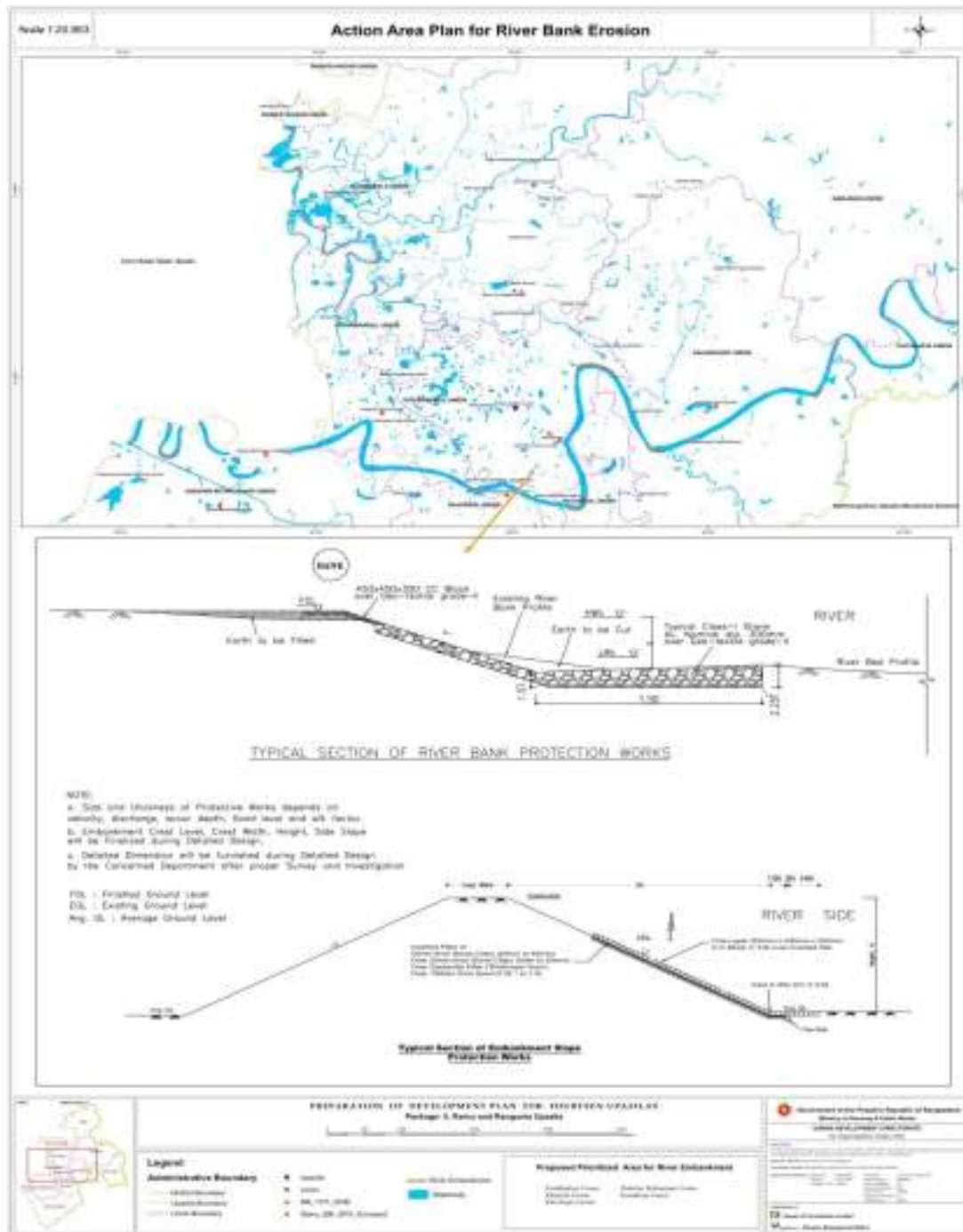


Figure 7.7: Action Area Plan for River Bank Erosion

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### 12.3 Low cost housing

#### Low Cost Housing

SALIENT FEATURES: FOR ONE LOW COST	
Total no. of House = 120. Size of each House = 23-3'x 25'-10". Plinth Area of each House = 600. 78 sft. Size of each Plot 40'x 50' = 4.591 decimal.	Area Required for Housing = 6.84 acre. Community Pond = 1 no. (0.69 acre). Community Centre = 1 no. (1363 sft). Play Ground = 1 no. No. of Tube-well =24 nos. Length of HBB Road= 3096 f t. Length of Brick Drain = 3120 ft. Total Area Required for Low Cost Housing 9.31 acre.

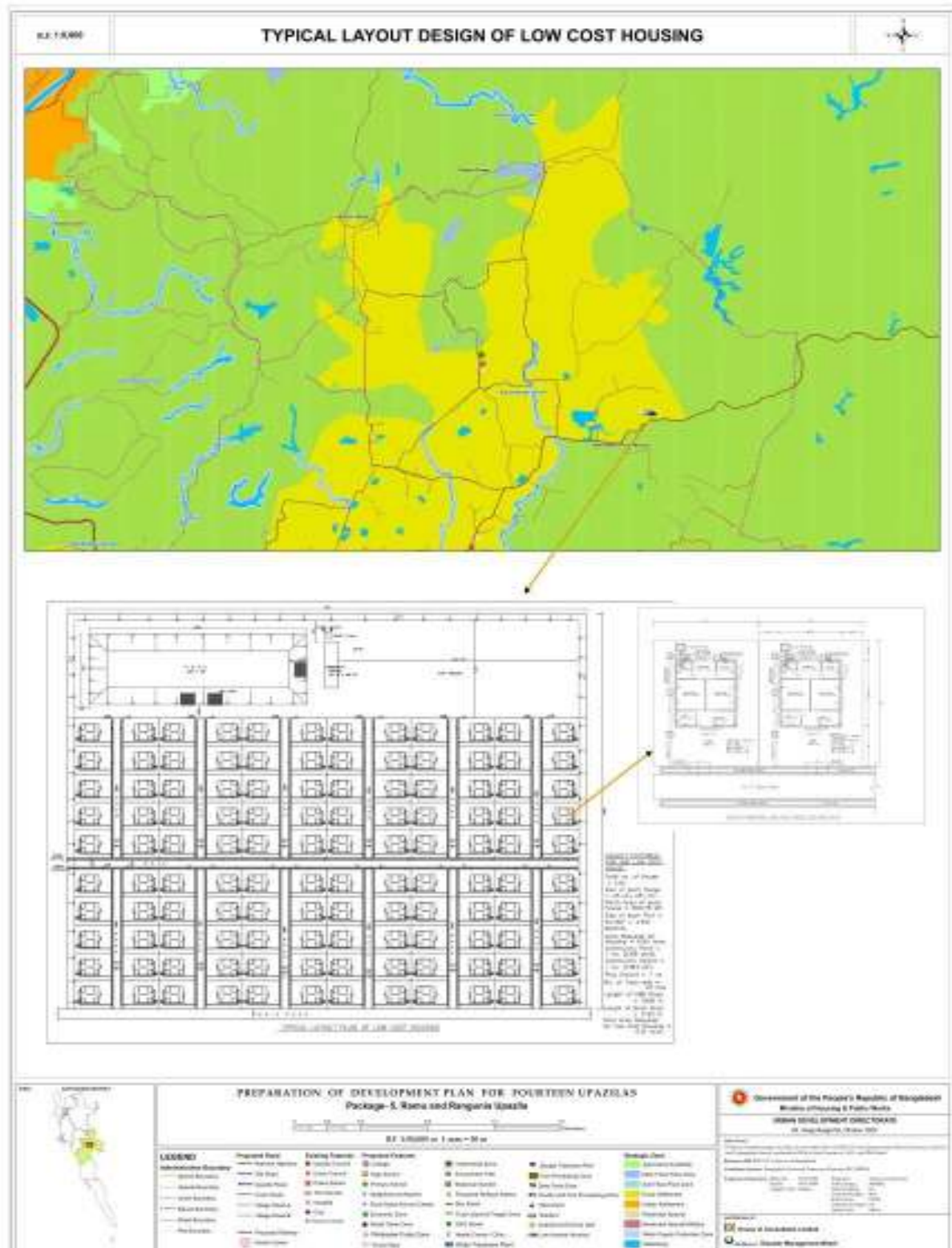
Table 7.10: Proposed Housing Site

Union	Structure Frequency	Average Household	Estimated Population	No. of Low Cost housing Site
Dakshin Mithachhari Union	369	5.8	2148	2
Khuniapalong Union	223	5.6	1254	2
Rajarkul Union	387	5.4	2080	1
Rashid Nagar Union	573	5.5	3131	1

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**Figure 7.8: Typical Layout Plan Of Low Cost Housing**

### 12.4 Regulator

Flash flood is a very burning problem in Ramu Upazila. The inhabitants of this area are suffering from these phenomena. To mitigate or control this situation different types of regulators have been proposed. Such as 1 vent regulator, 2 vent, 4 vent and 6 vents.



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Depending on the current situation which type of vent will be suitable for specific area it can be constructed. Here some typical designs of this regulator have been given. The regulator with 6 vents will also work as water retention structure.

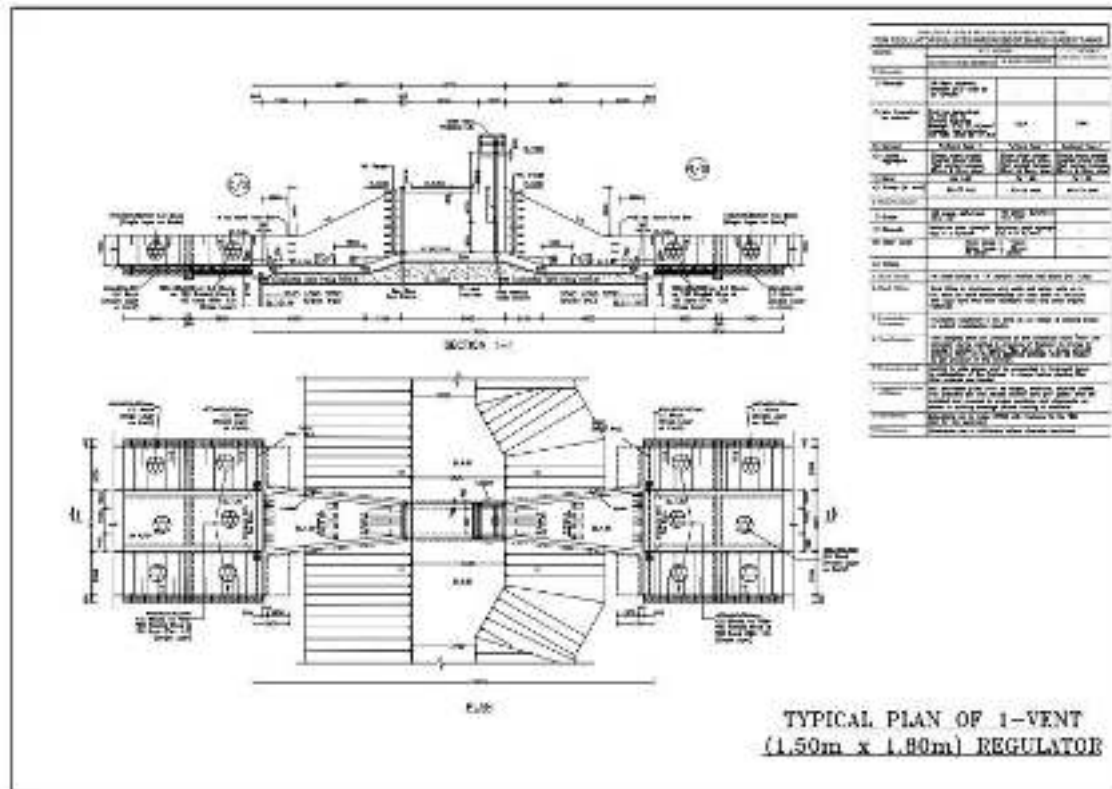


Figure 7.9: TYPICAL PLAN OF 1-VENT REGULATOR

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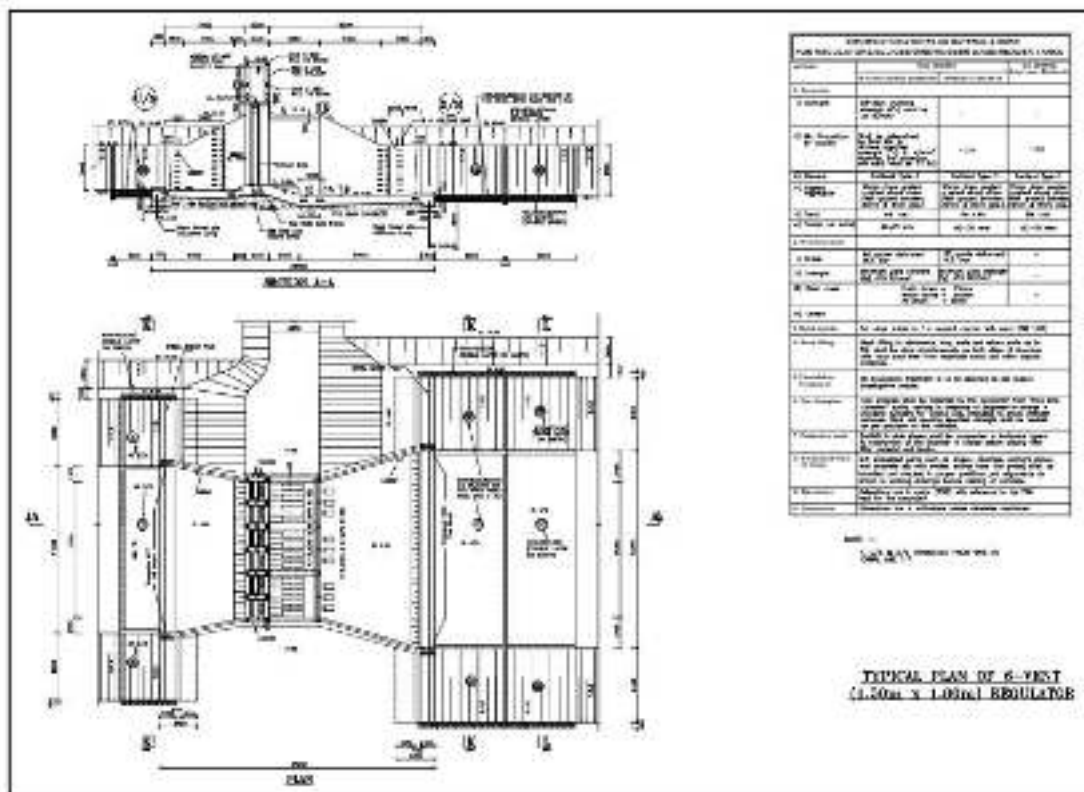
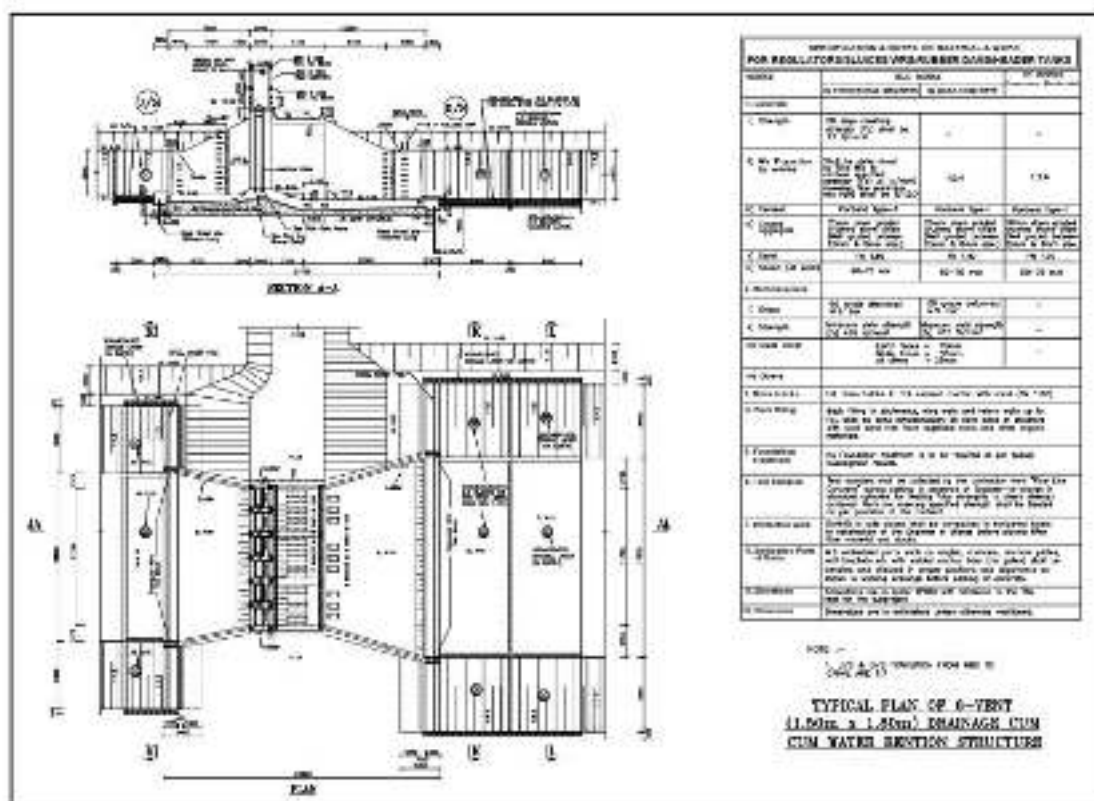


Figure 7.11: TYPICAL PLAN OF 7-VENTS REGULATOR



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Figure 7.12: TYPICAL PLAN OF 7-VENTS DRAINAGE CUM WATER RETENTION  
STRUCTURE

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### CHAPTER 8 IMPLEMENTATION MODALITY

#### 8.1 Introduction

Effective implementation of a plan is the most important part of the total planning process. The process of execution needs to be carried out with care and efficiency in order to produce the best results. This chapter of the plan report highlights the various measure needed to be taken in order to execute the plan proposals.

#### 8.2 Priority Development Projects for Ramu Upazila

Type of Development Project	Implementation Responsibility	Source of Fund	Monitoring and Evaluation
RESIDENTIAL			NHA, Upazila
-Site and Services Projects	Public Sector-,NHA	Self-Finance,	
-Public Housing	Public Sector-PWD,NHA	Government Finance	
-Participatory Housing Area Development	Public-Community Joint, Community	Community, Public (infrastructure development),	
-Commercial Housing	Real Estate Company	Real Estate Company	
-Cooperative Housing	Cooperative Body	Cooperative Body	
COMMERCE			Paurashava/Upazila
- Private Business Enterprise	Company /Proprietor	Company /Proprietor	
-Town Centre	-Private Joint Venture	-Private Joint	
- Shopping Centre		Government	
INDUSTRY	(Infrastructure development)	(Cost recovery from land owners)	BSCIC, BEPZA
- Industrial Area	BEPZA	Government	
- Export Processing Zone			
EDUCATION	Ministry of Education	Government, Community,	Department of Education,
- School, College	Ministry of Science & Technology,	Government-Community Joint	Ministry of Science and Technology
- IT Village	Ministry of Industry	Government	
OPEN SPACE	Paurashava/District and National,	Government	Upazila/Paurashava/LGE D

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	Divisional Sports Council		
- Park, Stadium, Play ground			
UTILITY SERVICES	Postal Department, Paurashava/ Fire Service and Civil Defense Authority,	Government	DPHE, LGED
- Post Office, Water Supply Installations, Drainage Installations, Fire Station, Waste Disposal Site, etc.			
Regulator, Embankment	Water Board	Government	Water Board

### CHAPTER 9 SUSTAINABLE DEVELOPMENT

#### 9.1 Introduction

The Sustainable Development Goals (SDGs) are a collection of 17 global goals set by the United Nations. The broad goals are interrelated though each has its own targets to achieve. The total number of targets is 169. The SDGs cover a broad range of social and economic development issues. These include poverty, hunger, health, education, climate change, gender equality, water, sanitation, energy, urbanization, environment and social justice.

The 17 Sustainable Development Goals (SDGs) – part of a wider 2030 for Sustainable Development – build on the Millennium Development Goals (MDGs). The SDGs are also known as "Transforming our World: the 2030 Agenda for Sustainable Development" or 2030 Agenda in short. They are also known as the Global Goals for Sustainable Development.

The goals were developed to replace the Millennium Development Goals (MDGs) which ended in 2015. Unlike the MDGs, the SDG framework does not distinguish between "developed" and "developing" nations. Instead, the goals apply to all countries.



Figure 9.1: The Sustainable Development Goals

#### 9.2 SDG Goals:

Goal 1. End poverty in all its forms everywhere

Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Goal 3. Ensure healthy lives and promote well being for all at all ages

Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Goal 5. Achieve gender equality and empower all women and girls

Goal 6. Ensure availability and sustainable management of water and sanitation for all

Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all

Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

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Goal 10. Reduce inequality within and among countries

Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable

Goal 12. Ensure sustainable consumption and production patterns

Goal 13. Take urgent action to combat climate change and its impacts

Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

### **9.3 Relating Between SDG and Development Plan**

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SDG		
<b>Goal 2:</b> End hunger, achieve food security and improved nutrition and promote sustainable agriculture	Agricultural lands have given most priority during planning phase. Agricultural lands have been preserved. Food processing zone, retail trade zone, wholesale zone has been proposed for the food security and improved nutrition.	14.64 % area has been declared as pure agricultural zone and any kind of development on this area is prohibited. Besides that, 26% areas can be used as agricultural land including main flood, sub flood, restricted special zone. In Ramua upazila 1 wholesale trade zone 1Fruit Processing Zone, 1 retail trade zone have been proposed.
<b>Goal 4:</b> Ensure inclusive and quality education for all and promote lifelong learning	On the basis of population projection, future demand and PRA education facilities have been quantified and proposed.	On the basis of demand and population projection 33 primary schools and 14 high schools has been proposed.
<b>Goal 6:</b> Ensure access to water and sanitation for all	Main and sub flood flow zones have been identified. On the basis of demand overhead tank has been proposed.	Pond more than 0.25 Decimal will be preserved for Surface Water Consumption and for Urban Area an Overhead Tank has been Proposed, River can be used for Surface water Treatment.
<b>Goal 7:</b> Ensure access to affordable, reliable, sustainable and modern energy for all	Solar park has been proposed as modern, affordable and reliable energy for all.	1 solar park has been proposed and the area is 100 acres.
<b>Goal 8:</b> Promote inclusive and sustainable economic growth, employment and decent work for all	Shift share analysis has been done to identify the future economic growth of the upazila. Growth centers have been identified, redevelopment plan for growth center has been proposed, RSSC has been proposed for rural areas, neighborhood market for urban area.	18 growth centers have been identified in this upazila, redevelopment plan of these growth centers have proposed, 25RSSC and 8 neighborhood markets have been included in the plan.

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<b>Goal 9:</b> Build resilient infrastructure, promote sustainable industrialization and foster innovation	Industrial area has been identified.	1.39 sq.km area has been declared as industrial zone in the structure plan.
<b>Goal 11:</b> Make cities inclusive, safe, resilient and sustainable	Suitable urban area has been identified through planning. The facilities have been quantified according to the need.	19.76 sq.km area has identified as urban area, schools, drainage systems, stadium and other facilities have been proposed in urban area.
<b>Goal 12:</b> Ensure sustainable consumption and production patterns	The upazila is an agro-based upazila and also suitable for fisheries and poultry farms. Food processing zones, retail and trade zones, wholesale zone has been proposed for the upazila.	In Ramu upazila 1 food processing zone, 1 retail trade zone have been proposed, poultry and fish processing zones have been proposed.
<b>Goal 13:</b> Take urgent action to combat climate change and its impacts	Restricted special zone which includes reserved forest, agricultural land has been identified and policies have been given to conserve these areas.	Around 77% area (246.59 sq.km) has declared as reserved forest, it includes the hilly area, Triple and Double agricultural zone, native forests, waterbodies.
<b>Goal 15:</b> Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss	Reserved forests are the massive natural resource of the upazila. Reserved forests have been restricted from any kind of development. Eco sensitive zones have been identified to protect the biodiversity of the upazila.	62.75 % of total area has been declared as restricted special to conserve the restricted forest, it includes beach, Himchari National park, botanical garden.



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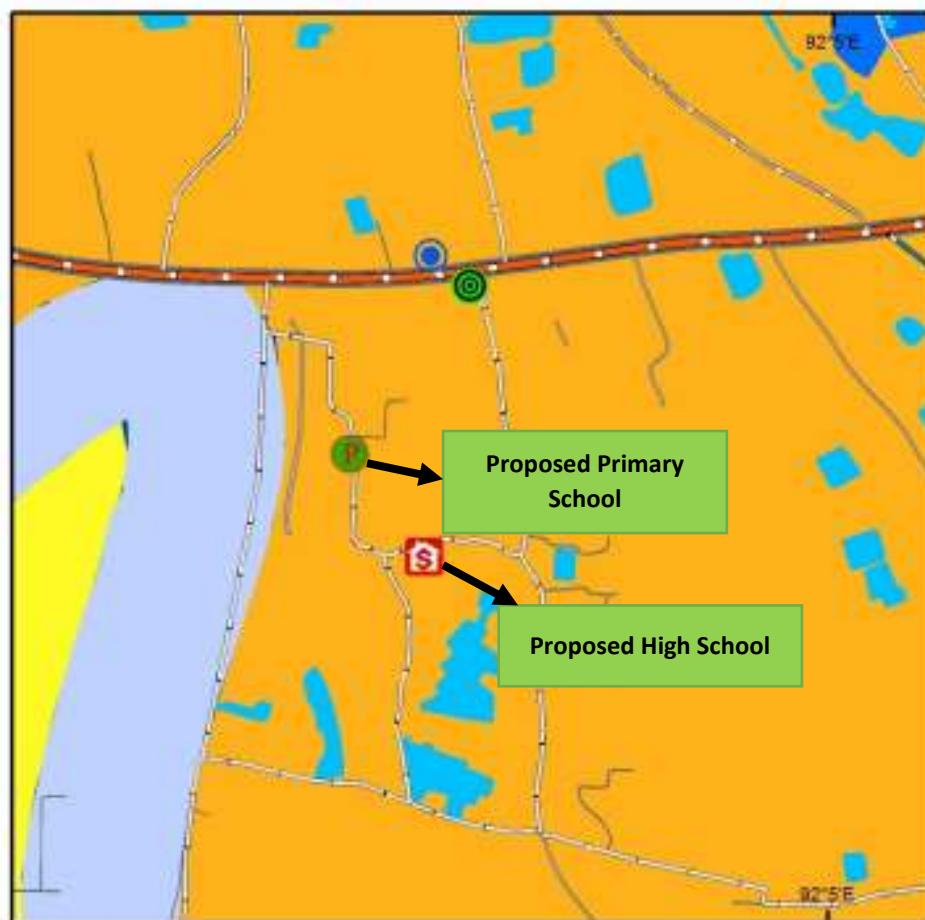


Figure 9.1: Ensure Inclusive and Quality Education for All

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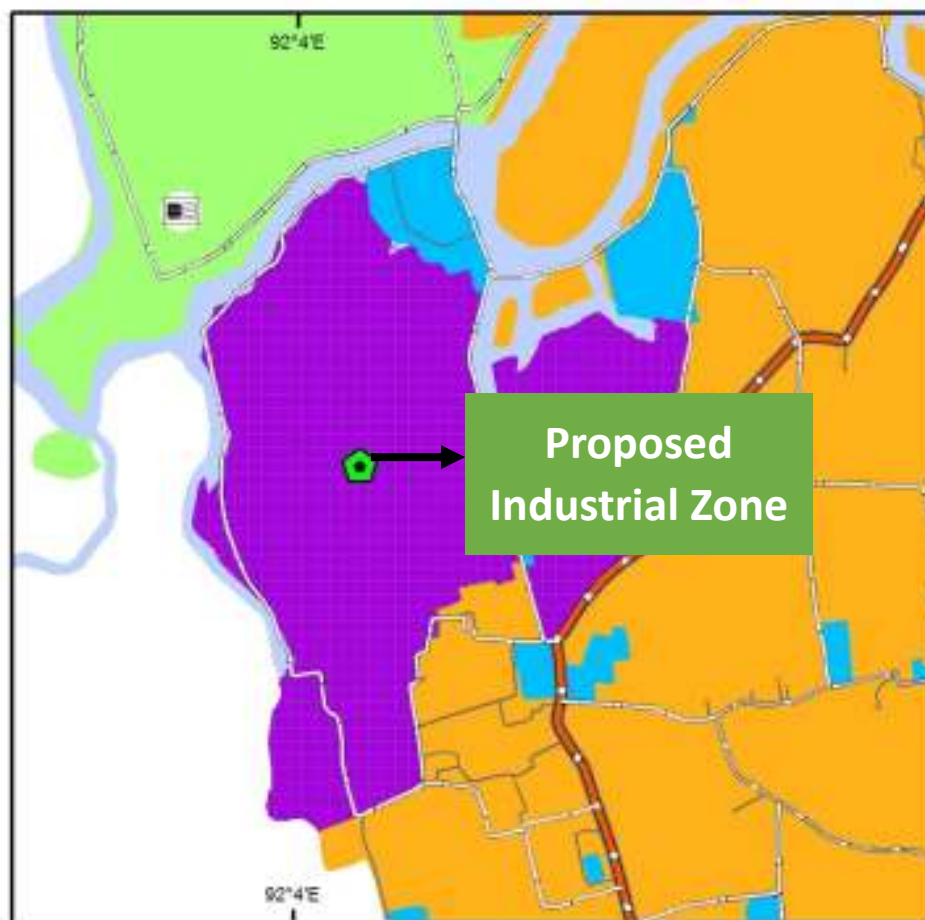


Figure 9.2: Promote Sustainable Industrialization

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Figure 9.3: Promote affordable, reliable, sustainable and modern energy

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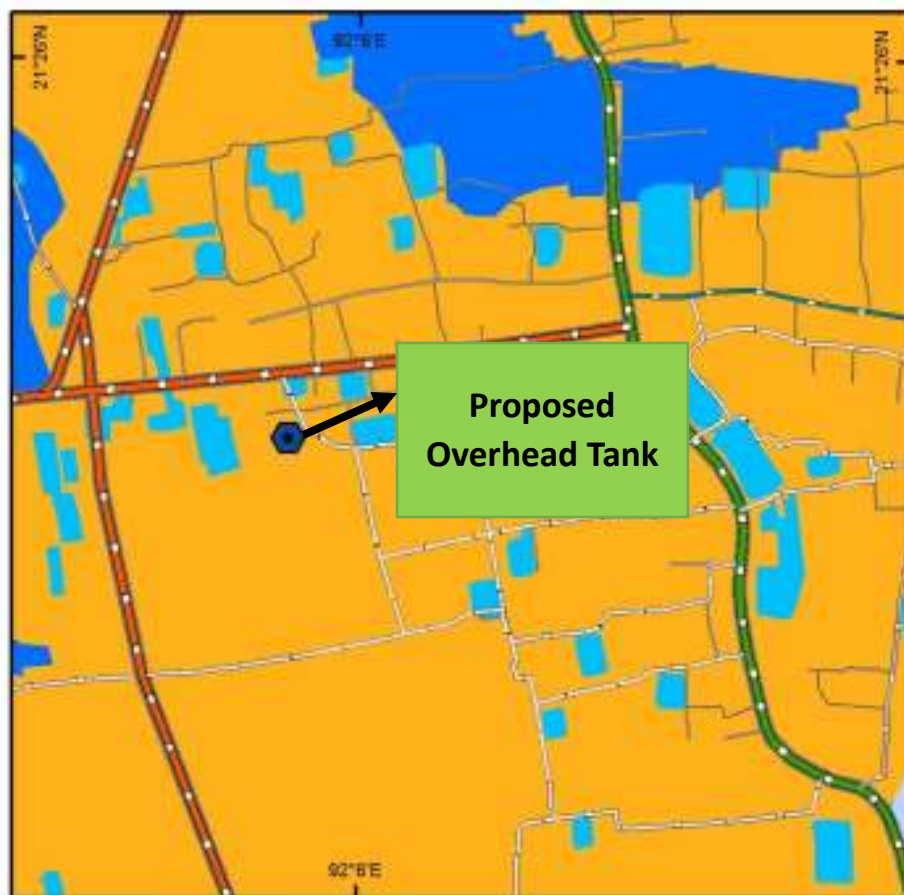


Figure 9.4: Promote water and sanitation For all

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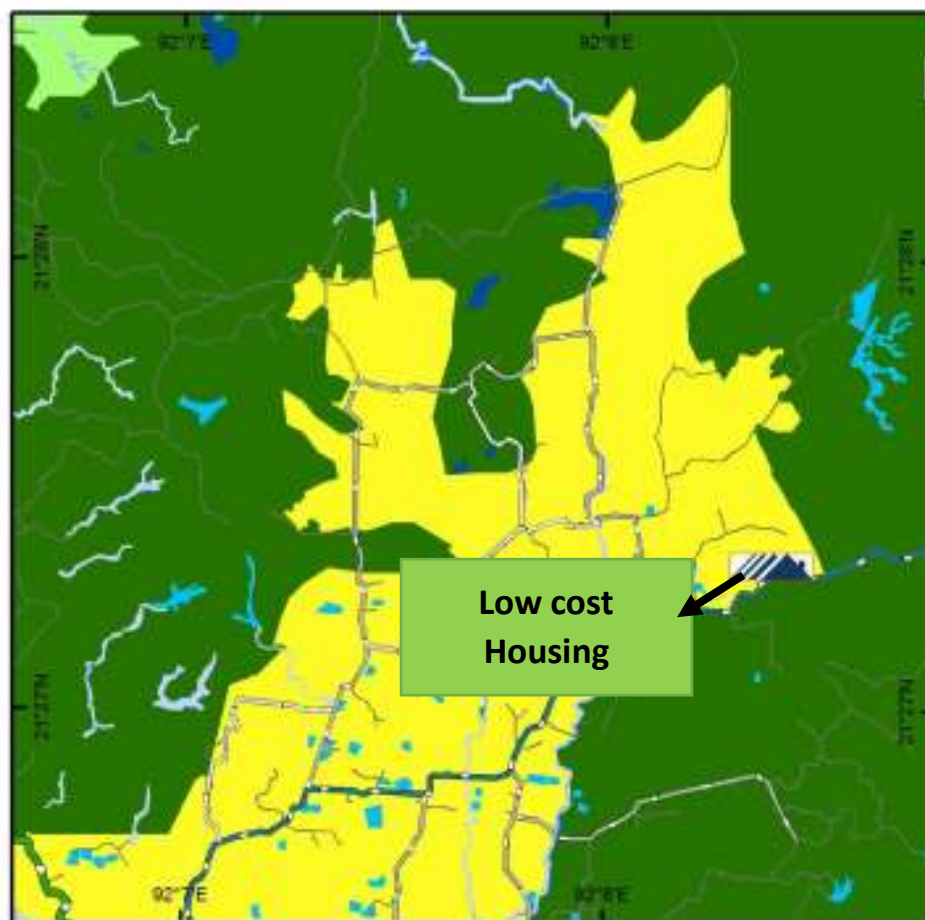


Figure 9.5: Affordable Housing

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**Source: Prepared by Consultant Team Based on Field Survey, 2016**  
**Map 9.1: Buffer Area for Hill Protection in Ramu Upazila**



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### **CHAPTER 10 CONCLUSION**

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Final draft plan of Ramu Upazila will give a guideline to develop the area according to the demand perceived by the PRA survey of local people. The five-tier: sub-regional, structure, urban, rural and action area plans will be effective tools for planned development of most of the areas in Ramu. The planned urban and integrated rural development will require infrastructure and service facilities that can be done by the proper utilization of such urban and rural area plan. This in turn will make a positive impact on economic growth, social progress and environmental sustainability in the whole region. Ramu Upazila must avail this opportunity for its progress in future by implementing the Development Plan done by UDD under the Ministry of Housing and Public Works.

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### APPENDIX-A

#### National Agriculture Policy 1999

Policy	Five Tier Plan	Key Issues
<b>National Agriculture Policy 1999</b>	<b>Sub-regional Plan</b>	<ul style="list-style-type: none"><li>• Groundwater irrigation programmes will be coordinated at the national level.</li><li>• National Agricultural Research Institutes will give priority to region-wise research on irrigate and rain-fed cultivation and also Research on improving quality and utility of various crops.</li></ul>
	<b>Structure Plan</b>	<ul style="list-style-type: none"><li>• Location specific (including hill tracts) suitable crops will be identified with respect to technological and economic parameters and appropriate strategies will be pursued for cultivating those crops.</li><li>• Measures will be taken to minimize post-harvest losses by introducing appropriate technologies.</li><li>• With a view to transforming crop production system into a profitable and sustainable sector, a two-dimensional agricultural research management programme will be followed.</li><li>• Government, private sector agencies and NGOs involved in agriculture sector will in principle agree to exchange information among them.</li><li>• Special development programmes will be taken with a view to increasing production of potential crops suitable for the coastal areas and the hill tracts.</li><li>• ensure a profitable and sustainable agricultural production system and raise the purchasing power by increasing real income of the farmers</li><li>• The Seed Certification Agency will take membership of the International Seed Testing Association (ISTA) so that the opportunities for exporting internationally standard seeds are created</li></ul>
	<b>Action Area Plan</b>	<ul style="list-style-type: none"><li>• Reservoirs will be built-up to tap water from the year-round stream flow in hilly areas and appropriate infrastructure will be developed for irrigation as well as fish culture.</li><li>• Pest surveillance and monitoring system will be strengthened.</li><li>• Salt tolerant crop varieties will be developed and extended along with possible measures to resist salinity.</li><li>• Irrigation programmes will be undertaken following proper strategy according to the availability of surface and groundwater.</li><li>• Number of agricultural education institutions will be increased up to the required level.</li><li>• take supportive programmes for inter-cropping in a field instead of single cropping;</li><li>• Land zoning programme will be taken up by the Soil Resources Development Institute (SRDI) on a priority basis.</li></ul>

#### Climate Change Strategy 2009

Policy	Five Tier Plan	Key Issues
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<b>Climate Change Strategy 2009</b>	<b>Sub-regional Plan</b>	<ul style="list-style-type: none"> <li>Model climate change scenarios for Bangladesh by applying global climate change models and methodologies at regional and national levels</li> <li>Regional and international cooperation is essential in order to build necessary capacity and resilience</li> <li>Strengthen the government's capacity and that of civil society partners and communities to manage natural disasters</li> <li>To review energy and technology policies and incentives to promote efficient production, consumption, distribution and use of energy</li> <li>To build the capacity of the country to meet the challenge of climate change over the next 20-25 years.</li> </ul>
	<b>Structure Plan</b>	<ul style="list-style-type: none"> <li>Repair and rehabilitate existing infrastructure (e.g., coastal embankments, river embankments and drainage systems, urban drainage systems) and ensure effective operation and maintenance systems</li> <li>Undertake strategic planning of future infrastructure needs and future patterns of urbanization and socio-economic development; and the changing hydrology of the country, because of climate change</li> <li>Strengthen cyclone, storm surge and flood early warning systems to enable more accurate short, medium and long-term forecasts.</li> </ul>
	<b>Urban Area Plan</b>	<ul style="list-style-type: none"> <li>New urban areas must be built to be climate resilient.</li> <li>Flood protection and drainage schemes to protect urban areas from rainwater and river flooding during the monsoon season</li> </ul>
	<b>Action Area Plan</b>	<ul style="list-style-type: none"> <li>.Monitor changes in water quality and quantity available for drinking and forecast future changes due to climate change</li> <li>flood management schemes to raise the agricultural productivity of many thousands of km<sup>2</sup> of low-lying rural areas and to protect them from extremely damaging severe floods</li> <li>Monitor and research the impacts of climate change on ecosystems and biodiversity</li> <li>Model the likely hydrological impacts of climate change on the Ganges-Brahmaputra-Meghna system to assess future system discharges and river levels</li> </ul> <p>The Climate Change Action Plan is built on six pillars:</p> <ul style="list-style-type: none"> <li>➤ Food Security, Social Protection and Health</li> <li>➤ Comprehensive disaster management</li> <li>➤ Infrastructure to ensure existing and maintainences.</li> <li>➤ Research and Knowledge Management</li> <li>➤ Migration and low carbon development</li> <li>➤ Capacity Building and institutional strengthening</li> </ul>

### Disaster Management Act 2012

Policy	Five Tier Plan	Key Issues
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<b>Disaster Management Act 2012</b>	<b>Sub-regional Plan</b>	<ul style="list-style-type: none"> <li>National Disaster Management Council should provide               <ul style="list-style-type: none"> <li>➤ strategic guidelines concerned to policies and plans about disaster management;</li> <li>➤ Implementation progress review of government projects and programs taken to face the disaster and rehabilitation</li> </ul> </li> <li>The government may give order to accomplish special activities to be done on emergency basis by concern ministry, division, directorate, office, government and semi-government organization and committees formed under this Act.</li> </ul>
	<b>Action Area Plan</b>	<p>The following requirements will need assistance:</p> <ul style="list-style-type: none"> <li>Unusable or destroyed disaster protection infrastructure for essential services.</li> <li>Extensive death or disaster like any unnatural event or any such natural event.</li> </ul>

### National Plan for Disaster Management 2008-2015

Policy	Five Tier Plan	Key Issues		
<b>National Plan for Disaster Management 2008-2015</b>	<b>Sub-regional Plan</b>	<b>Strategic Goal</b>	<b>Action Agenda for 2008-2015</b>	<b>Supporting Agency/ dept.</b>
		<p>Strengthening Institutional Mechanisms</p> <p>Strengthening Emergency Response Systems</p>	<p>Identify national, regional, sub-regional and local institutional mechanisms including informal systems and undertake an audit to validate roles and linkages</p> <p>Use SAARC, RCC and other available frameworks and platforms to establish regional networks for real time data/information sharing</p>	<p>Ministry of Establishment /Ministry of Law, Justice and Parliamentary Affairs/ Cabinet Division/ Sectoral Ministries/NGOs Affairs Bureau/NGOs / Development Partners</p> <p>Armed Forces Division; Ministry of Post and Telecommunication; MoHA/ MoFA/ SMRC NGO Affairs Bureau/ NGOs Development Partners</p>

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### National Plan for Disaster Management 2008-2015

Policy	Five Tier Plan	Key Issues
		<p>Developing and Strengthening regional and global Networks</p> <p>Identify key regional collaborating organizations and develop systems for coordination, and knowledge sharing. Use SAARC, ASEAN and RCC platforms to establish regional networks for real time data/information sharing as well as sharing of new knowledge and technology.</p> <p>Relevant Ministries/ Departments, NGO Affairs Bureau, NGOs, Academic Institutions MoFDM/MoD/ / MoWR/ MoP&amp;T/NGO Affairs Bureau/NGOs/ / Regional and International Organisations</p> <ul style="list-style-type: none"> <li>• Developing and strengthening networks of relevant national, regional and international organizations.</li> <li>• To mitigate the impacts of floods, the government has been developing and implementing various measures to better equip the country to deal with floods.</li> </ul>
	<b>Structure Plan</b>	<ul style="list-style-type: none"> <li>• Strengthening disaster management and risk reduction capacity</li> <li>• The plan followed by the strategic plan and operational plan of the different directorate of the ministry. Purpose of the Corporate Plan includes <ul style="list-style-type: none"> <li>□ Articulate the Ministry's long-term Strategic Focus.</li> <li>□ Detail a road-map for the development of internal Strategic Plans for the Disaster Management Bureau (DMB), Directorate of Relief and Rehabilitation (DRR), Director-General of Food (DGoF) and the Policy Programme and Partnership Development Unit (PPPDU).</li> <li>□ Provide a framework within which to report performance and success in achieving goals and strategies</li> </ul> </li> <li>• Different stakeholders in a multi-sectoral approach, including the development sector, should address the strategic goals and priorities for action.</li> </ul> <p><b>STRATEGIC GOALS OF THE PLAN</b></p> <p>The strategic goals of the plan are drawn from the SAARC Disaster Management Framework</p> <ul style="list-style-type: none"> <li>• Goal 1: Professionalising the Disaster Management</li> </ul>

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### National Plan for Disaster Management 2008-2015

Policy	Five Tier Plan	Key Issues
		<p>System</p> <ul style="list-style-type: none"><li>• Goal 2: Mainstreaming Risk Reduction</li><li>• Goal3: Strengthening Institutional Mechanisms</li><li>• Goal 4: Empowering at Risk Communities</li><li>• Goal 5: Expanding Risk Reduction Programming</li><li>• Goal 6: Strengthening Emergency Response Systems</li><li>• Goal 7: Developing and Strengthening Network</li></ul>
	<b>Action Area Plan</b>	<ul style="list-style-type: none"><li>• to develop a Tsunami early warning system and mass awareness of Tsunami threat at the coastal areas</li></ul>

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### Population Policy 2004

Policy	Five Tier Plan	Key Issues
Population Policy 2004	Sub-regional Plan	<ul style="list-style-type: none"><li>Ministry of Planning/Planning Commission will be responsible for<ul style="list-style-type: none"><li>policy planning,</li><li>integration of population variables in the relevant sectoral plans and programs, as well as</li><li>co-ordination of adequate resource allocation to concerned ministries.</li></ul></li></ul> <p>The Population Policy proposals can broadly be divided into four sectors,</p> <ul style="list-style-type: none"><li>human resources development,</li><li>decentralization of population activities,</li><li>participation of NGOs and private sector in population planning,</li><li>building of planned family</li></ul>
	Structure Plan	<ul style="list-style-type: none"><li>Roads and communication systems should be linked with the growth centers; along with health, education housing and other welfare services created in those places</li></ul>
	Rural Area Plan	<ul style="list-style-type: none"><li>to mitigate the push factors from rural areas by ensuring rural employment opportunities in agriculture and agro-based industries for slowing down the rate of migration from rural areas</li><li>Support the programs for re-excavation of canals and ponds in rural area and to undertake measures against soil and river erosion.</li></ul>
	Action Area Plan	<ul style="list-style-type: none"><li>A detailed time-bound integrated Action Plan shall be prepared to implement this policy with specific measurable indicators to monitor progress</li><li>satellite towns and growth centers should be established with adequate facilities to provide alternative destinations to rural migrants.</li></ul>

### National policy for safe water supply and sanitation 1998

Policy	Five Tier Plan	Key Issues
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<b>National policy for safe water supply and sanitation 1998</b>	<b>Sub-regional Plan</b>	<p>The overall works to be done-</p> <ul style="list-style-type: none"> <li>➤ Power to formulate international and regional agreement</li> <li>➤ Formulation of National Disaster Management Policy.</li> <li>➤ Declaration as distress zone</li> <li>• Drainage system in the cities and municipalities will be integrated with the overall drainage system with the coordination of Ministry of Water Resources.</li> <li>• Department of Environment will be consulted on solid waste management.</li> </ul>
	<b>Structure Plan</b>	<ul style="list-style-type: none"> <li>• A comprehensive strategic plan of operations shall be prepared</li> <li>• Within a specified period legislation will be enacted making use of sanitary latrine compulsory.</li> <li>• Support poverty alleviating strategies for improved quality of life</li> </ul>
	<b>Urban Area Plan</b>	<ul style="list-style-type: none"> <li>• Ensuring storm-water drainage in urban areas.</li> <li>• Making safe drinking water available to each household in the urban areas.</li> <li>• Adoption of necessary measures in urban areas to prevent contamination of ground and surface water by solid and liquid wastes.</li> <li>• To prevent contamination of ground and surface water by solid and liquid wastes.</li> <li>• The City Corporations or Paurasabhas shall be responsible for solid waste collection, disposal and their management.</li> </ul>
	<b>Rural Area Plan</b>	<ul style="list-style-type: none"> <li>• Ensuring the use of waste for the production of organic fertilizer (compost) in the rural areas.</li> <li>• Ensuring the installation of one sanitary latrine in each household in the rural areas</li> <li>• To improve public health standard through inculcating the habit of proper use of sanitary latrines.</li> </ul>
	<b>Action Area Plan</b>	<ul style="list-style-type: none"> <li>• Paurasabhas and WASAs will take actions to present the wastage of water.</li> <li>• Necessary measures shall also be taken to prevent contamination and damage of tube wells during natural disaster.</li> </ul>

### The Building Construction Act, 1952

Policy	Five Tier Plan	Key Issues
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<b>The Building Construction Act, 1952</b>	<b>Structure Plan</b>	<p>In order to power to make Bangladesh National Building Code , the following requirements are:</p> <ul style="list-style-type: none"><li>❖ general building requirements, control and regulation;</li><li>❖ fire protection;</li><li>❖ building materials;</li><li>❖ structural design;</li><li>❖ construction practices and safety;</li><li>❖ building services;</li><li>❖ alteration, addition to and change of use of existing building;</li><li>❖ sign and outdoor display;</li></ul>
	<b>Urban Area Plan</b>	<p>This act includes as follows:</p> <ul style="list-style-type: none"><li>• Restriction on construction of building and excavation of tank</li><li>• Restriction on improper use of lands and building</li><li>• Direction for removal of construction, etc</li><li>• Power of removal of temporary building</li><li>• Power of removal of building under construction</li></ul>
	<b>Action Area Plan</b>	<ul style="list-style-type: none"><li>• Restriction on cutting of hills</li><li>• Direction for stopping cutting or razing of hill</li><li>• Power of seizure and arrest without warrant</li></ul>

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### National Water policy 1999

Policy	Five Tier Plan	Key Issues
<b>National Water policy 1999</b>	<b>Sub-regional Plan</b>	<p>This plan will guide water management Institutions at the national, regional, and local levels in the formulation and implementation of policies and plans for improved water management and investment.</p> <ul style="list-style-type: none"><li>• The Government will exercise its water allocation power in identified scarcity zones on the basis of specified priorities</li><li>• The Government may empower the local government or any local body to exercise its right to allocate water in scarcity zones during periods of severe drought</li><li>• To environmental protection, restoration and enhancement measures consistent with the National Environmental Management Action Plan (NEMAP) and the National Water Management Plan (NWMP)</li><li>• For sustaining rechargeable shallow groundwater aquifers. The Government will regulate the extraction of water in the identified scarcity zones with full public knowledge.</li></ul>
	<b>Structure Plan</b>	<ul style="list-style-type: none"><li>• Water development plans will make adequate provision in control structure for allowing fish migration and breeding.</li><li>• Brackish aquaculture will be confined to specific zones designated by the Government</li></ul>
	<b>Urban Area Plan</b>	<ul style="list-style-type: none"><li>• Preserve natural depressions and water bodies in major urban areas for recharge of underground aquifers and rainwater management</li><li>• Improve efficiency of resource utilization through conjunctive use of all forms of surface water and groundwater for irrigation and urban water supply.</li></ul>
	<b>Rural Area Plan</b>	<ul style="list-style-type: none"><li>• To develop different flood proofing measures such as raising of platform for homesteads, market places, educational institutions, community centers etc and adjusting the cropping pattern to suit the flood regime.</li></ul>
	<b>Action Area Plan</b>	<ul style="list-style-type: none"><li>• The contingency plan will include action to limit the use of groundwater according to priorities.</li><li>• To assist the process of building public support</li></ul>

### Industrial Policy 2005

Policy	Five Tier Plan	Key Issues
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<b>Industrial Policy 2005</b>	<b>Sub-regional Plan</b>	<ul style="list-style-type: none"> <li>Establishment of Special Economic Zone based on the Importance of Industries,</li> <li>Availability of Inputs and Regional Facilities</li> <li>To reduce poverty and generate employment opportunities</li> <li>The government has taken an initiative to formulate a separate SME policy to provide entrepreneurs with necessary guidance and strategic support in respect of the establishment of SME industries all over the country.</li> </ul>
	<b>Structure Plan</b>	<ul style="list-style-type: none"> <li>Develop planned industrial areas by establishing Special Economic Zones in areas with vast economic potentials, and utilizing local resources</li> <li>Cluster villages can be set up in especial economic zones for industries</li> <li>Provide structural and other facilities to establish and develop compact industrial areas.</li> </ul>
	<b>Action Area Plan</b>	<ul style="list-style-type: none"> <li>Necessary action will be taken to update the relevant legislation and</li> <li>The establishment of a separate bank under public or private initiative will be considered</li> </ul>

### Burning Bricks Act 1989

<b>Policy</b>	<b>Five Tier Plan</b>	<b>Key Issues</b>
<b>Burning Bricks Act 1989</b>	<b>Action Area Plan</b>	<p>The conditions of the act as follows</p> <ul style="list-style-type: none"> <li>❖ Supremacy of the Act.</li> <li>❖ Licence for burning bricks</li> <li>❖ Prohibition of burning bricks with firewood</li> <li>❖ Inspection</li> <li>❖ Punishment</li> <li>❖ Filing suit</li> <li>❖ .Power to make rules</li> </ul>

### National Urban Sector Policy 2011

<b>Policy</b>	<b>Five Tier Plan</b>	<b>Key Issues</b>
<b>National Urban Sector Policy 2011</b>	<b>Sub-regional Plan</b>	<ul style="list-style-type: none"> <li>In order to make urban plans flexible and adaptable to changing circumstances, following three levels of planning activity are required <ul style="list-style-type: none"> <li>❖ structure planning,</li> <li>❖ local planning and</li> <li>❖ action planning</li> </ul> </li> <li>Associations at local and regional levels can form partnerships in local economic development which are then</li> </ul>

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### National Urban Sector Policy 2011

Policy	Five Tier Plan	Key Issues
		<p>connected to national and international opportunities.</p> <ul style="list-style-type: none"><li>• Formulation of Urban, Rural and Regional Planning Act (i.e., Physical Planning Act)</li><li>• facilitate economic development, employment generation, reduction of inequality and poverty eradication through appropriate regulatory frameworks and infrastructure provisions</li></ul>
	<b>Structure Plan</b>	<ul style="list-style-type: none"><li>• Regional development planning at district level would pave the way for practical application of bottom-up planning approach as present planning activities in Bangladesh are too much centralized.</li><li>• Detailed plan for specific sections of urban area as identified in the structure plan can be prepared for rapid development or for special projects and improvements.</li><li>• urban planning and management strategies including:<ul style="list-style-type: none"><li>❖ Regulatory frameworks</li><li>❖ Appropriate by-laws, standards and norms,</li><li>❖ and planning guidelines should be developed and adopted.</li><li>❖ Informal and home-based income-generating activities</li></ul></li><li>• Specific responsibilities for provision of services in urban areas will be formulated for government agencies and</li><li>• encouraging community participation in maintaining law and order.</li><li>• Develop and implement urban management strategies and governance arrangements for enhancing complementary roles of urban and rural areas in sustainable development</li><li>• local level rural plans can be prepared at the union level while the local level urban plan can be prepared at the Paurashava level</li></ul>
	<b>Urban Area Plan</b>	<ul style="list-style-type: none"><li>• Protect hills in urban areas, specially Chittagong, Sylhet, Khagrachari, Cox's Bazar etc. Protect peri-urban areas from unplanned development.</li><li>• Promote hierarchical structure of educational institutions, such as from the kindergartens to universities, at appropriate locations with catchment areas/zones in urban areas.</li><li>• The local government body should design and implement regular survey of deprived groups in urban areas to keep track of numbers, origin and location of street children and other disadvantaged groups or individuals.</li><li>• Promote hierarchal distribution of recreational places in all urban areas with planned coverage as per physical planning rules.</li><li>• Plan for adequate number, size and location of graveyards and provision for burning ghats in all urban areas.</li></ul>

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### National Urban Sector Policy 2011

Policy	Five Tier Plan	Key Issues
		<ul style="list-style-type: none"><li>• Conserve natural water bodies, forests if they exist in and around urban areas as public recreation open spaces.</li><li>• Government will enact law and adopt prevention measures through police and special system for crime prevention and personal safety in urban areas.</li></ul>
	<b>Action Area Plan</b>	<ul style="list-style-type: none"><li>• thePaurashava and City Corporation Ordinance/acts should be amended so that the women ward commissioners can participate fully and equally in the decision-making processes and activities of urban local bodies.</li><li>• Union plans can be integrated at the upazila level to prepare the upazila plan.</li></ul>

### National Fisheries Policy 1998

Policy	Five Tier Plan	Key Issues
<b>National Fisheries Policy 1998</b>	<b>Sub-regional Plan</b>	<ul style="list-style-type: none"><li>• To save the marine resources from further decline strict measures will be taken against increase in mechanized or non-mechanised boats engaged in fish harvest in the marine zones.</li><li>• Development of the fisheries research infrastructure, extension, training, demonstration and other activities influencing fisheries programme shall be run by both private and public sector agencies.</li><li>• The Ministry of Fisheries and Livestock will control all development, , and other management aspects of fisheries resources and fish habitats and Ministry of Land will be involved in taking effective steps in this respect</li><li>• All water bodies of the country will be identified and their primary use as areas of fish production ensured.</li><li>• To ensure high quality of exportable fish and shrimp products, laboratory facilities for Quality Control will be expanded and modernised.</li><li>• Appropriate preventive measures will be taken against</li></ul>

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		dumping of hazardous chemicals and nuclear wastes into the sea.
	<b>Structure Plan</b>	<ul style="list-style-type: none"><li>• Integrated rice cum fish culture shall be extended through the release of fish fry in the beels, haors and other floodplains, especially in the areas encircled by dams in flood control and irrigation projects.</li><li>• Fish culture will be encouraged in all ponds, dighis and other water bodies.</li><li>• Biodiversity will be maintained in all natural water bodies and in marine environment.</li></ul>
	<b>Action Area Plan</b>	<ul style="list-style-type: none"><li>• Priority will be given to fish culture in the low-lying lands of the country where 50 cm or more of water is retained or can be retained during rainy season for more than three months.</li><li>• discharge of harmful municipal and industrial wastes directly into the water bodies will be considered a punishable crime and measures will be taken to control and limit the use of harmful chemical fertilisers, insecticides</li><li>• Union based demonstration farms will be established with the assistance of the private sector, for the dissemination of aquaculture technologies.</li><li>• After mapping of soil quality of potential aquaculture regions, a manual describing appropriate use of lime and fertiliser in fish ponds shall be developed and distributed.</li></ul>

### Bangladesh National Building Code 1993

Policy	Five Tier Plan	Key Issues
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Bangladesh National Building Code 1993	Urban Area Plan	The BNBC code has ten parts comprising different aspects of building construction and services.	
		Parts	Components
		1. General introduction to the code	<ul style="list-style-type: none"><li>• Definitions</li><li>• Symbols</li></ul>
		1. Administrative requirements necessary for enforcement of the code	<ul style="list-style-type: none"><li>• Seismic zoning</li><li>• Design earthquake forces for primary framing systems</li><li>• Selection of lateral force method</li><li>• Seismic Dead Load</li><li>• Design Base Shear</li><li>• Seismic zone coefficient</li><li>• Structure Importance coefficients</li><li>• Structure period</li><li>• Response Modification coefficient for structural systems</li><li>• Site coefficient</li><li>• Vertical distribution of lateral force</li><li>• Combination of structural systems</li><li>• Ground motion</li><li>• Response spectrum Analysis</li><li>• Seismic laterak forces on components and equipment supported by structures</li><li>• Horizontal force coefficient</li><li>• Seismic lateral forces on nonbuilding structures</li><li>• Horizontal force coefficient</li><li>• Coefficient for nonbuilding structures</li><li>• Combination of loads and stress increase for allowable stress design method</li><li>• Combinations of load for strength design method</li></ul>

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		<ol style="list-style-type: none"> <li>2. General Planning and architectural requirements of buildings based on classification in accordance with occupancy, fire resistance</li> <li>3. The requirements for fire prevention and protection measures</li> <li>4. The standard materials to be used in building construction</li> <li>5. Requirements governing structural design that ensure safety and serviceability of buildings <ul style="list-style-type: none"> <li>• Earth quake resistant Design</li> <li>• Strengthening of Masonry Buildings for Earthquake Seismic</li> <li>• Band Reinforcement</li> <li>• Strengthening of Corner and Junctions</li> <li>• Vertical Reinforcement for Brick and Hollow Block Masonry</li> <li>• provisions for high wind regions</li> <li>• Special Splice Requirements for Columns</li> <li>• special provision for seismic design</li> <li>• Detailing of Reinforced Concrete Structures</li> <li>• Analysis and Proportioning of Structural Members</li> <li>• Detailing of Reinforced Concrete Structures</li> <li>• Structural Walls and Diaphragms</li> <li>• Shear Strength Requirements</li> <li>• Frame Members not Proportioned to Resist Forces Induced by Earthquake Motion</li> <li>• Requirements for Special Moment Frames (SMF)</li> </ul> </li> <li>6. Ensuring safety of life during construction and minimization of construction hazards</li> <li>7. Standards of minimum requirements for the various services</li> </ol>
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### Seventh Five Year Plan (FY2016 – FY2020)

Policy	Five Tier Plan	Key Issues
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<b>Seventh Five Year Plan</b>	<b>Action Area Plan</b>	<ul style="list-style-type: none"><li>• Seventh plan strategy for enhancing the role of the services sector in economic development includes:<ul style="list-style-type: none"><li>i) Modernizing the service sector with emphasis on export of non-factor services;</li><li>ii) Improve the incentive policies</li><li>iii) Increasing public investment in key service sector infrastructure;</li><li>iv) Strengthening the skills base for the service industry;</li><li>v) Strengthening implementation of prudential regulations to boost service quality increase public safety, improve compliance and ensure accountability of service providers;</li><li>vi) Strengthen monitoring and enforcement services and Strengthening public institutions</li><li>vii) In urban and peri-urban areas the government should preferably not transfer land in freehold to occupants, rather choose leases as the instrument for granting tenure for publicly-owned land and especially local authority land</li></ul></li><li>• Provide infrastructure and services</li><li>• Strategies for Reduction of Urban Poverty</li><li>• Special Zones for the Urban Poor</li><li>• Ensure availability and sustainable management of water and sanitation for all</li><li>• Build resilient infrastructure</li><li>• Take urgent action to combat climate change and its impacts</li><li>• Conserve and sustainably use the oceans, seas and marine resources for sustainable development</li></ul>
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### National Land Use Policy 2001

Policy	Five Tier Plan	Key Issues
<b>National Land Use Policy 2001</b>	<b>Sub-regional Plan</b>	<ul style="list-style-type: none"><li>• Execution of coordinated land conservation projects aimed at prevention of desertification in the northern region.</li><li>• Take up effective programmes aimed at preventing weathering of land, conservation of land fertility, development and conservation of land in coastal areas.</li><li>• identification of zones for land uses by Paurashavas and other places of Upazilas</li></ul>
	<b>Structure Plan</b>	<ul style="list-style-type: none"><li>• Formulation, categorization and effective implementation of land use plan in order to ensure planned occupancy and / or use of land.</li><li>• Payment of compensation to those who will be affected by land weathering and land acquisition for the purpose of development agencies and/ or by the government.</li><li>• Regular monitoring, survey and research on desertification in the northern region, land reclamation, prevention of weathering of land, mixed use of land, conservation and protection of coastal area land and condition of watershed areas.</li></ul>
	<b>Urban Area Plan</b>	<ul style="list-style-type: none"><li>• construct service roads along the main roads of the country so as to ensure safe movement of traffic as well as set aside 10 feet to 20 feet of land for plantation trees on the both sides of roads.</li></ul>
	<b>Action Area Plan</b>	<ul style="list-style-type: none"><li>• Prevention of destroying the hilly landscape by earth cutting, excavation and removal of land.</li><li>• Appropriate measures to be taken against indiscriminate collection of earth and stone from hilly areas and disturbance ecological balance.</li><li>• Emphasis on watershed management</li><li>• Entrust the responsibility of maintaining small ponds by the owners and large water bodies such as river, channels, haor, baor and beel by the community people and the Government.</li><li>• use of embankments for controlling flood as roads as far as possible</li><li>• planned tree plantation on the embankments</li><li>• encouragement to construct multi-storied buildings instead of single storied in the rural and urban areas so as to ensure optimum use land for residential purposes</li></ul>

### Housing Policy 2008 (Draft)



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Policy	Five Tier Plan	Key Issues
Housing Policy 2008 (Draft)	Sub-regional Plan	<ul style="list-style-type: none"> <li>সরকারগৃহায়নপ্রক্রিয়াবাস্তবায়নকালেউদ্ভূতপরিস্থিতিসমূহপর্যালোচনাকরবেএবংএসংক্রান্তপদ্ধতিগতবাধাবিপত্তিগুলোঅপসারণেসক্রিয়ভূমিকাপালনকরবে।</li> <li>বস্তিবাসীদেরবাকোননিম্নবিস্তারিতস্থানান্তরকরারসিদ্ধান্তঅপরিহার্যবিবেচিতহলেপ্রয়োজনীয়সামগ্রিকআর্থসামাজিকতথ্যাবলীরসমন্বয়েবিশেষজ্ঞদ্বারাপ্রণীতএকটিউপযোগিতাসমীক্ষাজাতীয়গৃহায়নকতৃপক্ষেরমতামতেরজন্যদাখিলকরাহবে।</li> <li>বস্তিএলাকাযেখানেআবাসিকএলাকারপরিবেশওঅবকাঠামোরউন্নয়ন, গৃহেরওসেবা-সুবিধারক্রমোন্নয়নএবংযখনযেখানেসম্ভবসেখানেবাসিন্দাদেরবসবাসেঅধিকারপ্রদানেরব্যবস্থানেয়াহবে।</li> </ul>
	Structure Plan	<ul style="list-style-type: none"> <li>একটিআধুনিকআবাসিকভূমিতথ্যপদ্ধতিতৈরীকরাহবে।জমিরসরবরাহবৃদ্ধি, যথোপযুক্তওসময়াপগাণীব্যবহারনিশ্চিতকরণএবংফতকাবাজীরোধকরারলক্ষ্যেজমিফেলেরাখাকেঅলাভজনকওনিরুৎসাহিতকরারব্যবস্থানেয়াহবে।</li> <li>গৃহায়নেরজন্যভূমিওঅবকাঠামোউন্নয়নএবংসার্বিকভাবেগ্রামীণঘরবাড়ীরমানউন্নয়নকেসম্পদওকর্মসংস্থানসৃষ্টিকার্যক্রমেরসঙ্গেসম্পৃক্তকরাহবে।</li> </ul>
	Urban Area Plan	<ul style="list-style-type: none"> <li>দেশেরসকলপল্লীওশহরাঞ্চলেরজন্যসমভাবেপ্রয়োজ্যএইনীতিরআওতায়গৃহনির্মাণেসরকারক্রমাণ্বেসহায়তাকারীরভূমিকানিবে।</li> <li>নগরওগ্রামীণএলাকায়অব্যবহৃতখাসওপতিতজমিওজেগেউঠাচরনিয়েআলাদা 'ভূমিবাংক' সৃষ্টিকরেতাকেসমৃদ্ধকরাহবে।</li> <li>উচ্চবিত্তেরআবাসনেরজন্যভূমিওইমারতএবংশিল্প-বাণিজ্যজাতীয়অনাবাসিকভূমিমনাফামূল্যেবরাদ্দকরেপ্রাপ্তমুনাফাদিয়েনিম্নবিত্তেরসুবিধাদিতেভর্তুকিদেয়াহবে।</li> <li>একটিসমন্বিতআঞ্চলিকউন্নয়নপরিকল্পনারআওতায়ছোটওমাঝারিশহরেরসংগেসংলগ্নগ্রামাঞ্চলওহাটবাজারেরসংযোগগড়েতোলে, এগুলোতেঅর্থনৈতিকক্রিয়াকাণ্ডকর্মসংস্থানেরসুযোগবৃদ্ধিকরাহবেওসামাজিকওসাংস্কৃতিকভাবেআকর্ষণীয়করেগড়েতোলাহবে।</li> <li>দেশেরসবকয়টিনগরএলাকারমহাপরিকল্পনাপ্রণয়নসমাপ্তকরেতদনুযায়ীঅবকাঠামোনির্মাণওব্যবহারনিশ্চিতকরাহবে।</li> <li>নগরঅঞ্চলেঅনুমোদনবিহীনএবংব্যক্তিমালিকানাধীনবস্তীগজিয়েওঠারোধকরারউদ্দেশ্যেবিভিন্নবিধিমালাকঠোরভাবেপ্রয়োগকরাহবে।</li> <li>স্থায়ী/অস্থায়ী, কাঁচা/পাকাপ্রকৃতিরযেকোনবসতিতেএ্যাম্বুলেন্স, অগ্নিনির্বাপকগাড়ীওঅত্যাবশ্যকীয়যানবাহনচলাচলনিশ্চিতকরাহবে।</li> </ul>
	Rural Area Plan	<ul style="list-style-type: none"> <li>গ্রামাঞ্চলেঅধিকহারেকর্মসংস্থান, রসদেরপ্রাপ্তিওগৃহায়নওসেবাসুবিধাবৃদ্ধিকরেঅভিবাসনজনিতগৃহায়নচাহিদাহ্রাসকরণ।</li> <li>পল্লীরজনগণেরজন্যউপযুক্তনিরমানউপকরণসহজলভ্যকরাহবে।একইসাথেপরিবেশসংরক্ষণ, আবাবৃক্ষনিধন, ইটভাটারজ্বালানী, ইত্যাদিনিয়ন্ত্রণকরারপ্রয়োজনীয়ব্যবস্থানেয়াহবে।</li> </ul> <p><b>গ্রামীণগৃহায়নঃ</b></p>

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### Housing Policy 2008 (Draft)

Po lic y	Fiv e Tier Pla n	Key Issues
		<ul style="list-style-type: none"><li>কৃষিজমির উপর বাড়ীঘর নির্মাণের প্রবণতা নিরুৎসাহিত করা হবে। গ্রামাঞ্চলে পরিকল্পিত নিবিড় আবাসন সৃষ্টির উৎসাহ ও নির্দেশনা দেয়া হবে। গ্রামীণ গৃহায়নের জন্য খাস জমির প্রাপ্যতাসাপেক্ষে ‘আদর্শগ্রাম’/‘গুচ্ছগ্রাম’ কর্মসূচীর অনুরূপ কার্যক্রম বিস্তারিত করা হবে।</li></ul> <p>গ্রামীণ জনগণের গৃহ নির্মাণ, মেরামত, পরিবর্তন, পরিবর্ধন ও অন্যান্য গৃহ সংক্রান্ত ছোটখাটো প্রয়োজন বিনা সূদে বাস হজশর্তে ছোট ছোট ঋণের ব্যবস্থা করা হবে।</p>

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### National Forest Policy 1994

Policy	Five Tier Plan	Key Issues
<b>National Forest Policy 1994</b> জাতীয় বননীতি, ১৯৯৪ (সংশোধিত)	<b>Sub-regional Plan</b>	<ul style="list-style-type: none"><li>To fulfill national responsibilities and commitments by implementing various efforts and government ratified agreements relating to global warming, desertification and the control of trade and commerce of wild birds and animals;</li><li>To encourage effective use and utilization of forest products at various stages of processing ;</li></ul>
	<b>Structure Plan</b>	To aforest about, 20% of the total area of the country by initiating various aforestation programmes in forest lands, fallow lands, lands not useful for agriculture, hinter lands and other possible areas to meet the basic needs of the present and future generations and to ensure greater contribution of the forestry sector to economic development.
	<b>Rural Area Plan</b>	<ul style="list-style-type: none"><li>To strengthen agriculture by extending assistance to those sectors related with forest development, especially by conserving land and water resources;</li><li>To encourage effective use and utilization of forest products at various stages of processing ;</li><li>To provide for and implement aforestation programmes on both public and private lands.</li></ul>
	<b>Action Area Plan</b>	<ul style="list-style-type: none"><li>To prevent illegal occupation of forest lands, illegal tree felling and hunting of wild animals through the promotion of participation of local people</li></ul>

### National Environment Policy 1992

Policy	Five Tier Plan	Key Issues
<b>National Environment Policy 1992</b>	<b>Sub-regional Plan</b>	<p>Key elements of the policy statement are:</p> <ul style="list-style-type: none"><li>Maintain ecological balance and overall physical development progress of the country through protection and development of different sectors. Protection from natural disaster is one of them;</li><li>Identification and regulation all type of activities which pollutes and degrade the environment;</li><li>Ensuring proper Environment Impact Assessment prior to undertaking of industrial and other development projects; and</li><li>Ensuring sustainable use of natural resources.</li></ul>

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### National Tourism Policy 1992

Policy	Five Tier Plan	Key Issues
National Tourism Policy 1992	Sub-regional Plan	<ul style="list-style-type: none"> <li>The policy identified tourism as a multidimensional industry and spelt out the necessity to have an effective coordination among various government ministries, departments, agencies and civil society bodies.</li> <li>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.</li> </ul>
	Action Area Plan	<p>Its main objectives are:</p> <ul style="list-style-type: none"> <li>To create interest in tourism among the people.</li> <li>To preserve, protect, develop and maintain tourism resources.</li> <li>To take steps for poverty-alleviation through creating employment.</li> <li>To build a positive image of the country abroad.</li> <li>To open up a recognized sector for private capital investment.</li> <li>To arrange entertainment and recreation.</li> <li>To strengthen national solidarity and integrity</li> </ul>

### Private Residential Land Development Rule 2004

Policy	Five Tier Plan	Key Issues				
Private Residential Land Development Rule 2004	Urban Area Plan	<ul style="list-style-type: none"><li>• প্রকল্পবাস্তবায়নের সময় পার্শ্ববর্তী এলাকায় যাহাতে কোন ধরনের জলাবদ্ধতা সৃষ্টি বা পরিবেশের ভারসাম্য নষ্ট না হয় উহা নিশ্চিত করণ</li><li>• বিভিন্ন ইউটিলিটি সার্ভিস এর রক্ষণাবেক্ষণের জন্য সংরক্ষিত জায়গা সংশ্লিষ্ট সংস্থার নিয়ম-নীতি অনুসরণে হস্তান্তর যাতে ইসকল বরাদ্দ ও হস্তান্তর যাতে ইসকল বরাদ্দ</li><li>• প্রকল্প এলাকার উন্নয়নের সময় পানি এবং বিদ্যুৎ সরবরাহ সুবিধা ব্যবস্থানাথাকিলে উদ্যোক্তার নিজস্ব খরচে অন্তর্বর্তীকালীন পানি এবং ব্যবস্থা করণ</li><li>• নগর পরিকল্পনার দৃষ্টি কোন হইতে প্রকল্প এলাকার প্রতিটি বাড়ীর অবস্থান, ব্লক , সেক্টর, পার্শ্ববর্তী বাড়ীর অবস্থান (Block/Sector/Zone/Neighbourhood) এ নিরূপিত জনসংখ্যার বিবেচনায় বিস্তারিত ভূমি ব্যবহার সিডিউল প্রস্তুত করিয়া লে-অউত প্লানের প্রদর্শন করিতে হইবে।<ul style="list-style-type: none"><li>➤ Sectoral/ Block/Zonal/ Naighbourhood Plan including detailed sub-division of lands;</li><li>➤ Road Network Plan;</li><li>➤ Drainage Plan;</li><li>➤ Utility Services Plan of Water Supply, Sewerage System(Treatment &amp; Final Disposal),Solid Waste Collectoin &amp; Disposal, Gas Supply, Electricity Supply,Telephone Facilities,etc.</li><li>➤ Traffic Circulation Plan;</li></ul></li></ul> <p><b>Space Standards for Urban Community Facilities in acres by Population size</b></p> <table><tr><th>Community Facilities</th><th>Facility per 1000 Population</th></tr><tr><td></td><td></td></tr></table>	Community Facilities	Facility per 1000 Population		
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### Private Residential Land Development Rule 2004

Policy	Five Tier Plan	Key Issues
		<p><b>EDUCATION</b></p> <p>Nursery 0.08</p> <p>Primary School 0.08</p> <p>Secondary School 0.10</p> <p>College* 0.08</p> <p><b>HEALTH</b></p> <p>Small Clinic* 0.04</p> <p>Hospital* 0.04</p> <p><b>COMMUNITY ORGANIZATION</b></p> <p>Community Center/Mosque 0.04</p> <p><b>RECREATION</b></p> <p>Play-Ground/ 0.08</p> <p>Play-field</p> <p>Park 0.12</p> <p><b>COMMERCIAL</b></p> <p>Corner Shop/ 0.04</p> <p>Market/Kutcha</p> <p>Bazar*</p> <p>Residential 0.34</p> <p>Roads**</p> <p>Total Area for community Facilities (minimun) 1.00</p>
	Action Area Plan	<ul style="list-style-type: none"> <li>• প্রকল্প এলাকাটাকাসিটিকপোর্শনওটাকাওয়াসারআওতারবাহিরেইইলেসেইক্ষেত্রেরউদ্যোক্তাদেরনিজস্বখরচে Waste Water &amp; Sewerage Treatment Plant Composting Plant ইত্যাদিনির্মাণেরব্যবস্থাকরণ;</li> <li>• The Building Construction Act,1952(E.B. Act // of 1953) এবংপ্রচলিতইমারতবিধিমালাঅনুসারেঅনুমোদনগ্রহণকরিয়াসরকারকর্তৃকঅনুমোদিতবিল্ডিংকোডঅনুযায়ীপ্রকল্পেরবাস্তবায়নএবংইমারতনির্মাণকরণ;</li> <li>• প্রকল্প এলাকায়বসতবাড়ীআছেএমনসকলক্ষতিগ্রস্থকেপুনর্বাসনেরব্যবস্থাকরিতেহইবে।</li> <li>• প্রকল্প এলাকারআয়তনঅজনসংখ্যানির্ধারনসম্প্রদায়িকশর্ত:             <ul style="list-style-type: none"> <li>➢ বেসরকারীআবাসিকপ্রকল্পগ্রহণেরক্ষেত্রেটাকাসিটিকপোর্শনএলাকারঅভ্যন্তরন্যূনতম৫ একরএবংসিটিকপোর্শনবাপৌরএলাকাবাহিরেঅন্যূনতম১০(দশ) একরজমিরপ্রয়োজনহইবে।</li> <li>➢ বেসরকারীআবাসিকপ্রকল্পপ্রতিএকরেসবোর্ডজনসংখ্যারঘনত্ব ( Gross Density) হইবে৩৫০জন।</li> </ul> </li> <li>• প্রকল্প এলাকার৩০(ত্রিশ) ভাগজমিরসম্পূর্ণভাবেঅবিক্রয়যোগ্যবলিয়াগ্যহইবেএবংএইজমিপ্রকল্পএলাকারবসবাসকারীদেরপ্রয়োজনীয়নাগরিকসুযোগ-সুবিধাপ্রদানসহবিভিন্নইউটিলিটিসার্ভিসেসেরজন্যসংরক্ষিতথাকবে</li> </ul>

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### Private Residential Land Development Rule 2004

Policy	Five Tier Plan	Key Issues
		<ul style="list-style-type: none"> <li>বেসরকারী আবাসিক প্রকল্প এলাকার মৌজাম্যাপের উপর আধুনিক পদ্ধতিতে জরিপ (GPS bases Survey) করিয়া existing topographical Survey Map প্রস্তুত করিতে হইবে</li> <li>প্রকল্প এলাকার ৩০ (ত্রিশ) ভাগ জমি নাগরিক সুবিধাদি এবং বিভিন্ন ইউটিলিটি সার্ভিসের জন্য সংরক্ষিত থাকবে</li> <li>সড়ক যোগাযোগ ব্যবস্থার বিন্যাস, প্রকল্প এলাকার আয়তন, জনসংখ্যা এবং আশে-পাশের Traffic Circulation বিবেচনা রাখিতে হইবে, প্রকল্পের প্রধান সড়কের (Main/Primary Road) প্রশস্ততা (Right of Way or ROW) ন্যূনতম ৬০ ফুট, মাধ্যমিক সড়কের (Secondary Road) প্রশস্ততা (ROW) ন্যূনতম ৪০ ফুট এবং অভ্যন্তরীণ বাসযোগ্য সড়কের (Internal/Access/Residential Roads) প্রশস্ততা (ROW) ন্যূনতম ২৫ ফুট হইতে হইবে</li> <li>প্রকল্প এলাকায় নিরূপিত জনসংখ্যার ভিত্তিতে প্রয়োজনীয় প্রাইমারী স্কুলের সংখ্যা নির্ধারণ, হাইস্কুলের সংখ্যা নির্ধারণ, প্রয়োজনীয় কলেজ নির্ধারণ প্রয়োজনীয় কলেজ এবং স্থাপনের ব্যবস্থা করিতে হইবে।</li> </ul>

### Building Construction Rules 1996

Policy	Five Tier Plan	Key Issues
	Urban Area Plan	<p><b>Density Control-</b> Density Control is considered as an important development control tool. It includes the number of units, people allowed per parcel of plot size, unit limitation, height of the building etc. In the Government and Semi Government institutions, building permission is hardly obtained and therefore, density control rules and regulations are not in practice.</p> <p><b>Payment of Betterment fee-</b> For every town planning scheme for an existing town, some owners of the property will be affected and as such they will have to be paid some amount as compensation.</p> <p><b>Control of private housing estates</b> Large numbers of pockets of urban infill and privately owned low lying peripheral lands have been developed by private companies. In some cases small scale real estate development permission is obtained occasionally but deviations from the approved plan are most common practice of the developers.</p>
	Action Area Plan	According to the Building Construction Rules (1996), the maximum height of a building will not be more than the summation of front side road width and the mandatory open space between road and building site.

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### Coastal Zone Policy 2005

Policy	Five Tier Plan	Key Issues
	Structure plan	<ul style="list-style-type: none"><li>Coastal Development Strategy (CDS) shall be developed and adopted in line with national strategy documents as a commonly agreed framework document;</li><li>Rigid enforcement of conservation regulations will affect the livelihoods of many people and such conservation efforts will be linked, as far as possible, with alternative opportunities of employment</li><li>Conservation and enhancement of critical ecosystems</li></ul>
	Urban Area Plan	<ul style="list-style-type: none"><li>Actions will be designed to reach the poorest and the remote rural areas (including the cycloneprone coastal regions, chars and river erosion affected areas), which are vulnerable to adverse ecological processes and those with high concentrations of socially disadvantaged</li></ul>
	Action Area Plan	<ul style="list-style-type: none"><li>Khas land will be distributed among the landless and a more transparent process of land settlement will be ensured;</li><li>An effective program for land reclamation will be developed</li><li>A Coastal Development Strategy (CDS) shall be developed and adopted in line with national strategy documents as a commonly agreed framework document</li></ul>

### Climate Change Policies

Policy	Five Tier Plan	Key Issues
<b>Climate Change Policies</b>	Structure plan	<ul style="list-style-type: none"><li>According to the Intergovernmental Panel on Climate Change (IPCC), to keep global warming below 2 °C, emissions of carbon dioxide (CO<sub>2</sub>) and other greenhouse gases (GHGs) must be halved by 2050 (compared with 1990 levels). Developed countries will need to reduce more – between 80 % and 95 % by 2050; advanced developing countries with large emissions (e.g. China, India and Brazil) will have to limit their emission growth.</li><li>Agreed in 1997, the UNFCCC's Kyoto Protocol is a first step towards achieving more substantial global emission reductions. It sets binding emission targets for developed countries that have ratified it, such as the EU Member States, and limits the emission increases of the remaining countries for the first commitment period from 2008 to 2012. The 15 pre-2004 EU Member States (the EU-15) have a joint emission reduction target of 8 % below 1990 levels. Through the internal EU "burden-sharing agreement", some EU Member States are permitted increases in emissions, while others must decrease them. Most Member States that joined the EU after 1 May 2004 have targets of -6 % to -8 % from their base years (mostly 1990).</li><li>EU emissions represent about 10 % of total global emissions. The United States, which has a large share of total global GHG emissions, has not ratified the protocol.</li></ul>

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		<p>China and several other countries with large GHG emissions do not have binding emission targets under the protocol. Countries are expected to meet their target mainly through domestic policies and measures. They may meet part of their emission reduction targets by investing in emission-reducing projects in developing countries (the Clean Development Mechanism (CDM)) or in developed ones (Joint Implementation (JI)). The CDM is also meant to support sustainable development, e.g. by financing renewable energy projects.</p> <ul style="list-style-type: none"><li>• The Cancún Agreements, adopted at the UN Climate Conference in Mexico (December 2010), include a comprehensive finance, technology and capacity-building support package to help developing nations adapt to climate change and adopt sustainable paths to low-emission economies. The agreements also include a time schedule for reviewing the objective of keeping the average global temperature rise below 2 °C. The agreements confirm that developed countries will mobilise USD 100 billion in climate funding for developing countries annually by 2020, and establish a Green Climate Fund through which much of the funding will be channelled.</li><li>• The 'Durban Platform for Enhanced Action', adopted at the UN conference in South Africa (Dec 2011) agreed a roadmap towards a new legal framework by 2015, applicable to all Parties to the UN climate convention. It also foresees a second commitment period of the Kyoto Protocol, starting in 2013. Agreement was also reached on the design and governance arrangements for the new Green Climate Fund.</li></ul>
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**The United Nations Framework Convention on Climate Change**

Policy	Five Tier Plan	Key Issues
<p><b>The United Nations Framework Convention on Climate Change</b></p>	<p>Structure plan</p>	<ol style="list-style-type: none"> <li>1. The 2015 Paris Agreement represents a historic turning point in global cooperation on addressing climate change and its global goal of limiting warming to well below 2 °C or 1.5 °C provide direction and help to frame climate change action. Given the gap between the emission level implied by the aggregate effect of countries' national plans enshrined in their intended nationally determined contributions and the level consistent with limiting warming to well below 2 °C or 1.5 °C, urgent pre-2020 mitigation action is needed to reduce climate risks in the 21st century and beyond and increase the prospects for effective adaptation. While greater levels of mitigation can reduce the need for additional adaptation efforts, failure to mitigate can result in higher adaptation costs or in adaptation options being no longer available or being financially non-viable.</li> <li>2. Addressing global climate change goes hand in hand with ensuring sustainable development. Reducing poverty as well as securing food, water, health, energy and livelihoods are contingent on our mitigation and adaptation efforts. National climate change policies will be most effective if linked to broader sustainable development strategies, including those geared towards the attainment of the United Nations Sustainable Development Goals enshrined in the 2030 Agenda for Sustainable Development.</li> <li>3. Through the process of preparing national contributions and their implementation, countries demonstrate that they are increasingly introducing national policies and related instruments for low emission and climate resilient development. This rise is driven by increased mainstreaming of climate change in national and sectoral development priorities and increased collaborative climate action between Parties and non-Party stakeholders. All key economic sectors and areas are being addressed as laid out in this year's report.</li> <li>4. Financial support, technology development and transfer as well as capacity-building at scale continue to be urgently needed. Successful planning and implementation of adaptation and mitigation measures requires very large investments. As such, in many developing countries, financial, technological and capacity-building support is critical. Developed country Parties should continue to seek to scale up their level of support to developing country Parties, with a concrete road map to achieve the collective mobilization goal of jointly providing USD 100 billion annually by 2020 for climate mitigation and adaptation. It is also critical to further explore ways to increase private sector financial investments.</li> </ol>

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Policy	Five Tier Plan	Key Issues
		<p>5. Institutions need strengthening to enable them to plan for and implement adaptation and mitigation in an effective and sustainable fashion. Institutions and stakeholder groups at all levels of government, as well as civil society, are more likely to engage in climate action when they have the necessary human, technical and financial capacity.</p> <p>6. The UNFCCC process offers a platform to scale up cooperative action. Evidence continues to prove that cooperative initiatives are important to enhance climate action as such initiatives can facilitate access to support and knowledge. The UNFCCC process, including the technical examination processes and the Non-state Actor Zone for Climate Action platform, supports the incubation and fully fledged development of cooperative action by facilitating solution oriented dialogue, knowledge-sharing and learning between cooperative initiatives and government leaders and encouraging the scaling up of existing and the establishment of new initiatives.</p>

### The Sendai Framework for Disaster Risk Reduction 2015-2030

Policy	Five Tier Plan	Key Issues
<b>The Sendai Framework for Disaster Risk Reduction 2015-2030</b>	Structure plan	<p><b>Priority 1:</b> Understanding disaster risk.</p> <p><b>Priority 2:</b> Strengthening disaster risk governance to manage disaster risk.</p> <p><b>Priority 3:</b> Investing in disaster risk reduction for resilience.</p> <p><b>Priority 4:</b> Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction.</p>
	Urban Area Plan	<p><b>Priority 4:</b> Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction.</p>

### Priorities of the 2017 G20 Summit (Agenda3)

Policy	Five Tier Plan	Key Issues
<b>Quito Implementation Plan for the New Urban Agenda</b>	Structure plan	<p>The United Nations resolves to implement the New Urban Agenda as a key instrument for national, sub-national and local governments and all relevant stakeholders to achieve sustainable urban development.</p> <p><b>1. The Transformative Commitments for Sustainable Urban</b></p>

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Policy	Five Tier Plan	Key Issues
		<p><b>Development</b> The transformative commitments for sustainable urban development are grounded in social, economic and environmental dimensions, which are seen as integrated and indivisible.</p> <p><b>a. Sustainable Urban Development for Social Inclusion and Ending Poverty</b> Land tenure, the value of public space, and the sustainable leverage of natural and cultural heritage are among the issues that this section elaborates.</p> <p><b>b. Sustainable and Inclusive Urban Prosperity and Opportunities for All</b> The profound impact of housing on economic transformation, access to knowledge, skills, and education, and the promotion of investments, innovations and entrepreneurship are part of the scope of concern.</p> <p><b>c. Environmentally Sustainable and Resilient Urban Development</b> Climate change, unsustainable consumption, slum upgrading, energy efficiency and the social and ecological function of land are some of the topics of concern.</p> <p><b>2. Effective Implementation</b> An enabling policy framework is required at the national, sub-national and local levels. Integrated and complimentary processes and actors, such as participatory planning, regional development banks, coordination of urban and rural development strategies, and international cooperation will assist the implementation of the New Urban Agenda, along with system-wide coordination of the UN.</p> <p><b>a. Building the Urban Governance Structure: Establishing a Supportive Framework</b> Inclusive, implementable and participatory policies will ensure effective implementation of the New Urban Framework. Local and municipal governments are a particular focus, with support for capacity, reliable financing mechanisms and management structures. The cooperation of all levels of government will be fostered.</p> <p><b>b. Planning and Managing Urban Spatial Development</b> Integrated planning will aim to balance short-term needs with long-term desired outcomes. Among the issues addressed are food security, the interrelationships of cities and territories, mixed social and economic uses, and quality public spaces. Road safety, affordable, accessible and sustainable urban mobility, water management and climate risk are also specific focus points. Culture will be included as a priority component of urban plans and strategies.</p>

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Policy	Five Tier Plan	Key Issues
		<p><b>c. Means of Implementation</b></p> <p>The complexity of the agenda requires many actors and a variety of means, along with an enabling environment. Capacity development, cooperation, mobilization of financial resources, alongside political and legal frameworks, are all part of the core means. The New Urban Agenda advocates building on the legacy of Habitat III and the lessons learnt from its preparatory process.</p> <p><b>3. Follow-up and Review</b></p> <p>This will be done to track progress, assess impact, ensure effective and timely implementation, accountability and transparency. The United Nations Human Settlements Programme (UN-Habitat) is recognized as a focal point for sustainable urbanization. Quantitative and qualitative analysis, regular assessments, along with meetings and conferences, will support follow-up and review of the New Urban Agenda. The New Urban Agenda's and the 2030 Agenda for Sustainable Development's follow-up and review must have effective linkages to ensure coherence in their implementation.</p>

### Sustainable Development Goals

Policy	Five Tier Plan	Key Issues
<b>Sustainable Development Goals</b>	Sub Regional Plan	<ul style="list-style-type: none"><li>▪ Goal 1. End poverty in all its forms everywhere</li><li>▪ Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture</li><li>▪ Goal 3. Ensure healthy lives and promote well being for all at all ages</li><li>▪ Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all</li></ul>

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		<ul style="list-style-type: none"> <li>▪ Goal 5. Achieve gender equality and empower all women and girls</li> <li>▪ Goal 6. Ensure availability and sustainable management of water and sanitation for all</li> <li>▪ Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all</li> <li>▪ Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all</li> </ul>
	Structure plan	<ul style="list-style-type: none"> <li>▪ Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</li> <li>▪ Goal 12. Ensure sustainable consumption and production patterns</li> <li>▪ Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development</li> <li>▪ Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss</li> <li>▪ Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development</li> </ul>
	Urban Area Plan	<ul style="list-style-type: none"> <li>▪ Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable</li> </ul>
	Rural Area Plan	<ul style="list-style-type: none"> <li>▪ Goal 10. Reduce inequality within and among countries</li> <li>▪ Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels</li> </ul>
	Action Area Plan	<ul style="list-style-type: none"> <li>▪ Goal 13. Take urgent action to combat climate change and its impacts</li> </ul>

**APPENDIX-B****Agriculture Sector**

<b>Policy</b>	<b>Key Issues</b>
<b>National Agriculture Policy 1999</b>	<ul style="list-style-type: none"> <li>• To grow more profitable crops as an alternative to only rice-rice cropping pattern.</li> <li>• reduce excessive dependence on any single crop</li> <li>• Salt tolerant crop varieties will be developed</li> <li>• Special development programmes will be taken with a view to increasing production of potential crops suitable for the coastal areas and the hill tracts.</li> <li>• Maximum utilization of land will be ensured through promotion of inter-cropping with the main crops</li> <li>• preserve existing bio-diversity of different crops</li> <li>• encourage farmers in providing supplementary irrigation during drought with a view to increasing cropping intensity and yield</li> <li>• take supportive programmes for inter-cropping in a field instead of single cropping</li> <li>• Modern cultivation practices will be followed</li> </ul>
<b>Climate Change Strategy 2009</b>	<ul style="list-style-type: none"> <li>• Develop climate change resilient cropping systems (e.g. agricultural research to develop crop varieties, which are tolerant of flooding, drought and salinity)</li> <li>• irrigation schemes to enable farmers to grow a dry season rice crop in areas subject to heavy monsoon flooding and in other parts of the country, including drought-prone areas</li> <li>• agricultural research programmes to develop saline, drought and flood-adapted high yielding varieties of rice and other crops</li> </ul>
<b>National Plan for Disaster Management 2008-2015</b>	<ul style="list-style-type: none"> <li>• Develop and establish policy and planning frameworks to incorporate all hazard risk reduction perspectives into Agriculture, livestock with the support agency Ministry of Agriculture,</li> <li>• Agriculture cannot be practiced without irrigation so irrigation is must.</li> </ul>
<b>Population Policy 2004</b>	<ul style="list-style-type: none"> <li>• discourage housing in the villages and cities by destroying agricultural lands;</li> </ul>
<b>Safe Water Supply and Sanitation 1998</b>	<ul style="list-style-type: none"> <li>• To ensure the use of waste for the production of organic fertilizer (compost) in the rural areas.</li> </ul>
<b>National Water policy 1999</b>	<ul style="list-style-type: none"> <li>• Strengthen crop diversification programmes</li> <li>• Encourage and promote continued development of minor Irrigation</li> </ul>
<b>Industrial Policy 2005</b>	<ul style="list-style-type: none"> <li>• To establish agro-based industries as well as to raise agricultural production.</li> <li>• Prioritize the expansion and development of agro-based and agricultural processing industries</li> <li>• Take steps to preserve and market agro-based goods hygienically by processing in frozen, pasteurized, canned or dry form</li> </ul>
<b>National Urban Sector Policy 2011</b>	<ul style="list-style-type: none"> <li>• Protect productive agricultural lands by limiting the intrusion of non-agricultural uses</li> </ul>
<b>Seventh Five Year Plan</b>	<ul style="list-style-type: none"> <li>• develop technologies of crops</li> <li>• develop the capacity of agriculture to effectively respond to market signals</li> <li>• New technology generation for vulnerable areas e.g. stress tolerant varieties and management practices, quality improvement of major crop varieties</li> </ul>

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### Agriculture Sector

Policy	Key Issues
	<ul style="list-style-type: none"><li>Promote adoption of modern agricultural practices in dry land, wetland, hills.</li></ul>
<b>National Environment Policy 1992</b>	<ul style="list-style-type: none"><li>Ensuring proper Environment Impact Assessment prior to undertaking of industrial and other development projects; and</li><li>Ensuring sustainable use of natural resources.</li></ul>

### PRA, Socio-Economic and Formal-Informal Economic Sector

Policy	Key Issues
<b>National Agriculture Policy 1999</b>	<ul style="list-style-type: none"><li>Land zoning programme will be taken up by the Soil Resources Development Institute (SRDI) on a priority basis.</li><li>Activities of the government, private organization and NGOs involved in agricultural development will be brought under a well-organized monitoring system and will be coordinated from the national to field level.</li><li>The Ministry of Agriculture will have a contingency plan for taking up emergency agricultural rehabilitation programmes (ARP) to recover from the crop losses due to any natural disaster at both the farmers' and national levels.</li></ul>
<b>Climate Change Strategy 2009</b>	<ul style="list-style-type: none"><li>Implement drinking water and sanitation programmes in areas at risk from climate change (e.g., coastal areas, flood-and drought-prone areas)</li><li>to ensure food security, social protection and health for the poorest and most vulnerable in society, including women and children</li><li>agricultural research programmes to develop saline, drought and flood-adapted high yielding varieties of rice and other crops, based on the traditional varieties evolved over centuries by Bangladeshi farmers</li><li>comprehensive disaster management projects, involving community-based programmes and early warning systems for floods and cyclones</li></ul>
<b>Disaster Management Act 2012</b>	<ul style="list-style-type: none"><li>National Disaster Management Council should provide necessary guidelines to all concern about law, policy and plan implementation on disaster management</li><li>The government may establish a 'National Disaster Management Research and Training Institute' to take relevant programs including research on the effects of disaster and climate change and increasing capability of disaster management method.</li><li>Formulation of National Disaster Management Policy and National and Local Disaster Management Plan and also National Disaster Response Coordination Group, National, local, level disaster management committee</li></ul>
<b>National Plan for Disaster Management 2008-2015</b>	<ul style="list-style-type: none"><li>Restoration of emergency services, such as water supply, gas supply, power, telecommunication, road links</li><li>To ensure socioeconomic development of the country through food security, relief and disaster management programmes.</li></ul> <p><b>Health</b></p> <ul style="list-style-type: none"><li>Improve maternal health Combat HIV/AIDS, malaria and other diseases</li><li>Reduce child mortality</li><li>Maintaining and strengthening the National Food Security System</li></ul> <p><b>Education</b></p> <ul style="list-style-type: none"><li>Achieve universal primary education</li></ul>

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### PRA, Socio-Economic and Formal-Informal Economic Sector

Policy	Key Issues
	<ul style="list-style-type: none"><li>Promote gender equality and empower women</li></ul> <b>Environment</b> <ul style="list-style-type: none"><li>Ensure environmental sustainability</li><li>launch national strategies for addressing greenhouse gas emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries</li></ul> <b>Economy</b> <ul style="list-style-type: none"><li>Develop a global partnership for development</li></ul> <b>Education</b> <ul style="list-style-type: none"><li>to take measures for prevention and mitigation of disasters by government agencies, NGOs, CBOs and the private sector within the district,</li><li>capacity building and preparedness measures to be taken by government agencies, NGOs, CBOs and the private sector</li><li>Make provision in the national budget for funding of activities related to Disaster Reduction</li><li>Ensure an effective system within Government to link and co-ordinate the processes of planning and the management of sustainable development, environmental management and disaster reduction.</li><li>The government in coordination with NGOs and International Organizations has done a commendable job in responding to the cyclone emergency situation and assisting the affected population</li><li>Non-structural mitigation measures such as community disaster preparedness, training advocacy and public awareness must be given a high priority</li></ul>
<b>Population Policy 2004</b>	<ul style="list-style-type: none"><li><b>Health</b></li><li>Improve maternal health with emphasis on reduction of maternal mortality</li><li>Reduce RTIs/STIs and prevent spread of HIV/AIDS</li><li>Establishment of Union level Health and Family Welfare Centers, wherever needed and appointment of a doctor in these centers</li><li>Ensure and support gender equity and empower women</li><li>provide food and social security and shelter for the disadvantaged including the elderly, destitute, physically and mentally retarded persons;</li><li>Ensure availability, access to safe and arsenic free water.</li><li>Strengthen training activities in order to develop skilled manpower like nurses, paramedics, field workers and skilled birth attendants so that maternal and child mortality can be reduced</li><li><b>Environment</b></li><li>Support measures for environmental sustainability with emphasis on access to safe drinking water.;</li><li><b>Education</b></li><li>Provide formal and non-formal education to both in-school and out-of-school adolescent boys and girls;</li><li>Provide adolescent RH and life skills education as well as counseling for parents, teachers and service providers</li><li>Impart education and skill training to the young men and women to become competent and skillful</li><li><b>Social Consciousness</b></li><li>Ensure Early Childhood Development (ECD) program</li></ul>



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Policy	Key Issues
	<ul style="list-style-type: none"><li>• Eliminate all forms of violence and sexual abuse, including trafficking of women and children;</li><li>• Promote male participation in household responsibilities;</li><li>• Create equal opportunity for both boys and girls in education, nutrition and health services.</li><li>• Ensuring rural employment opportunities in agriculture and agro-based industries.</li><li>• <b>Ministry of Health and Family Welfare</b> shall be the lead Ministry for overseeing family planning, maternal and child health and reproductive health care services.</li><li>• <b>Ministry of Primary and Mass Education and Ministry of Education</b> may ensure improved quality and completion of primary and secondary education levels.</li><li>• <b>Ministry of Agriculture</b> may make useful efforts to motivate farm population on small family norm through its extension workers.</li><li>• <b>Ministry of Information</b> will be encouraged</li><li>• <b>Ministry of Local Government, Rural Development and Co-operatives</b> strengthen institutional capacity and resources of the women's development related institutions.</li><li>• Engage NGO in awareness creation activities regarding the benefits of delayed marriage and delayed birth, health and nutrition issues as well as of STIs, RTIs, HIV/AIDS;</li><li>• Ensure coordination and intimate linkages of the NGOs and private sector with the Ministry of Health and Family Welfare and other relevant ministries and institutions and avoid duality</li></ul>
<b>Safe Water Supply and Sanitation 1998</b>	<ul style="list-style-type: none"><li>❖ <b>Health</b><ul style="list-style-type: none"><li>• To ensure that all people have access to safe water and sanitation services at an affordable cost.</li><li>• Removal of arsenic from drinking water and supply of arsenic free water from alternate sources in arsenic affected areas.</li></ul></li><li>❖ <b>Social Consequences</b><ul style="list-style-type: none"><li>• Bringing about behavioural changes regarding use of water and sanitation;</li><li>• Promotion of various technology options will be sustainable for both water supply and sanitation keeping the needs of specific areas and socio-economic groups of people.</li></ul></li><li>❖ <b>Environment Consequences</b><ul style="list-style-type: none"><li>• To preserve environmental quality and to mitigate arsenic contamination research and field surveys are being carried out.</li><li>• Use of organic waste material for compost and bio-gas will be promoted</li><li>• The City Corporations or Paurasabhas shall be responsible for solid waste collection, disposal and their management</li><li>• The government is encouraging and supporting the involvement of other partners, such as non-governmental organizations (NGOs) market- oriented business organizations and similar private organizations in water and sanitation development.</li><li>• Private sector and NGO investment will be encouraged in manufacturing, sale and distribution of different types of tube wells, sanitary latrines etc</li></ul></li></ul>

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### **PRA, Socio-Economic and Formal-Informal Economic Sector**

<b>Policy</b>	<b>Key Issues</b>
	<ul style="list-style-type: none"><li>• During natural disaster WASAs and relevant agencies shall take appropriate measures for providing safe drinking water</li><li>• Building capacity in local governments and communities to deal more effectively with problems relating to water supply and sanitation;</li><li>• Water Supply, Sewerage Authorities (WASAs) shall be responsible for sustainable water supply in the metropolitan areas where WASAs exist.</li><li>• Drainage system in the cities and municipalities will be integrated with the overall drainage system with the coordination of Ministry of Water Resources.</li></ul> <p>Behavioral development and changes in user communities shall be brought about through social mobilization and hygiene education in coordination with the Ministries of Health, Education, Social Welfare, Information, Women &amp; Children Affairs and DPHE, NGOs, CBOs, local government bodies and other related agencies</p>
<b>National Water policy 1999</b>	<ul style="list-style-type: none"><li>❖ <b>Social Consequences</b><ul style="list-style-type: none"><li>• Recreational activities at or around water bodies will be allowed</li></ul></li><li>❖ <b>Environment Consequences</b><ul style="list-style-type: none"><li>• Natural water bodies such as heels, haors, and baors will be preserved for maintaining the aquatic environment and facilitating drainage</li><li>• Mandate local governments to create awareness among the people in checking water pollution and wastage</li><li>• Mandate relevant public water and sewerage institutions to provide necessary drainage and sanitation, including treatment of domestic wastewater and sewage</li><li>• Empower, and hold responsible, municipalities and urban water and sewerage institutions to regulate the use of water for preventing wastage and pollution by human action</li></ul></li></ul>
	<ul style="list-style-type: none"><li>• Alleviation of poverty through creation of job opportunities and finding options for diversified livelihoods would be the major principles of all economic activities.</li><li>• Economic opportunities based on local resources will be explored to enhance income of the people;</li></ul>
<b>Industrial Policy 2005</b>	<ul style="list-style-type: none"><li>• Social Consequences</li><li>• Provide special facilities as well as infrastructural support to Cottage and Small and Medium Enterprises (SME)</li><li>• establish more backward linkage industries in order to accelerate the export of high value-added garments</li><li>• SMEs will be established on a greater scale across the country in order to bring about poverty alleviation, unemployment reduction and creating more employment opportunity so that national economic growth can be attained</li><li>• Provide financial, technical, technological and infrastructural facilities in order to inspire setting up and developing agro-based industries.</li><li>• For setting up industries, The Board of Investment will provide one-stop service in the following fields so that investors get infrastructure facilities quickly when setting up industries:<ul style="list-style-type: none"><li>• (a) Electric and gas connections;</li><li>• (b) Water and sewerage connections;</li></ul></li></ul>

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### **PRA, Socio-Economic and Formal-Informal Economic Sector**

<b>Policy</b>	<b>Key Issues</b>
	<ul style="list-style-type: none"> <li>• (c) Telecommunications facilities;</li> <li>• (d) Customs clearance of imported machineries, spare parts and raw materials;</li> <li>• (e) Clearance from environmental agencies; and</li> <li>• (f) Other necessary facilities and services for speedy setting up and running of industries</li> </ul>
<b>National Urban Sector Policy 2011</b>	<p>❖ <b>Social Consequences</b></p> <ul style="list-style-type: none"> <li>• assure health, safety and security of all citizens through multifaceted initiatives to reduce crime and violence;</li> <li>• 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</li> <li>• Strengthen local government bodies by increasing efficiency through adequate and trained manpower.</li> <li>• Each Paurashava should have a Paurashava Development Committee and there should be a Ward Committee in each ward of a City Corporation.</li> </ul>
<b>Seventh Five Year Plan</b>	<p>❖ <b>Education</b></p> <ul style="list-style-type: none"> <li>➤ The religious education at primary level will be well organized &amp; systemic. Islamic ideals, values culture will be disseminated and flourished among the students at primary schools.</li> <li>➤ Achieving 100 percent net enrolment rate for primary and secondary education</li> </ul> <p>❖ <b>Health</b></p> <ul style="list-style-type: none"> <li>➤ Creating Medicare facilities by creating a permanent infrastructural facilities for each Centre.</li> <li>➤ Providing free Medicare service will be given to the poor and disadvantaged people.</li> <li>➤ Safe drinking water for all and Proportion of urban population with access to sanitary latrines to be increased to 100 percent.</li> </ul> <p>❖ <b>Culture</b></p> <ul style="list-style-type: none"> <li>➤ Preserve and present national history, culture and heritage</li> <li>➤ Preserve and promote language arts and culture of small ethnic group communities within the framework of national unity;</li> <li>➤ <b>Access to education, language, and culture:</b></li> </ul> <p><b>Recreation</b></p> <ul style="list-style-type: none"> <li>➤ Development and establishment of five new initiatives such as eco-parks, recreational garden along river or bay and botanical gardens, safari park, national park etc Such activities will be continued under this Seventh Five Year Plan.</li> <li>➤ Regional botanical garden will also be setup for uniform biodiversity conservation in the country.</li> </ul> <p><b>Water and Sanitation</b></p> <ul style="list-style-type: none"> <li>❑ Safe drinking water for all</li> <li>❑ Proportion of urban population with access to sanitary latrines to be increased to 100 percent</li> <li>❑ Proportion of rural population with access to sanitary latrines to be raised to 90 percent</li> </ul>
<b>National Environment</b>	Key elements of the policy statement are:

**PRA, Socio-Economic and Formal-Informal Economic Sector**

<b>Policy</b>	<b>Key Issues</b>
<b>Policy 1992</b>	Maintain ecological balance and overall physical development progress of the country through protection and development of different sectors. Protection from natural disaster is one of them; Identification and regulation all type of activities which pollutes and degrade the environment;
<b>National Tourism Policy 1992</b>	In the Tourism Policy, status of tourism industry in Bangladesh was described, aims and objectives were defined and implementation strategies were suggested. The National Tourism Policy of Bangladesh was declared in 1992. Its main objectives are: <ul style="list-style-type: none"> <li>• To create interest in tourism among the people.</li> <li>• To preserve, protect, develop and maintain tourism resources.</li> <li>• To take steps for poverty-alleviation through creating employment.</li> <li>• To build a positive image of the country abroad.</li> <li>• To open up a recognized sector for private capital investment.</li> <li>• To arrange entertainment and recreation</li> </ul>
<b>Housing Policy 2008 (Draft)</b>	<ul style="list-style-type: none"> <li>• ভাসমানওসাময়িকব্যবহারকারীদেরজন্যপানীয়জলওপয়ঃনিষ্কাশনেরব্যবস্থাস্বলিত রাত্রিকালীনআশ্রয়এবংগন-শৌচাগারনির্মাকরাহবে।</li> <li>• সরকারী,আধা-সরকারীএবংবেসরকারীসকলপ্রকারআবাসনপ্রকল্পপানি, বিদ্যুত, পয়ঃ, গ্যাস, বর্জ্যানিষ্কাশন, ড্রেনেজইত্যাদিসেবামূলককার্যক্রমেরজন্যপর্যাপ্তজায়গারাখা হবে।</li> <li>• পরিবারহীনবৃদ্ধদেরগ্রিহায়নেসহরওগ্রামাঞ্চলেপ্রয়োজনীয়সংখ্যক 'বৃদ্ধনিবাস' নির্মাণকরা হবে।</li> <li>• পল্লীঅঞ্চলেরআবাসনব্যবস্থারলক্ষ্যেপরিকল্পনাপ্রণয়ন, অর্থেরযোগাননিশ্চিতকরণ, বাস্তবায়ন, তদারকওপয়বেক্ষণসংক্রান্তসার্বিকদায়িত্বপালনেরলক্ষ্যেস্থানীয়পর্যায়েরসংগঠনগুলো কেজাতীয়গৃহায়নকতপক্ষেসহায়তায়শক্তিশালীকরাসহউপযুক্তপ্রাথমিককাঠামো, জনবলওসম্পদসৃষ্টিকরা হবে।</li> <li>• লাগসইওসহজবোধ্যপ্রযুক্তি, পরিবেশবান্ধবসামগ্রীউৎপাদন, বাজারজাতকরণওব্যবহার, স্বাস্থ্যসম্মতগৃহায়নওপরিবেশউন্নয়নইত্যাদিবিষয়েএনজিও, এলাকাভিত্তিকবেসরকারীসংস্থা, সেবাসংস্থাসমূহেরকর্মচারীওমাঠকর্মীএবংব্যক্তিরজ্ঞানওসামর্থ্যবৃদ্ধিরজন্যপ্রয়োজনীয়তথ্যপুস্তিকা, প্রচারএবংকর্মশালারআয়োজনকরা হবে।</li> <li>• সকলগ্রামআবাসিকভূমিওআবাদীভূমিচিহ্নিতকরেসেঅনুসারেবিভিন্নঅবকাঠামোগড়ে তোলা হবে।এক্ষেত্রেবেসরকারীউদ্যোগ্তাদেরঅংশগ্রহণকেউৎসাহিতকরা হবে।</li> </ul>
<b>Forest Policy 1994</b>	<ul style="list-style-type: none"> <li>• Buffer zones attached to protected areas may be allocated for tree farming and agroforestry on a long term lease basis</li> <li>• Industries located in rural areas, particularly those cottage and small scale labour intensive industries which contribute to the local economy and process wood and other forest based raw materials, will be promoted by the State</li> <li>• To enrich biodiversity in the existing degraded forests by conserving the remaining natural habitats of birds and animals;</li> <li>• To strengthen agriculture by extending assistance to those sectors related with forest development, especially by conserving land and water resources</li> </ul>

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### Geology Sector

Policy	Key Issues
<b>Climate Change Strategy 2009</b>	<ul style="list-style-type: none"><li>Afforestation and reforestation can protect land from soil erosion and landslides, particularly in hilly areas.</li></ul>
<b>National Plan for Disaster Management 2008-2015</b>	<ul style="list-style-type: none"><li>Incorporate Tsunami Risks in land use planning in Coastal Zone Development Plans developed by Ministry of Water Resources Ministry of Water Resources, Disaster Management Bureau, DRR</li><li>Prepare an Institutional Resource Map of Coastal Zone by Disaster Management Bureau and CDMP</li></ul>
<b>Private Residential Land Development Rule 2004</b>	<ul style="list-style-type: none"><li>ভূতত্ত্ব অধিদপ্তর হইতে প্রকল্প এলাকার বন্যানিওন্দ্রন অপানি নিষ্কাশন সুবিধা প্রদান সংক্রান্ত ছাড়পত্র</li></ul>

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### Transport Sector

Policy	Key Issues
<b>Population Policy 2004</b>	<ul style="list-style-type: none"><li>Roads and communication systems should be linked with the growth centers</li><li>disallow air polluting vehicles Reduce vehicular pollution by implementing appropriate laws</li></ul>
<b>Coastal Zone Policy</b>	<ul style="list-style-type: none"><li>development of communication network with islands for passengers and freight traffic;</li><li>An integrated network of communication including highways, major roads, rural roads, railways and waterways will be developed</li><li>development of two existing seaports and installation of a communication network between main river ports, ghat and inland container ports and depots;</li><li>Initiatives of establishing deep sea port;</li><li>development of communication network with islands for passengers and freight traffic;</li><li>ensuring shipping security for passengers and freight;</li></ul>

### Hydrology Sector

Policy	Key Issues
<b>Population Policy 2004</b>	<ul style="list-style-type: none"><li>Support the programs for re-excavation of canals and ponds in rural area and to undertake measures against soil and river erosion</li></ul>
<b>National Water policy 1999</b>	<ul style="list-style-type: none"><li>replacement of open drains and construction of sewers</li><li>Dredging and other suitable measures would be undertaken,</li><li>Develop and disseminate appropriate technologies for conjunctive use of rainwater ground water and surface water</li><li>Develop and promote water management techniques to prevent wastage and generate efficiency of water and energy use</li><li>Investigate thoroughly important flood control and management issues, such as the efficacy of coastal polders, for guiding future policy on structural Interventions</li><li>Haors that naturally dry up during the winter will be developed for dry season agriculture</li></ul>
<b>National Urban Sector Policy 2011</b>	<ul style="list-style-type: none"><li>protect, preserve and enhance the urban environment, particularly water bodies;</li><li>Conserve natural water bodies.</li></ul>
<b>National Fisheries Policy 1998</b>	<ul style="list-style-type: none"><li>Proper arrangement will be initiated to develop water control and drainage system for sustainable fish production in the baor.</li><li>Arrangements will be made to conserve the ecological balance within the polders and embankments in which a suitable environment shall be created for rice and shrimp production.</li><li>To ensure high quality of exportable fish and shrimp products, laboratory facilities for Quality Control will be expanded and modernised.</li></ul>
<b>Private Residential Land Development Rule 2004</b>	<ul style="list-style-type: none"><li>প্রকল্প এলাকায় ভূমির উচ্চতাব্যবস্থাপনা- প্রবাহসীমার উপর (Highest Flood Level) এর উপরে রাখার জন্য প্রয়োজনীয় ব্যবস্থা গ্রহণ;</li><li>প্রকল্প এলাকায় এলাকায় কোন খাল, বিল, নদী, নালা বা অন্য কোন জলাশয় থাকিলে উহার পানি প্রবাহে বিঘ্ন সৃষ্টি না করিয়া প্রবাহিত পানি যাতে প্রকল্পের শেষ প্রাপ্ত হইয়া ক্ষেত্রমত খাল, বিল, নদী, নালা বা জলাধার পর্যন্ত প্রবাহিত হইতে পারে, উহা নিশ্চিত করণ;</li></ul>

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<b><u>Hydrology Sector</u></b>	
<b>Policy</b>	<b>Key Issues</b>
	<ul style="list-style-type: none"><li>• বাংলাদেশপানিউন্নয়নবোর্ডহইতেপ্রকল্পএলাকারবন্যানিয়ন্ত্রণঅপানিনিষ্কাশনসুবিধাপ্রদান সংক্রান্তছাড়পত্র</li></ul>

### **Physical, Landuse and Topographic Features Sector**

<b>Policy</b>	<b>Key Issues</b>
<b>National Agriculture Policy 1999</b>	<ul style="list-style-type: none"><li>• Maximum utilization of land will be ensured through promotion of inter-cropping with the main crops.</li><li>• Acquisition of land in excess of requirement for non-agricultural purposes will be discouraged.</li></ul>
<b>Climate Change Strategy 2009</b>	<ul style="list-style-type: none"><li>• Flood management embankments, coastal polders and cyclone shelters have been built</li></ul>
<b>National Plan for Disaster Management 2008-2015</b>	<ul style="list-style-type: none"><li>• restoration of damaged public infrastructure, resumption of educational institutions,</li><li>• restoration of livelihood, rehabilitation of affected people, especially the disabled, and elderly women and children</li><li>• Map out critical vulnerable infrastructure and communities within the high risk zones</li></ul>
<b>Building Construction Rules 1996</b>	<ul style="list-style-type: none"><li>• Land use planning Rules- It is based on land use policies including Local Plans, such as residential density, road standard, provision of infrastructure and services.</li><li>• Control of public estates-Different government agencies have developed some housing, commercial and industrial estates in different urban areas and they have leased them out.</li><li>• Non-compliance of development control by some government and semi-government agencies- According to Building Construction Act, 1952 (amended in 1996, followed by Paurashava) each public building needs approval from the concerned development agencies.</li><li>• Control of private housing estates</li><li>• Control of informal Development</li><li>• Density Control- At present, Paurashava follows Building Construction Rule, 1952 (amended in 1996) which restricts the height of Building in respect of adjacent road.</li><li>• Taxation</li><li>• Payment of Betterment fee</li><li>•</li></ul>
<b>National Water policy 1999</b>	<ul style="list-style-type: none"><li>• replacement of open drains and</li><li>• construction of sewers to the interest of public health</li></ul>
<b>Industrial Policy 2005</b>	<ul style="list-style-type: none"><li>• By creating special economic zones, cluster villages can be established quickly for running industrial enterprises.</li><li>• Provide structural and other facilities to establish and develop compact industrial areas.</li><li>• Develop planned industrial areas by establishing Special Economic Zones in areas with vast economic potentials, and utilizing local resources.</li></ul>
<b>Burning Bricks Act 1989</b>	<ul style="list-style-type: none"><li>• No person may burn bricks without a licence.</li><li>• No person may use firewood for burning bricks.</li><li>• No suit shall be filed in any court against offences under this Act without the</li></ul>

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### Physical, Landuse and Topographic Features Sector

Policy	Key Issues																		
	written accusation of the chairman of the Upazila Parishad																		
<b>National Urban Sector Policy 2011</b>	<ul style="list-style-type: none"> <li>Allocating khas land/acquired land for housing the poor</li> <li>Protect hills in urban areas, specially Chittagong, Sylhet, Khagrachari, Cox's Bazar etc.;</li> <li>Protect peri-urban areas from unplanned development.</li> <li>Manage floodplains by controlling uses of land within hydrologically defined areas subject to floods of a designated frequency;</li> <li>Promote hierarchical structure of educational institutions, such as from the kindergartens to universities, at appropriate locations with catchment areas/zones in urban areas.</li> <li>Preserve open space by designating land areas for a variety of purposes such as recreation, future use, green belt etc</li> </ul>																		
<b>Coastal Zone Policy 2005</b>	<ul style="list-style-type: none"> <li>Enforcement of existing legal coverage will be facilitated with adequate logistics and support, to relevant agencies.</li> </ul>																		
<b>National Fisheries Policy 1998</b>	<ul style="list-style-type: none"> <li>To increase production and to conserve biodiversity, part or the whole water bodies/jalmohals shall be converted into fish sanctuaries</li> <li>Emphasis will be given for extension of rice-cum-fish culture.</li> <li>Biodiversity will be maintained in all natural water bodies and in marine environment.</li> <li>Chemicals harmful to the environment will not be used in fish and shrimp culture</li> </ul>																		
<b>Seventh Five Year Plan</b>	<ul style="list-style-type: none"> <li>Coastal pollution &amp; marine resource management</li> <li>Crop Zoning and Land Use Planning:</li> </ul>																		
<b>Private Residential Land Development Rule 2004</b>	<p><b>Building Height</b> According to the Building Construction Rules (1996), the maximum height of a building will not be more than the summation of front side road width and the mandatory open space between road and building site. According to the law, the following decisions can be summarized</p> <table border="1"> <thead> <tr> <th>Distance between Front side road and space of the building</th><th>Building's Highest Height (meter)</th></tr> </thead> <tbody> <tr> <td>7. 60-10.59 m</td><td>9.5 m</td></tr> <tr> <td>10. 60-13.59m</td><td>12. 50m</td></tr> <tr> <td>13. 60-16.59m</td><td>15.50m</td></tr> </tbody> </table> <p>According to the rules, the building's height doesn't less than the above values, if the width of adjacent road of the site tends to the following conditions, the estimated building's height will be the correspondent value according to the following table.</p> <table border="1"> <thead> <tr> <th>Width of the Road of Adjacent Site</th><th>Building's Highest Height (meter)</th></tr> </thead> <tbody> <tr> <td>4.55-7.59m</td><td>18.50m</td></tr> <tr> <td>7.60-10.66m</td><td>27. 50m</td></tr> <tr> <td>10. 67-15.24m</td><td>42.50m</td></tr> <tr> <td>15.25-22.99m</td><td>60.50m</td></tr> </tbody> </table> <p>Here is also one condition, if the width of the Road of the adjacent Site is 23.50 or more then there is no limit of the height of the building.</p>	Distance between Front side road and space of the building	Building's Highest Height (meter)	7. 60-10.59 m	9.5 m	10. 60-13.59m	12. 50m	13. 60-16.59m	15.50m	Width of the Road of Adjacent Site	Building's Highest Height (meter)	4.55-7.59m	18.50m	7.60-10.66m	27. 50m	10. 67-15.24m	42.50m	15.25-22.99m	60.50m
Distance between Front side road and space of the building	Building's Highest Height (meter)																		
7. 60-10.59 m	9.5 m																		
10. 60-13.59m	12. 50m																		
13. 60-16.59m	15.50m																		
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4.55-7.59m	18.50m																		
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### **Physical, Landuse and Topographic Features Sector**

<b>Policy</b>	<b>Key Issues</b>
<b>The Building Construction Act, 1952</b>	<p>Density Control: Section 12(1) of Building Construction Rules, 1996 sets a formula for building height determination based on the width of the front road. This rule imposes a limit on the building height as long as the front road is less than 75 ft. (22.87 meter). Indirectly this limits the number of family or the size of population in a building. Setback rule of the building and approval system of the building plan also prescribed in the Building Construction Rules.</p> <p>Raging of Hill: Section 3(3) of the Act presents regulation on the raging of hill. In the Act it is prescribed that anybody is not authorized for raging of hill without approval from the concerned authority. Development Authority and Deputy Commissioner is the concerned authority.</p>

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### APPENDIX-C

#### Khuniapalong Union

Khuniapalong Union								
Facilities	Type	No of Facilities	From PRA	Location (No of Facilities)	Area (Acre)	%	Total %	Major Findings From PRA
Education	Madrasa	3	3	Ward-02(3)	0.27	0.00	0.00	<ul style="list-style-type: none"> <li>Transportation Problem</li> <li>Lack of Educational Institutions</li> <li>Lack of Medical Facilities</li> </ul>
Religious	Mosque	10	45	Ward-02(7), Ward-08(3)	0.59	0.00	0.00	
Graveyard		1	39	ward-02(1)	0.54	0.00	0.04	
Open Space		1		ward-02(1)	0.96	0.01	0.01	
Community		1		ward-08(1)	0.03	0.00	0.00	
Health	Community Clinic	1	2	ward-08(1)	0.04	0.00	0.00	

Khuniapalong Union-Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Proposed Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	13	26	Ward-01 (1); Ward-02 (5); Ward-04 (1); Ward-05 (1); Ward-08(4)
	Secondary/High School	20000	5	3	15	Ward-02 (1), Ward-08 (1)
	College	20000	10	3	30	Ward-02 (1), Ward-08 (1)
Open Space	Play field/ground	20000	3	3	9	Ward-02 (1), Ward-08 (1)
	Neighborhood park/Park	10000	1	7	7	Ward-02(3); Ward-08(2)

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Khuniapalong Union-Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
<b>Health</b>	Health centre/Maternity clinic	5000	1	13	13	Ward-04 (1);Ward-03 (1);Ward-02 (1);Ward-06 (1);Ward-09 (1)
<b>Community Facilities</b>	Mosque/Church /Temple	20000	0.5	3	1.5	Ward-02 (1),Ward-08 (1)
	Eidgah	20000	1	3	3	Ward-02 (1),Ward-08 (1)
	Graveyard	20000	1	3	3	Ward-02 (1),Ward-08 (1)
	Community centre	20000	1	3	3	Ward-02 (1),Ward-08 (1)
	Post office	20000	0.5	3	1.5	Ward-02 (1),Ward-08 (1)
<b>Utilities</b>	Water supply	20000	1	3	3	Ward-02 (1),Ward-08 (1)
	Gas	20000	1	3	3	Ward-02 (1),Ward-08 (1)
	Electric sub-station	20000	1	3	3	Ward-02 (1),Ward-08 (1)
<b>Commerce and Shopping</b>	Wholesale market	20000	1	3	3	Ward-02 (1),Ward-08 (1)
	Retail sale market	20000	1	3	3	Ward-02 (1),Ward-08 (1)
	Corner Shop	2500	0.25	26	6.5	Ward-01(1);Ward-02 (11);Ward-03 (1);Ward-04 (2);Ward-05 (1);Ward-07 (1);Ward-08 (8);Ward-09 (1)
	Neighborhood Market	10000	1	7	7	Ward-02(3);Ward-08(2)
<b>Industry</b>	Small scale	1000	1.5	66	99	Ward-01(3);Ward-02 (27);Ward-03 (2);Ward-04 (4);Ward-05 (3);Ward-06 (1);Ward-07

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Khuniapalong Union-Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
						(2);Ward-08 (21);Ward-09 (2);
	Heavy Industry	10000	5	7	35	Ward-02(3);Ward-08(2)
Transportation	Bus terminal	20000	1	3	3	Ward-02 (1),Ward-08 (1)
	Truck terminal	20000	0.5	3	1.5	Ward-02 (1),Ward-08 (1)

### Chakmarkul Union

Chakmarkul Union								
Facilities	Type	No of Facilities	From PRA	Location (No of Facilities)	Area (Acre)	%	Total %	Major Findings From PRA
Education	Primary School	5	5	Ward-01(1), Ward-05(1), Ward-08(1), ward-09(2)	4.79	0.27	0.77	Bad transportation condition
	Secondary School	2	1	ward-03(1), ward-09(1)	3.97	0.22		
	Madrasa	7	5	Ward-01(1), Ward-04(1), ward-07(1), ward-08(2), ward-09(2)	5.10	0.28		
Religious	Mosque	23	32	Ward-01(1), Ward-03(3), Ward-04(3), ward-05(2), ward-06(3), ward-07(3), ward-08(1), ward-09(7)	9.88	0.55	0.55	
	Buddho Temple	1	1	ward-03(1)	0.04	0.00		
Graveyard		5		Ward-06(1), Ward-07(1), ward-08(1), ward-09(2)	14.80	0.82	0.82	
Health Facilities	Community Clinic	3		ward-01(1), ward-09(2),	1.24	0.07	0.07	
Open Space		3		ward-03(1), ward-05(1), ward-07(1)	0.17		0.17	

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Chakmarkul Union-Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Proided Area (acre)	Location Ward (No.of Facilities)
<b>Education</b>	Primary School/ kindergarten	5000	2	6	12	Ward-03 (1);Ward-04(1);Ward-06 (1);Ward-08 (1);Ward-09 (2)
	Secondary/High School	20000	5	1	5	
	College	20000	10	1	10	
<b>Open Space</b>	Play field/ground	20000	3	1	3	
	Neighborhood park/Park	10000	1	3	3	Ward-09 (1)
<b>Health</b>	Health centre/Maternity clinic	5000	1	6	6	Ward-03 (1);Ward-04(1);Ward-06 (1);Ward-08 (1);Ward-09 (2)
<b>Communit y Facilities</b>	Mosque/Church/T emple	20000	0.5	1	0.5	
	Eidgah	20000	1	1	1	
	Graveyard	20000	1	1	1	
	Community centre	20000	1	1	1	
	Post office	20000	0.5	1	0.5	
<b>Utilities</b>	Water supply	20000	1	1	1	
	Gas	20000	1	1	1	
	Electric sub-station	20000	1	1	1	
<b>Commerce and Shopping</b>	Wholesale market	20000	1	1	1	
	Retail sale market	20000	1	1	1	
	Corner Shop	2500	0.25	12	3	Ward-01 (1);Ward-02 (1);Ward-03 (2);Ward-04 (1);Ward-05 (1);Ward-06 (1);Ward-07 (1);Ward-08 (1);Ward-09 (4);
	Neighborhood Market	10000	1	3	3	Ward-09 (1)
<b>Industry</b>	Small scale	1000	1.5	30	45	Ward-01 (2);Ward-02 (2);Ward-03 (4);Ward-04 (3);Ward-05

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Chakmarkul Union-Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Proided Area (acre)	Location Ward (No.of Facilities)
						(2);Ward-06 (3);Ward-07 (2);Ward-08 (3);Ward-09 (9);
	Heavy Industry	10000	5	3	15	Ward-09 (1)
Transportation	Bus terminal	20000	1	1	1	
	Truck terminal	20000	0.5	1	0.5	

## Dakshin Mithachari Union

Dakshin Mithachari Union-Existing								
Facilities	Type	No of Facilities	From PRA	Location (No of Facilities)	Area (Acre)	%	Total %	Major Findings From PRA
Education	Primary School	6	7	Ward-02(2), Ward-06(2), ward-07(2)	3.21	0.03	0.10	<ul style="list-style-type: none"> <li>Bad transportation condition</li> <li>Lack of Embankment</li> </ul>
	Madrasa	5	1	Ward-01(2), Ward-02(1), ward-03(1), ward-04(1)	1.73	0.02		
	Secondary School	3	1	Ward-01(1),Ward-02(1),Ward-07(1)	4.94	0.05		
Religious	Mosque	24	32	Ward-01(10), Ward-02(3), Ward-03(2), ward-04(2), ward-05(1), ward-07(5), ward-	12.60	0.12	0.18	

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Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

Dakshin Mithachari Union-Existing								
Facilities	Type	No of Facilities	From PRA	Location (No of Facilities)	Area (Acre)	%	Total %	Major Findings From PRA
				08(1)				
	Temple	3	1	ward-02(2), ward-03(1)	5.83	0.06		
Graveyard		8		Ward-01(4), Ward-02(1), ward-05(1), ward-07(2)	56.56	0.56	0.15	
Health Facilities	Community Clinic	1		ward-01(1)	0.16	0.00	0.01	
	Hospital	1	1	ward-07(1)	1.31	0.01		
Community		3		ward-03(1), ward-07(1), ward-08(1)	0.36	0.00	0.00	
Open Space		2		ward-05(1), ward-07(1)	3.81	0.04	0.04	

Dakshin Mithachhari Union-Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Proposed Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	9	18	Ward-01(1); Ward-02 (3); Ward-03(1); Ward-04 (1); Ward-06 (1); Ward-07 (1)
	Secondary/High School	20000	5	2	10	Ward-02 (1)
	College	20000	10	2	20	Ward-02 (1)
Open Space	Play field/ground	20000	3	2	6	Ward-02 (1)

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Dakshin Mithachhari Union-Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Proided Area (acre)	Location Ward (No.of Facilities)
	Neighborhood park/Park	10000	1	5	5	Ward-01 (1);Ward-02 (1);Ward-04 (1);Ward-07 (1)
<b>Health</b>	Health centre/Maternity clinic	5000	1	9	9	Ward-01(1);Ward-02 (3);Ward-03(1);Ward-04 (1);Ward-06 (1);Ward-07 (1)
<b>Community Facilities</b>	Mosque/Church/Temple	20000	0.5	2	1	Ward-02 (1)
	Eidgah	20000	1	2	2	Ward-02 (1)
	Graveyard	20000	1	2	2	Ward-02 (1)
	Community centre	20000	1	2	2	Ward-02 (1)
	Post office	20000	0.5	2	1	Ward-02 (1)
<b>Utilities</b>	Water supply	20000	1	2	2	Ward-02 (1)
	Gas	20000	1	2	2	Ward-02 (1)
	Electric sub-station	20000	1	2	2	Ward-02 (1)
<b>Commerce and Shopping</b>	Wholesale market	20000	1	2	2	Ward-02 (1)
	Retail sale market	20000	1	2	2	Ward-02 (1)
	Corner Shop	2500	0.25	19	4.75	Ward-01 (3);Ward-02 (6);Ward-03 (2);Ward-04 (3);Ward-05 (1);Ward-06 (1);Ward-07 (2);Ward-08 (1)
	Neighborhood Market	10000	1	5	5	Ward-01 (1);Ward-02 (1);Ward-04 (1);Ward-07 (1)



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Dakshin Mithachhari Union-Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Proided Area (acre)	Location Ward (No.of Facilities)
Industry	Small scale	1000	1.5	47	70.5	Ward-01 (9);Ward-02 (14);Ward-03 (4);Ward-04 (7);Ward-05 (2);Ward-06 (3);Ward-07 (6);Ward-08 (2)
	Heavy Industry	10000	5	5	25	Ward-01 (1);Ward-02 (1);Ward-04 (1);Ward-07 (1)
Transportation	Bus terminal	20000	1	2	2	Ward-02 (1)
	Truck terminal	20000	0.5	2	1	Ward-02 (1)

## Fatekharkul Union

Fatekharkul Union-Existing								
Facilities	Type	No of Facilities	From PRA	Location (No of Facilities)	Area (Acre)	%	Total %	Major Findings From PRA
Education	Primary School	8	16	Ward-02(1), ward-03(1), ward-04(2), ward-05(1), ward-07(1), ward-09(2)	7.73	0.32	0.66	<ul style="list-style-type: none"> <li>Transportation Problem</li> <li>Flood</li> </ul>
	Secondary School	4	2	ward-07(2),ward-08(2),	1.56	0.06		
	Madrasa	8	1	Ward-02(1), Ward-04(3), ward-05(1), ward-06(1), ward-09(1),ward-08(1)	6.80	0.28		
Religious	Mosque	37	57	Ward-01(3), Ward-02(3), Ward-03(6), ward-04(7), ward-05(4), ward-06(2), ward-07(4), ward-	6.07	0.25	0.70	

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Fatekharkul Union-Existing								
Facilities	Type	No of Facilities	From PRA	Location (No of Facilities)	Area (Acre)	%	Total %	Major Findings From PRA
				08(3), ward-09(5)				
	Temple	13	11	ward-02(4), ward-04(2), ward-05(3), ward-06(3), ward-09(1)	4.64	0.19		
	Buddho Bihar	14	13	ward-02(4), ward-05(4), ward-07(5), ward-09(1)	6.35	0.26		
Graveyard		12		Ward-01(1), Ward-02(3), Ward-04(3), ward-05(2), ward-06(2), ward-09(1)	13.08	0.53	0.24	
Health Facilities	Community Clinic	3	1	ward-01(1), ward-02(1), ward-09(1)	2.20	0.09	0.09	
Open Space		6		ward-02(1), ward-04(1), ward-05(1), ward-06(1), ward-07(1), ward-08(1)	5.91966413	0.24	0.24	
Community Facilities		2		ward-06(1), ward-07(1)	0.240786392	0.01	0.01	

Fatekharkul Union-Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)

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Fatekharkul Union-Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Proid ed Area (acre)	Location Ward (No.of Facilities)
<b>Education</b>	Primary School/ kindergarten	5000	2	12	24	Ward-02(1);Ward-03 (1);Ward-04 (2);Ward-05 (1);Ward-06 (2);Ward-07 (2);Ward-08 (1);Ward-09 (1)
	Secondary/High School	20000	5	3	15	Ward-04 (1)
	College	20000	10	3	30	Ward-04 (1)
<b>Open Space</b>	Play field/ground	20000	3	3	9	Ward-04 (1)
	Neighborhood park/Park	10000	1	6	6	Ward-04(1);Ward-05 (1);Ward-06 (1);Ward-07 (1);Ward-08 (2);Ward-09 (1)
<b>Health</b>	Health centre/Maternity clinic	5000	1	12	12	Ward-02(1);Ward-03 (1);Ward-04 (2);Ward-05 (1);Ward-06 (2);Ward-07 (2);Ward-08 (1);Ward-09 (1)
<b>Community Facilities</b>	Mosque/Church/Temple	20000	0.5	3	1.5	Ward-04 (1)
	Eidgah	20000	1	3	3	Ward-04 (1)
	Graveyard	20000	1	3	3	Ward-04 (1)
	Community centre	20000	1	3	3	Ward-04 (1)
	Post office	20000	0.5	3	1.5	Ward-04 (1)
<b>Utilities</b>	Water supply	20000	1	3	3	Ward-04 (1)

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Fatekharkul Union-Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Proid ed Area (acre)	Location Ward (No.of Facilities)
	Gas	20000	1	3	3	Ward-04 (1)
	Electric sub-station	20000	1	3	3	Ward-04 (1)
<b>Commerce and Shopping</b>	Wholesale market	20000	1	3	3	Ward-04 (1)
	Retail sale market	20000	1	3	3	Ward-04 (1)
	Corner Shop	2500	0.25	23	5.75	Ward-01(1);Ward-02 (2);Ward-03 (1);Ward-04 (5);Ward-05 (3);Ward-06 (3);Ward-07 (4);Ward-08 (2);Ward-09 (3);
	Neighborhood Market	10000	1	6	6	Ward-04(1);Ward-05 (1);Ward-06 (1);Ward-07 (1);Ward-08 (2);Ward-09 (1)
<b>Industry</b>	Small scale	1000	1.5	58	87	Ward-01 (2);Ward-02 (5);Ward-03 (3);Ward-04 (11);Ward-05 (6);Ward-06 (9);Ward-07 (9);Ward-08 (6);Ward-09 (7)
	Heavy Industry	10000	5	6	30	Ward-04(1);Ward-05 (1);Ward-06 (1);Ward-07 (1);Ward-08 (2);Ward-09 (1)
<b>Transportati on</b>	Bus terminal	20000	1	3	3	Ward-04 (1)

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

Fatekharkul Union-Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Proided Area (acre)	Location Ward (No.of Facilities)
	Truck terminal	20000	0.5	3	1.5	Ward-04 (1)

### Kaurakop Union

Facilities	Type	No of Facilities	Location (No of Facilities)	Area (Acre)	%	Total %	Major Findings From PRA
Education	Primary School	10	Ward-02(1), Ward-03(2), Ward-04(3), ward-06(1), ward-07(2), ward-08(1)	3.95	0.06	0.18	<ul style="list-style-type: none"> <li>No community clinic</li> <li>River erosion</li> <li>No provision of bridge or culvert</li> <li>Cultivation of Tobacco</li> <li>Lack of Embankment</li> </ul>
	Secondary School	2	ward-04(1), ward-08(1)	3.38	0.05		
	Madrasa	8	Ward-02(1), Ward-03(2), ward-04(4), ward-07(2), ward-08(4)	4.03	0.07		
Religious	Mosque	26	Ward-02(3), Ward-03(2), Ward-04(9), ward-06(2), ward-07(4), ward-08(6)	10.24	0.17	0.22	
	Temple	7	ward-03(2), ward-04(5)	3.55	0.06		
	Orphanage	1	ward-08(1)	0.07	0.00		
Graveyard		1	ward-09(1)	1.30	0.02	0.02	
Health Facilities	Community Clinic	3	ward-04(1), ward-08(1), ward-07(1),	18.47	0.30	0.30	
Open Space		3	ward-03(1), ward-04(1), ward-08(1),	0.82	0.01	0.01	
Community	Community Center	1	ward-03(1),	0.02	0.00	0.00	

### Kauarkhop Union-Proposed

Facilities	Category	Population	Standard Area per acre	No. of Facilities	Proided Area (acre)	Location Ward (No.of Facilities)
Education	Primary School/	5000	2	9	18	Ward-

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

Kauarkhop Union-Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
	kindergarten					02(1); Ward-03 (1); Ward-04(1); Ward-05 (1); Ward-05 (1); Ward-07(1); Ward-08 (2); Ward-09 (1);
	Secondary/High School	20000	5	2	10	Ward-08 (1)
	College	20000	10	2	20	Ward-08 (1)
	Open Space					
	Play field/ground	20000	3	2	6	Ward-08 (1)
	Neighborhood park/Park	10000	1	4	4	Ward-02 (1); Ward-03 (1); Ward-04 (1); Ward-07 (1); Ward-08 (1)
Health	Health centre/Maternity clinic	5000	1	9	9	Ward-02(1); Ward-03 (1); Ward-04(1); Ward-05 (1); Ward-05 (1); Ward-07(1); Ward-08 (2); Ward-09 (1);
Community Facilities	Mosque/Church/ Temple	20000	0.5	2	1	Ward-08 (1)
	Eidgah	20000	1	2	2	Ward-08 (1)
	Graveyard	20000	1	2	2	Ward-08 (1)
	Community centre	20000	1	2	2	Ward-08 (1)
	Post office	20000	0.5	2	1	Ward-08 (1)
Utilities	Water supply	20000	1	2	2	Ward-08 (1)
	Gas	20000	1	2	2	Ward-08 (1)
	Electric sub-station	20000	1	2	2	Ward-08 (1)
Commerce and Shopping	Wholesale market	20000	1	2	2	Ward-08 (1)
	Retail sale market	20000	1	2	2	Ward-08 (1)
	Corner Shop	2500	0.25	17	4.25	Ward-01(1); Ward-02 (2); Ward-03 (2); Ward-04 (3); Ward-05 (1); Ward-07 (3); Ward-08(4); Ward-09

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

Kauarkhop Union-Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
	Neighborhood Market	10000	1	4	4	(1); Ward-02 (1); Ward-03 (1); Ward-04 (1); Ward-07 (1); Ward-08 (1)
Industry	Small scale	1000	1.5	43	64.5	Ward-01 (2); Ward-02 (5); Ward-03 (5); Ward-04 (7); Ward-05 (3); Ward-06 (1); Ward-07 (6); Ward-08 (11); Ward-09 (3)
	Heavy Industry	10000	5	4	20	Ward-02 (1); Ward-03 (1); Ward-04 (1); Ward-07 (1); Ward-08 (1)
Transportation	Bus terminal	20000	1	2	2	Ward-08 (1)
	Truck terminal	20000	0.5	2	1	Ward-08 (1)

## Garjania Union

Garjania Union-Existing								
Facilities	Type	No of Facilities	From PRA	Location (No of Facilities)	Area (Acre)	%	Total %	Major Findings From PRA
Education	Primary School	15	5	Ward-01(2), Ward-03(1), Ward-04(3), ward-05(3), ward-08(4), ward-09(2)	8.78	0.06	0.08	<ul style="list-style-type: none"> <li>No community clinic</li> <li>High school, Madrasa.</li> <li>River erosion is excessive</li> <li>Irrigation problem in agriculture</li> </ul>
	Secondary School	1	1	ward-09(1)	1.62	0.01		
	Madrasa	6	1	Ward-08(6)	2.33	0.01		
Religious	Mosque	7	25	Ward-08(7)	1.78	0.01	0.01	
	Temple	1	2	ward-09(1)	0.03	0.00		
Graveyard		11		ward-03(2), ward-04(2), ward-05(1), ward-	15.75	0.10	0.10	

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

Garjania Union-Exisating								
Facilities	Type	No of Faciliti es	Fro m PRA	Location (No of Facilities)	Area (Acre)	%	Total %	Major Findings From PRA
				07(1),ward-08(2),ward-09(3),				<ul style="list-style-type: none"> <li>• Bad transportation condition</li> <li>• No Electricity connection in full ward</li> <li>• Cultivation of Tobacco</li> <li>• Lack of drinking water</li> </ul>
Health Facilities	Community Clinic	1	4	ward-09(1)	0.82	0.01	0.01	
	Hospital	1		ward-03(1)	0.20	0.00		
Open Space		1		ward-08(1)	0.33	0.00	0.00	
Community Facilities		2		ward-08(1),ward-09(1)	1.49	0.01	0.01	

Garjania Union-Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Proposed Area (acre)	Location Ward (No.of Facilities)
Education	Primary School/ kindergarten	5000	2	8	16	Ward-01 (1);Ward-03 (2);Ward-04 (1);Ward-05 (1);Ward-08 (2);Ward-09 (1)
	Secondary/High School	20000	5	2	10	Ward-08 (1)
	College	20000	10	2	20	Ward-08 (1)
Open Space	Play field/ground	20000	3	2	6	Ward-08 (1)
	Neighborhood park/Park	10000	1	4	4	Ward-03(1);Ward-08 (1);Ward-09 (1);
Health	Health centre/Maternity clinic	5000	1	8	8	Ward-01 (1);Ward-03 (2);Ward-04 (1);Ward-05 (1);Ward-08 (2);Ward-09 (1)
Community Facilities	Mosque/Church/Temple	20000	0.5	2	1	Ward-08 (1)
	Eidgah	20000	1	2	2	Ward-08 (1)



## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

Garjanja Union-Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
	Graveyard	20000	1	2	2	Ward-08 (1)
	Community centre	20000	1	2	2	Ward-08 (1)
	Post office	20000	0.5	2	1	Ward-08 (1)
Utilities	Water supply	20000	1	2	2	Ward-08 (1)
	Gas	20000	1	2	2	Ward-08 (1)
	Electric sub-station	20000	1	2	2	Ward-08 (1)
Commerce and Shopping	Wholesale market	20000	1	2	2	Ward-08 (1)
	Retail sale market	20000	1	2	2	Ward-08 (1)
	Corner Shop	2500	0.25	16	4	Ward-01(2);Ward-02 (1);Ward-03 (3);Ward-04 (2);Ward-05(2);Ward-07 (1);Ward-08(5);Ward-09(2);
	Neighborhood Market	10000	1	4	4	Ward-03(1);Ward-08 (1);Ward-09 (1);
Industry	Small scale	1000	1.5	41	61.5	Ward-01 (4);Ward-02 (1);Ward-03 (6);Ward-04 (4);Ward-05 (5);Ward-07(2);Ward-08 (12);Ward-09 (6);
	Heavy Industry	10000	5	4	20	Ward-03(1);Ward-08 (1);Ward-09 (1);
Transportation	Bus terminal	20000	1	2	2	Ward-08 (1)
	Truck terminal	20000	0.5	2	1	Ward-08 (1)

## Idgar Union

Idgar Union-Existing								
Facilities	Type	No of Facilities	From PRA	Location (No of Facilities)	Area (Acre)	%	Total %	Major Findings From PRA
Education	Primary School	5		Ward-02(2), ward-05(1), ward-07(2)	3.68	0.03	0.06	<ul style="list-style-type: none"> <li>Transportation Problem</li> <li>Lack of Educational Institutions</li> </ul>

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

Idgar Union-Existing								
Facilities	Type	No of Facilities	From PRA	Location (No of Facilities)	Area (Acre)	%	Total %	Major Findings From PRA
	Madrasa	10		Ward-01(1), Ward-02(4), ward-05(1), ward-07(3), ward-08(1)	3.85	0.03		<ul style="list-style-type: none"> <li>• River Erosion</li> <li>• Lack of employment</li> <li>• Flash flood due to hilly water</li> </ul>
Religious	Mosque	25	37	Ward-01(6), Ward-05(1), Ward-07(2), ward-08(2)	8.33	0.06	0.06	
Graveyard		12		ward-02(6), ward-05(1), ward-06(1), ward-07(2), ward-09(2),	27.48	0.21	0.21	
Open Space		3		ward-02(1), ward-07(1), ward-08(1),	4.59	0.04	0.04	
Community		3	1	ward-02(1), ward-05(1), ward-07(1),	1.57	0.01	0.01	
Health		2		ward-02(1), ward-05(1)	0.66			

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

Idgar Union Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	7	14	Ward-02 (2);Ward-05(1);Ward-07 (2)
	Secondary/High School	20000	5	2	10	Ward-02 (1)
	College	20000	10	2	20	Ward-02 (1)
Open Space	Play field/ground	20000	3	2	6	Ward-02 (1)
	Neighborhood park/Park	10000	1	3	3	Ward-02 (1);Ward-05 (1);Ward-07 (1)
Health	Health centre/Maternity clinic	5000	1	7	7	Ward-02 (2);Ward-05(1);Ward-07 (2)
Community Facilities	Mosque/Church/Temple	20000	0.5	2	1	Ward-02 (1)
	Eidgah	20000	1	2	2	Ward-02 (1)
	Graveyard	20000	1	2	2	Ward-02 (1)
	Community centre	20000	1	2	2	Ward-02 (1)
	Post office	20000	0.5	2	1	Ward-02 (1)
Utilities	Water supply	20000	1	2	2	Ward-02 (1)
	Gas	20000	1	2	2	Ward-02 (1)
	Electric sub-station	20000	1	2	2	Ward-02 (1)
Commerce and Shopping	Wholesale market	20000	1	2	2	Ward-02 (1)
	Retail sale market	20000	1	2	2	Ward-02 (1)
	Corner Shop	2500	0.25	13	3.25	Ward-01 (1);Ward-02(5);Ward-05(2);Ward-07 (3);Ward-08(1);Ward-09 (1)
	Neighborhood Market	10000	1	3	3	Ward-02 (1);Ward-05 (1);Ward-07 (1)
Industry	Small scale	1000	1.5	33	49.5	Ward-01 (2);Ward-02 (12);Ward-03(1);Ward-05 (5);Ward-07 (8);Ward-08 (2);Ward-09 (2)
	Heavy Industry	10000	5	3	15	Ward-02 (1);Ward-05 (1);Ward-07 (1)

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

<b>Transportation</b>	Bus terminal	20000	1	2	2	Ward-02 (1)
	Truck terminal	20000	0.5	2	1	Ward-02 (1)

### Joarianala Union

Joarianala Union								
Facilities	Type	No of Facilities	From PRA	Location (No of Facilities)	Area (Acre)	%	Total %	Major Findings From PRA
<b>Education</b>	Primary School	7	11	Ward-01(1), Ward-06(2), ward-07(1), ward-09(3)	2.07	0.03	0.06	<ul style="list-style-type: none"> <li>• Salinity in water</li> <li>• Weak Embankment</li> <li>• Water Logging</li> <li>• Problem of graveyard</li> <li>• River Erosion</li> </ul>
	Secondary School	0	2					
	Madrasa	8	6	Ward-01(3), Ward-06(2), ward-09(3)	2.18	0.03		
<b>Religious</b>	Mosque	44		Ward-01(9), Ward-02(2), ward-06(7), ward-07(5), ward-06(7), ward-08(1), ward-09(20),	12.30	0.18	0.32	
	Temple	5		Ward-09(5)	9.67	0.14		
<b>Graveyard</b>		10		ward-01(4), ward-02(1), ward-06(1), ward-07(2), ward-09(4)	61.18	0.88	0.88	
<b>Health</b>	Community Clinic	4		ward-07(1), ward-09(3)	15.52	0.22	0.22	
<b>Community</b>	Community Center	3		ward-02(1), ward-	1.57	0.02	0.02	

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

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				05(1),war d-06(1),				
<b>Open Space</b>		2		ward- 02(1),war d-06(1),	2.39	0.0 3	0.03	

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

Joarianala Union-Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
<b>Education</b>	Primary School/ kindergarten	5000	2	14	28	Ward-01 (2); Ward-02 (1); Ward-06 (2); Ward-07(3); Ward-09(6);
	Secondary/High School	20000	5	4	20	Ward-07(1); Ward-09(1);
	College	20000	10	4	40	Ward-07(1); Ward-09(1);
<b>Open Space</b>	Play field/ground	20000	3	4	12	Ward-07(1); Ward-09(1);
	Neighborhood park/Park	10000	1	7	7	Ward-01(1); Ward-02(1); Ward-06(1); Ward-07(1); Ward-09(3);
<b>Health</b>	Health centre/Maternity clinic	5000	1	14	14	Ward-01 (2); Ward-02 (1); Ward-06 (2); Ward-07(3); Ward-09(6);
<b>Community Facilities</b>	Mosque/Church/ Temple	20000	0.5	4	2	Ward-07(1); Ward-09(1);
	Eidgah	20000	1	4	4	Ward-07(1); Ward-09(1);
	Graveyard	20000	1	4	4	Ward-07(1); Ward-09(1);
	Community centre	20000	1	4	4	Ward-07(1); Ward-09(1);
	Post office	20000	0.5	4	2	Ward-07(1); Ward-09(1);
<b>Utilities</b>	Water supply	20000	1	4	4	Ward-07(1); Ward-09(1);
	Gas	20000	1	4	4	Ward-07(1); Ward-09(1);
	Electric sub-	20000	1	4	4	Ward-

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

Joarianala Union-Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
	station					07(1); Ward-09(1);
Commerce and Shopping	Wholesale market	20000	1	4	4	Ward-07(1); Ward-09(1);
	Retail sale market	20000	1	4	4	Ward-07(1); Ward-09(1);
	Corner Shop	2500	0.25	28	7	Ward-01(4); Ward-02(3); Ward-06(4); Ward-07(5); Ward-08(1); Ward-09(12)
	Neighborhood Market	10000	1	7	7	Ward-01(1); Ward-02(1); Ward-06(1); Ward-07(1); Ward-09(3);
Industry	Small scale	1000	1.5	70	105	Ward-01(10); Ward-02(7); Ward-05(1); Ward-06(10); Ward-07(13); Ward-08(1); Ward-09(29);
	Heavy Industry	10000	5	7	35	Ward-01(1); Ward-02(1); Ward-06(1); Ward-07(1); Ward-09(3);
Transportation	Bus terminal	20000	1	4	4	Ward-07(1); Ward-09(1);
	Truck terminal	20000	0.5	4	2	Ward-07(1); Ward-09(1);

### Kachhapia Union

#### Kachhapia Union

Facilities	Type	No of Facilities	From PRA	Location (No of Facilities)	Area (Acre)	%	Total %	Major Findings From PRA
Education	Primary School	6	9	Ward-02(5), Ward-	3.03	0.03	0.06	<ul style="list-style-type: none"> <li>River erosion (</li> </ul>

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

Kachhapia Union								
Facilities	Type	No of Facilities	From PRA	Location (No of Facilities)	Area (Acre)	%	Total %	Major Findings From PRA
				08(1)				<ul style="list-style-type: none"> <li>No provision of college</li> <li>Electricity connection problem</li> <li>Flash Flood due to hill.</li> </ul>
	Secondary School	0	1					
	Madrasa	7	5	Ward-02(3), Ward-03(2), ward-05(1), ward-07(1)	3.24	0.03		
Religious	Mosque	30	55	Ward-02(14), Ward-03(1), Ward-05(1), ward-08(5), ward-09(9)	8.51	0.08	0.08	
	Temple	3	4	ward-02(2), ward-09(1)	0.50	0.00		
Graveyard		11	38	ward-02(5), ward-03(2), ward-07(1), ward-08(1), ward-09(2),	11.65	0.11	0.11	
Health Facilities	Community Clinic	3	7	ward-02(1), ward-09(2)	0.32	0.00	0.00	
Community Facilities		3		ward-02(1), ward-08(1), ward-09(1)	2.92	0.03	0.03	
Open Space		2		ward-02(1), ward-08(1)	1.60	0.01	0.01	

### Kachhapia Union-Proposed



## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
<b>Education</b>	Primary School/ kindergarten	5000	2	10	20	Ward-02(4); Ward-03 (1); Ward-05(1); Ward-08 (1); Ward-09 (4);
	Secondary/High School	20000	5	3	15	Ward-02(1); Ward-09 (1)
	College	20000	10	3	30	Ward-02(1); Ward-09 (1)
<b>Open Space</b>	Play field/ground	20000	3	3	9	Ward-02(1); Ward-09 (1)
	Neighborhood park/Park	10000	1	5	5	Ward-09(2); Ward-02 (2)
<b>Health</b>	Health centre/Maternity clinic	5000	1	10	10	Ward-02(4); Ward-03 (1); Ward-05(1); Ward-08 (1); Ward-09 (4);
<b>Community Facilities</b>	Mosque/Church/ Temple	20000	0.5	3	1.5	Ward-02(1); Ward-09 (1)
	Eidgah	20000	1	3	3	Ward-02(1); Ward-09 (1)
	Graveyard	20000	1	3	3	Ward-02(1); Ward-09 (1)
	Community centre	20000	1	3	3	Ward-02(1); Ward-09 (1)
	Post office	20000	0.5	3	1.5	Ward-02(1); Ward-09 (1)
<b>Utilities</b>	Water supply	20000	1	3	3	Ward-02(1); Ward-09 (1)
	Gas	20000	1	3	3	Ward-02(1); Ward-09 (1)

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

Kachapia Union-Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
	Electric sub-station	20000	1	3	3	Ward-02(1); Ward-09(1)
<b>Commerce and Shopping</b>	Wholesale market	20000	1	3	3	Ward-02(1); Ward-09(1)
	Retail sale market	20000	1	3	3	Ward-02(1); Ward-09(1)
	Corner Shop	2500	0.25	20	5	Ward-01(1); Ward-02(7); Ward-03(1); Ward-05(1); Ward-08(2); Ward-09(7)
	Neighborhood Market	10000	1	5	5	Ward-09(2); Ward-02(2)
<b>Industry</b>	Small scale	1000	1.5	51	76.5	Ward-01(2); Ward-02(19); Ward-03(4); Ward-05(3); Ward-06(1); Ward-07(1); Ward-08(5); Ward-09(18)
	Heavy Industry	10000	5	5	25	Ward-09(2); Ward-02(2)
<b>Transportation</b>	Bus terminal	20000	1	3	3	Ward-02(1); Ward-09(1)
	Truck terminal	20000	0.5	3	1.5	Ward-02(1); Ward-09(1)

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### Kaurakop Union

#### Kaurakop Union-Existing

Facilities	Type	No of Facilities	Location (No of Facilities)	Area (Acre)	%	Total %	Major Findings From PRA
Education	Primary School	10	Ward-02(1), Ward-03(2), Ward-04(3), ward-06(1), ward-07(2), ward-08(1)	3.95	0.06	0.18	<ul style="list-style-type: none"> <li>No community clinic</li> <li>River erosion is excessive</li> <li>No provision of bridge or culvert</li> <li>Cultivation of Tobacco</li> <li>Lack of Embankment</li> </ul>
	Secondary School	2	ward-04(1), ward-08(1)	3.38	0.05		
	Madrasa	8	Ward-02(1), Ward-03(2), ward-04(4), ward-07(2), ward-08(4)	4.03	0.07		
Religious	Mosque	26	Ward-02(3), Ward-03(2), Ward-04(9), ward-06(2), ward-07(4), ward-08(6)	10.24	0.17	0.22	
	Temple	7	ward-03(2), ward-04(5)	3.55	0.06		
	Orphanage	1	ward-08(1)	0.07	0.00		
Graveyard		1	ward-09(1)	1.30	0.02	0.02	
Health Facilities	Community Clinic	3	ward-04(1), ward-08(1), ward-07(1),	18.47	0.30	0.30	
Open Space		3	ward-03(1), ward-	0.82	0.01	0.01	

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			04(1),ward -08(1),				
<b>Community</b>	Community Center	1	ward- 03(1),	0.02	0.0 0	0.00	

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Kauarkhop Union Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	9	18	Ward-02(1);Ward-03 (1);Ward-04(1);Ward-05 (1);Ward-05 (1);Ward-07(1);Ward-08 (2);Ward-09 (1);
	Secondary/High School	20000	5	2	10	Ward-08 (1)
	College	20000	10	2	20	Ward-08 (1)
Open Space	Play field/ground	20000	3	2	6	Ward-08 (1)
	Neighborhood park/Park	10000	1	4	4	Ward-02 (1);Ward-03 (1);Ward-04 (1);Ward-07 (1);Ward-08 (1)
Health	Health centre/Maternity clinic	5000	1	9	9	Ward-02(1);Ward-03 (1);Ward-04(1);Ward-05 (1);Ward-05 (1);Ward-07(1);Ward-08 (2);Ward-09 (1);
Community Facilities	Mosque/Church/ Temple	20000	0.5	2	1	Ward-08 (1)
	Eidgah	20000	1	2	2	Ward-08 (1)
	Graveyard	20000	1	2	2	Ward-08 (1)
	Community centre	20000	1	2	2	Ward-08 (1)
	Post office	20000	0.5	2	1	Ward-08 (1)
Utilities	Water supply	20000	1	2	2	Ward-08 (1)
	Gas	20000	1	2	2	Ward-08 (1)
	Electric sub-station	20000	1	2	2	Ward-08 (1)
Commerce and Shopping	Wholesale market	20000	1	2	2	Ward-08 (1)
	Retail sale market	20000	1	2	2	Ward-08 (1)
	Corner Shop	2500	0.25	17	4.25	Ward-01(1);Ward-02 (2);Ward-03 (2);Ward-04 (3);Ward-

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Kauarkhop Union Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
						05 (1);Ward-07 (3);Ward-08(4);Ward-09 (1);
	Neighborhood Market	10000	1	4	4	Ward-02 (1);Ward-03 (1);Ward-04 (1);Ward-07 (1);Ward-08 (1)
Industry	Small scale	1000	1.5	43	64.5	Ward-01 (2);Ward-02 (5);Ward-03 (5);Ward-04 (7);Ward-05 (3);Ward-06(1);Ward-07 (6);Ward-08 (11);Ward-09 (3)
	Heavy Industry	10000	5	4	20	Ward-02 (1);Ward-03 (1);Ward-04 (1);Ward-07 (1);Ward-08 (1)
Transportation	Bus terminal	20000	1	2	2	Ward-08 (1)
	Truck terminal	20000	0.5	2	1	Ward-08 (1)

### Rajarkul Union

Rajarkul Union								
Facilities	Type	No of Facilities	From PRA	Location (No of Facilities)	Area (Acre)	%	Total %	Major Findings From PRA
Education	Primary School	15	6	Ward-01(2), Ward-02(8), Ward-04(1), ward-07(3), ward-09(1)	5.02	0.10	0.20	<ul style="list-style-type: none"> <li>Problem of Transportation</li> <li>Flood</li> </ul>
	Madrasa	8	4	Ward-01(1), Ward-02(3), ward-	5.04	0.10		

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Rajarkul Union								
Facilities	Type	No of Facilities	From PRA	Location (No of Facilities)	Area (Acre)	%	Total %	Major Findings From PRA
				07(3), ward-09(1)				
Religious	Mosque	19	23	Ward-01(6), Ward-02(7), Ward-07(3), ward-08(1), ward-09(2)	12.80	0.25	0.29	
	Temple	3	6	ward-01(1), ward-02(2)	1.81	0.04		
	Buddho Bihar	1	2	ward-02(1)	0.12	0.00		
Graveyard		9		ward-01(2), ward-02(6), ward-06(1)	67.98	1.35	1.35	
Health Facilities	Community Clinic	3	1	ward-02(2), ward-07(1)	17.88	0.35	0.35	
Open Space		2		ward-01(1), ward-02(1)	5.27	0.10	0.10	
Community		3		ward-02(1), ward-04(1), ward-09(1),	0.51	0.01	0.01	

Rajarkul Union Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	7	14	Ward-01 (2); Ward-02 (2); Ward-07 (1); Ward-09(1);
	Secondary/High School	20000	5	2	10	Ward-02(1)
	College	20000	10	2	20	Ward-

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Rajarkul Union Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Open Space	Play field/ground	20000	3	2	6	02(1) Ward-02(1)
	Neighborhood park/Park	10000	1	4	4	Ward-01 (1);Ward-02 (1);Ward-07(1);Ward-09 (1)
Health	Health centre/Maternity clinic	5000	1	7	7	Ward-01 (2);Ward-02 (2);Ward-07 (1);Ward-09(1);
Community Facilities	Mosque/Church/ Temple	20000	0.5	2	1	Ward-02(1)
	Eidgah	20000	1	2	2	Ward-02(1)
	Graveyard	20000	1	2	2	Ward-02(1)
	Community centre	20000	1	2	2	Ward-02(1)
	Post office	20000	0.5	2	1	Ward-02(1)
Utilities	Water supply	20000	1	2	2	Ward-02(1)
	Gas	20000	1	2	2	Ward-02(1)
	Electric sub-station	20000	1	2	2	Ward-02(1)
Commerce and Shopping	Wholesale market	20000	1	2	2	Ward-02(1)
	Retail sale market	20000	1	2	2	Ward-02(1)
	Corner Shop	2500	0.25	15	3.75	Ward-01(3);Ward-02 (5);Ward-04 (1);Ward-07 (3);Ward-07 (3);Ward-09 (2)
	Neighborhood Market	10000	1	4	4	Ward-01 (1);Ward-



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Rajarkul Union Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
						02 (1);Ward-07(1);Ward-09 (1)
Industry	Small scale	1000	1.5	36	54	Ward-01 (8);Ward-02 (12);Ward -04(1);Ward-06 (1);Ward-07 (7);Ward-08 (1);Ward-09(6);
	Heavy Industry	10000	5	4	20	Ward-01 (1);Ward-02 (1);Ward-07(1);Ward-09 (1)
Transportation	Bus terminal	20000	1	2	2	Ward-02(1)
	Truck terminal	20000	0.5	2	1	Ward-02(1)

## Rashid Nagar Union

Rashid Nagar Union								
Facilities	Type	No of Facilities	From PRA	Location (No of Facilities)	Area (Acre)	%	Total %	Major Findings From PRA
Education	Primary School	5	7	Ward-02(1), Ward-07(1), Ward-08(3)	3.68	0.09	0.31	<ul style="list-style-type: none"> <li>Problem of Transportation</li> <li>Flood</li> </ul>
	Secondary School	1	1	ward-02(1)	2.18	0.06		
	Madrasa	11	27	Ward-01(2), Ward-02(4), ward-03(1), ward-08(1),ward	5.48	0.14		

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Rashid Nagar Union								
Facilities	Type	No of Facilities	From PRA	Location (No of Facilities)	Area (Acre)	%	Total %	Major Findings From PRA
				-09(3)				
	College	1	1	ward-08(1)	0.58	0.01		
Religious	Mosque	27		Ward-01(1), Ward-02(7), Ward-03(1), Ward-08(13), ward-09(5)	12.37	0.32	0.32	
	Orphanage	1		ward-09(1)	0.02	0.00		
Graveyard		8		ward-02(4), ward-08(2), ward-09(2)	10.79	0.28	0.28	
Community Facilities		1		ward-08(1)	0.01	0.00	0.00	
Health Facilities	Community Clinic	2	2	ward-02(2)	0.42	0.01	0.01	

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Rashid Nagar Union Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	6	12	Ward-01 (1); Ward-02 (1); Ward-08 (1); Ward-09 (2)
	Secondary/High School	20000	5	1	5	
	College	20000	10	1	10	
Open Space	Play field/ground	20000	3	1	3	
	Neighborhood park/Park	10000	1	3	3	Ward-02(1); Ward-08 (1); Ward-09(1)
Health	Health centre/Maternity clinic	5000	1	6	6	Ward-01 (1); Ward-02 (1); Ward-08 (1); Ward-09 (2)
Community Facilities	Mosque/Church /Temple	20000	0.5	1	0.5	
	Eidgah	20000	1	1	1	
	Graveyard	20000	1	1	1	
	Community centre	20000	1	1	1	
	Post office	20000	0.5	1	0.5	
Utilities	Water supply	20000	1	1	1	
	Gas	20000	1	1	1	
	Electric sub-station	20000	1	1	1	
Commerce and Shopping	Wholesale market	20000	1	1	1	
	Retail sale market	20000	1	1	1	
	Corner Shop	2500	0.25	12	3	Ward-01 (1); Ward-02 (3); Ward-03 (1); Ward-07 (1); Ward-08 (3); Ward-09 (3)
	Neighborhood Market	10000	1	3	3	Ward-02(1); Ward-08 (1); Ward-09(1)
Industry	Small scale	1000	1.5	30	45	Ward-01 (3); Ward-02 (7); Ward-03 (2); Ward-07(1); Ward-08 (7); Ward-09 (9)
	Heavy Industry	10000	5	3	15	Ward-02(1); Ward-08 (1); Ward-09(1)
Transportatio	Bus terminal	20000	1	1	1	

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Rashid Nagar Union Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
n	Truck terminal	20000	0.5	1	0.5	

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**APPENDIX-D**

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**1. BACKGROUND OF THE PROJECT**

Bangladesh is the most densely populated country in the world having a total population of about 124.36 million as per the last Population Census 2001 with an average increase of around 1.7 million per year during the decade between 1991 and 2001. Master plans prepared for the Zila and District Town, City Corporations, Paurashavas by Urban Development Directorate (UDD) during the 80s have also become obsolete due to the passage of time. In order to cope with the population surge in these towns, it has become almost imperative to update the existing Master Plans. The Drainage & environmental Master Plan will also be prepared to maintain the drainage system, while a Traffic Management Master plan would be required to provide planned traffic movement of the Urban Area. Rural Area Plan will ensure the development of rural areas within the project area. Disaster Management Plan within the urban area will reduce the vulnerability from natural and manmade hazards/disasters. The Action Area Plan will also be updated in order to keep track of the land use of the Areas. In the government's recent policy of overall administrative re-organization, the upazila has been recognized as the most significant tier of the administration. It will be planned and developed to accommodate all social, economic, administrative and infrastructure services for the region. Under the "Preparation of Development Plan for Fourteen Upazilas" Rangunia and Ramu are the two upazilas.

**2. PROJECT PROFILE**

Name of the Project:	Preparation of Development Plan for Fourteen Upazilas
Implementing Agency:	Urban Development Directorate (UDD)
Financial assistance:	Government of the People's Republic of Bangladesh (GoB)
Project Package:	Package 05- (Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)
Main Goal of RDP:	Preparation of Five Tiers Development Plan
Plan Namely:	Sub Regional Plan, Structure Plan, Urban Area Plan, Rural Area Plan and Action Area Plan

**3. SURVEY UNDERTAKEN UNDER THE PROJECT****a. Inception Stage**

- Reconnaissance Survey (January, 2015)
- FGD (Focus Group Discussion) (January, 2015)
- Courtyard Meeting (January, 2015)
- Collection of secondary data and information (February-July, 2015)
  - Mouza Map Collection
  - Collection of Satellite image

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### b. Major Survey and Studies

- Participatory Rural Appraisal (PRA) (July-October, 2015)
- Socio Economic Survey (October-November, 2015)
- Agricultural Survey (October-November, 2015)
- Formal and Informal Economic Survey (December, 2015)
- Traffic and Transportation Survey (December, 2015)
- Hydrological Survey (January-February,2016)
- Geological Survey (January-February,2016)
- Geo-physical Survey (January-February,2016)
- GCP Survey (March,2015)
- BM Pillar Installment (March,2015)
- Physical Feature, Land Use & Topographic Survey (March-April,2016)

## 4. PREPARATION OF FIVE TIER PLAN

- Sub-Regional Plan
- Structure Plan
- Urban Area Plan
- Rural Area Plan
- Action Area Plan

## 5. SURVEY SUMMARY

### Description of the Project Area

Ramu upazila is situated in Cox's Bazar district and it lies 15 kilometers to the northeast of Cox's Bazaar District Sadar. Ramu Upazila located in between 21°17' and 21°36' north latitudes and in between 92°00' and 92°15' east longitudes. It is bounded by Chakaria and Cox's Bazar Sadar upazilas on the north, Naikhongchhari and Ukhia upazilas on the south, Naikhongchhari upazila on the east, Cox's Bazar Sadar and the Bay of Bengal on the west. Ramu is comprised of 11 unions with an area of about 384.409 sq.km (**94989.54 acre**). The detail administrative boundary of the project area has been shown in the below table:

**Table: Study Area Demarcation**

Union Name	Area in Sq.m	Area in Sq.km	Area in Acre	Percentage	Population 2011	Density
Chakmarkul	7315604.610	7.316	1807.725	1.903	11845	6

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Dakshin Mithachhari	40987889.474	40.988	10128.33	10.663	25560	13
Fatekharkul	9919859.235	9.920	2451.251	2.581	17266	9
Garjania	64240739.416	64.241	15874.23	16.712	12391	6
Idgar	52189948.388	52.190	12896.42	13.577	17575	9
Joarianala	27984051.737	27.984	6915.01	7.280	20277	10
Kachhapia	43806742.081	43.807	10824.88	11.396	27620	14
Kauarkhop	24986894.913	24.987	6174.396	6.500	20353	10
Khuniapalong	76794154.694	76.794	18976.25	19.977	12352	6
Rajarkul	20417604.815	20.418	5045.3	5.311	16507	8
Rashid Nagar	15765539.137	15.766	3895.75	4.101	20937	10
<b>Total</b>	<b>384409028.498</b>	<b>384.409</b>	<b>94989.54</b>	<b>100</b>	<b>202683</b>	<b>100</b>

### Bench Mark

Table-: Location of Reference BM

Pillar ID	Height above MSL (in meter)	Latitude (WGS 84)	Longitude (WGS 84)	Location
BM 1311	3.8348	-"	-	The pillar is situated in the compound of Merangloa Jame Mosque, 15ft west from Cox's Bazar-Chokoria road and 43ft from the SE corner of the mosque. Vill: Merangloa, Upazila: Ramu, district: Cox's Bazar.

Table: Coordinates and Descriptions of the BM Pillars

BM No.	R.L (m)	Easting (dd)	Northing (dd)	Location
1	6.924	92.100083373355 8	21.449335064637 4	Along the road side from Ramu-Chittagong Highway to Naikhangchari Road (Chabagan). Union: Jowarianala
2	7.459	92.101319127516 2	21.449171588439 6	Around 220m North Side of BM 1 and left side of the road (Chabagan) Union: Jowarianala
3	7.984	92.050290838744	21.411058770582 7	South west side of Daskhin Mithachari Madrasha Jame Mosque. Union: Daskhin Mithachari
4	5.411	92.050122986179 3	21.410712890018	South side of the Madrasha and North side of the Road. Union: Daskhin Mithachari
5	5.434	92.092631135131 3	21.317763517010 8	In front of the Khunia Palong Union Parishad along the Link Road. Union: Khunia Palong
6	3.991	92.092884421942 8	21.318720730296 4	From North side of BM 5 (around 200m) to North south side of Morichha-Ramu

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BM No.	R.L (m)	Easting (dd)	Northing (dd)	Location
				Road. (Road toe level, Paddy Land) Union: Khunia Palong
7	6.409	92.106671281431 3	21.423279727818 5	North-East opposite side of the Boundary Wall of Ramu Police Station. Union: Fatekharkul
8	5.502	92.106115039096 1	21.423993458242 6	North side of BM 7 point approximately 200m distance and near the pucca road. Union: Fatekharkul
9	12.291	92.196616792250 3	21.439860255322 5	North-West and East side of the Road in front of The Grameen Bank, Kocchopia. Union: Kocchopia
10	12.204	92.196457732599 6	21.440447368321 8	From the BM 9 approximately 100m distance at the North side of the road and the North-West side of the Under construction Building Union: Kocchopia
11	23.248	92.140319052908 5	21.57414277029	Along the Island of Road in front of Eidghar Police Fari. Union: Eidghar
12	20.464	92.141503717775	21.574152674439 1	From the BM 11 approximately 200m distance at the North side of the road and the North-West side angle of the Union Parishad, beside the road. Union: Eidghar
13	3.683	92.075686565767 2	21.498820410467 6	South side of the Rashidnagar Ershad Filling Station and near the West side of the Highway Road. Union: Rashidnagar
14	3.891	92.076439977770 9	21.497879053055 4	From BM 13 of South side approximately 200m distance at the East side of the main road and South West side of the Post Office Jame Mosque. Union: Rashidnagar



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### Existing Land Use

The existing land use statistics has been summarized in the below table:

**Table: Existing Landuse of Ramu Upazila**

Existing Landuse	Frequency	Area in Sq.m	Area inSq.km	Area in Acre	Percentage (%)
Agricultural Zone	2117	124131224.213	124.131224	30673.49351	32.292
Beach	2	1462155.319	1.46215532	361.3064478	0.380
Circulation Network	349	2379221.263	2.379	587.918	0.619
Commercial Zone	620	642585.268	0.643	158.786	0.167
Community Facilities	29	32654.512	0.033	8.069	0.008
Education & Research Zone	215	272480.697	0.272	67.331	0.071
General Industrial Zone	35	25024.420	0.025	6.184	0.007
Government Services	58	92448.451	0.092	22.845	0.024
Graveyard	92	273498.495	0.273	67.583	0.071
Health Services	29	53897.112	0.054	13.318	0.014
Heavy Industrial Zone	44	997832.323	0.998	246.570	0.260
Hilly Area	1135	202667698.035	202.668	50080.279	52.723
Hilly Settlement	889	3142865.002	3.143	776.619	0.818
Miscellaneous	2	5022.421	0.005	1.241	0.001
Mixed Use Zone	63	205164.737	0.205	50.697	0.053
Natural Forest	505	2084180.484	2.084	515.012	0.542
Non Government Services	8	6284.311	0.006	1.553	0.002
Open Space	30	109233.110	0.109	26.992	0.028
Orchards and Groves	57	527788.928	0.528	130.419	0.137
Planted Forest	18	1640096.664	1.640	405.277	0.427
Recreational Facilities	4	10944.232	0.011	2.704	0.003
Religious	353	284586.801	0.285	70.323	0.074
Restricted Area	31	7142752.210	7.143	1765.013	1.858
Rural Settlement	2388	17349309.242	17.349	4287.108	4.513
Transportation Facilities	16	35737.131	0.036	8.831	0.009
Urban	998	4604526.419	4.605	1137.803	1.198



## **Final Plan - Ramu Upazila**

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Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

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### **Map: Existing Landuse Map in Ramu Upazila**

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### Existing Waterbody

Waterbody Type	FREQUENCY	Area (sq.m )	Area (sq.km )	Area (Acre)
Ditch	380	671940.316	0.671940316	166.0400681
Khal	151	4962460.9	4.9624609	1226.250794
Pond	2001	3672435.159	3.672435159	907.4784909
River	18	4001996.828	4.001996828	988.9149529
Wet Land	132	2471364.335	2.471364335	610.6874267
Total	2682	15780197.54	15.78019754	3899.371732

### Existing Circulation Network

From the Physical feature survey, the road network of the study area has been summarized in the below table.

**Table: Existing Circulation Network of Upazila**

Type	Length in Meter	Length in Km
HBB Road	235550.9853	235.551
Katcha Road	647239.1125	753.833
Pucca Road	172392.5408	172.393
Total	1055182.639	1161.776

**Table: Existing Circulation Network of Union**

Union	Type	Length in Meter	Length in Km
Chakmarkul Union	HBB Road	21365.355	21.365
	Katcha Road	19838.597	19.839
	Pucca Road	3071.841	3.072
Dakshin Mithachhari Union	HBB Road	9618.246	9.618
	Katcha Road	46342.954	46.343
	Pucca Road	15664.633	15.665
Fatekharkul Union	HBB Road	34794.838	34.795
	Katcha Road	13379.120	13.379
	Pucca Road	14212.902	14.213
Garjania Union	HBB Road	28669.102	28.669
	Katcha Road	38923.150	38.923
	Pucca Road	11531.933	11.532
Idgar Union	HBB Road	10789.929	10.790
	Katcha Road	56261.418	56.261
	Pucca Road	7819.381	7.819
Joarianala Union	HBB Road	38906.640	38.907
	Katcha Road	79560.908	79.561
	Pucca Road	10696.014	10.696
Kachhapia Union	HBB Road	28799.595	28.800
	Katcha Road	47522.395	47.522
	Pucca Road	9121.964	9.122
Kauarkhop Union	HBB Road	21998.334	21.998
	Katcha Road	42699.173	42.699
	Pucca Road	9859.516	9.860

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Khuniapalong Union	HBB Road	3268.023	3.268
	Katcha Road	92237.763	92.238
	Pucca Road	35031.230	35.031
Rajarkul Union	HBB Road	17671.406	17.671
	Katcha Road	28933.502	28.934
	Pucca Road	12531.986	12.532
Rashid Nagar Union	HBB Road	18686.559	18.687
	Katcha Road	58091.697	58.092
	Pucca Road	9332.836	9.333

**Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)**



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## Final Plan - Ramu Upazila

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### Structure Type in Urban and Rural Area

According to the interpretation of satellite image and field survey there are 36098 structures within the Ramu Upazila. Among them 21170 are katcha, 2962 are pucca and 11833 are semi-pucca. The statistic has been shown below in the table:

**Table: Structure Type of Upazila**

Structure Type	No of Structures
Katcha	21170
Pucca	2962
Semi Pucca	11833
Under Construction	133

**Table: Structure Use of Upazila**

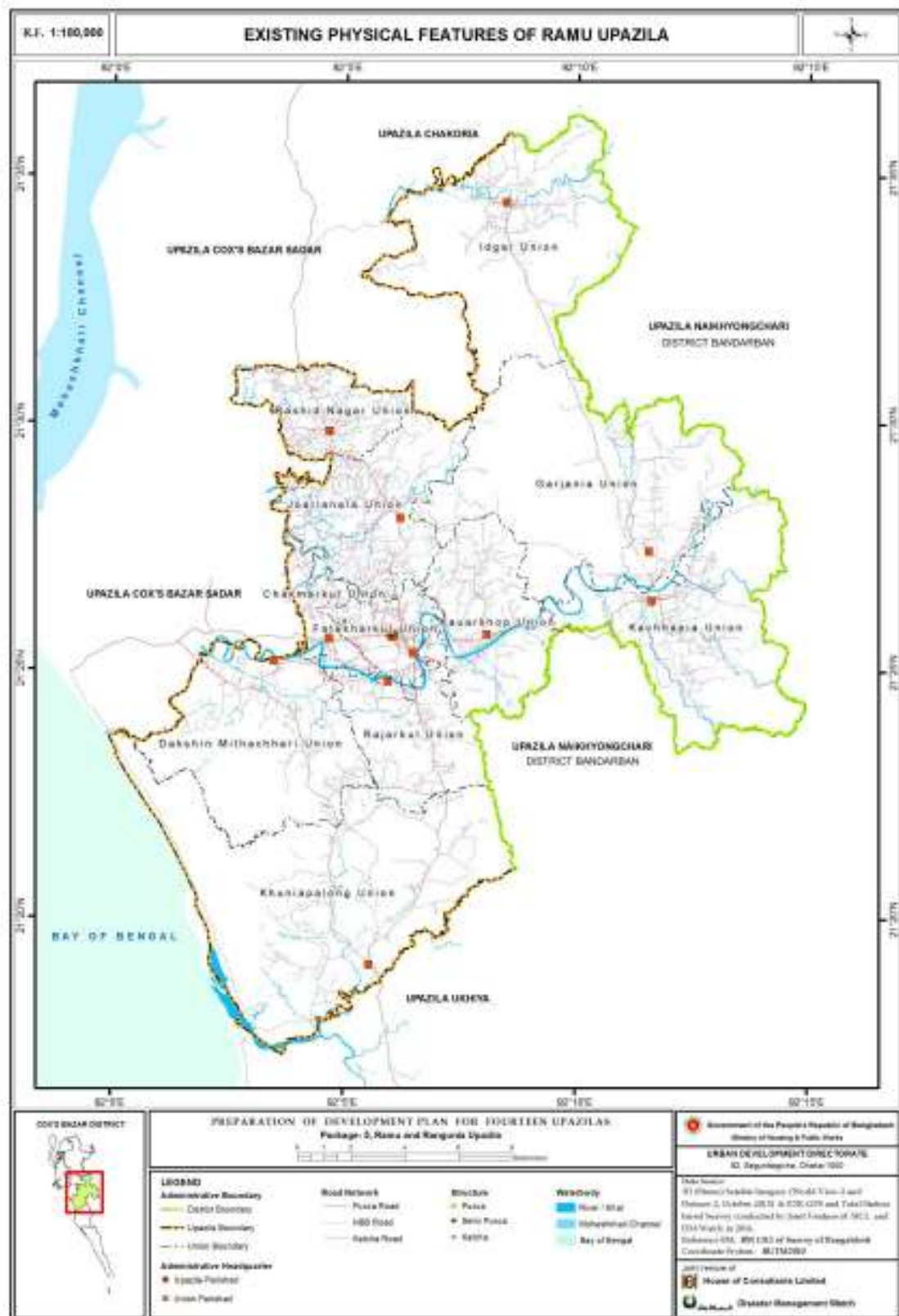
Structure Use	No of Structures
Agricultural	557
Commercial	2124
Community Facilities	40
Education and Research	442
General Industries	118
Government Service	1
Government Services	120
Health Services	32
Heavy Industries	16
Miscellaneous	318
Mixed Use	66
Non Government Services	3
Open Space	12
Recreational Facilities	4
Religious	506
Residential	31666
Transportation Facilities	47
Under Construction	1
Utility Services	25



## Final Plan - Ramu Upazila

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Source: Prepared by Consultant Team Based on Field Survey, 2016  
Map: Physical Feature Map in Ramu Upazila

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

**Table: Growth Center of Upazila**

Location	Name
Dakshin Mithachari	Kathir Matha Notun Bazaar
Chakmarkul	Kolghor Bazaar
Fatekharkul	Tecchipul Bazaar
Fatekharkul	Chowmuhani Bazaar
Fatekharkul	Fakira Bazaar
Rajarkul	Panjekhana Bazaar
Kauarkhop	Kauarkhop Bazaar
Garjania	Garjania Bazaar
Kachhapia	Douchari Bazaar
Garjania	Timchori Bazaar
Rashidnagar	Panirchara Bazaar
Joarianala	Joarinala Bazaar
Joarianala	Joarianala Cha Bagan Bazaar
Rajarkul	Sikolghat Bazaar
Idgar	Idgar Bazaar
Rashidnagar	Notun Bazaar
Garjania	Beltoli Bazaar
Garjania	Time Bazaar

**Table: Brick Field of Upazila**

Union	No of Brick Field
Chakmarkul Union	13
Fatekharkul Union	17
Joarianala Union	1
Kauarkhop Union	4
Khuniapalong Union	5
Rashid Nagar Union	1
Total	41

**Table: Union wise Existing Facilities**

Education Facilities	Union	No of Primary School	No of High School	No of College	No of Madrasa
	Chakmarkul Union	5	2		6
	Dakshin Mithachhari Union	5	3		2
	Fatekharkul Union	12	5	1	10
	Garjania Union	6	1		3
	Idgar Union	5	1		6
	Joarianala Union	6			4
	Kachhapia Union	6	1	1	7
	Kauarkhop Union	8	2		8
	Khuniapalong Union	1			1
	Rajarkul Union	5	1		7
	Rashid Nagar Union	3	1	1	8

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Health Facilities(Clinic)	Union	No of Facilities
	Chakmarkul Union	2
	Dakshin Mithachhari Union	2
	Fatekharkul Union	2
	Garjania Union	2
	Idgar Union	2
	Kachhapia Union	3
	Kauarkhop Union	1
	Khuniapalong Union	1
	Rajarkul Union	3
	Rashid Nagar Union	2
	Total	20

Religious	Union	Mosque	Hindu Temple	Buddhist Temple
	Chakmarkul Union	33	3	
	Dakshin Mithachhari Union	18	4	1
	Fatekharkul Union	59	4	10
	Garjania Union	25		
	Idgar Union	22		
	Joarianala Union	37	4	1
	Kachhapia Union	39	3	
	Kauarkhop Union	35	2	1
	Khuniapalong Union	7		
	Rajarkul Union	28		3
	Rashid Nagar Union	28		

Graveyard	Union	Frequency
	Chakmarkul Union	4
	Dakshin Mithachhari Union	7
	Fatekharkul Union	12
	Garjania Union	10
	Idgar Union	12
	Joarianala Union	12
	Kachhapia Union	11
	Kauarkhop Union	7
	Khuniapalong Union	1
	Rajarkul Union	9
	Rashid Nagar Union	8
		93

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Other Facilities			
Utility facilities	Type	Union Name	No of Facilities
	Electric Pole	Chakmarkul	289
		Dakshin Mithachhari	206
		Fatekharkul	389
		Garjania	21
		Idgar	139
		Joarianala	303
		Kachhapia	50
		Kauarkhop	152
		Khuniapalong	178
		Rajarkul	106
		Rashid Nagar	250
	Electric Tower	Fatekharkul	7
		Joarianala	14
		Rashid Nagar	4
	Electric Transformer	Fatekharkul	6
		Kauarkhop	1
		Rajarkul	1
		Rashid Nagar	1
	Fueling Station	Chakmarkul Union	1
		Fatekharkul Union	2
		Joarianala Union	1
		Rashid Nagar Union	1
	Fire Service	Joarianala	1
	Police Station	Fatekharkul	1
	Post Office	Fatekharkul Union	1
		Kachhapia Union	1
		Kauarkhop Union	1

## Agricultural Pattern and Intensity of Ramu Upazila

Cropping pattern of 11 unions of Ramu has been identified through consultation with the Sub-Assistant Agricultural Officer. From the consultation it has been found that there are single cropping, double cropping and triple cropping land which comprises 8.276%, 62.939 % and 28.785 % of total area respectively.\

**Table: Cropping Intensity**

Cropping Pattern	Area in Sq.m	Area in Sq.Km	Percentage
Double Cropping	73468832.14	73.46883214	62.939

**Final Plan - Ramu Upazila**

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Single Cropping	9660866.412	9.660866412	8.276
Tripple Cropping	33600178.76	33.60017876	28.785
Total	116729877.3	116.7298773	100

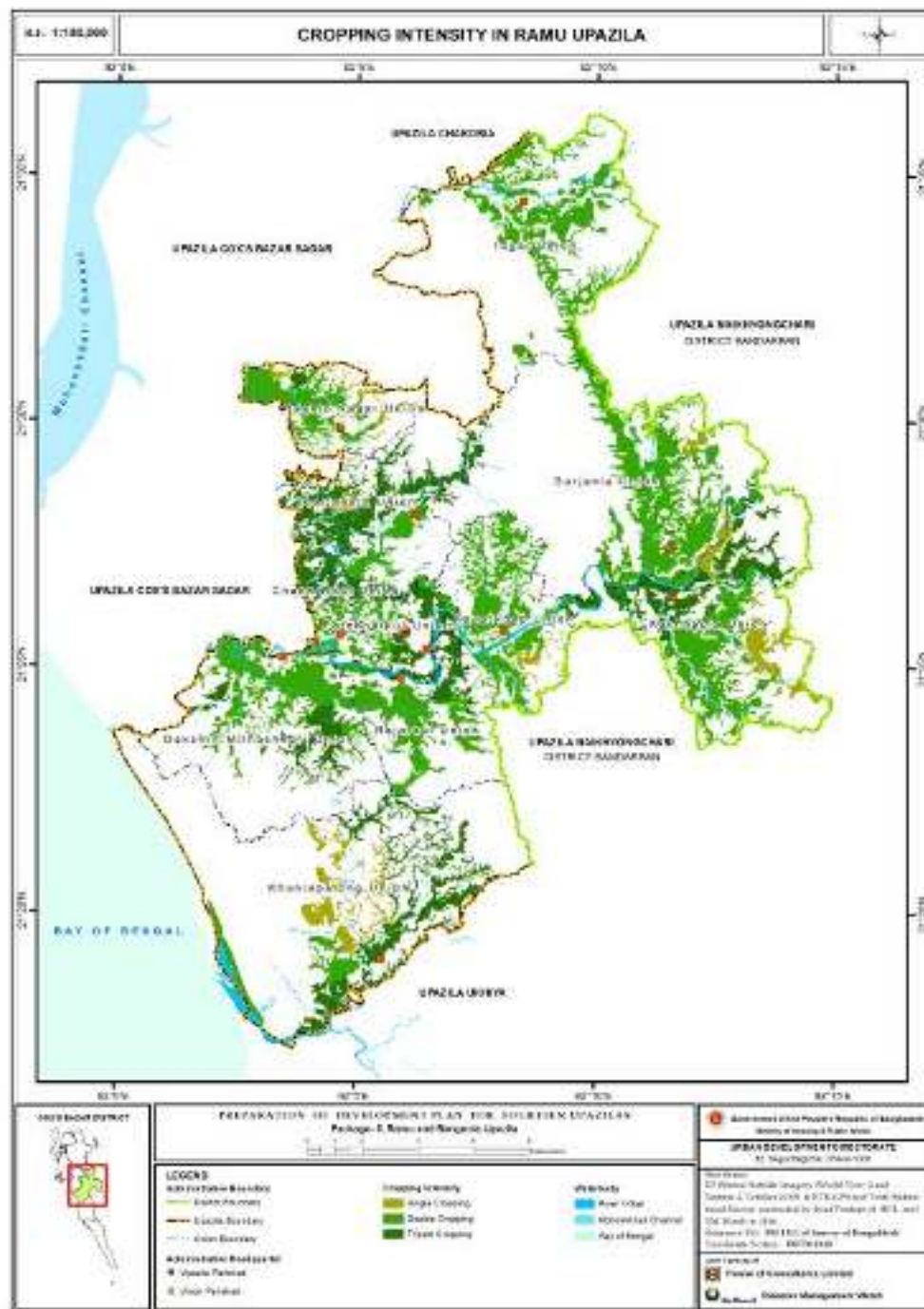
**Union wise Cropping Intensity**

Crop_No	Union	Shape_Area_m	Shape_Area_k m	Acre
Double Cropping	Chakmarkul Union	1589110.05	1.59	392.68
	Dakshin Mithachhari Union	8721807.90	8.72	2155.21
	Fatekharkul Union	2057707.85	2.06	508.47
	Garjania Union	14794239.76	14.79	3655.74
	Idgar Union	11547004.53	11.55	2853.33
	Joarianala Union	2578058.30	2.58	637.05
	Kachhapia Union	9152653.18	9.15	2261.67
	Kauarkhop Union	9242884.02	9.24	2283.97
	Khuniapalong Union	2449719.23	2.45	605.34
	Rajarkul Union	6500839.85	6.50	1606.39
	Rashid Nagar Union	4834807.46	4.83	1194.71
Single Cropping	Garjania Union	785058.07	0.79	193.99
	Joarianala Union	492095.85	0.49	121.60
	Kachhapia Union	3197772.67	3.20	790.19
	Kauarkhop Union	685142.16	0.69	169.30
	Khuniapalong Union	3460995.97	3.46	855.23
	Rashid Nagar Union	1039801.70	1.04	256.94
Tripple Cropping	Chakmarkul Union	2291303.54	2.29	566.19
	Dakshin Mithachhari Union	3355923.68	3.36	829.27
	Fatekharkul Union	2565606.56	2.57	633.98
	Garjania Union	601999.57	0.60	148.76
	Joarianala Union	7636631.25	7.64	1887.05
	Kachhapia Union	6145939.51	6.15	1518.69
	Kauarkhop Union	242561.03	0.24	59.94
	Khuniapalong Union	8523156.51	8.52	2106.12
	Rajarkul Union	1632962.08	1.63	403.51
	Rashid Nagar Union	604095.039	0.60409504	149.275

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Source: Prepared by Consultant Team Based on Field Survey, 2016

Map: Cropping Intensity Map in Ramu Upazila

## Final Plan - Ramu Upazila

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Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

### Flooding Scenario

The project area has been divided into five categories depending on the flooding scenario which are 1<sup>st</sup> degree flooded area, 2<sup>nd</sup> degree flooded area, 3<sup>rd</sup> degree flooded area, 4<sup>th</sup> degree flooded area and 5<sup>th</sup> degree flooded area. The statistics has been summarized in the table:

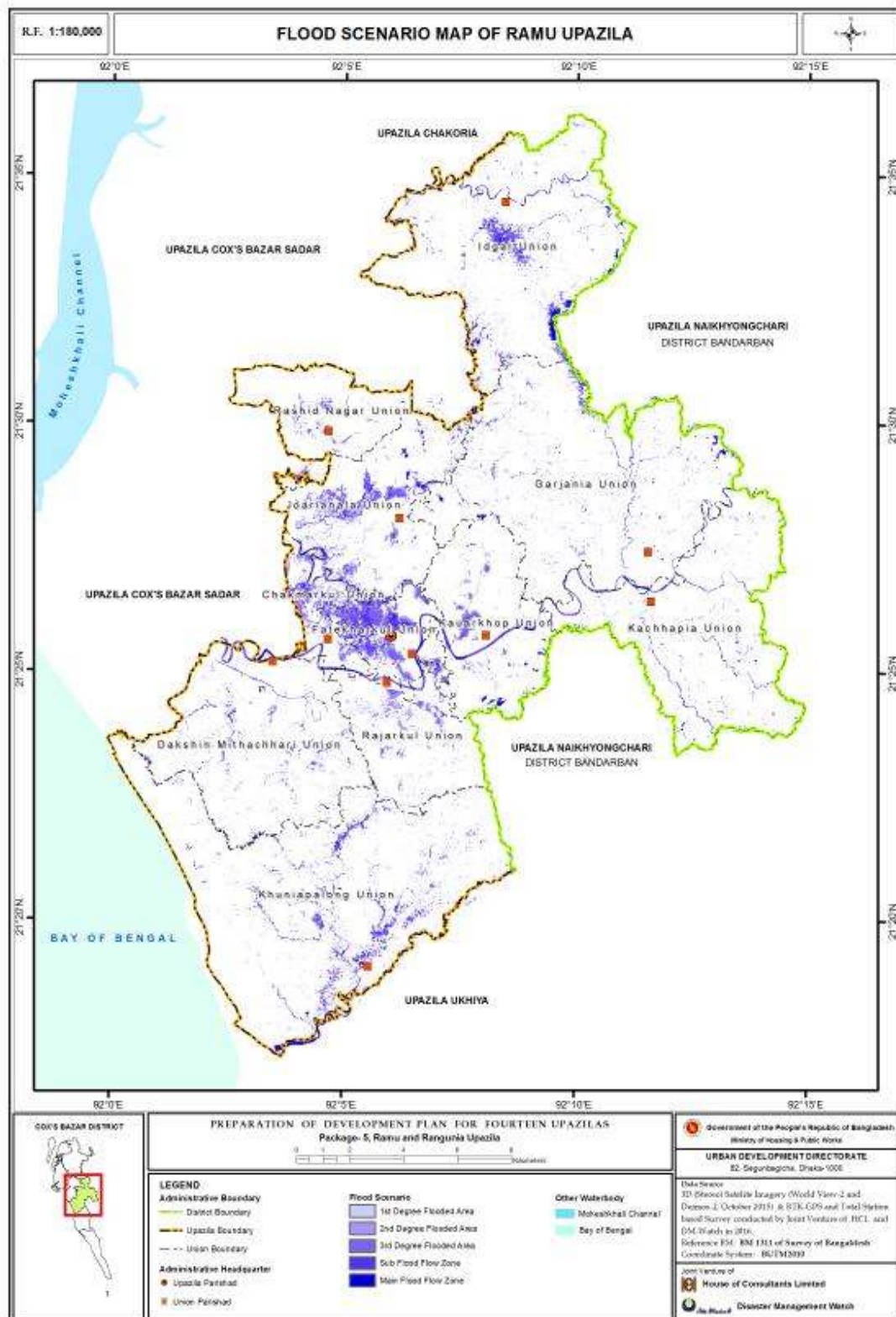
**Table: Different Flooding Scenario**

<b>Flooded Land Category</b>	<b>Depth (m)</b>	<b>Area (sq.m)</b>	<b>Area(sq.km )</b>	<b>Area (Acre)</b>	<b>Percentage</b>	<b>Remarks</b>
1st Degree Flooded area	0-0.3	400	0.00	0.10	0.0003	
2nd Degree Flooded area	0.3-0.9	21406500	21.41	5289.66	18.5132	
3rd Degree Flooded area	0.9-1.8	35062500	35.06	8664.13	30.3234	
4th Degree Flooded area	1.8-3.6	35367100	35.37	8739.40	30.5868	Sub Flood Flow Zone
5th Degree Flooded area	>3.6	23792000	23.79	5879.13	20.5762	Main Flood Flow Zone
<b>Total</b>		<b>115628500</b>	<b>115.63</b>	<b>28572.42</b>	<b>100.00</b>	

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**Source: Prepared by Consultant Team Based on Field Survey, 2016**  
**Map: Flood Scenario Map in Ramu Upazila**



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**Geology****Table: Bore Hole Information Summary at Ramu Upazila, Cox's Bazar**

<b>Borehole ID</b>	<b>Location Name</b>	<b>Latitudes</b>	<b>Longitude</b>	<b>Depth of penetration (m)</b>	<b>N value (min.)</b>	<b>N value (max.)</b>
BH-1	09 No. KhoniaPalong Union Parishad	21°19'4.25"	92°05'33.18"	30	8	50
BH-2	ThoyaingGakata (Dariardighi Community Clinic)	21°20'59.8"	92°06'49.6"	21	5	50
BH-3	Uttar KhoniaPalong	21°21'17.24"	92°04'45.62"	21	17	31
BH-4	Claylatoli A.K Ajad High School	21°24'1.25"	92°03'57.37"	19.5	12	51
BH-5	Omkhali Govt. Practionary School, Mitachari	21°25'3.54"	92°04'26.88"	24	1	32
BH-6	RayarkullIslamiaMohilaDakhi I Madrasa	21°24'17.05"	92°06'33.45"	19.5	1	24
BH-7	Kawarkhop Hakim Rakima High School. Kawarkhop	21°25'48.53"	92°07'58.56"	19.5	3	46
BH-8	Okhiyarguna Community Centre, Kawarkhop	21°26'54.4"	92°07'22.78"	10.5	3	21
BH-9	Uttar Mithachari Govt. Primary School , Juwarianala	21°26'52.36"	92°05'14.24"	27	1	51
BH-10	Chakmarkool Union Parishad	21°25'38.82"	92°04'39.57"	21	4	50
BH-11	Chinda Govt. Primary School, Mithachari	21°24'59.31"	92°02'6.59"	21	1	51
BH-12	Juwarianala Union Parishad	21°28'11.12"	92°06'2.99"	22.5	1	50
BH-13	Panirchara. Eidgor	21°34'37.45"	92°06'42.75"	16.5	1	50
BH-14	11 no Rashid Nagar Union Parishad Complex	21°29'49.96"	92°04'39.7"	18	1	36
BH-15	Hazipara, Borobil, Gorjonia	21°30'55.8"	92°09'47.05"	18	5	51
BH-16	Karoliamora Primary School, Eidgor	21°32'32.23"	92°09'3.6"	16.5	5	50
BH-17	Eidgor Union Parishad	21°34'28.93"	92°08'26.49"	15	9	50
BH-18	Hasnakata Govt. Primary School, Eidgor	21°34'51.91"	92°07'45.96"	22.5	2	50
BH-19	Niribili, Bowghat, Eidgor	21°34'41.72"	92°10'34.12"	18	5	46
BH-20	Kengarbil, Eidgor	21°35'41.3"	92°09'10.52"	15	1	41
BH-21	Uttar Kahatia Para (NotunBazar), Rashid Nagar	21°31'6.12"	92°03'57.89"	19.5	3	52
BH-22	West Shikdar Para (Mog Para), Rashid Nagar	21°31'2.34"	92°03'5.69"	21	6	52

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BH-23	Baro Dolir Chora Haz iMotiur Millah Govt. Primary School, Rashid Nagar	21°29'57.12"	92°03'48.26"	19.5	4	52
BH-24	Nondikhali Govt. Primary School, Juwarianala	21°28'13.74"	92°04'11.32"	16.5	1	16
BH-25	East Nunachari Govt. Primay School, Juwarianala	21°27'48.83"	92°05'35.08"	24	1	50
BH-26	Merong Loa RahmanialslamiaAlim Madrasa	21°26'5.84"	92°06'13.15"	18	2	40
BH-27	East Razarkol Govt. Primary School	21°25'18.5"	92°06'44.33"	18	1	51
BH-28	Monirjil Govt. Primary School	21°25'20.41"	92°08'2.78"	19.5	2	40
BH-29	RamuKhezariAdarsha High School	21°25'48.14"	92°06'12.54"	21	2	51
BH-30	Ramu Degree College	21°25'37.95"	92°05'27.3"	24	2	50

**Table: PS logging and MASW test locations**

Upazila Name	Test/ Survey Name	ID	Location Name	Coordinate	
				Latitude	Longitude
Ramu	Downhole Seismic Test (PS Logging)	BH-9P	Uttar Mathaichori Primary School Field, Joarinala Union	21.44789	92.08725
		BH-12	Titazpara, Caccapia	21.43931	92.19697
		BHC-18	Ramu Cantonment Area	21.37114	92.11755
	Multichannel analysis of surface waves (MASW)	MASW-01	Hakim Rokim High School, CawerkhabModhompapa	21.43019	92.13285
		MASW-02	Nondakhali, Boropara, Jowarinala Union	21.46904	92.0696
		MASW-03	Idger Amir MahammudBoddiruddin High School, Idger Union	21.56893	92.14137
		MASW-04	Rajarkul Union, RamuUpazila	21.40904	92.08705
		MASW-05	Ramu Cantonment Area	21.37602	92.07901

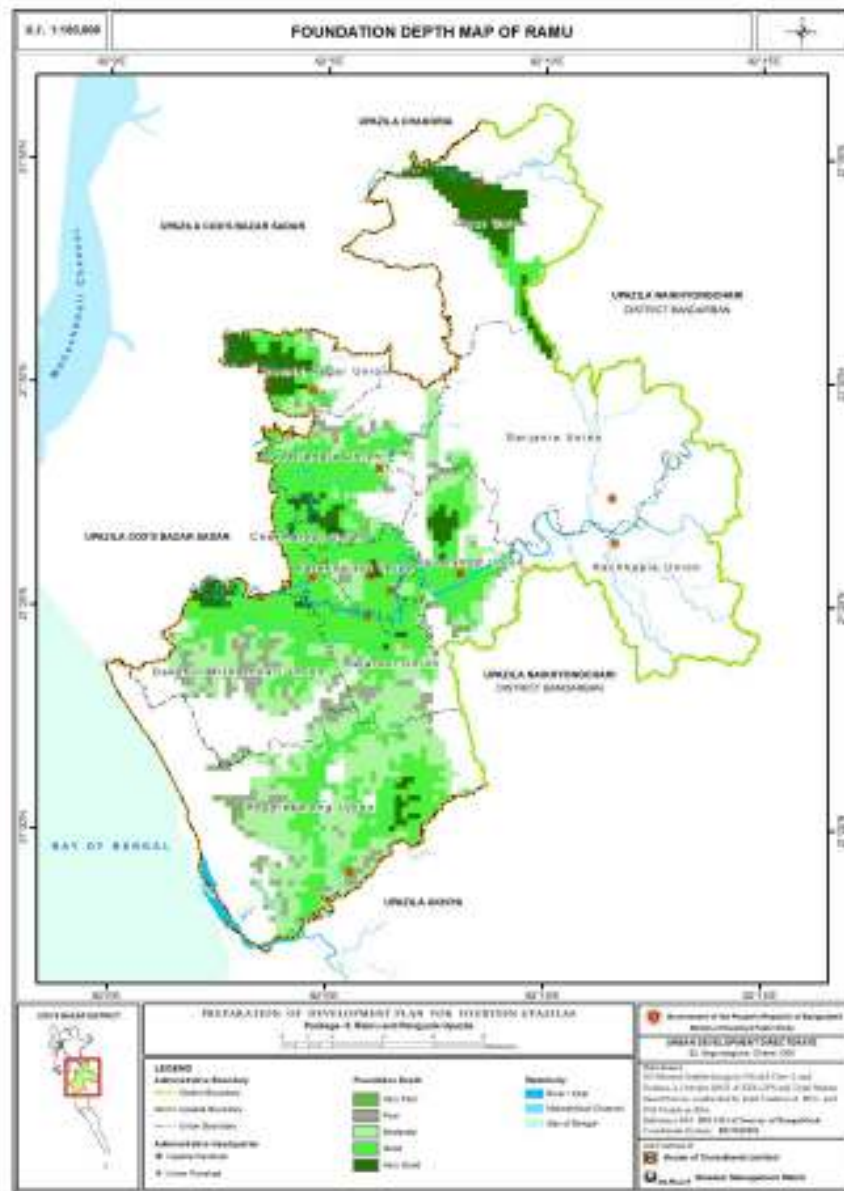
**Table: Foundation Layer**

Foundation Layer	Area (Sq.m)	Area(Acre)
Very Poor	562500	139.00
Poor	14937500	3691.14
Moderate	58437500	14440.22
Good	82125000	20293.53
Very Good	21437500	5297.32

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**Source: Prepared by Consultant Team Based on Field Survey, 2016**  
**Map: Foundation Type of Ramu Upazila**

**Table: PGA**

PGA	Area(Sq.m)	Area(Acre)
1st Degree Sensitive	32000000	7907.37
2nd Degree Sensitive	99187500	24509.77
3rd Degree Sensitive	46312500	11444.07

**Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)**

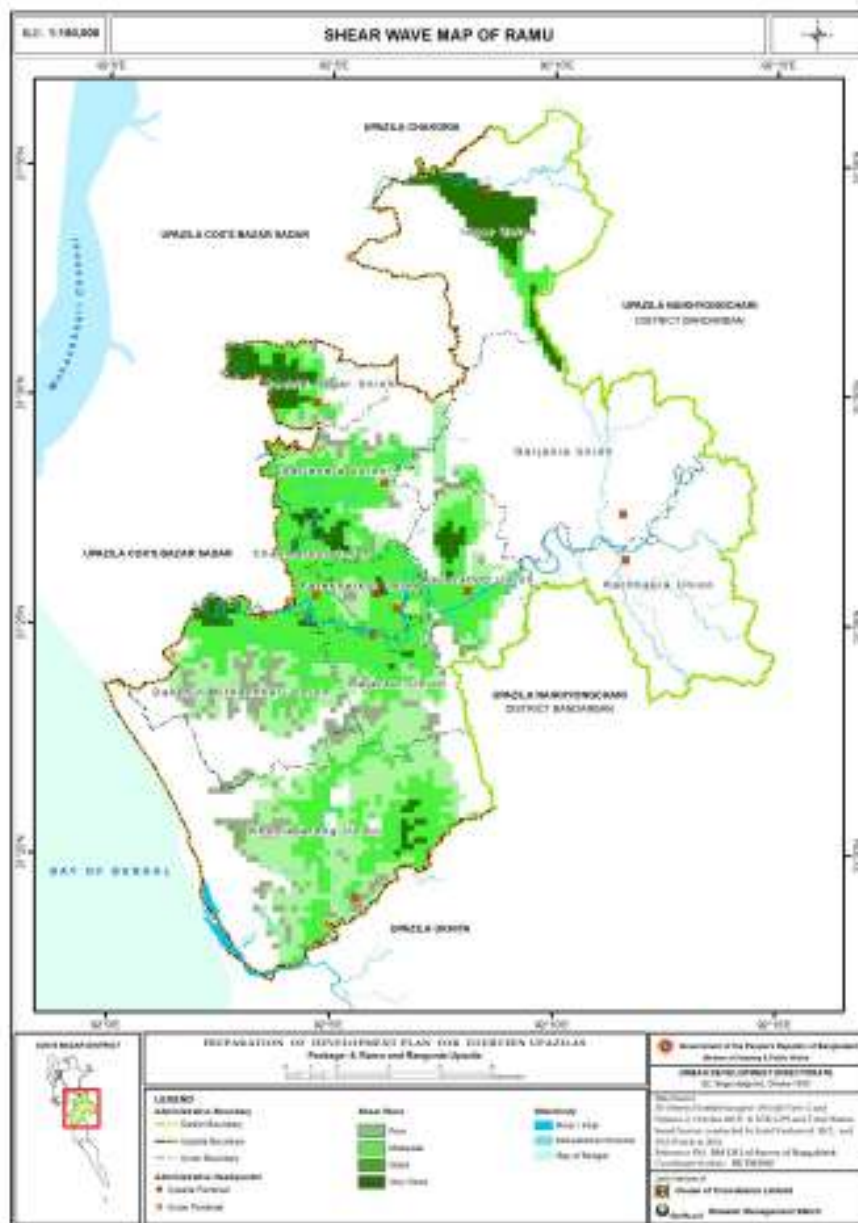


Shear Wave	Area(Sq.m)	Area(Acre)
Very Poor	10687500	2640.94
Poor	79312500	19598.55
Moderate	55500000	13714.35
Good	32000000	7907.37

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**Source: Prepared by Consultant Team Based on Field Survey, 2016**  
**Map: Shear Wave of Ramu Upazila**

**Table: Union-wise Landuse**

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Preparation of Development Plan for Fourteen Upazilas

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Union Name	Landuse	Area in Sq.m	Area in sq.km	Area in Acre	Percentage (%)
Chakmarkul	Agricultural Zone	3880413.601	3.880	958.871	53.042
	Circulation Network	114583.8205	0.115	28.314	1.566
	Commercial Zone	16350.29124	0.016	4.040	0.223
	Education & Research Zone	20302.58398	0.020	5.017	0.277
	General Industrial Zone	1490.056302	0.001	0.368	0.020
	Government Services	2545.195209	0.003	0.629	0.034
	Graveyard	2455.990096	0.002	0.607	0.033
	Health Services	657.3782865	0.001	0.162	0.008
	Heavy Industrial Zone	358811.5906	0.359	88.664	4.904
	Hilly Area	91274.58039	0.091	22.554	1.247
	Mixed Use Zone	18137.74186	0.018	4.482	0.247
	Natural Forest	401949.947	0.402	99.324	5.494
	Open Space	698.9058542	0.001	0.173	0.009
	Orchards and Groves	14316.22833	0.014	3.538	0.195
	Religious	16499.60686	0.016	4.077	0.225
	Rural Settlement	614282.2813	0.614	151.792	8.396
	Transportation Facilities	6130.953426	0.006	1.515	0.083
	Urban Residential Zone	482919.3506	0.483	119.332	6.601
	Utility Services	485.2032769	0.000	0.120	0.006
	Vacant Land	362769.4016	0.363	89.642	4.958
	Waterbody	908529.8826	0.909	224.503	12.4190
	Total	7315604.59	7.316	1807.725	100

Union Name	Landuse	Area in Sq.m	Area in sq.km	Area in Acre	Percentage (%)
Dakshin Mithachhari	Agricultural Zone	11683100.42	11.683	2886.957	28.504
	Circulation Network	206280.1635	0.206	50.973	0.503
	Commercial Zone	31292.80553	0.031	7.733	0.076
	Community Facilities	1471.275204	0.001	0.364	0.004
	Education & Research Zone	26407.42709	0.026	6.525	0.064
	General Industrial Zone	4324.762039	0.004	1.069	0.011
	Government Services	1007.961713	0.001	0.249	0.002
	Graveyard	27882.52614	0.028	6.890	0.068
	Health Services	5920.94264	0.006	1.463	0.014
	Hilly Area	16160618.14	16.161	3993.376	39.428
	Mixed Use Zone	8941.894052	0.009	2.210	0.022
	Natural Forest	7933528.138	7.934	1960.417	19.356
	Open Space	15437.5731	0.015	3.815	0.038
	Orchards and Groves	182594.7282	0.183	45.120	0.445
	Planted Forest	11233.18257	0.011	2.776	0.027
	Recreational Facilities	1659.101646	0.002	0.410	0.004
	Religious	22965.81732	0.023	5.675	0.056
	Restricted Area	2212297.124	2.212	546.671	5.397
	Rural Settlement	1092874.821	1.093	270.055	2.666

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

	Vacant Land	53999.15291	0.054	13.343	0.132
	Waterbody	1304051.485	1.304	322.238	3.182
	Total	40987889.44	40.988	10128.328	100
Fatekharkul	Agricultural Zone	4623314.412	4.623	1142.446	46.607
	Circulation Network	207993.3428	0.208	51.396	2.097
	Commercial Zone	137104.8274	0.137	33.879	1.382
	Community Facilities	974.4278558	0.001	0.241	0.010
	Education & Research Zone	37910.75326	0.038	9.368	0.382
	General Industrial Zone	1968.419645	0.002	0.486	0.020
	Government Services	30126.76099	0.030	7.444	0.304
	Graveyard	13249.38295	0.013	3.274	0.134
	Health Services	3143.924331	0.003	0.777	0.032
	Heavy Industrial Zone	335421.3959	0.335	82.884	3.381
	Hilly Area	36369.35499	0.036	8.987	0.367
	Mixed Use Zone	78664.92628	0.079	19.439	0.793
	Natural Forest	655413.7106	0.655	161.956	6.607
	Non Government Services	425.1587872	0.000	0.105	0.004
	Open Space	28512.71663	0.029	7.046	0.287
	Orchards and Groves	51287.69393	0.051	12.673	0.517
	Planted Forest	1705.521019	0.002	0.421	0.017
	Recreational Facilities	3845.997392	0.004	0.950	0.039
	Religious	52983.76699	0.053	13.093	0.534
	Rural Settlement	506683.5229	0.507	125.204	5.108
	Transportation Facilities	27415.7309	0.027	6.775	0.276
	Urban Residential Zone	1930893.618	1.931	477.134	19.465
	Utility Services	4724.465443	0.005	1.167	0.048
	Vacant Land	132775.0954	0.133	32.809	1.338
	Waterbody	1016950.316	1.017	251.294	10.252
	Total	9919859.242	9.920	2451.251	100

Union Name	Landuse	Area in Sq.m	Area in sq.km	Area in Acre	Percentage (%)
Garjania	Agricultural Zone	16181297.46	16.181	3998.486	25.189
	Circulation Network	217870.6529	0.218	53.837	0.339
	Commercial Zone	102366.404	0.102	25.295	0.159
	Community Facilities	6035.708596	0.006	1.491	0.009
	Education & Research Zone	31287.68143	0.031	7.731	0.049
	Government Services	803.5594905	0.001	0.199	0.001
	Graveyard	31333.25352	0.031	7.743	0.049
	Health Services	4119.02813	0.004	1.018	0.006
	Hilly Area	42520172.43	42.520	10506.963	66.189
	Miscellaneous	492.4725114	0.000	0.122	0.001
	Mixed Use Zone	6124.114718	0.006	1.513	0.010
	Natural Forest	59257.38267	0.059	14.643	0.092
	Non Government Services	155.1484866	0.000	0.038	0.000
	Open Space	1327.556506	0.001	0.328	0.002
	Orchards and Groves	7961.727969	0.008	1.967	0.012
	Religious	25054.36479	0.025	6.191	0.039
	Rural Settlement	3970473.589	3.970	981.125	6.181

**Final Plan - Ramu Upazila**

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

	Vacant Land	18131.91728	0.018	4.480	0.028
	Waterbody	1056474.972	1.056	261.061	1.645
	Total	64240739.43	64.241	15874.232	100
Idgar	Agricultural Zone	11547004.54	11.547	2853.327	22.124
	Circulation Network	211673.9505	0.212	52.306	0.405
	Commercial Zone	53489.61334	0.053	13.218	0.102
	Community Facilities	6352.713479	0.006	1.570	0.012
	Education & Research Zone	26002.07975	0.026	6.425	0.049
	General Industrial Zone	304.4108293	0.000	0.075	0.0005
	Government Services	14444.82998	0.014	3.569	0.027
	Graveyard	47470.57296	0.047	11.730	0.0909
	Health Services	4056.450729	0.004	1.002	0.007
	Hilly Area	35479624.35	35.480	8767.206	67.981
	Mixed Use Zone	30212.87673	0.030	7.466	0.057
	Natural Forest	22807.60521	0.023	5.636	0.0437
	Non Government Services	1147.281103	0.001	0.283	0.0021
	Open Space	18588.57732	0.019	4.593	0.035
	Religious	25697.15511	0.026	6.350	0.049
	Rural Settlement	3773954.763	3.774	932.565	7.231
	Vacant Land	18489.55354	0.018	4.569	0.035
	Waterbody	908623.5487	0.909	224.526	1.740
	Total	52189944.88	52.190	12896.416	100



## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

Union Name	Landuse	Area in Sq.m	Area in sq.km	Area in Acre	Percentage (%)
Joarianala	Agricultural Zone	10706785.35	10.707	2645.704	38.260
	Circulation Network	355208.3232	0.355	87.774	1.269
	Commercial Zone	51554.43844	0.052	12.739	0.184
	Community Facilities	3709.981323	0.004	0.917	0.013
	Education & Research Zone	13526.68251	0.014	3.343	0.048
	General Industrial Zone	2033.663974	0.002	0.503	0.007
	Government Services	9576.424727	0.010	2.366	0.034
	Graveyard	36709.00095	0.037	9.071	0.131
	Health Services	29233.62552	0.029	7.224	0.104
	Heavy Industrial Zone	36309.29114	0.036	8.972	0.130
	Hilly Area	10743531.75	10.744	2654.785	38.392
	Mixed Use Zone	1512.29909	0.002	0.374	0.005
	Natural Forest	628686.4862	0.629	155.352	2.247
	Open Space	9684.590467	0.010	2.393	0.035
	Orchards and Groves	115868.6252	0.116	28.632	0.414
	Planted Forest	1038734.838	1.039	256.677	3.712
	Religious	20590.4413	0.021	5.088	0.074
	Rural Settlement	334859.3222	0.335	82.746	1.197
	Transportation Facilities	1997.223002	0.002	0.494	0.007
	Urban Residential Zone	1632546.596	1.633	403.411	5.834
	Utility Services	789.4397105	0.001	0.195	0.003
	Vacant Land	258571.8801	0.259	63.895	0.924
	Waterbody	1952031.461	1.952	482.357	6.976
	Total	27984051.74	27.984	6915.010	100.000
Kachhapia	Agricultural Zone	18496365.35	18.496	4570.551	42.223
	Circulation Network	217967.2808	0.218	53.861	0.498
	Commercial Zone	132992.8102	0.133	32.863	0.304
	Community Facilities	11829.60742	0.012	2.923	0.027
	Education & Research Zone	37817.20772	0.038	9.345	0.086
	General Industrial Zone	5622.44965	0.006	1.389	0.013
	Government Services	5668.647925	0.006	1.401	0.013
	Graveyard	32396.86281	0.032	8.005	0.074
	Health Services	1302.743408	0.001	0.322	0.003
	Hilly Area	19210562.53	19.211	4747.033	43.853
	Mixed Use Zone	34495.12061	0.034	8.524	0.079
	Natural Forest	45698.41082	0.046	11.292	0.104
	Non Government Services	4420.450435	0.004	1.092	0.010
	Open Space	6456.252249	0.006	1.595	0.015
	Religious	33740.16933	0.034	8.337	0.077
	Rural Settlement	3695564.324	3.696	913.194	8.436
	Vacant Land	287725.4167	0.288	71.098	0.657
	Waterbody	1546116.455	1.546	382.054	3.529
	Total	43806742.08	43.807	10824.882	100

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

Union Name	Landuse	Area in Sq.m	Area in sq.km	Area in Acre	Percentage (%)
Kauarkhop	Agricultural Zone	10170587.21	10.171	2513.207	40.704
	Circulation Network	184028.9564	0.184	45.475	0.737
	Commercial Zone	30421.98949	0.030	7.517	0.122
	Community Facilities	68.73524734	0.000	0.017	0.000
	Education & Research Zone	16975.89054	0.017	4.195	0.068
	General Industrial Zone	5442.939289	0.005	1.345	0.022
	Government Services	2840.710702	0.003	0.702	0.011
	Graveyard	23562.794	0.024	5.822	0.094
	Health Services	2451.96297	0.002	0.606	0.010
	Heavy Industrial Zone	85108.72668	0.085	21.031	0.341
	Hilly Area	10128937.91	10.129	2502.915	40.537
	Mixed Use Zone	23638.48139	0.024	5.841	0.095
	Natural Forest	126605.9973	0.127	31.285	0.507
	Non Government Services	136.2721734	0.000	0.034	0.001
	Open Space	3300.806009	0.003	0.816	0.013
	Orchards and Groves	22929.21733	0.023	5.666	0.092
	Planted Forest	138296.5033	0.138	34.174	0.553
	Recreational Facilities	5439.133309	0.005	1.344	0.022
	Religious	24150.90645	0.024	5.968	0.097
	Rural Settlement	2706822.114	2.707	668.870	10.833
	Urban Residential Zone	3236.045194	0.003	0.800	0.013
	Utility Services	241.046855	0.000	0.060	0.001
	Vacant Land	130751.8325	0.131	32.309	0.523
	Waterbody	1150918.739	1.151	284.398	4.606
	Total	24986894.92	24.987	6174.396	100
Khuniapalong	Agricultural Zone	14417314.21	14.417	3562.596	18.776
	Beach	1462155.319	1.462	361.306	1.904

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

Circulation Network	266499.828 4	0.266	65.854	0.347
Commercial Zone	15372.7154 9	0.015	3.799	0.020
Community Facilities	105.905047 2	0.000	0.026	0.000
Education & Research Zone	11783.6126 3	0.012	2.912	0.015
General Industrial Zone	806.466906 2	0.001	0.199	0.001
Government Services	15186.9597 2	0.015	3.753	0.020
Graveyard	2184.35328 2	0.002	0.540	0.003
Health Services	152.216576 3	0.000	0.038	0.000
Heavy Industrial Zone	149190.868 7	0.149	36.866	0.194
Hilly Area	40059468.6 4	40.059	9898.910	52.170
Mixed Use Zone	64.6537439 1	0.000	0.016	0.000
Natural Forest	16928377.6 4	16.928	4183.093	22.046
Open Space	3903.58928 2	0.004	0.965	0.005
Orchards and Groves	36003.4868 1	0.036	8.897	0.047
Religious	3073.68627 1	0.003	0.760	0.004
Restricted Area	1506671.89 3	1.507	372.307	1.962
Rural Settlement	212960.936 5	0.213	52.624	0.277
Transportation Facilities	193.223742 6	0.000	0.048	0.000
Utility Services	160.378485 3	0.000	0.040	0.000
Vacant Land	12324.8558 0	0.012	3.046	0.016
Waterbody	1681970.38 7	1.682	415.624	2.190
Total	76785925.8 3	76.786	18974.21 5	100

Union Name	Landuse	Area in Sq.m	Area in sq.km	Area in Acre	Percentage (%)
Rajarkul	Agricultural Zone	7295764.873	7.296	1802.823	35.73
	Circulation Network	165465.5954	0.165	40.887	0.81
	Commercial Zone	30468.11714	0.030	7.529	0.15
	Community Facilities	2067.027865	0.002	0.511	0.01
	Education & Research Zone	27038.97968	0.027	6.681	0.13
	General Industrial Zone	1937.241189	0.002	0.479	0.01

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

	Government Services	13151.27032	0.013	3.250	0.06
	Graveyard	14177.38386	0.014	3.503	0.07
	Health Services	1156.195408	0.001	0.286	0.01
	Hilly Area	4047561.849	4.048	1000.174	19.82
	Mixed Use Zone	3372.62828	0.003	0.833	0.02
	Natural Forest	2485912.813	2.486	614.282	12.18
	Open Space	21322.54214	0.021	5.269	0.10
	Orchards and Groves	88536.00961	0.089	21.878	0.43
	Planted Forest	450126.6198	0.450	111.229	2.20
	Religious	44620.54357	0.045	11.026	0.22
	Restricted Area	3655112.889	3.655	903.198	17.90
	Rural Settlement	1111294.687	1.111	274.607	5.44
	Transportation Facilities	751.47524	0.001	0.186	0.00
	Urban Residential Zone	155849.9415	0.156	38.511	0.76
	Utility Services	1664.828165	0.002	0.411	0.01
	Vacant Land	3358.164339	0.003	0.830	0.02
	Waterbody	796893.127	0.797	196.917	3.90
	Total	20417604.8	20.418	5045.300	100
Rashid Nagar	Agricultural Zone	6478704.191	6.479	1600.923	41.094
	Circulation Network	232611.5704	0.233	57.480	1.475
	Commercial Zone	41734.13361	0.042	10.313	0.265
	Community Facilities	39.12964617	0.000	0.010	0.000
	Education & Research Zone	24876.65442	0.025	6.147	0.158
	General Industrial Zone	1094.010256	0.001	0.270	0.007
	Government Services	1204.753924	0.001	0.298	0.008
	Graveyard	43666.93882	0.044	10.790	0.277
	Health Services	1702.644213	0.002	0.421	0.011
	Heavy Industrial Zone	32990.45018	0.033	8.152	0.209
	Hilly Area	6599654.66	6.600	1630.810	41.861
	Miscellaneous	4529.94856	0.005	1.119	0.029
	Natural Forest	354625.7056	0.355	87.630	2.249
	Orchards and Groves	62814.24186	0.063	15.522	0.398
	Religious	15928.72026	0.016	3.936	0.101
	Rural Settlement	865345.1562	0.865	213.831	5.489
	Urban Residential Zone	390803.3321	0.391	96.570	2.479
	Utility Services	370.283457	0.000	0.091	0.002

**Final Plan - Ramu Upazila**

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

		2			
Vacant Land	41961.97535	0.042	10.369	0.266	
Waterbody	570880.5945	0.571	141.068	3.621	
Total	15765539.09	15.766	3895.750	100	

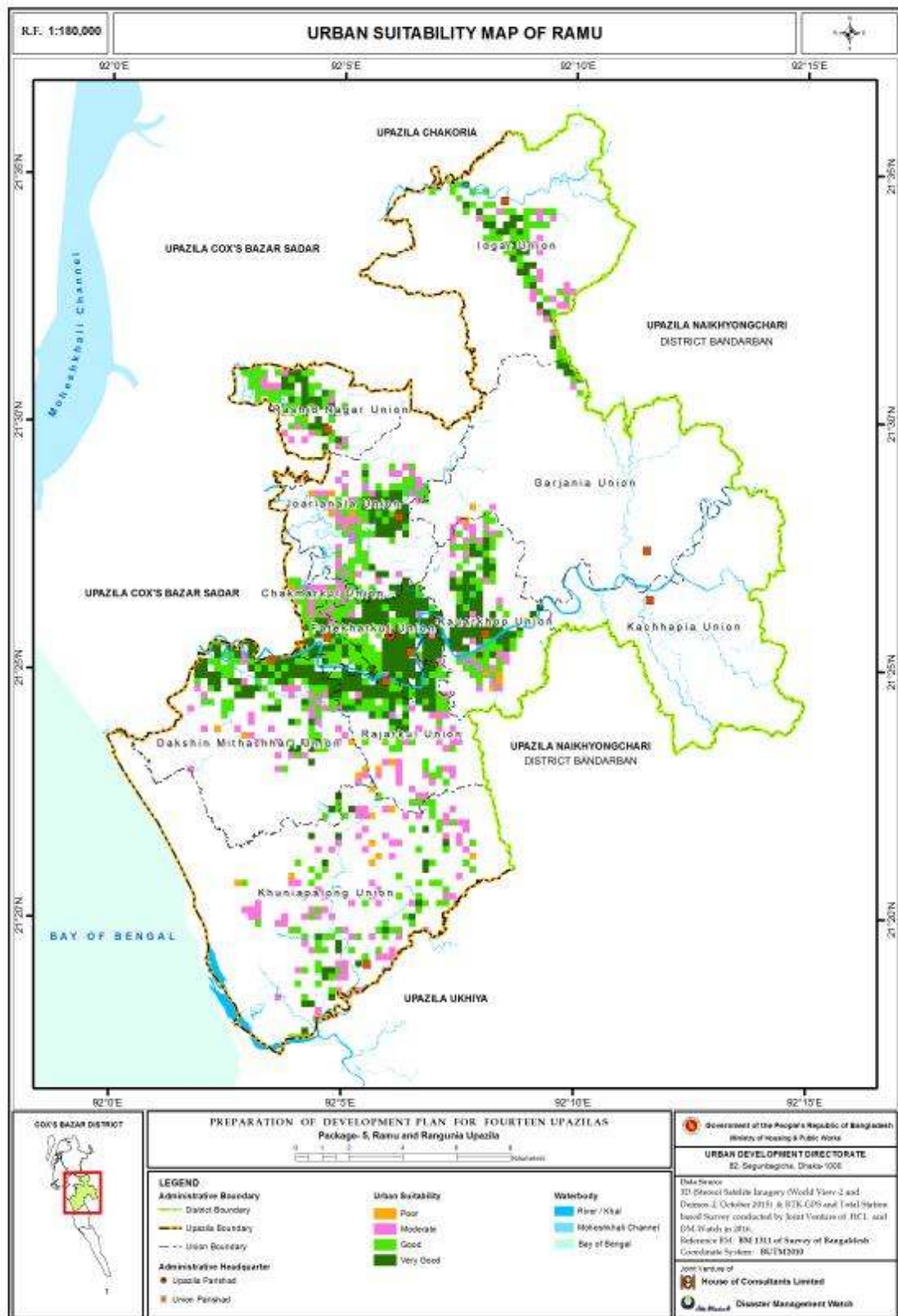
**Suitibility Analysis****Urban Suitibility**

Urban Suitibility		Area(Sq.m)	Area(Sq.Km)	Acre	%
Poor	28	2800	0.0028	0.691895	2.21
Moderate	284	28400	0.0284	7.017793	22.42
Good	509	50900	0.0509	12.57766	40.17
Very Good	446	44600	0.0446	11.0209	35.20
	1267	126700	0.1267	31.30825	100

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)



**Source: Prepared by Consultant Team Based on Field Survey, 2016**  
**Map: Urban Suitability of Ramu Upazila**

**Final Plan - Ramu Upazila**

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

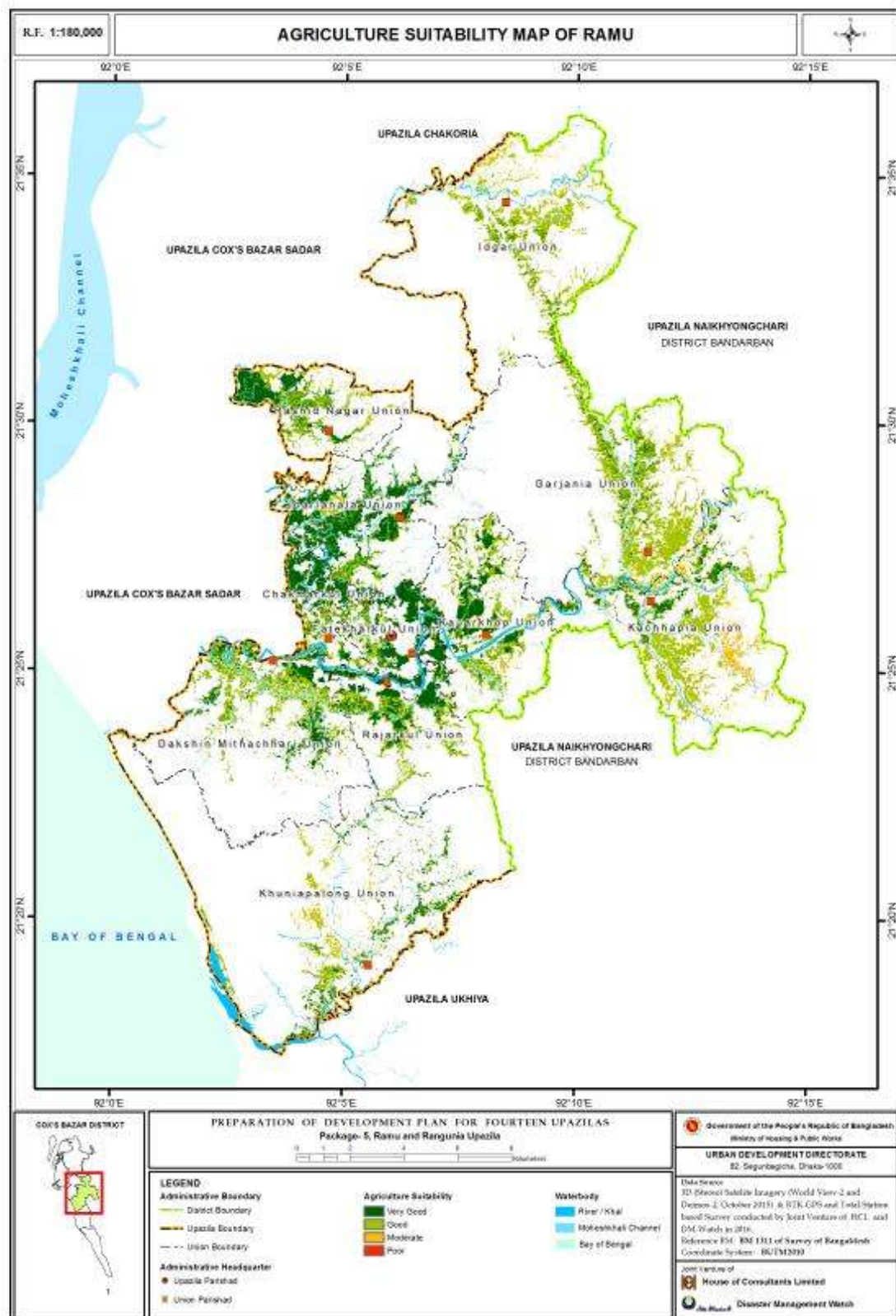
**Agriculture Suitability**

Agriculture_Suitibility		Sq.M	Sq.Km	Acre	%
Poor	196	19600	0.0196	4.84	0.03
Moderate	47556	4755600	4.7556	1175.13	6.27
Good	422290	42229000	42.229	10435.01	55.67
Very Good	288492	28849200	28.8492	7128.79	38.03
		75853400	75.8534	18743.78	100

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)



**Source: Prepared by Consultant Team Based on Field Survey, 2016**  
**Map: Agricultural Suitability of Ramu Upazila**



## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

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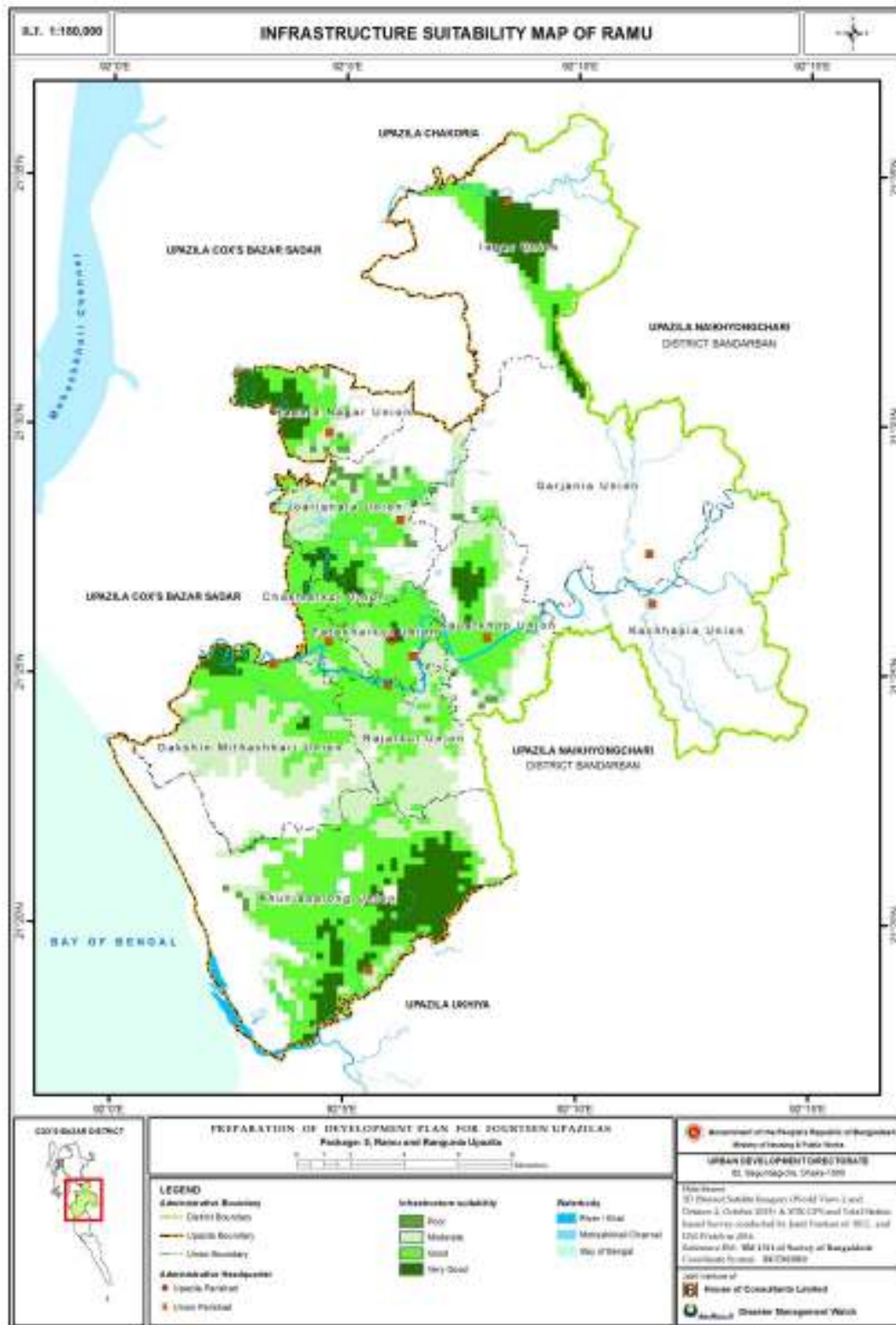
**Table: Infrastructure Suitability**

Infrastructure_Suitibility		Sq.M	Sq.Km	Acre	%
Poor	41	4100	0.0041	1.01	1.44
Moderate	904	90400	0.0904	22.34	31.83
Good	1400	140000	0.14	34.59	49.30
Very Good	495	49500	0.0495	12.23	17.43
Total	2840	284000	0.284	70.18	100

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)



Source: Prepared by Consultant Team Based on Field Survey, 2016

Map: Infrastructure Suitability of Ramu Upazila

Table: Eco\_sensitive Landuse

**Final Plan - Ramu Upazila**

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

<b>Existing Landuse</b>	<b>Area in Sq.m</b>	<b>Area in Sq.km</b>	<b>Area in Acre</b>	<b>%</b>
Agricultural Zone	124131224	124.13122	30673.49351	36.09061
Hilly Area	202667698	202.668	50080.279	58.92475
Natural Forest	2084180.5	2.084	515.012	0.605966
Orchards and Groves	527788.93	0.528	130.419	0.153452
Planted Forest	1640096.7	1.64	405.277	0.476851
Waterbody	12892289	12.892	3185.754	3.748377
			84990.23451	100

**Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)**

**Final Plan - Ramu Upazila**

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

**Table: Slope More Than 5%**

<b>Slope more than 5</b>	<b>Sq.M</b>	<b>Sq.Km</b>	<b>Acre</b>
2575991	257599100	257.5991	63654.124

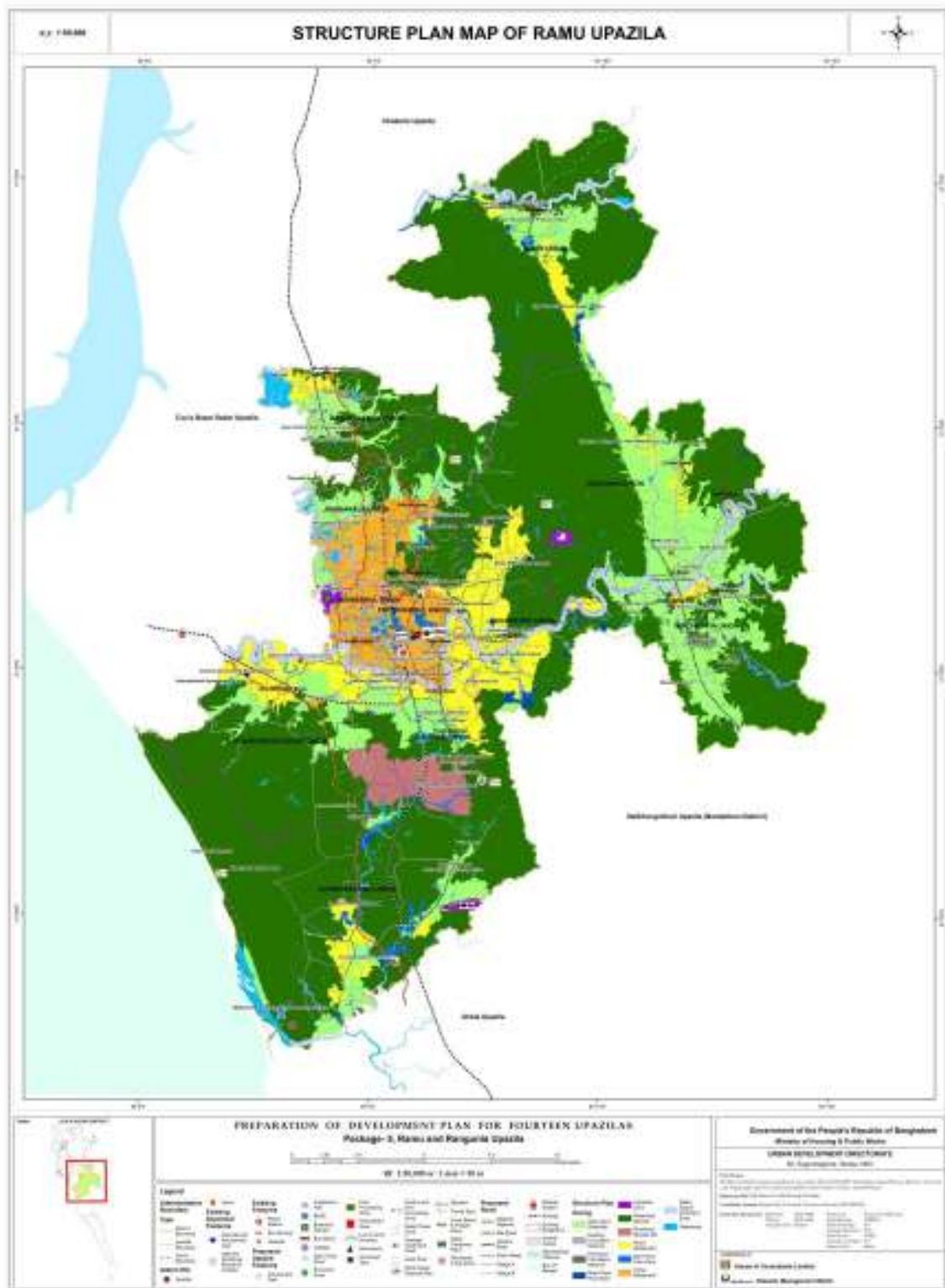
**Table: Area Coverage of Structure Plan Zoning**

<b>Zoning</b>	<b>Area in Sq.m</b>	<b>Area in Sq.km</b>	<b>Area in Acre</b>	<b>Percentage</b>
Agriculture Suitability	55810304.49	55.81030449	13791.02658	14.518
Existing Circulation Network	2525145.286	2.525145286	623.9769891	0.656
Industrial Zone	1392553.141	1.392553141	344.1073752	0.362
Main Flood Flow Zone	1865406.824	1.865406824	460.9520648	0.485
Proposed Circulation Network	4640663.122	4.640663122	1146.732831	1.207
Restricted Special	240812442.8	240.8124428	59506.05054	62.646
Restricted Special-Military	7181516.076	7.181516076	1774.591269	1.868
Rural Settlement	32872990.2	32.8729902	8123.092783	8.551
Sub Flood Flow Zone	4207248.083	4.207248083	1039.633643	1.094
Urban Settlement	19261347.54	19.26134754	4759.582632	5.010
Water Supply Protection Zone	8049408.127	8.049	1988.951215	2.093
Waterbody	5781770.356	5.781770356	1428.706569	1.504
<b>Total</b>	<b>384400796</b>	<b>384.4003879</b>	<b>94987.40449</b>	<b>100</b>

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)



**Source: Prepared by Consultant Team Based on Field Survey, 2017**

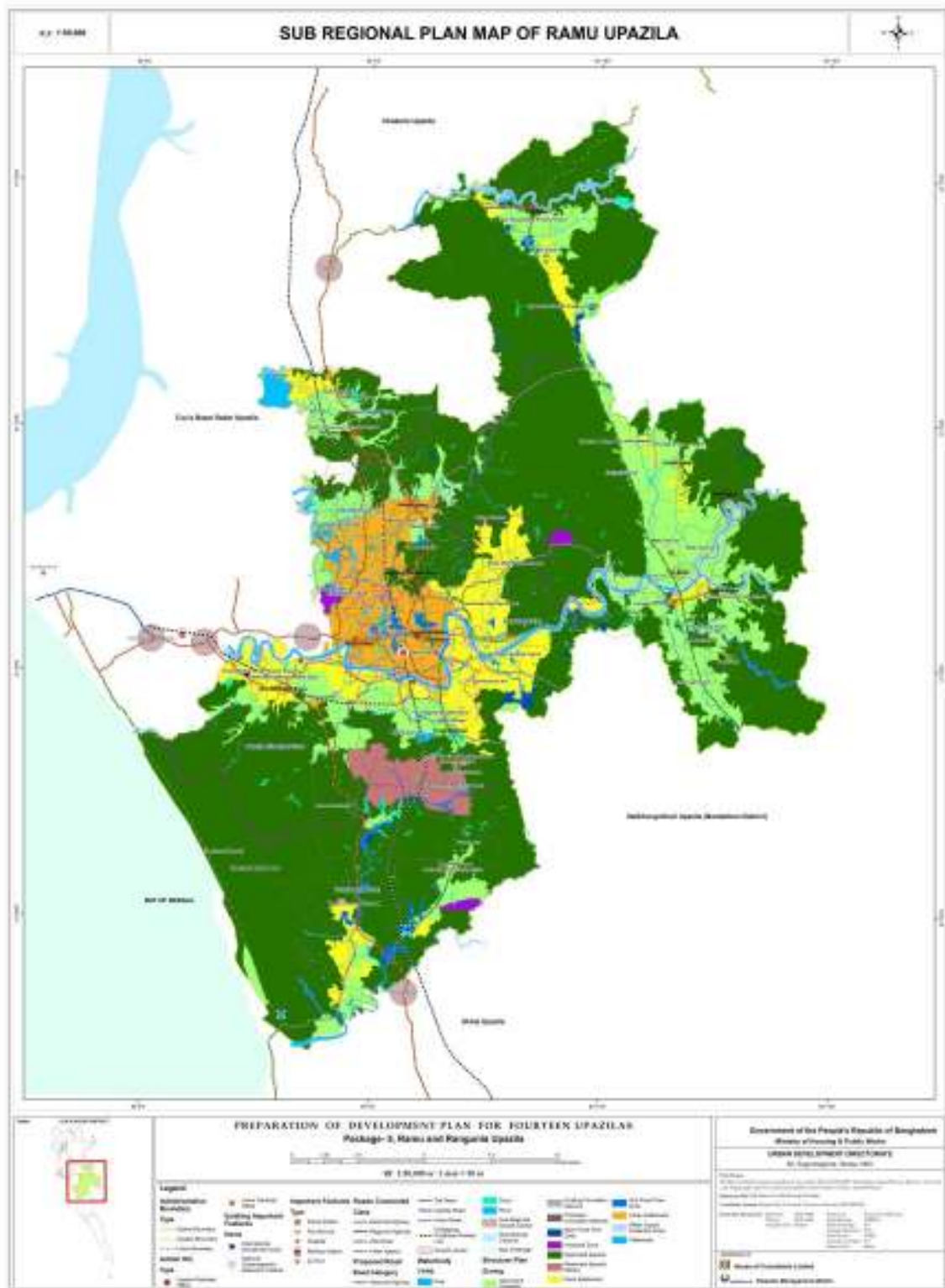
**Map: Structure Plan of Ramu Upazila**



## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)



Source: Prepared by Consultant Team Based on Field Survey, 2017

Map: Sub-Regional Plan of Ramu Upazila

Table: Proposed Road

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

Road (Category)	Length (m)	Length (km)
National Highway	43539.19089	43.53919089
Union Road	64590.73881	64.59073881
Upazila Road	6175.126389	6.175126389
Village-A	70333.24154	70.33324154
Village-B	182153.3251	182.1533251
Zila Road	75211.08157	75.21108157
Total	442002.7043	442.0027043

**Table: Proposed Bridge/ Culvert**

Existing	Proposed	Frequency	Union
<b>Bridge/ Culvert 436</b>	Culvert	16	Chakmarkul, Fatekharkul, Joarianala (2), Kachhapia (03), Kauarkhop (05), Khuniapalong, Rajarkul(3)
	Bridge	3	Rajarkul Union , Kauarkhop, Parua, Joarianala

**Table: Proposed Features for Urban and Rural area plan**

Rural/Union	Urban/Built up Area	Upazila
<ul style="list-style-type: none"> <li>• Growth Center</li> <li>• Wholesale Market</li> <li>• Retail Market</li> <li>• CNG/Tempo/Auto Rickshaw /Rickshaw Stand</li> <li>• Primary School/Kindergarten</li> <li>• High School</li> <li>• Health Center/Maternity Clinic</li> <li>• Play Ground/Field</li> <li>• Eidgah</li> <li>• Graveyard</li> <li>• Mosque/Pagoda/Temple</li> <li>• Community Center</li> <li>• Post Office</li> <li>• Electric Substation</li> <li>• Small Scale Industry</li> </ul>	<ul style="list-style-type: none"> <li>➤ Primary School/Kindergarten</li> <li>➤ High School</li> <li>➤ College</li> <li>➤ Neighborhood Park</li> <li>➤ Play Ground/Field</li> <li>➤ Health Center/Maternity Clinic</li> <li>➤ Mosque/Pagoda/Temple</li> <li>➤ Eidgah</li> <li>➤ Graveyard</li> <li>➤ Community Center</li> <li>➤ Post Office</li> <li>➤ Water Reservoir</li> <li>➤ Waste Secondary Transfer Station</li> <li>➤ Electric Substation</li> <li>➤ Wholesale Market</li> <li>➤ Retail Market</li> </ul>	<ul style="list-style-type: none"> <li>✓ Retail Trade Zone</li> <li>✓ Wholesale Trade Zone</li> <li>✓ Dairy Food Zone</li> <li>✓ Fruit processing Zone</li> <li>✓ Hi Tech Park</li> <li>✓ Hotel Motel Zone</li> <li>✓ Economic Zone</li> <li>✓ Poultry and Fish Processing Zone</li> <li>✓ Amusement park</li> <li>✓ IT Park</li> <li>✓ Low Income/Landless Affordable Housing</li> <li>✓ Stadium</li> <li>✓ Water Treatment Plant</li> <li>✓ Textile and Sweetmeat Zone</li> <li>✓ Bus Stand</li> <li>✓ Truck Stand and Freight Zone</li> <li>✓ Solid Waste Disposal</li> <li>✓ Botanical Garden</li> <li>✓ Tourist Zone</li> <li>✓ Eco Park</li> <li>✓ Auditorium/Cinema Hall</li> <li>✓ Monument</li> </ul>



**Final Plan - Ramu Upazila**

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

**Proposed\_Facilities****Table: Union & Plotwise Proposed Upazila Facilities**

Features	Union	Mouza	JL_No	Sheet_No	Mauza_JL_S	Plot_No
Hotel Motel Zone	Khuniapalong Union	Jungle Goalia Palong	032	000	Jungle Goalia Palong_032_000	19
Monument	Khuniapalong Union	Dhechua Palong	036	003	Dhechua Palong_036_003	3042
Dairy Food Zone	Khuniapalong Union	Dariar Dighi	037	007	Dariar Dighi_037_007	4385
Dairy Food Zone	Khuniapalong Union	Dariar Dighi	037	007	Dariar Dighi_037_007	4388
Dairy Food Zone	Khuniapalong Union	Dariar Dighi	037	007	Dariar Dighi_037_007	4384
Poultry and Fish Processing Zone	Khuniapalong Union	Dariar Dighi	037	007	Dariar Dighi_037_007	4611
Poultry and Fish Processing Zone	Khuniapalong Union	Dariar Dighi	037	007	Dariar Dighi_037_007	4612
Tourist Spot	Khuniapalong Union	Jungle Khunia Palong	029	000	Jungle Khunia Palong_029_000	41
Botanical Garden	Dakshin Mithachhari Union	Dakshin Mithachhari	027	011	Dakshin Mithachhari_027_011	12542
Tourist Spot	Rajarkul Union	Rajarkul	025	007	Rajarkul_025_007	7776
Amusement Park	Rajarkul Union	Rajarkul	025	006	Rajarkul_025_006	7670
Amusement Park	Rajarkul Union	Rajarkul	025	007	Rajarkul_025_007	7776
College	Kauarkhop Union	Kauarkho	008	002	Kauarkho_008_002	606
Overhead Tank	Fatekharkul Union	Fotekhar Kul	022	003	Fotekhar Kul_022_003	4601
Auditorium/Cinema Hall	Fatekharkul Union	Fotekhar Kul	022	003	Fotekhar Kul_022_003	4601
Bus Stand	Fatekharkul Union	Fotekhar Kul	022	002	Fotekhar Kul_022_002	1787
Retail Trade Zone	Fatekharkul Union	Fotekhar Kul	022	003	Fotekhar Kul_022_003	5560
Monument	Fatekharkul Union	Fotekhar Kul	022	003	Fotekhar Kul_022_003	5555
Truck Stand & Frieight Zone	Fatekharkul Union	Hightupi	020	000	Hightupi_020_000	658
Water Treatment Plant	Fatekharkul Union	Hightupi	020	000	Hightupi_020_000	395
Water Treatment Plant	Fatekharkul Union	Hightupi	020	000	Hightupi_020_000	394
Fruit Processing Zone	Kachhapia Union	Kachhapia	040	05	Kachhapia_004_005	2978
Fruit Processing	Kachhapia	Kachhapia	040	05	Kachhapia_004_005	297

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

Zone	Union				05	9
Economic Zone	Chakmarkul Union	Chakmarkul	018	003	Chakmarkul_018_003	3607
Economic Zone	Chakmarkul Union	Chakmarkul	018	003	Chakmarkul_018_003	3605
Economic Zone	Chakmarkul Union	Chakmarkul	018	003	Chakmarkul_018_003	3649
Monument	Joarianala Union	Uttar Mithachhari	019	002	Uttar Mithachhari_019_002	2021
Solid Waste Disposal Site	Fatekharkul Union	Maronglowa	021	001	Maronglowa_021_001	601
Solid Waste Disposal Site	Fatekharkul Union	Maronglowa	021	001	Maronglowa_021_001	590
Solid Waste Disposal Site	Fatekharkul Union	Maronglowa	021	001	Maronglowa_021_001	600
Sewage Treatment Plant	Chakmarkul Union	Chakmarkul	018	003	Chakmarkul_018_003	3184
Sewage Treatment Plant	Chakmarkul Union	Chakmarkul	018	003	Chakmarkul_018_003	3107
Stadium	Fatekharkul Union	Hightupi	020	000	Hightupi_020_000	11
Wholesale Trade Zone	Joarianala Union	Uttar Mithachhari	019	002	Uttar Mithachhari_019_002	1926
Low Income Housing	Kauarkhop Union	Lot Ukhiarghona	039	006	Lot Ukhiarghona_039_006	2527
Low Income Housing	Kauarkhop Union	Lot Ukhiarghona	039	001	Lot Ukhiarghona_039_001	675
Low Income Housing	Kauarkhop Union	Lot Ukhiarghona	039	001	Lot Ukhiarghona_039_001	563
Solar Park	Garjania Union	Jungle Garjania	010	000	Jungle Garjania_010_000	119
BKSP	Joarianala Union	Nonachhari	017	003	Nonachhari_017_003	3432
BKSP	Joarianala Union	Nonachhari	017	003	Nonachhari_017_003	3431
BKSP	Joarianala Union	Nonachhari	017	003	Nonachhari_017_003	3436
College	Joarianala Union	Joarianala	012	005	Joarianala_012_005	7295
Tourist Spot	Garjania Union	Jungle Garjania	010	000	Jungle Garjania_010_000	56
Tourist Spot	Garjania Union	Jungle Garjania	010	000	Jungle Garjania_010_000	119
Tourist Spot	Joarianala Union	Joarianala	012	007	Joarianala_012_007	99999

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

**Table: Plotwise Proposed Educational Facilities**

Type	Location	Union	Mouza	JL No.	Sheet No.	Plot No.
Proposed Primary School	Idgar_W_07	Idgar Union	Idgar	002	006	8132
	Idgar_W_05	Idgar Union	Idgar	002	004	4923
	Garjania_W_09	Garjania Union	Garjania	003	012	9670
	Kacchapia_W_08	Kachhapia Union	Dakshin Kachhapia	005	006	11159
	Kacchapia_W_03	Kachhapia Union	Kachhapia	004	002	344
	Kawarkhop_W_07	Kauarkhop Union	Manirjhil	006	001	527
	Kawarkhop_W_09	Kauarkhop Union	Sonaichhari	024	005	936
	Kawarkhop_W_08	Kauarkhop Union	Ukhiarghona	009	003	4264
	Kawarkhop_W_02	Kauarkhop Union	Ukhiarghona	009	001	33
	Kawarkhop_W_08	Kauarkhop Union	Lot Ukhiarghona	039	007	3177
	Khuniapalong_W_02	Khuniapalong Union	Khuniapalong	035	004	1328
	Khuniapalong_W_08	Khuniapalong Union	Dariar Dighi	037	005	2585
	Rajarkul_W_01	Rajarkul Union	Rajarkul	025	009	10679
	Rajarkul_W_09	Rajarkul Union	Rajarkul	025	002	1919
	Dakshin_Mithachari_04	Dakshin Mithachhari	Dakshin Mithachari	027	004	6118
	Dakshin_Mithachari_01	Dakshin Mithachhari	Dakshin Mithachhari	027	001	718
	Chakmarkul_W_07	Chakmarkul Union	Chakmarkul	018	004	7720
	Chakmarkul_W_09	Chakmarkul Union	Chakmarkul	018	005	10072
	Chakmarkul_W_09	Chakmarkul Union	Chakmarkul	018	003	4701
	Fatekharkul_W_03	Fatekharkul Union	Fotekhar Kul	022	004	8182
	Fatekharkul_W_03	Fatekharkul Union	Fotekhar Kul	022	004	7798
	Fatekharkul_W_05	Fatekharkul Union	Sreekul	023	000	99999
	Fatekharkul_W_07	Fatekharkul Union	Maronglowa	021	002	2414
	Fatekharkul_W_08	Fatekharkul Union	Maronglowa	021	001	472
	Fatekharkul_W_06	Fatekharkul Union	Hightupi	020	000	519
	Jowarianala_W_09	Joarianala Union	Uttar Mithachhari	019	001	514
	Joarinala_W_01	Joarianala Union	Nandakhali	015	002	757
	Joarinala_W_02	Joarianala Union	Joarianala	012	002	204
	Joarinala_W_06	Joarianala Union	Joarianala	012	005	7167
	Rashidnagar_W_08	Rashid Nagar Union	Dhalichora	014	004	9839
	Rashidnagar_W_09	Rashid Nagar Union	Dhalichora	014	003	6467
	Rashidnagar_W_02	Rashid Nagar Union	Dhalichora	014	002	3191
	Rashidnagar_W_02	Rashid Nagar Union	Dhalichora	014	002	2121
Proposed High School	Idgar_W_02	Idgar Union	Idgar	002	003	2197
	Garjania_W_08	Garjania Union	Garjania	003	011	6763
	Kacchapia_W_09	Kachhapia Union	Dakshin Kachapia	005	005	8552
	Kacchapia_W_02	Kachhapia Union	Kachhapia	04	05	3284
	Kawarkhop_W_08	Kauarkhop Union	Kauarkho	008	002	547
	Khuniapalong_W_02	Khuniapalong Union	Khuniapalong	035	004	1328
	Khuniapalong_W_08	Khuniapalong Union	Dariar Dighi	037	005	2584
	Rajarkul_W_02	Rajarkul Union	Rajarkul	025	008	8866
	Dakshin_Mithachari_09	Chakmarkul Union	Chakmarkul	018	004	8818
	Fatekharkul_W_04	Fatekharkul Union	Fotekhar Kul	022	003	4885
	Jowarianala_W_09	Joarianala Union	Uttar Mithachhari	019	001	519
	Fatekharkul_W_07	Joarianala Union	Joarianala	012	004	4911

**Final Plan - Ramu Upazila**

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	Chakmarkul_W_09	Chakmarkul Union	Chakmarkul	018	004	8440
	Rashidnagar_W_02	Rashid Nagar Union	Dhalichora	014	002	2680

**Table: Proposed Tempo-CNG Stand**

Type	Location	Union	Mouza	JL No.	Sheet No.	Plot No.
Proposed Tempo CNG Stand	Idgar_W_02	Idgar Union	Idgar	002	003	2582
	Garjania_W_09	Garjania Union	Garjania	003	012	10063
	Kacchapia_W_02	Kachhapia Union	Kachhapia	04	05	99999
	Kawarkhop_W_08	Kauarkhop Union	Kauarkho	008	002	1829
	Khuniapalong_W_07	Khuniapalong Union	Dhechua Palong	036	003	3357
	Rajarkul_W_07	Rajarkul Union	Rajarkul	025	003	3928
	Fatekharkul_W_05	Fatekharkul Union	Fotekhar Kul	022	003	5555
	Jowarianala_W_06	Joarianala Union	Joarianala	012	005	7259
	Rashidnagar_W_08	Rashid Nagar Union	Dhalichora	014	004	9114
	Chakmarkul_W_08	Chakmarkul Union	Chakmarkul	018	004	8964
	Dakshin_Mithachari_W_01	Dakshin Mithachhari	Dakshin Mithachari	027	001	712

**Table: Proposed RSSC and Neighborhood Market**

Type	Location	Union	Mouza	JL No.	Sheet No.	Plot No.
Proposed Rural Sales Service Center (RSSC)	Idgar_W_05	Idgar Union	Idgar	002	004	4929
	Idgar_W_07	Idgar Union	Idgar	002	006	8192
	Idgar_W_02	Idgar Union	Idgar	002	003	2191
	Garjania_W_03	Garjania Union	Garjania	003	004	1408
	Garjania_W_08	Garjania Union	Garjania	003	011	6702
	Garjania_W_09	Garjania Union	Garjania	003	012	9045
	Kacchapia_W_09	Kachhapia Union	Dakshin Kachhapia	005	005	8521
	Kawarkhop_W_07	Kauarkhop Union	Manirjhil	006	001	803
	Kawarkhop_W_08	Kauarkhop Union	Ukhiarghona	009	003	4265
	Kawarkhop_W_03	Kauarkhop Union	Lot Ukhiarghona	039	005	2102
	Kawarkhop_W_02	Kauarkhop Union	Ukhiarghona	009	001	33
	Kawarkhop_W_04	Kauarkhop Union	Ukhiarghona	009	002	1531
	Khuniapalong_W_02	Khuniapalong Union	Khuniapalong	035	002	122
	Khuniapalong_W_08	Khuniapalong Union	Dariar Dighi	037	005	2757
	Rajarkul_W_02	Rajarkul Union	Rajarkul	025	008	8946
	Rajarkul_W_01	Rajarkul Union	Rajarkul	025	009	10445
	Rajarkul_W_09	Rajarkul Union	Rajarkul	025	002	1897
	Dakshin_Mithachari_04	Dakshin Mithachhari	Dakshin Mithachari	027	004	6124
	Dakshin_Mithachari_01	Dakshin Mithachhari	Dakshin Mithachari	027	001	715
	Dakshin_Mithachari_09	Rajarkul Union	Rajarkul	025	002	1706
	Dakshin_Mithachari_07	Dakshin Mithachhari	Chainda	028	001	1020

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

	Jowarianala_W_01	Joarianala Union	Nandakhali	015	001	56
	Jowarianala_W_02	Joarianala Union	Joarianala	012	002	204
	Rashidnagar_W_09	Rashid Nagar Union	Dhalichora	014	003	6467
	Rashidnagar_W_02	Rashid Nagar Union	Dhalichora	014	002	3151
Neighborhood Market	Chakmarkul_W_09	Chakmarkul Union	Chakmarkul	018	005	11033
	Chakmarkul_W_09	Chakmarkul Union	Chakmarkul	018	005	10073
	Chakmarkul_W_08	Chakmarkul Union	Chakmarkul	018	004	7567
	Fatekharkul_W_04	Fatekharkul Union	Fotekhar Kul	022	003	4682
	Fatekharkul_W_05	Fatekharkul Union	Sreekul	023	000	338
	Fatekharkul_W_06	Fatekharkul Union	Maronglowa	021	002	2411
	Jowarianala_W_09	Joarianala Union	Uttar Mithachhari	019	001	752
	Jowarianala_W_07	Joarianala Union	Joarianala	012	004	4953

**Table: Proposed Health/Clinic**

Type	Location	Union	Mouza	JL No.	Sheet No.	Plot No.
Proposed Health Clinic	Idgar_W_05	Idgar Union	Idgar	002	004	4990
	Idgar_W_07	Idgar Union	Idgar	002	006	8189
	Garjania_W_09	Garjania Union	Garjania	003	012	9666
	Garjania_W_08	Garjania Union	Garjania	003	011	6773
	Garjania_W_04	Garjania Union	Garjania	003	009	4560
	Kacchapia_W_08	Kachhapia Union	Dakshin Kachhapia	005	006	11159
	Kauarkhop_W_07	Kauarkhop Union	Manirjhil	006	001	803
	Kauarkhop_W_09	Kauarkhop Union	Sonaichhari	024	005	936
	Kauarkhop_W_03	Kauarkhop Union	Lot Ukhiarghona	039	004	1911
	Kauarkhop_W_02	Kauarkhop Union	Ukhiarghona	009	001	58
	Kauarkhop_W_04	Kauarkhop Union	Ukhiarghona	009	002	1531
	Kauarkhop_W_08	Kauarkhop Union	Lot Ukhiarghona	039	007	3176
	Khuniapalong_W_02	Khuniapalong Union	Khuniapalong	035	004	1328
	Rajarkul_W_01	Rajarkul Union	Rajarkul	025	009	10679
	Rajarkul_W_09	Rajarkul Union	Rajarkul	025	002	1871
	Dakshin_Mithachari_04	Dakshin Mithachhari Union	Dakshin Mithachhari	027	004	6116
	Dakshin_Mithachari_01	Dakshin Mithachhari Union	Dakshin Mithachhari	027	001	723
	Chakmarkul_W_03	Chakmarkul Union	Chakmarkul	018	003	4324
	Chakmarkul_W_04	Chakmarkul Union	Chakmarkul	018	001	648
	Fatekharkul_W_03	Fatekharkul Union	Fotekhar Kul	022	004	8181
	Fatekharkul_W_03	Fatekharkul Union	Fotekhar Kul	022	004	7793
	Fatekharkul_W_04	Fatekharkul Union	Fotekhar Kul	022	003	4682
	Fatekharkul_W_05	Fatekharkul Union	Sreekul	023	000	99999
	Fatekharkul_W_07	Fatekharkul Union	Maronglowa	021	002	2428
	Fatekharkul_W_08	Fatekharkul Union	Maronglowa	021	001	472
	Fatekharkul_W_06	Fatekharkul Union	Hightupi	020	000	519
	Jowarianala_W_09	Joarianala Union	Uttar Mithachhari	019	001	516
	Fatekharkul_W_09	Joarianala Union	Joarianala	012	004	5557
	Jowarianala_W_01	Joarianala Union	Nandakhali	015	002	757
	Jowarianala_W_02	Joarianala Union	Joarianala	012	002	204
	Jowarianala_W_06	Joarianala Union	Joarianala	012	005	7165

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

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	Rashidnagar_W_08	Rashid Nagar Union	Dhalichora	014	004	9805
	Rashidnagar_W_09	Rashid Nagar Union	Dhalichora	014	003	6467
	Rashidnagar_W_02	Rashid Nagar Union	Dhalichora	014	002	2280

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

### Vulnerability Assessment

**Table: Age Sensitivity**

Age Sensitivity	Frequency
Averagely Sensitive	125
Less Sensitive	268
Moderately Sensitive	18
Mostly Sensitive	2
Not Sensitive	97

**Table: Structure Condition Sensitivity**

Structure Condition Sensitivity	Frequency
Averagely Sensitive	163
Less Sensitive	154
Moderately Sensitive	91
Mostly Sensitive	26
Not Sensitive	104

**Table: Structure Period Sensitivity**

Structure Period Sensitivity	Frequency
	31
Averagely Sensitive	32
Less Sensitive	375
Moderately Sensitive	3
Not Sensitive	97

**Table: Peripheral Impact Sensitivity**

Peripheral Impact Sensitivity	Frequency
Averagely Sensitive	72
Less Sensitive	142
Moderately Sensitive	2
Not Sensitive	322

**Table: Quality Sensitivity**

Quality Sensitivity	Frequency
	115
Averagely Sensitive	48
Less Sensitive	288
Moderately Sensitive	10
Not Sensitive	77

**Table: Final Vulnerability Sensitivity**

Final Vulnerability Sensitivity	Frequency
	137
Averagely Sensitive	5
Less Sensitive	269

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

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Not Sensitive	127
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**Table: Vulnerable Buildings of Ramu Upazila**

Frequency Sensitivity	Sensitivity Sale	Frequency	Percentage
Not Sensitive	0	69	12.83
Less Sensitive	0 to 20	130	24.16
Averagely Sensitive	40 to 60	61	11.34
Sensitive	20 to 40	257	47.77
Moderately Sensitive	60 to 80	21	3.90
Mostly Sensitive	80 to 100	0	0.00
Total		538	100.00

### Action Area Plan

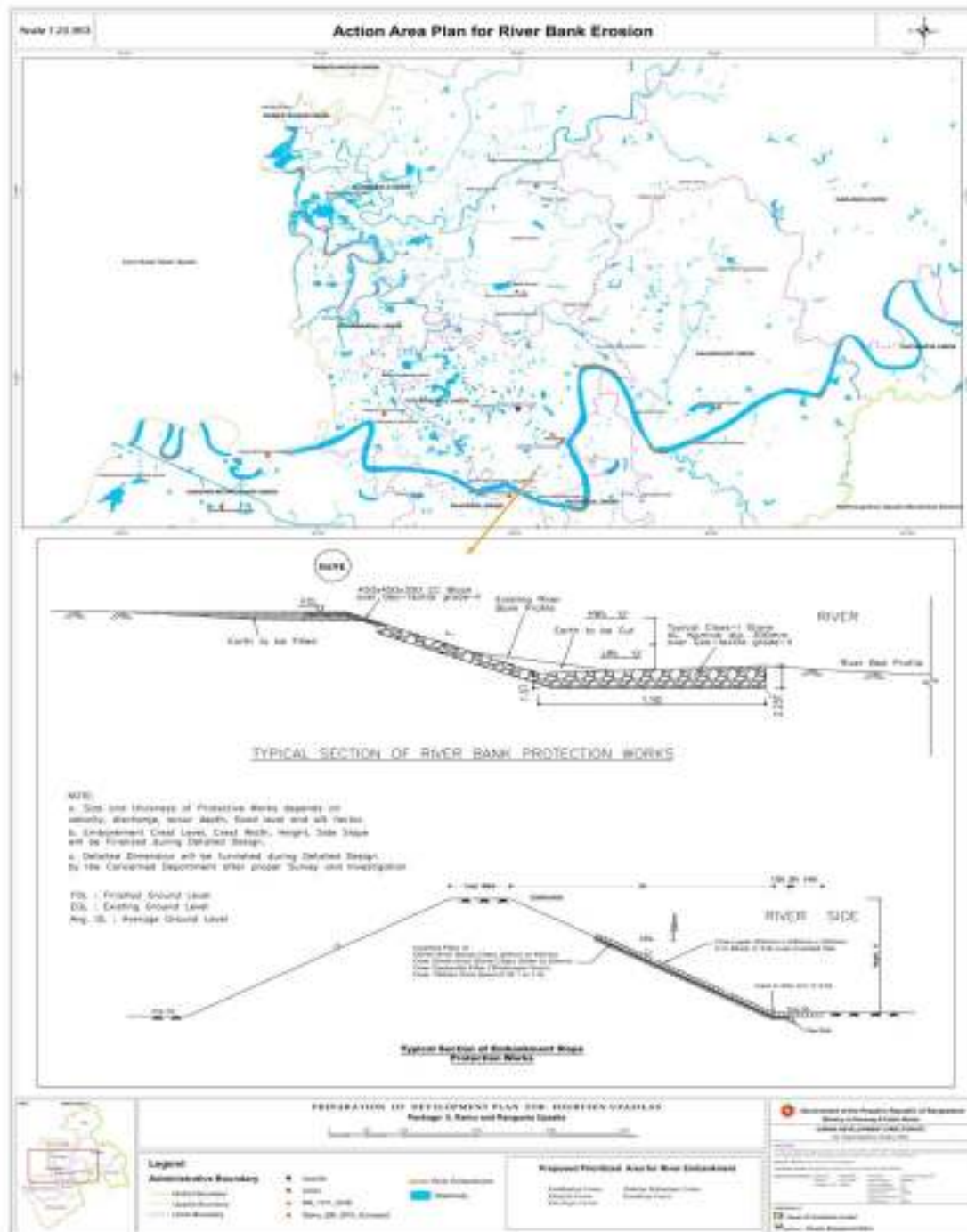
#### River Bank Erosion



## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

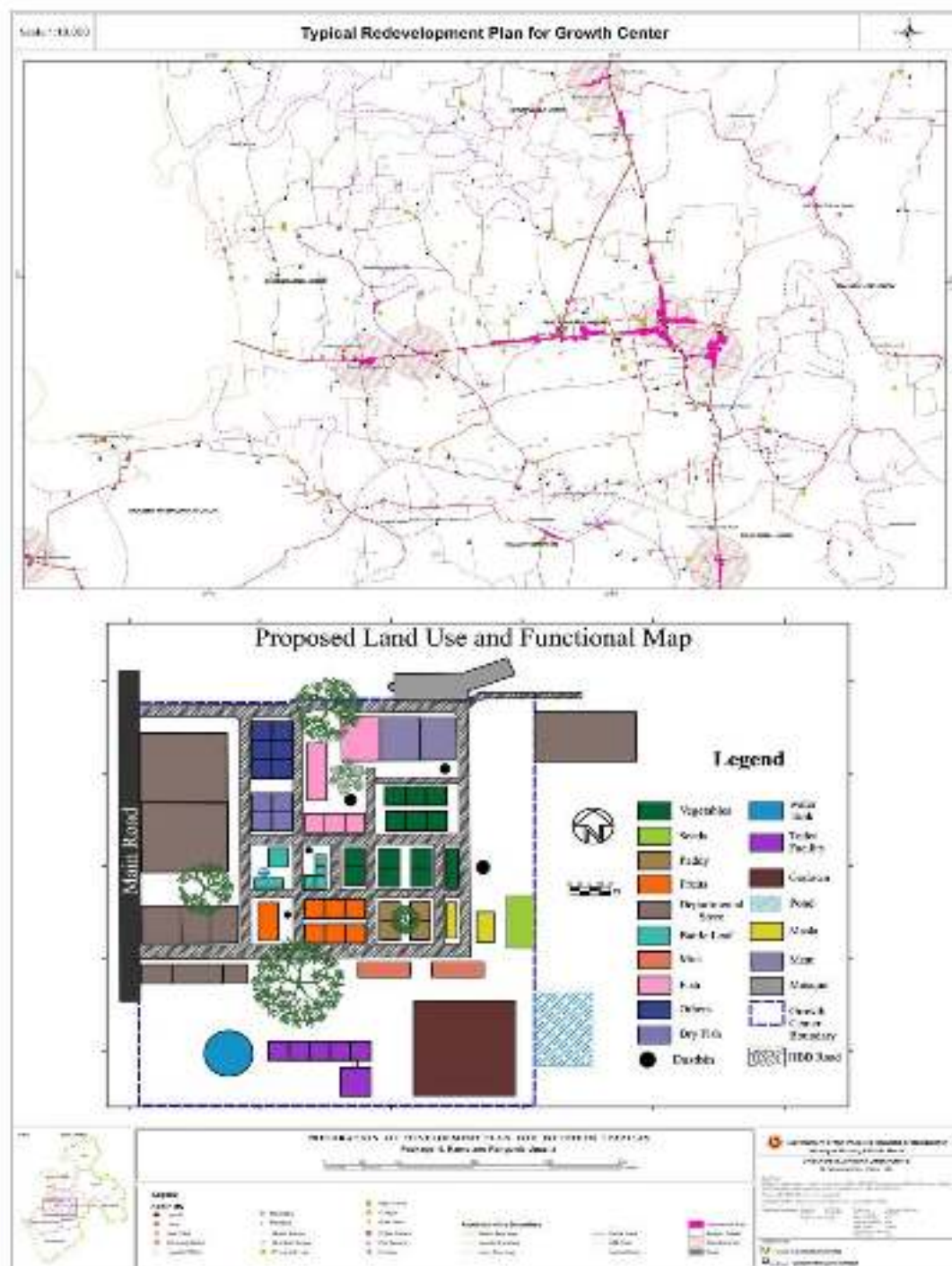


Map : River Bank Erosion Protection

## Final Plan - Ramu Upazila

Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)



Map: Typical Redevelopment plan for growth center

### Preparation of Development Plan for Fourteen Upazilas

Union	Structure Frequency	Average Household	Estimated Population	No. of Low Cost housing Site
Dakshin Mithachhari Union	369	5.8	2148	2
Khuniapalong Union	223	5.6	1254	2
Rajarkul Union	387	5.4	2080	1
Rashid Nagar Union	573	5.5	3131	1

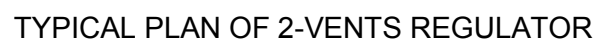


**Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)**



Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

## TYPICAL PLAN OF 1-VENT REGULATOR



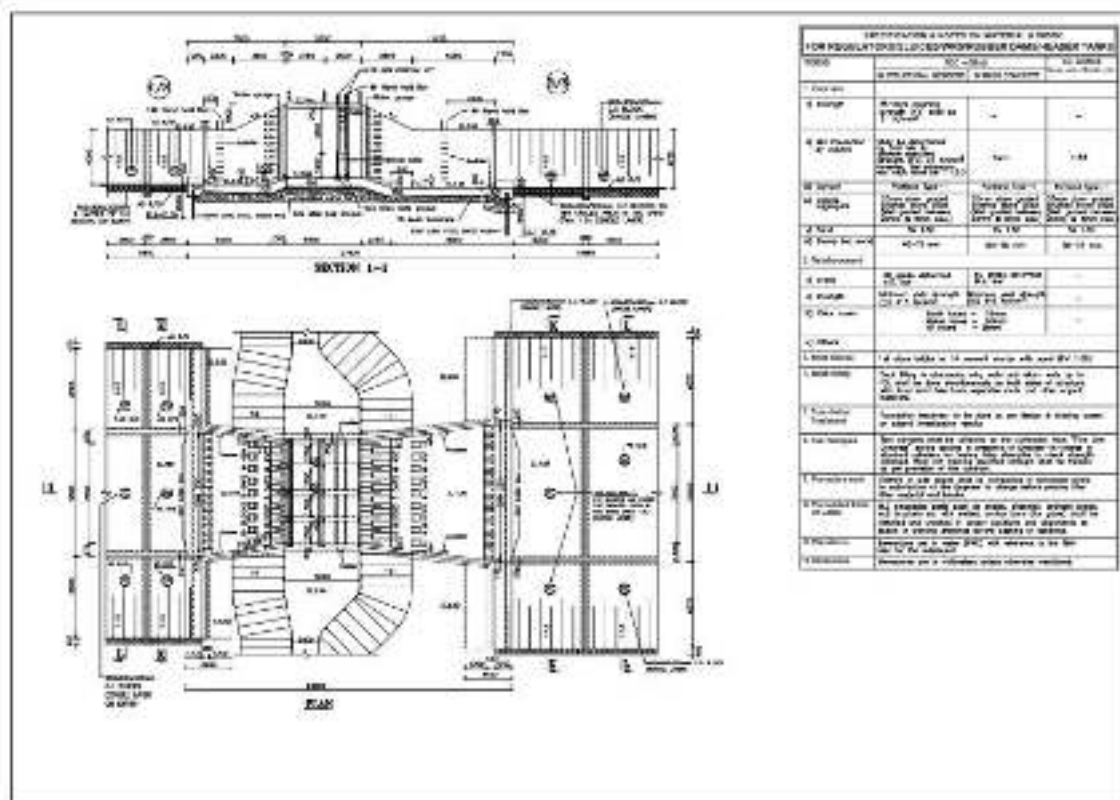


## Final Plan - Ramu Upazila

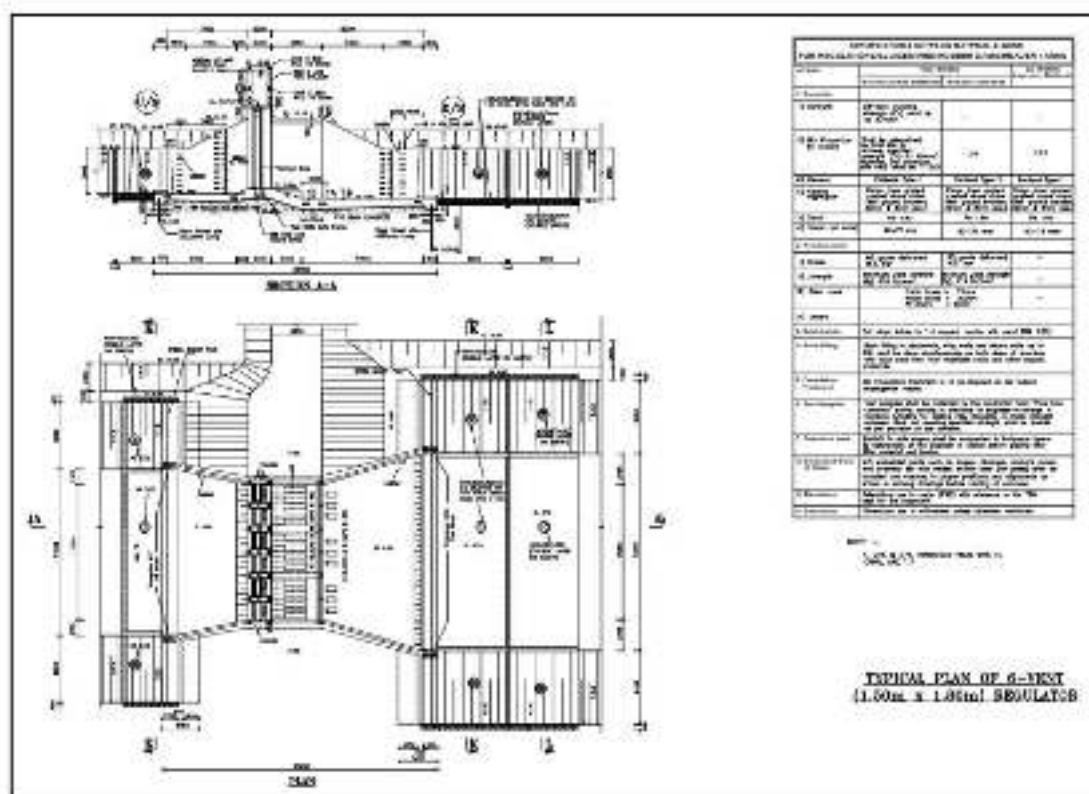
Preparation of Development Plan for Fourteen Upazilas

Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

TYPICAL PLAN OF 4-VENTS REGULATOR



TYPICAL PLAN OF 7-VENTS REGULATOR



**Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)**

**SECTION A-A**

**PLAN**

**TABLE OF MATERIALS AND DIMENSIONS**

ITEM	DESCRIPTION	UNIT	QUANTITY
1	0-vent	1	1
2	Drainage channel	m	11.6
3	Water retention structure	m	1.6
4	Concrete	m <sup>3</sup>	1.6
5	Reinforcement	m <sup>2</sup>	1.6
6	Gravel	m <sup>3</sup>	1.6
7	Soil	m <sup>3</sup>	1.6
8	Water	m <sup>3</sup>	1.6
9	Drainage	m	1.6
10	Water retention	m	1.6
11	Concrete	m <sup>3</sup>	1.6
12	Reinforcement	m <sup>2</sup>	1.6
13	Gravel	m <sup>3</sup>	1.6
14	Soil	m <sup>3</sup>	1.6
15	Water	m <sup>3</sup>	1.6
16	Drainage	m	1.6
17	Water retention	m	1.6
18	Concrete	m <sup>3</sup>	1.6
19	Reinforcement	m <sup>2</sup>	1.6
20	Gravel	m <sup>3</sup>	1.6
21	Soil	m <sup>3</sup>	1.6
22	Water	m <sup>3</sup>	1.6
23	Drainage	m	1.6
24	Water retention	m	1.6
25	Concrete	m <sup>3</sup>	1.6
26	Reinforcement	m <sup>2</sup>	1.6
27	Gravel	m <sup>3</sup>	1.6
28	Soil	m <sup>3</sup>	1.6
29	Water	m <sup>3</sup>	1.6
30	Drainage	m	1.6
31	Water retention	m	1.6
32	Concrete	m <sup>3</sup>	1.6
33	Reinforcement	m <sup>2</sup>	1.6
34	Gravel	m <sup>3</sup>	1.6
35	Soil	m <sup>3</sup>	1.6
36	Water	m <sup>3</sup>	1.6
37	Drainage	m	1.6
38	Water retention	m	1.6
39	Concrete	m <sup>3</sup>	1.6
40	Reinforcement	m <sup>2</sup>	1.6
41	Gravel	m <sup>3</sup>	1.6
42	Soil	m <sup>3</sup>	1.6
43	Water	m <sup>3</sup>	1.6
44	Drainage	m	1.6
45	Water retention	m	1.6
46	Concrete	m <sup>3</sup>	1.6
47	Reinforcement	m <sup>2</sup>	1.6
48	Gravel	m <sup>3</sup>	1.6
49	Soil	m <sup>3</sup>	1.6
50	Water	m <sup>3</sup>	1.6
51	Drainage	m	1.6
52	Water retention	m	1.6
53	Concrete	m <sup>3</sup>	1.6
54	Reinforcement	m <sup>2</sup>	1.6
55	Gravel	m <sup>3</sup>	1.6
56	Soil	m <sup>3</sup>	1.6
57	Water	m <sup>3</sup>	1.6
58	Drainage	m	1.6
59	Water retention	m	1.6
60	Concrete	m <sup>3</sup>	1.6
61	Reinforcement	m <sup>2</sup>	1.6
62	Gravel	m <sup>3</sup>	1.6
63	Soil	m <sup>3</sup>	1.6
64	Water	m <sup>3</sup>	1.6
65	Drainage	m	1.6
66	Water retention	m	1.6
67	Concrete	m <sup>3</sup>	1.6
68	Reinforcement	m <sup>2</sup>	1.6
69	Gravel	m <sup>3</sup>	1.6
70	Soil	m <sup>3</sup>	1.6
71	Water	m <sup>3</sup>	1.6
72	Drainage	m	1.6
73	Water retention	m	1.6
74	Concrete	m <sup>3</sup>	1.6
75	Reinforcement	m <sup>2</sup>	1.6
76	Gravel	m <sup>3</sup>	1.6
77	Soil	m <sup>3</sup>	1.6
78	Water	m <sup>3</sup>	1.6
79	Drainage	m	1.6
80	Water retention	m	1.6
81	Concrete	m <sup>3</sup>	1.6
82	Reinforcement	m <sup>2</sup>	1.6
83	Gravel	m <sup>3</sup>	1.6
84	Soil	m <sup>3</sup>	1.6
85	Water	m <sup>3</sup>	1.6
86	Drainage	m	1.6
87	Water retention	m	1.6
88	Concrete	m <sup>3</sup>	1.6
89	Reinforcement	m <sup>2</sup>	1.6
90	Gravel	m <sup>3</sup>	1.6
91	Soil	m <sup>3</sup>	1.6
92	Water	m <sup>3</sup>	1.6

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