Government of the People's Republic of Bangladesh

Development Plan of Ramu Upazila (2013-2033)

June 2018

Urban Development Directorate (UDD)

Ministry of Housing and Public Works

রেজিস্টার্ড নং ডি এ-১

বাংলাদেশ গেজেট

অতিরিক্ত সংখ্যা

কর্তৃপক্ষ কর্তৃক প্রকাশিত

তারিখঃ

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

গৃহায়ন ও গণপূর্ত মন্ত্রণালয়

পরিকল্পনা শাখা-৩

প্রজ্ঞাপন

তারিখ, ...

নং ..... - গণপ্রজাতন্ত্রী বাংলাদেশ সরকারের Organizational Set up, Phase-II, (Department/Directorates and Other Organizations under them), Volume XV (Ministry of Works), Chapter VI (Urban Development Directorates, June, 1983 এর Allocation of Functions এর ক্ষমতাবলে সরকার "প্রিপারেশন অব ডেভেলপমেন্ট প্ল্যান ফর ফোরটিন উপজেলাস প্রকল্প" এর রামু উপজেলা, কক্স-বাজার এর জন্য নতুন Development Plan (Sub-Regional Plan, Structure Plan, Urban Area Plan, Rural Area Plan and Action Area Plan) যথাযথ প্রক্রিয়া অনুসরণ করিয়া অনুমোদন করিয়াছে।

অতএব, সরকার অত্র প্রজ্ঞাপন দ্বারা রামু উপজেলা, কক্স-বাজার এর জন্য প্রনীত নতুন Development Plan (Sub-Regional Plan, Structure Plan, Urban Area Plan, Rural Area Plan and Action Area Plan) এর অনুমোদনের বিষয়টি অনুমোদিত Development Plan সহ সংশ্লিষ্ট সকলের অবগতির জন্য প্রকাশ করিল।

বিশেষ দ্রষ্টব্য : অনুমোদিত ডেভেলপমেন্ট প্ল্যান ও প্রতিবেদনের কপি নগর উন্নয়ন অধিদপ্তর, ৮২, সেগুনবাগিচা, ঢাকা-১০০০ এবং জেলা প্রশাসক, কক্স-বাজার ও উপজেলা নির্বাহী কর্মকর্তা, রামু এর কার্যালয়ে জনসাধারণের পরিদর্শনের সুবিধার্থে সংরক্ষিত থাকবে। তাছাড়া উক্ত ডেভেলপমেন্ট প্ল্যানটি নগর উন্নয়ন অধিদপ্তরের ওয়েবসাইট (www.udd.gov.bd) এর 14 Upazila Project Link এ সর্বসাধারনের পরিদর্শন ও ডাউনলোড করার জন্য উম্মুক্ত থাকবে।

রাষ্ট্রপতির আদেশক্রমে

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....., উপ-পরিচালক, বাংলাদেশ সরকারি মুদ্রণালয়, তেজগাঁও, ঢাকা কর্তৃক মুদ্রিত।
....., উপ-পরিচালক, বাংলাদেশ ফরম ও প্রকাশনা অফিস,
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Preface

This is a great pleasure for all concerned that the **"Preparation of Development Plan for Fourteen Upazilas"** has been successfully completed by June, 2018 under the supervision of Urban Development Directorate (UDD), Ministry of Housing and Public Works, Government of the People's Republic of Bangladesh. This Development Plan for the period of 20 years (2013-2033) will serve as a guideline for the future Development together with land use control, effective development and management of the Upazila. This Development Plan comprises of Five-tier Plan in a hierarchical order. Those are Sub-Regional Plan for 20 years, Structure Plan for 20 years, Urban Area Plan for 10 years, Rural Area Plan for 10 years and Action Area Plan for 5 Years.

UDD engaged Consulting firm "Joint Venture of House of Consultants Ltd. (HCL) and Disaster Management Watch (DM Watch)" for the preparation of the development plan for Rangunia Upazila. The Consultants have successfully completed the most essential tasks such as socio-economic survey, PRA, Agriculture Survey, formal and informal Survey, physical feature survey, land use survey, traffic and transport survey, Hydrological Survey and Geological Survey and series of consultation meetings with stake holders for the preparation of the Plan; and then formal public hearing has been made to register public opinions and awareness. Moreover, engineering geological data has been interfaced with land use data to prepare risk sensitive land use plan. The entire works have been completed through participatory planning approach with the Upazila and related stake-holders. During implementation period if needed any change of the land use plan may be allowed with the approval of the appropriate authority.

Urban Development Directorate (UDD) acknowledges the full support and cooperation of Rangunia Upazila Authority, Stake-holders and Civil Societies with the deepest gratitude.

Finally, I appreciate this Plan Book as an important step forward in providing knowledge and tools for planning professional as well as guideline for risk sensitive land use planning for Rangunia Upazila.

Dr. K. Z. Hossain Taufique

Director

Urban Development Directorate

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EXECUTIVE SUMMARY

Urban and rural development plan offers visionary, intelligent solution for the future oriented development opportunities in the locality of urban and rural areas. The development plan is the main public statement of planning policies for the local community. It sets out the land use, amenity and development objectives and policies of the planning authority for short, medium and long-term basis. The plan consists of a written statement of objectives and a map or series of maps along with separate land schedule. The main objectives of development plan of urban or rural areas are (i) reserving, improving and extending amenities; (ii) provision of utility services, waste recovery and disposal facilities; (iii) zoning of areas for residential, commercial, industrial, agricultural, forestry, flood plains etc. purposes; (iv) provision of accommodation for travelers and provision of services for the community. Development plans will also usually include development objectives related to the control of use of buildings, community planning, reservation of land, preservation, conservation etc.

Earlier, development in Bangladesh took place in and around a few major cities. Therefore, the benefits of development were enjoyed by the limited urban people. The small town called secondary town at Upazila headquarter or Paurashava situated at the urban-rural interface having some form of urban infrastructure and the rural population have the most access to these town. Therefore, the development of the town/urban centers in terms of the improvement and expansion of ranges of the services will directly benefit the population of their hinterlands and at the same time will be more economically feasible. According to the Sixth Five Year Plan (SFYP), the main goal of the government's land use policy and management is to ensure best possible use of land resources and delivery of land related services to the people through modernized and efficient land administration for sustainable development including accelerated poverty reduction.

Ramu Upazila with an area of 384.409 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 Ramu has Archaeological heritage and relics Hindu Temple and Buddhist Keyang at Ramkot, Buddhist Keyang at Lamarpara. The biggest of the Buddha images hitherto, thirteen feet high bronze image of Buddha was found at Ramu. 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. The area of Ramu Upazila is about 391.71sq.km. (BBS 2011) but found 384.40 sq. km. based on the Georeferenced Mouza Map. Ramu Upazila has 11 Unions, 102 villages and it has total 39 nos. of Mouza.Total population of Ramu Upazila is 266640 (BBS 2011).Out of total population of Ramu Upazila, the numbers of male and female are 135000 and 131640 nos. The distribution of main sources of income of the people in Ramu Upazila are agriculture, industry and other services where 23467people engage in agricultural activities, 2214 people in industrial services and 6348 people are engaged in other services

Thetotal length of road is about 989.98 km including pucca (162.77 km), HBB (248.18 km) and katcha road (579.04km). There are one major river namely that is Bakkhali river and nested by a series of distributaries and tertiaries.

The development plan is to be prepared for the accommodation in planned and better way for the increased population. Therefore, population projection for 20 years is the prime and one of the important parameters for the preparation of development plan.

Development Plan of Ramu Upazila was prepared based on the four stages: a) Data Collection & Survey Works; b) Preparation of Thematic Maps based on collected data and survey works; c) Preparation of Suitability Maps for planning; d) Preparation of Development Plan representing through a series of Maps.

There are 19 Thematic Maps were prepared based on 11 types of survey during the survey stage. Each survey has distinct output. The outputs of survey works were presented in the form of Thematic Maps. The Thematic Maps are a) Topographic: Slope, DEM, Contour; b) Geological and Geo-physical: Peak Ground Acceleration (PGA), Shear Wave, Foundation Depth, Micro-zonation; c) Physical Features: Land use, Vegetation, Ecology, Road Type and Width, Connectivity; d) Agriculture: Cropping Pattern, Cropping Intensity; e) Demographic: Population Density based on Year 2011 and Year 2033; f) Hydrology: Water Source, Flood Scenarios and Inundation.

Suitability analysis is a prime requirement for the preparation of development plan of any urban and rural areas. There are 5 Suitability Maps were prepared after analyzing the suitability of the existing features. Through this analysis suitable area for agriculture, urban and infrastructure development were identified. The area that land slope is more than 5% is not considered for any infrastructure development plan except preservation for hilly or forest areas.

In sub-regional plan, the main focus was to make Ramu Upazila well-connected in terms of communication with the surrounding upazilas. Ramu Upazila is a hilly based upazila. The communication among the surrounding upazila will help to grow the economy of this area through transportation of goods, opportunity of jobs, Conservation of natural resources, formation of many business centres, expansion of education facilities etc. 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.

The structure plan prepared for the Ramu Upazila in the light of national planning policies and other guidelines covering a period of 20 years. The structure plan of Ramu Upazila is presented through Map and statistical table.The total area of Ramu Upazila is 384.19 sq.km. The total area is covered under structure plan.

The area under structure plan has been sub-divided into 12 strategic planning zones. Within the 13 zones, some issues were identified for policies of plan preparation. The plan contains policies for the following issues: a) Restricted Special; b) Urban Settlements; c) Rural Settlements; d) Agriculture; e) Circulation Network; f) Flood Flow, Water Body and Water Supply Protection Zone; g) Restricted Military; h) Geology; i) Tourism Development; j) Economic Development.

Proposed facilities have selected based on the existing facilities, projected population, PRA demand and planning standard that are important for the development of the Upazila for the next 20-year. The locations of the proposed facilities have been indicated in the report.

Proposed Facilities of Ramu Upazila	
Transportation	Truck Stand and Freight Zone, Bus Stand.
Trade	Retail Trade Zone, Whole sale Trade Zone, Dairy Food Zone, Fruit processing Zone, Poultry and Fish Processing Zone
Housing	Low Income/Landless Affordable Housing
Economy	Economic Zone
Tourism	Hotel Motel Zone
Amusement and Park	Amusement Park, Tourist spot
Treatment Plant	Water Treatment Plant, Sewage Treatment Plant, Overhead Tank, Solid Waste Disposal Site
Play Groundand Monument	Stadium, Monument
Proposed Educational Facilities	Primary School- 3 3 nos., High School – 14 nos., College-1nos.
Proposed Commercial Facilities	Neighborhood Market-8 nos., Rural Sales &Service Centre (RSSC)-25nos.
Proposed Health Facilities	Health center/ Clinic- 20nos.
Proposed Transportation Facilities	Tempo CNG Stand-11 nos.
Proposed Bridge/Culvert	Culvert- 16 nos., Bridge-3 nos.

During PRA in the Ramu Upazila, local people demanded some immediate actions against river bank protection, flood protection, embankment slope protection, construction of regulators, growth centres and low cost housing for landless people. The mentioned development activities are to be implementedby the concerned government agencies like BWDB, LGED for Ramu Upazila on priority basis within the first five years of the plan period.

- Protection for river bank erosion;
- Embankment for river flood protection and embankment slope protection;
- Redevelopment plan for growth centres;
- Construction of Regulators for flood control, drainage and water management;
- Low cost housing.

This contingency plan for natural disasters summarizes the Government's alerting systems and organizational framework for responding to such disasters. Functions and responsibilities of Government departments and other bodies in the event of natural disasters including those resulting from severe weather conditions are also set out in this Contingency Plan. The following possible aspects are examined under contingency plan:

- Building Vulnerability Assessment
- Existence of Natural Hazards

In building vulnerability assessment had done to detect vulnerable buildings from existing physical structure survey. In Ramu Upazila, vulnerability assessment done upon 538 buildings that were more than one story among totals36025 structures. Among 538 structures, 5 structures were found as averagely sensitive, 269 as less sensitive, and 126as not sensitive. So, retrofit measure should be taken to make earth quake resistant structure according to its scale of sensitivity.

Four types of hazards have been identified for the project area, Ramu which are categorized in planning process according to responsive stages to confine under a contingency plan. They are:

- Earthquake
- Landslide
- Flood
- Cyclone

On the other hand, installation of lighting arrestor due to thunder storm is utmost necessary to save human lives. Many people died due to thunder storm. Power Development Board (PDB) or Rural Electrification Board (REB) may study regarding this issue and may perform detailed design for construction of tower in the open field to save the lives.

The implementation modality for the proposed structure plan, urban and rural area plan and action area plan could be implemented by the concerned government agencies like BWDB, LGED, BADC, Pourashava, NHA, BSCIC, BEPZA, DPE etc. and details implementation modality.

The development plan is a blueprint for the planning and development of urban or rural areas for the next 20-years. It sets out where utility services (roads, water supplies, sewerage etc.) are to be provided and it zones land for particular purposes (housing, shopping, schools, factories etc.). When land is zoned for a particular type of development in the development plan, this is a clear indication that a planning permission for this form of development may be obtained. Zoning may also indicate restrictions on development. The plan may list for preservation, particular natural amenities (views, trees, landscape etc.) and particular buildings, features or sites of artistic, architectural or historic interest. Development proposals which might alter or interfere with any of these amenities will be restricted, and works which might otherwise be exempted development will require planning permission.

Glossary of Terms

Action Area Plan: The Action Area Plan 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.

Bazar: Bazar is a Market Place almost synonym of hat with some advanced facilities in comparison to hat. Generally, in a hat, there may not be any permanent business/trading house, shops. But in a bazar, there are some permanent trading houses, shops and these shops are open every day and buyers and sellers attend the bazar from morning till late evening.

Buffer: A zone of user - specified distance around a point, line or area.

Building Code: Regulations established describing design, building procedures and construction details for new homes or homes undergoing rehabilitation.

Catchment: The area contributing surface water to a point on a (Drainage) Area drainage or river system, which may be divided in to sub-catchments.

Climate Change: The slow variations of climatic characteristics over time at a given place. Usually refers to the change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is, in addition to natural climate variability, observed over comparable periods.

Community Service: Community service covers a wide range of urban basic services, like, park, play field, eidgah, health and education services.

Contingency Plan: The problematic structures in project area found to be vulnerable and risky. For these structures a contingency plan has been prepared to make sure safety of the structures in case of earthquake.

Contour: The form of the land. Contour lines are map lines connecting points of the same ground elevation and are used to depict and measure slope and drainage. Spot elevations are points of a specific elevation.

Contour Interval: Difference in elevation between two successive Contour lines. The interval at which contours are drawn on a map depends on the amount of the relief depicted and the scale of the map.

Coordinates: Pairs of numbers expressing horizontal distances along orthogonal axes, or triplets of numbers measuring horizontal and vertical distances.

Detailed Area Plan: Detailed Area Plan is the last tier of the present plan package (Structure Plan, Master /Urban Area Plan and Detailed Area Plan) adopted in Bangladesh which gives detailed development plan of an area at plot to plot level. It also provides a land use zoning plan superimposed on mouza map. A detailed area plan is prepared for approximately three to five years, that is, the plan must be implemented during this period.

Because, spatial changes in urban areas, particularly, in large cities takes place very rapidly. If the DAP is not implemented within five years it would turn obsolete, and a new plan will have to be prepared to accommodate new changes. So, it should be executed as soon as possible. A detailed area plan can be both, participatory or non-participatory. Participatory plans are those plans when it is prepared with direct participation of the local people.

Development: The process whereby a local planning authority Control decides whether a planning application meets the requirements of planning policy, particularly as set out in development plans. The prime function of the Development Control section is to determine planning applications in the public interest, in accordance with planning legislation and the local plan that has been adopted by the plan approving authority.

DEM: The representation of continuous elevation values over a topographic surface by a regular array of z-values, referenced to a common datum. DEMs (Digital Elevation Model) are typically used to represent terrain relief.

Encroachments: A structure that extends over the legal property line of other people or public land.

EIA: It is a detailed study based on Environmental Assessment (EA) to determine the type and level of effects an existing facility is having, or a proposed project would have, on its natural environment.

GIS: A geographic information system merges information in a computer database with spatial coordinates on a digital map.

GPS: Global Positioning System used to determine latitude, longitude, and elevation anywhere on or above the Earth Surface. This system involves the transmission of radio signals from a number of specialized satellites to a hand-held receiving unit. The receiving unit uses triangulation to calculate altitude and spatial position on the Earth Surface.

Growth Centre: Hats and bazars are the trading centers of the rural Bangladesh. Considering the importance of their economic role in national economy, government has decided to develop infrastructure facilities of some selected hats and bazars in every upazila through LGED. The markets which are already provided with such extra infrastructure facilities are called growth center.

Hat: The term ‘hat’ is very much known to all from time immemorial throughout the country which is a temporary rural market place. In rural Bangladesh farmers and other producers/manufactures used to sit with their surplus products in a suitable place having comparatively better communication system with surrounding villages to exchange these goods. This suitable place is called hat where generally on fixed days sellers and buyers get together and exchange goods and services. This gathering place is developed gradually by the local people at the beginning. The Hatis a rural trading center.

Household: Describes group of people who live in the same house and share food from the same kitchen. Household is similar to a family, except that household members may not have blood relationship.

Katcha: Impermanent structure/ building materials.

Land Use Zoning: Land use zoning plan can be a single plan or it can be devised as a part of master plan. In land use zoning plan the entire area under planning is sub-divided into suitable use zones according to their potentiality for that particular use. Accordingly planning permits are given to developers. Land use helps a city grow maintaining environmental sanctity ensuring livability.

Land Development: Re-shaping land to make better use of it. All planned and unplanned development on land is called land development. This term is usually used for housing development in urban areas.

Local Road: Those Roads are provided at local level to give access to houses and other establishments. It is the lowest level of road hierarchy.

Master Plan: It is the 2nd tier of the three level urban plans. It is prepare for the main city and its surroundings. Its development proposals are more detailed and prepared in map and report forms. It also contains a land use zoning map.

Mouza: Mouza is the smallest unit of Land Survey System with a unique number called Jurisdiction List Number (J.L. No.)

Mode of Transport: Four ways are included in the mode of transport. They are Roadway or Highway, Railway, Waterway, and Airway.

National Highway: Highway is a public road, especially a more major road connecting two or more destinations. National Highways are the primary long-distance roadways. Connect national capital with state capital, major port towns, border areas etc. Most are maintained by the Government. Connecting the neighboring countries is also called the National Highway.

Paurashava/Pourashava: Paurashava/Pourashava is the local name of the municipality. The incorporated area administered by the government as urban area under the Paurashava Ordinance 2008 is considered as the paurashava.

Population Projection: Make future estimation of population using well established and scientifically developed formula.

Pucca: Permanent construction/structure using bricks, cement etc. Right of Way: The entire space reserved for use of road. Initially road is developed in a part of the space, but gradually with the pace of urbanization the entire reserved space is used for road and footpath.

Road Hierarchy: The hierarchy of roads categorizes roads according to their functions and capacities.

Rural Area Plan: Rural Area Plan (RAP) provides a mid-term strategy for 10 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 etc.

Structure Plan: Structure plan develops broad strategies for managing and promoting efficient medium- to long-term urban development. The structure plan integrates economic, physical and environmental planning objectives, providing a framework for development activities in the area. It also indicates the direction and extent of urban growth over a period of next 20 years.

Sub-Regional Plan: It is the document of plan package which determines a long-term vision for the development of an area

Shoulder: Shoulders are strips provided on both the sides of the carriage way. It serves as parking place for vehicles which have developed some defect and need parking.

Solid Waste: Non-liquid waste materials that have been discarded. It may be classified by point of origin (such as agricultural waste, industrial waste, domestic waste or construction waste) or by the kind of waste involved (such as rubbish, ashes, garbage, and special waste).

Structure Plan: Structure Plan is the 1st tier plan of the three level plan currently prepared for urban centres in Bangladesh. It is a policy plan and not a plan in maps. Future urban development policies are written down in the plan report that serve as the framework for subsequent lower level plans, like, master plan/urban area plan and detailed area plan. Major development locations may be symbolically indicated in structure plan.

Suitability Analysis: The suitability is a GIS based process for evaluating the suitability of land for development.

Traffic Volume: Number of vehicles passing a particular road per unit time at a specified time is called Traffic volume.

Thematic Map: A thematic map is a type of map specifically designed to show a particular theme connected with a specific geographic area.

Upazilla/Thana: Sub-District administrative area.

Union: Smallest local administrative unit of rural area which is composed of mouzas and villages. A union has a union parishad.

Urban Fringe Area: Outskirt areas of an urban center. These areas are usually being developed. They low density of population and structure and lack physical infrastructure, particularly road.

Urban Area Plan: It provides an interim mid-term strategy for 10 years and covers for the development of urban areas within the project area. Generally, Urban Area Plan contains an

explanatory report, resource maps, interim management report, planning rules, urban area plan and a multi-sectoral investment program.

Village: Smallest geographic area of rural area. A village may be same as mouza or there may be more than one village in a mouza.

Vulnerability Analysis: To analysis the vulnerable condition of buildings in the project area different criteria have been identified. These are: structure condition, structure age, historical time period, peripheral impact of structure. Depending on these criteria vulnerable buildings have been identified.

Ward: Smallest local administrative unit of urban area. For the operational convenience, Municipalities are divided into three or more wards. The ward boundaries are specified by gazette notification.

Zila/District: District administrative area.

Unit of Equivalence

1 lakh = 1,00,000

1 million = 10,00,000

1 crore = 1,00,00,000

1 katha = 0.05 bighas =1.65 dec.=66.9 sq.m. =720 sq. ft.

1 bigha = 20 kathas = 33 dec = 0.33 ac.

1 acre (ac) = 3 bighas=4000 sq.m.=60.50 kathas=100 dec

1 hectare (ha) = 2.47ac. = 7.5 bighas = 10,000 sq. m.

1 square metre (sq. m.) = 1.20 sq. yards = 10.76 sq. ft.

1 square kilometre (sq. km.) = 247.1 ac. = 100 ha.

1 square mile (sq. mile) = 259 ha. = 640 ac. = 2.59 sq. km.

1 yard = 3 feet = 0.9m

1 metre = 3.281 feet

1 kilometre = 1000m. = 0.62 miles

1 mile = 1760 yards = 1.61 km.

1MW = 1000 KW = 106 watts

1 Nautical mile = 1.854 mile

LIST OF ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
ADP	Annual Development Plan
BBS	Bangladesh Bureau of Statistics
BIWTA	Bangladesh Inland Water Transport Authority
BM	Bench Mark
BNBC	Bangladesh National Building Code
BRTA	Bangladesh Road Transport Authority
BSCIC	Bangladesh Small & Cottage Industries Corporation
CBO	Community Based Organization
CNG	Compressed Natural Gas
CS	Cadastral survey
dBase	Data Base
DC	District Commissioner
DEM	Digital Elevation Model
DAP	Detailed Area Plan
DLRS	Directorate of Land Records and Survey
DoE	Department of Environment
DPHE	Directorate of Public Health & Engineering
DTM	Digital Terrain Models
e.g	For Example
EIA	Environmental Impact Assessment
FAR	Floor Area Ratio
FGD	Focus Group Discussion
GCP	Ground Control Point
GIS	Geographic Information System
HQ	Head Quarter
i.e.	That is
LGED	Local Government Engineering Department
LGD	Local Government Division
MDG	Millennium Development Goals
MOFDM	Ministry of Flood and Disaster Management
MSL	Mean Sea Level
NHA	National Housing Authority
NGO	Non Government Organization
NMV	Non-motorized Vehicle
O-D	Origin and destination Survey
PCU	Passenger Car Unit
PRSP	Poverty Reduction Strategy Paper
PWD	Public Works Department
RHD	Roads and Highway Department
ROW	Right of Way
RTK-GPS	Real Time Kinematics Global Positioning System

SFYP	Sixth Five Year Plan
SOB	Survey of Bangladesh
SP	Structure Plan
TOR	Terms of Reference
TS	Total Station
TVS	Traffic Volume Survey
UDD	Urban Development Directorate
UNDP	United Nations Development Programme
UAP	Urban Area Plan
UP	Union Parishad
UZ	Upazila Parishad
WDB	Water Development Board

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 per cent since independence, at a time when the national population growth was 2.2 per cent. As a result, urban population has grown six-fold, compared with a 70 per cent 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-1.1: 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
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	**134**	**1.37**	**28.00**	**28.40**	**34.96**	**3.00**

Source: Government of Bangladesh: BBS, Population and Housing Census 2011

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 livable.

1.2 Objectives

According to the Terms of Reference the objectives of Ramu 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 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, soild 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 constrains 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.
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 Ramu 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.
- Undertake initiatives 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.

- To provide 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.
- 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 Master Plan is the prerequisite. It will guide the future development of this area. 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 Ramu 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 Plan and Ward Action Plans for the project area.

Considering the above scope of services and to prepare an efficient Development Plan for Ramu 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.
- 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.
- 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.

1.5 Structure of the Report

This final report incorporates eleven chapters. First chapter provides an introduction and discusses about the background of the plan preparation. The second chapter illustrates the study area of Ramu Upazila. Third chapter reviews the development related polices, 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. Chapter four illustrates the 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 gives an idea about employment structure of Ramu, whether changes in employment in this region is increasing or decreasing by the analysis of shift-share components. Chapter five reviews planning standards and chapter six implies the total technical process of planning preparation. Chapter seven gives a review about the components of planning which are sub-regional, structure, urban, rural and action area plans. Chapter 8 addresses the contingency planning. Chapter 9 address Sustainable development goals where all development works are related to 12 sustainable development goals. Chapter 10 addresses implementation modality and land use control. Chapter eleven concludes the report suggesting a future guideline. Appendices A, B, C, D represents all detailed description of working processes. Appendix-E represents fact sheets for all thematic maps and structure plans are also given in the respective chapters sequentially. Appendices F, G, H, I, J, K, L address RTK deviation, all minutes of public hearing, public consultation, workshops, TMC on draft plan ,final plan and Tofsil.

CHAPTER 2

STUDY AREA PROFILE

2.1 Introduction

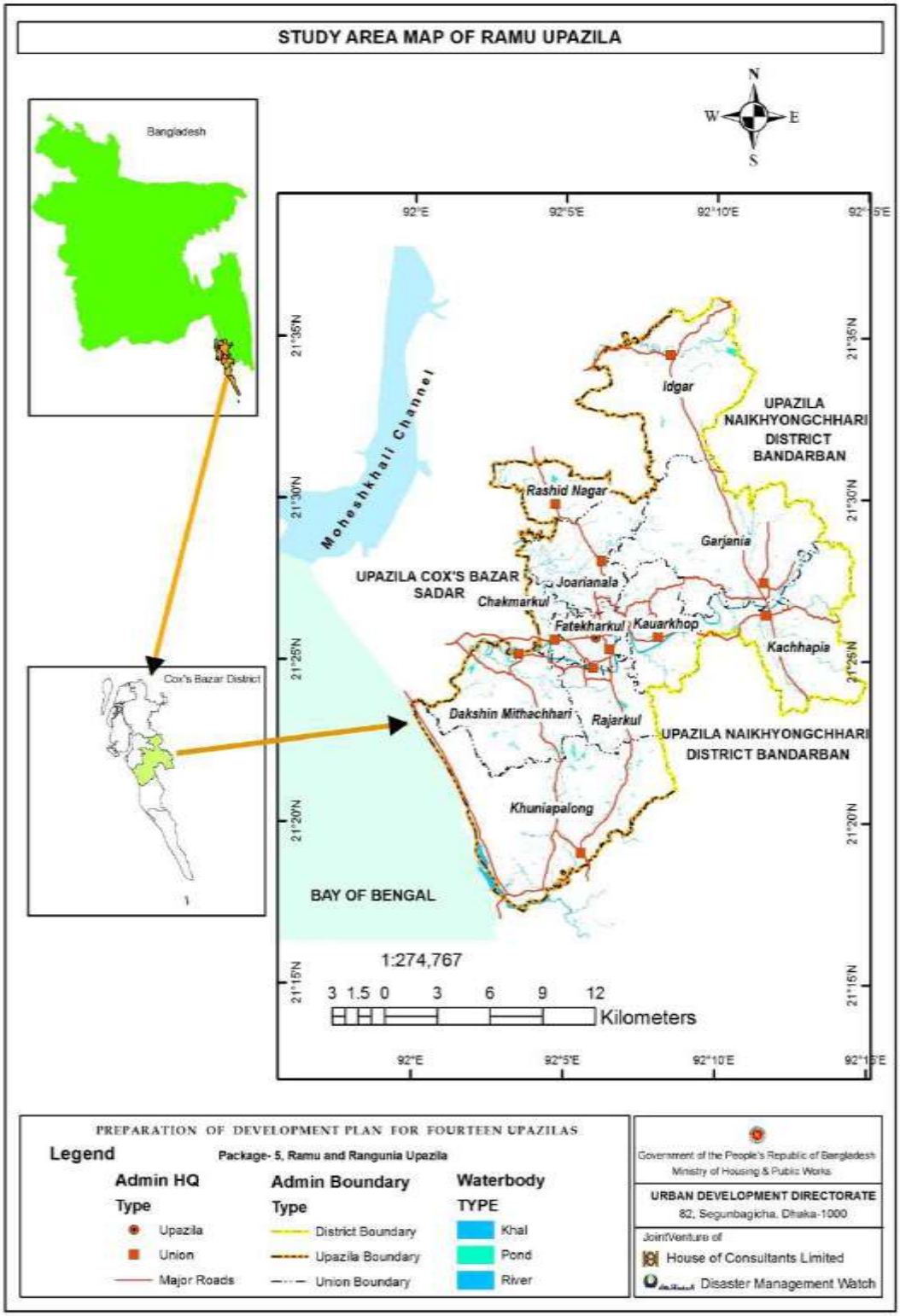
The current chapter describes the basic information about Ramu Upazila. The information presents in this chapter has been collected directly from the field as well as from many other secondary sources including National Population Census Reports of BBS.

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 8upazilas; Ramu is one of these upazilas. This upazila of Cox's Bazar is oldest human habitation and once it was a centre place for kingof the Arakan and Mog. Ramu lies 15 kilometers to the northeast of Cox's Bazaar 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 of 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 Sadarupazilas on the north, Naikhongchhari and UkhiaUpazilas 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

2.2.2 History of the Upazila

Tradition goes that Ramu was named after the royal Ramu dynasty of Arakan. At the time of the conquest of Chittagong by the Mughals (1666) a thirteen feet high bronze image of Buddha was found at Ramu. This is the biggest of the Buddha images 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 & Rakhiain and the relationship between them is very good.

Photo 2.1: Historical Places of Ramu Upazila

(Source: Reconnaissance Survey)

2.2.3 Administrative and Cadastral Boundaries

The area of Ramu Upazila is 384.409square kilometers, it is comprised of 11 Unions, 39mouzas and 102villages. The information of union based mouza and village are presented in **Table 2.1.**

Table 2.1: Union based Mouza of RamuUpazila

Sr. No	Name of Union/ Paurashava	Area (in acre)	Village based Administrative Units (Mouza)
1	Chakmarkul Union	1807.725	Chakmarkul
2	Fatekharkul Union	2451.251	Fatekharkul, Haitupi,Merangloa, Sreekul
3	Garjania Union	15874.23	Garjania, Jungle Garjania, PaschimGarjania
4	Idgar Union	12896.42	Idgar, JungaleIdgar
5	Joarianala Union	6915.01	Joarianala, Nandakhali, Nonachhari, Uttar Mithachhari
6	Kachhapia Union	10824.88	DakshinKachhapia, Kachhapia
7	Khuniapalong Union	18976.25	DariarDighi, DhechuaPalong, Dhoa Palong, GoaliaPalong, Jungle DariarDighi, Jungle Doha Palong, Jungle GoaliaPalong, Jungle KhuniaPalong, KhuniaPalong, Pechardwip,
8	Kauarkhop Union	6174.396	Kauarkhop, Maishkum, Lot Ukhiarghona, Manirjhil, Sonaichhari, Ukhiarghona
9	Rashid Nagar Union	3895.75	Dhalirchora, JongleDalirchara, Ultakhali
10	Rajarkul Union	5045.3	Rajarkul
11	DakshinMithachhari Union	10128.33	Chainda, DakshinMithachhari, Umkhali,

Source: BBS, 2011

2.2.4 Local Authorities

Ramu Thana was formed in 1908 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

According to the census, 2011, the total populations of the Upazila amounts to 266640 people, among which 135000 are male and 131640are female. Out of the total population, there are Muslim 248766, Hindu 8745, Buddhist 8916, Christian 44 and others 169. The distribution of Urban and Rural Population and Literacy Rate of Ramu Upazila in Upazila, Union/Ward wise are presented in Table 2.2 .

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

Population		Density (per sq km)	Literacy rate (%) (Based on sampling survey)	
Other Urban	**Rural**	**Upazila**	**Urban**	**Rural**
42,072	2,24,568	681	38.84	23.31

Source: BBS, 2011

Houses and Accommodation

Most of the houses and infrastructure of this upazila is building, semi-pucca and katcha. Though the school, Mosque and various infrastructures are semi-pucca and katcha but most of the houses are semi metaled

Roads

Most of the roads within RamuUpazila are paved; the communication system has improved significantly over the last 5-10 years. But the road system within the unions of the e 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. Around 162.77 km are pucca, around 248.18 km are HBB road and around 579.04 km are katcha road.

Photo 2.2: Road Network of Ramu Upazila

(Source: Reconnaissance Survey)

Schools/Educational Institutions

Over the last 10-15 years, the general condition of education has improved noticeably. There are 33 primary school, 14 high schools in Ramu Upazila.

Religious Institution

The Ramu Upazila has 331 mosques, 20 Hindu Temples and 16Buddhist Temples.

Health Care

There are 34 health centre /clinics

Photo 2.3: Health Service Facilities of RamuUpazila
(Source: Reconnaissance Survey)

Post Office

There are 3 post offices in RamuUpazila. 3 post offices are situated in Fatekharkul Union, Kachhapia Union and Kauarkhop Union.

Main Sports

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

Playing Ground

Every primary school has a small playing field and every higher secondary school has football fields. There are smaller fields in open areas.

Graveyard/ Crematorium:

There are93 graveyards in Ramu Upazila.

2.2.6 Agricultural Land

The RamuUpazila covers in total, 30645.77341 acres of land. There are 8.276% area is single cropping, 62.94% area is double cropping and 28.785% area is triple cropping.

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, RaiShakh, 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, GolapJum. Guava, Pineapple, Tum, Papaya, etc.

Photo 2.4: Agricultural Activities of RamuUpazila

(Source: Reconnaissance Survey)

2.2.7 Hydrology and River Hydraulics

Main River is Bakkhali river of Ramu Upazila and others are small rivers. Total 3899.371732 acres area is waterbody.

Photo 2.5: River and Canal of Ramu Upazila

(Source: Reconnaissance Survey)

2.2.8 External Linkage

Roadway communication is the major communication of RamuUpazilla with Cox's Bazar Sadar as well as other sub-districts of Cox's Bazar Districts (Chokoria, Pekua, Ukhia, Teknaf and Cox's Bazaar SadarUpazilla) and also using Cox's Bazar Channel for Moheshkhali and KutbdiaUpazilla.

Types of transport used in this sub-district minibus, jeep, taxi, tomtom, auto-rickshaw and engine boat. People are travelling usually by foot, rickshaw on earthen road, ricksaw, auto-rickshaw and taxi in metaled 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, tomtom or rickshaw are using for local travel. One can go to Cox's Bazar district and Chokoria, Pekua, and TeknafUpazilla from Ramu by road. Nevertheless, Moheshkahli or KutubdiaUpazilla 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 RamuSadar 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.

2.2.9 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 POLICIES, LAWS AND REGULATIONS

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 tire 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 inervention 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 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.

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
28. Bangladesh Water Act 2013.

3.4 Policy Review according to Five Tier Plan wise

3.4.1 Framework of Five Tier Plan

The Strategy and Time Frame of Five Tier Plan is presented in **Table 3.1.**

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
Action Area Plan	5 years	Short term

Among 22 policies, the policies were reviewed according to duration and strategy. So, according to duration and strategic point of view some policies are shortlisted.List of Policies according to Five Tier Plan is presented in **Table 3.2**.

Table 3.2: List of Policies according to Five Tier Plan

Five Tier Plan	Review Policies
Sub-regional Plan	• Climate Change Policies • The Sendai Framework for Disaster Risk Reduction 2015-2030 • National Agriculture Policy 1999 • Climate Change Strategy 2009 • Disaster Management Act 2012 • National Plan for Disaster Management 2008-2015 • Population Policy 2004 • National policy for safe water supply and sanitation 1998 • National Water policy 1999 • Industrial Policy 2005 • National Urban Sector Policy 2011 • National Fisheries Policy 1998
Structure Plan	• Climate Change Policies • The Sendai Framework for Disaster Risk Reduction 2015-2030 • Quito Implementation Plan for the New Urban Agenda • Sustainable Development Goals (SDG) • The United Nations Framework Convention on Climate Change • National Agriculture Policy 1999 • Climate Change Strategy 2009 • National Plan for Disaster Management 2008-2015 • Population Policy 2004 • National policy for safe water supply and sanitation 1998 • The Building Construction Act, 1952 • National Water policy 1999 • Industrial Policy 2005 • National Urban Sector Policy 2011 • National Fisheries Policy 1998
Urban Area Plan	• Quito Implementation Plan for the New Urban Agenda • Sustainable Development Goals (SDG) • Climate Change Strategy 2009 • National policy for safe water supply and sanitation 1998 • The Building Construction Act, 1952 • National Water policy 1999 • National Urban Sector Policy 2011 • Bangladesh National Building Code 1993
Rural Area Plan	• Population Policy 2004 • National policy for safe water supply and sanitation 1998 • National Water policy 1999
Action Area Plan	• Quito Implementation Plan for the New Urban Agenda • Sustainable Development Goals (SDG) • National Agriculture Policy 1999 • Climate Change Strategy 2009 • National Plan for Disaster Management 2008-2015 • Population Policy 2004 • National policy for safe water supply and sanitation 1998 • The Building Construction Act, 1952 • National Water policy 1999 • Industrial Policy 2005 • Burning Bricks Act 1989 • National Urban Sector Policy 2011 • National Fisheries Policy 1998 • Seventh Five Year Plan • Bangladesh Water Act 2013

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

3.4.2 Policy Review according to Conducted Survey Sectors

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

1. PRA (Participatory Rural Appraisal)
2. Socio-economic Survey
3. Agricultural Survey
4. Formal-informal Economic Survey
5. Physical Features Survey
6. Landuse Survey
7. Topographic Survey
8. Photogrammetric works Survey
9. Traffic and Transportation Survey
10. Geological & geophysical Survey
11. Hydrological 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** depicted that the Sectors are categorized as per Policy Review and **Table 3.4** is presented the Summary of Policies according to Sectors.

Table 3.3: Sectors are categorized as per Policy Review

Sectors	**Agriculture**
	PRA and Socio-Economic, Formal-informal Economic Sector
	Geology
	Hydrology
	Transport
	Physical, Landuse and Topographic Features

Table 3.4: Summary of Policies according to Sectors

Sector wise Policy List					
Agriculture Sector	**PRA and Socio-Economic Formal-informal Sector**	**Physical, Landuse and Topographic Features**	**Geology**	**Hydrology**	**Transport**
1. National Agriculture Policy 1999 2. Climate Change Strategy 2009 3. National Plan for Disaster Management 2008-2015 4. Population Policy 2004 5. Safe Water Supply and Sanitation 1998 6. National Water	1. National Agriculture Policy 1999 2. Climate Change Strategy 2009 3. Disaster Management Act 2012 4. National Plan for Disaster Management 2008-2015 5. Population Policy 2004 6. Safe Water Supply and Sanitation 1998 7. National Water policy 1999	1. National Agriculture Policy 1999 2. Climate Change Strategy 2009 3. National Plan for Disaster Management 2008-2015 4. Population Policy 2004 5. The Building Construction Act, 1952 6. National Water policy 1999	1. Climate Change Strategy 2009 2. National Plan for Disaster Management 2008-2015 • The Sendai Framework for Disaster Risk Reduction 2015-2030	1. Population Policy 2004 2. National Water policy 1999 3. National Urban Sector Policy 2011 4. National Fisheries Policy 1998 • Climate Change Policies	1. Population Policy 2004

Sector wise Policy List					
Agriculture Sector	**PRA and Socio-Economic Formal-informal Sector**	**Physical, Landuse and Topographic Features**	**Geology**	**Hydrology**	**Transport**
policy 1999 7. Seventh Five Year Plan 8. National Environment Policy 1992 9. Industrial Policy 2005 10. National Urban Sector Policy 2011 11. The United Nations Framework Convention on Climate Change	8. Industrial Policy 2005 9. National Urban Sector Policy 2011 10. Seventh Five Year Plan(FY2016 – FY2020) • Quito Implementation Plan for the New Urban Agenda • Sustainable Development Goals (SDG)	7. Industrial Policy 2005 8. Burning Bricks Act 1989 9. National Urban Sector Policy 2011 10. National Fisheries Policy 1998 11. Seventh Five Year Plan (FY2016 – FY2020)	3. The United Nations Framework Convention on Climate Change	5. The United Nations Framework Convention on Climate Change 6. Bangladesh Water Act 2013	

(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** depicted that the Summary of Sectors according to Policies.

Table 3.5: Summary of Sectors according to Policies

Policy	Sector
National Agriculture Policy 1999	• Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features
Climate Change Strategy 2009	• Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features • Geology
Disaster Management Act 2012	• Formal-informal Sector
National Plan for Disaster Management 2008-2015	• Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features • Geology
Population Policy 2004	• Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Transport • Hydrology
Safe Water Supply and Sanitation 1998	• Agriculture • PRA and Socio-Economic Formal-informal Economic Sector
The Building Construction Act,1952	• Physical, Landuse and Topographic Features
National Water policy 1999	• Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features • Hydrology

Policy	Sector
Industrial Policy 2005	• Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features • Formal-informal Sector
Burning Bricks Act 1989	• Physical, Landuse and Topographic Features
National Urban Sector Policy 2011	• Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Formal-informal Sector • Physical, Landuse and Topographic Features • Hydrology
National Fisheries Policy 1998	• Physical, Landuse and Topographic Features • Hydrology
Seventh Five Year Plan(FY2016 – FY2020)	• Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features
National Land Use Policy 2001	• Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features • Hydrology • Transport
Climate Change Policies	• Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features • Geology • Hydrology
The Sendai Framework for Disaster Risk Reduction 2015-2030	• Agriculture • Physical, Landuse and Topographic Features • Geology • Hydrology
Quito Implementation Plan for the New Urban Agenda	• PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features
Sustainable Development Goals	• Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features • Geology • Hydrology
The United Nations Framework Convention on Climate Change	• Agriculture • Geology • Hydrology
Bangladesh Water Act 2013	• Hydrology

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

CHAPTER 4

CRITICAL PLANNING ISSUES

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.

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
Cohort Component method	1) Requires more detailed data • Fertility and mortality rates by tenure are approximations • Needs a census for full validation 2) Inflow/outflow concept are more difficult to interpret 3) Issues of consistency such as all tenure household projection	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.
Arithmetical Increase Method	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.
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.	Though Ramu Upazila has increased growth rate, the growth rate will be more varied for future developments.
Geometrical Increase Method	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.
Compound Growth Method	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.
Exponential Growth Method	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.

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 **444485** (Year, 2033)	Population of Ramu Upazila will be **475173** (Year, 2035)	Population of Ramu Upazila will be **424070** (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 **260212 (1981-2001)**	Population in 2011 would be **259434 (1981-2001)**	Population in 2011 would be **259990 (1981-2001)**	Almost same result and three methods are perfect.
Population in 2011 would be **245379 (1991-2001)**		Population in 2011 would be **245340 (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.

4.2.5.2 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.

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.

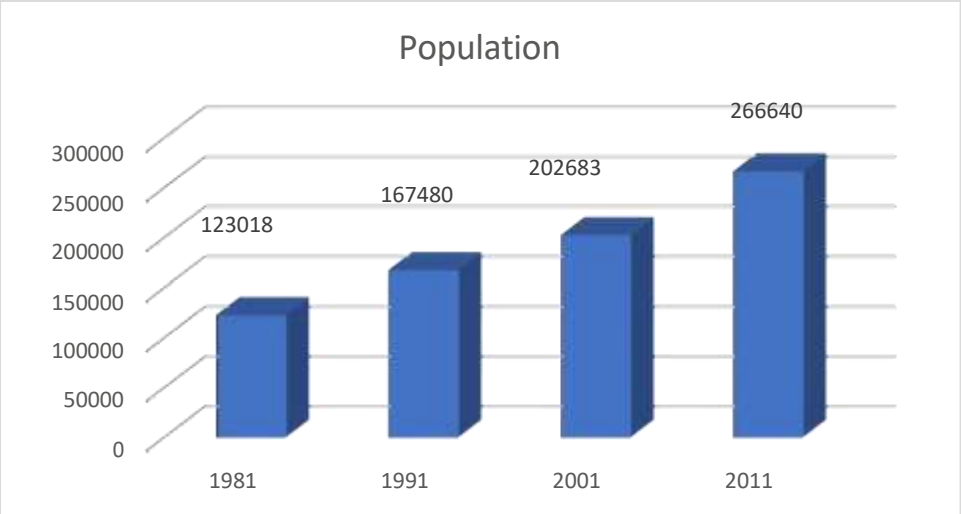


Figure 4.1: Number of Population from 1981 to 2011

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

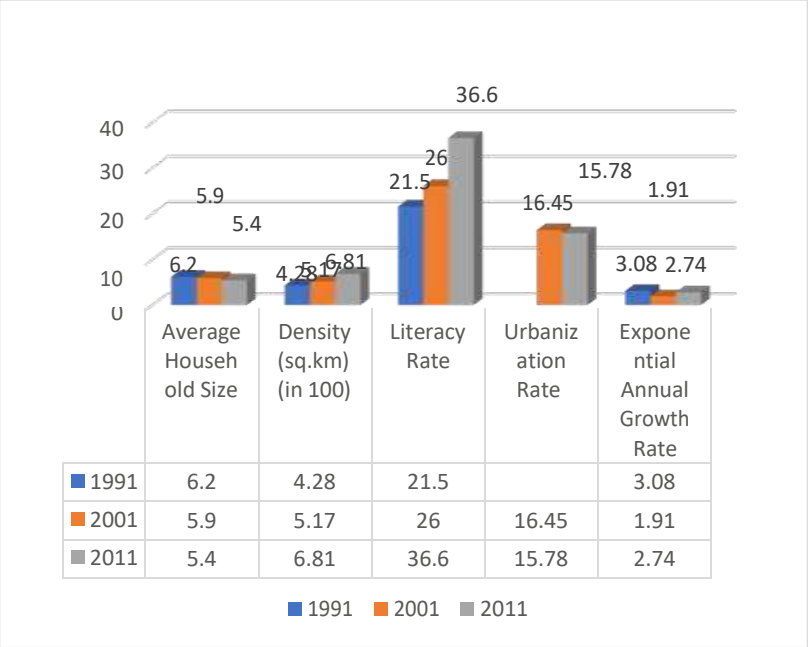
Source: Projected by Planning Team based on BBS, 1981-2011.

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

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.



Source: BBS, 1991-2011.

Figure 4.2: Different Attributing Factors from 1991 to 2011

4.2.6.3 Analysis of Natural Birth Rate and Decadal Growth Rate

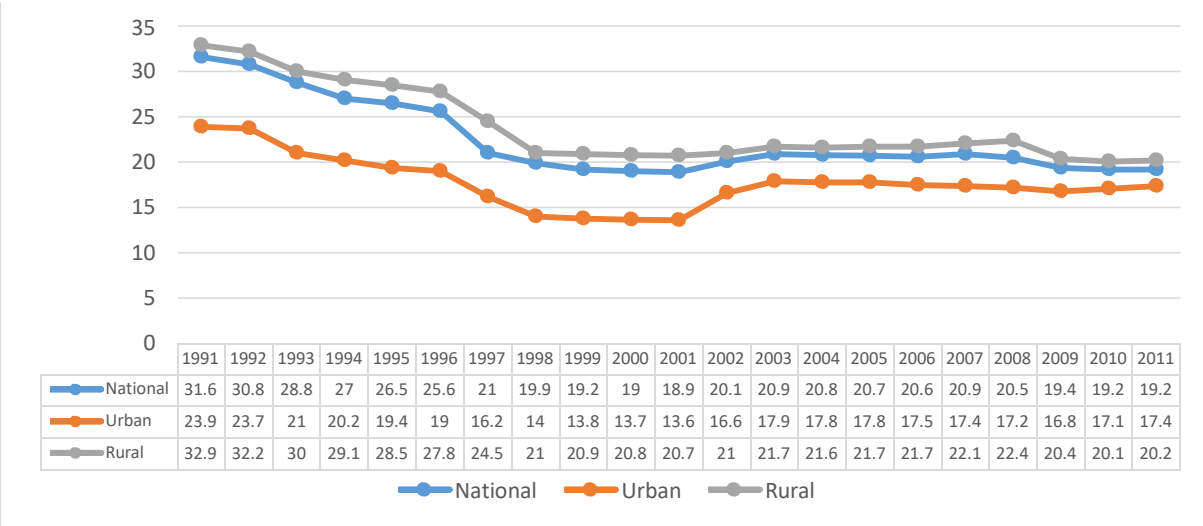
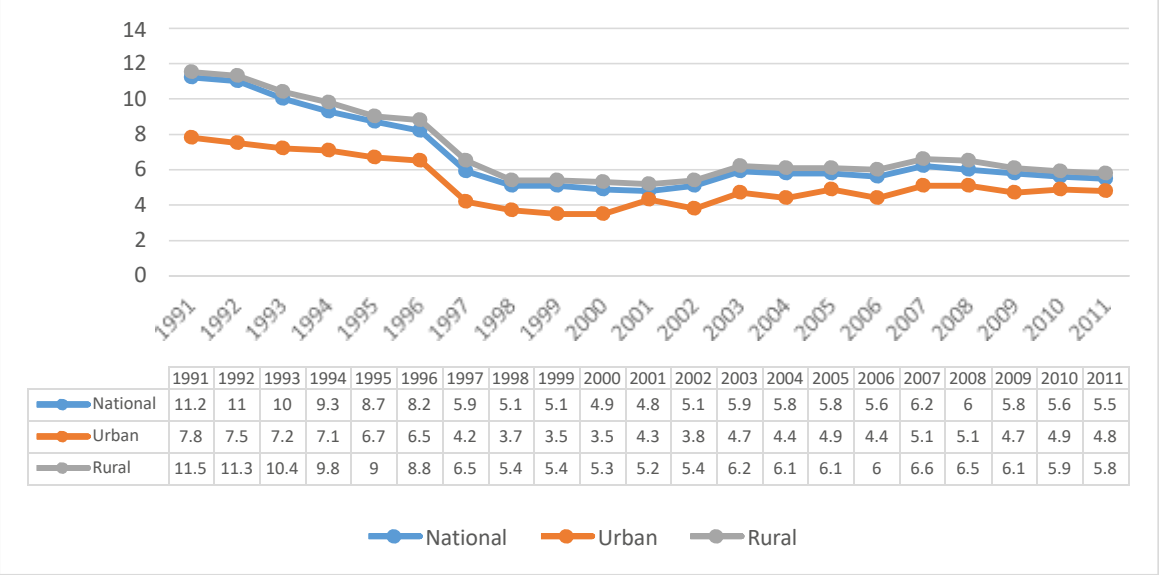


Figure 4.3: Crude Birth Rate (CBR) per 1000

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.



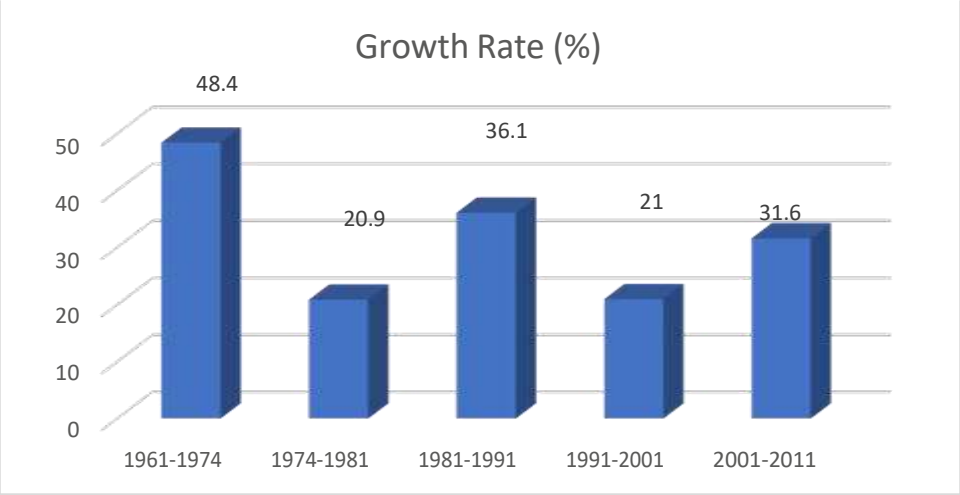
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
National	11.2	11	10	9.3	8.7	8.2	5.9	5.1	5.1	4.9	4.8	5.1	5.9	5.8	5.8	5.6	6.2	6	5.8	5.6	5.5
Urban	7.8	7.5	7.2	7.1	6.7	6.5	4.2	3.7	3.5	3.5	4.3	3.8	4.7	4.4	4.9	4.4	5.1	5.1	4.7	4.9	4.8
Rural	11.5	11.3	10.4	9.8	9	8.8	6.5	5.4	5.4	5.3	5.2	5.4	6.2	6.1	6.1	6	6.6	6.5	6.1	5.9	5.8

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 Coxs Bazar Zila, it is advisable that the natural growth rate can be maximum limit after ignoring net migrants.

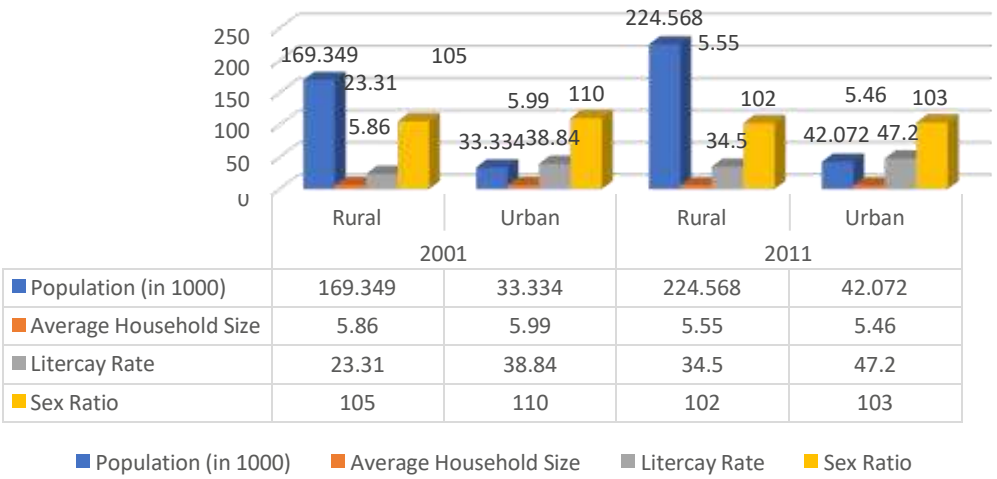


Source: BBS, 2011

Figure 4.5: Decadal Growth Rate (%)

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



	2001 Rural	2001 Urban	2011 Rural	2011 Urban
Population (in 1000)	169.349	33.334	224.568	42.072
Average Household Size	5.86	5.99	5.55	5.46
Litercay Rate	23.31	38.84	34.5	47.2
Sex Ratio	105	110	102	103

Source: BBS, 2001 & 2011

Figure 4.6: Attributing Factors in Influential Areas

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 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.

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.

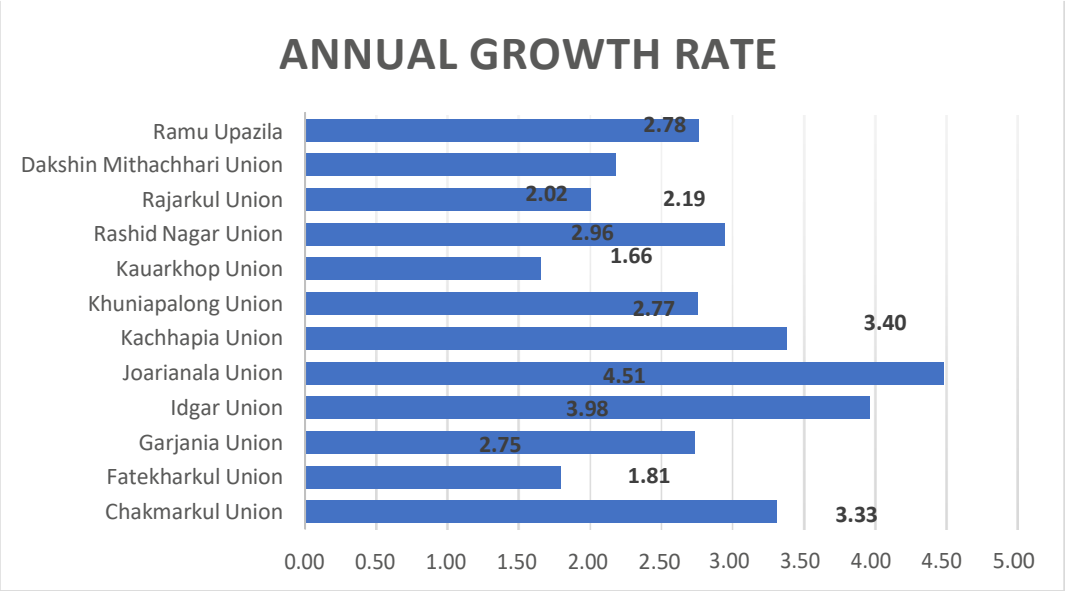


Figure 4.7: Annual Growth Rate in Unions and Upazila

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.

Table 4.6: Change of Annual Growth Rate in Influential Areas

Union/Pourashava	Population (2001)	Population (2011)	Growth Rate
Urban	**33334**	**42072**	2.36
Rural	**169349**	**224568**	2.86
Ramu Upazila	**202683**	**266640**	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 4.13at 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	**2.99**
Ramu Rural (9 Union)	159548	208748	49200	31	0.027243	**2.72**
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

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	2.4	2.61	2.99
Rural	2.35	2.5	2.75

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

The growth rate of Ramu Upazila in 2001-2011 was 2.36 and 2. Respectively in rural and urban areas. But according to the last 40 years growth rate it is changing. 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 2.4 and 2.35 have been determined for Urban and Rural areas and the projected results are summarised in below Table 4.9, Table 4.10 and Table 4.11 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-2.4	49670	55923	62964	70891
		Medium-2.1	50387	57315	65196	74159
		High-2.99	51708	59915	69424	80442
Rural	**224568**	Low-2.35	264218	296758	333305	374352
		Medium-2.5	266941	302019	341707	386610
		High-2.75	305195	325716	347616	370990
Ramu Upazila	**266640**	Low	313888	352681	396269	445243
		Medium	317328	359334	406902	460769
		High	323240	370893	425579	488337

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

Unions	Years	0-4	5-9	10-14	15-19	20-24	25-29	30-49	50-59	60-64	65+	Total
Chakmarkul Union	**2011 (Base Year)**	1973	2219	2334	1956	1594	1414	3189	789	378	592	**16438**
	2018	2345	2638	2775	2325	1895	1680	3791	938	449	703	**19540**
	2023	2653	2984	3139	2631	2144	1901	4289	1061	508	796	**22107**
	2028	3001	3377	3552	2976	2426	2151	4852	1201	575	900	**25012**
	2033	3396	3820	4018	3368	2745	2434	5490	1358	651	1019	**28299**
Fatekharkul Union	**2011 (Base Year)**	152	143	141	149	122	120	302	96	34	44	**1304**
	2018	181	170	167	177	146	142	359	115	40	53	**1550**
	2023	205	193	189	200	165	161	407	130	46	60	**1754**
	2028	232	218	214	226	186	182	460	147	52	67	**1985**
	2033	262	247	242	256	211	206	520	166	58	76	**2245**
Garjania Union	**2011 (Base Year)**	3624	3851	3081	1993	1857	1971	3964	1110	476	725	**22651**
	2018	4308	4577	3662	2369	2208	2342	4712	1319	565	862	**26925**
	2023	4874	5179	4143	2681	2498	2650	5331	1493	640	975	**30463**
	2028	5515	5859	4687	3033	2826	2999	6032	1689	724	1103	**34466**
	2033	6239	6629	5303	3432	3198	3393	6824	1911	819	1248	**38995**
Idgar Union	**2011 (Base Year)**	2546	3040	2656	1740	1593	1484	3443	861	385	568	**18315**
	2018	3026	3614	3157	2068	1894	1763	4093	1023	457	675	**21771**
	2023	3424	4089	3572	2340	2143	1995	4631	1158	517	764	**24632**
	2028	3874	4626	4041	2648	2425	2257	5239	1310	585	864	**27868**
	2033	4383	5234	4572	2995	2743	2554	5928	1482	662	977	**31531**
Joarianala Union	**2011 (Base Year)**	2003	2250	1989	1582	1307	1248	2642	726	305	479	**14532**
	2018	2381	2675	2364	1881	1553	1484	3141	863	362	569	**17273**
	2023	2694	3026	2675	2128	1757	1679	3553	976	410	644	**19543**
	2028	3048	3424	3026	2408	1988	1900	4020	1104	464	729	**22111**
	2033	3449	3874	3424	2724	2249	2149	4549	1250	525	825	**25017**
Kachapia Union	**2011 (Base Year)**	4449	4789	3825	2692	2352	2267	5157	1332	595	878	**28336**
	2018	5288	5692	4547	3200	2796	2695	6130	1583	707	1044	**33683**
	2023	5983	6440	5145	3620	3163	3049	6936	1791	800	1181	**38109**
	2028	6769	7287	5821	4096	3579	3449	7847	2026	905	1337	**43117**
	2033	7659	8244	6586	4634	4049	3903	8878	2293	1024	1512	**48782**
Khuniapalong Union	**2011 (Base Year)**	5593	6065	5120	3450	3523	3159	6464	1416	654	908	**36351**
	2018	6648	7209	6087	4101	4187	3756	7684	1684	777	1079	**43210**
	2023	7521	8156	6886	4640	4737	4249	8693	1905	879	1221	**48888**
	2028	8510	9228	7791	5249	5360	4807	9836	2155	995	1381	**55313**
	2033	9628	10441	8815	5939	6064	5439	11128	2438	1125	1563	**62581**
Kauarkhop Union	**2011 (Base Year)**	3361	4081	3409	2352	2040	1896	4585	1104	528	648	**24004**
	2018	3995	4851	4052	2796	2425	2254	5450	1313	628	770	**28533**
	2023	4520	5488	4584	3164	2744	2550	6166	1485	710	872	**32283**
	2028	5113	6209	5187	3579	3105	2885	6976	1680	804	986	**36525**
	2033	5785	7025	5868	4050	3513	3265	7893	1901	909	1116	**41325**

Rashid Nagar Union	**2011 (Base Year)**	2381	2596	2431	1720	1588	1356	3010	761	281	413	**16538**
	2018	2831	3086	2890	2044	1887	1612	3578	904	334	491	**19658**
	2023	3203	3492	3270	2313	2135	1824	4048	1023	378	556	**22242**
	2028	3624	3951	3699	2617	2416	2063	4580	1158	428	629	**25165**
	2033	4100	4470	4185	2961	2733	2335	5182	1310	484	712	**28471**
Rajarkul Union	**2011 (Base Year)**	2499	2962	2862	1915	1874	1773	4091	1068	423	685	**20153**
	2018	2970	3521	3402	2276	2228	2108	4863	1270	503	814	**23956**
	2023	3361	3984	3849	2575	2521	2385	5502	1436	569	922	**27104**
	2028	3802	4508	4354	2913	2852	2699	6225	1625	644	1043	**30665**
	2033	4302	5100	4927	3296	3227	3053	7043	1839	729	1180	**34695**
Dakshin Mithachhari Union	**2011 (Base Year)**	3458	4212	3848	3016	2132	2054	4602	1274	494	910	**25998**
	2018	4110	5006	4574	3585	2534	2441	5470	1514	587	1082	**30903**
	2023	4650	5664	5175	4056	2867	2762	6189	1713	664	1224	**34964**
	2028	5261	6409	5855	4589	3244	3125	7002	1938	752	1385	**39559**
	2033	5953	7251	6624	5192	3670	3536	7922	2193	850	1567	**44757**

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
Fatekharkul	2.61	2011 (Base Year)	3102	3512	3717	3424	3131	2663	6292	1639	644	1141	**29266**
		2018	3715	4206	4451	4101	3750	3190	7536	1963	771	1367	**35050**
		2023	4226	4784	5063	4665	4266	3628	8572	2233	877	1555	**39869**
		2028	4807	5442	5760	5306	4853	4127	9750	2540	998	1769	**45351**
		2033	5468	6190	6551	6036	5520	4694	11091	2889	1135	2012	**51587**
Joarianala		2011 (Base Year)	1716	1947	1882	1447	1229	1024	2139	653	295	474	**12806**
		2018	2055	2331	2255	1733	1472	1227	2561	782	353	567	**15337**
		2023	2338	2652	2565	1971	1675	1396	2913	890	401	645	**17446**
		2028	2659	3016	2917	2242	1905	1588	3314	1012	456	734	**19844**
		2033	3025	3431	3318	2551	2167	1806	3770	1151	519	835	**22573**

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

The total population of unions from base year 2011 to 2033 are presented in the **Table 4.12**

The **Table 4.12** depicted that the present population and population in the next 20 years. From the data it is visible that Khuniapalong Union will have the highest population and Fatekharkul Union has lowest population.

Table 4.12: Projected Population in Rural Areas

Union	Population (2011 Base Year)	Projected Population (2033)
Chakmarkul Union	16438	28299
Fatekharkul Union	1304	53832
Garjania Union	22651	38995
Idgar Union	18315	31531
Joarianala Union	14531	47590
Kachapia Union	28336	48782
Khuniapalong Union	36351	62581
Kauarkhop Union	24004	41325
Rashid Nagar Union	16538	28471
Rajarkul Union	20153	34695
Dakshin Mithachhari Union	25998	44757
Total	224619	460859

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

From the **Table 4.12** it may be concluded that Khuniapalong Union, Dakshin Mithachhari Union Fatekharkul Union, Kachapia Union, Joarianala Union will be populated than other unions in rural areas in next 20 years.

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 tire 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

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:

National Share, $N_j = \sum [E_{ijo}(E_t/E_o) - E_{ijo}]$

Proportionality Shift Component, $P_j = \sum [(E_{it}/E_{io})-(E_t/E_o)]E_{ijo}$

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

Total Regional Growth, $G_j = E_{jt} - E_{jo} = N_j + P_j + D_j$

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

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.

4.3.4 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.

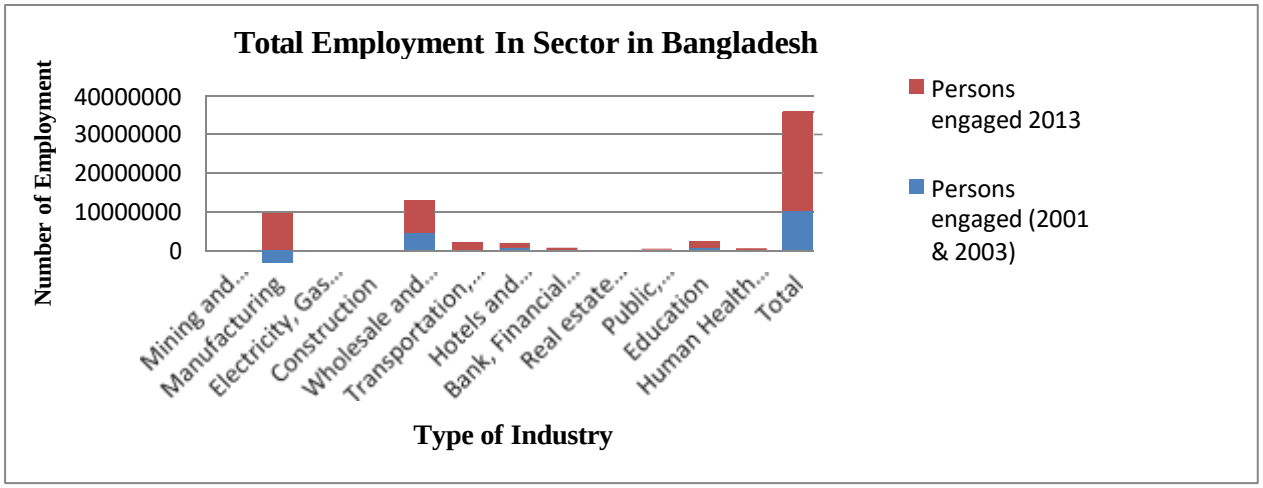


Figure 4.8: Distribution of industries according to growth of employment in national level between 2001 & 03 and 2013

National growth rate analysis

The figure show 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
Total	**10859**	**21918**	**10065**	**1.02**

Source: BBS, Economic Census 2003 & 2013

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
Total	**10633**	**-938**	**285**	**9980**	**-653**

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.

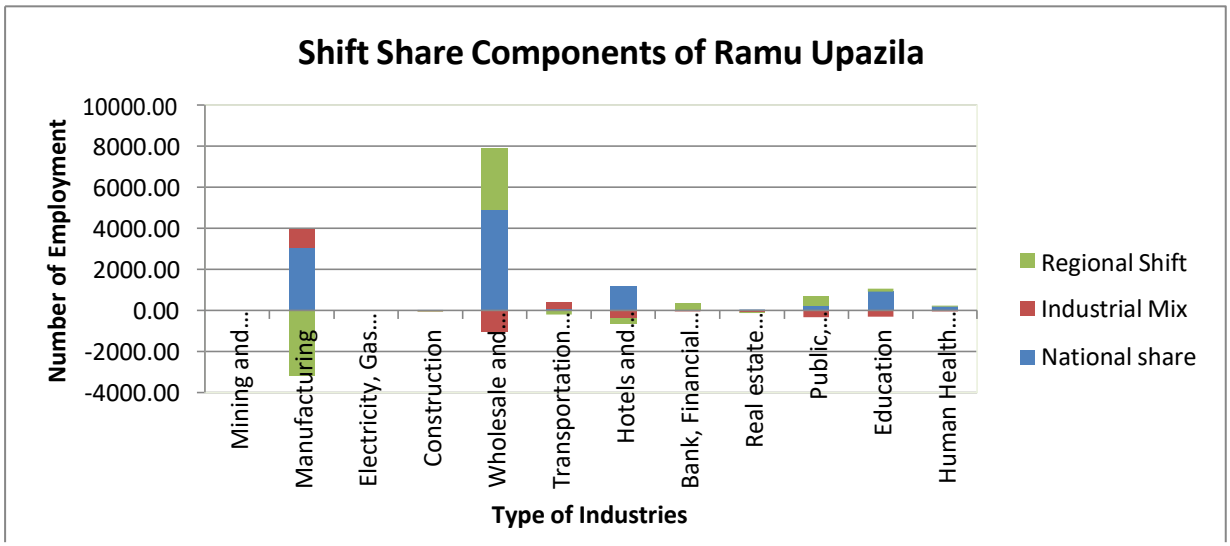


Figure 4.9: Distribution of industries according to shift share components in Ramu Upazilla

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 Upazila has 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.

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		✓
Total		✓

From the Table 4.14, it observed that among different types of sector 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 are progressive industries in Ramu Upazila. It shows that employment is growing in these industries whereas Mining and Quarrying, Manufacturing, Electricity, Gas, Water, Steam, and Air Conditioning Supply, Construction, Real estate activities, Education, Health and Social Works are less progressive industries. It is said that employment is declining in these industries. So, it has been seen that a few of industries are progressive where others are less progressive industries.

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

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 Basic Notions 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.

5.3 Formulation of Planning Standard

The planning standard specified for development plan of Upazila is the minimum land required for the specific services. The planning standard has been modified after reviewing different planning standards practice in different planning projects. The reasons behind the modified planning standard are as follows:

- The approved planning standard is the minimum land required to install each service.
- Missing of different planning items.
- Area specific potential item requirement.

The planning standard as follows in **Table 5.1** has been used for the study area and required land for different sectoral land use has been calculated accordingly.

Table 5.1: Recommended Standard for Major Land Uses

Types of Land Uses	Recommended Standard
1. Residential	
General Residential	150 persons/1 acre
Real Estate-Public/Private	200 population/ 1 acre
2. Roads	
Upazila Primary Roads	70 feet and above
Upazila Secondary Roads	40feet
Upazila Local/Tertiary Roads	32 feet
Access Roads	20 feet
3.Education	
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
4.Open Space	
Play field/ground	3.00 acres/20,000 population
Park	1.00 acre /10000 population
Neighborhood Park	1.00 acre /10000 population
5. Recreational	
Stadium/Sports Complex	5 – 10 acres/ Upazila Headquarter
Cinema/ Theatre	1.0 acre /20,000 population
6. Health	
Upazila Health Complex	10 -15 acres/ Upazila Headquarter
Health Centre/Maternity Clinic	1.00 acre/ 5,000 population
7. Community Facilities	
Mosque/Church/Temple	0.5 acre /20,000 population
Eidgah	1.0 acre/20,000 population
Graveyard	1.00 acre /20,000 population
Community center	1.00 acre /20,000 population
Police Station	3 – 5 acres/ Upazila Headquarter
Police Box/Outpost	0.25 acre/ per box
Fire Station	1.00 acre/ 20,000 population
Post office	0.5 acre /20,000 population
8. Utilities	
Pump House for Water supply	0.25 acre /20,000 population

Types of Land Uses	Recommended Standard
Solid waste Disposal Site	5– 10 acres/Upazila Headquarter
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	1 acre/20,000 population
9. Commerce and Shopping	
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
10.Industry	
Small Scale	2 acres /1000 population
Heavy Industry	5.0 acres /10000 population
11.Transportation	
Bus Stand	1.0 acre /20,000 population
Truck Terminal	0.50 acre /20,000 population
Launch/Steamer Terminal	0.50 acre /20,000 population
Rickshaw/Van/TempoStand	0.25 acre /one baby taxi/tempo stand
Passenger Shed	0.02 acre /one baby taxi/tempo stand
12. Administration/Government Service	
Upazila Complex	10-15.00 acres
PourashavaOffice	3 – 5 acres

Source: Compiled and Suggested by Consultants based on Planning Standard of UDD, LGED, Land Development Rules of Private Housing Project, 2004; Education Directorate; Power Development Board; BIWTA; Youth Development Directorate; Bangladesh Parjoton Corporation; Bangladesh Railway; University Grants Commission; Bangladesh Oil, Gas & Mineral Resource Corporation; RHD; DMDP; DAP; KDA Master Plan etc.

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.

Table 5.2: 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 UnitShow the FAR aspectsDetermine 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 Ramu Upazila, converting to 5 as average H/H size): 5 x 6 = 30 persons,
- ✓ Net density per acre (30 ÷ 3 x 55) = 550 persons,
- ✓ Assuming 55 acres as net residential area of a 100 acre residential area estate,
- ✓ Total population of the housing area: 55 x 550 = 30,250,
- ✓ Gross density of public sector housing area (30250÷ 100) = 302 persons/acre.

GROSS RESIDENTIAL DENSITY/ACRE: 302 persons
NET RESIDENTIAL DENSITY/ACRE: 550 persons

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 x 6 = 30 persons,
- ✓ net residential density per acre (30 ÷ 3 x 60) = 600 persons
- ✓ gross residential density can be calculated as follows:
- ✓ assuming 60 acres as net residential area of a 100-acre residential area estate,
- ✓ total population of the area: 60 x 600 = 36000 persons.
- ✓ gross residential density of the private organized housing area: 36000÷100 = 360 persons/acre.

GROSS RESIDENTIAL DENSITY/ACRE: 360 persons
NET RESIDENTIAL DENSITY/ACRE: 600 persons

Neighbourhood Size

Accroding 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 Corpoaration 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 ulitility facilities according to the private residential developemnt 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

<u>Given</u>:
1 acre = 43,560 square feet (sq. ft.) and 20 units/acre as a **<u>minimum density</u>**
Example Plot Size = 5,000 sq. ft. plot

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

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

Example Plot Size	Plot Size	Allowable Unit	Round upto
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 **<u>minimum density</u>**
Example Plot Size = 5,000 sq. ft. plot

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

$$= \frac{43560}{30} = 1452\ sq.ft. \approx 1450\ sq.ft.$$

Example Plot Size	Plot Size	Allowable Unit	Round upto
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
13. 60-16.59m	15.50m

Source: Building Construction Rules, 1996.

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.	

Source: Building Construction Rules, 1996.

CHAPTER 6

TECHNICAL APPROACH OF PLAN PREPARATION

6.1 Introduction

The planning approach has described in this chapter where applied techniques are elaborated. The survey outputs are incorporated in order to produce certain findings of Ramu Upazila and served as basis for final plan preparation. Through this process the existing land use, physical features, agricultural situation, flooding scenario, geological factors and other related facts are portrayed into maps and then analysed through GIS Techniques.

6.2 Methodology of Plan Preparation

Planning process depends on a bunch of works which reflects the existing condition of the project area. To reveal the existing situation several surveys have been done and further gone through a technical process. The technical methodology has been shown in the **Figure 6.1**.

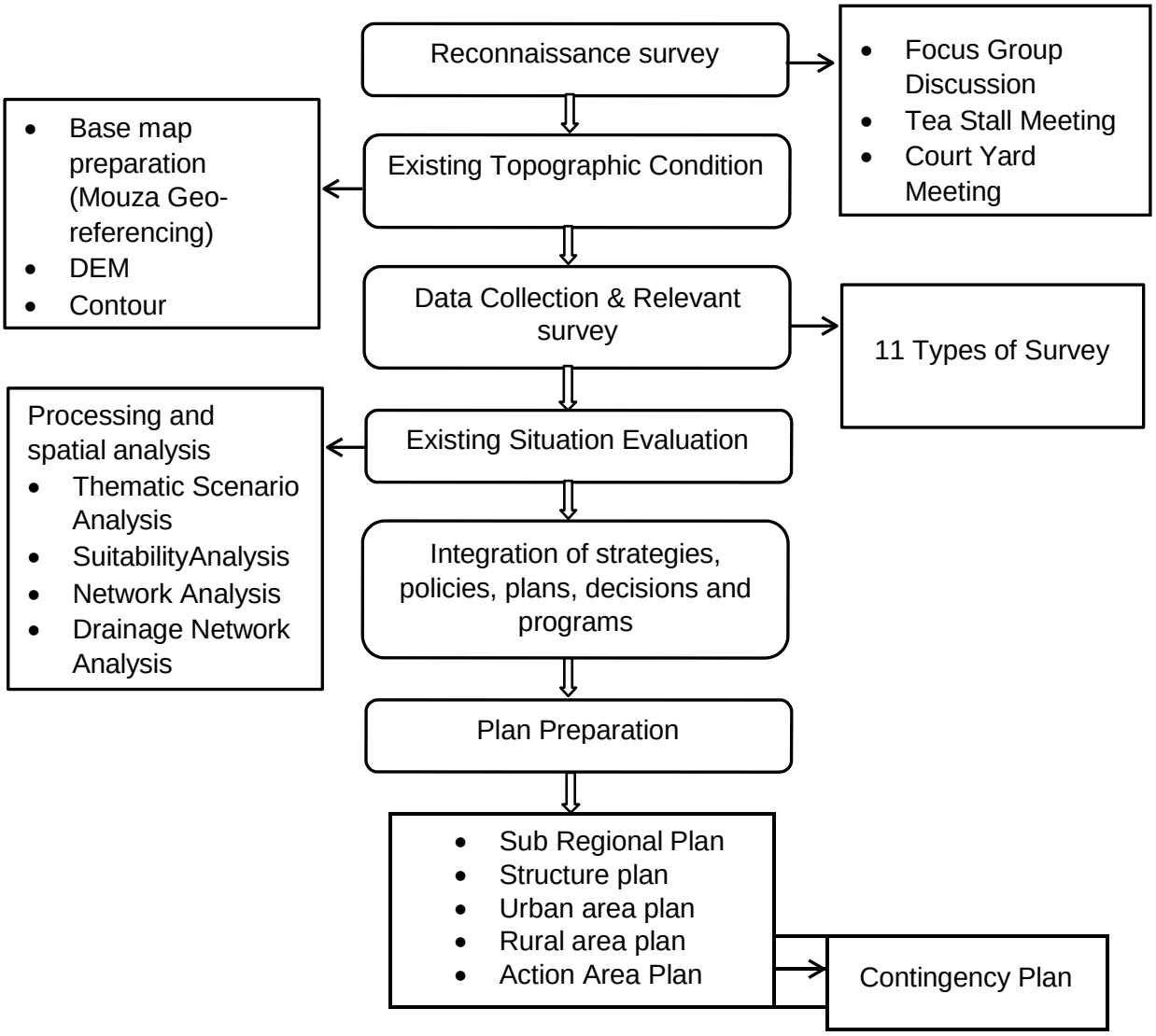


Figure 6.1: Technical Methodology of Plan Preparation

6.2.1 Reconnaissance Survey

A reconnaissance survey had carried out to identify the extent of works and get an idea about project area which includes several Focus Group Discussion, Courtyard Meeting, Tea stall Meeting.

6.2.2 Existing Topographic Condition

Satellite image had purchased for the concern area then processed the image for planning works from where Digital Elevation Model (Dem), Contour, Physical Feature extraction are important phenomena. To get the project area boundary, Mouza maps have been collected from Land Record and Survey Department (DLRS)and processed for further works.

6.2.3 Data Collection and Relevant Survey

During the survey stage, 11 types of survey had conducted that were paraphrased in the **Figure 6.2**. The detail description and procedure had described in Final Survey Report.

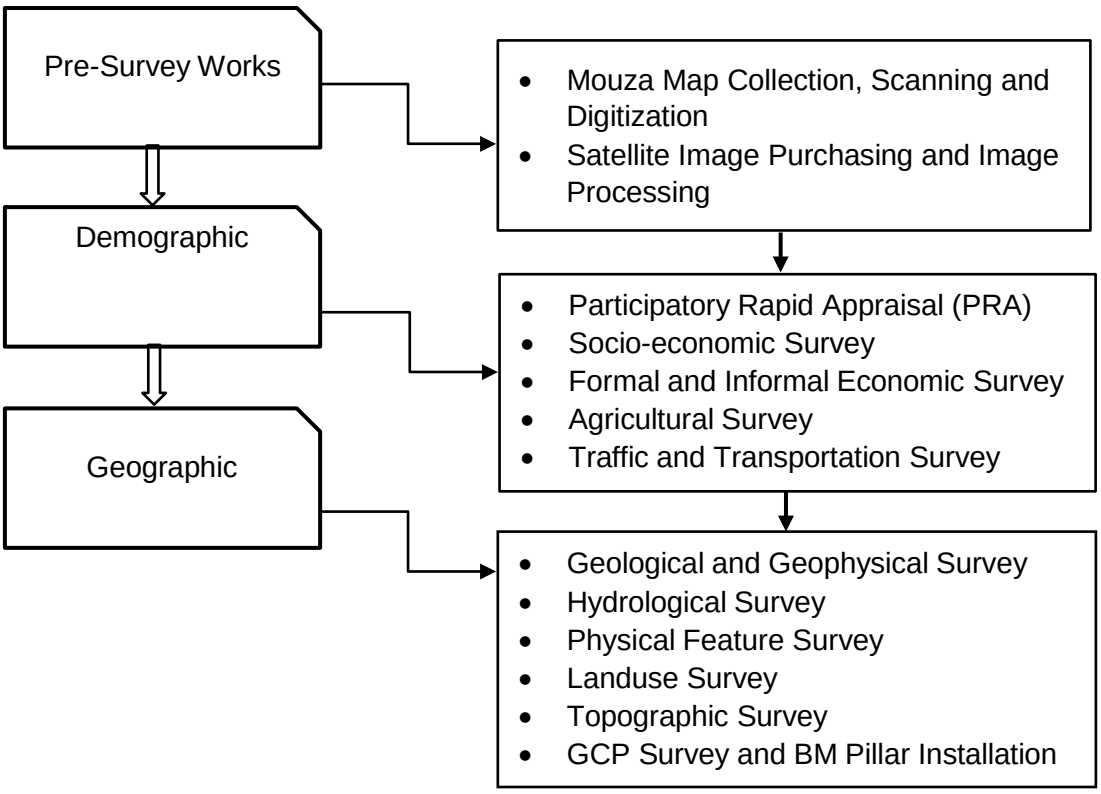


Figure 6.2: Flow chart of Conducted Surveys

6.2.4 Existing Situation Evaluation

In this stage, several scientific ways followed through GIS Analysis which help to go in a concrete decision. The following techniques were applied:

- Thematic Scenario Analysis
- Suitability Analysis
- Network Analysis
- Location Allocation Analysis
- Drainage Network Analysis

6.2.5 Integration of Strategies, Policies, Plans, Decisions and Programs

Depending on the analysis, several decisions were made depending on planning phase. Few decisions, strategies and policies had placed in broad scale in Sub Regional Plan and Structure Plan and other decision ssuggested in small scale for Urban and Rural area plan. Immediate intervention emphasized in action area plan.

6.2.6 Plan Preparation Process

Plan preparation process outlined in following diagram which has been further elaborated in **Chapter 7**. Outline of Plan Preparation Process are described in **Figure 6.3** to **Figure 6.6**.

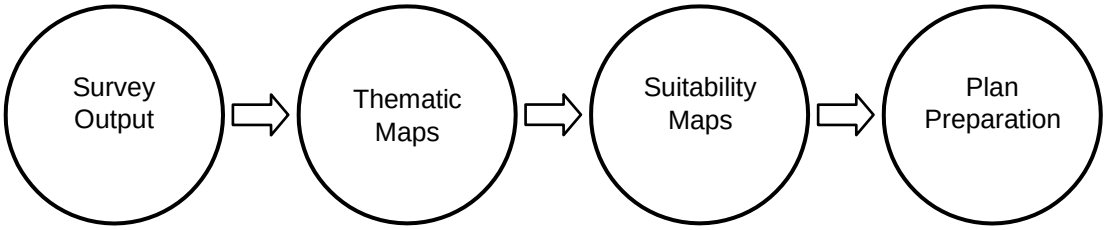


Figure 6.3: Flow Chart of Plan Preparation Basis

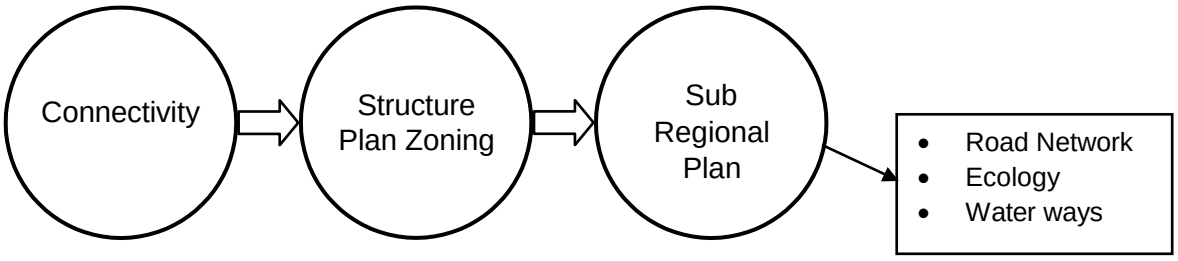


Figure 6.4: Flow Chart of Sub Regional Plan Process

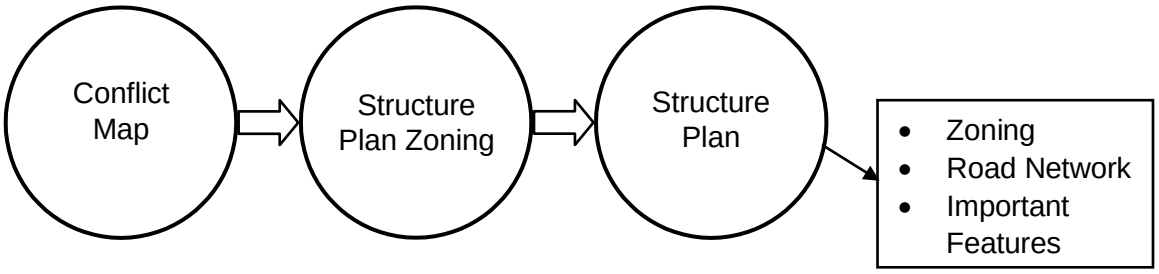


Figure 6.5: Flow Chart of Structure Plan Process

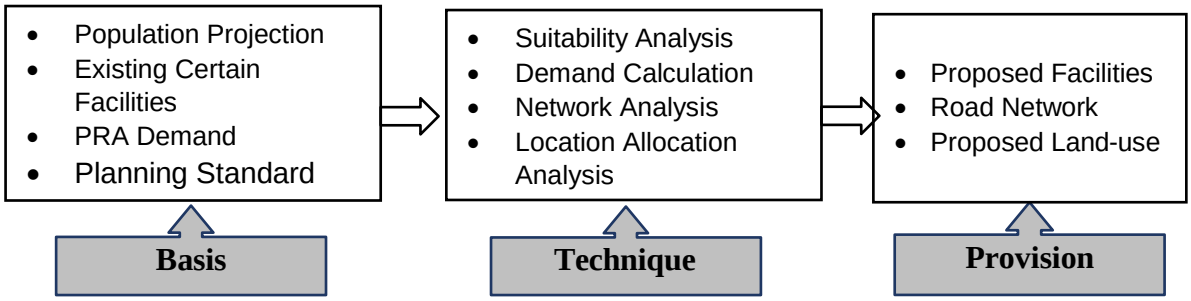


Figure 6.6: Flow Chart of Urban and Rural Area Plan Process

6.3 Formulation of Thematic Maps

During the survey stage, 11 types survey had conducted. These were PRA, Socio-Economic survey, Formal-Informal survey, Agricultural survey, Transportation survey, Physical Feature survey, Land use 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. The main components of thematic scenario are presented in **Figure 6.7**.

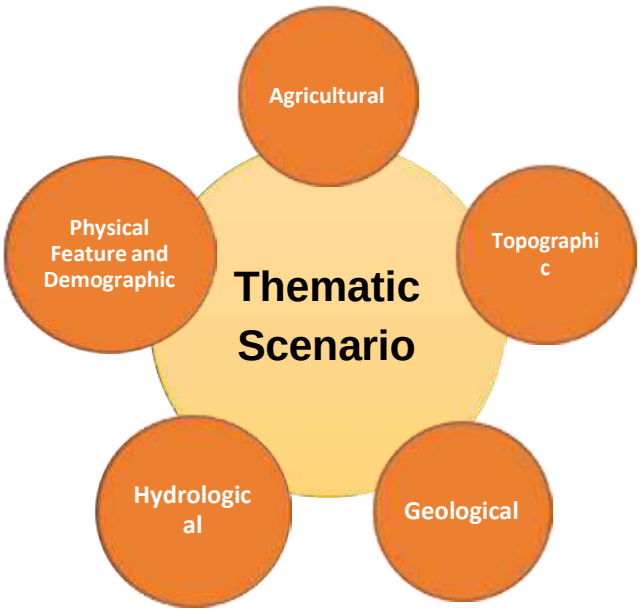


Figure 6.7: Thematic Scenario

Here is a major list of thematic maps:

- Topographic Survey
  - Slope
  - DEM
  - Contour
- Geological & Geo-physical Survey
  - PGA
  - Shear wave
  - Foundation depth
  - Micro zonation map

- Land Use Survey
  - Existing land use map
  - Ecological map
- Physical-Feature Survey
  - Existing road network in terms of type
  - Existing road network in terms of width
  - Connectivity map
- Agricultural Survey
  - Cropping intensity map
- Hydrological Survey
  - Flooding scenario map
  - Main and Sub flood flow zone map
- Density
  - Union-wise population density
  - Ward-wise population density

6.3.1 Connectivity

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. A strong connectivity not only strengthens the intra and inter regional trade but also generates higher income and prosperity. Connectivity map shows inter and intraregional connectivity **Map 6.1**

6.3.2 Density

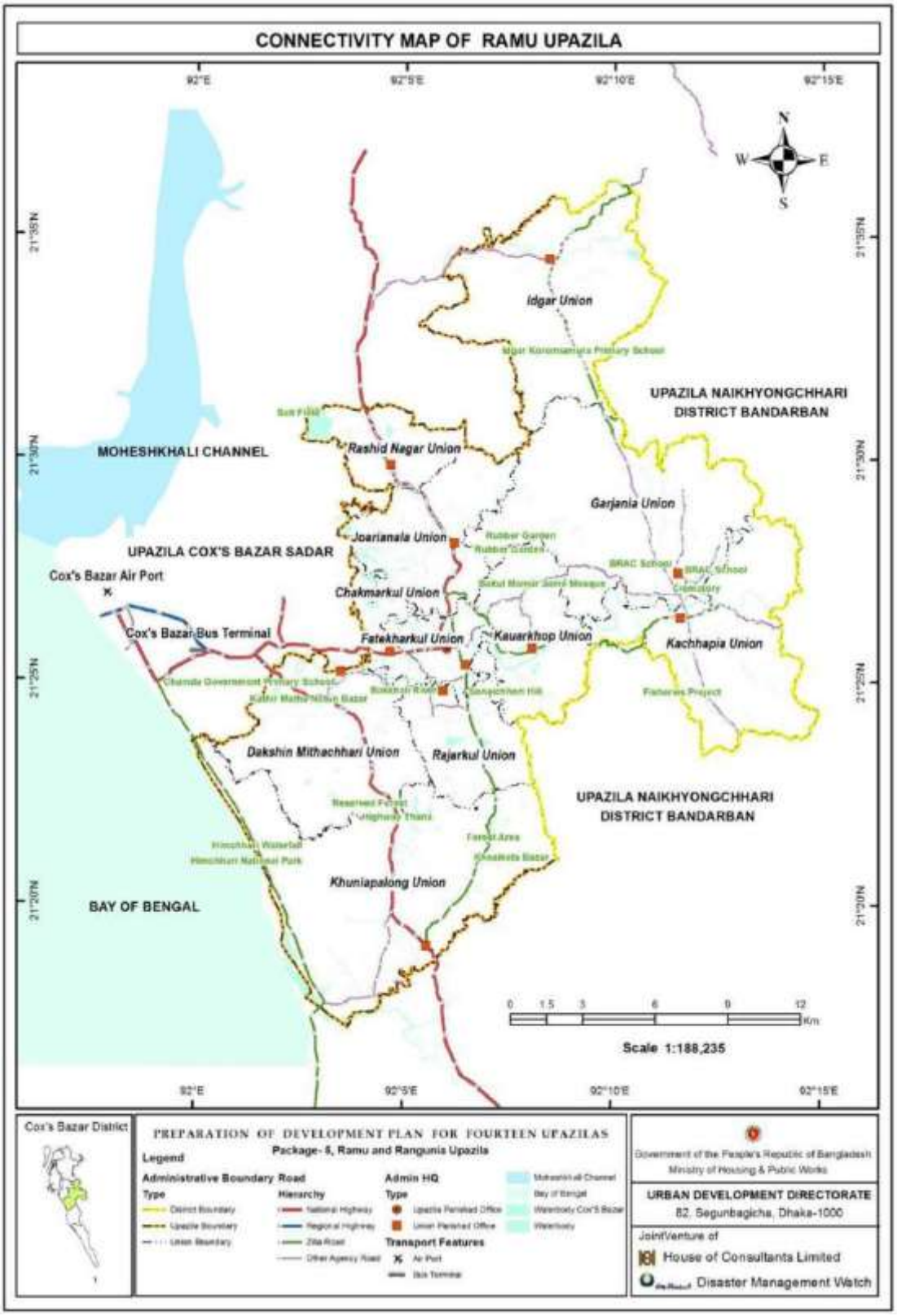
Population density is midyear population divided by land area in square kilometres. Population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship--except for refugees not permanently settled in the country of asylum, who are generally considered part of the population of their country of origin. Land area is a country's total area, excluding area under inland water bodies, national claims to continental shelf, and exclusive economic zones. Here population density map has been prepared according to the population density of 2011 of Ramu Upazila and projected density in 2033 respectively.

6.3.2.1 Density Map According to 2011

Density **Map 6.2** represents union wise population according to BBS, 2011. The map divided in 9 classes. Among 9 classes, there are ranges. The light colour represents lowest value that is 0-1 and dark colour represents highest value that is 12-23. And from the map it shows that, in 2011 Fatekharkul union had highest population density and jungle Garjania had lowest population density. Chakmarkul, Kauarkhop union had medium population density.

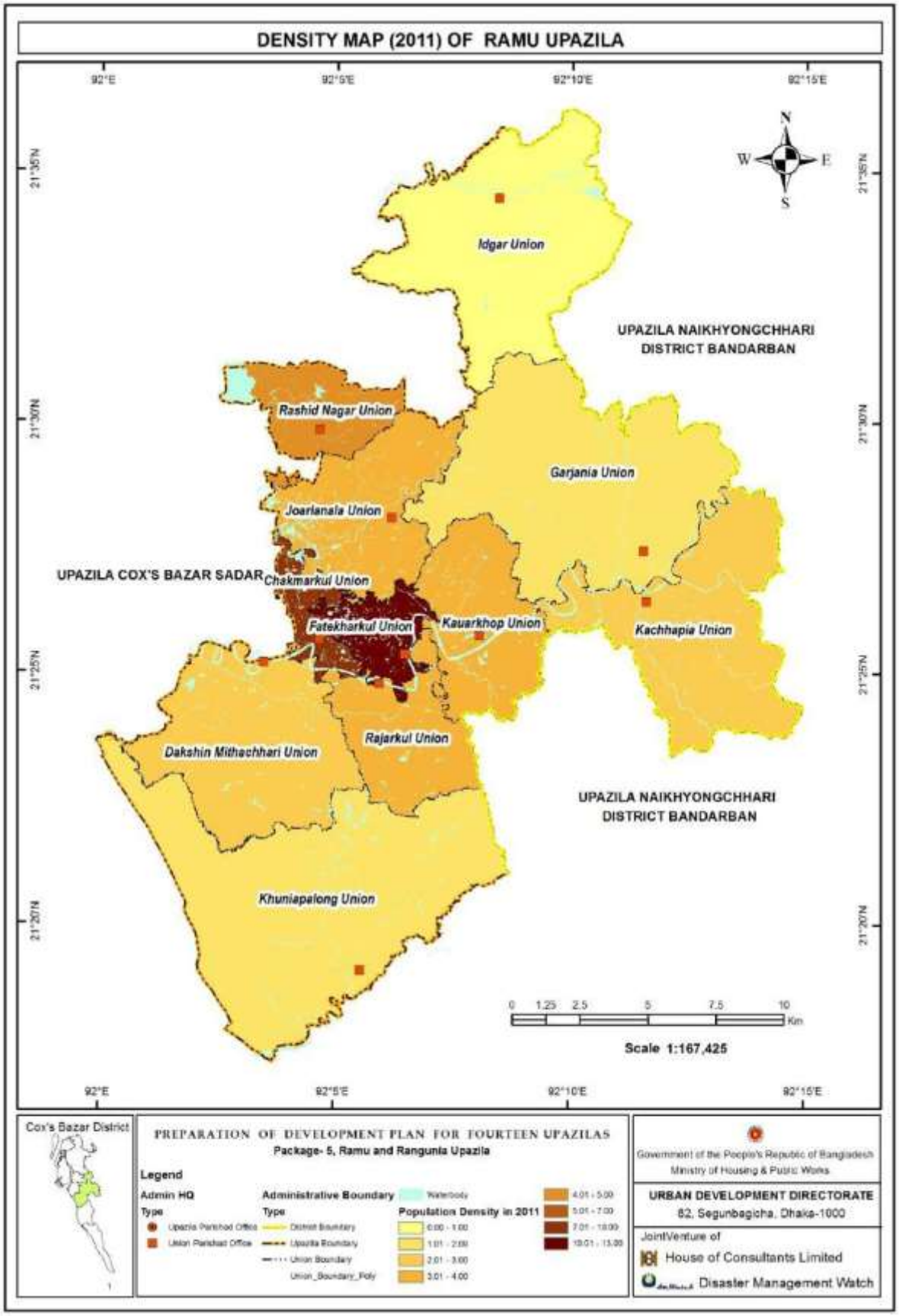
6.3.2.2 Density Map According to 2033

Population projection has been done for 20 years. From the projected population the projected density has been calculated. And from the **Map 6.3** it shows that, according to population projection in 2033 Fatekharkul union and Rajarkul union will highest population density and the range is 28-46. Joarianala, Garjania, Idgar, Rashid Nagar, Kauarkhop union had lowest population density and the range is 0-1.



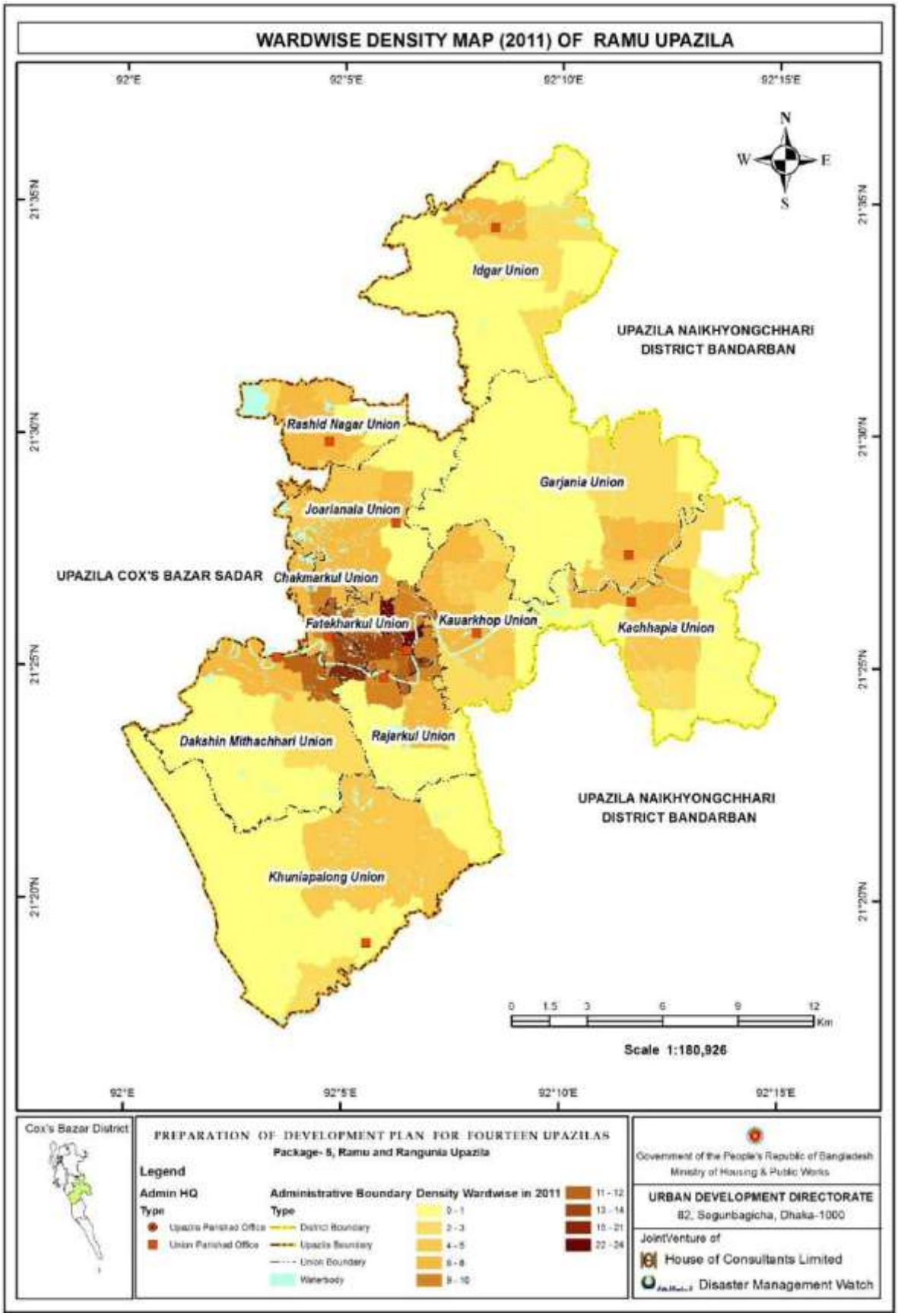
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.1: Connectivity Map of Ramu Upazila



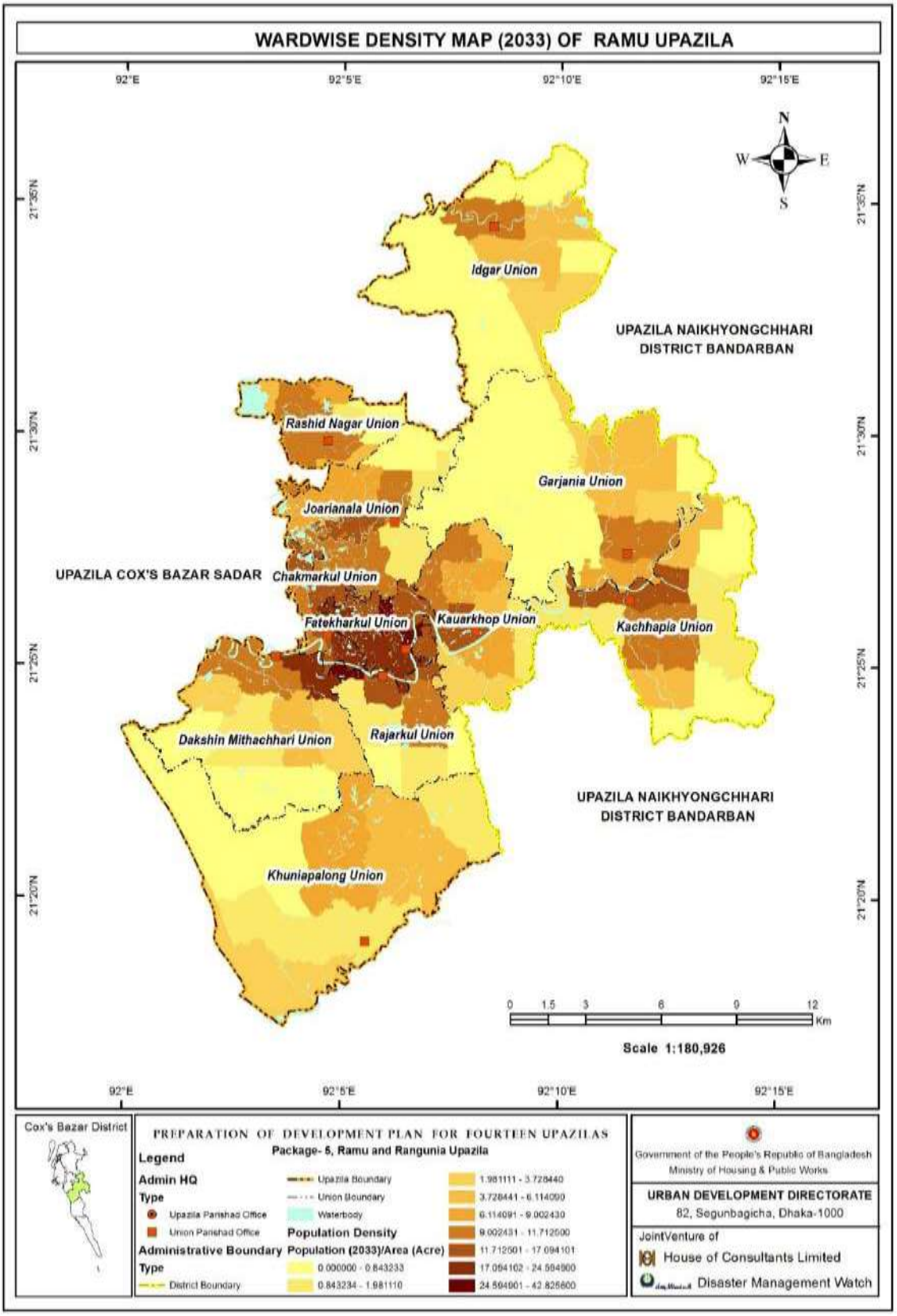
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.2: Population Density of Ramu Upazila (2011)



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

Map 6.3:Ward Wise Population Density in Ramu Upazila (2011)



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

Map 6.4: Union Wise Population Density in Ramu Upazila (2033)

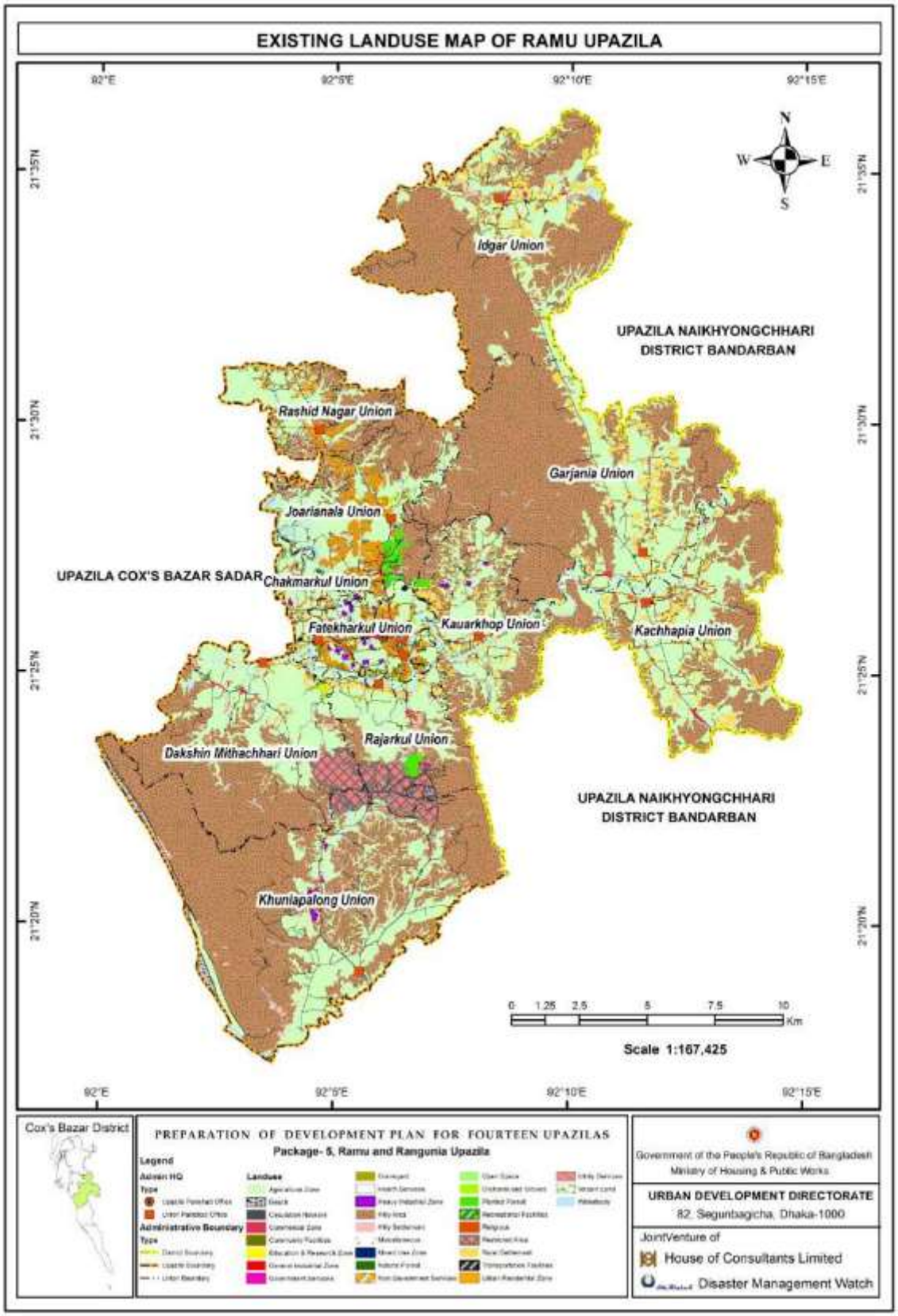
6.3.3 Existing Land Use

For a planned development land use is an important part. From the survey the land use of Ramu Upazila has been enlisted with all details.29 kinds of land uses have been enlisted. From the table below, it is visible that in this Upazila agriculture and hilly area are covering a huge amount of land which is 202.50sq.km and 124.04sq.km respectively. The rural settlement and urban residential zone onlycover4.509% and 1.197% of the total area. From the present scenario of land use, it can be concluded that the Upazila is an agro-based and hilly area. The existing land use statistics of Ramu Upazila has summarized and presented in **Table 6.1**and the existing land use map is presented in **Map 6.4**.

Table 6.1: Existing Land Use of Ramu Upazila

Landuse	Area (Sq.m)	Area (Sq.Km)	Area(Acre)	Percentage
Agricultural Zone	124019035.66	124.02	30645.77	32.26
Beach	1459856.65	1.46	360.74	0.38
Circulation Network	2737262.90	2.74	676.39	0.71
Commercial Zone	642032.22	0.64	158.65	0.17
Community Facilities	32551.15	0.03	8.04	0.01
Education & Research Zone	272176.48	0.27	67.26	0.071
General Industrial Zone	24973.51	0.02	6.17	0.01
Government Services	92230.34	0.09	22.79	0.02
Graveyard	272742.33	0.27	67.40	0.07
Health Services	53102.98	0.05	13.12	0.01
Heavy Industrial Zone	996821.90	1.00	246.32	0.26
Hilly Area	202502545.08	202.50	50039.47	52.68
Hilly Settlement	3136477.65	3.14	775.04	0.816
Miscellaneous	5022.42	0.01	1.24	0.001
Mixed Use Zone	204874.43	0.20	50.63	0.053
Natural Forest	2081483.96	2.08	514.35	0.541
Non Government Services	6284.31	0.01	1.55	0.002
Open Space	108903.43	0.11	26.91	0.028
Orchards and Groves	526125.07	0.53	130.01	0.137
Planted Forest	1639582.62	1.64	405.15	0.427
Recreational Facilities	10898.12	0.01	2.69	0.003
Religious	284443.67	0.28	70.29	0.074
Restricted Area	7119481.26	7.12	1759.26	1.852
Rural Settlement	17334479.88	17.33	4283.44	4.509
Transportation Facilities	35736.82	0.04	8.83	0.009
Urban Residential Zone	4599910.05	4.60	1136.66	1.197
Utility Services	8435.65	0.01	2.08	0.002
Vacant Land	1320288.30	1.32	326.25	0.343
Waterbody	12873037.17	12.87	3181.00	3.349
Total	384400795.98	384.400796	94987.51	100

Source: Field Survey, 2016



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

Map 6.4: Land Use of Ramu Upazila

6.3.4 Existing Physical Feature

During the physical feature survey existing features such as roads according to type and width, structures of the Upazila have enlisted. A total overview of the Upazila was gathered from the data of existing physical feature survey. This database is the base for the development that will be planned for next 20 years.

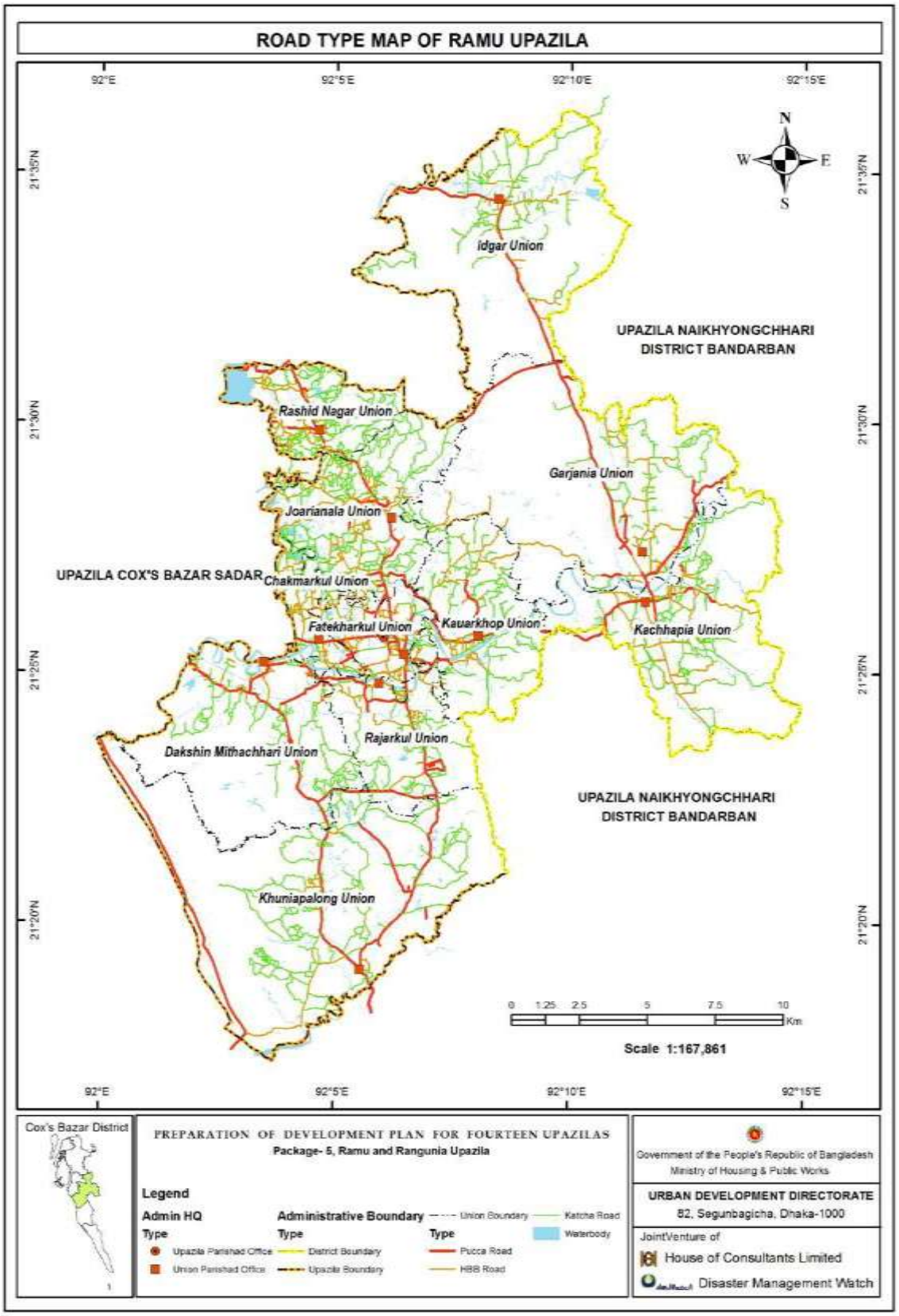
6.3.4.1 Road Network according to Type

From the Physical feature survey, the road network of the study area has summarized in the **Table 6.2**. From the survey, it is found that the length of HBB road is 235.551 km, katcha road is 753.833 km of pucca road is 172.393 km. Pucca Road is around 15% of total length of road. From the table, it is visible that the length of katcha road is longer than others. That means most of the roads of this area is katcha. Existing road network according to type and width has presented in **Map 6.5 and 6.6.**

Table 6.2: Total Circulation Network of Ramu 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**

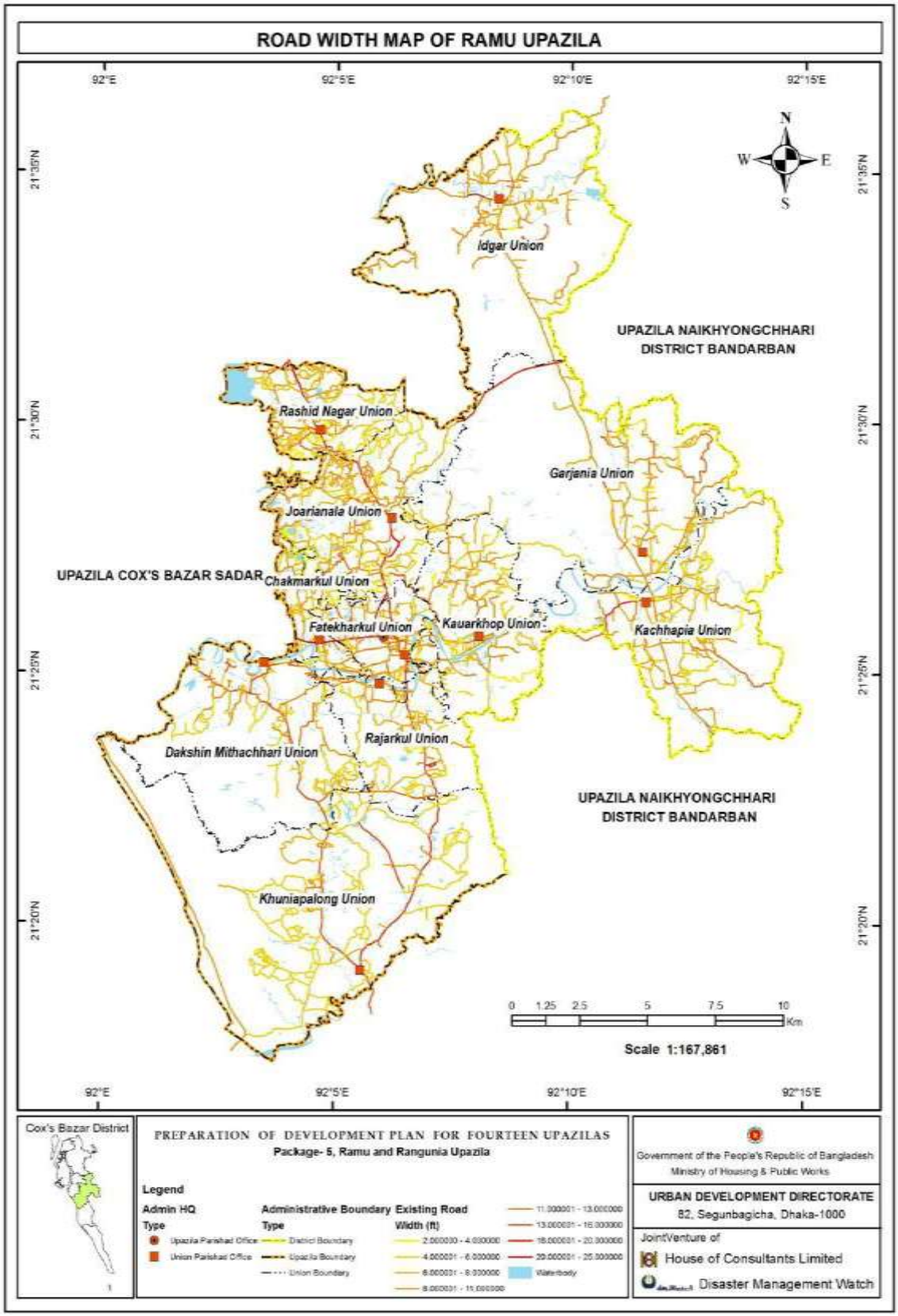
Source: Field Survey, 2016



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

Map 6.5: Road Network (Type) of Ramu Upazila

6.3.4.2 Road Network according to Width



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

Map 6.6: Road Network (Width) of Ramu Upazila

6.3.4.3 Waterbody

The **Table 6.3** represented the present condition of the waterbody of this area. There is existence of river, pond, ditch, khal in this Upazila. There is one major river is flowing through this area that is Bakkhali. The total area of water body is 15.780 sq.km.

Table 6.3: Existing WaterBody in Ramu Upazila

Water body Type	Area (sq.m)	Area (sq.km)	Area (Acre)
Ditch	671940.316	0.671940316	166.0400681
Khal	4962460.9	4.9624609	1226.250794
Pond	3672435.159	3.672435159	907.4784909
River	4001996.828	4.001996828	988.9149529
Wet Land	2471364.335	2.471364335	610.6874267
Total	15780197.54	15.78019754	3899.371732

Source: Field Survey, 2016

6.3.4.4 Structure type

According to the field survey, there were 36025 structures within the Ramu Upazila. The statistic has been shown in the **Table 6.4.**

Table6.4: Structure Type of Upazila according to the Union

Union	Structure Type	No. of Structure	Total	Percentage
Chakmarkul	Katcha	1282	2819	6.83
	Pucca	468		
	Semi Pucca	1044		
	Under Construction	25		
DakshinMithachhari	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		

Union	Structure Type	No. of Structure	Total	Percentage
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		
	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		
Total		36025	36025	100

Source: Field Survey, 2016

From the data, it can be concluded that the number of katcha structure is significant in every unions. Structure condition could be an indicator to understand economic condition of the inhabitants of this Upazila. If the data of each Upazila is compared with other it is visible that Fatekharkul, Chakmarkul, Gorjaniaand Joarianala unions contain the highest number of pucca structure thatindicated the economic or financial condition of these four unions and it is better than others. In Rashid Nagar union the number of katcha structure is 2260. Besides the pucca structure Fatekharkul also contains highest number of katcha structure. In Khunia Palong only 15 structures are pucca. There is another category of structure which is under construction and this number is visible in almost every union.

6.3.5 Agriculture

The existing land use of this Upazila depicted that the most of its land are occupied by the agricultural use. Different types of crops are planted in the agricultural land. Through the agricultural survey the cropping pattern and intensity has recorded. From the survey it implied that three types of cropping intensity exist in this area.

6.3.5.1 Cropping Intensity

Single, double and triple cropped land are enlisted in Ramu Upazila. From the **Table 6.5**, it is visible that double cropped land is the highest in this Upazila. The area of double cropped and triple cropped land is 19.11% and 8.64% respectively.

Table 6.5: Cropping Intensity of Ramu Upazila

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

6.3.6 Vegetation

The vegetation scenario of Ramu Upazila has summarized in the **Table 6.6**where percentage are shown in respect of whole Ramu Upazila.

Table 6.6: Vegetation Scenario of Ramu Upazila

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, 2016

As it has previously shown in the **Table 6.5** that most of the lands are double and triple cropped. The **Map 6.7** also visualized the same scenario. It represents that the agricultural land is not limited in a fixed area; it is widely distributed throughout the Upazila. In **Map 6.8**represented a scenario of vegetation of this Upazila.The purpose of this vegetation map is to represent the vegetal land of the area. In this map three types of vegetal land are highlighted that are natural forest, planted forest and orchards and groves.

6.3.7 Ecology

Map 6.9 represented the agricultural zone, hilly area, recreational area, water body and natural forest. It covered almost most of the areas of the Upazila. These areas should be preserved to maintain environmental balance of this Upazila.

6.3.8 Hydrology-Flooding Scenario

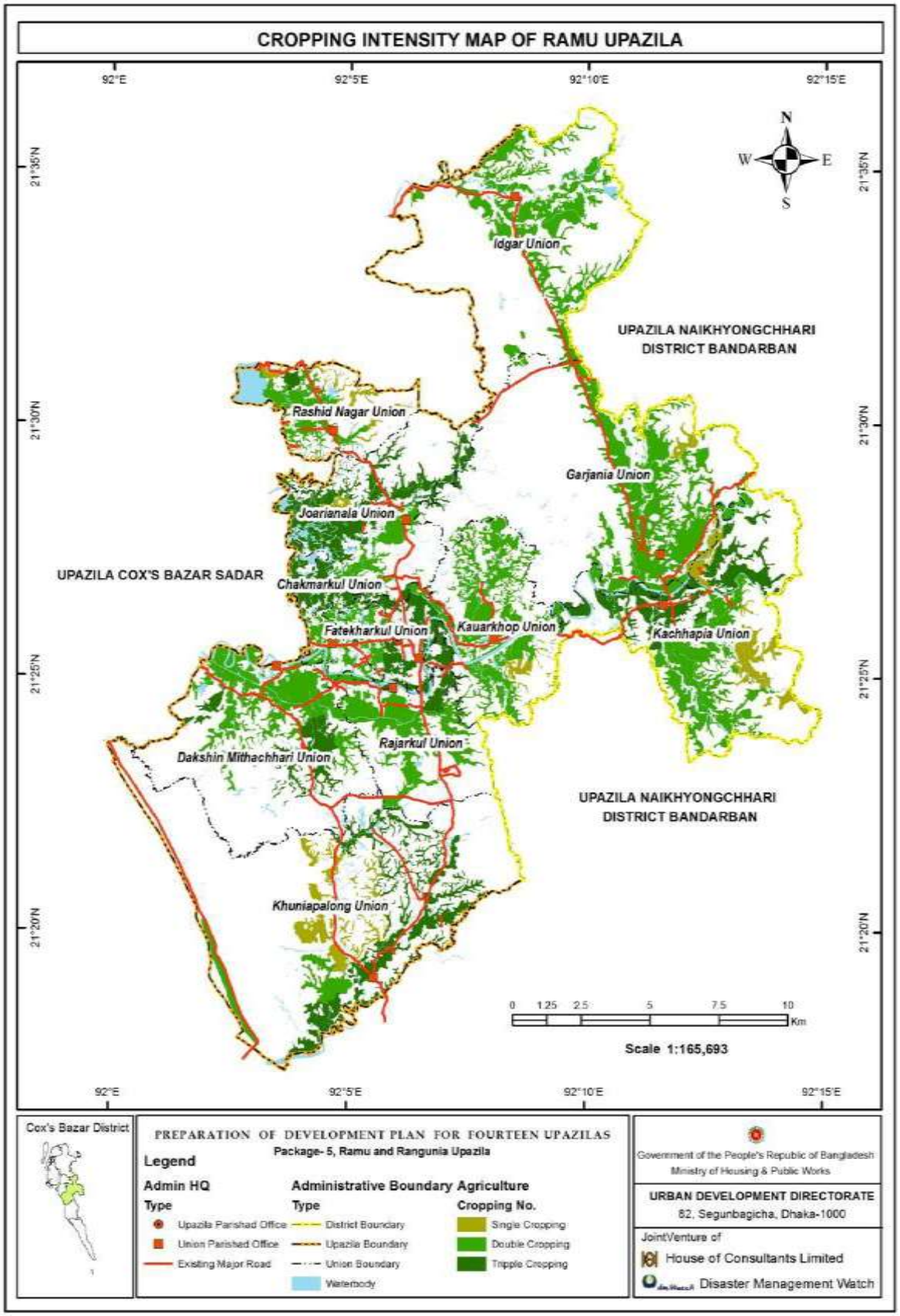
The project area has divided into five categories depending on the flooding scenario that are 1st degree flooded area, 2nd degree flooded area, 3rd degree flooded area, 4th degree flooded area and 5th degree flooded area. The statistics has summarized in below **Table 6.7**.

Table 6.7: 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
Total	**31118800**	**31**	**6690**	

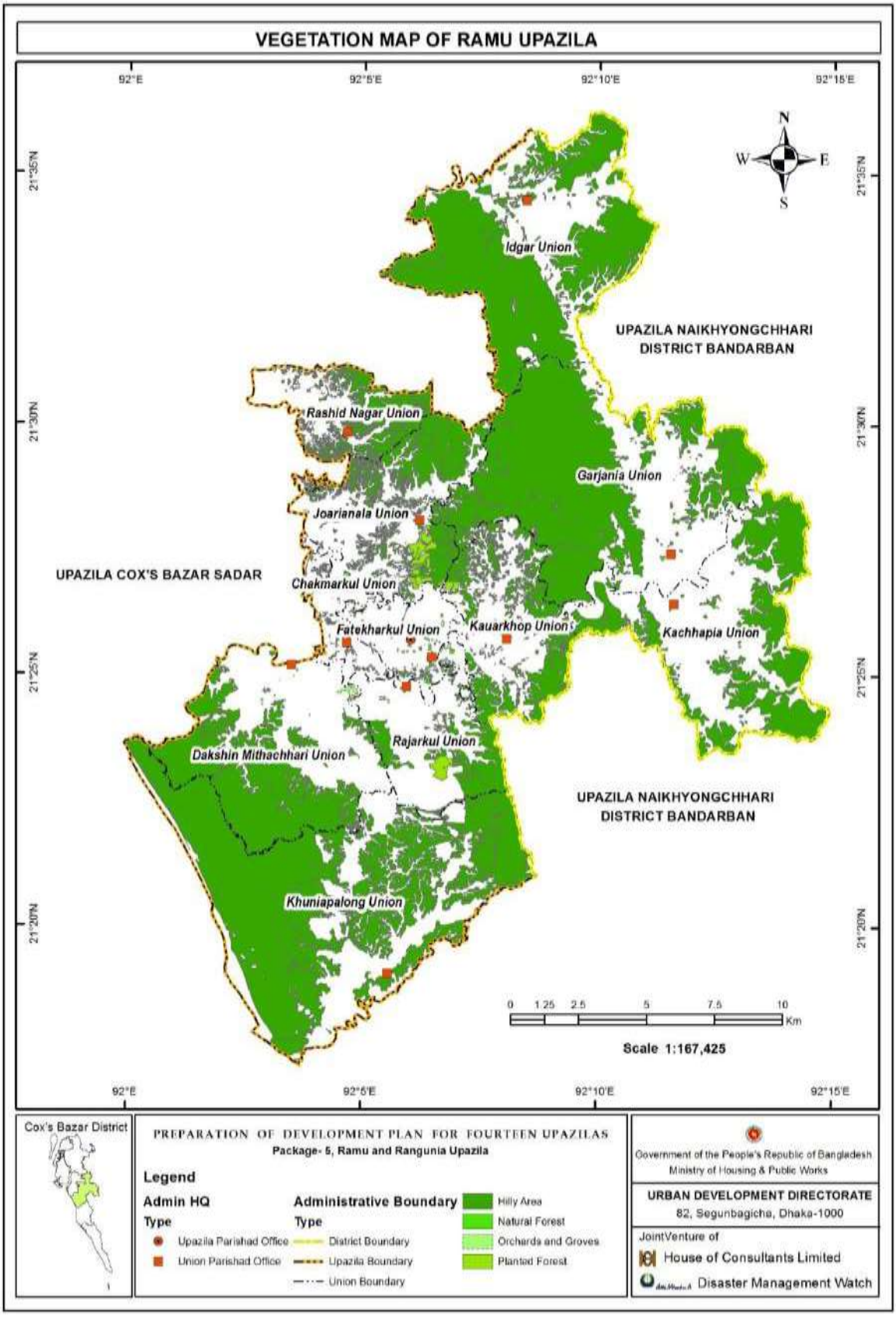
Source: Field Survey, 2016

The flood scenario **Map 6.10** provided a visualization of flooded land of Ramu Upazila. During the flooding period which areas will be flooded can be identified through this map. Five types of land have been shown depending on the water depth.4th and 5th degree flooded areas are termed as sub flood flow zone and main flood flow zone respectively.



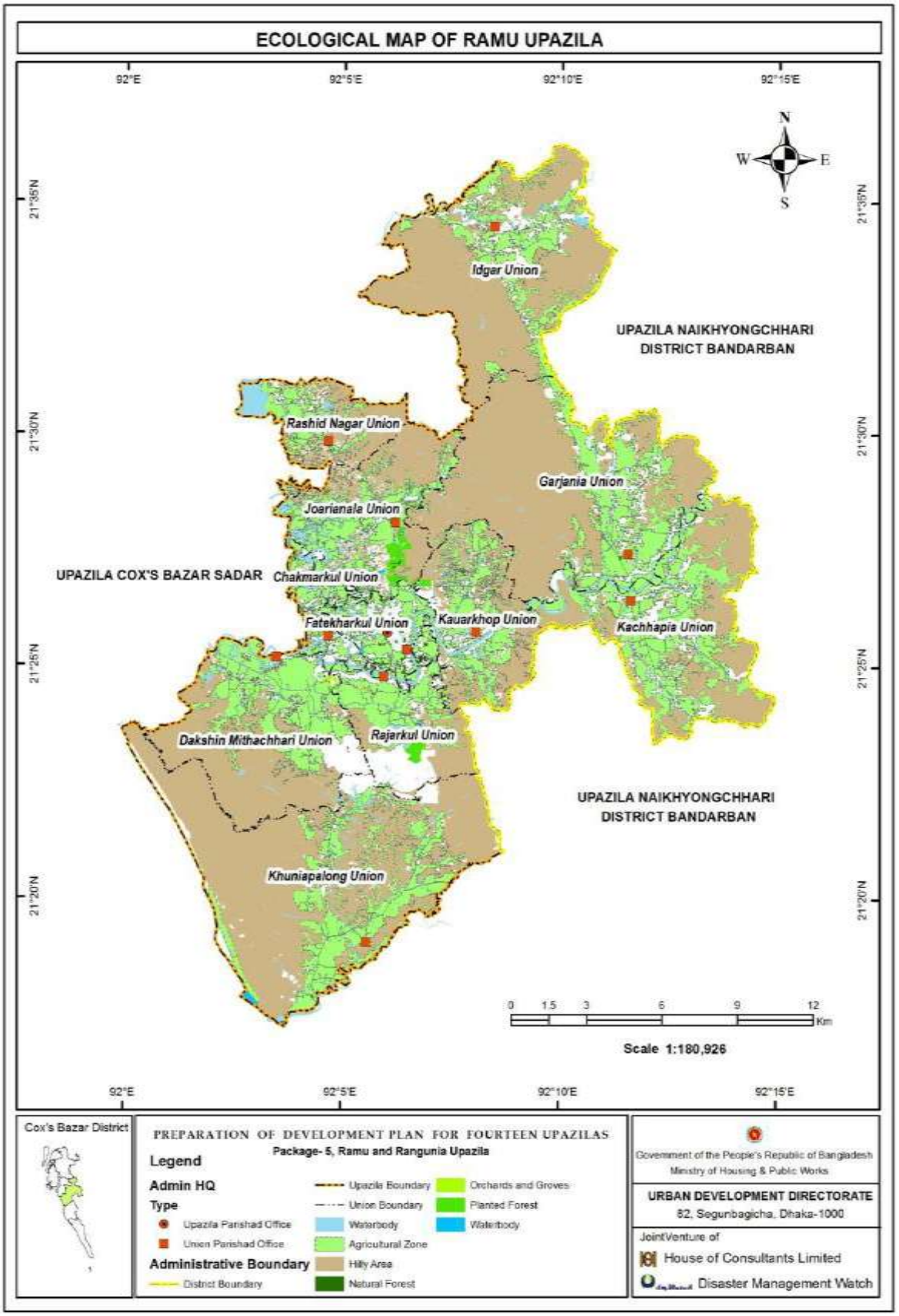
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.7: Cropping Intensity in Ramu Upazila



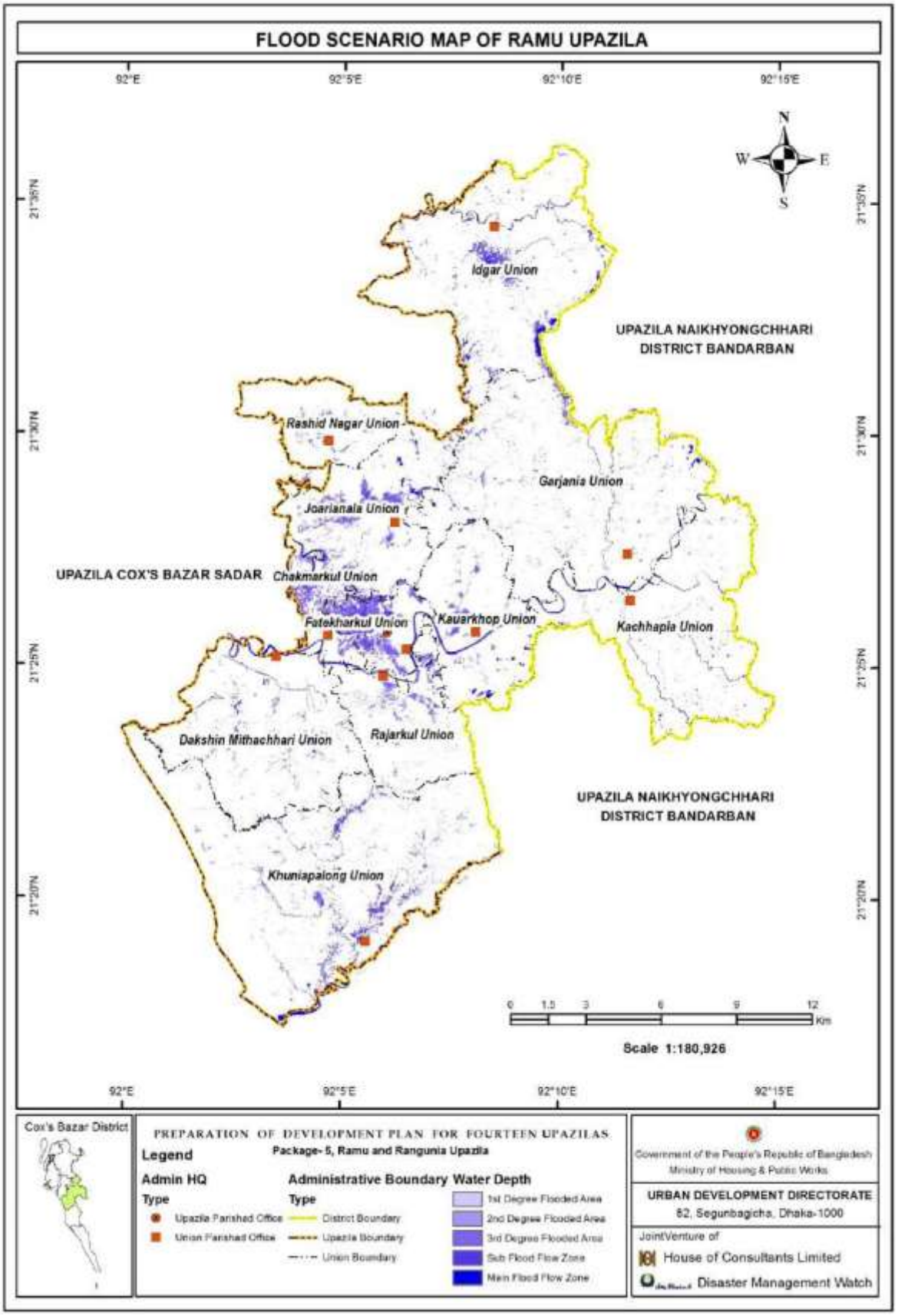
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.8: Vegetation Map of Ramu Upazila



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

Map 6.9: Ecological Map of Ramu Upazila



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

Map 6.10: Flood Scenario of Ramu Upazila

6.3.9 Geology

About Foundation

The structural elements that connect buildings, bridges, and other structures to the ground are called foundations. These elements are very important, because the safety and serviceability of the structure depends on the performance of its foundations. Suitable engineering layer identification may reduce the both natural (Earthquake) and anthropogenic (Building Collapse) disaster risk. Geotechnical engineers are routinely involved in both the design and construction of foundations. The main objective of this part of the report is to suggest and help planners based on the bearing capacity and subsoil stratification. It is noteworthy that the bearing capacity results and zoning based on the results are solely for use during planning stage of the project. Before design and construction of any structure within the project area, detail subsoil investigation must be carried out for foundation and structural design of any structure. Based on the geological and geo-physical investigation and study, it is recommended the suitability of foundation depth for the multi-storied structure with respect to land area in Ramu Upazila is presented in **Table 6.8**.

Table 6.8: Foundation Depth of Ramu Upazila

Category	Area (sq. m)	Area (sq. km)	Area (acre)	Percentage
Very Poor	562500	0.5625	138.9968	0.261628
Poor	14937500	14.9375	3691.137	6.947674
Moderate	58437500	58.4375	14440.22	27.18023
Good	82125000	82.125	20293.53	38.19767
Very Good	58937500	58.9375	14563.77	27.41279
Total	215000000	215	53127.66	100

Source: Field Survey, 2016

Seismic Hazard Assessment

Seismic hazard is a broad term used in a general sense to refer to the potentially damaging phenomena associated with earthquakes, such as ground shaking, liquefaction, landslides, and tsunami. In the specific sense, seismic hazard is the likelihood or probability of experiencing a specified intensity of any damaging phenomenon at a particular site or over a region in some period of interest. The methodology for assessing the probability of seismic hazards grew out of an engineering need for better designs in the context of structural reliability (Cornell, 1968; Cornell, 1969), since such assessments are frequently made for the purpose of guiding decisions related to mitigating risk. However, the probabilistic method has also proven to be a compelling, structured framework for the explicit quantification of scientific uncertainties involved in the hazard estimation process. Uncertainty is inherent in the estimation of earthquake occurrence and the associated hazards of damaging ground motion, permanent ground displacements, and in some cases, seiche and tsunami.

The process begins with the characterization of earthquake occurrence using two sources of data: observed seismicity (historical and instrumental) and geologic. The occurrence information is combined with data on the transmission of seismic shaking to form the seismo-tectonic model. Since uncertainty is inherent in the earthquake process, the parameters of the seismo-tectonic model are systematically varied via logic trees, Monte Carlo simulation, and other techniques, to provide the probabilistic seismic hazard model's

results. The results may be disaggregated (also known as disaggregation) to identify specific contributory parameters to the overall results. The results must also consider the site-specific soil properties.

The final outcome of seismic hazard assessment in this project is a seismic micro-zoning map or hazard map of the area, in which incorporated are characterized seismic sites, constrained from the aforementioned simulations of earthquake ground motion. The mapped hazard refers to an estimate of the probability of exceeding a certain amount of ground shaking, or ground motion, in 50 years. This map can be used to create building code at the area to help establish construction requirements necessary to preserve public safety. Based on the geological and geo-physical investigation and study, it is observed the area of land that is suitable against shear wave during earth quake for the multi-storied structure in Ramu Upazila is presented in **Table 6.9**.

Table 6.9: Shear Wave of Ramu Upazila

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

Ground Motion Parameters (PGA, SA 0.2s and SA 1s)

Peak ground acceleration (PGA) is experienced by a particle on the ground, and spectral acceleration (SA) is approximately experienced by a building, as modelled by a particle mass on a mass less vertical rod having the same natural period of vibration as the building. SA would also be a good index to hazard to buildings and is more closely related to the building behaviour than peak ground motion parameters. PGA is normally used to define earthquake intensity and SA is used for safe building design, considering earthquake intensity.

Peak ground acceleration (PGA) is equal to the maximum ground acceleration that occurred during earthquake shaking at a location. PGA is equal to the amplitude of the largest absolute acceleration recorded on an accelerogram at a site during a particular earthquake and Spectral Acceleration (SA) for 0.2 sec and 1 sec were measured to identify comparative suitable land for low and high rise building respectively. Suitable land can be identified using following equation.

$F = ma$……. (5.8)

Here, F is the applied force due to measure earthquake intensity from PGA value in a grid; m is the mass of the structure and a is the Spectral Acceleration.

The Peak Ground Acceleration (PGA) during earth quake in Ramu Upazila is presented in the **Table 6.10**.

Table 6.10: PGA of Ramu Upazila

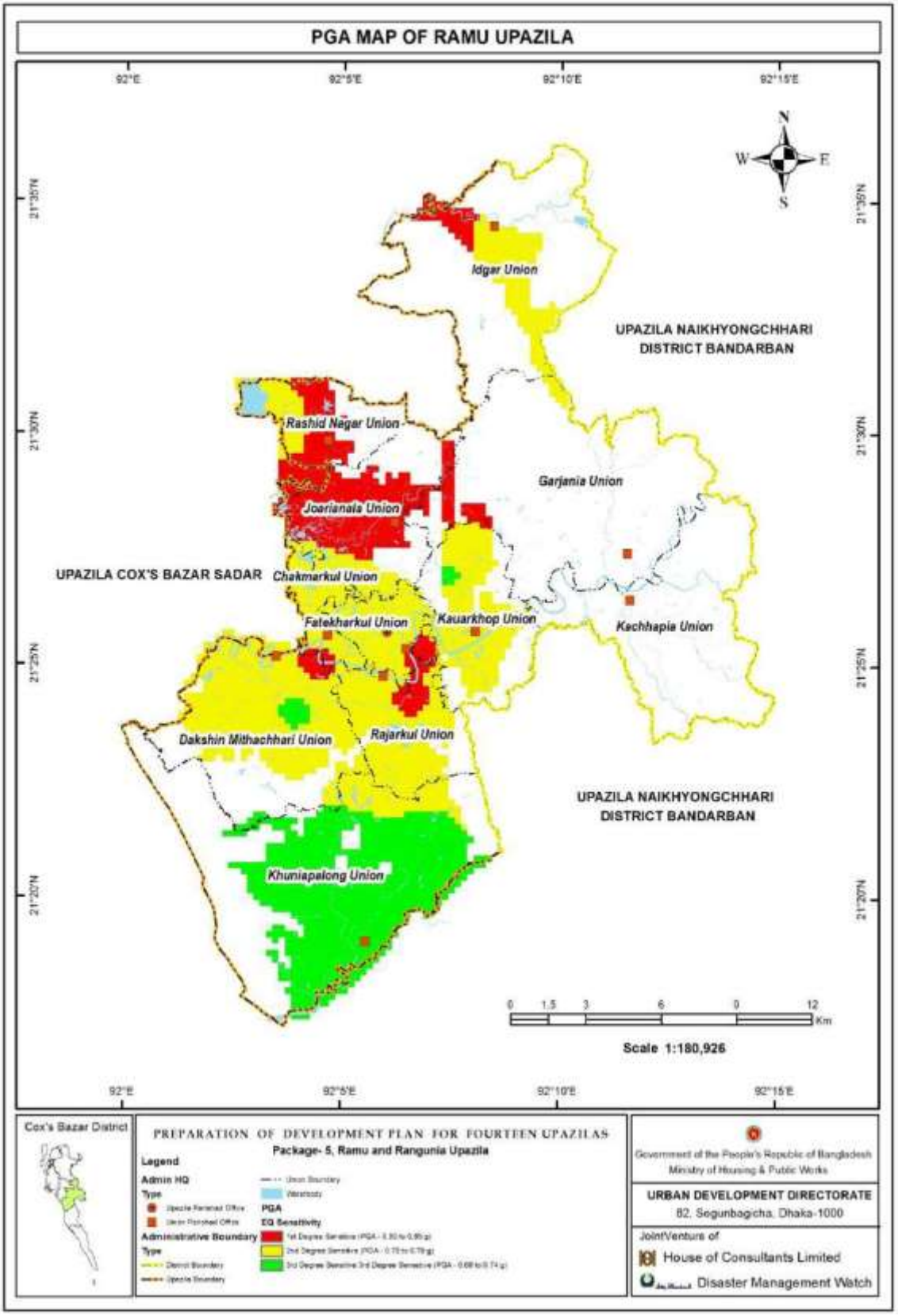
PGA	Area(Sq.m)	Area(Acre)
1st Degree Sensitive	32000000	6906.36
2nd Degree Sensitive	99186500	24509.66
3rd Degree Sensitive	46312500	11444.06

Source: Field Survey, 2016

The **Map 6.11** represented peak ground acceleration condition of Ramu Upazila. It is an important part of geology and as well as development. Three types areas have been shown in the map depending on the sensitivity of PGA which are 1st degree sensitive, 2nd degree and 3rd degree sensitive. It is shown that most of the area is 2nd degree sensitive which includes Chakmarkul union, Fatekharkul Union, Dakshin Mithaichari, Kauarkhop, Rajarkul and a little portion of Idgar union. The **Map 6.12** represented the Shear Wave of Ramu Upazila. According to the **Map 6.12**, it is divided into four categories of land depending on the shear wave. These are poor, moderate, good and very good. In the category of very good only a few areas are identified which are in Khuniapalong Union. The foundation depth is an important factor of geology for infrastructure development that is presented in **Map 6.13**. Depending on the soil quality, the area can be selected for high rise buildings for construction with economically. Foundation depth of the soil of this Upazila can be distributed into five categories which are very poor, poor, moderate, good and very good. From the map it is visible that foundation depth of this area is more or less of very good category.

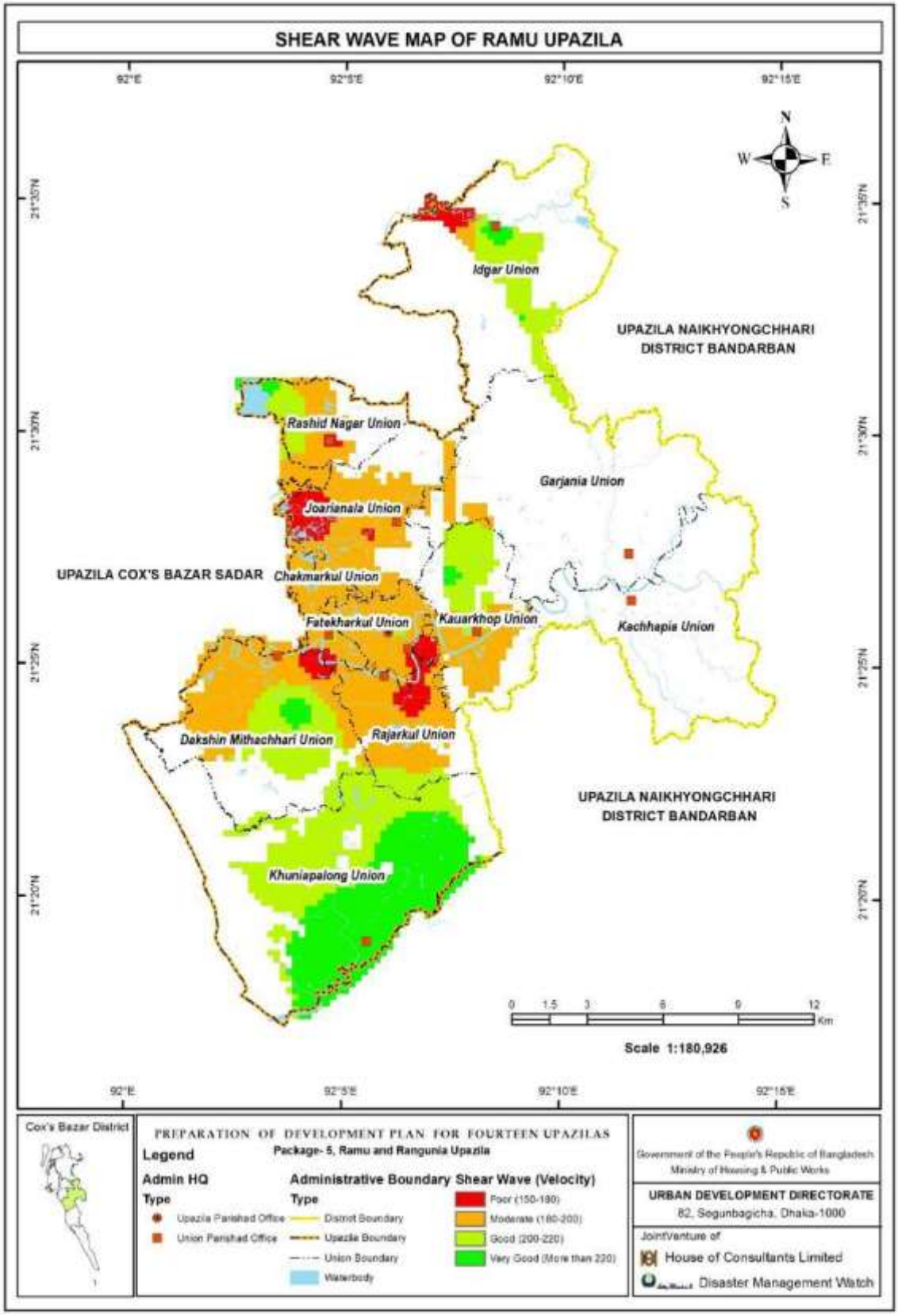
Micro Zonation

Micro zonation **Map 6.14**represented the character of the soil that is the combined result of different geological survey that has described earlier. Seismic micro zonation is defined as the process of subdividing a potential seismic or earthquake prone area into zones with respect to some geological and geophysical characteristics of the sites. From the map it is visible that Chakmarkul union, Fatekharkul union, Kauarkhop union, and Khuniapalong union are very good category area in respect of mirco zonation.



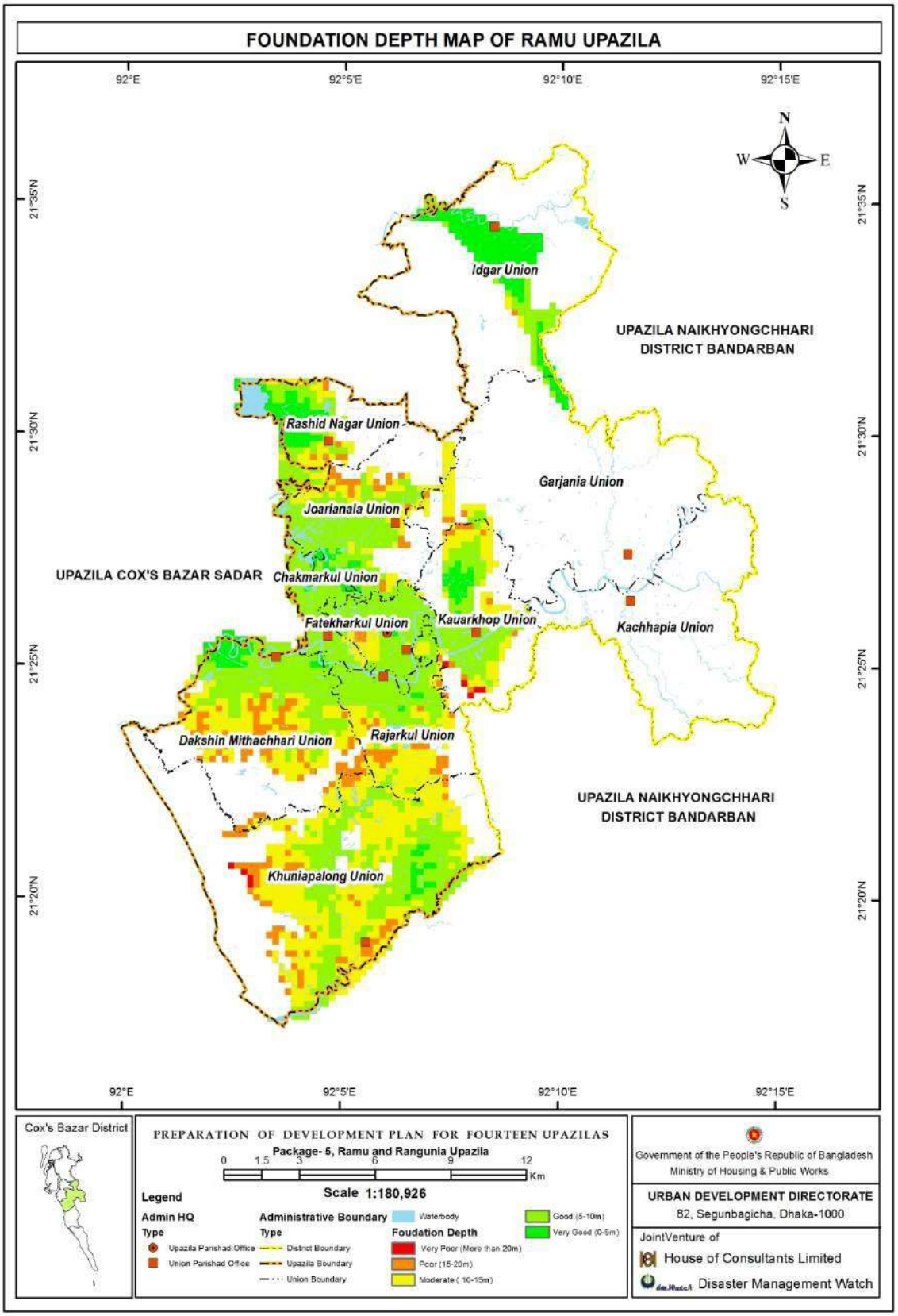
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.11: Geology (PGA) of Ramu Upazila



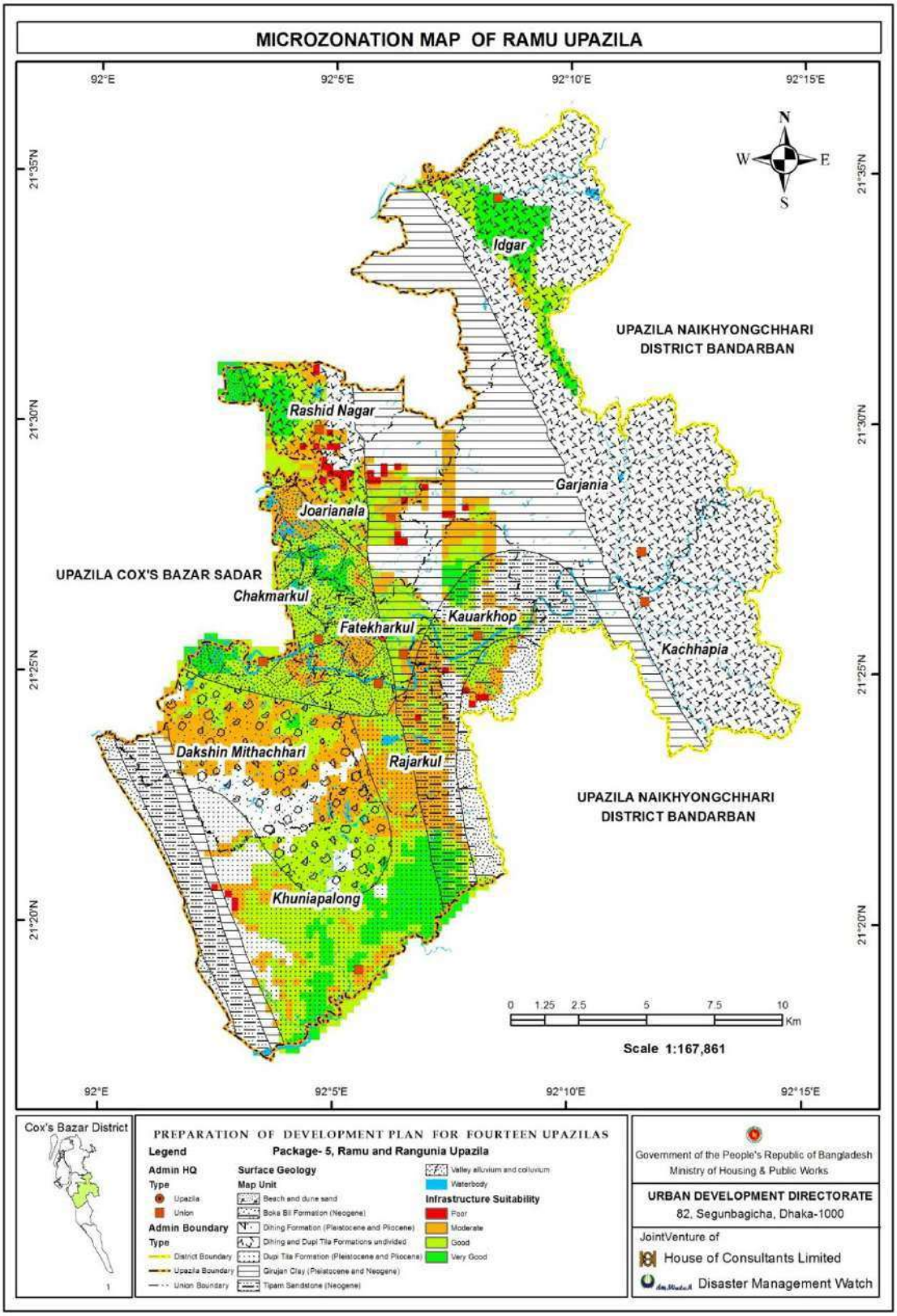
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.12: Geology (Shear Wave) of Ramu Upazila



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

Map 6.13: Geology (Foundation Depth) of Ramu Upazila



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

Map 6.14: Micro Zonation Map of Ramu Upazila

According to the Geological and Geophysical Survey, the recommendation stated in the **Table 6.11**could be drawn for Ramu Upazila.

Table 6.11: Overview of the Infrastructure Suitability Classes

Infrastructure Suitability	Subsurface Sediments	Foundation Layer (m)	Average Elevation msl	Shear Wave Velocity, Vs (m/s)	Peak Ground Acceleration (PGA) SEISMICITY	Infrastructure foundation suitability	Suggested land use suitability
Very Good	DupiTila Formation (Pleistocene and Pliocene)	0-5	15 above	>220	3rd Degree Sensitive (PGA 0.443g to 0.529g)	4-6 story light infrastructure is suitable with a foundation depth of up to 2 m. Large and tail infrastructure requires pile foundation placed on Soil layer no 4 or 7.	Commercial area Residential area Industrial zone
Good	Dihing and DupiTila Formations undivided	5-10	10-15	200-220	3rd Degree Sensitive (PGA 0.443g to 0.529g)	4-6 story light infrastructure is suitable in Dupitila Formation. General foundation depth is within 5 m, at places higher Large and tall infrastructure requires pile foundation placed on layer no 4 or 7	Commercial area Residential area Industrial zone
Moderate	Dihing Formation (Pleistocene and Pliocene)	10-15	7-10	180-200	2nd Degree Sensitive (PGA 0.528g to 0.583g)	4-6 story light infrastructure requires on-site subsoil investigation and proper foundation design. Deep pile foundation is needed for large and tail infrastructure	Industrial zone Residential area Commercial area Agricultural Zone Park and Recreation

Infrastructure Suitability	Subsurface Sediments	Foundation Layer (m)	Average Elevation msl	Shear Wave Velocity, Vs (m/s)	Peak Ground Acceleration (PGA) SEISMICITY	Infrastructure foundation suitability	Suggested land use suitability
Poor	Girujan Clay (Pleistocene and Neogene)	15-20	6-7	150-180	1st Degree Sensitive (PGA 0.584g to 0.651g)	Detail subsoil investigation and proper foundation design is required for all types of infrastructure, due to low bearing capacity with hazard potential.	Agricultural zone Flood flow zone Wetland Rural settlement Park and Recreation
Very Poor	Valley alluvium and colluviums. Mainly silty clay, with alternate layers of Organic clay and peat. Thickness is more than 10 m. In low floodplain areas less organic layers can be expected.	>20	5-7	<150	1st Degree Sensitive (PGA 0.584g to 0.651g)	Detail subsoil investigation for deep pile foundation is essential, due to very low bearing capacity and high hazard potential. Shallow foundation is not preferred.	Agricultural zone Flood flow zone Wetland Rural settlement Park and Recreation

Source: Field Survey, 2016

6.3.10 DEM (Digital Elevation Model)

DEM refers the digital representation of topography that creates cell based with a single elevation representing the entire area of the cell. In a word, A digital elevation model (DEM) is a digital file consisting of terrain elevations for ground positions at regularly spaced horizontal intervals. It determines the following characteristics of terrain:

- Slope, aspect
- Watersheds
- Drainage networks

Map 6.15 presented the Digital Elevation Model that enables to understand the land type of this area whether it is plain or undulated. According to the existing land use 35.62% of the total area is hill. From the map it is visible that the Upazila is surrounded by hilly area which value in meter is from 19 to100. The land below 19 is relatively flat land. The deeper area in the map is the river.

6.3.11 Contour

A contour line connects a series of points of equal elevation & is used to illustrate relief on a map. For example, numerous contour lines that are close to one another show hilly or mountainous terrain; when far apart, they indicate a gentler slope.

Contour has been created for Ramu Upazila at 30 cm interval. In the **Map 6.16,** Contour interval has shown in 10 categories. From the map, it is clear that urban area has divided into two categories as flat land and hilly area where flat land ranges within 5m and hilly area has varied from 30 to 40 m interval.

6.3.12 Slope

Slope is the steepness of a line as it moves from left to right. Therefore, Slope is the ratio of the rise, the vertical change, to the run, the horizontal change of a line. Slope is measured by calculating the difference in the elevation from one point to another divided by the lateral distance between those points.

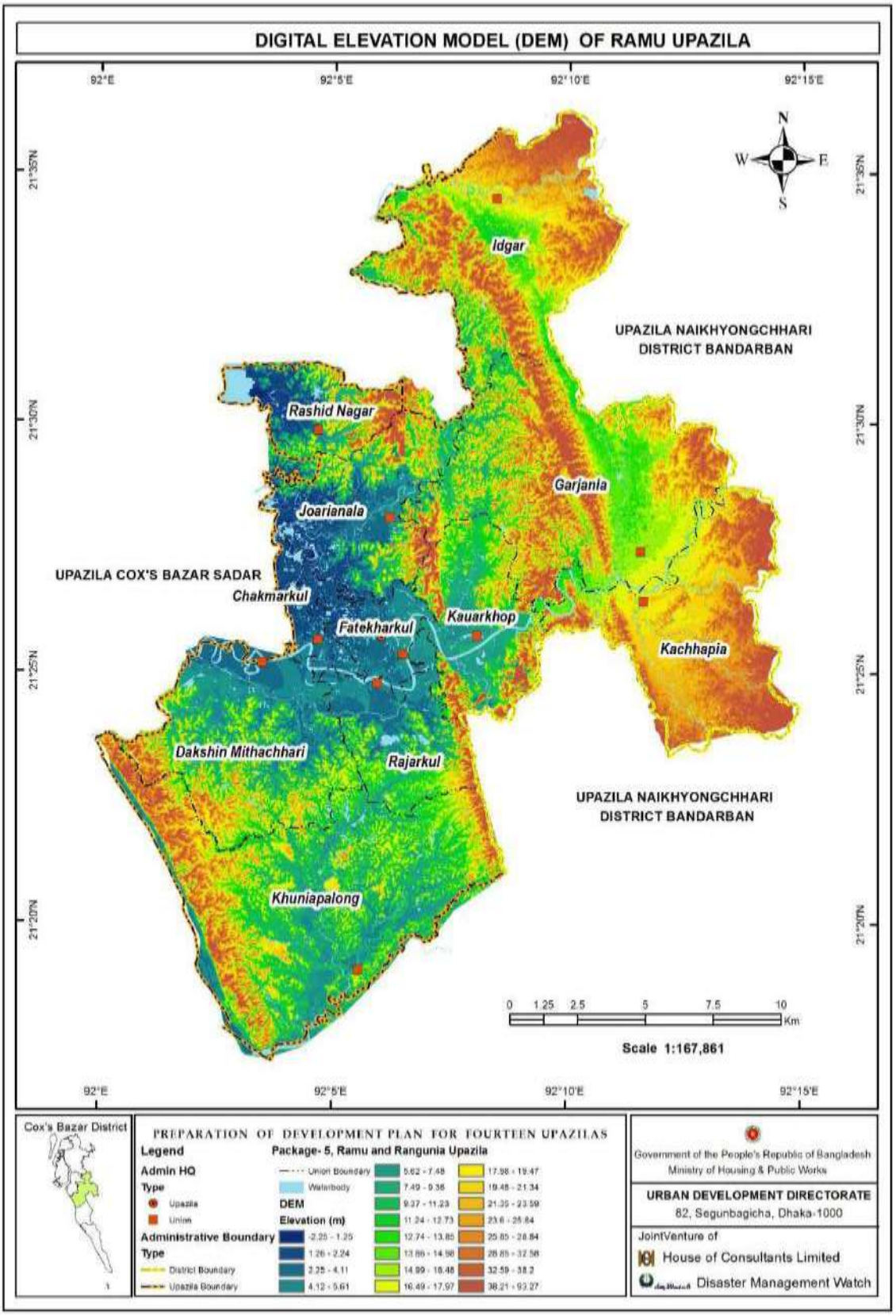
Slope can be categorized into different interval depending on purpose. For the planning of project area, slope map has been done in following interval:

Table 6.12: Slope Categories

Categories	Percentages
Nearly Level	0-1
Very Gently Sloping	1-3
Gently Sloping	3-5
Moderately Sloping	5-10
Strongly Sloping	10-15
Moderately Steep	15-25
Steep	25-33
Very Steep	33-50
Very Very Steep (More than 50)	More than 50

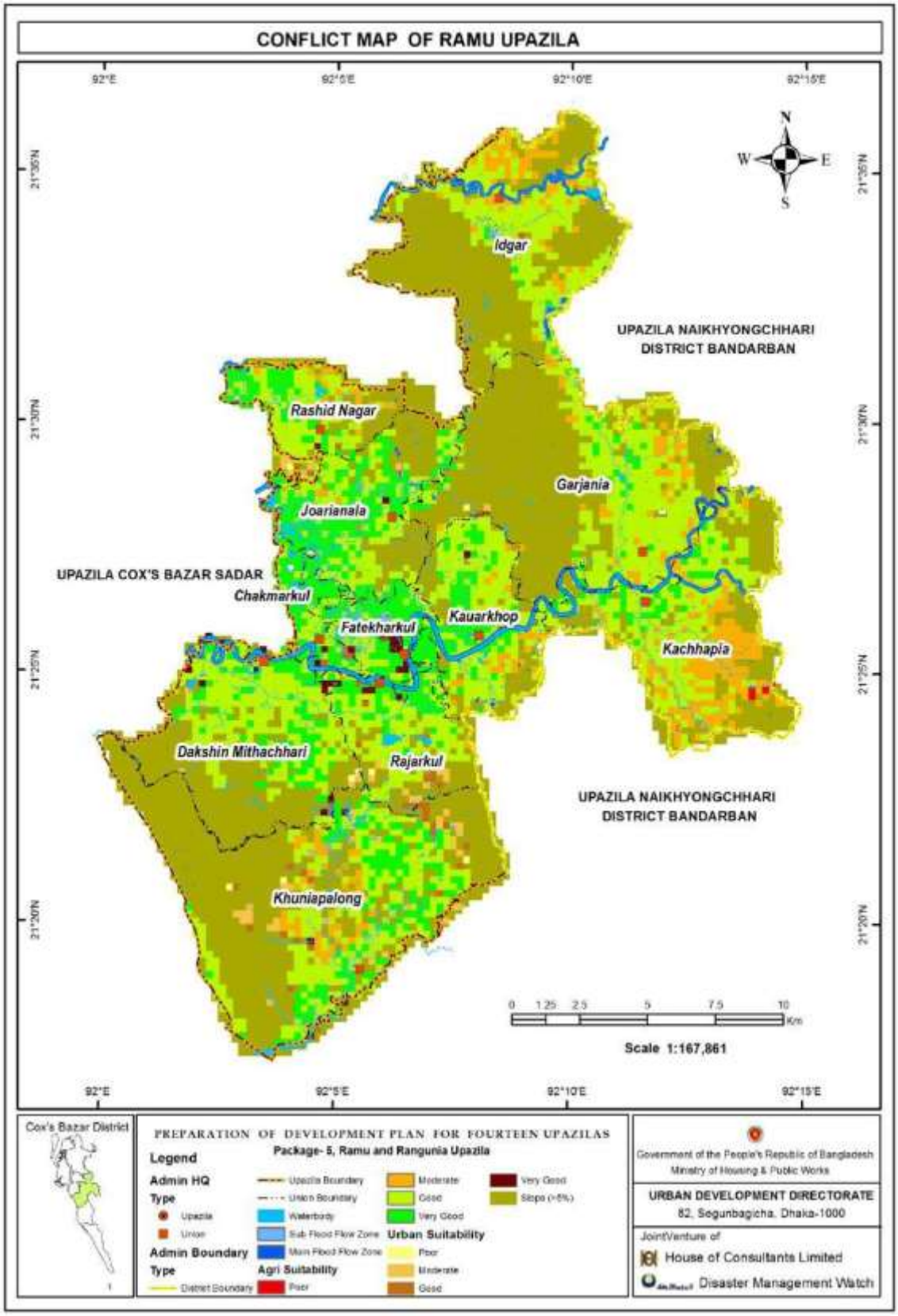
Source: Developed by Consultants

From the **Map 6.17**, it is clear that the allowable development area ranges from nearly level to gentle sloping and other areas like more than 5% is not feasible for development in perspective of planning.



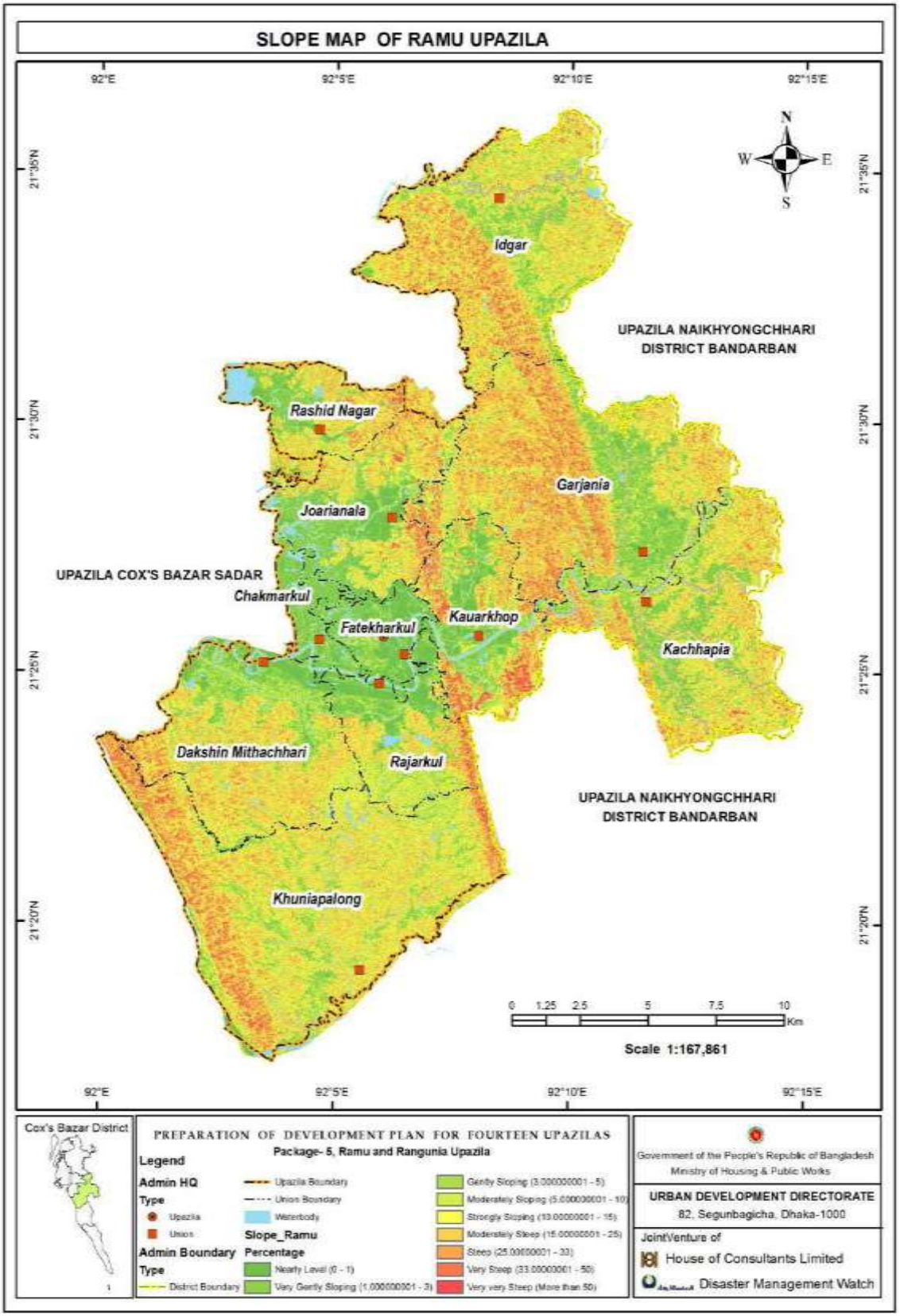
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.15: Digital Elevation Model (DEM) of Ramu Upazila



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

Map 6.16: Contour Map of Ramu Upazila



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

Map 6.17: Slope Map of Ramu Upazila

6.4 Suitability Analysis

For the plan preparation of Ramu Upazila suitability analysis is an essential step. Through this analysis suitable area for agriculture, urban and infrastructure development have been identified for planning. In this step firstly undesirable area, the area with slope more than 5% has delineated for Ramu Upazila. The factors were considered in the suitability analysis is presented in **Figure 6.8**.

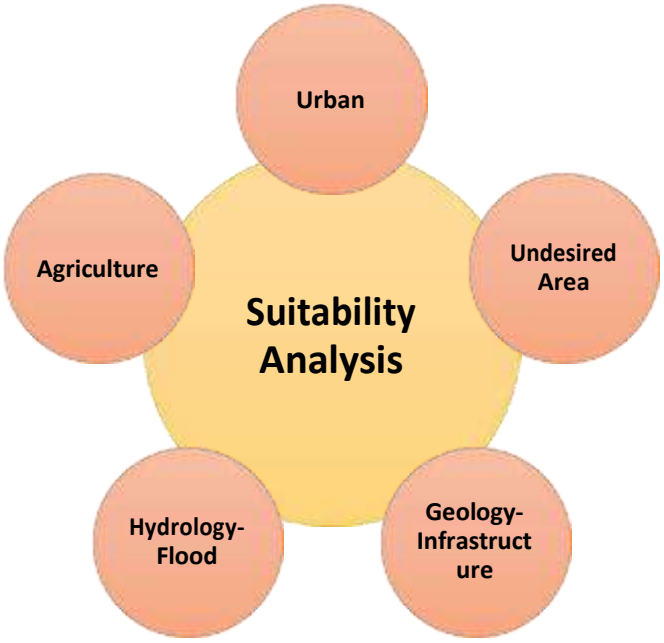


Figure 6.8: Diagram of Suitability Analysis

6.4.1 Agricultural Suitability

Suitability analysis is a GIS-based multi-criteria decision-making process. 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. For agricultural suitability analysis, the weightages according to criteria are given below:

Table 6.13: Criteria for Agriculture Suitability

Criteria	Weightage
Cropping Intensity	50
Water Depth	30
DEM	20

Source: Developed by Consultants

It is derived from the data of water depth, slope and cropping intensity as stated in **Table 6.13**. The main reason of this analysis is to identify the most suitable agricultural land for conservation. The statistic has given in the **Table 6.14**.

Table6.14: 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

The **Map 6.18** depicted the derived result from the analysis. Agriculture suitability represents the suitable areas for agricultural activities. It also provides a guideline in order to preserve the agriculture land. Depending on this which land should be preserved for agriculture and which will be used for future development decision can be taken. This analysis divides the agriculture land of this Upazila into four categories which are good, moderate and poor.

6.4.2 Urban Suitability

For the identification of the urban suitable area some criteria have fixed based on the slope less than or equal to 5%, DEM, geological suitability and major roads. In which areas these four criteria have met the consideration those areas are the urban suitable areas. According to criteria and weightages are presented in the **Table 6.15**.

Table 6.15: Criteria for Urban Suitability

Criteria	Weightage
DEM	35
Major Roads	25
Infrastructure Suitability	20
1/Hydrological Suitability	10
1/Agricultural Suitability	10

Source: Developed by Consultants

Criteria are the main basis in which weightages are given according to priority basis and then suitability analysis has been done. So, here DEM, major roads and infrastructure suitability have given higher weightage. The **Table 6.16** showed the best suitable urban area of the Upazila.

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Table6.16: 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

The results revealed that approximately 6.25 % of land of the study area is highly suitable for urban development, whereas 4.62% of land is moderately suitable.

Map 6.19 presented the urban suitable area in this Upazila that is divided into four categories which are poor, moderate, good and very good. In this situation, Very Good area will be used for future urban development.

6.4.3 Infrastructure Suitability

Infrastructure Suitability is the process of identifying the most and least suitable areas of the Upazila.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. The weightages according to the criteria are presented in the **Table 6.17**.

Table 6.17: Criteria for Infrastructure Suitability

Criteria	Weightage
PGA	30
Foundation Depth	40
Shear Wave	30

Source: Developed by Consultants

From this analysis, the most and least suitable areas for infrastructure has identified that will help for further development in the project area and presented in the **Table 6.18**.

Table 6.18: 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

The results revealed that approximately 8.05% of land of the study area is highly suitable for infrastructure development, whereas 0.66% of land is less suitable which is presented in **Map 6.20**. Infrastructure suitability is the most important part of infrastructure development. The area is divided into four categories which are very good, moderate, poor and very poor. This analysis will enable to take decision where to build high rise buildings and industries or residential buildings. Chakmarkul, Fatekharkul, Kauarkhop and Khunipalong unions are good for infrastructure development.

6.4.4 Undesired Area for Planning

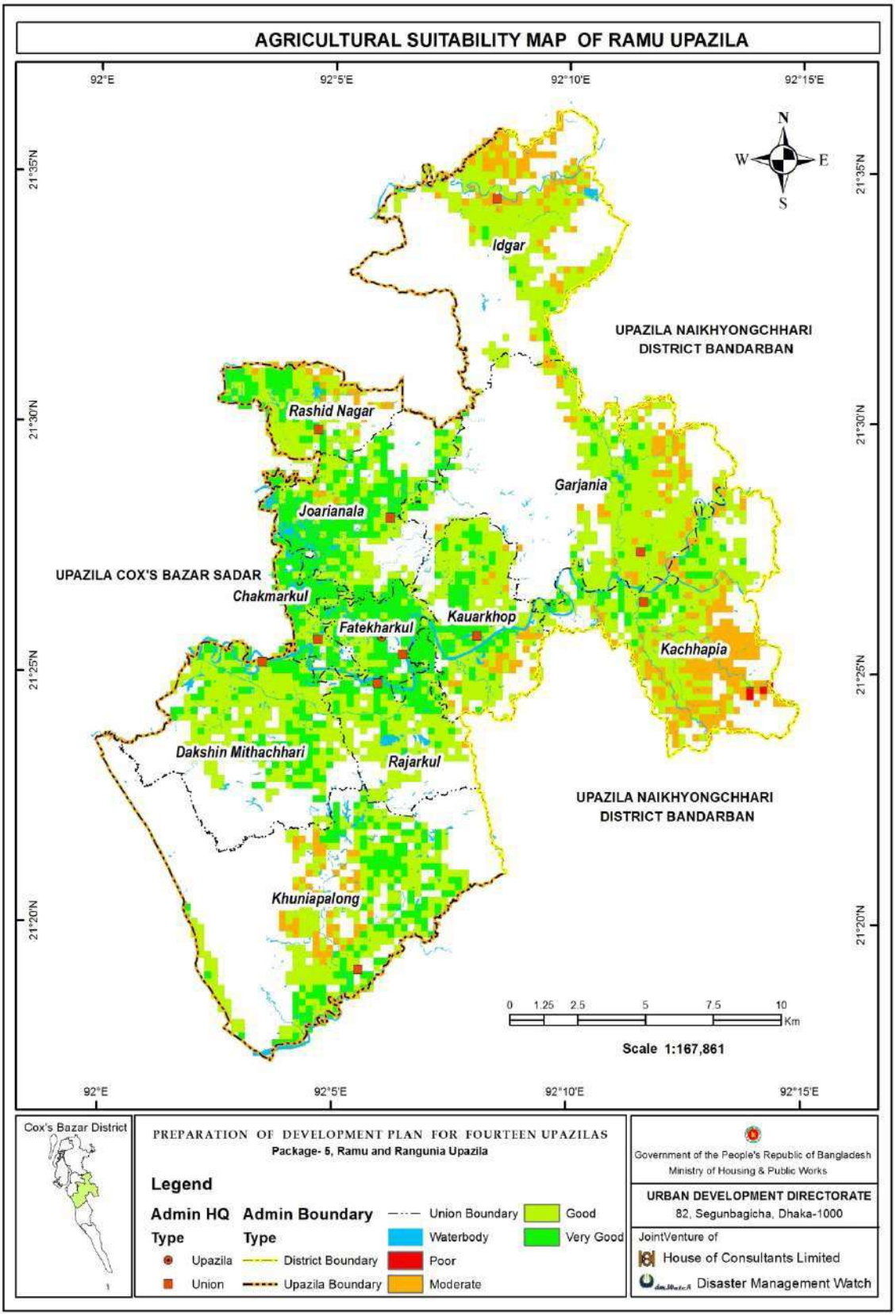
There are some affecting factors to plan the Ramu Upazila. The factors are slope more than 5%, main flood flow zone and sub-flood flow zone. In these three types of areas development cannot take place. But these areas can be used for other purposes such as agriculture, afforestation, water retention area etc. Any kind of development is prohibited in this 68.71% area which comprises slope more than 5 %, main and Sub-flood flow zone. The factors that affected the area for planning are listed and presented in the **Table 6.19**.

Table 6.19: 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

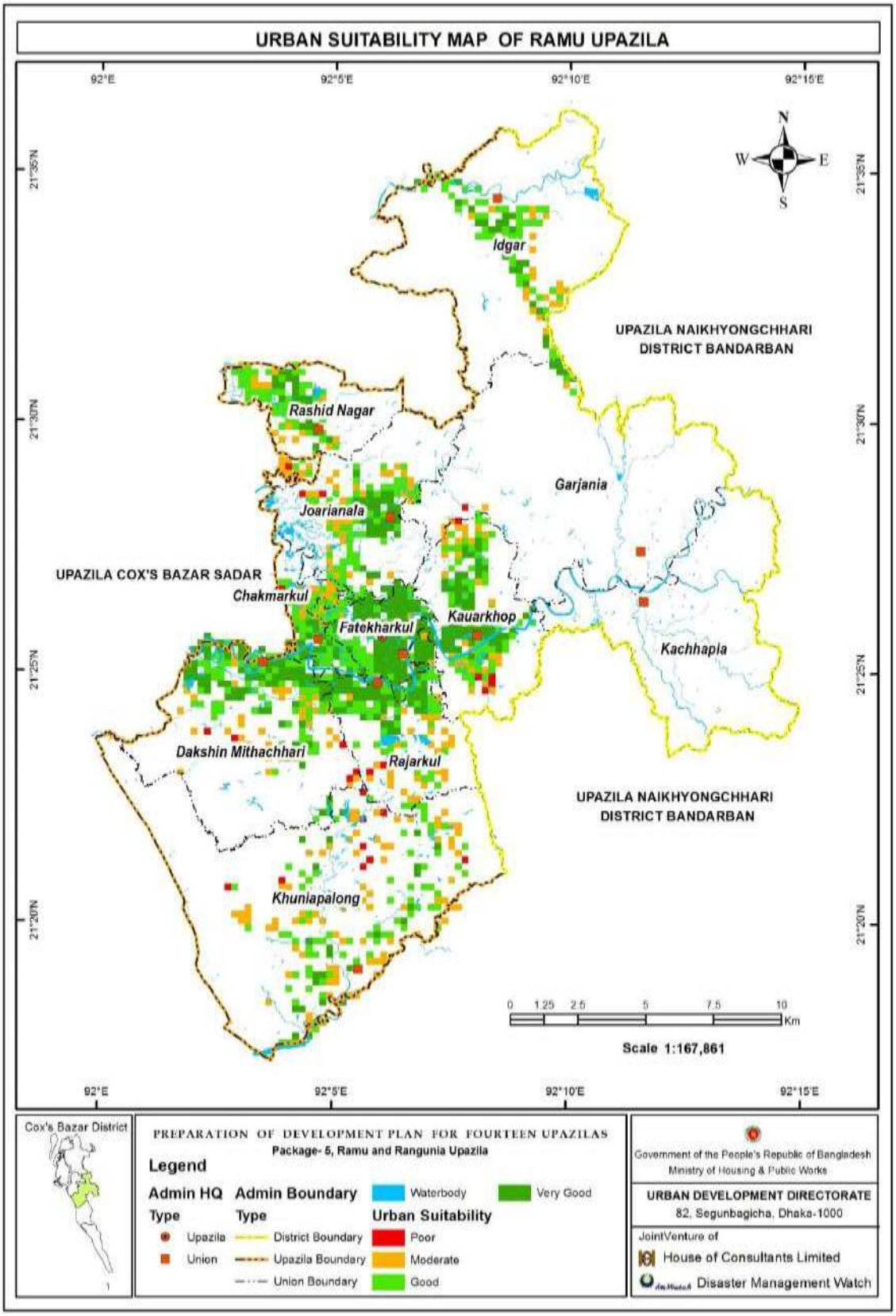
Source: Field Survey, 2016

Map 6.21 showed the undesired area for planning where land slope is above 5%. From planning consideration land with slope above 5% will be prohibited for the development.



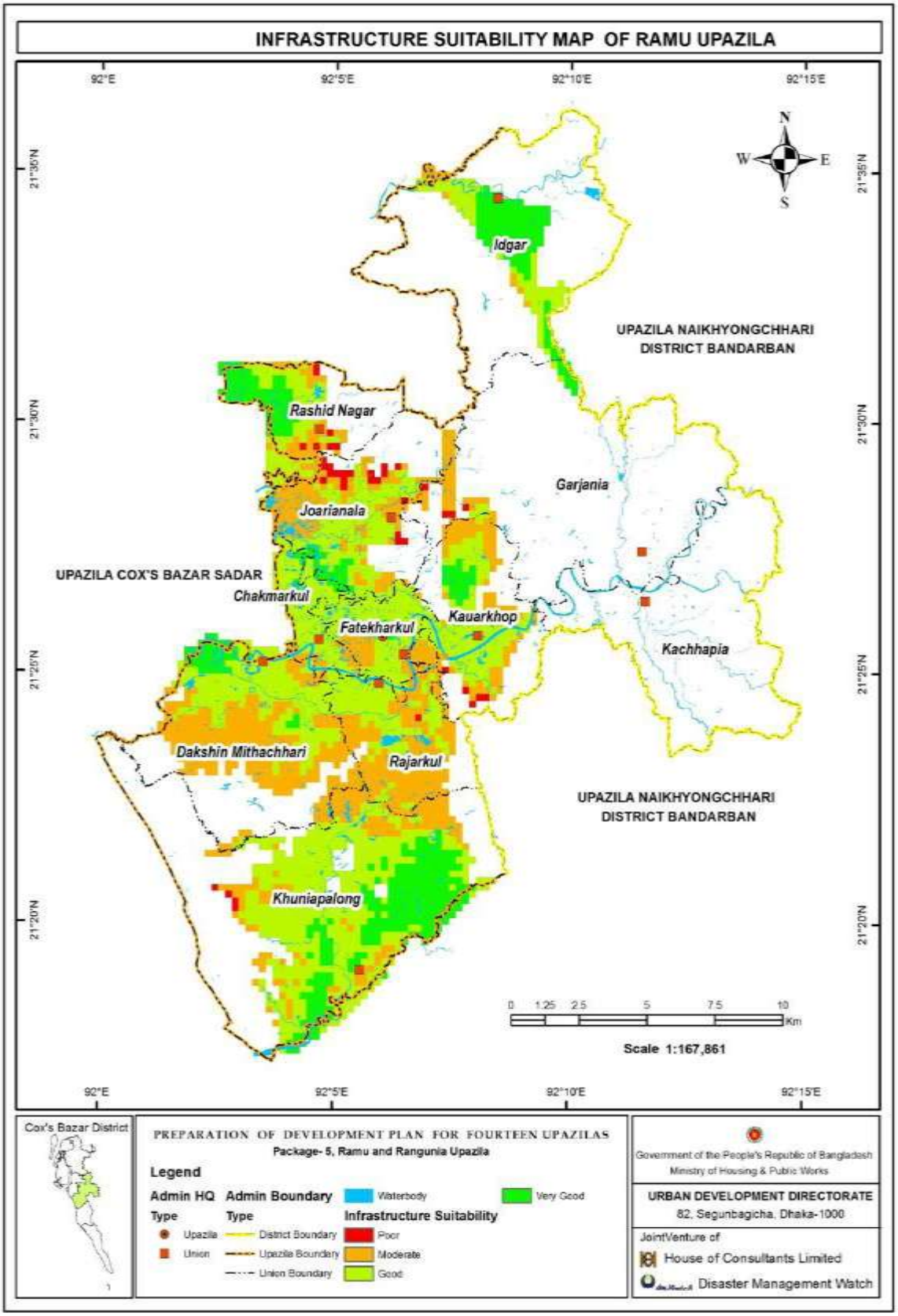
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.18: Agriculture Suitability of Ramu Upazila



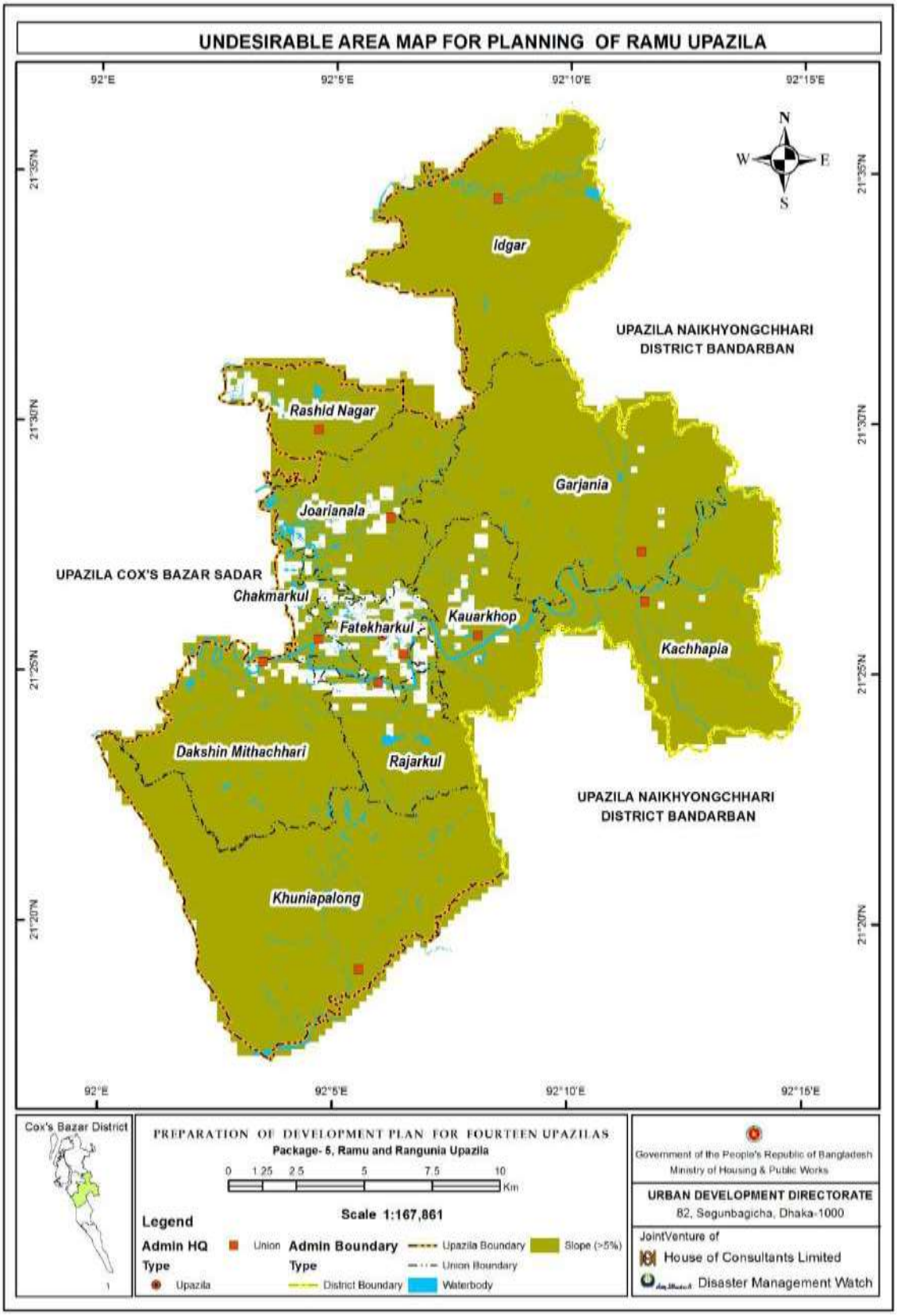
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.19: Urban Suitability of Ramu Upazila



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

Map 6.20: Infrastructure Suitability of Ramu Upazila



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

Map 6.21: Undesirable Area for Planning in Ramu Upazila

6.4.5 Prime Flood Affected Area

Flood is an important phenomenon in this Upazila. Without considering this factor planning cannot take place. This map mainly shows the sub flood flow zone and main flood flow zone of this Upazila. Sub flood flow zone area is submerged in water occasionally. Flood inundation map of Ramu Upazila is presented in **Map 6.22**.

6.4.6 Water Supply Protection Zone

Water supply protection zone comprises river, canal/chara/khal. 50-meter buffer from the edge of the rivers, 10-meter buffer from the chara/khal will be preserved for water supply protection zoneand presented in the **Map 6.23**. It has done according to the Water Act, 2013. The dominating parts of water supply protection zone has summarized in below **Table 6.20**.

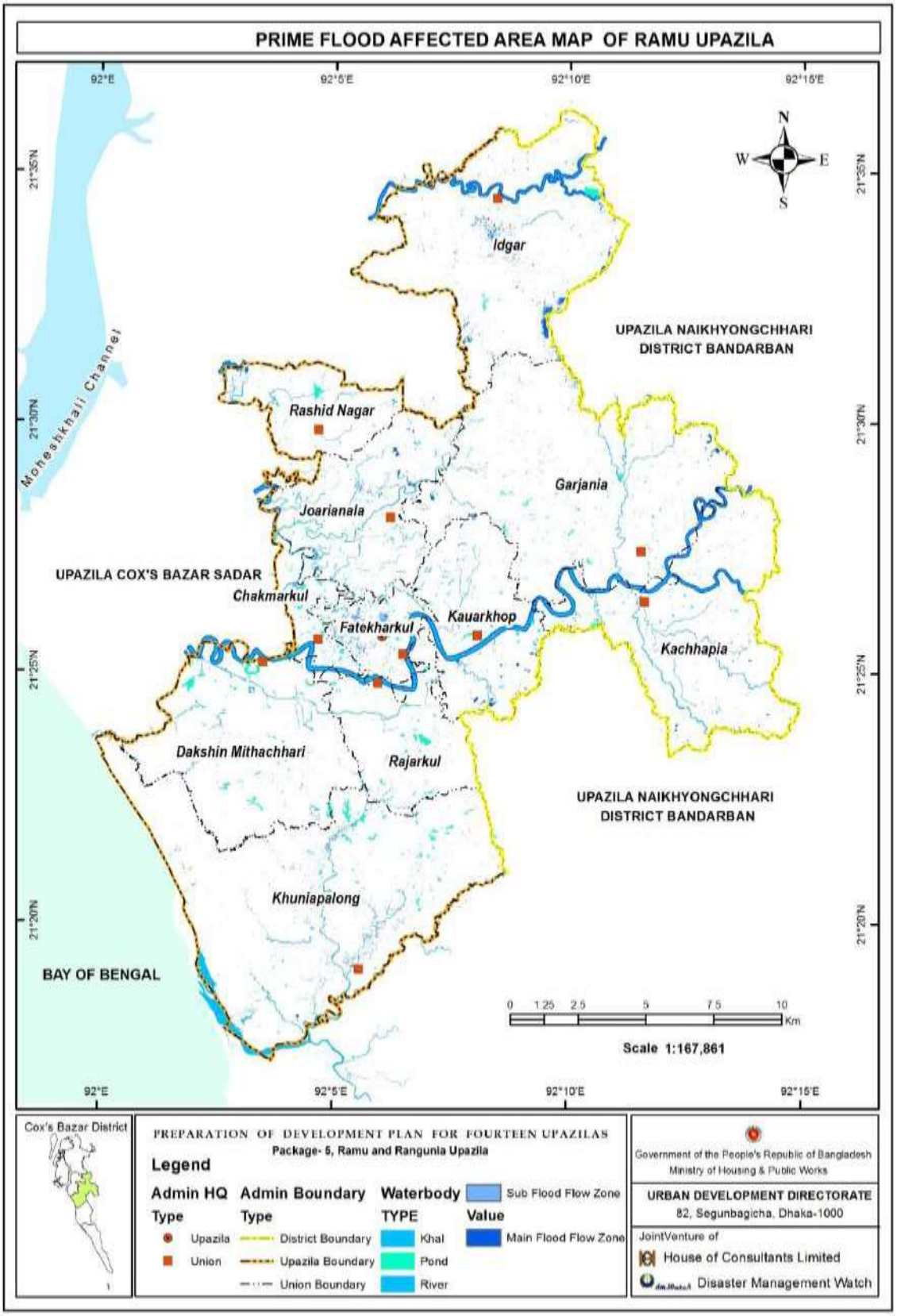
Table 6.20: Water Supply Protection Zone

Water Supply Protection Zone	Area (sq. m)	Area (sq.km)
River_50m	11032013.14	11.03201
Khal_chara_canal	10642613.66	10.64261
River_10m	4001996.828	4.001997

Source: Field Survey, 2016

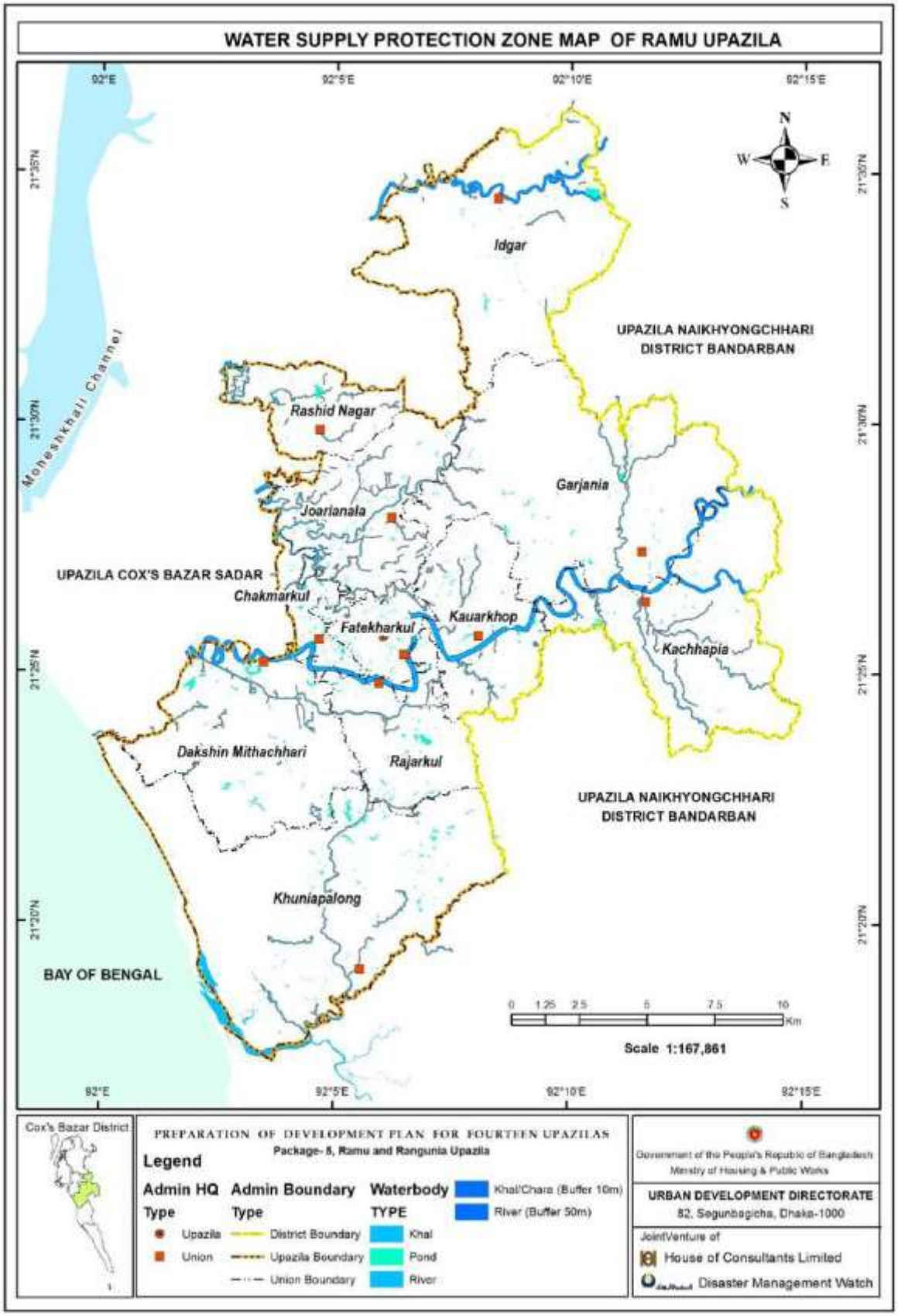
6.4.7 Conflict Map

After the identification of suitable areas, a conflict map has derived by compiling agricultural suitable area, urban suitable area, 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 that helps to develop of zoning. Conflict **Map 6.24** represented that the results of the suitability analysis have conflict with each other. In this map reserved agriculture, urban suitability, main flood flow zone, sub flood flow zone and slope more than 5% have been incorporated. From this map decision will be taken which part of the area will be used for which purpose.



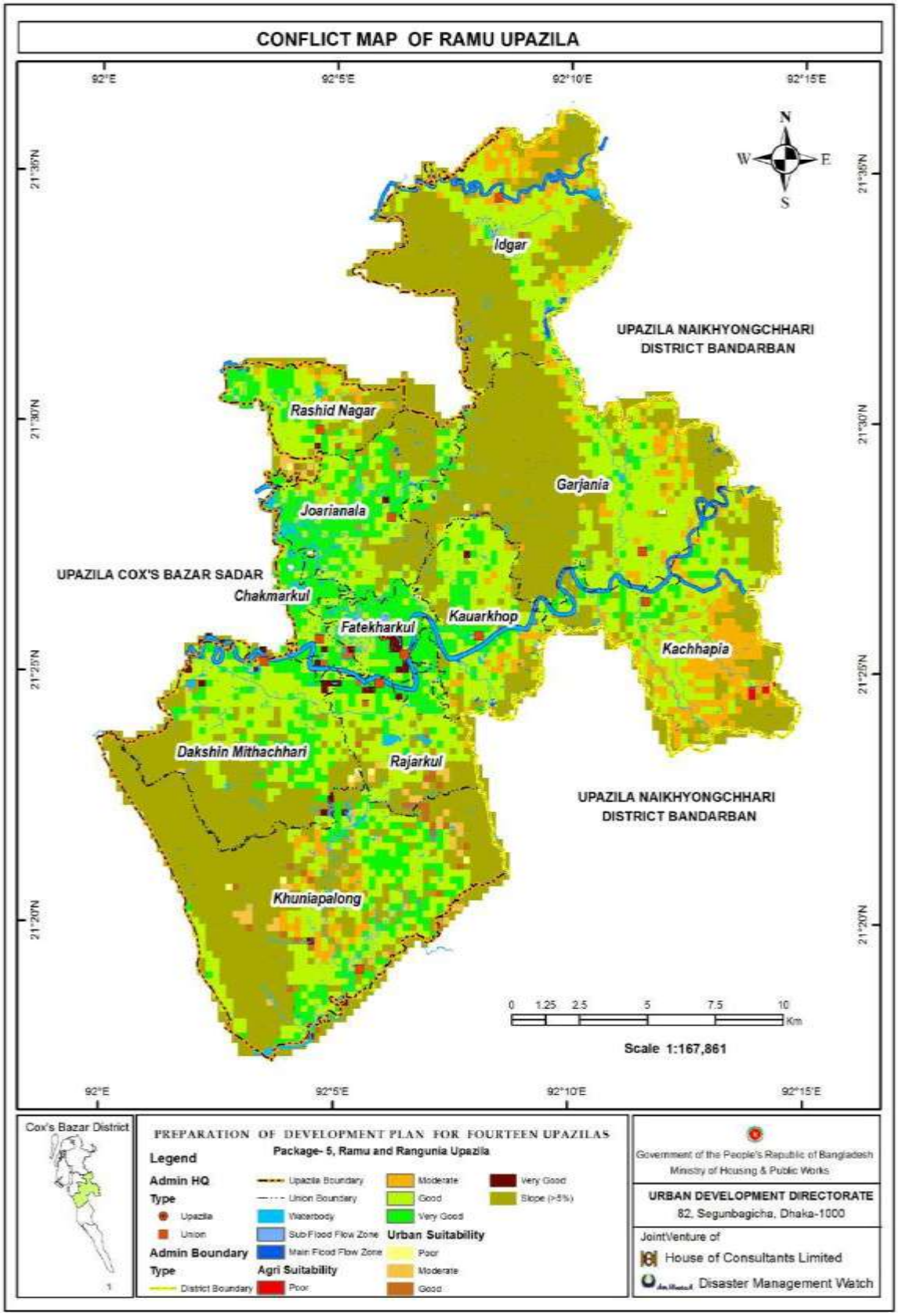
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.22: Prime Flood Affected Area of Ramu Upazila



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

Map 6.23: Water Supply Protection Zone Map of Ramu Upazila



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

Map 6.24: Conflict Map of Ramu Upazila

6.5 Future Urban Area Demand Calculation

Development Plan has been prepared on the basis of projection forecasting 20 years as 2033 where existing population and projected population have been analyzed to ascertain the future demand for projected population. The calculation is done by a chronological order are as follows:

- Existing Population and Household
- Projected Population and Household
- Household Demand
- Existing Building Footprint and Plot Area
- Future Residential Plot Area
- Ward wise Population and Structure Density

The total existing population of Ramu Upazila is 266640 and projected population in 2033 is 460859. The household size of upazila in 2011 and 2033 are respectively 47904 and 86454. There is no municipality in this Upazila. Among 11 unions of Ramu Upazila, Fatekharkul, Joarianala and Chamarkul Union projected as future urban area. The total existing population of Fatekharkul, Joarianala and Chamarkul Union is 29266, 12806 and 16438 where projected population in 2033 is 51587, 22573 and 28299. The household demand has been calculated by subtracting present household size of three unions 2930 from projected household size. Existing building foot print has been calculated from the total residential structures area divided by the number of residential structures which average is 871 sq. ft. It is assumed that the structure area covers 60% of the total area. By adjusting the area, the total plot area has been calculated as 1452 sq. ft. average. For considering the future extension, existing residential plot area has been multiplied by 2 which is 2904 sq. ft or 199 acres. Moreover, the present ward wise population and projected ward wise population has been observed. The present number of structures in each ward has been identified and the pucca structures has been targeted for future extension. The existing building footprint of these pucca structures has been calculated along with the existing settlement area. After that it has been assumed that the existing area is sufficient to serve the future population. Apart from this a planned residential area of 47.87 acre has been proposed for urban area.

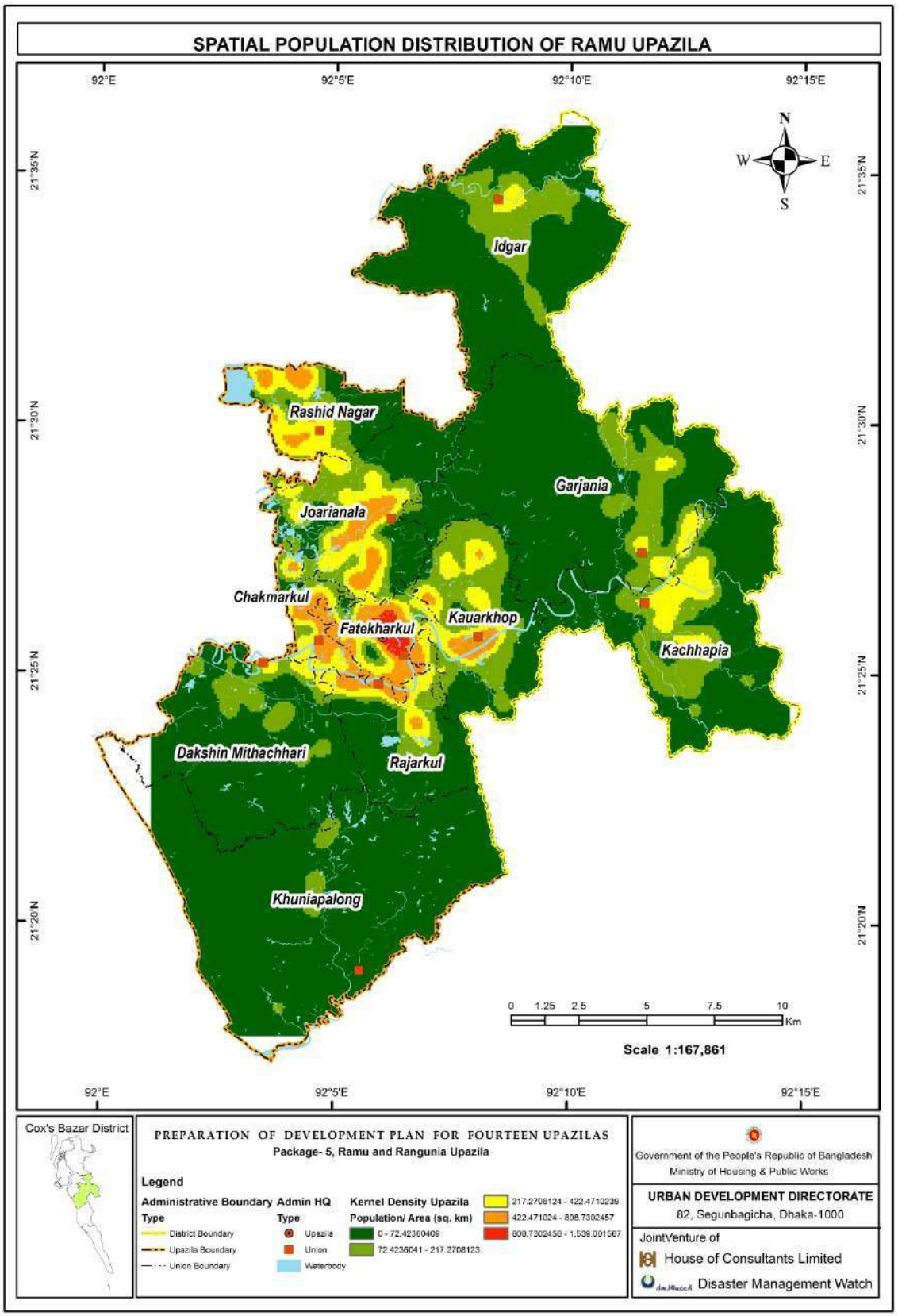
Urban Area Declaration

For urban area declaration, Kernel Density Tool through GIS has been applied in which population density and administrative boundary of an area are required. Through this tool the population concentration in different areas of Upazila can easily observed. This spatial analysis helps to understand the future growth of population. Besides this tool, the following phenomena has been observed to declare the urban area. (**Map 6.25** represents Spatial Population Distribution)

- Administrative Body (Upazila Parishad, Pourashava, Upzila Hospital, Fire Service, Police Station)
- Population Size
- Population Density
- Economic Function (Growth Center)
- Urban Characteristics (Paved Streets, Electric Lights, Sewerage, Water Supply Line)

In Ramu Upazila, Urban Area has been categorized in 3 types such as

1. Core Urban Area
2. Fringe Urban Area
3. Urban Deferred



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

Map 6.25: Spatial Population Distribution of Ramu Upazila

6.6 Location Allocation Analysis

Location Allocation Analysis is a tool in the ArcGIS Network Analyst extension determines an optimal location for one or more facilities that will serve demand from the surrounding population.

To analyse with this tool the following data has required:

- **Facilities**-If we want to provide a primary school in an area, first we need the existing primary school data of that area.
- **Demand Points**-Projected Population is the demand points, that's why we need the projected population of certain area
- **Road Network**

To provide facilities in Urban and Rural area, first we have to calculate the future demand of the area. Therefore, Population projection has been done for 2033. On the basis of this data, future demand for certain facilities has been calculated (presented in **Appendix C and Appendix D**).

The road network has been analysed through Network Analysis. Network analysis is the shortest path analysis which is used to find the shortest routes between an origin and a destination. It helps to find closest facility, evaluating allocation and solving location allocation problems.

To run the location allocation analysis, we have to set parameter for providing a facility, such as we want to provide a primary school; a primary school will serve for 5000 population and distance will be within 500 meters. Such kind of parameters have been established in Planning Standard (presented in **Chapter 5**).

By using the existing facilities data, network analysis and future demand of certain facilities; several proposals have been made for Urban and Rural area which has outlined in **Chapter 7**.The proposals allow the optimal distance and well served facilities provisions for an area as it has determined through location allocation analysis.

6.7 Drainage Network Analysis

For deriving the drainage network, watershed analysis has been done. Defined by topographic divides, a watershed is an area that drains surface water to a common outlet. A watershed is a hydrologic unit that is often used for the management and planning of natural resources. Watershed Analysis refers to the process of using of DEM and raster data operations to delineate watersheds and to derive topographic features such as stream networks. The total analysis has been incorporated through using Hydrology Tool in ArcGIS where Fill, Flow Direction, Flow Accumulation, Stream Network, Stream Links has performed. On the basis of analysis, Primary drain, Secondary Drain and Possible outlets have been determined in Drainage Network Analysis (presented in **Chapter 7**).

6.8 Landslide Scenario Analysis

6.8.1 Generalization

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 exists. 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.

6.8.2 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 Ramu are as below:

a. Physical causes:
   i) Topography:
      - Slope aspects and gradient
      - 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-6.9** illustrated 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-6.9** and **Figure-6.10** illustrated clearly an artificial situation that the mechanics are essentially involved as per a real landslide. The location of landslide in Ramu Upazila is presented in **Table 6.21**andthe pictorial views are presented in **Picture 0**1 and **Picture 02** respectively.

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 $mm \cdot h^{-1}$.

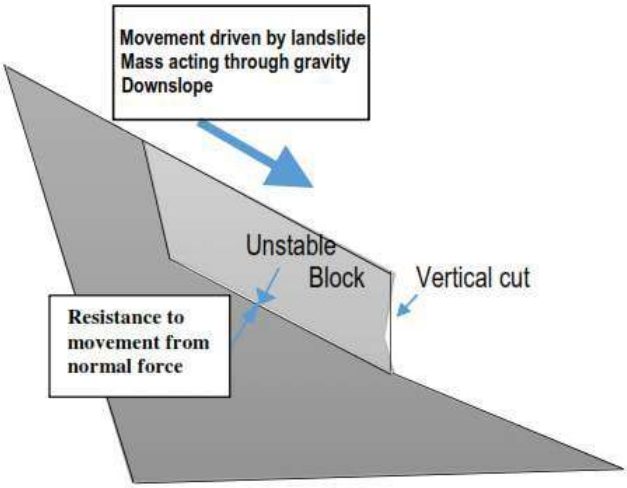


Figure 6.9: Diagram Illustrating the Resistance to, and causes of Movementin a Slope System consisting of an Unstable Block

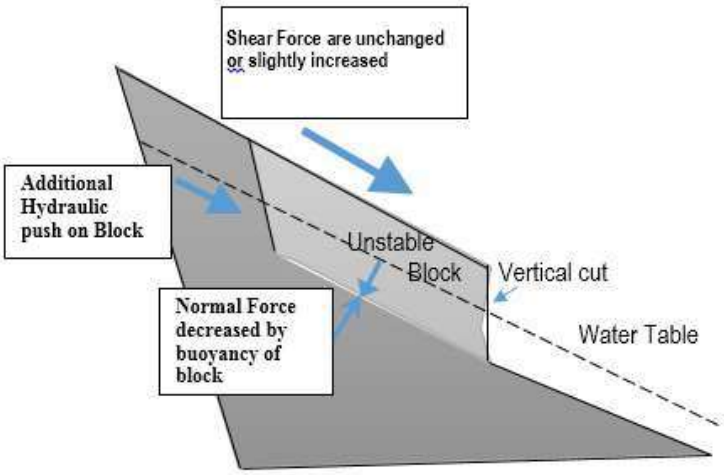


Figure 6.10: Diagram Illustrating the Resistance to, and causes of Movement in a Slope System consisting of an Unstable Block

Table 6.21: 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 Mitahchari Union, Ramu Upazila	Chainda		2 people died	20.78 meter	7.304 meter	118.04 feet

Map 6.26: Location of Hill Landslide in Ramu

6.8.3 Recommendation

Hills are natural environmental beauty due to its undulation shape and size, and top is covered by green trees. Many fruits, herbs, wood etc. grow on the hill. Because these hills made of silty-clay based soil, it is also a source of surface water that supply water even round the year towards rivers through charas/channels. It anchored the earth through maintaining the balance of weight of earth. Therefore, preservation of hill is utmost essential to save the nature as well as human lives. Specially, it plays a vital role on climate change. The following issues shall be considered during development and formulation of policy for hilly areas.

a. No habitation will be considered on the hill slope by cutting the hill. Since the hill slopes are generally more than 5% which is not at all favourable for habitation.
b. Sufficient protection measures shall be considered to protect the soil in the upper side to continue the uninterrupted road/rail transport communication, sometimes some hills or hill slopes may require to cut. In that case, sufficient protection measures shall be considered to protect the soil in the upper side. At the same time, sufficient weep holes with graded filter material inside the hill will be provided to release the pore water pressure. Adequate drainage facility will be provided to catch surface runoff from hill top. After study the hill nature, gradient of surface, physical and mechanical properties of soil of the hill, above precaution measure shall be taken.
c. Hills those are nearby urban area, 50m to 100m buffer zone will be kept based on the parameters of hill. Long rooted trees can be planted within the buffer zone that can be reduced the velocity of landslide mass of hill.
d. Hills nearby urban area containing steep slopes and weak in soil properties, toe of hill shall be protected as stated in b.
e. If the slope of the hills nearby urban area is in weaker formation then upper layers of soil can be reinforced by providing adequate geo-textile laying underneath the soil.

CHAPTER 7

APPROACH OF DEVELOPMENT PLAN

7.1 Sub-Regional Plan

Sub Regional 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. It has been comprised of three sectors:

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

7.1.1 Conceptualization of Sub-Regional Plan

Sub Regional 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.

7.1.2 Extent and Nature of Sub-Regional Plan

I) Strategic Plan at Sub-Regional Level

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 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.

7.1.3 Objectives

The objectives of Sub Regional Plan have been outlined below:

- ✓ 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. Ramu Upazila is a hilly 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- (Zila-Upazila/Upazila-Upazila) (Chakaria-Ramu-Cox's Bazar) and intra-(Urban-Rural-GC)(Fatekharkul-Kacchapia-Garjania/Bazar)regional connectivity.

Connectivity and transportation network are pre-requisite for all kinds of development. Connectivity between zila to upazila, upazila to upazila as well as urban-rural is very much essential. Development of local transportation network will help build up improved internal road and waterway transport system within the Upazila. This will connect all parts of the

Upazila with the regional and national transportation system and help transportation of goods and services between the Upazila and many other potential regional and national centres.

Policy 2: Accelerate high standard road links through widening of primary and secondary and construction of new tertiary roads.At present, all the Union Parishads are not directly connected by roads between each other and some of them are also not directly connected to the UpazilaParishad. To fasten the communication among urban and rural areas the road should be linked properly. The primary and secondary roads need to be widened according to the future demand.

Policy 3: Build an integrated (land, rail and water) transportation network.
Railway connectivity enables strong communication network. It will be a great initiative if a railway platform can be developed in this upazila. It will be a great achievement for the local people if the communication system developed. So, establishment of a Railway platform is a crying need for the betterment of connectivity in the whole upazila.

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. A healthy natural environment contributes directly to a City's quality of life. Conservation is the optimum rational use of natural resources and the environment, having regard to the various demands made upon them and the need to safeguard and maintain them for the future. It is the protection, improvement and use of natural resources according to principles that will assure their highest economic or social benefits.

Policy 2: Conserve ecosystem through the delineation or demarcation of eco-sensitive zones. In ecology, conservation includes those measures concerned with the preservation restoration, beneficiation, maximization, reutilization, substitution, allocation and integration of natural resources. The concern for wildlife is, however, the concern for man himself. All forms of life -- human, animal and plant are so closely interlinked that disturbance in one give rise to imbalance in the others. In Rangunia Upazila, Gumaibeel is an eco-sensitive area. This area must be conserved for the betterment of future.

Policy 3: Execute land use planning for the enhancement of ecosystem and species diversity.

Community Resilience through Disaster Management

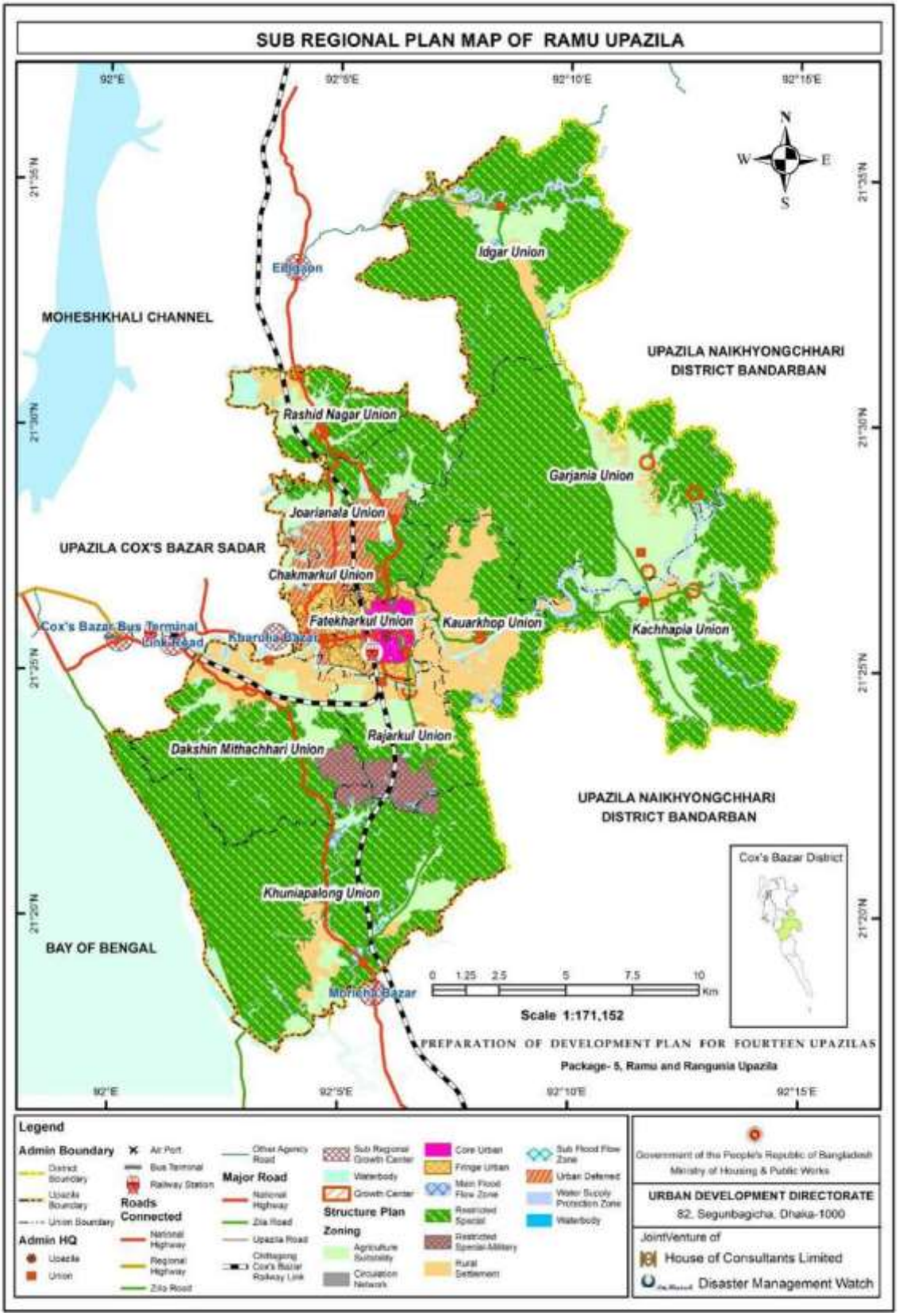
Policy 1: Identification of seismic hazard prone zones. To attain this goal, geological surveys have been conducted Which will enable to understand which portion of area is seismic hazard prone. Depending on this mitigation strategies can be adopted.

Policy 2: Identification of flood hazard prone zones and river erosion areas. To take proper mitigation measurement flood prone areas have to be identified.

Policy 3: Provision and implementation of a risk sensitive land use planning.

Rail Line promotes smooth connectivity between Upazilas. As Ramu bounded by Chakaria and Cox's Bazar Sadar upazilas. Therefore, Dohazari-Gumdum rail line has been proposed for connectivity between tourist town Cox's Bazar and commercial capital Chittagong. The rail line will connect Regional Upazilas like Chandanaish, Satkania and Lohagara upazilas of Chittagong district, Chakaria, Ramu, Cox's Bazar Sadar, and Ukhiya upazilas of Cox's Bazar district and Gumdum upazila of Bandarban district, Cox's Bazar district. A Proposed Tentative Rail Line has been collected from concerned consultants through Railway Authority which will connect Bandarban district, Cox's Bazar district.

The consultant has proposed 3 railway station in different junctions that is Dulahazara Railway Station, Ramu Railway Station and Cox's Bazar Railway Station. It would play an important role in raising the GDP growth, considering the economic hub of Chittagong and tourism capital Cox's Bazar. The Sub-Regional plan has presented in **Map 7.1**.



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

Map 7.1: Sub regional Plan of Ramu Upazila

7.2 Structure Plan

Structure plan typically shows how broad scale development or change in a Geographical area will be physical organized on the ground.

7.2.1 Conceptualization of Structure Plan

It provides long term statuary 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.

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.

7.2.2 Extent and Nature of Structure Plan

Structure Plan for Ramu Upazila would be prepared for 20 years which would cover up to 2033 with the content and meaning of the development policy of Planning Commission and guidelines laid in the Poverty Reduction Strategy Paper (PRSP), National Water Management Plan (NWMP), Disaster Management Plan, Wetland Protection Act, Environmental Laws, etc. This will bridge the gap between National level policy and local level plan.

The Structure Plan would include the following studies on:

- ✓ Hydrological study on the of the Upazila and connecting rivers (Hydrodynamic characteristics, Morphological characteristics, Geomorphologic development, Dominant Hydrodynamic and Morphologic process)
- ✓ Disaster management: Flood, water logging, drainage congestion,

- ✓ Water Resource Management
- ✓ Lands Study: Change in Land Use
- ✓ Livelihood Study
- ✓ Settlement Pattern
- ✓ Population Study
- ✓ Housing, Water supply and sanitation
- ✓ Communication, energy, education and health
- ✓ Agriculture and fisheries
- ✓ Transport system (road and water)
- ✓ Ecology and Environment

These sectoral studies would provide planning guidelines for land use and physical infrastructure. There is a need for a legal instrument in order to regulate land use in a manner that would encourage orderly urban and rural settlements in accordance with the strategic policies of the Structure Plan. Zoning regulations in Sub Regional Plan will be applied for the delineation of the Structure Plan.

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: 10000 scales illustrating various plan proposals. As such, at they are broad b rush and indicative and are developed and elaborated in the Urban Area Plan and Action Area Plan. The boundary of Structure Plan will coincide the future jurisdiction of Ramu Upazila as the future expansion has duly been considered during preparation of Structure 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 Broad Landuse Zoning

In Land-use strategies Zoning is a technique that is used as a tool for urban planning by the governments to develop and regulate a real estate. The purpose of zoning is to divide a property uniformly into residential, commercial, and industrial districts. Zoning regulates the use and development of private and public real estates of an area.

The Total area of the Upazila is segregated under some broad classes that will basically guide future growth with wide aspects. Definitions of broad classes of Structure Plan are given below for conceptualizing focus of the future magnitude as well as illustration of the policies and strategies.

7.2.5 Agriculture zone

Agriculture zone is the zone of food production where predominantly agricultural production will be encouraged. All types of agricultural activity such as crop production, aquaculture, vegetable production etc. will be dominant and will be permitted to ensure food security and also fishing, poultry, etc. will be included in this zone. The main purposes of this zone are to:

- Protecting high value agriculture land
- Promote farming activity and farming operation in the land especially suitable for the purpose.
- Conserve agriculture lands within the urban area.

7.2.6 Circulation Network

Circulation network contains major road network and railways linkage with regional and national settings. The purpose of this zoning is:

- Development of Regional Connectivity.
- To reduce traffic congestion
- Widening of existing Narrow Roads.

7.2.7 Growth Center

Growth centers are service centers (rural or urban) which has a potential for further development. It has been conceived as points of attraction for the people who otherwise would go to large congested urban areas.

- To sustain economic activity and economic development of rural area
- To provides goods and services to its own population as well as its surroundings.

7.2.8 Hat Bazar

Hat Bazar serves as a trading venue for local people in rural areas. These area is considered as the market place for the villagers provide a noticeable number of commercial activities and have a higher concentration of structures than the rural settlement area.

- Promote trade and commerce compactly associated with all other facility.

7.2.9 Industrial Zone

Industrial zone has been earmarked as the primary location to promote industrial development, the use generally include manufacturing, repairs, warehousing, distribution and transport operating centers.. Agro based industry major consideration for this zone.

- Accommodate a variety of industrial establishments of high environment quality that may function as an integral part of an overall development of the area.
- Link the zone with major transport network for convenience of the employees and production function.

7.2.10 New Growth Center

The hut bazar area which has the potentiality of new development and has a good connectivity and prospects to serve local community by increasing commercial activities area considered as New Growth Center.

- New Growth Center will be the new development hub in the rural area
- The development should not go beyond the area of the growth center zone what will preserve the agriculture land.

7.2.11 Water body

This zone conserves various types water bodies such as river, canal, khal, beel and pond etc. Water body under this category are grouped under two functional sub categories, natural water system – rivers and canals; water retention –controlled canal and large ponds.

- Ensure natural drainage network
- Provide irrigation facility round the year, especially in dry seasons

7.2.12 Water Supply Protection Zone

Water supply protection zone comprises river, canal/chara/khal. 50 meter buffer from the edge of the rivers, 10 meter buffer from the chara/khal will be preserved for water supply protection zone.

7.2.13 Area Coverage under Structure Plan

The total area of Ramu Upazila is 384.19sq.km. The total area is under structure plan coverage. The area has re-structured into some planning zones.

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.

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.

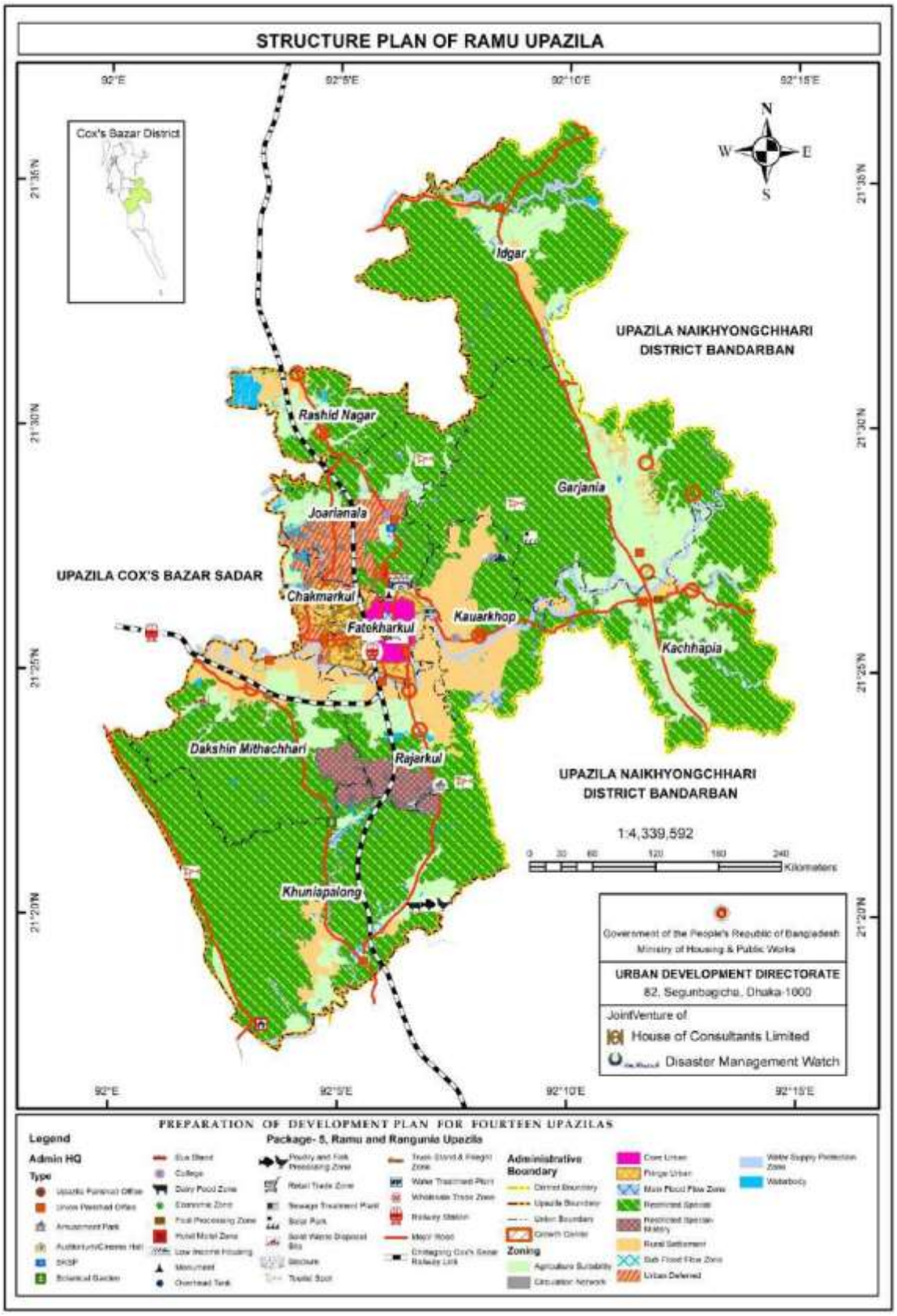
Water body: The water bodies which area is more than0.25 acre are shown in the structure plan.

The statistics after formulation of zoning of Ramu Upazila has presented in **Table 7.1** and in **Map 7.2.**

Table 7.1: Area Coverage of Structure Plan Zoning

Zoning	Area Sq.m	Area Sq.km	Area Acre	Percentage
Agriculture Suitability	55684984.65	55.68	13760.06	14.494
Circulation Network	2607031.64	2.61	644.21	0.679
Core Urban	3326708.19	3.33	822.05	0.866
Fringe Urban	6175304.68	6.18	1525.95	1.607
Main Flood Flow Zone	1857285.48	1.86	458.95	0.483
Restricted Special	240075687.34	240.08	59324.00	62.489
Restricted Special-Military	7169854.23	7.17	1771.71	1.866
Rural Settlement	32726896.26	32.73	8086.99	8.518
Sub Flood Flow Zone	4162458.26	4.16	1028.57	1.083
Urban Deferred	9717858.71	9.72	2401.34	2.529
Water Supply Protection Zone	14922345.61	14.92	3687.39	3.884
Waterbody	5763003.64	5.76	1424.07	1.500
Total	384189418.70	384.19	94935.28	100

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



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

Map 7.2: Structure Plan of Ramu Upazila

7.2.14 Policies for Planning Zones

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.

No encroachment of other uses will be allowed in the agricultural zones. To save the agricultural land for food security in the country, it is necessary that further loss of agricultural land is prevented.

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

Bangladesh is an agricultural country. Its economy is mostly dependent on agriculture. But in order to provide housing, most of the agricultural lands are converting to residential areas.

As a result of expansion of residential areas, the total amount of agricultural lands is decreasing day by day which is harmful for future food production. So it is the demand of the time to discourage residential expansion in the agricultural land and Keep suitable agriculture lands free from any kind of encroachments.

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.

Promotion of agriculture would help raising income and savings to employment. The main objectives of agriculture sector to increased production and simultaneously ensure value addition. Surplus from agriculture will help development of agro-based industries and investment in other productive sectors.

Circulation Network:

Policy 1: Connect headquarters, market places, growth centers 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 centers in seismic hazard prone zone.

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

Tourism Development:

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 (Idgar) 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 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 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 and Rural 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. 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

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 have been outlined in this chapter.

7.3.3 Purpose 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

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 have been outlined in this chapter.

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

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.

7.3.5 Urban and Rural Area Plan Proposals

Depending on existing facilities, projected population for 20 years and demand from PRA the urban and rural facilities are distributed. The circulation network and drainage network has been given top priority. Other facilities like schools, health clinics, neighbourhood markets, eco- park, bus terminal, CNG stand and many more have been proposed.

7.3.6 Plan for Road Network Development

Road network development plans are taken on the basis of existing scenario of road network. The existing road network condition has been described in total and also according to the and ward wise.

7.3.6.1 Existing Road Network

The **Table 7.2** describes the present road network condition of the Ramu Upazila. The total length of Pucca, HBB and Katcha road is respectively 162.77, 248.18 and 579.04 kilometer.

Table 7.2: Existing Circulation Network of Ramu Upazila

Type	Length (m)	Length(km)
Katcha Road	579033.75	579.04
HBB Road	248179.22	248.18
Pucca Road	162761.78	162.77
Total	989974.76	989.98

Source: Field Survey, 2016

Table 7.3: Existing Circulation Network ofUnion

Union Name	Type	Length in Meter	Length in Km
Chakmarkul	Katcha Road	25037.35	25.04
	HBB Road	25649.92	25.65
	Pucca Road	11337.01	11.34
Dakshin Mithachhari	Katcha Road	61829.79	61.83
	HBB Road	9858.81	9.86
	Pucca Road	23347.62	23.35
Fatekharkul	Katcha Road	14353.83	14.35
	HBB Road	32607.29	32.61
	Pucca Road	36885.78	36.89
Garjania	Katcha Road	50141.03	50.14
	HBB Road	30836.81	30.84
	Pucca Road	26605.34	26.61
Idgar	Katcha Road	50698.88	50.70
	HBB Road	11358.71	11.36
	Pucca Road	10477.37	10.48
Joarianala	Katcha Road	99252.75	99.25
	HBB Road	39706.07	39.71
	Pucca Road	9114.13	9.11
Kachhapia	Katcha Road	56424.27	56.42
	HBB Road	29527.83	29.53
	Pucca Road	6364.46	6.36
Kauarkhop	Katcha Road	49243.68	49.24
	HBB Road	19985.61	19.99
	Pucca Road	3876.32	3.88
Khuniapalong	Katcha Road	86320.13	86.32
	HBB Road	11260.08	11.26
	Pucca Road	20235.94	20.24
Rajarkul	Katcha Road	23843.65	23.84
	HBB Road	16312.81	16.31
	Pucca Road	5571.45	5.57
Rashid Nagar	Katcha Road	61888.38	61.89
	HBB Road	21075.28	21.08
	Pucca Road	8946.36	8.95
	Total	989974.76	989.97

Source: Field Survey, 2016

7.3.6.2 Proposed Road Network

PRA survey has been done throughout 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 upgrade into four lane roads. The significant road inside the Upazila has been proposed to make pucca. The following cross section and proposed road width have to maintain during road construction. In Table 7.4 description of the types, agencies which are responsible are given and in Table 7.5 road cross-section standards have been presented. Table 7.6 depicts the proposed roads according to width along with lane.

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 Centers with another Growth Center by a single main connection or connecting Growth Center to Higher Road System**, through shortest distance / route.	LGED*/LGI*
5	Road	Roads connecting 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 HQ/s, local markets, farms and ghats or with each other. b) Roads within a Village.	LGED*/LGI*

Source: LGED, 2005

Design Classes

Roads in Bangladesh are divided into the following six design types. The figures of cross-sections are presented in **Figure 7.1, Figure 7.2, Figure 7.3, Figure 7.4, Figure 7.5 and Figure 7.6**

Table 7.5: Road Cross-Section Standards

Design Type	Design year traffic volume PCU/peak hour (typical MV AADT)	Cross-section widths in metres			Indicative Road Classification		
		Crest Width(meter)	Carriageway (no. of lanes)	Paved shoulders			
1	4500 - 8500 (19,000-36,000)	36.2	2x 11 (6)	1.8	National		
2	2100-4500 (7,000- 19,000)	21.6	2x7.3 (4)	1.8		Regional	
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			Feeder
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 (meter)	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	Road	5.5	1	
6	Village Road	4.8	1	

Source: RHD 2004

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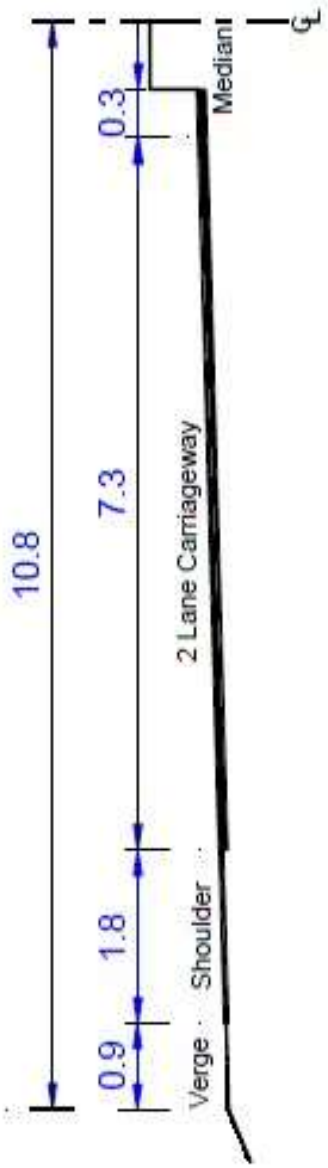


Width of sectional elements (m)

Crest	21.6
Median	1.0
Carriageway	7.3
Shoulder (L) – paved	1.8
Shoulder (R) – paved	0.3
Verge	0.9

Design Capacity

Maximum capacity: 4500 PCU/hr

(assumes that NMVs are either prohibited or are less than 50 PCU/hr)

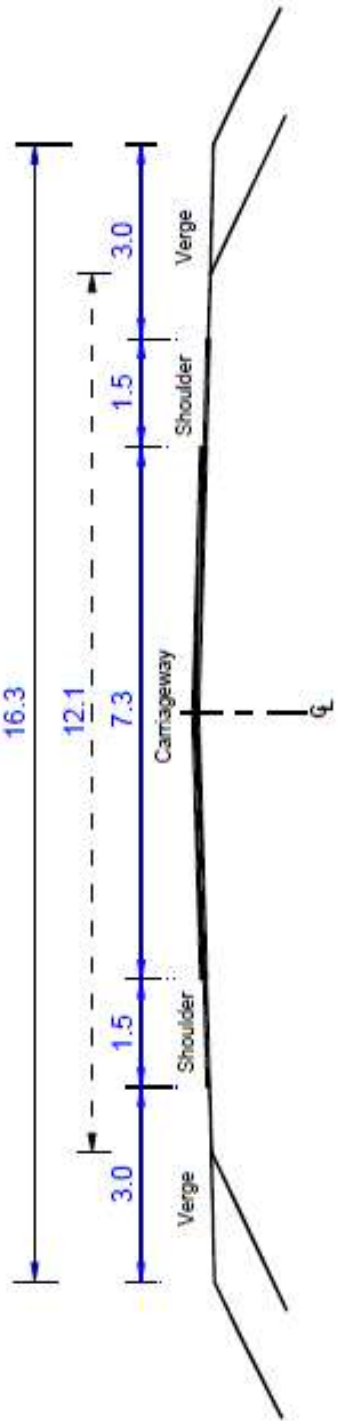
NMV provision

NMVs will use the shoulder. If the Design Year NMV PCU/hour exceeds 50 adopt the Type 2a cross-section which incorporates separate NMV lanes.

Median

See Figure 4.9 for alternative designs.

Figure 7.1: Design Type 2, Dual 2 lane; 7.3m carriageway (RHD, 2004)



Width of sectional elements (m)

Crest	16.3
Carriageway	7.3
Shoulder – paved	1.5
Verge	3.0

Design Capacity

Maximum capacity: 2100 PCU/hr (assumed NMV/MV ratio of 0.2)

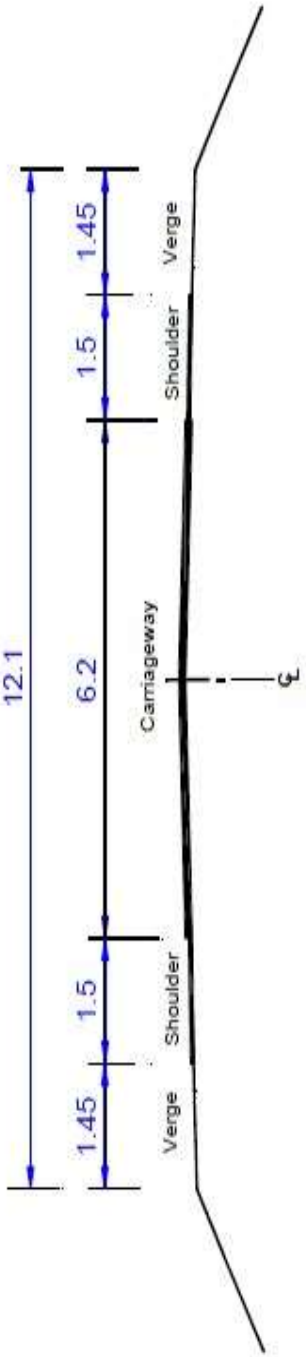
NMV provision

NMVs will use the paved shoulder. Consider providing separate NMV lanes (Type 3a cross-section) if the DY NMV PCU/hr exceeds 400 – see Figure 4.8.

Crest width

The extra-wide embankment permits the future addition of NMV lanes. If it is unlikely that these will ever be needed the verge need only be 0.9m wide, making the crest width 12.1m.

Figure 7.2: Design Type 3; 7.3m carriageway (RHD, 2004)



Width of sectional elements (m)

Crest	12.1
Carriageway	6.2
Shoulder – paved	1.5
Verge	1.45

Design Capacity

Maximum capacity: 1600 PCU/hr
(assumed NMV/MV ratio of 0.14)

NMV provision

Where DY NMV PCU/hr exceeds 400 consider providing separate NMV lanes (Type 4a cross-section) – see Figure 4.8.

Upgrading

The extra-wide embankment permits upgrading to Type 3 standard.

Figure 7.3: Design Type 4; 6.2m carriageway (RHD, 2004)

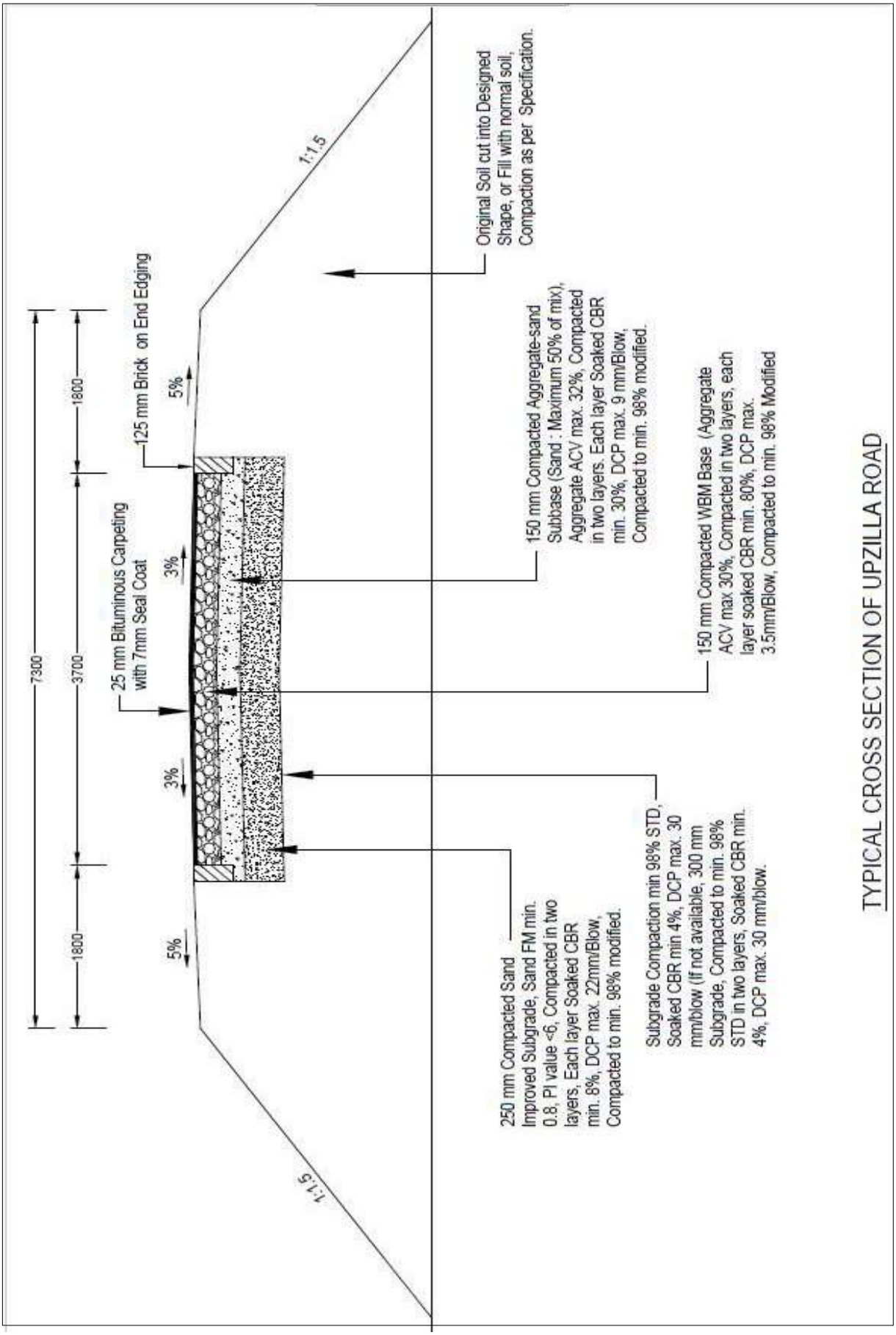


Figure 7.4: Typical Cross Section of Upazila Road (LGED, 2005)

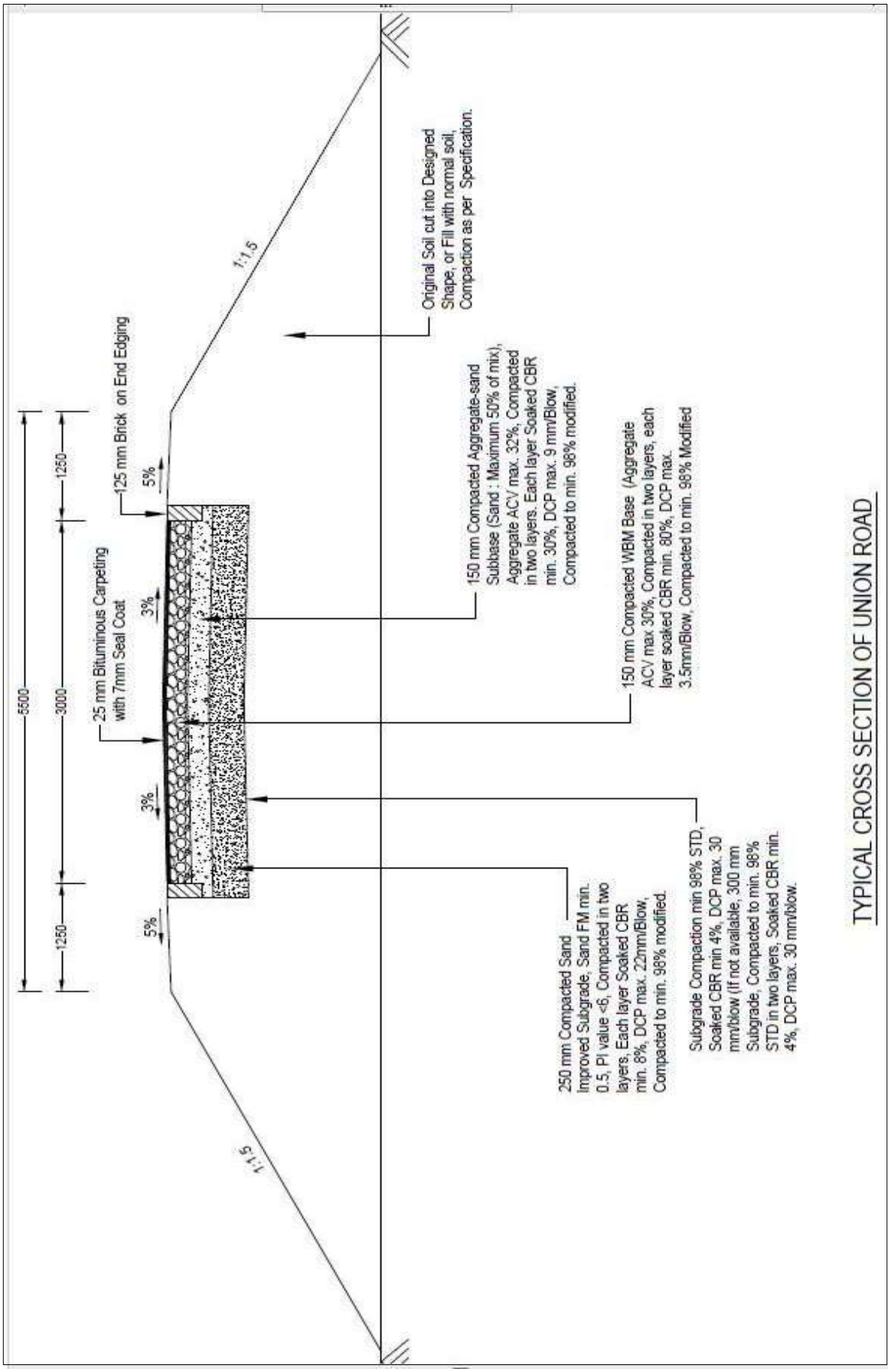


Figure 7.5: Typical Cross Section of Union Road (LGED, 2005)

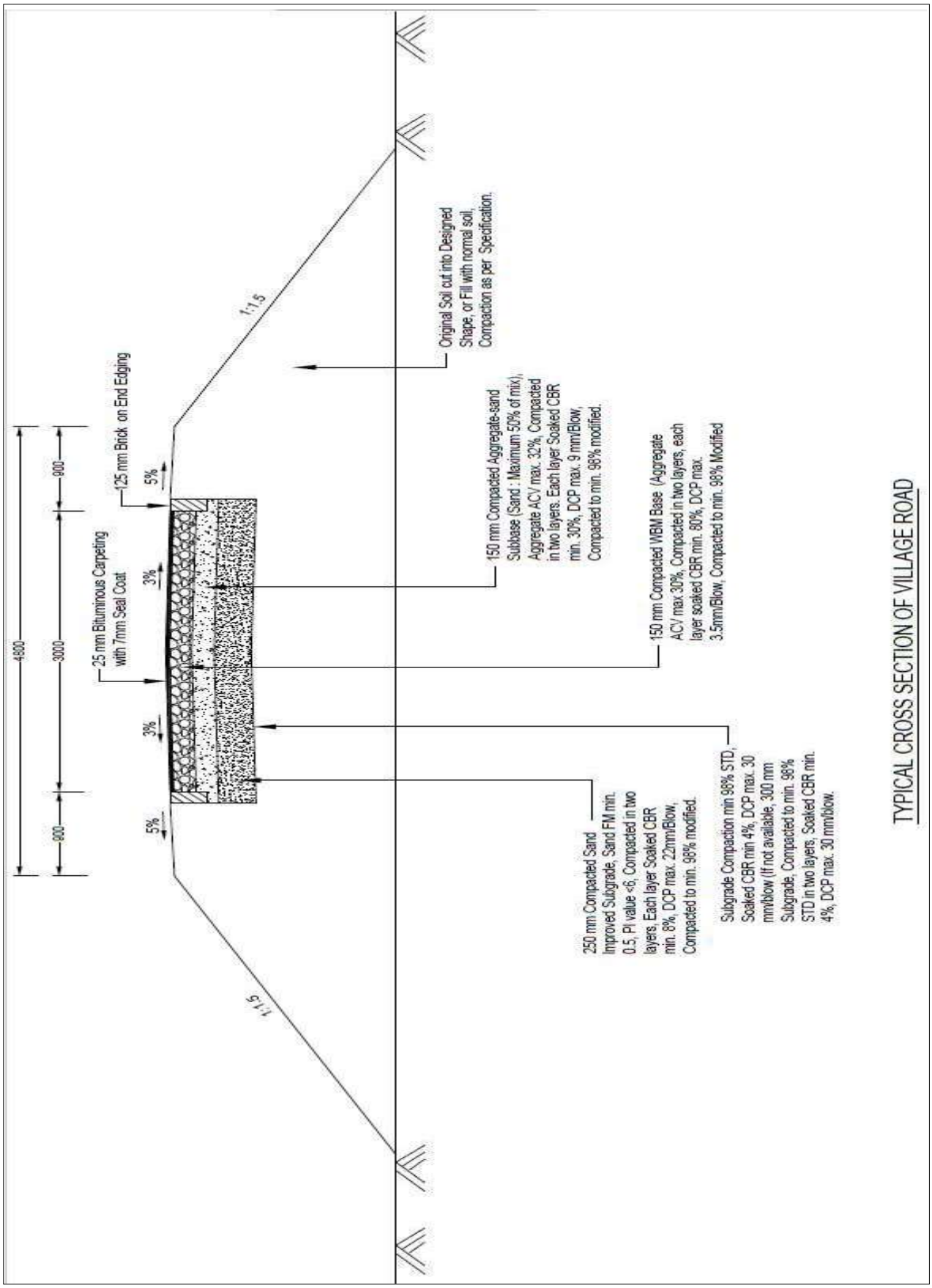


Figure 7.6: Typical Cross Section of Village Road (LGED, 2005)

Road Network has been proposed depending on the missing links and requirement of the upgradation of existing road. Roads have been proposed on the basis of concerned authority and 6 types of road have been proposed for Ramu Upazila **(Map 7.3)**. In total, 442 km road has been proposed for Ramu Upazila which incorporates existing road and new roads based on missing links. Thee detail length of road has been outlined in **Table 7.7**.

Table 7.7: Proposed Road Network

Road Category	Lane	Road Width (m)	Area (sq. m)	Area (sq. km)
National Highway	4	0.044	43539.19	43.54
Road	1	0.035	34616.57	34.62
Road	4	0.030	29974.17	29.97
Upazila Road	1	0.006	6175.13	6.18
Village-A	1	0.070	70333.24	70.33
Village-B	1	0.182	182153.33	182.15
Zila Road	4	0.075	75211.08	75.21
Total			442002.70	442.00

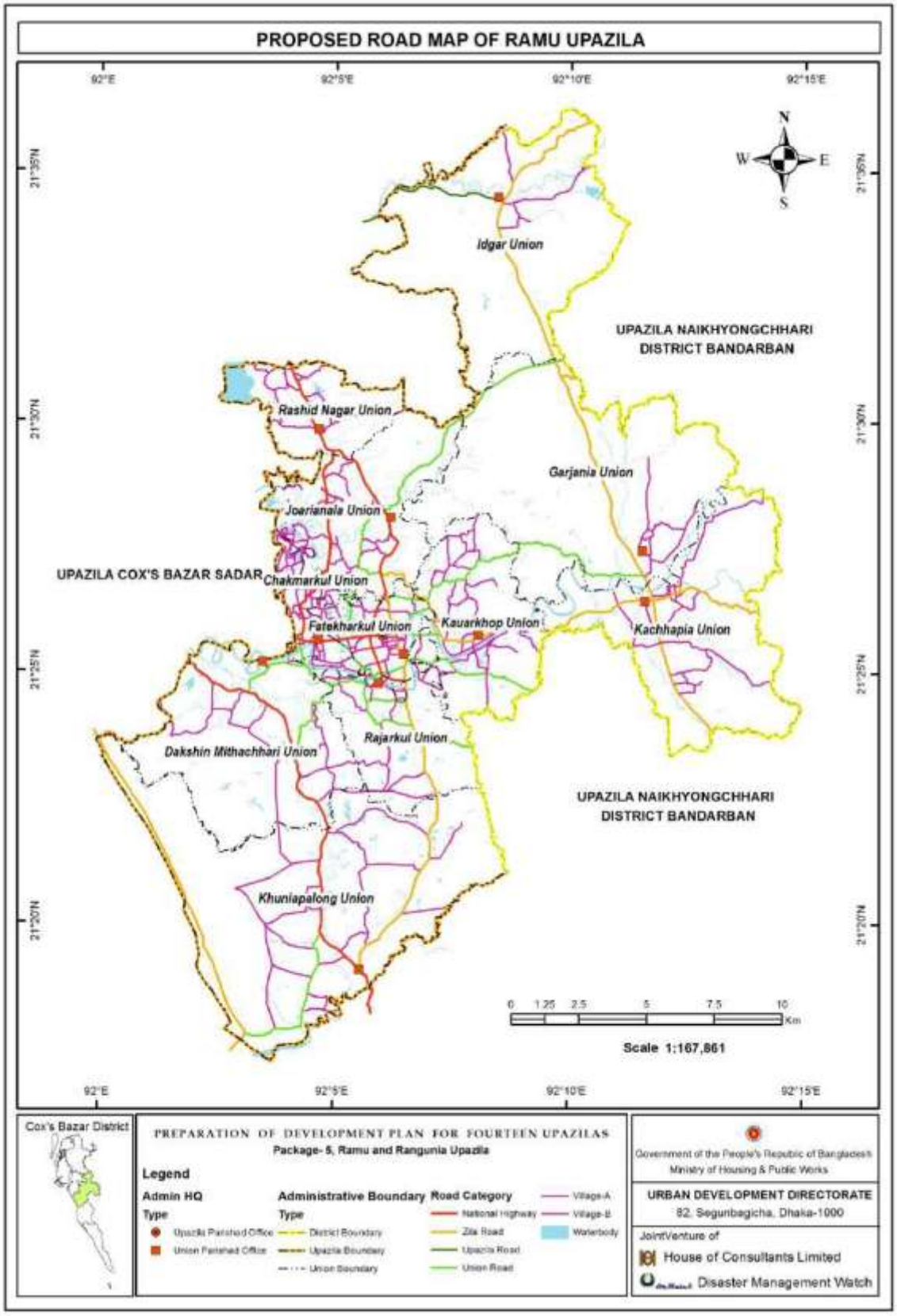
Source: Prepared by Consultant Team based on Survey, 2016

The below **Table 7.8** has shown the statistics of differences between existing road network and the proposed road network. The total circulation network of the Upazila has been increased. Almost 1.62% area covers the road network of the total area.

Table 7.8: Comparison between Existing & Proposed Circulation Network

Circulation Network	Length (km)	Area (sq. km)	Area in Percentage	Remarks
Existing	989.98	2.74	.71	According to Existing Land use
Proposed	442.00	3.48	.91	According to Structure Plan

Source: Prepared by Consultant Team based on Survey, 2016



Source: Prepared by Consultant Team Based on Field Survey, 2017

Map 7.3: Proposed Roads in Ramu Upazila

7.3.7 Drainage Network

The existing drainage system has been observed of this area. Depending on the existing condition drainage network has been proposed for s.

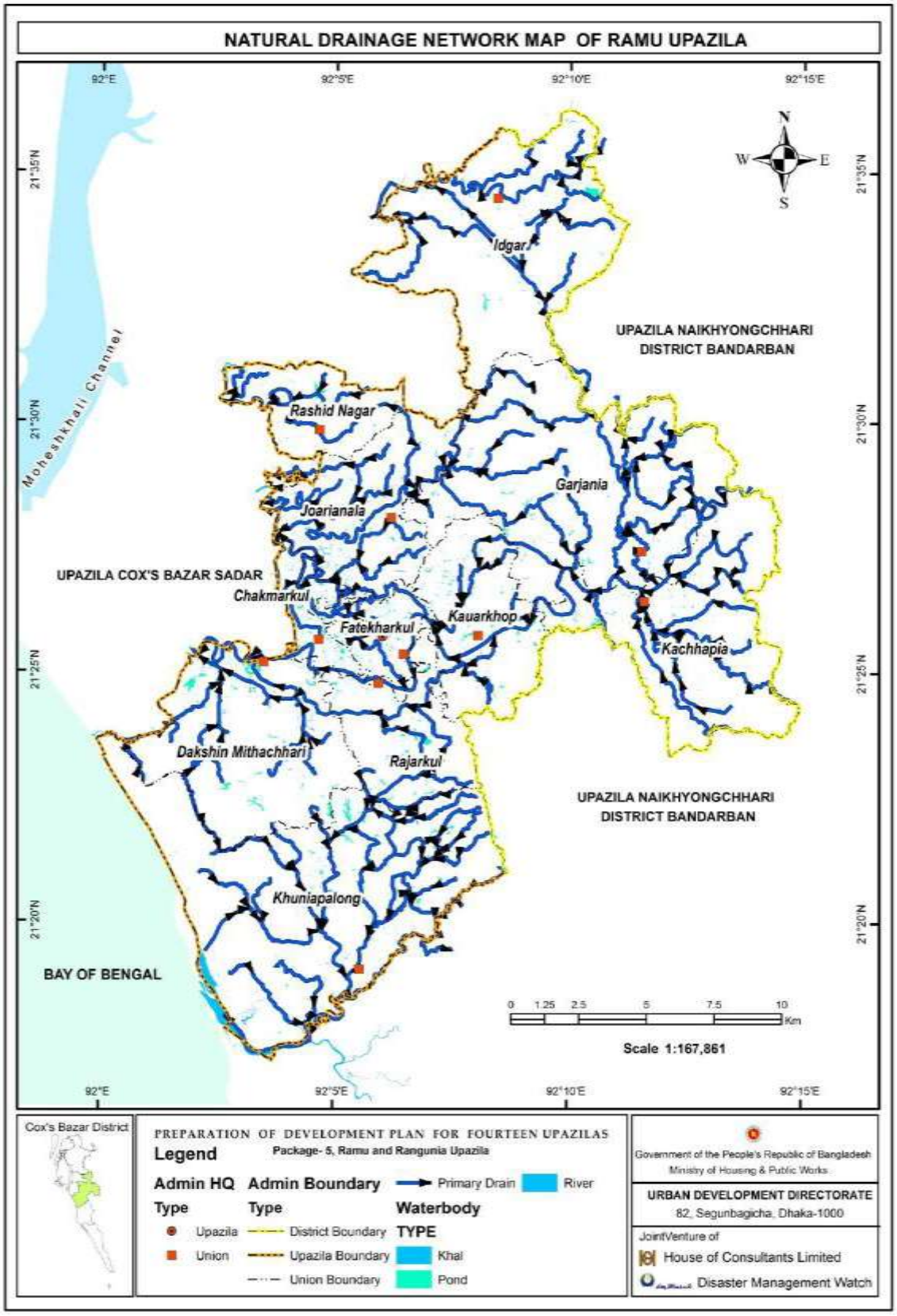
7.3.7.1 Existing Drainage Network

During the physical feature survey, it was detected that there is no proper drainage system. And the existing drainage system is not well designed, there are some manmade drains and natural drainage networks. The natural drainage network is mainly Bakkhali River or other rivers and numerous numbers of channels are passing through this Upazila.The **Map 7.4** represents the existing natural drainage network of Ramu Upazila.

7.3.7.2 Proposed Drainage Network

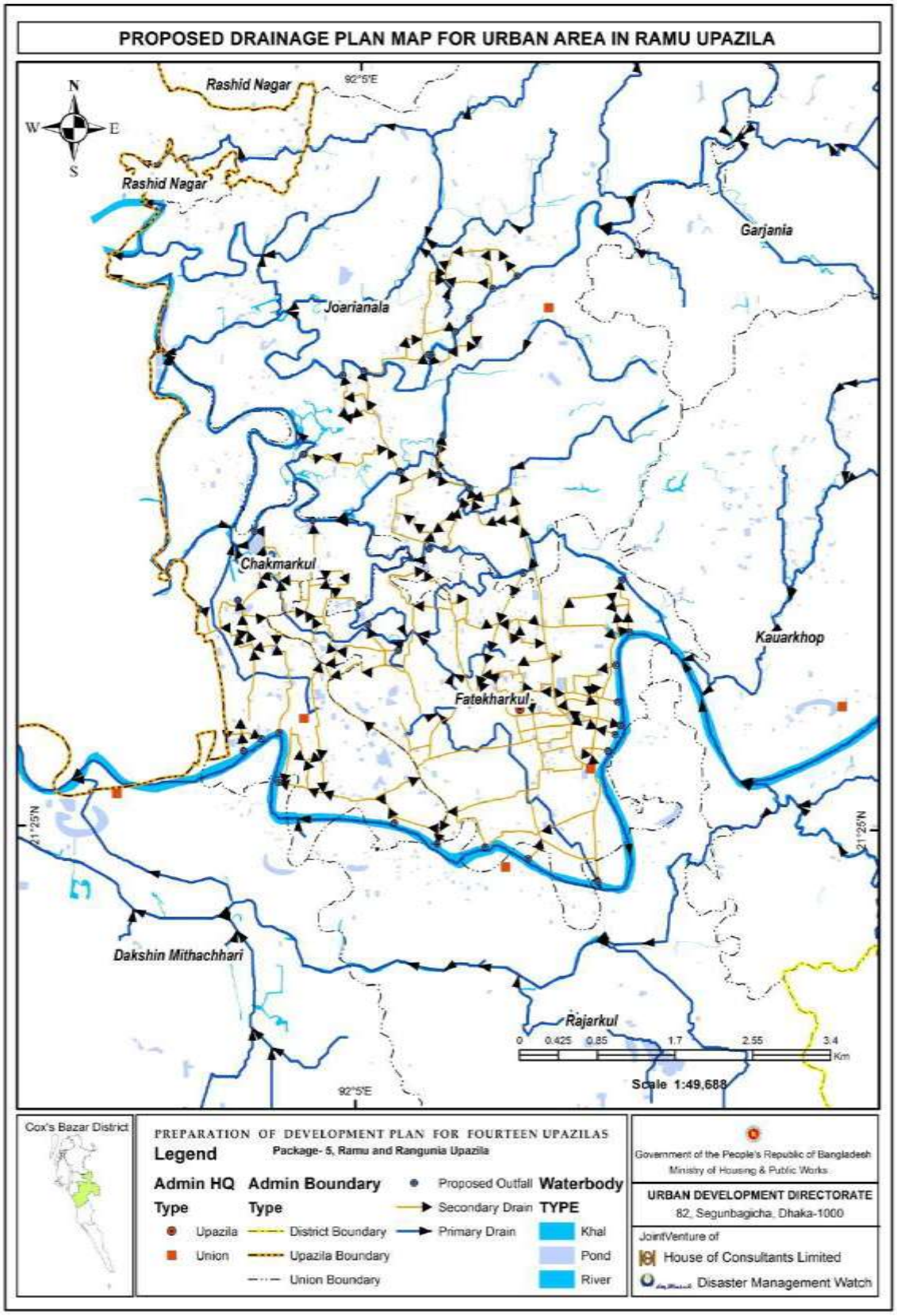
According to the road alignment a drainage network has been proposed for the urban area. Outfalls of these manmade drainages have been identified. In case of rural areas, the existing natural channels need to keep navigable for the passing of water. From the existing natural drainage network, the direction of flow can be easily recognisable. Proposed drainage network has done in two parts. First one is for the total drainage network of Ramu Upazila that is natural drainage system and other for the assumed urban area Fathekharkul, Chakmarkul and Joarianala. The **Map 7.5**shows the proposed drainage map depicts the flow of water and their outfalls to respective rivers and chara. The total length of primary drainage is 530.21 km. The Map represents the man-made drainage system which has been proposed with designated outfalls. The length of secondary drainage is 76.14 km. 52 outfalls have been proposed.

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.



Source: Prepared by Consultant Team Based on Field Survey, 2017

Map 7.4: Natural Drainage Network in Ramu Upazila



Source: Prepared by Consultant Team Based on Field Survey, 2017

Map 7.5: Proposed Drainage in Ramu Upazila

7.3.8 Plan for Urban and Rural Services

7.3.8.1 Existing Facilities and Services

On the basis of existing facilities, population projection and PRA demand different features have been proposed which are important for the development of this Upazila in near future. Table 7.9 represents the existing facilities and services.

Table 7.9: Existing Facilities and Services

Important Features	Frequency	Important Features	Frequency
Primary School	62	Hindu Temple	20
High School	17	Mosque	331
Madrasa	62	Hindu Temple	20
College	3	Buddhist Temple	16
Electric Pole	1	Graveyard	93
Electric Tower	11	Fire Service	1
Electric Transformer	3	Police Station	1
Fueling Station	6	Post Office	3
Mosque	331	Hindu Temple	20

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

For deriving the proposed features and facilities, a model features for an Upazila has been made in below **Table 7.10**.

Table 7.10: Proposed Features for Urban and Rural area plan

Rural/	Urban/Built up Area	Upazila
• Growth Center • Wholesale Market • Retail Market • CNG/Tempo/Auto Rickshaw /Rickshaw Stand • Primary School/Kindergarten • High School • Health Center/Maternity Clinic • Play Ground/Field • Eidgah • Graveyard • Mosque/Pagoda/Temple • Community Center • Post Office • Electric Substation • Small Scale Industry	➢ Primary School/Kindergarten ➢ High School ➢ College ➢ Neighborhood Park ➢ Play Ground/Field ➢ Health Center/Maternity Clinic ➢ Mosque/Pagoda/Temple ➢ Eidgah ➢ Graveyard ➢ Community Center ➢ Post Office ➢ Water Reservoir ➢ Waste Secondary Transfer Station ➢ Electric Substation ➢ Wholesale Market ➢ Retail Market	✓ Retail Trade Zone ✓ Wholesale Trade Zone ✓ Dairy Food Zone ✓ Fruit processing Zone ✓ Hi Tech Park ✓ Hotel Motel Zone ✓ Economic Zone ✓ Poultry and Fish Processing Zone ✓ Amusement park ✓ IT Park ✓ Low Income/Landless Affordable Housing ✓ Stadium ✓ Water Treatment Plant ✓ Textile and Sweetmeat Zone ✓ Bus Stand ✓ Truck Stand and Freight Zone ✓ Solid Waste Disposal ✓ Botanical Garden ✓ Tourist Zone ✓ Eco Park ✓ Auditorium/Cinema Hall ✓ Monument

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

7.3.8.2 Proposed Upazila Features

The above table depicts the proposed urban, rural and upazila features which are needed in this area depending on the existing facilities as well as from planning perspective. The table only represents the features and the descriptions along with locations are given in the **Table 7.11 and also see Appendix-K.**

Table 7.11: Proposed Upazila Features

Features	Union	Mouza
Hotel Motel Zone	Khuniapalong	Jungle Goalia Palong
Monument	Khuniapalong	Dhechua Palong
Dairy Food Zone	Khuniapalong (3)	Dariar Dighi
Dairy Food Zone		Dariar Dighi
Dairy Food Zone		Dariar Dighi
Poultry and Fish Processing Zone	Khuniapalong (2)	Dariar Dighi
Poultry and Fish Processing Zone		Dariar Dighi
Tourist Spot	Khuniapalong	Jungle Khunia Palong
Botanical Garden	Dakshin Mithachhari	Dakshin Mithachhari
Tourist Spot	Rajarkul	Rajarkul
Amusement Park	Rajarkul(2)	Rajarkul
Amusement Park		Rajarkul
College	Kauarkhop	Kauarkho
Overhead Tank	Fatekharkul	Fatekharkul
Auditorium/Cinema Hall	Fatekharkul	Fatekharkul
Bus Stand	Fatekharkul	Fatekharkul
Retail Trade Zone	Fatekharkul	Fatekharkul
Monument	Fatekharkul	Fatekharkul
Truck Stand & Frieght Zone	Fatekharkul	Hightupi
Water Treatment Plant	Fatekharkul(2)	Hightupi
		Hightupi
Fruit Processing Zone	Kachhapia(2)	Kachhapia
		Kachhapia
Economic Zone	Chakmarkul (3)	Chakmarkul
		Chakmarkul
		Chakmarkul
Monument	Joarianala	Uttar Mithachhari
Solid Waste Disposal Site	Fatekharkul(3)	Maronglowa
		Maronglowa
		Maronglowa
Sewage Treatment Plant	Chakmarkul (2)	Chakmarkul
		Chakmarkul
Stadium	Fatekharkul	Hightupi
Wholesale Trade Zone	Joarianala	Uttar Mithachhari
Low Income Housing	Kauarkhop(3)	Lot Ukhiarghona
		Lot Ukhiarghona
		Lot Ukhiarghona
Solar Park	Garjania	Jungle Garjania
BKSP	Joarianala(3)	Nonachhari
		Nonachhari
		Nonachhari
College	Joarianala	Joarianala
Tourist Spot	Garjania(2)	Jungle Garjania
		Jungle Garjania
	Joarianala	Joarianala

Source: Prepared by Consultant Team

The proposed Upazila features have been indicated in the above table along with their mouza and plot number. According to the needs of the inhabitants that have been identified through PRA and different survey and also from planning perspective, the features have been proposed for the specific areas. Water Treatment plant has been proposed for the urban area. In urban area an overhead tank also has been proposed. It will ensure water supply in the urban area.

7.3.8.3 Proposed Primary School

In Ramu Upazila 33 primary schools has been proposed. The location has been given in the **Table 7.12** below. From the survey 62 primary schools have been identified in Ramu Upazila. According to the PRA and for future demand 33 primary schools have been provided. It has been proposed on the basis of population projection and the public demand.. As the time period of the development plan is 20 years each school should be constructed after 10 years. See Appendix-K.

Table7.12: Mouza-wise Proposed Primary School

Type	Union	Mouza
Proposed Primary School (33)	Idgar(2)	Idgar
		Idgar
	Garjania	Garjania
	Kachhapia(2)	DakshinKachhapia
		Kachhapia
	Kauarkhop(5)	Manirjhil
		Sonaichhari
		Ukhiarghona
		Ukhiarghona
		Lot Ukhiarghona
	Khuniapalong(2)	Khuniapalong
		DariarDighi
	Rajarkul(2)	Rajarkul
		Rajarkul
	DakshinMithachhari	DakshinMithachhari
	DakshinMithachhari	DakshinMithachhari
	Chakmarkul (3)	Chakmarkul
		Chakmarkul
		Chakmarkul
	Fatekharkul(6)	FotekharKul
		FotekharKul
		Sreekul
		Maronglowa
		Maronglowa
		Hightupi
	Joarianala(4)	Uttar Mithachhari
		Nandakhali
		Joarianala
		Joarianala
	Rashid Nagar (4)	Dhalichora
		Dhalichora
		Dhalichora
		Dhalichora

Source: Prepared by Consultant Team

7.3.8.4 Proposed High School

To ensure education facility for every inhabitants of this area 14 high schools have been provided. At present 17 high schools are existed in this area which is sufficient to serve the present population and also for future population. But on the basis of PRA and population projection for 20 years 17 high schools have been proposed and these schools should be constructed according to the population projection which has been done for 5 years interval. **Table 7.13** presents the description of the proposed schools and See Appendix-K.

Table 7.13: Proposed High School

Type	Union	Mouza
Proposed High School (14)	Idgar	Idgar
	Garjania	Garjania
	Kachhapia(2)	DakshinKachhapia
		Kachhapia
	Kauarkhop	Kauarkho
	Khuniapalong(2)	Khuniapalong
		DariarDighi
	Rajarkul	Rajarkul
	Chakmarkul	Chakmarkul
	Fatekharkul	FotekharKul
	Joarianala(2)	Uttar Mithachhari
		Joarianala
	Chakmarkul	Chakmarkul
	Rashid Nagar	Dhalichora

Source: Prepared by Consultant Team

7.3.8.5 Proposed Health Facilities/Clinic

To ensure access to health facilities to every inhabitants of the upazila 34 clinics/ health centre has been proposed. The locations have been presented in the **Table 7.14**. Health is the most important issue for every people. Access to health facilities is the basic right of every human being. At present 20 clinic or health facilities are available in this upazila and 34 clinics have been proposed in the distant areas. And also see Appendix-K

Table 7.14: Proposed Health/Clinic

	Proposed Health Clinic (34)	
	Union	**Mouza**
Existing Health Clinic 20	Idgar(2)	Idgar
		Idgar
	Garjania(3)	Garjania
		Garjania
		Garjania
	Kachhapia	DakshinKachhapia
	Kauarkhop(6)	Manirjhil
		Sonaichhari
		Lot Ukhiarghona
		Ukhiarghona
		Ukhiarghona
		Lot Ukhiarghona
	Khuniapalong	Khuniapalong
	Rajarkul(2)	Rajarkul
		Rajarkul
	DakshinMithachhari	DakshinMithachhari
	Chakmarkul (2)	Chakmarkul
		Chakmarkul
	Fatekharkul(7)	FotekharKul
		FotekharKul
		FotekharKul
		Sreekul
		Maronglowa
		Maronglowa
		Hightupi
	Joarianala(5)	Uttar Mithachhari
		Joarianala
		Nandakhali
		Joarianala
		Joarianala
	Rashid Nagar (3)	Dhalichora
		Dhalichora
		Dhalichora

Source: Prepared by Consultant Team

7.3.8.6 Proposed CNG Stand

Proposed CNG stand and their locations have been presented in the **Table 7.15.** In Upazila area CNG or tempo is one of the most used transports. For this reason, CNG or tempo stands have been proposed in specific locations.See Appendix-K .

Table 7.15: Proposed CNG Stand

Type	Union	Mouza
Proposed Tempo CNG Stand(11)	Idgar	Idgar
	Garjania	Garjania
	Kachhapia	Kachhapia
	Kauarkhop	Kauarkho
	Khuniapalong	DhechuaPalong
	Rajarkul	Rajarkul
	Fatekharkul	FotekharKul
	Joarianala	Joarianala
	Rashid Nagar	Dhalichora
	Chakmarkul	Chakmarkul
	DakshinMithachhari	DakshinMithachari

Source: Prepared by Consultant Team

7.3.8.7 Proposed Neighbourhood Market

Neighbourhood market has been proposed specially neighbourhood markets have been proposed and their locations have been indicated in the **Table 7.16** and See **Appendix-K**.

Table 7.16: Proposed Neighbourhood Market

Type	Union	Mouza
Neighbourhood Market (8)	Chakmarkul (3)	Chakmarkul
		Chakmarkul
		Chakmarkul
	Fatekharkul(3)	FotekharKul
		Sreekul
		Maronglowa
	Joarianala(2)	Uttar Mithachhari
		Joarianala

Source: Prepared by Consultant Team

7.3.8.8 Proposed RSSC Feature

Rural Sales and Service Centres have been proposed for rural areas. As Ramu Upazila is situated beside cox's bazar upazila and for the marketing purpose RSSC in rural areas is very much needed. The location of these RSSC proposed on the basis of unserved rural areas. That means where such types of facilities are not available. **Table 7.17** presents the locations of proposed RSSC and See **Appendix-K**.

Table 7.17: Proposed RSSC Feature

Type	Union	Mouza
Proposed Rural Sales Service Center (RSSC) (25)	Idgar(3)	Idgar
		Idgar
		Idgar
	Garjania(3)	Garjania
		Garjania
		Garjania
	Kachhapia	DakshinKachhapia
	Kauarkhop(5)	Manirjhil
		Ukhiarghona
		Lot Ukhiarghona
		Ukhiarghona
		Ukhiarghona
	Khuniapalong(2)	Khuniapalong
		DariarDighi
	Rajarkul(3)	Rajarkul
		Rajarkul
		Rajarkul
	DakshinMithachhari(2)	DakshinMithachari
		DakshinMithachari
	Rajarkul	Rajarkul
	DakshinMithachhari	Chainda
	Joarianala(2)	Nandakhali
		Joarianala
	Rashid Nagar (2)	Dhalichora
		Dhalichora

Source: Prepared by Consultant Team

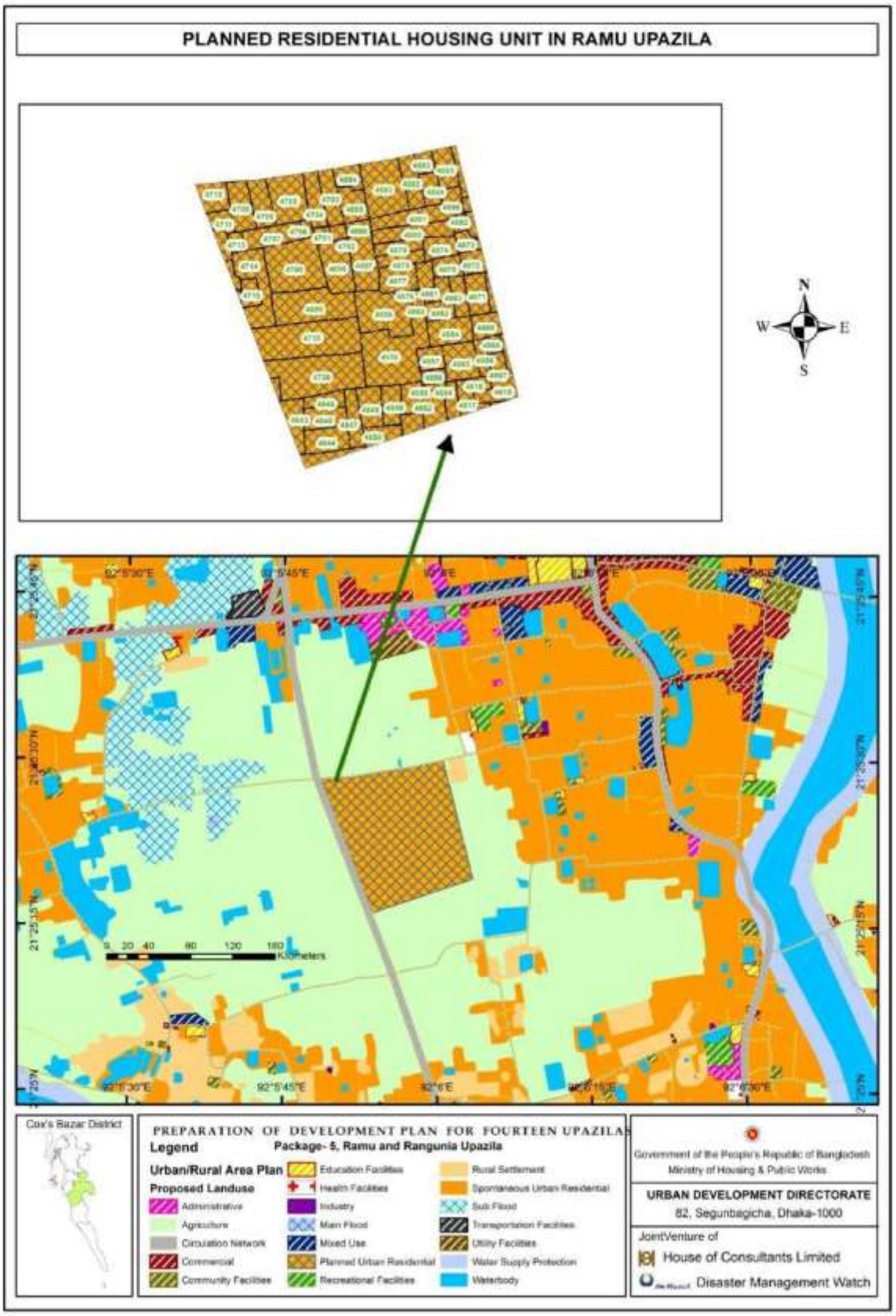
7.3.8.9 Planned Housing for Middle to High Income Group

Planned housing in Ramu Upazila can be developed with the intervention of Government bodies. To develop this upazila in a planned way planned housing is an important element. In order to carry out such project a suitable area should be selected for. As the housing scheme will serve the middle to high income people the location should be near the Pourashava as it is the urban area of this upazila. Two housing unit (**Map 7.6**) is selected on the basis of road connectivity and distance from upazila head quarter have been presented in **Table 7.18.**

Table 7.18: Proposed Planned Housing Unit

Planned Housing	Mouza	JL No.	Sheet No.	Area in Sq.km	Area in Acre
PlannedResidential Housing Unit 1	Chakmarkul	18	3	0.153	37.710
	FotekharKul	22	1		
Planned Residential Housing Unit 2	Sonaichhari	24	5	0.365	90.084

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



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

Map 7.6: Proposed Planned Residential Housing Unit

7.3.8.10 Low Cost Housing for the Landless People

Low cost housing unit is for the landless people who needs government help to have a house of their own. For this purpose, a low-cost housing unit has been proposed which has been discussed in the Action Area plan (**Table 7.19& Figure 7.14**)

Table 7.19: Salient Features for One Low Cost Unit

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.

Source: Prepared by Consultant Team

7.3.9 Existing Land Use and Development Plan of (Rural Area)

Existing land use data has been prepared for each union as well as development plan has been prepared. The area is divided into 12 different zones. The conditions of the unions are presented in the following maps after preparing of the structure plan. As the structure plan has been presented previously the development plan of 11unions has been presented in maps sequentially.

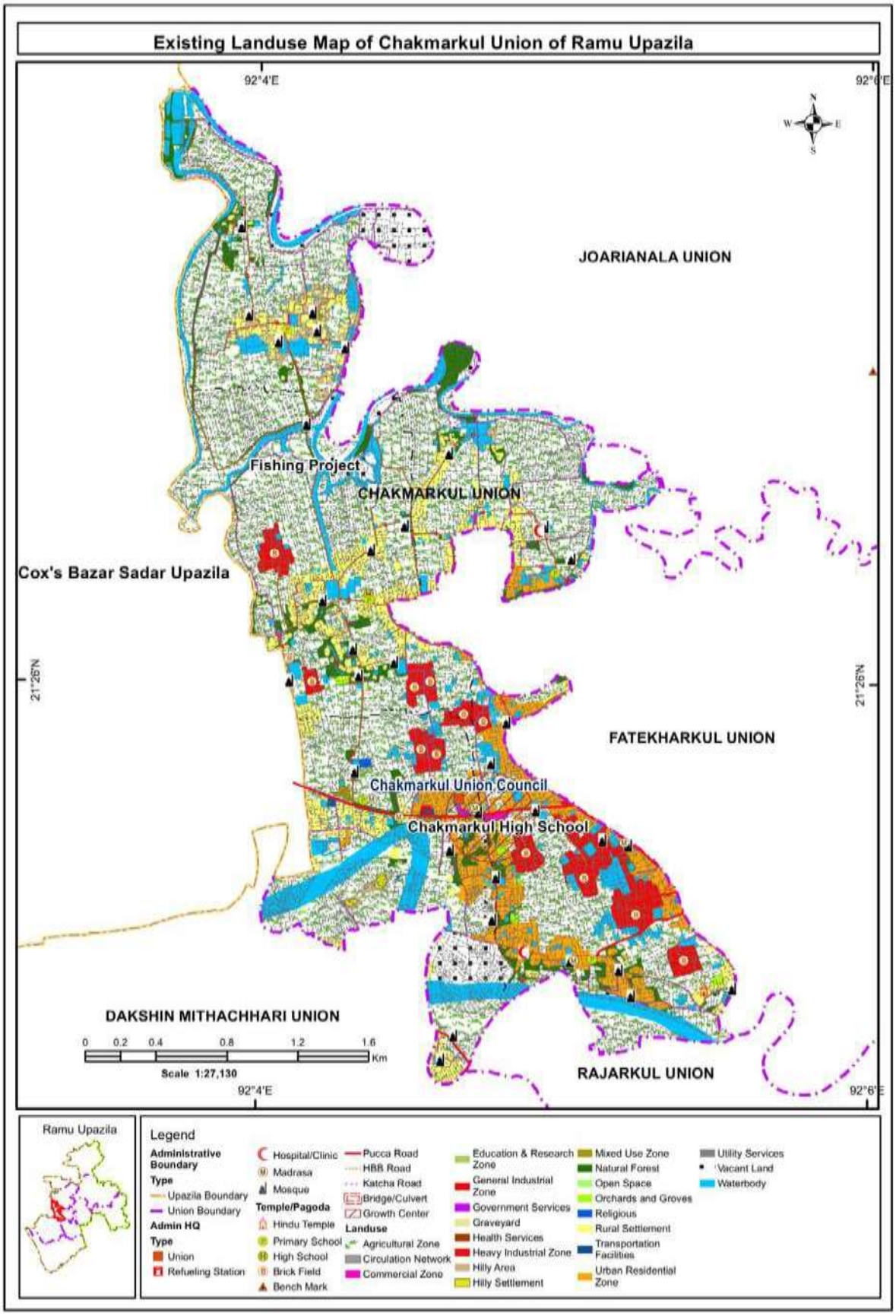
Existing Land Use and Development Plan of Chakmarkul

The existing land use of Chakmarkul has presented in **Table 7.20** along with **Map 7.7.** Total area is 7.31sq.km**.** The development plan of this is presented **i**n **Map 7.8.**

Table 7.20: Existing Land Use of Chakmarkul

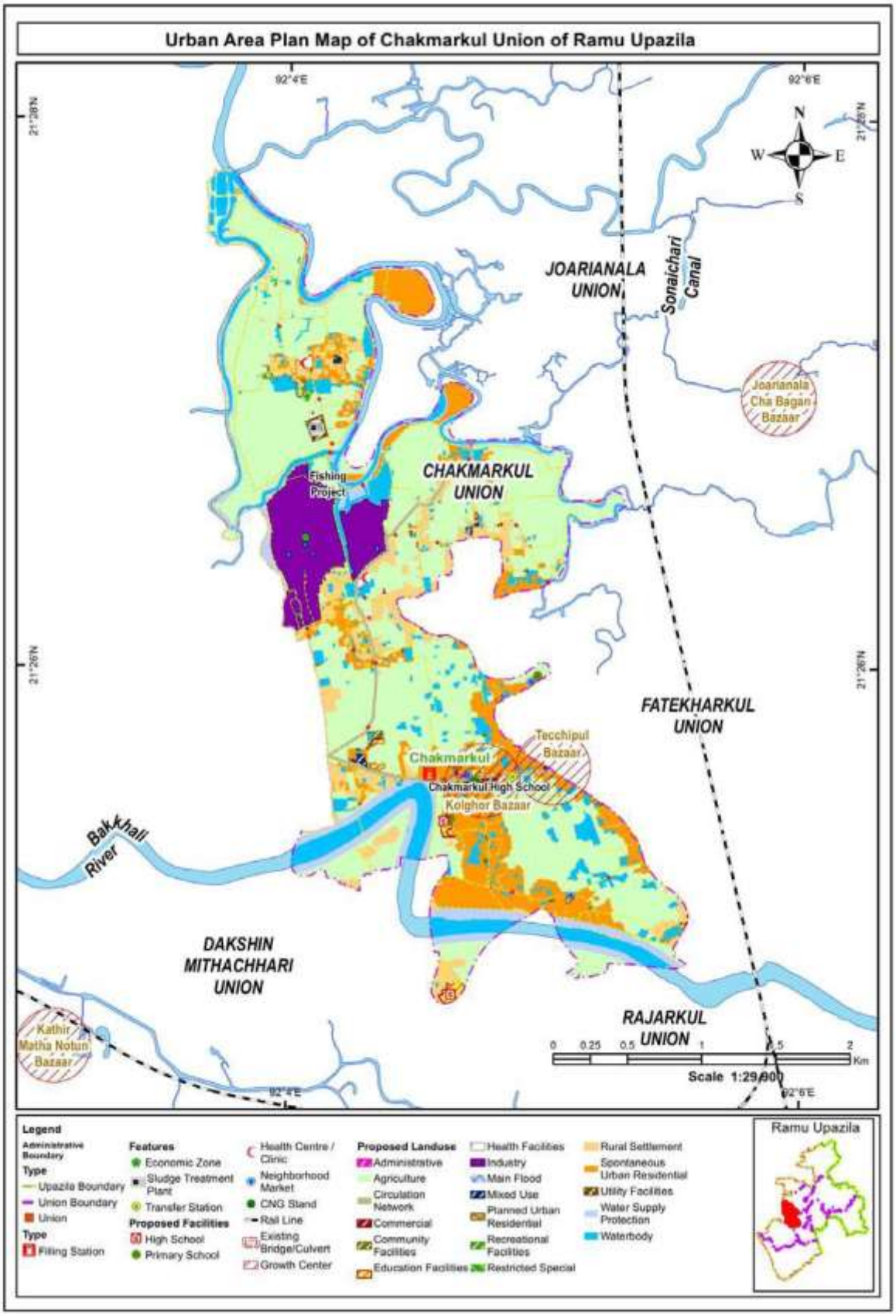
Landuse	Area in sq. m	Area in sq.km	Area in Acre
Agricultural Zone	3907547.652	3.908	965.594
Circulation Network	120292.750	0.120	29.726
Commercial Zone	16349.083	0.016	4.040
Education & Research Zone	20298.616	0.020	5.016
General Industrial Zone	1490.056	0.001	0.368
Government Services	2544.414	0.003	0.629
Graveyard	2456.004	0.002	0.607
Health Services	657.378	0.001	0.162
Heavy Industrial Zone	358793.432	0.359	88.661
Hilly Area	107029.668	0.107	26.448
Hilly Settlement	6493.767	0.006	1.605
Mixed Use Zone	18135.959	0.018	4.482
Natural Forest	352450.177	0.352	87.093
Open Space	698.906	0.001	0.178
Orchards and Groves	14230.724	0.014	3.517
Religious	16442.940	0.016	4.063
Rural Settlement	610000.621	0.610	150.7373
Transportation Facilities	6130.949	0.006	1.515019
Urban Residential Zone	482887.869	0.483	119.3264
Utility Services	485.203	0.0004	0.119899
Vacant Land	362767.853	0.363	89.64356
Waterbody	907420.570	0.907	224.2327
Total	7315604.593	7.316	1807.759

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



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

Map 7.7: Existing Land use Plan of Chakmarkul



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

Map 7.8: Development Plan for Chakmarkul

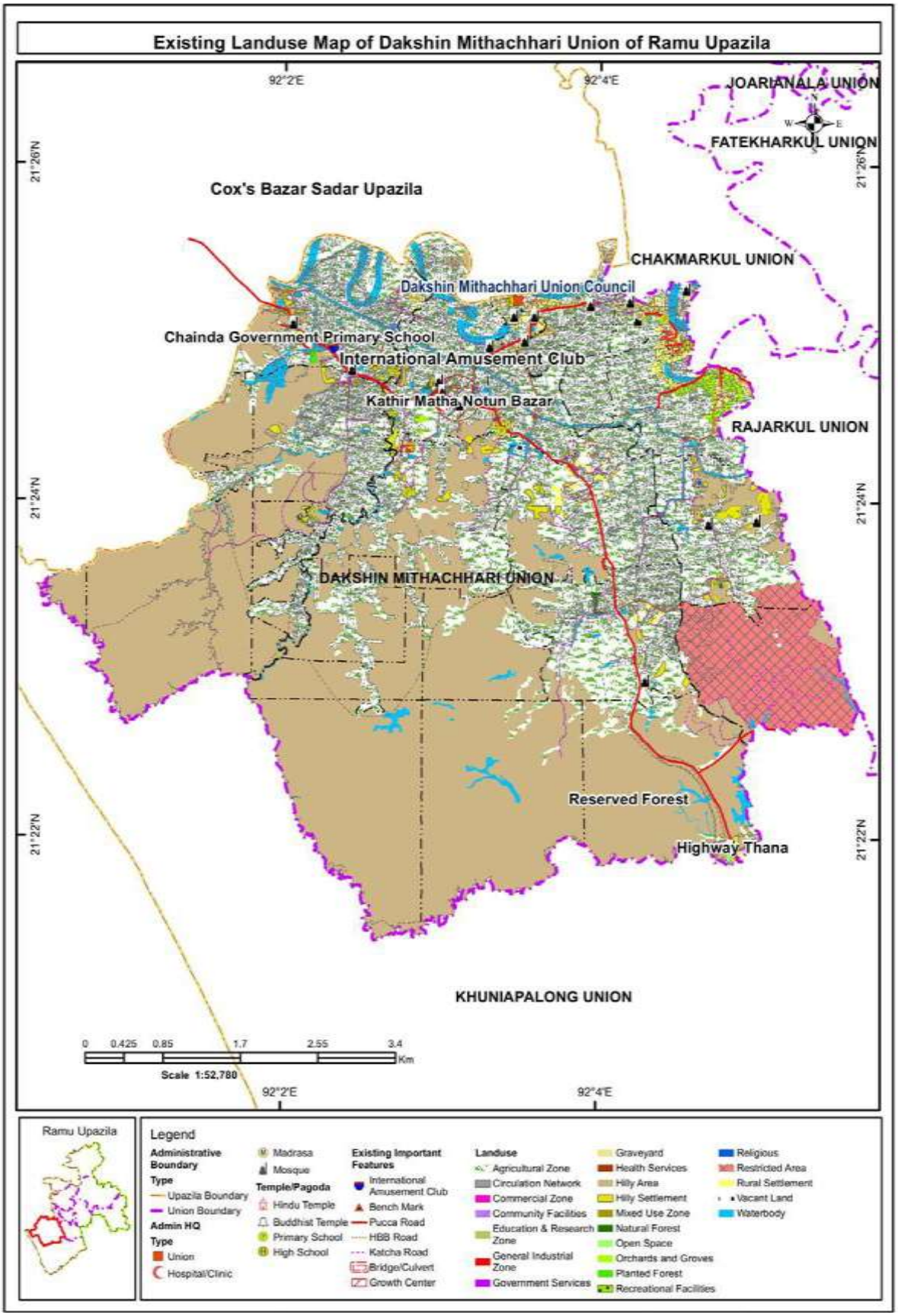
Existing Landuse and Development Plan of Dakshin Mithachari

The existing land use of Chandraghona Kadamtali has presented in **Table 7.21**along with **Map 7.9.** Total area is 40.98sq.km**.** The development plan is presented **i**n **Map 7.10.**

Table 7.21: Existing Land Use of Dakshin Mithachhari

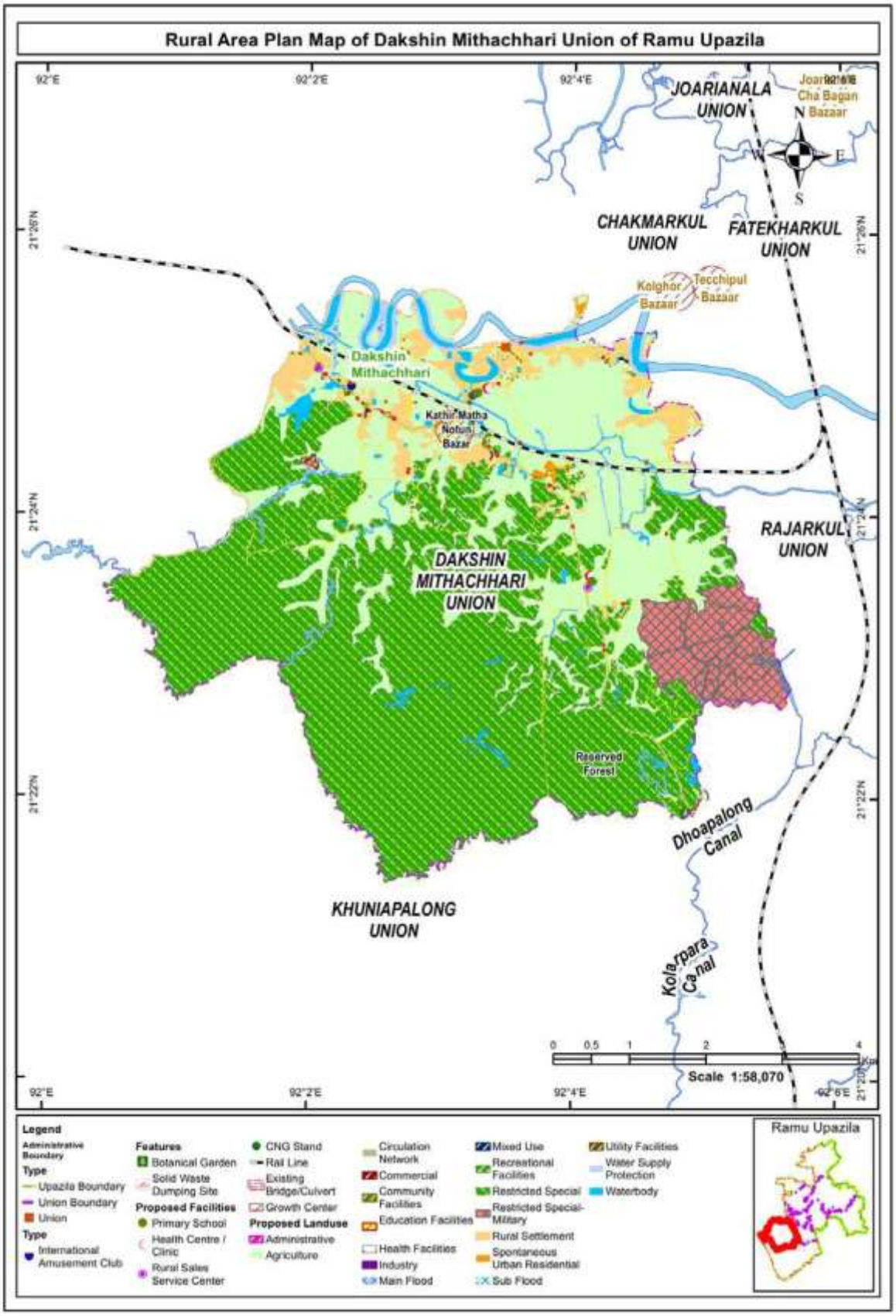
Landuse	Area in sq. m	Area in sq.km	Area in Acre
Agricultural Zone	15245390.5	15.245	3767.288
Circulation Network	243990.185	0.243	60.292
Commercial Zone	31243.8	0.031	7.721
Community Facilities	1471.276	0.001	0.364
Education & Research Zone	26405.107	0.026	6.525
General Industrial Zone	4324.765	0.004	1.069
Government Services	901.809	0.001	0.223
Graveyard	25960.433	0.026	6.415
Health Services	5920.940	0.006	1.463
Hilly Area	20403717	20.404	5041.963
Hilly Settlement	585084.159	0.585	144.580
Mixed Use Zone	8929.504	0.009	2.207
Natural Forest	34953.686	0.035	8.637
Open Space	15437.573	0.015	3.815
Orchards and Groves	160119.650	0.160	39.567
Planted Forest	11232.276	0.011	2.776
Recreational Facilities	1613.594	0.001	0.399
Religious	22242.437	0.022	5.496
Restricted Area	2155121.278	2.155	532.552
Rural Settlement	648291.374	0.649	160.199
Vacant Land	53831.089	0.054	13.302
Waterbody	1301707.031	1.301	321.665
Total	40987889	40.988	10128.52

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



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

Map 7.9: Existing Landuse Plan for Dakshin Mithachari



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

Map 7.10: Development Plan for Dakshin Mithachari

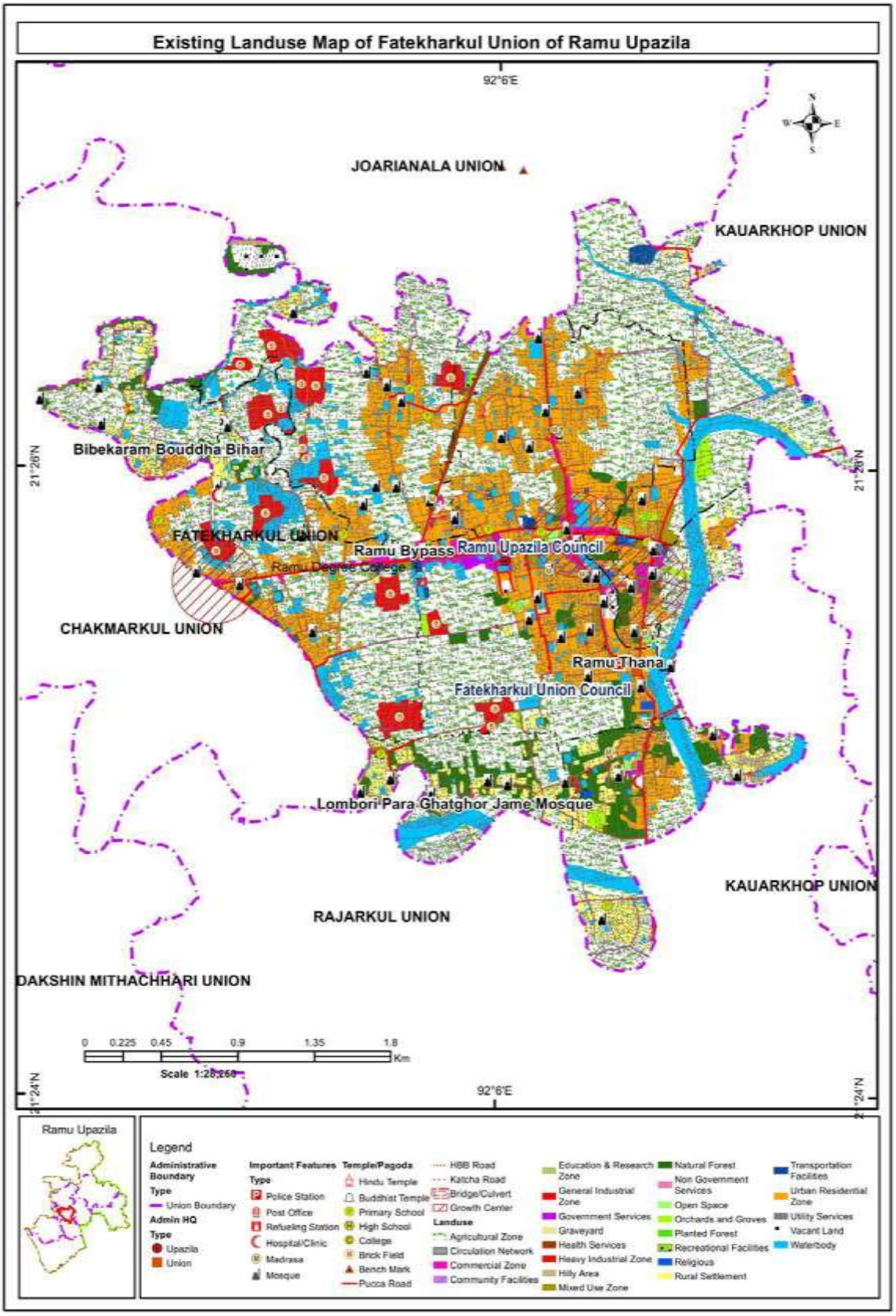
Existing Land Use and Development Plan of Fatekharkul

The existing land use of Fatekharkul has presented in **Table 7.22**along with **Map 7.11.** Total area is 9.92sq.km**.** The development plan is presented **i**n **Map 7.12.**

Table 7.22: Existing Land Use of Fatekharkul

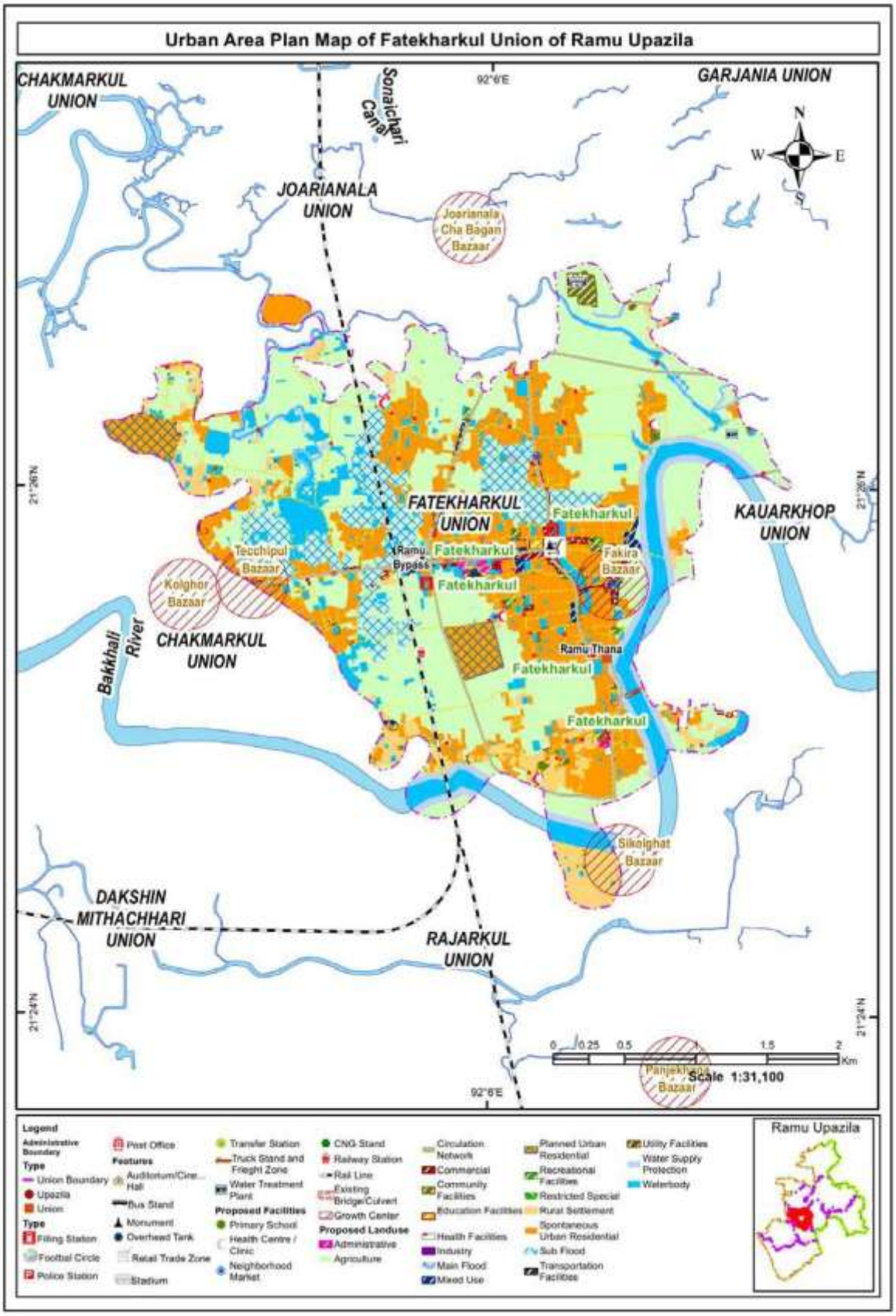
Landuse	Area in sq. m	Area in sq.km	Area in Acre
Agricultural Zone	4734589.117	4.735	1169.964
Circulation Network	212993.969	0.213	52.63294
Commercial Zone	137100.712	0.137	33.87896
Community Facilities	974.427	0.001	0.240791
Education & Research Zone	37906.557	0.038	9.367089
General Industrial Zone	1968.420	0.002	0.486416
Government Services	30109.854	0.030	7.440446
Graveyard	13249.375	0.013	3.274053
Health Services	3143.924	0.003	0.776895
Heavy Industrial Zone	335222.003	0.335	82.83671
Hilly Area	36366.279	0.036	8.986471
Mixed Use Zone	78662.296	0.079	19.43824
Natural Forest	542736.338	0.542	134.1156
Non Government Services	425.159	0.000	0.105061
Open Space	28512.707	0.029	7.045775
Orchards and Groves	51287.344	0.051	12.67362
Planted Forest	1705.521	0.001	0.421451
Recreational Facilities	3845.996	0.004	0.950384
Religious	52974.489	0.053	13.09053
Rural Settlement	506381.287	0.506	125.1319
Transportation Facilities	27415.418	0.027	6.774624
Urban Residential Zone	1929773.079	1.929	476.8662
Utility Services	4724.465	0.005	1.167463
Vacant Land	132769.869	0.133	32.80876
Waterbody	1015020.598	1.015	250.8217
Total	9919859	9.919	2451.296

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



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

Map 7.11: Existing Landuse Plan for Fatekharkul



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

Map 7.12: Development Plan for FatekharkulUnion

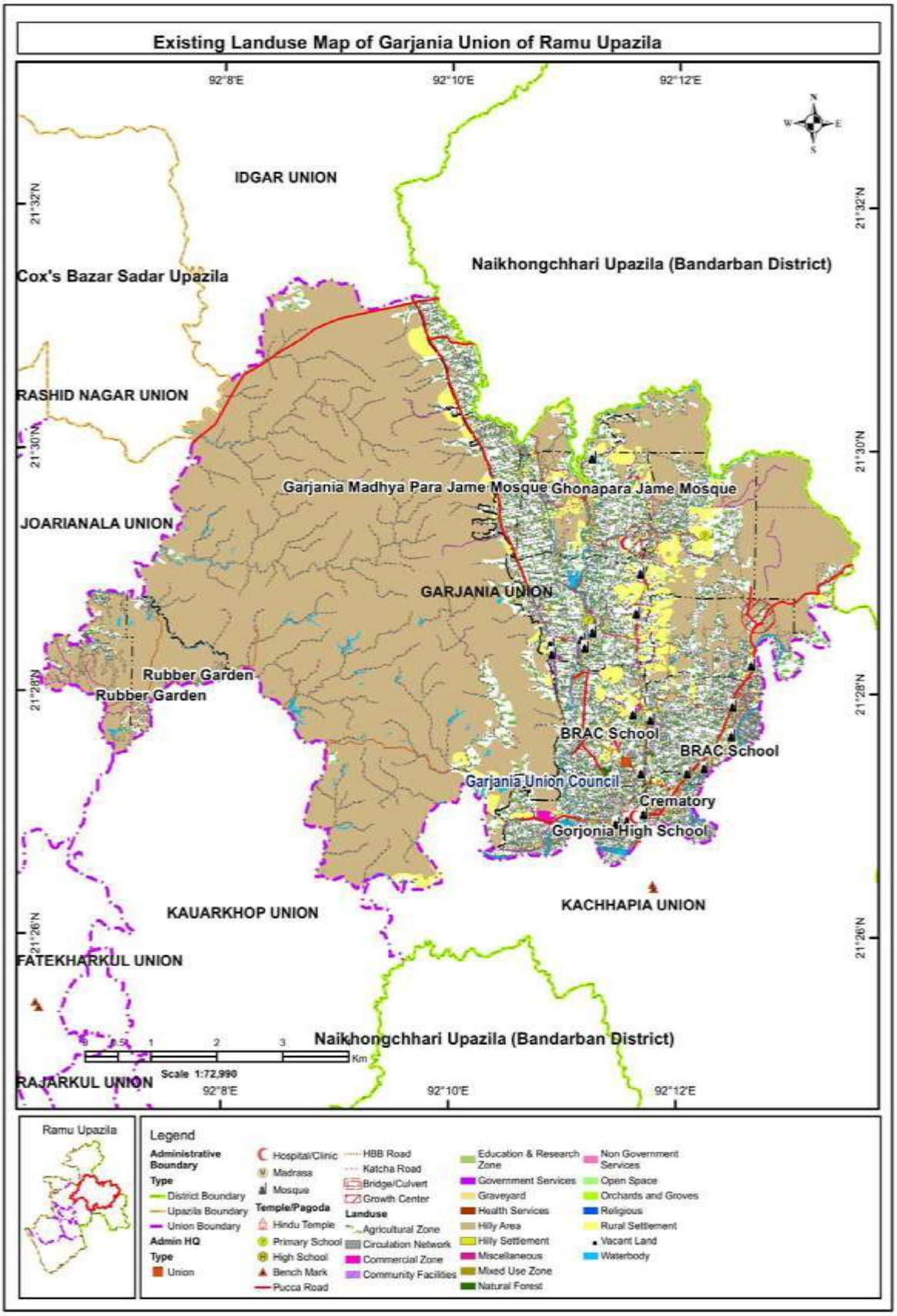
Existing Land Use and Development Plan of Garjania

The existing land use of Garjaniahas presented in **Table 7.24**along with **Map 7.13.** Total area is 64.24sq.km**.** The development plan is presented **i**n **Map 7.14.**

Table 7.23: Existing Land Use of Garjania

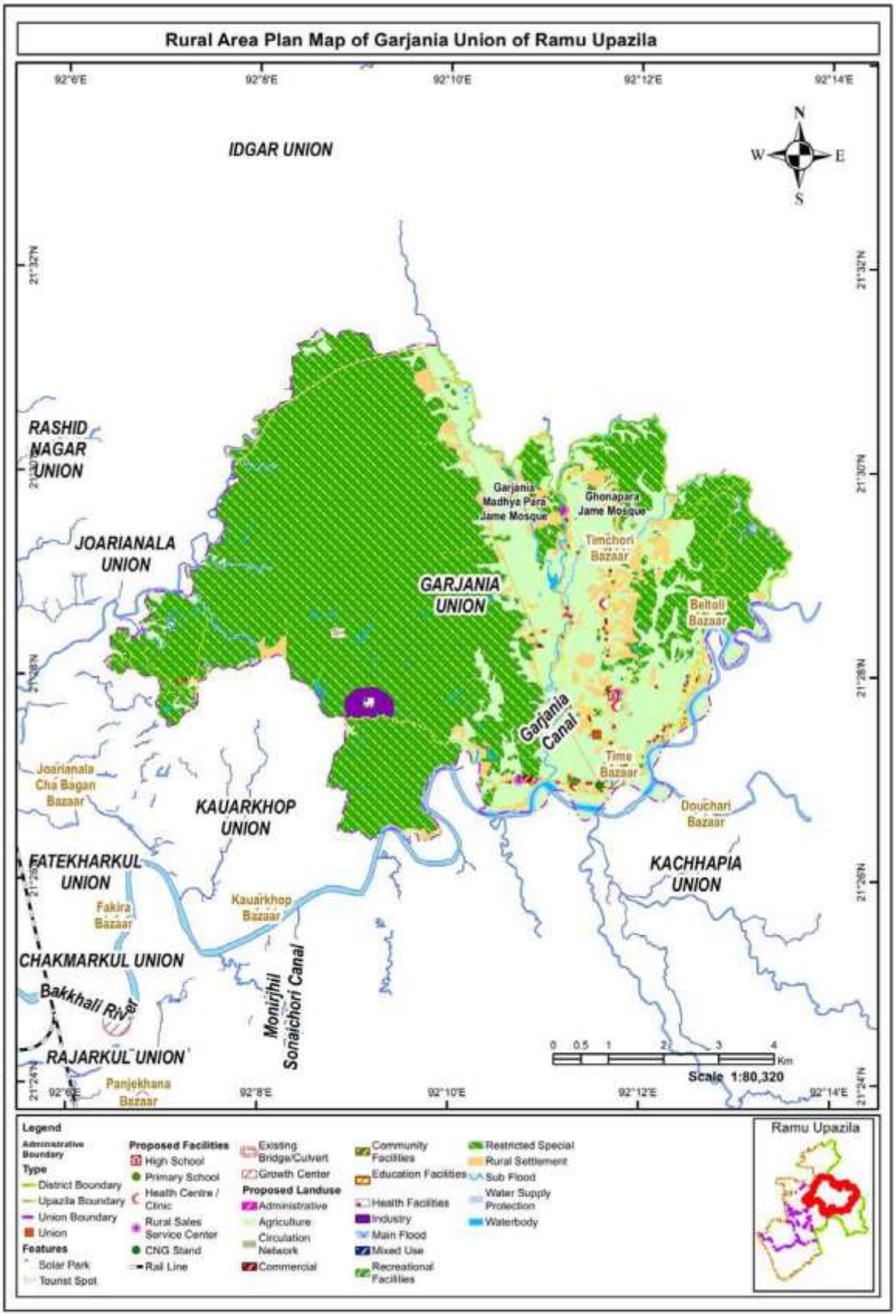
Landuse	Area in sq. m	Area in sq.km	Area in Acre
Agricultural Zone	16163890.13	16.164	3994.259
Circulation Network	271295.812	0.271	67.039
Commercial Zone	102363.973	0.102	25.295
Community Facilities	6035.709	0.006	1.491
Education & Research Zone	31287.701	0.031	7.732
Government Services	803.559	0.001	0.199
Graveyard	31333.259	0.031	7.7428
Health Services	4115.397	0.004	1.017
Hilly Area	42450792.81	42.450	10490.02
Hilly Settlement	15071.001	0.015	3.724
Miscellaneous	492.469	0.000	0.1217
Mixed Use Zone	6124.0178	0.006	1.513
Natural Forest	54182.396	0.054	13.389
Non Government Services	155.148	0.0001	0.038
Open Space	1327.557	0.001	0.328
Orchards and Groves	7823.037	0.008	1.933
Religious	25054.366	0.025	6.191
Rural Settlement	3996158.668	3.996	987.491
Vacant Land	18131.857	0.018	4.481
Waterbody	1054300.545	1.054	260.528
Total	64240739	64.241	15874.53

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



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

Map 7.13:ExistingLanduse Plan for Garjania



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

Map 7.14: Development Plan for Garjania Union

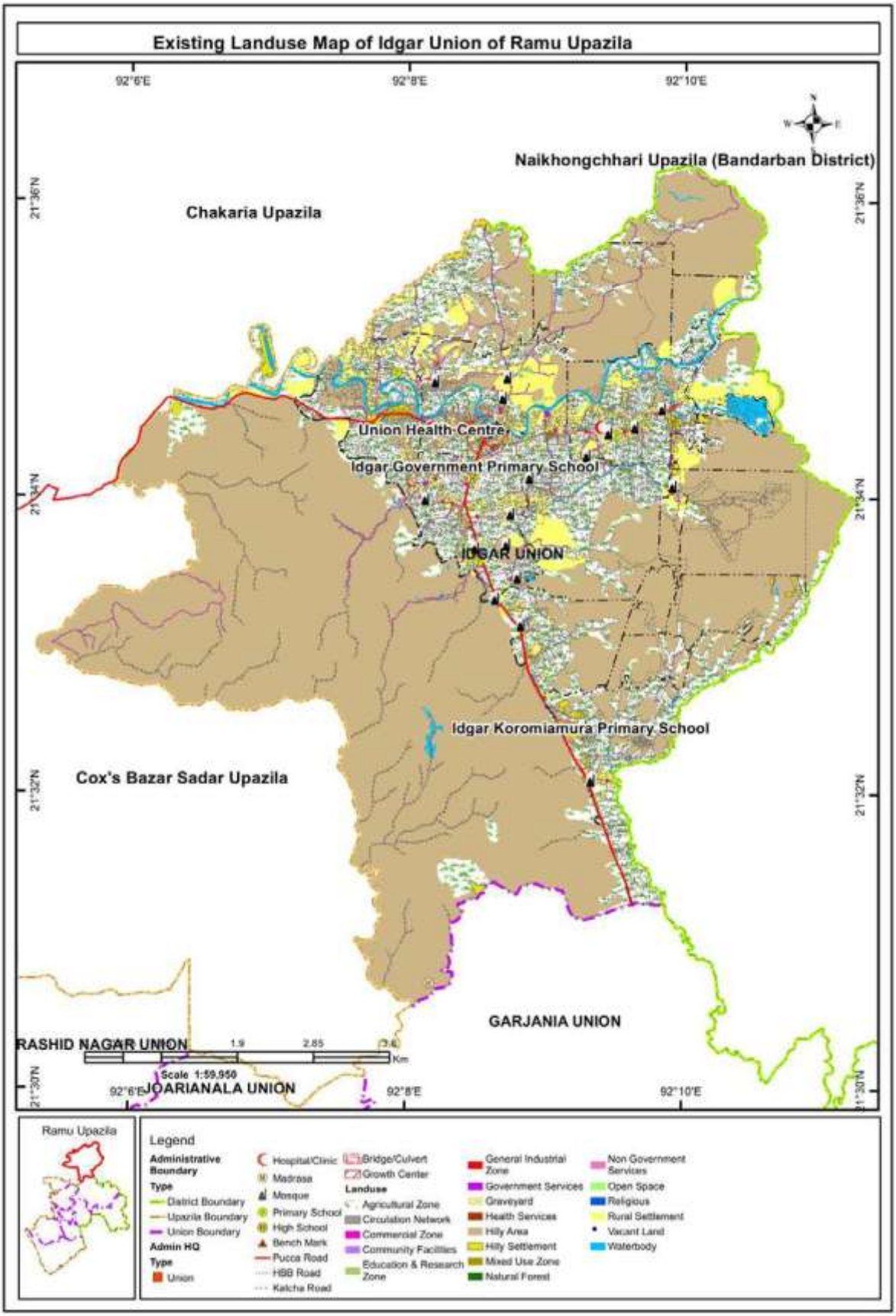
Existing Land Use and Development Plan of Idgar

The existing land use of Idgar has presented in **Table 7.24**along with **Map 7.15.** Total area of is 52.19 sq.km**.** The development plan is presented **i**n **Map 7.16.**

Table 7.24: Existing Land Use of Idgar

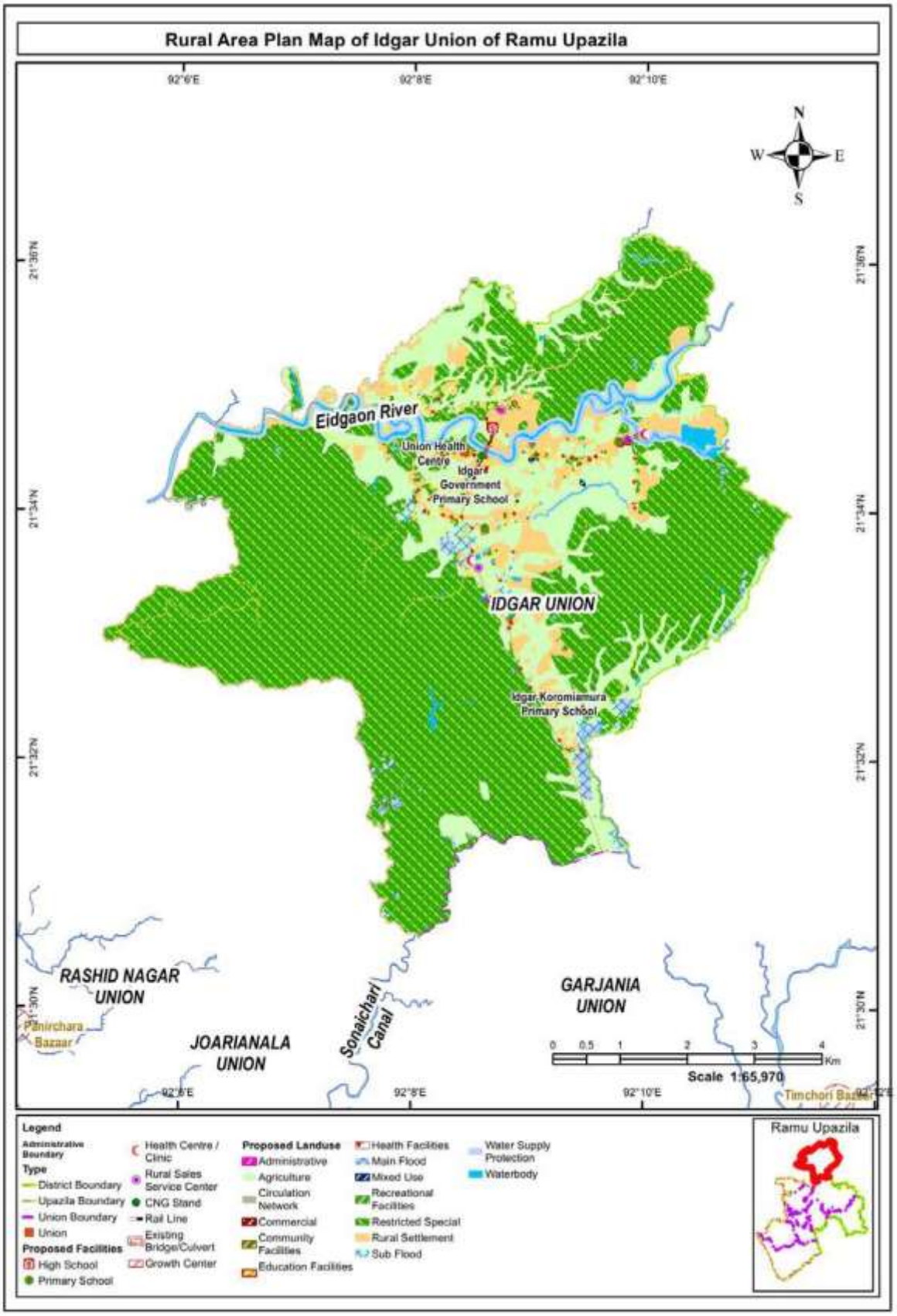
Landuse	Area in sq. m	Area in sq.km	Area in Acre
Agricultural Zone	11559619.71	11.559	2856.498
Circulation Network	229657.862	0.221	56.750
Commercial Zone	53223.214	0.053	13.152
Community Facilities	6352.714	0.006	1.569
Education & Research Zone	26002.080	0.026	6.425
General Industrial Zone	304.411	0.000	0.075
Government Services	14444.832	0.014	3.569
Graveyard	47181.465	0.047	11.659
Health Services	3871.220	0.004	0.957
Hilly Area	35440872.38	35.441	8757.794
Hilly Settlement	381847.116	0.382	94.358
Mixed Use Zone	29940.382	0.029	7.399
Natural Forest	1458.896	0.001	0.361
Non Government Services	1147.283	0.001	0.284
Open Space	18588.567	0.019	4.593
Religious	25697.165	0.026	6.350
Rural Settlement	3423130.854	3.423	845.889
Vacant Land	18489.552	0.018	4.569
Waterbody	908115.171	0.908	224.405
Total	52189945	52.189	12896.66

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



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

Map 7.15: Existing Landuse Plan for Idgar



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

Map 7.16: Development Plan for Idgar

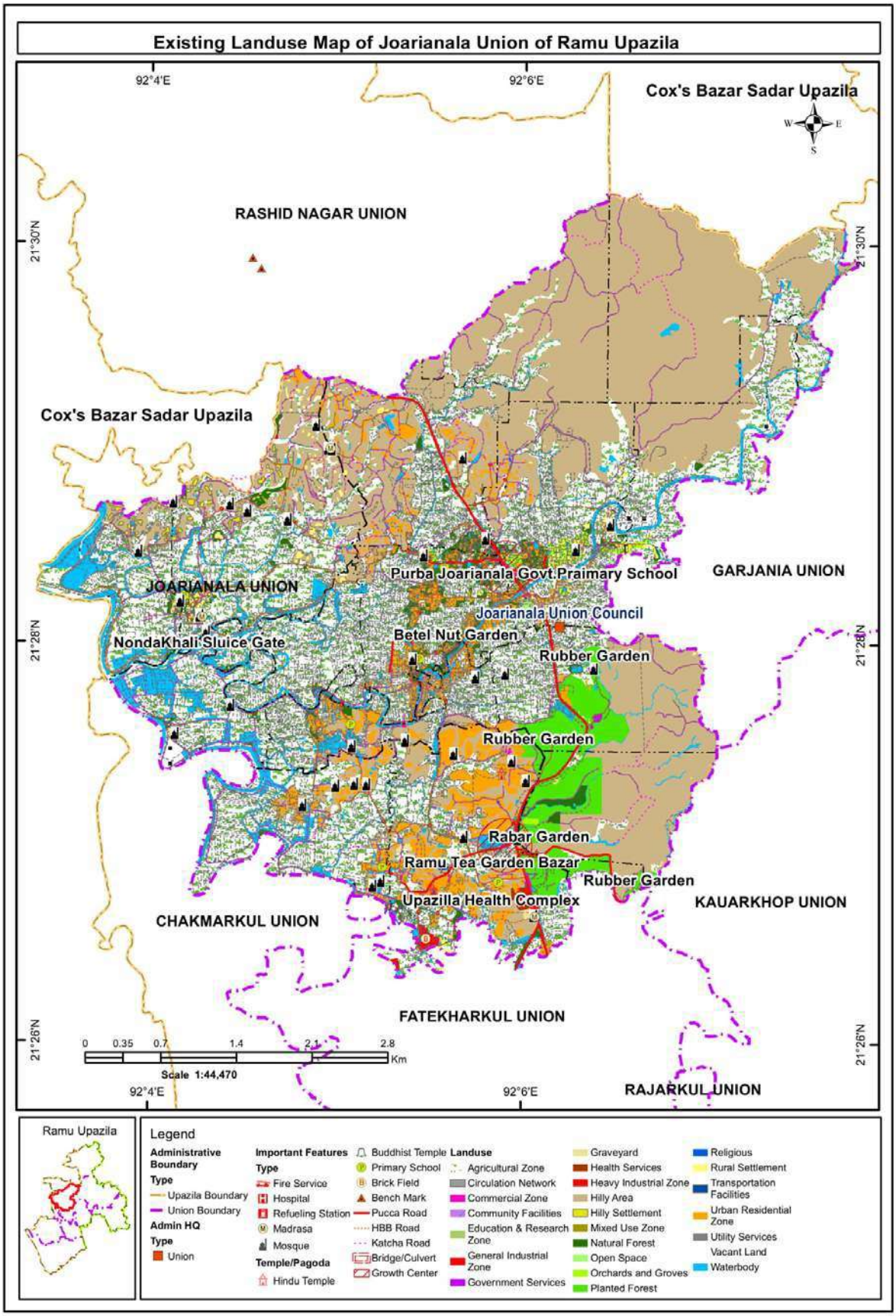
Existing Land Use and Development Plan of Joarianala

The existing land use of Joarianala has presented in **Table 7.25**along with **Map 7.17.** Total area is 27.98 sq.km**.** The development plan is presented in **Map 7.18.**

Table 7.25: Existing Land Use of Joarianala

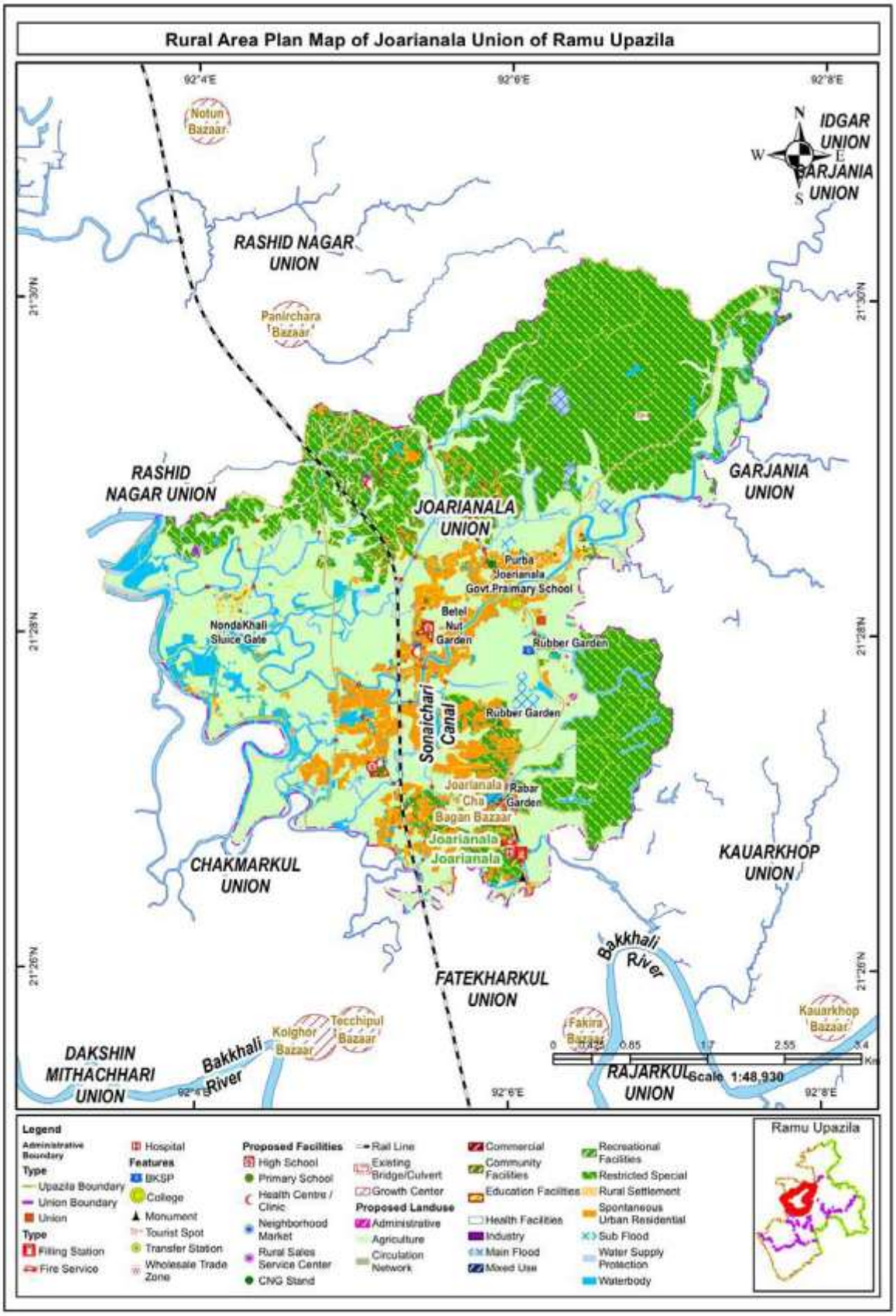
Landuse	Area in sq. m	Area in sq.km	Area in Acre
Agricultural Zone	10664740.17	10.664	2635.364
Circulation Network	407496.449	0.407	100.696
Commercial Zone	51552.4216	0.0516	12.739
Community Facilities	3709.982	0.004	0.917
Education & Research Zone	13489.921	0.014	3.333
General Industrial Zone	2030.033	0.002	0.502
Government Services	9576.422	0.009	2.366
Graveyard	36708.918	0.037	9.071
Health Services	28628.351	0.027	7.074
Heavy Industrial Zone	36308.995	0.036	8.972
Hilly Area	10756097.2	10.756	2657.939
Hilly Settlement	87738.041	0.088	21.681
Mixed Use Zone	1512.299	0.002	0.374
Natural Forest	611887.812	0.612	151.204
Open Space	9684.587	0.009	2.393
Orchards and Groves	114689.135	0.115	28.340
Planted Forest	1038634.083	1.039	256.657
Religious	20590.458	0.021	5.088
Rural Settlement	246058.641	0.246	60.804
Transportation Facilities	1997.224	0.001	0.494
Urban Residential Zone	1633115.156	1.633	403.559
Utility Services	789.439	0.001	0.195
Vacant Land	258464.675	0.258	63.869
Waterbody	1948551.299	1.946	481.51
Total	27984052	27.984	6915.139

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



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

Map 7.17: Existing Landuse Plan for Joarianala



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

Map 7.18: Development Plan for Joarianala

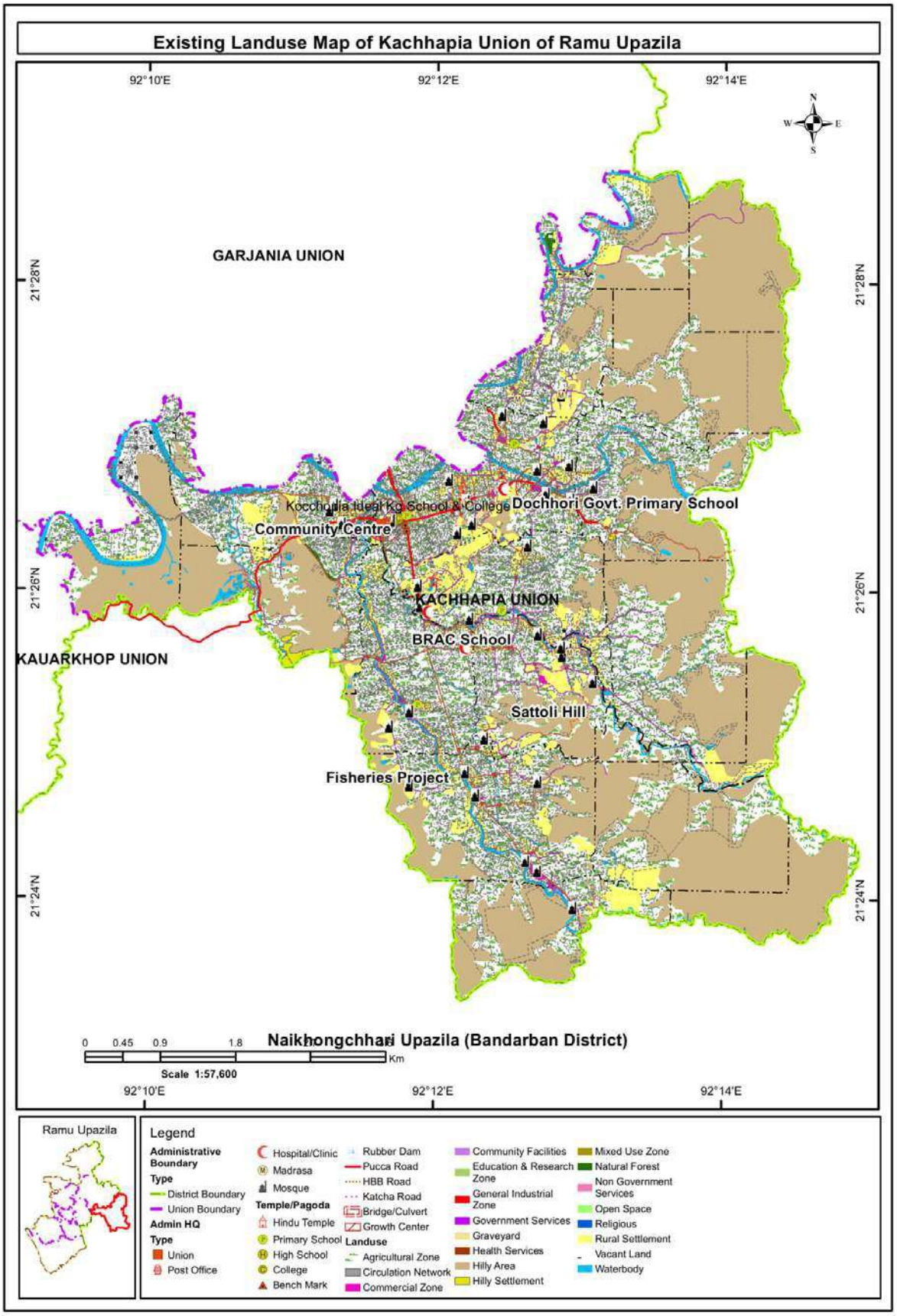
Existing Land Use and Development Plan of Kachhapia

The existing land use of Kachhapia has presented in **Table 7.26**along with **Map 7.19.** Total area of is 43.81 sq.km**.** The development plan is presented **i**n **Map 7.20**

Table 7.26: Existing Land Use of Kachhapia

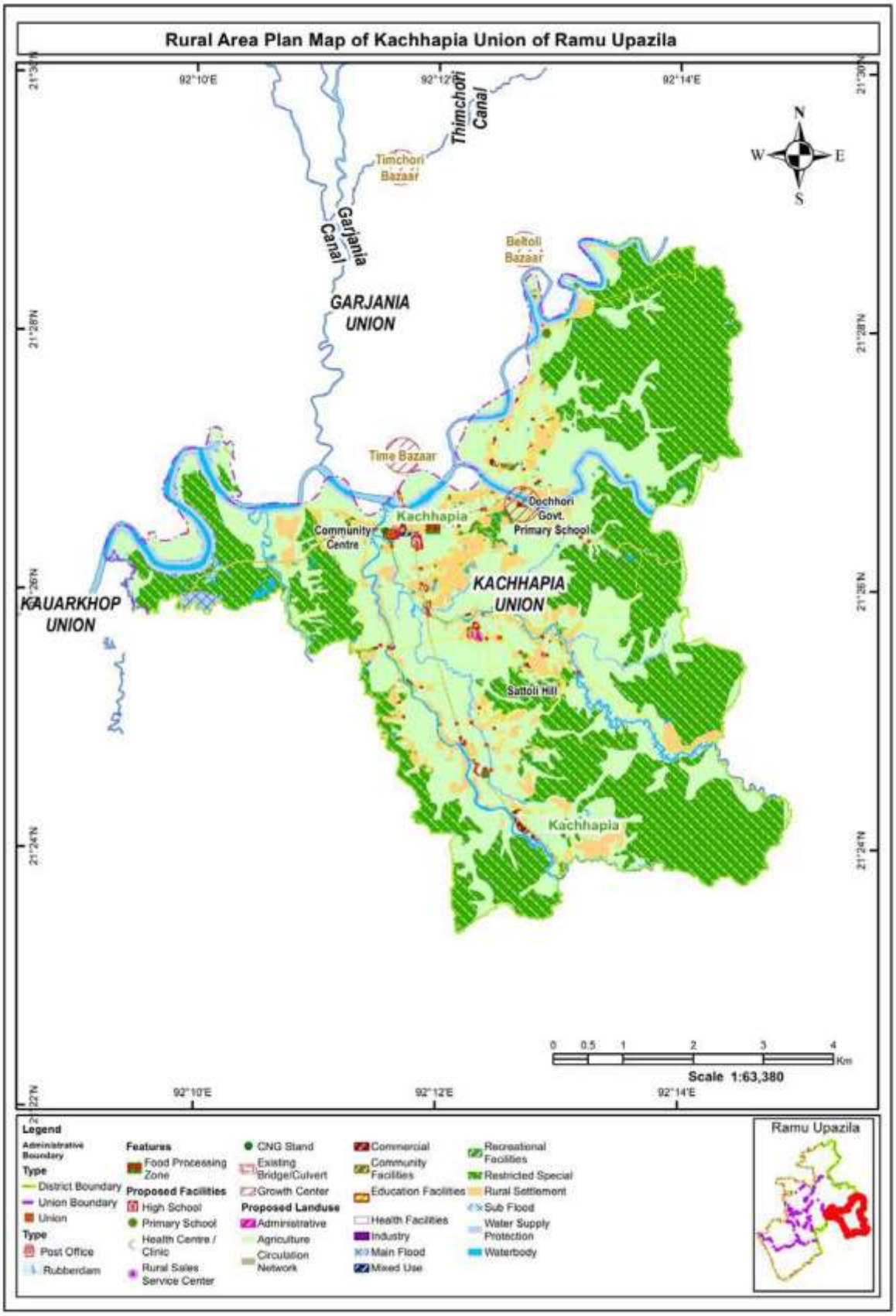
Landuse	Area in sq. m	Area in sq.km	Area in Acre
Agricultural Zone	18483863.82	18.484	4567.548
Circulation Network	247701.157	0.248	61.209
Commercial Zone	132927.464	0.133	32.848
Community Facilities	11829.604	0.012	2.923
Education & Research Zone	37814.822	0.038	9.344
General Industrial Zone	5622.329	0.006	1.389
Government Services	5668.644	0.006	1.401
Graveyard	32396.863	0.032	8.006
Health Services	1302.743	0.001	0.322
Hilly Area	19022468.24	19.022	4700.642
Hilly Settlement	68910.081	0.069	17.028
Mixed Use Zone	34494.21	0.034	8.524
Natural Forest	44415.149	0.044	10.975
Non Government Services	4420.449	0.004	1.092
Open Space	6451.067	0.006	1.594
Religious	33740.158	0.034	8.338
Rural Settlement	3800939.456	3.801	939.250
Vacant Land	287541.235	0.288	71.054
Waterbody	1544234.568	1.544	381.596
Total	43806742	43.807	10825.08

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



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

Map 7.19: Existing Landuse Plan for Kachhapia



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

Map 7.20: Development Plan for Kachhapia

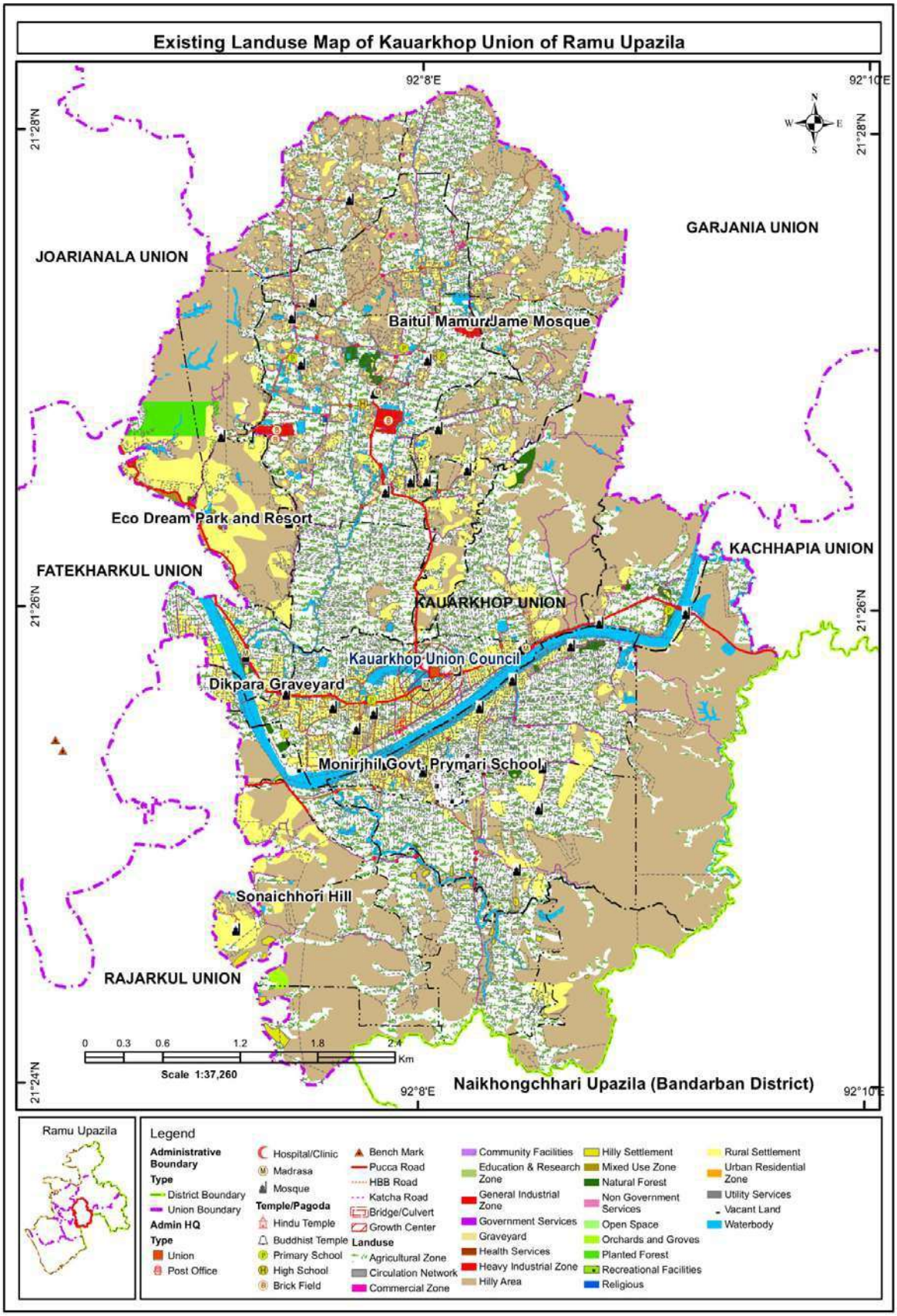
Existing Land Use and Development Plan of Kauarkhop

The existing land use of Kauarkhop has presented in **Table 7.27**along with **Map 7.21.** Total area is 24.99sq.km**.** The development plan is presented **i**n **Map 7.22.**

Table 7.27: Existing Land Use of Kauarkhop

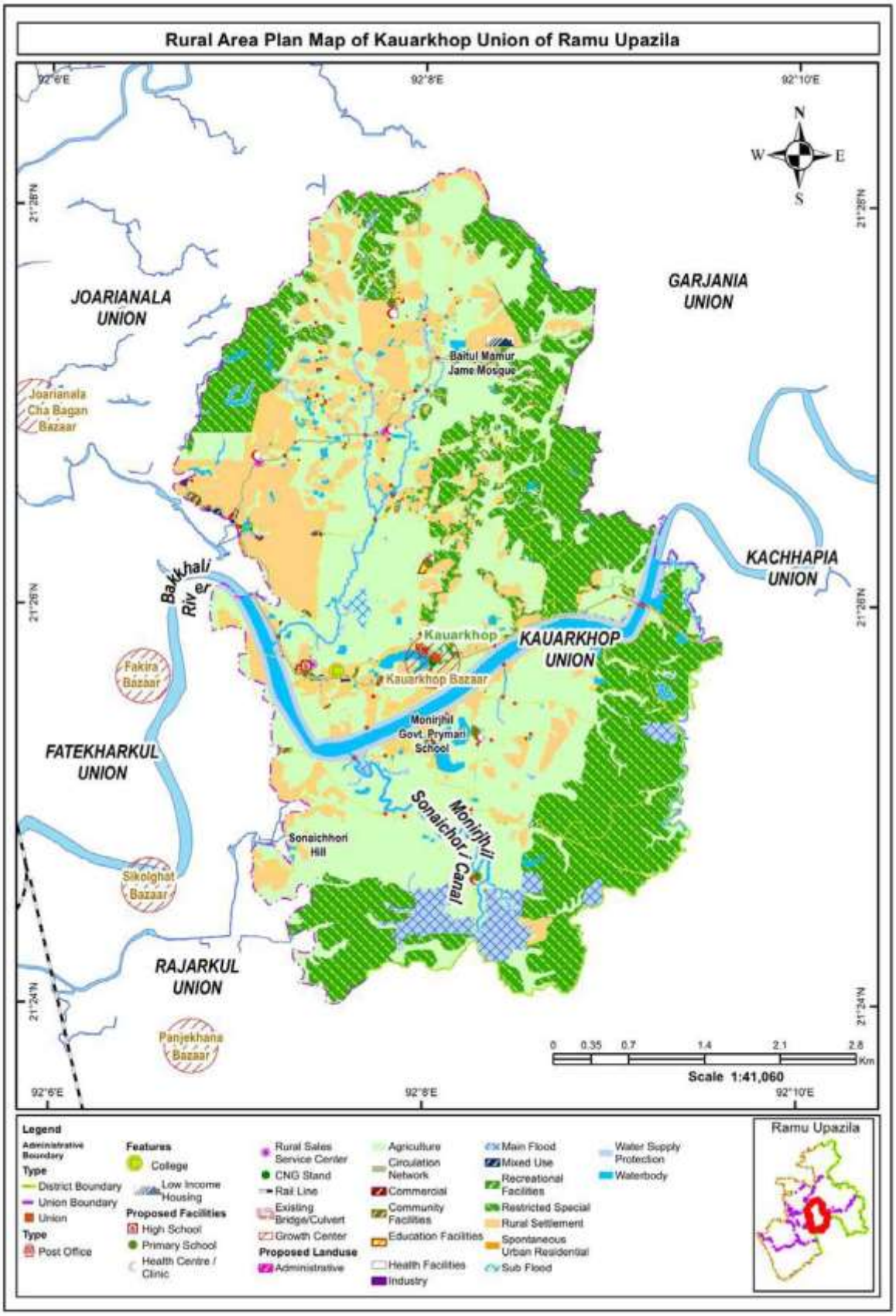
Landuse	Area in sq. m	Area in sq.km	Area in Acre
Agricultural Zone	10172445.89	10.172	2513.713
Circulation Network	202199.061	0.202	49.965
Commercial Zone	30421.974	0.030	7.518
Community Facilities	68.735	6.87	0.017
Education & Research Zone	16975.892	0.017	4.195
General Industrial Zone	5442.931	0.005	1.345
Government Services	2840.709	0.003	0.702
Graveyard	23562.794	0.024	5.823
Health Services	2451.965	0.002	0.606
Heavy Industrial Zone	85106.907	0.085	21.031
Hilly Area	10119077.77	10.119	2500.525
Hilly Settlement	70776.599	0.071	17.489
Mixed Use Zone	23638.481	0.024	5.841
Natural Forest	106946.043	0.107	26.427
Non Government Services	136.272	0.000	0.034
Open Space	3299.893	0.003	0.815
Orchards and Groves	22564.520	0.023	5.576
Planted Forest	138296.504	0.138	34.174
Recreational Facilities	5438.529	0.005	1.344
Religious	24086.447	0.024	5.952
Rural Settlement	2647934.37	2.648	654.331
Urban Residential Zone	3236.0436	0.003	0.799
Utility Services	241.047	0.000	0.059
Vacant Land	130751.837	0.131	32.310
Waterbody	1148953.688	1.149	283.918
Total	24986895	24.987	6174.511

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



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

Map 7.21: Existing Landuse Plan for Kauarkhop



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

Map 7.22: Development Plan for Kauarkhop

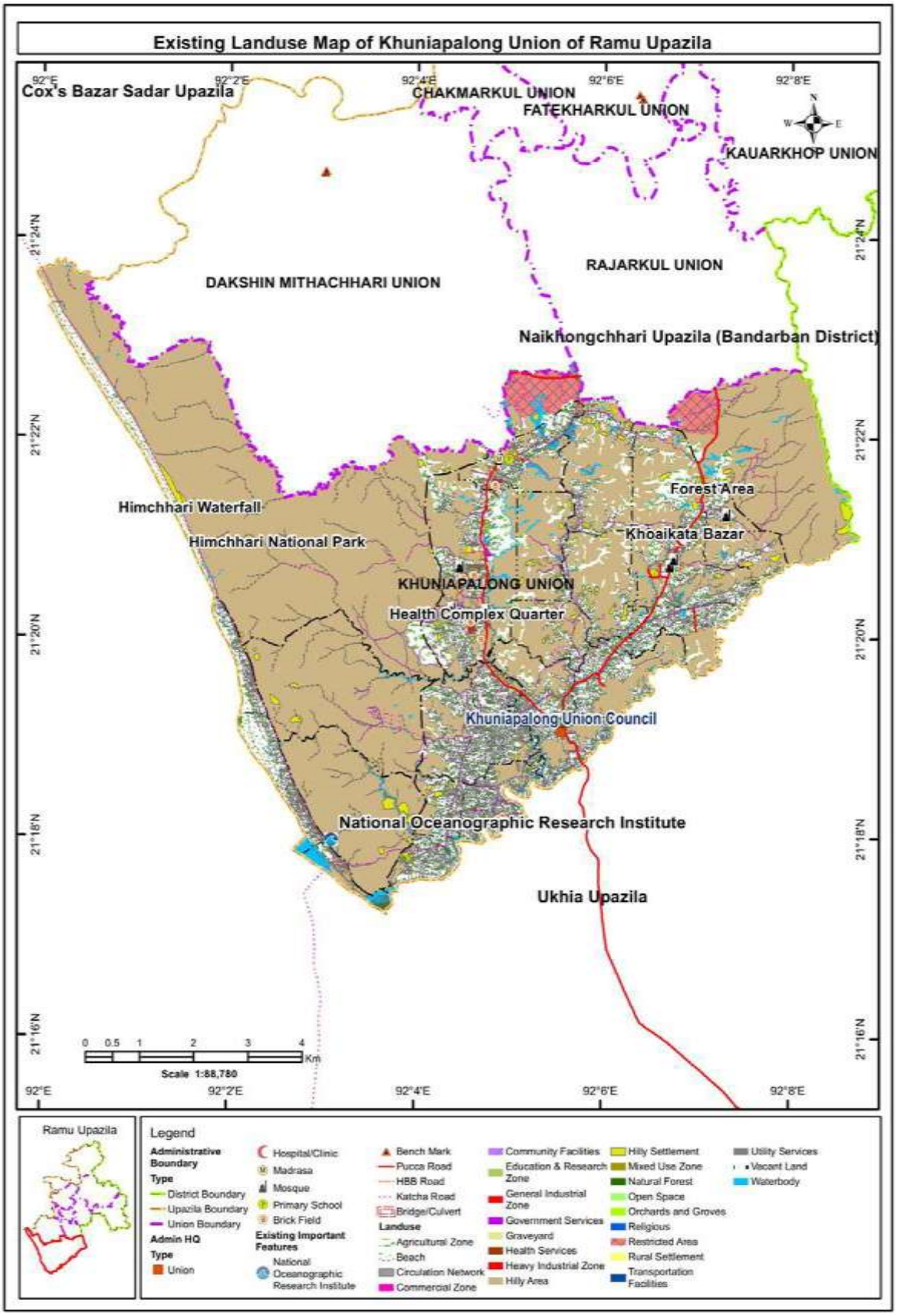
Existing Land Use and Development Plan of Khuniapalong

The existing land use of Khuniapalonghas presented in **Table 7.28**along with **Map 7.23.** Total area is 76.79sq.km**.** Thedevelopment plan is presented **i**n **Map 7.24.**

Table 7.28: Existing Land Use of Khuniapalong

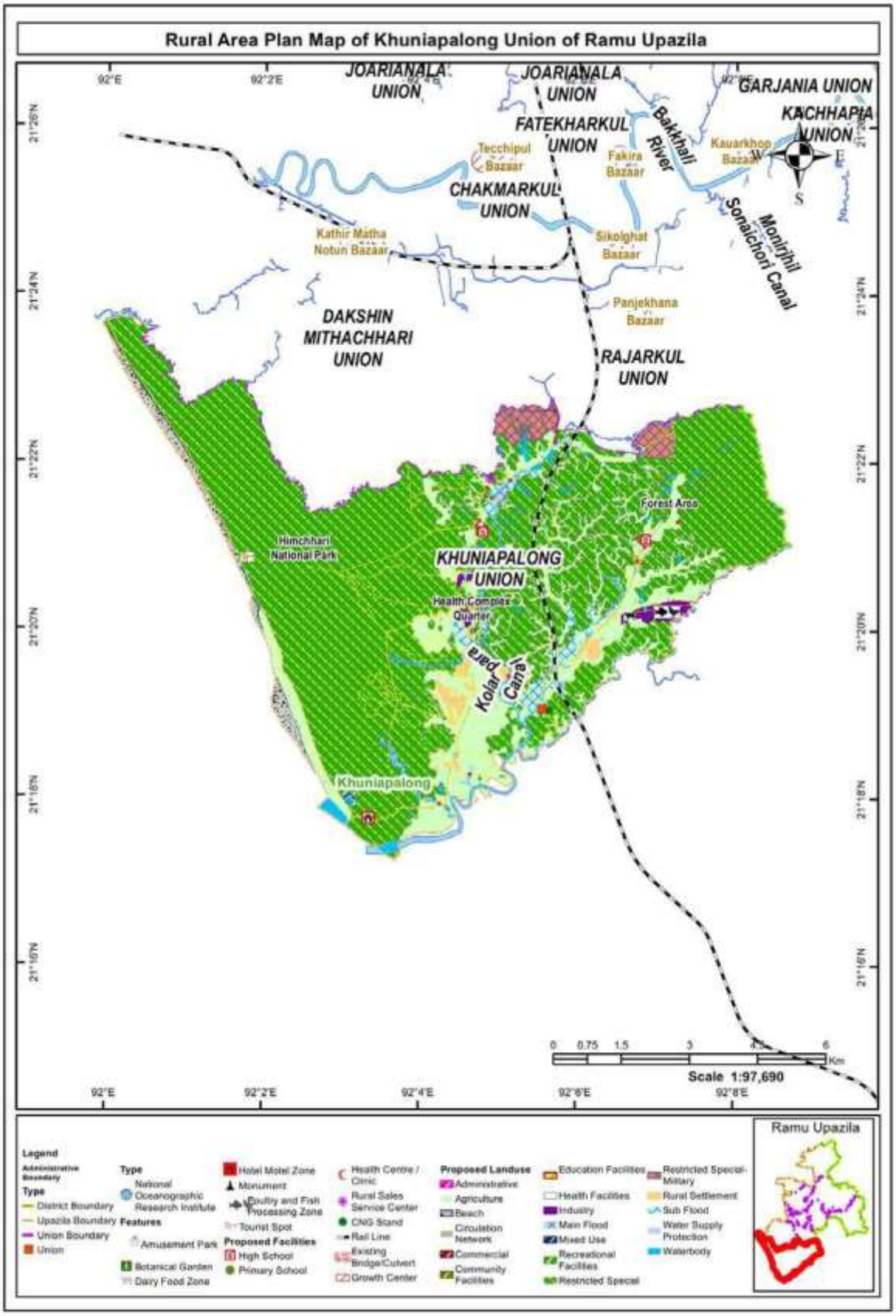
Landuse	Area in sq. m	Area in sq.km	Area in Acre
Agricultural Zone	18039012.32	18.039	4457.62
Beach	1459856.646	1.459	360.745
Circulation Network	353986.24	0.354	87.474
Commercial Zone	15296.049	0.015	3.779
Community Facilities	105.905	0.000	0.026
Education & Research Zone	11783.613	0.012	2.912
General Industrial Zone	759.307	0.0007	0.188
Government Services	14991.820	0.015	3.705
Graveyard	2184.352	0.002	0.539
Health Services	152.217	0.000	0.038
Heavy Industrial Zone	148400.104	0.148	36.671
Hilly Area	52187606.79	52.188	12896.08
Hilly Settlement	1313858.445	1.3139	324.668
Mixed Use Zone	64.654	6.47	0.016
Natural Forest	68778.859	0.069	16.996
Open Space	3903.591	0.004	0.965
Orchards and Groves	4313.085	0.004	1.066
Religious	3065.941	0.003	0.758
Restricted Area	1457595.81	1.458	360.187
Rural Settlement	7456.925	0.007	1.843
Transportation Facilities	193.224	0.000	0.048
Utility Services	160.378	0.000	0.0398
Vacant Land	12323.878	0.012	3.0458
Waterbody	1680075.622	1.680	415.164
Total	76785926	76.786	18974.57

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



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

Map 7.23: Existing Landuse Plan for Khuniapalong



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

Map 7.24: Development Plan for Khuniapalong

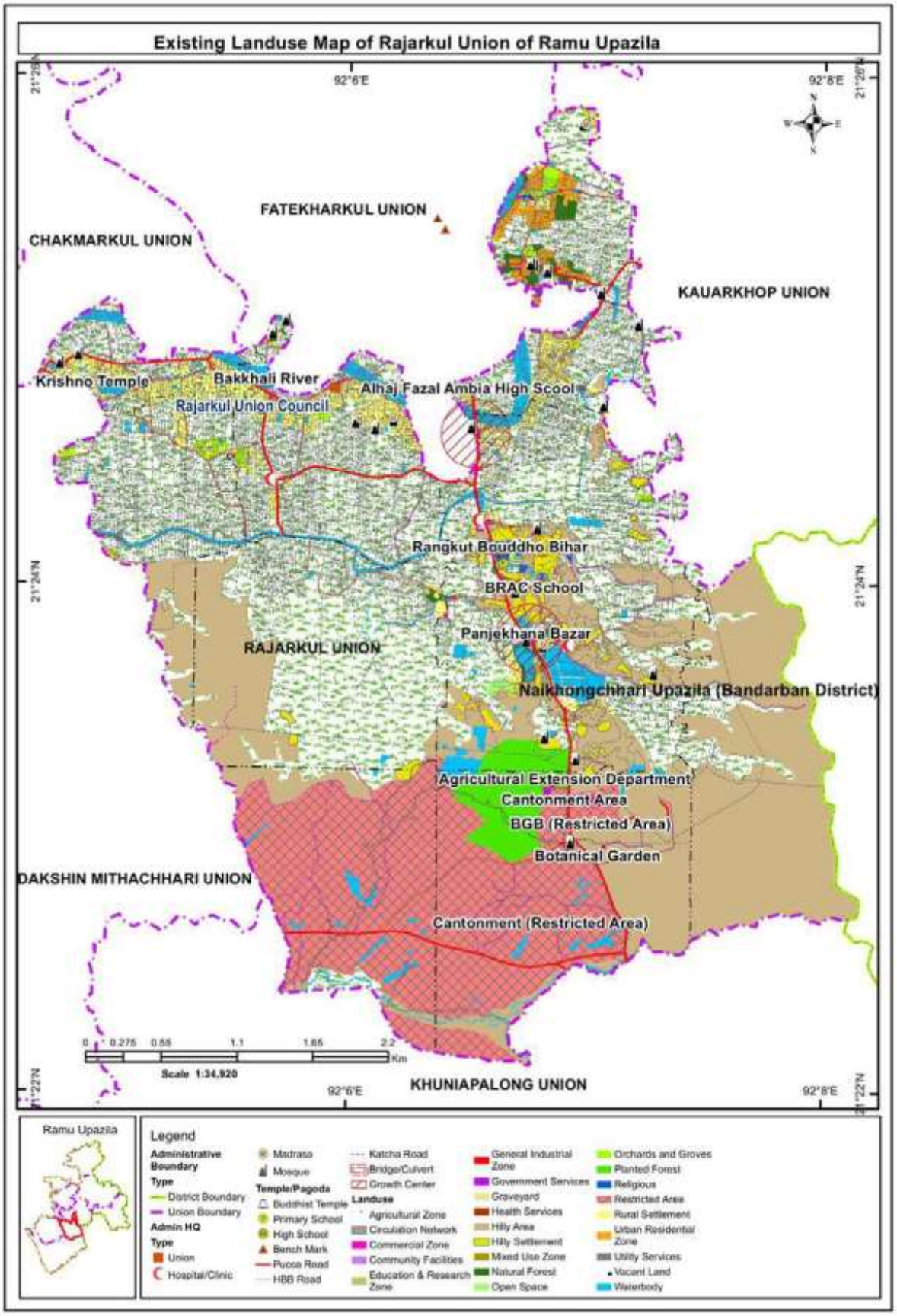
Existing Land Use and Development Plan of Rajarkul

The existing land use of Rajarkul has presented in **Table 7.29**along with **Map 7.25.** Total area is 20.42sq.km**.** The development plan is presented **i**n **Map 7.26.**

Table 7.29: Existing Land Use of Rajarkul

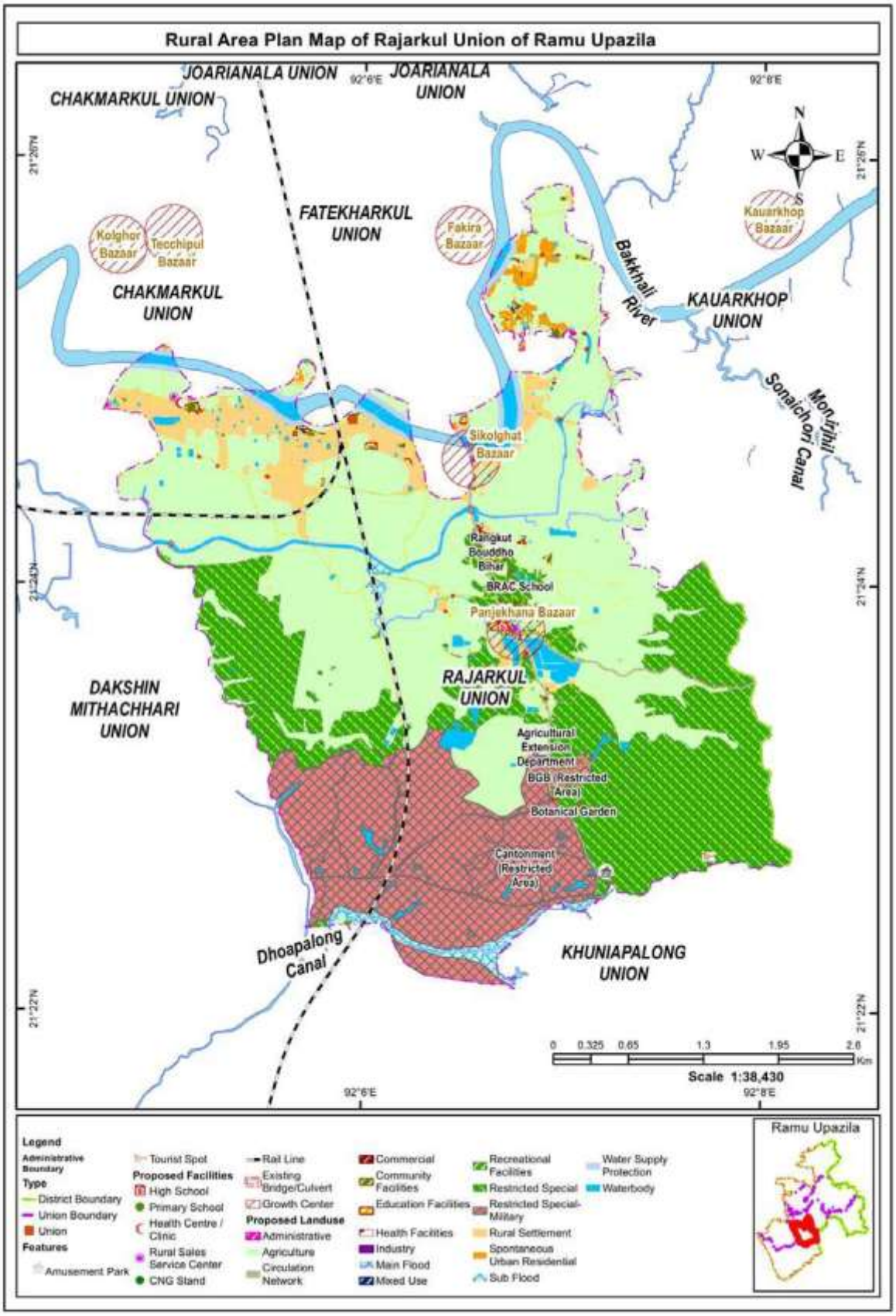
Landuse	Area in sq. m	Area in sq.km	Area in Acre
Agricultural Zone	8588586.772	8.589	2122.326
Circulation Network	184792.373	0.185	45.664
Commercial Zone	29866.821	0.029	7.380
Community Facilities	1963.672	0.002	0.485
Education & Research Zone	25590.121	0.026	6.324
General Industrial Zone	1937.240	0.002	0.479
Government Services	9148.799	0.009	2.260
Graveyard	14177.384	0.014	3.503
Health Services	1156.196	0.001	0.286
Hilly Area	5202000.88	5.202	1285.466
Hilly Settlement	356561.698	0.357	88.109
Mixed Use Zone	3372.628	0.003	0.833
Natural Forest	105546.683	0.106	26.082
Open Space	20998.985	0.021	5.189
Orchards and Groves	88533.389	0.089	21.877
Planted Forest	449714.233	0.449	111.129
Religious	44620.549	0.045	11.026
Restricted Area	3506764.172	3.507	866.557
Rural Settlement	826276.613	0.826	204.181
Urban Residential Zone	155830.568	0.156	38.507
Utility Services	1664.829	0.002	0.411
Vacant Land	3358.167	0.003	0.829
Waterbody	795142.052	0.795	196.488
Total	20417605	20.41761	5045.394

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



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

Map 7.25: Existing Landuse Plan for Rajarkul



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

Map 7.26: Development Plan for Rajarkul

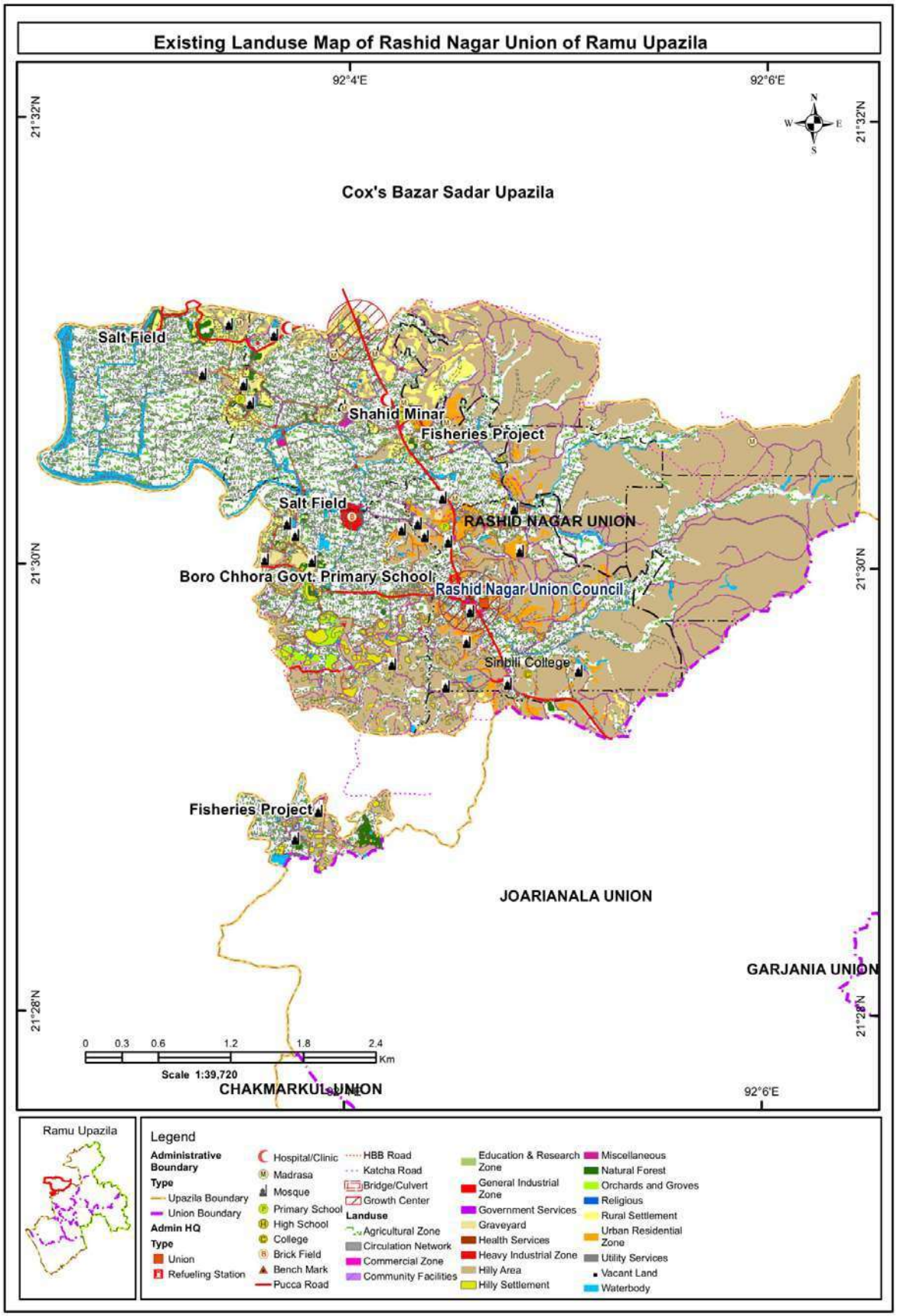
Existing Land Use and Development Plan of Rashid Nagar

The existing land use of Rashid Nagar has presented in **Table 7.30**along with **Map 7.27.** Total area is 15.77sq.km**.** The development plan of this is presented **in Map 7.28.**

Table 7.30: Existing Land Use of Rashid Nagar

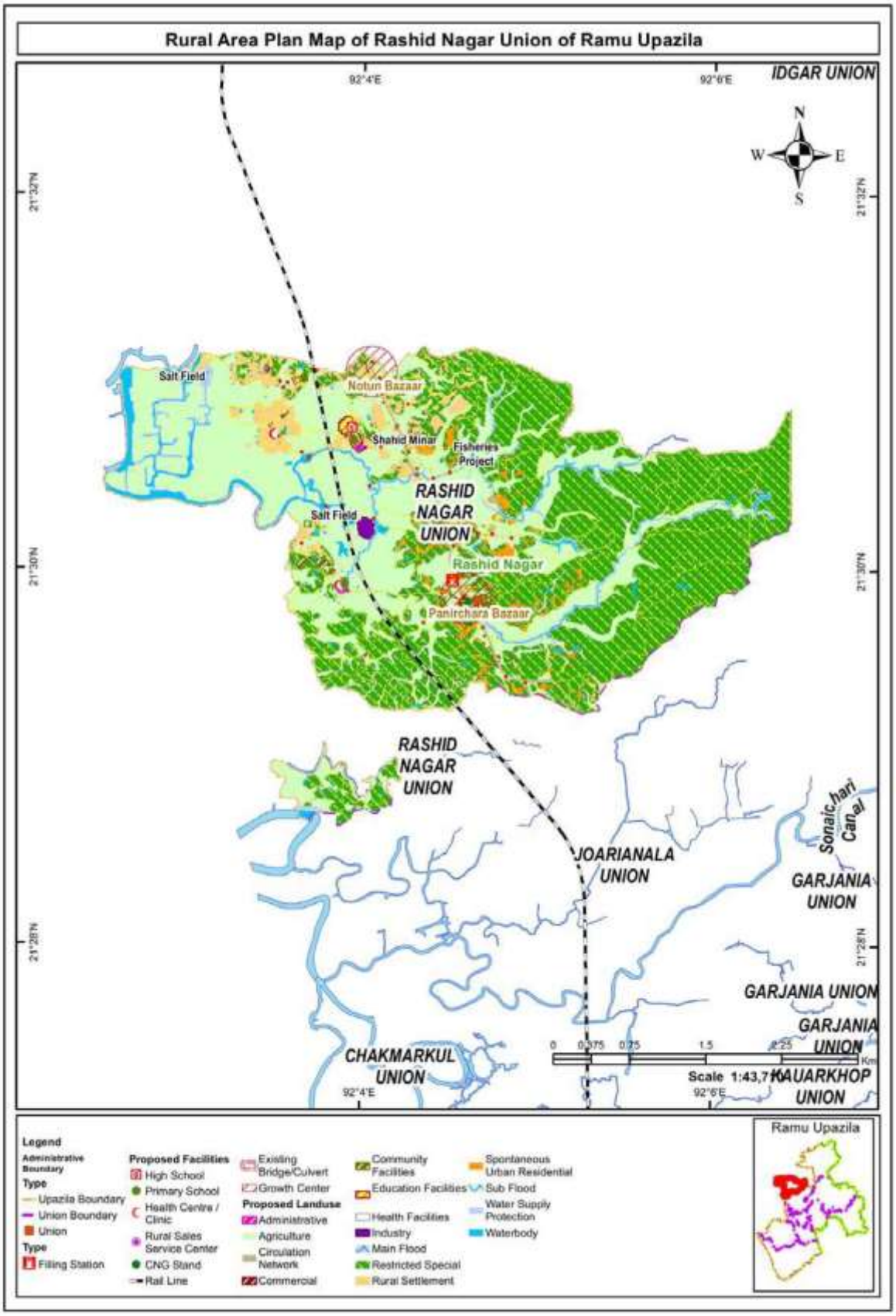
Landuse	Area in sq. m	Area in sq.km	Area in Acre
Agricultural Zone	6459349.564	6.459	1596.17
Circulation Network	262857.0277	0.263	64.9546
Commercial Zone	41686.70411	0.042	10.3012
Community Facilities	39.12964617	3.91	0.009669
Education & Research Zone	24622.04587	0.024	6.084354
General Industrial Zone	1094.010388	0.001	0.270341
Government Services	1199.476227	0.001	0.296403
Graveyard	43531.48509	0.043	10.75707
Health Services	1702.643363	0.002	0.42074
Heavy Industrial Zone	32990.45525	0.033	8.152271
Hilly Area	6776516.064	6.777	1674.545
Hilly Settlement	250136.7417	0.250	61.81129
Miscellaneous	4529.948166	0.005	1.119395
Natural Forest	158127.9198	0.158	39.07499
Orchards and Groves	62564.19009	0.063	15.46024
Religious	15928.71757	0.016	3.936145
Rural Settlement	621851.0677	0.622	153.6656
Urban Residential Zone	395067.3355	0.395	97.62509
Utility Services	370.28329	0.000	0.091501
Vacant Land	41858.28717	0.042	10.3436
Waterbody	569516.0211	0.569	140.7331
Total	15765539	15.766	3895.823

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



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

Map 7.27: Existing Landuse Plan for Rashid Nagar



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

Map 7.28: Development Plan for Rashid Nagar

7.4 Action Area Plan

7.4.1 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.

7.4.2 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.

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 7.31: PRA Demand of Ramu Upazila

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

Source: Field Survey, 2015

7.4.3 Priority Development Projects for Ramu Upazila

The following development activities will be taken immediately by the concerned Government Agencies to secure the urban and rural areas, property, lives etc. These development activities were identified based on the PRA survey during initial stage of planning process, through a series of workshops, meetings with TMC and also in the light of planning approach.

1. Protection for river bank erosion;
2. Embankment for river flood protection and embankment slope protection;
3. Redevelopment plan for growth centres;
4. Construction of Regulators for flood control, drainage and water management;
5. Low cost housing.

Depending on the PRA demand priority and the present need according to planning perspective the projects have been prioritized and their duration has also determined. But the duration of projects mainly depends on volume of the project and in case of Action Area Plan generally the project duration is 5 years.

Project/Scheme	Duration
Protection for river bank erosion	1 to 2 years
Embankment for river flood protection and embankment slope protection	1 to 2 years
Redevelopment plan for growth centres	1 year
Construction of Regulators for flood control, drainage and water management	1 to 2 years (depending on the volume of work)
Low Cost Housing	1 to 3 years

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

7.4.3.1 Protection for River Bank Erosion

River bank erosion is a common phenomenon in our country as the lands are nested by the series of canals, rivers. When the river course changes its alignment or direction with a sharp bend or steep slope of river bed, the bank starts to erode. Generally, river bank erosion is depending on the river discharge, velocity, width of river section, physical properties of river bed and bank materials, suspended sediment materials, river morphology and scour depth etc. A proper hydrologic and hydraulic investigation will be required to provide an appropriate sustainable river bank protection works. Bangladesh Water Development Board (BWDB) or Local Government Engineering Department (LGED) may take necessary action on the detail design and implementation of protection for river bank erosion. A typical drawing of protection of river bank erosion is presented in **Map 7.29**

7.4.3.2 Embankment

a)Project title: Embankment
Generally, embankment is constructed along the river bank to protect entry of flood water or flash flood into country side from river. As it is beside the river, sometimes high-water level in the river may erode the embankment side slope due to high velocity during flood. Then the river side embankment slope needs to protect from erosion and it is furnished by placing CC blocks on geo-textile or inverted filter materials considering scouring depth. A proper hydrologic and hydraulic investigation will be required to provide an appropriate sustainable embankment river side slope protection works.
b) Location: Beside Bakkhali River
c) Implementation Period: Phase-1 (2014-2019)
d) Project Objectives:

- To facilitate faster and easy movement of traffic from Bakkhali Embankment
- Help the people from Bakkhali Embankment area to have easy acess to highway.
- To reduce traffic jam in the area

e) Expected Benefits:

- Enhanced available urban services and facilities
- Reduced congestion and transport cost

f) Implementation Agencies: CoCC, RHD, LGED
g) Source of fund: LGED/Donor

A typical drawing of protection of river side embankment slope works is presented in **Map 7.29 and Figure 7.7**.

7.4.3.3 Sector: Commercial
Redevelopment Plan for Growth Centres

a) Project title: Redevelopment Plan for Growth Centres
Bangladesh is an agricultural country and more that 75% of the country's population live in rural areas. Development of the country depends on the development of the rural areas. The country has about 20,000 rural markets or 'Hats' and 'Bazars'. Development of physical facilities of these Growth Centers and creation of employment for the rural poor are the strategy for rural development. Rural markets are classified into two groups – (i) markets those have annual revenue income of more than Tk 50,000 and (ii) those with annual revenue of less than Tk 50,000. Rural markets are in fact collection centers. Rural Growth Centers are larger rural markets and have permanent shops, and commodities are traded every day in these markets starting from about 6 o'clock in the morning till 10 o'clock at night. Other rural markets have a few permanent shops and they run for limited hours. Rural hats sit twice or thrice a week and they may start at 10 o'clock in the morning and break at sunset.

Agriculture products and inputs are generally traded in the rural markets. Traders come to growth centers and larger markets, and purchase vegetables, fishes, pulses, cereals, oil seeds as available from small farmers and transport their bulk commodities using trucks to the urban centers of the country. However, most market centers are unplanned and undeveloped. Many markets lack separate areas for selling meat, fishes and vegetables etc. Sanitation facilities are either absent or are extremely poor. In many markets internal roads are not paved, internal drainage system is either absent or is clogged and in rainy season the pathways become muddy and dirty making the situation difficult both for the farmers and traders. However, on every hat day

a good number of people come to the growth centers and large markets to purchase their weekly necessities or to sell their produced commodities. In smaller bazars or 'hats', attendants are comparatively low. Since markets are far away from the settlements and are not very comfortable place for selling goods, many farmers sell their commodity at home to the middle men and thus deprived of the actual market price of the commodity.

Development of rural collection centre is required to create better trading environment as increased number of traders are expected in the developed markets which in turn will encourage farmers to come to the markets to sell their products. The move will certainly reduce exploitation of actual price of farmers' products by the intermediaries. To facilitate marketing after sunset in each market or collection centre, the provision of electricity has been considered either from power grid line if available near to the market area or from solar PV.

Planned development of collection centers is extremely necessary so that farmers can sell their goods easily and get the agriculture inputs at hand. Development of rural collection centers is expected to create better trading environment and increased numbers of traders are expected in the developed markets which in turn will encourage farmers to come to the markets to sell their products. Local Government Engineering Department may take necessary action on the detail design and implementation of growth centres in rural areas.

b) Location: Fathekharkul Union, Chowmuhani Bazar

c) Implementation Period: Phase-1 (2014-2019)

d) Project Objectives:

- To pave the way towards a commercially and economically developed community
- To assist the traders circulating more and more goods and products and thereby buildup investment fund

e) Expected Benefits:

- Local and Sub-regional economic stability
- Revenue generation for diversified economy

f) Implementation Agencies: CoCC, LGED

g) Source of fund: City Corporation/Donor

A typical drawings of planned growth centre in the rural area is presented in **Map 7.30 and Figure 7.8**.

7.4.3.4 Sector: Transport and Communication

Regulator

a) Project title: Regulator

When a saucer types plain land either in urban or rural areas is bounded by the high land or embanked for protection of flood water then regulators are used to protect entry of flood water inside the country from the river. This regulator is not protecting only the flood water but also control the drainage water that accumulated by the surface runoff within catchment area due to rain during monsoon. It also controls water management by retaining water inside the canal for irrigation purpose mainly or for bio-diversity or ecological benefits especially in the dry period. The inhabitants of this area are suffering from these phenomena. To mitigate or control this situation different types of regulators have been proposed. The size of the regulator is depends on the catchment area, topography of the catchment area, rainfall pattern, outfall river condition and river water level, intake canal section etc. It is essential, then, that proper attention be given to the design of the drainage sluice to ensure it fulfils its desired function. Collectively it is a structure that shares an

intimate relationship with a large portion of the rural population, often determining the success or failure of a farmer's crop. Bangladesh Water Development Board (BWDB) or Local Government Engineering Department may take necessary action on the detail design and implementation of regulator based on the design parameters.

b) Location: Beside Bakkhali River

c) Implementation Period: Phase-1 (2014-2019)

d) Project Objectives:

- To reduce river erosion, develop river front and keeping aesthetics of the BakkhaliRiver
- To facilitate faster movement of goods and people

e) Expected Benefits:

- Reduction in river erosion and increase aesthetic view to the area
- Better communication with the area
- Increase employment opportunity

f) Implementation Agencies: CoCC, LGED, Bangladesh Water Development Board (BWDB)

g) Source of fund: GoB

A typical drawing of regulator of 1 vent regulator, 2 vent, 4 vent and 6 vents are presented in **Figure 7.9, Figure 7.10, Figure 7.11, Figure 7.12 and Figure 7.13 respectively**.

7.4.3.5 Sector: Residential

Low Cost House

a) Project title: Low Income Housing

Government of Bangladesh has taken an initiative to construct a low-cost house for landless people for enjoying better improved life style. Accordingly, a housing area for low-cost house has selected in the rural area of each Upazila with considering internal roads, drain, drinking water supply, ponds, playground, and community centre etc. A typical layout plan prepared containing 120 houses, each plot size is assumed 40'x50' tentatively. The plot size may vary based on the availability of land and demands of inhabitants. A typical plan of low-cost house prepared and may vary in size.

b) Location: Kauarkhop Union, Mouza- Lot Ukhiarghona, JL No- 39, Sheet No- 1, Plot No- 563, 675, 2527

c) Implementation Period: Phase-1 (2014-2019)

d) Project Objectives:

- To redress acute housing problems for the Low-income group in the EPZ area
- To bring equality in the housing allocation for the economically weaker section of worker class people

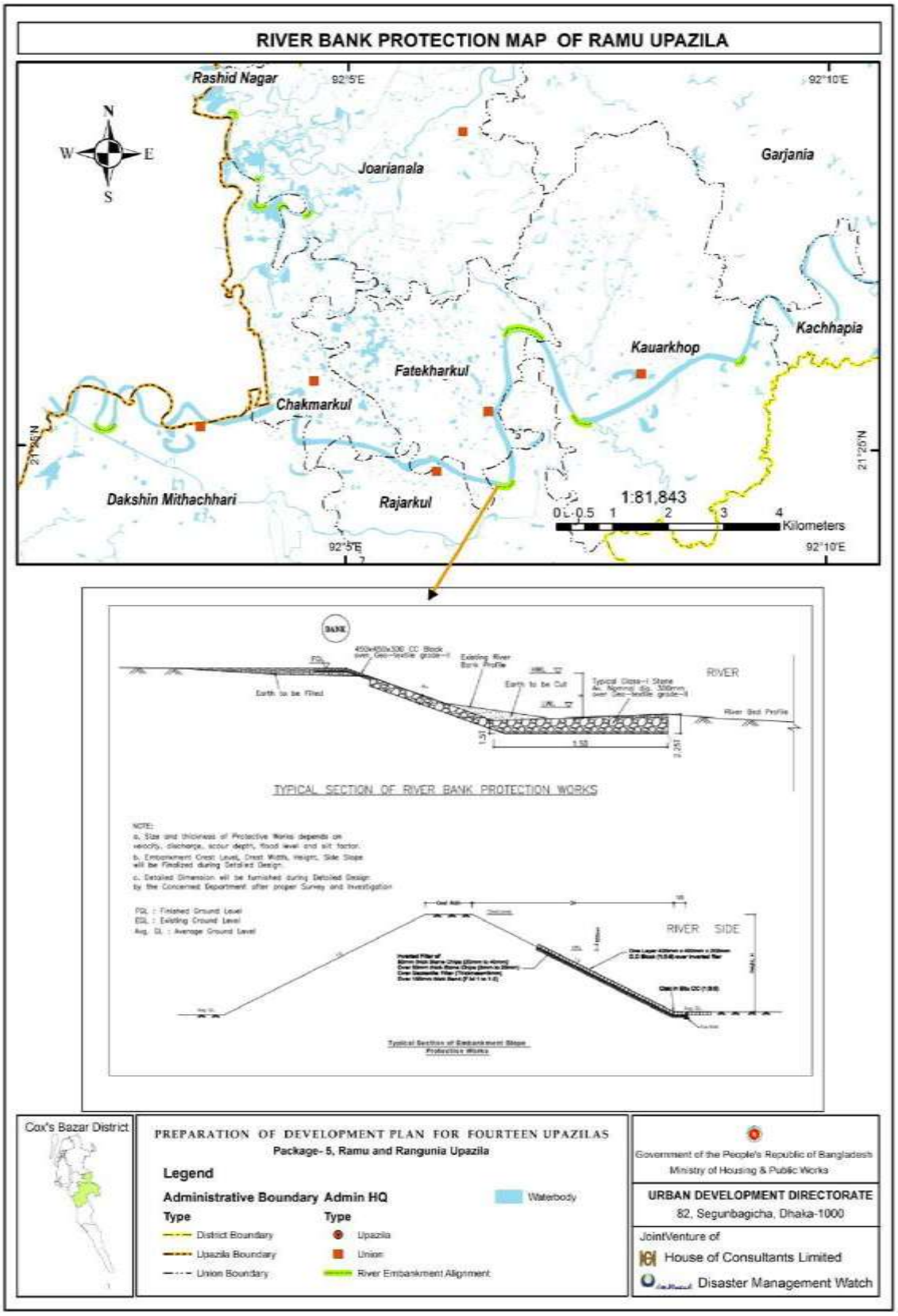
e) Expected Benefits:

- Provide housing to the low income families.
- Bring basic qualities of living for the industrial workers.
- Increasing efficiency is work

f) Implementation Agencies: CoCC, NHA

g) Source of fund: City Corporation, Industry Concerned, and Public Private Partnership.

A detailed typical layout plan of low-cost housing with all facilities is presented in **Map 7.31, Figure 7.14 and Figure 7.15**. Local Government Engineering Department (LGED) may take necessary action on the detail design and implementation of low cost housing area.



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

Map 7.29: Action Area Plan for River Bank Erosion

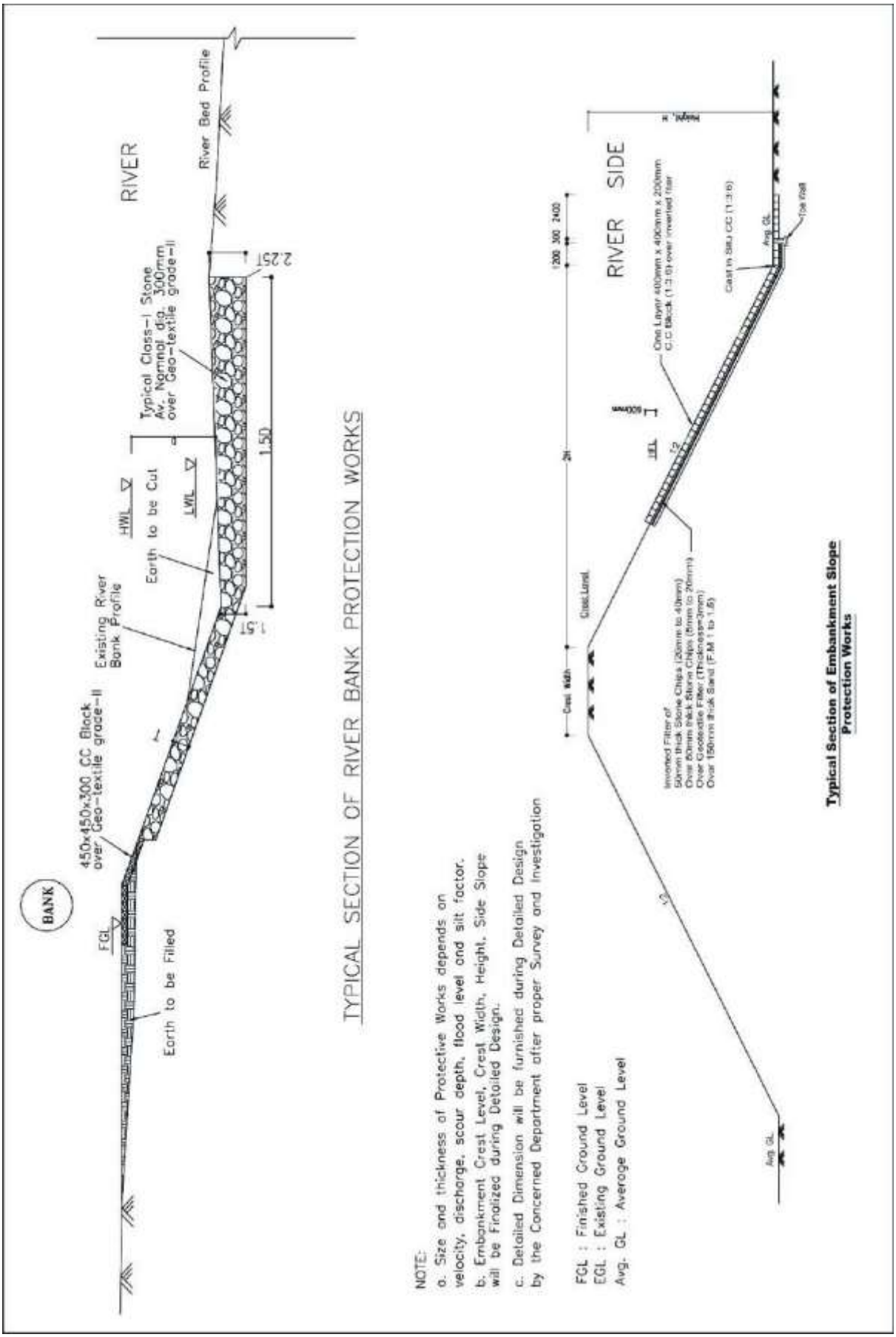
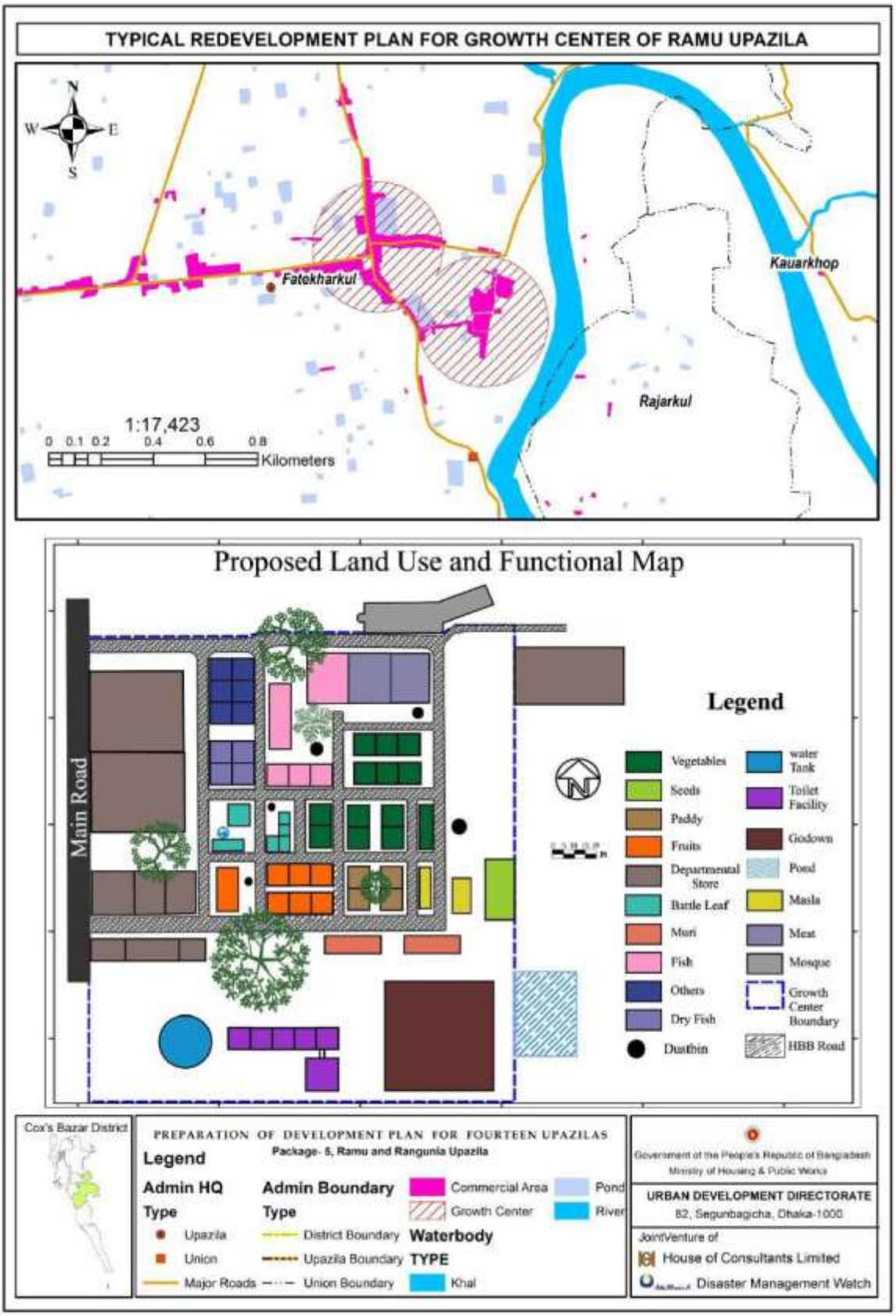


Figure 7.7: Typical Section of River Bank Protection



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

Map 7.30: Typical Redevelopment Plan for Growth Center

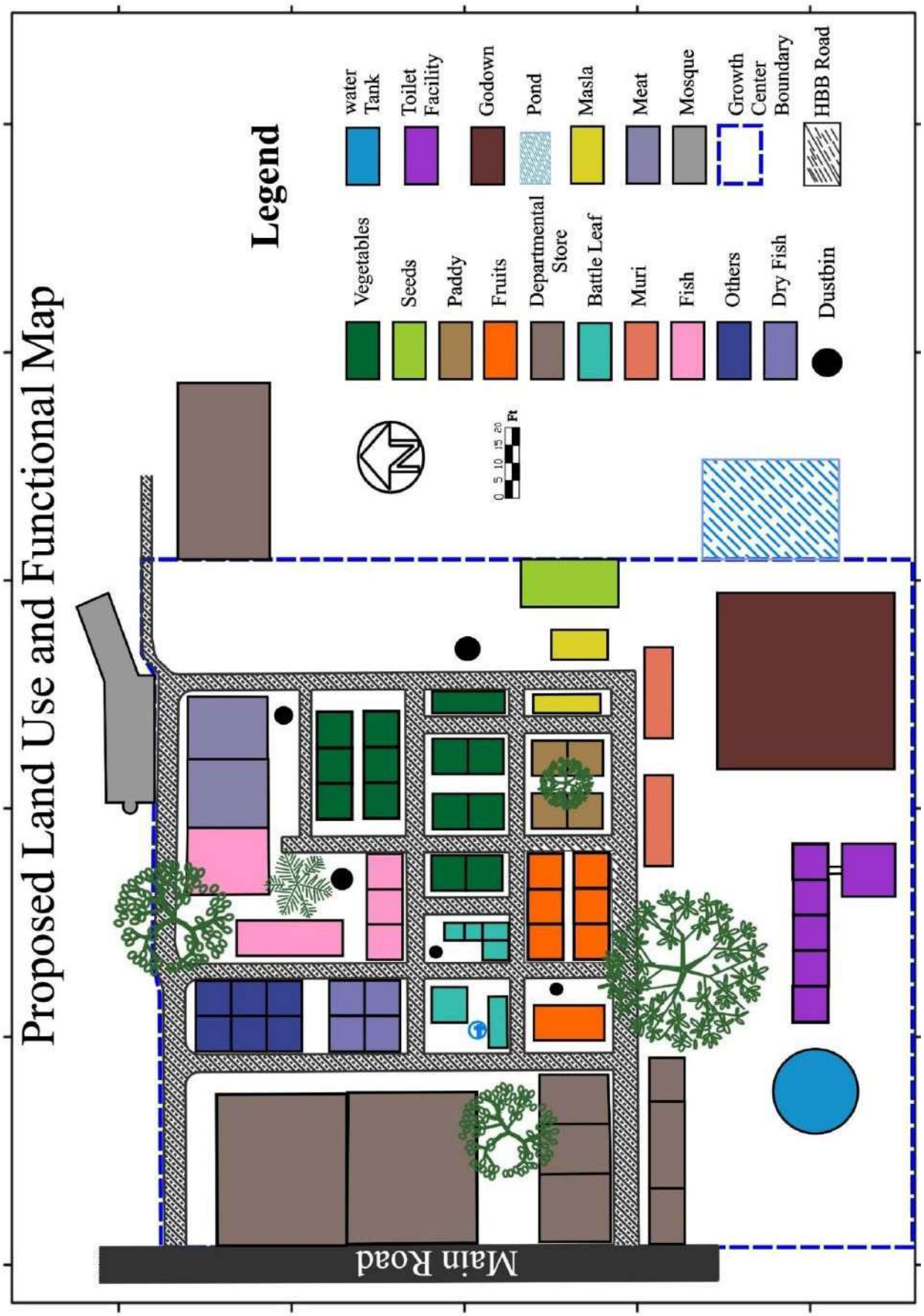


Figure 7.8: Typical Plan of Growth Center

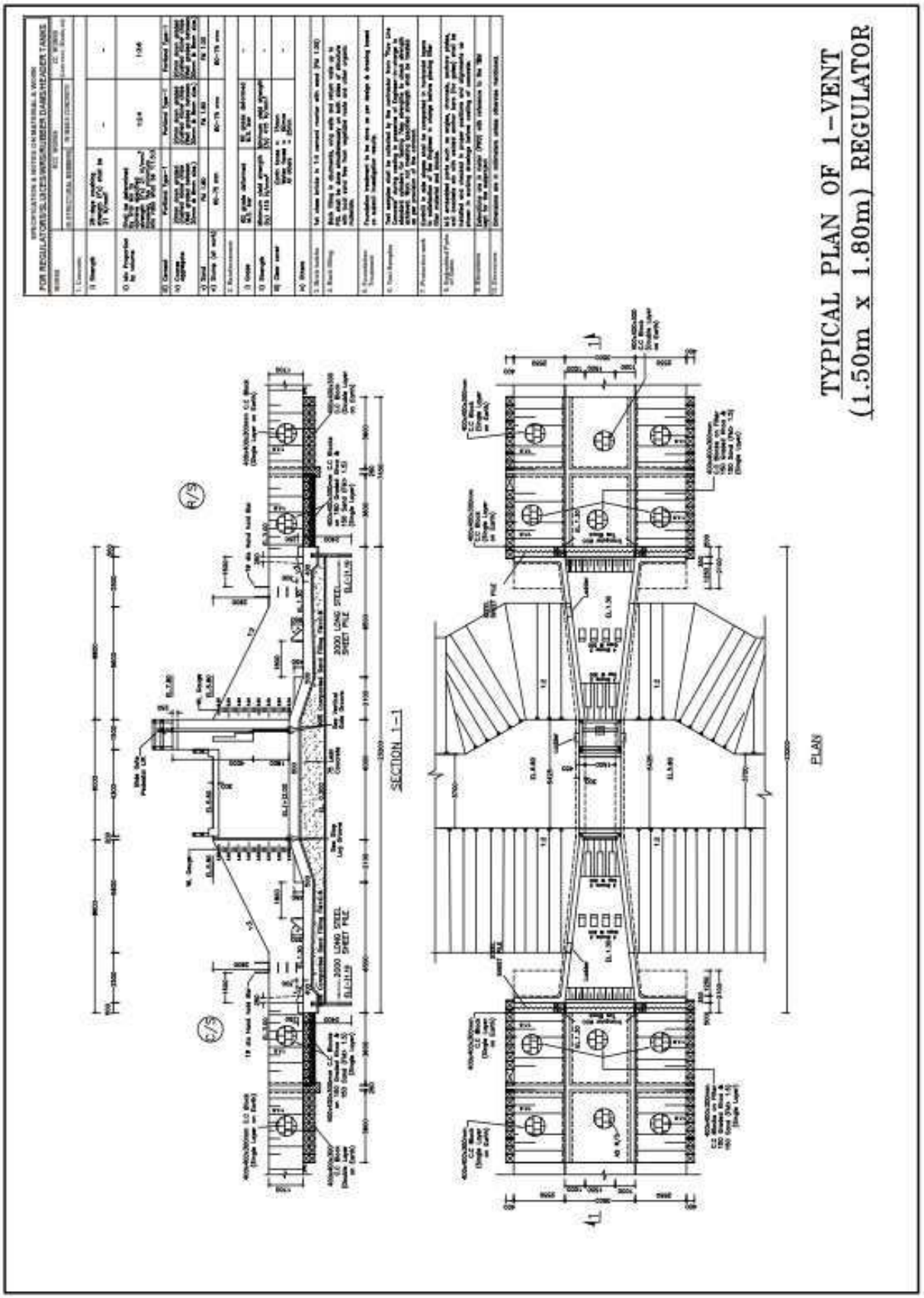


Figure 7.9: Typical Plan of 1-Vent Regulator

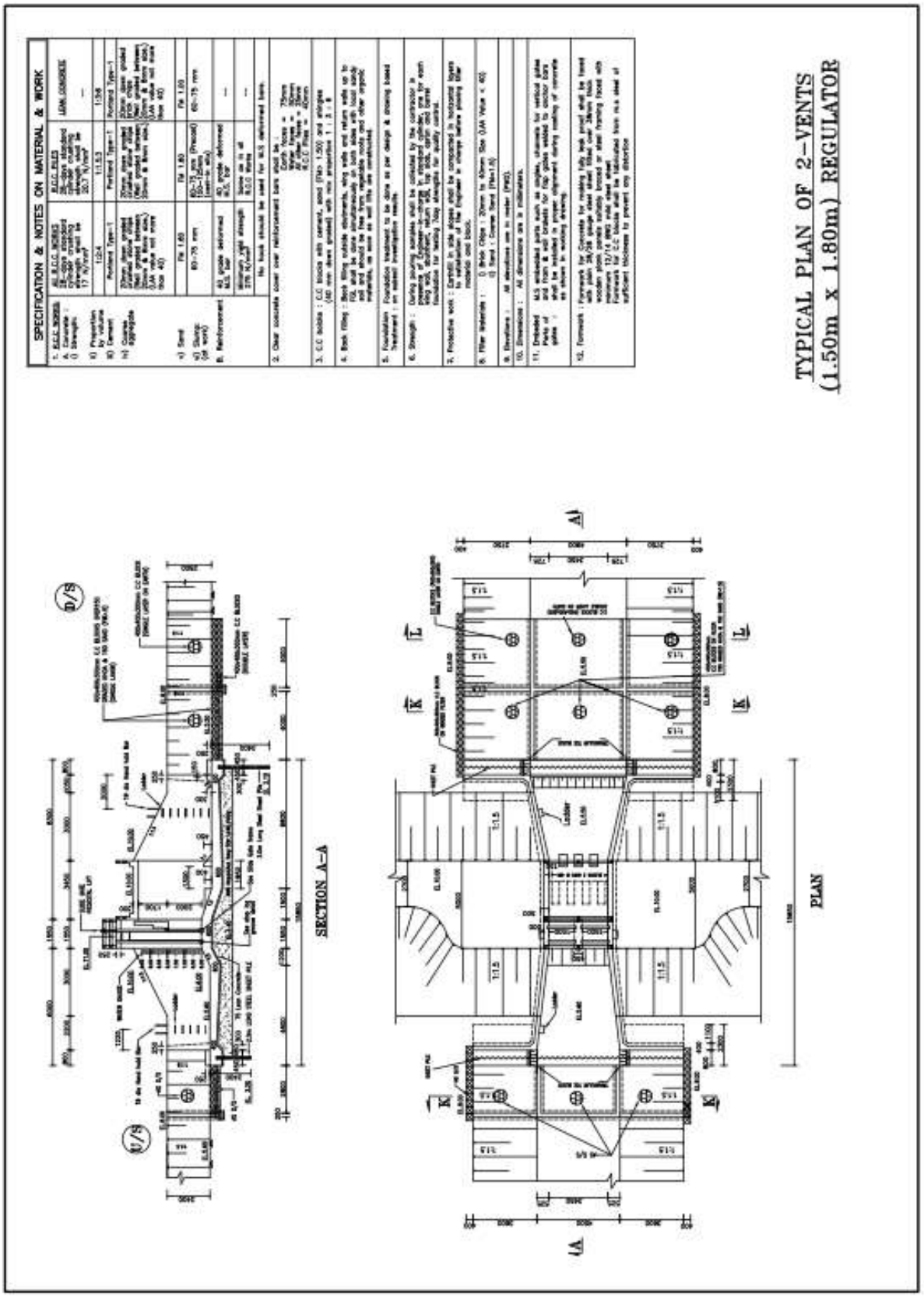


Figure 7.10: Typical Plan of 2-Vent Regulator

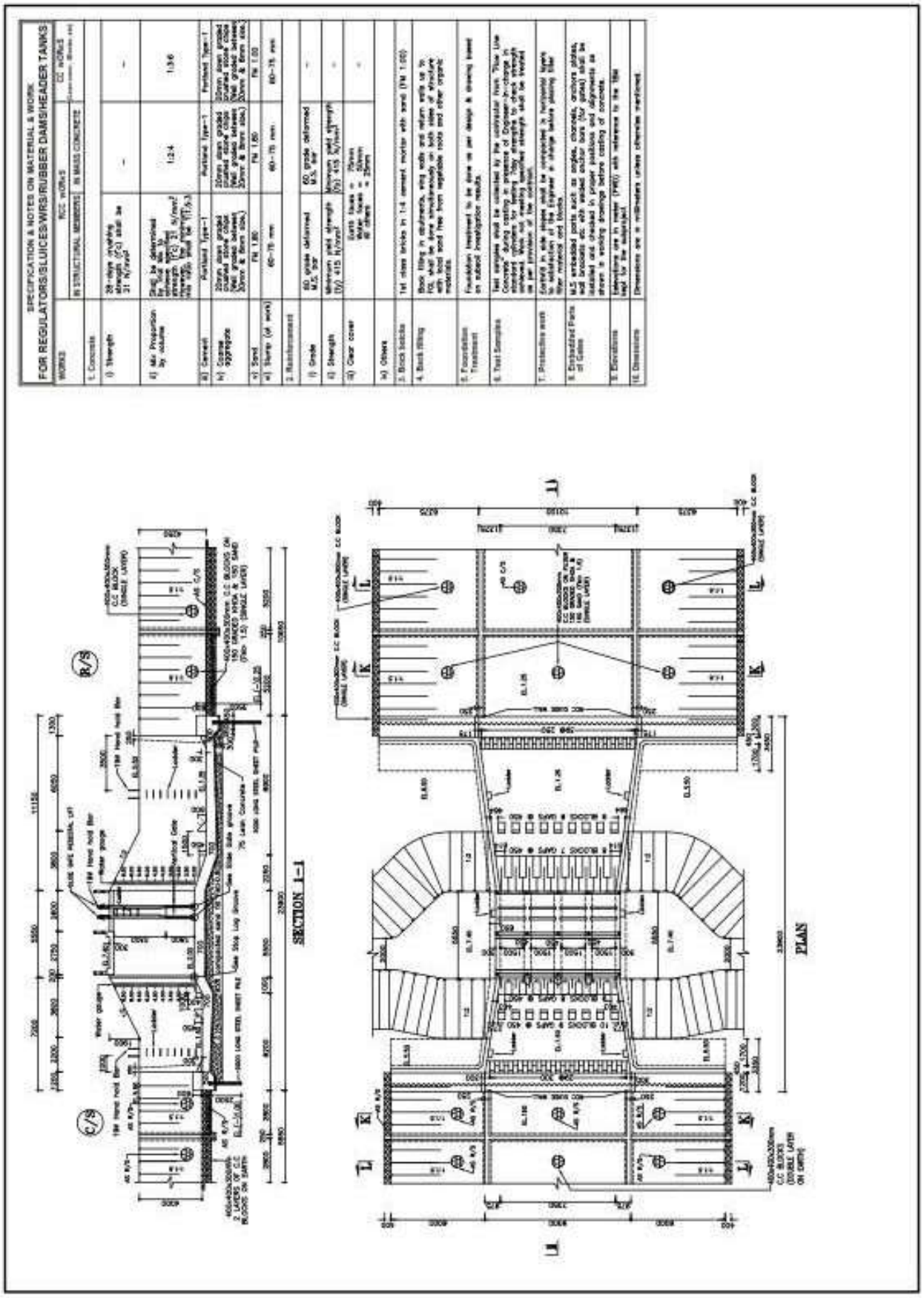


Figure 7.11: Typical Plan of 4-Vent Regulator

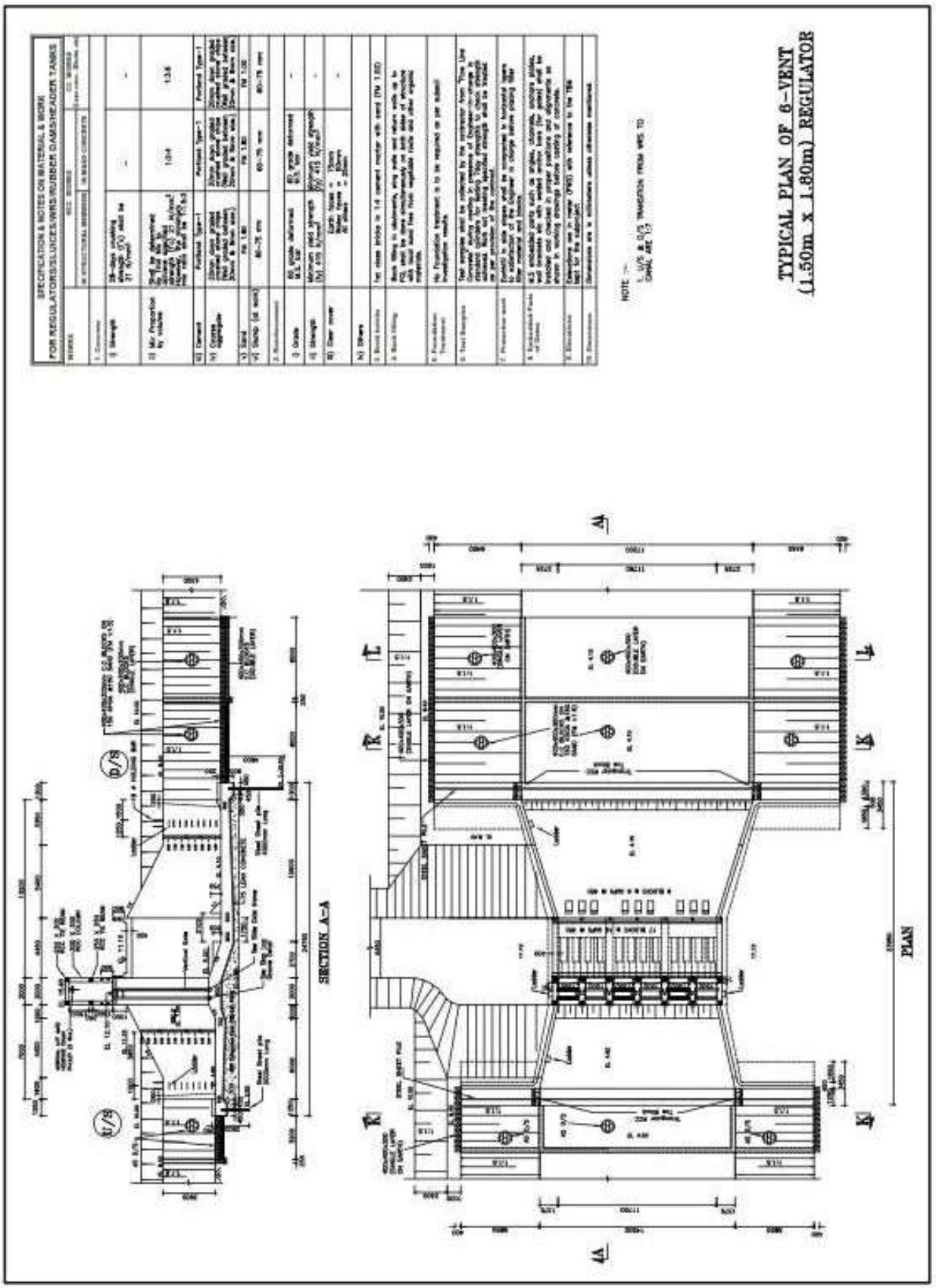


Figure 7.12: Typical Plan of 6-Vents Regulator

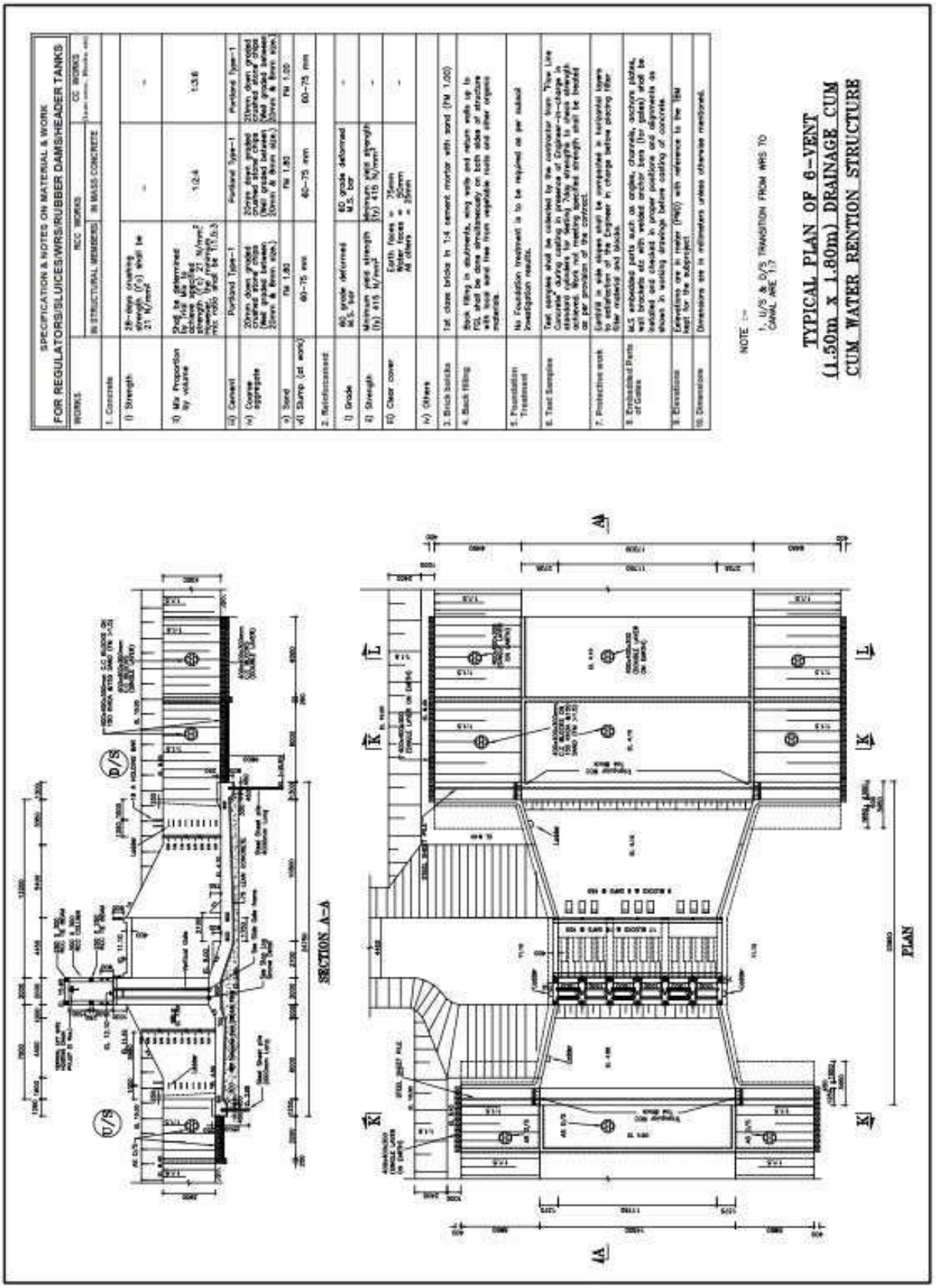
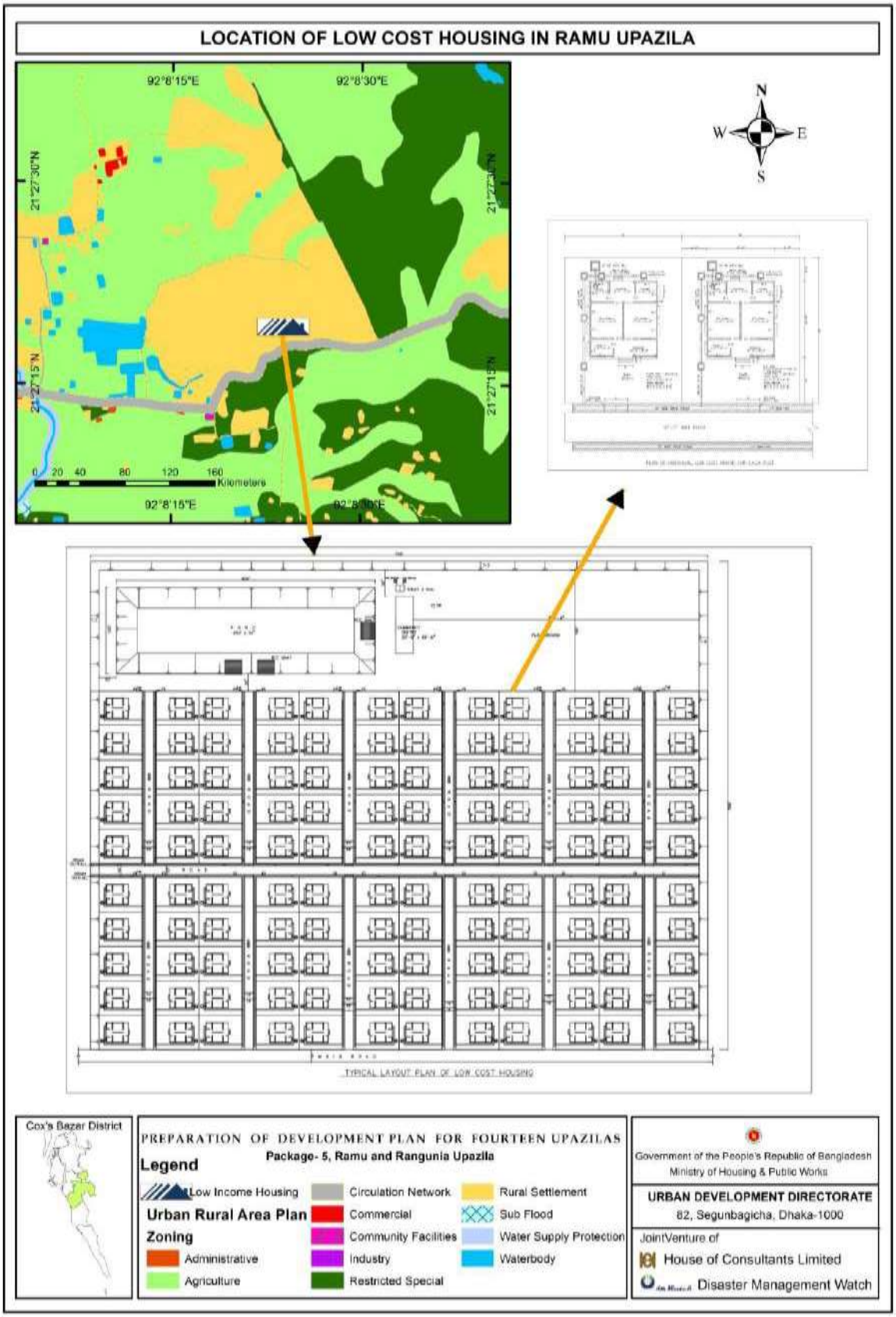


Figure 7.13: Typical Plan of 6-Vent Drainage Cum Water Retention Structure



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

Map 7.31: Low Cost Housing in Ramu Upazila

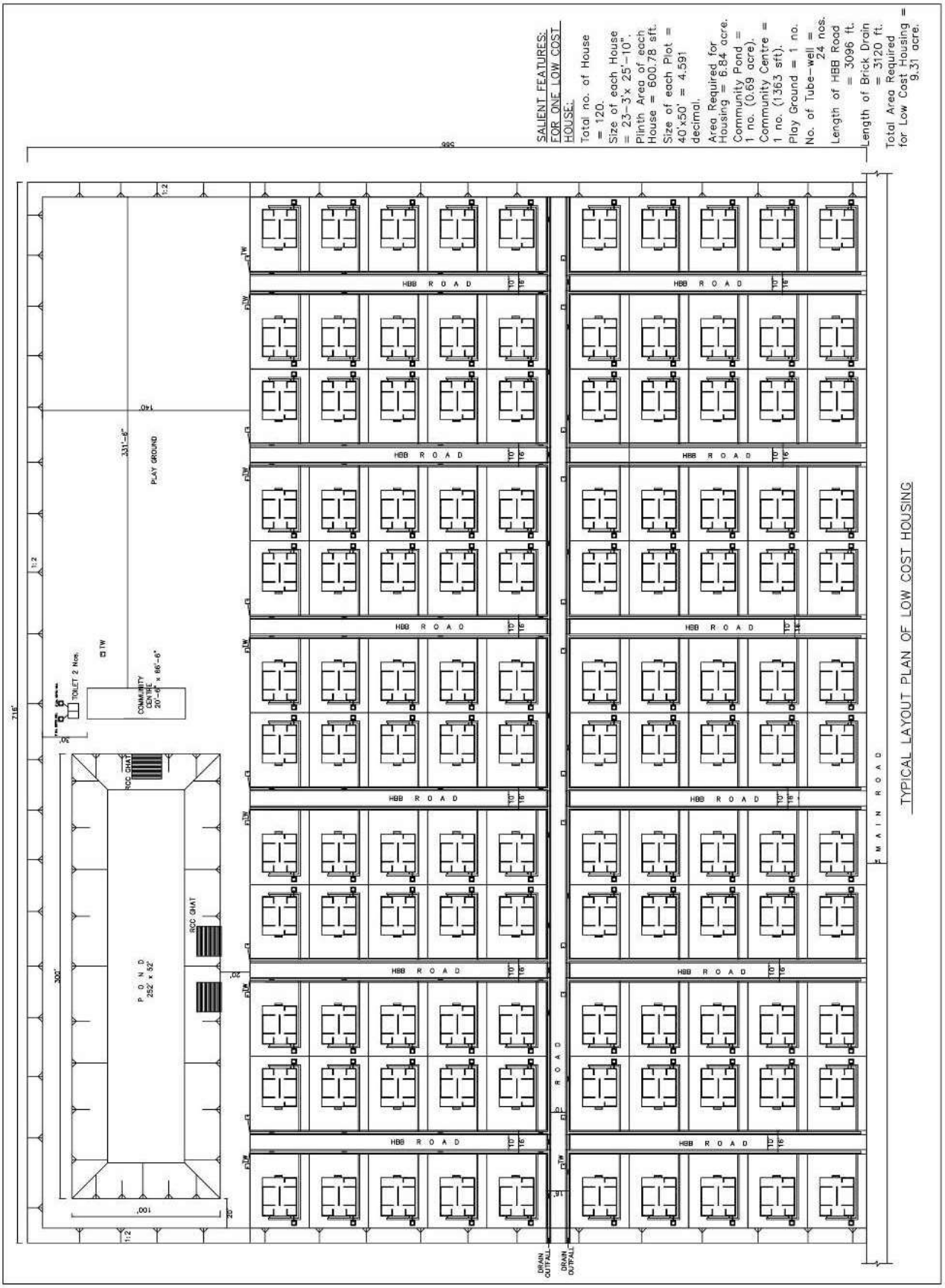


Figure 7.14: Layout Plan of Low Cost Housing

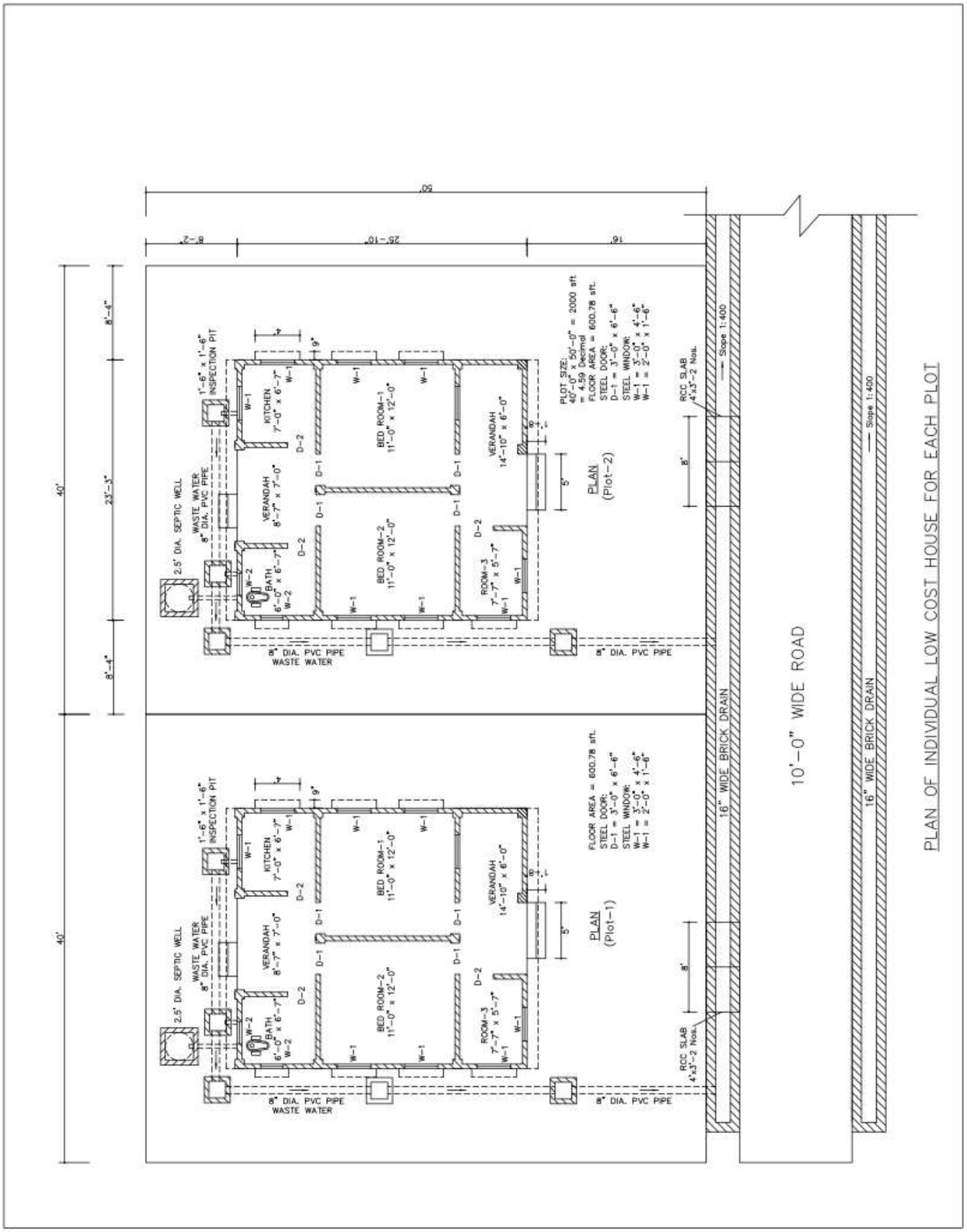


Figure 7.15: Plan of Individual Low-Cost House for Each Plot

CHAPTER 8

CONTINGENCY PLANNING

8.1 Introduction

A contingency is a situation that is likely to occur but may not. Contingency Planning is a systematic approach and the preparatory process of identification of and planning for such situations. A contingency plan may never need to be activated. However, if the anticipated situation does arise, the plan will provide a basis for rapid and appropriate actions. Thus, the contingency planning consists of anticipating and analyzing potential hazards, and determining the kind of measure.

Contingency implies a future event or circumstance which is possible but cannot be predicted with certainty. Contingency Planning is done for the rationalize change. It ensures that the resources available now and in the future are used in the most efficient way to obtain specific objectives (Green, 1994). Contingency planning enables actions taken to prepare for an impending emergency (Cunny, 1988). According to UNHCR, 1996; Contingency planning is a forward planning process in a state of uncertainty in which scenarios and objectives are agreed, managerial and technical actions defined and potential response systems put in place in order to prevent or better respond to an emergency. Contingency planning is one component of a much broader emergency preparedness process that includes items such as practices, operational continuity, and disaster recovery planning. Preparing for such events often involves implementing policies and processes at an organizational level and may require numerous plans to properly prepare for, respond to, recover from, and continue activities if impacted by an event.

8.2 Process of Contingency Planning

The purpose of contingency planning is to help ensuring a rapid, appropriate and effective response if and when a crisis occurs. The process of contingency planning should identify operational and other difficulties that could be encountered in responding to potential crises and enable thinking ahead and finding ways in which, such problems can be avoided or overcome before a crisis actually occurs. In case of Contingency Planning, the plan identifies the issues, build up scenarios and analyze them, promotes the choices and assert the first steps. The steps of contingency planning are summarized below:

- ✓ Identify scenarios of hazard and risk
- ✓ Set priorities and goals
- ✓ Identify activities and tasks
- ✓ Allocate resources
- ✓ Allocate responsibilities
- ✓ Set order of implementation
- ✓ Ensure technical inputs
- ✓ Develop procedures

8.3 Factors of Contingency Planning

Contingency plan includes how the current situation will change and what we want to achieve, then what we should be done firstly. The following factors are derived for contingency planning.

- **Population and Society:** Number of people, water security, food security, access to facilities, access to services.
- **Environment:** Shelter and habitat, sanitation, wildlife and natural heritage, cultural heritage.
- **Production and Economy:** Agriculture and livestock, industry, commerce, tourism, employment.
- **Infrastructure and Services:** Energy, communications, transports, health and medical, public works, education.

8.4 Contingency Plan for the Project Area

Natural disasters can strike anyplace, anytime with little or no warning. Fortunately, a small degree of preparation and common sense can greatly increase one's chances of surviving a natural disaster. This contingency plan for natural disasters summarizes the Government's alerting systems and organizational framework for responding to such disasters. Functions and responsibilities of Government departments and other bodies in the event of natural disasters including those resulting from severe weather conditions are also set out in this Contingency Plan. The following possible aspects are examined under contingency plan:

- Building Vulnerability Assessment
- Existence of Natural Hazards

8.4.1 Building Vulnerability Assessment

8.4.1.1 Background of the Assessment

Buildings are more vulnerable to earthquake. A significant earth quake may destroy the buildings that cause deaths within a few moments. It was difficult to conclude visually during survey period that most of the buildings were not constructed considering earth quake resistant structure. Therefore, building vulnerable assessment was necessary through setting some visual physical parameters. In Ramu Upazila, building vulnerability assessment has been done to identify the risk sensitive structure from the existing physical feature data. The assessment has been done above one storied building. According to the physical feature data, there area bout 36025 structures in Ramu Upazila from where 538 structures are dominated as more than one storied. The assessment carriedfor 538 structure s to identify the visual phenomena such as soft story, short column, heavy overhanging, pounding possibilities, tilting, ground set, age (0 to 10 years, 10 to 30 years and above 30 years), historical time period (British, Pakistan, Bangladesh Period), setback, existence of mobile tower above the structure and overall structure visible physical condition (good, average, poor). The outlined phenomena have been prioritized according to their existence weightage.

8.4.1.2 Methodology of Building Vulnerability Assessment

Building vulnerability assessment has been done through five steps. Assessment of exposure condition of structure is the prime criteria and then multiplication has been done with other criteria (Step 2 to Step 5) to simplify or generalize the vulnerability assessment. **Table 8.1** depicted the measure for building vulnerability assessment.

Table 8.1: Measure for Vulnerability Assessment

Weightage Value	Scale	Explanation
0	Not Sensitive	No existance of variablesof Step 01
10	Less Sensitive	Existance of any 1 variable of Step 01
20	Average Sensitive	Existance of any 2 variables of Step 01
30	Moderate Sensitive	Existance of any 3 variables of Step 01
40/50/60	Most Sensitive	Existance of 4/5/6 variables of Step 01

Source: Designed by Consultants

Step 01: Exposure Condition of Structure

Primarily to identify risk sensitive structure, the structure condition of each structure has been taken as the base. For that reason, every structure condition has given the same weightage. During earthquake the 6 factors stated in the **Table 8.2** that related to structure condition can be worked independently.

Table 8.2: Variable's Value of Structure Condition

Structural Condition Variable	Weightage
Soft Story	10
Short Column	10
Heavy Overhanging	10
Pounding Possibilities	10
Tilting	10
Ground Set	10

Source: Designed by Consultants

Step 02: Age of Structure

At this stage structure age (0 to 10 years, 10 to 30 years and above 30 years) has been given weightage according to their age. It has been assumed that most aged structure is mostly vulnerable to earthquake and has given the highest weightage value.

Table 8.3: Variable's Value of Structure Age

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

Source: Designed by Consultants

After that the summation of structure condition has been multiplied by the weightage of structure condition and the result has been generalized numbering between 60 sensitive structure has been identified at this stage.

Generalization

If Struture Condition's sum= 40 and Structure Age Weightage=3

So, That Structure multiplication value will be 120 from 180 (as highest structure condition weightage=60 & structure age=3)

As, generalization will be in 60, the calculated value= $\frac{120*60}{180}$ =40

Table 8.4: Generalization of Weightage Range Value

Rank	Generalized Weightage Range value
Not Sensitive	0
Less Sensitive	1-10
Average Sensitive	11-20
Moderate Sensitive	21-30
Most Sensitive	31-60

Source: Designed by Consultants

Step 03:Historical Construction Time Period

Weightage has been given according to the historical construction time period (British, Pakistan, Bangladesh Period). The oldest structure has been assumed as most vulnerable and weightage has been given according to that.

Table 8.5: Variable's Value of Historical Time Period

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

Source: Designed by Consultants

The summation of structure condition weightage has been multiplied by the weightage of historical time period. After that the result has been generalized numbering between 60 sensitive structure has been identified at this stage.

Step 04: Peripheral Impacts

Peripheral Impact includes having Mobile tower and not having set back. If a structure has Mobile Tower, it seems to be vulnerable cause it may not be thought in the time of construction and having Set back has positive site in the time disaster it can minimize the impact.

Table 8.6: Variable's Value of Peripheral impact

Peripheral impact of Structure	Weightage
Mobile Tower	10
Set back	10

Source: Designed by Consultants

The summation of structure condition weightage has been multiplied by the weightage of peripheral impact of structure. After that the result has been generalized numbering between 60 sensitive structures.

Step 05: Quality of Physical Condition

Weightage has been given according to the visible physical condition of structure. The poorest structure has been given the highest weightage. It has been assumed that visibly poor structure may be more sensitive to earthquake.

Table 8.7: Variable's Value of Visible Physical Condition

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

Source: Designed by Consultants

The summation of structure condition weightage has been multiplied by the weightage of visible physical condition. After that the result has been generalized numbering between 60 sensitive structure has been identified at this stage.

Findings for Building Vulnerability Assessment

The findings of step 1 to 5,the process for Building Vulnerability Assessment have presented in below **Table 8.8, Table 8.9, Table 8.10, Table 8.11 and Table 8.12**.

For the purpose of identifying vulnerable structures 538 buildings that are more than one storied have surveyed. After generalizing the weightage value according to structure condition, 26 structures were identified as mostly sensitive and 104 structures were not sensitive. Other structures are categorized into less, moderately and averagely sensitive and their frequency has mentioned in the **Table 8.8.**

As 104 structures have been eliminated as not sensitive in this step total number of structures have been reduced from 538.In case of structure age sensitivity 2 structures were found as most sensitive that means age of these structures were above 30 years as well as the structure condition was also not satisfactory. Recent constructed structures have found not sensitive that is about96. A statistic of age of the structure in Ramu Upazila is presented in the **Table 8.9**.

As per procedure described in step 3, structure period sensitivity has identified. About 3 structures have marked as moderately sensitive and 32 averagely sensitive. About 365 structures were less sensitive on the basis of structure condition and structure period. A statistic of the structure period sensitivity in Ramu Upazila is presented in the **Table 8.10**.

Almost half of the surveyed structures have been found as not sensitive. It indicated that the rest of the structures have the peripheral impact and their structure condition were also not satisfactory. About 2 structures have marked as moderately sensitive and 142 structures were marked as less sensitive. A statistic of the peripheral impact sensitivity in Ramu Upazila is presented in the **Table 8.11**.

In case of quality sensitivity, about538 structures were not involved here as many structures condition was missing. This analysis has carried out on 412 structures. From that about10 structures were identified as moderately sensitive and 66 structures as not sensitive. No structure has found as most sensitive. A statistic of the quality sensitivity in Ramu Upazila is presented in the **Table 8.12**.

Table 8.8: Structure Condition Sensitivity

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

Source: Field Survey, 2016

Table 8.9: Structure Age Sensitivity

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

Source: Field Survey, 2016

Table 8.10: Structure Period Sensitivity

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

Source: Field Survey, 2016

Table 8.11: Peripheral Impact Sensitivity

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

Source: Field Survey, 2016

Table 8.12: Quality Sensitivity

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

Source: Field Survey, 2016

Step 06: Final Stage

Finally, to identify the risk sensitive structure, the summation of structure conditions have been multiplied by structure age, historical time period, peripheral impact and visible physical condition. After that the result has generalized through marking0 to 60 to identify of sensitive structure at this stage. In this case the structure that has got more number, it was identified as more sensitive. This analysis has done for 538 structures but all 538 structures do not have all the information related to structure age, historical time period, peripheral impact and visible physical condition. Therefore, the results that depicted in **Table 8.13**included 400 structures among 538.

Table 8.13: Final Vulnerability Sensitivity

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

Source: Field Survey, 2016

At the final stage when all the criteria have generalized, a total overview of vulnerable structures has identified. After generalizing all the criteria, the number of structures has reduced from 538 to 400. Among 400 structures, about 269 structures were marked as less sensitive, 126 structures as not sensitive and 5 as averagely sensitive.

8.4.1.3 Recommendation

The above analysis has done on the basis of structure condition, structure age, structure quality, peripheral impact, structure period. Vulnerable structure identified where these above stated criteria are present. It does not indicate if any one of these criteria is present in a structure it won't be vulnerable. That means apart from this if any one of these criteria is found in any structure it will be declared as vulnerable on the fixed sensitivity scale. An analysis on that point has done and the result is presented in **Table 8.14**.

Table 8.14: Vulnerability Assessment According to the Factor's Existence

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

Source: Field Survey, 2016

Among 538 structures if any one of the criteria is present a scale has been fixed to denote its vulnerable condition and appropriate engineering steps should be taken to reduce the vulnerability. About 21 structures are found as moderately sensitive, 257 as sensitive, 61 as averagely sensitive. So, mitigation measurement through retrofit the structure should be taken according to its scale of sensitivity. A list of mentioned vulnerable structures with its degree of sensitivity could be visible in the GIS data base under vulnerability assessment.

8.4.2 Existence of Natural Hazards

8.4.2.1 Introduction

Natural hazards are occurred for different physical phenomena which includes geophysical, hydrological, meteorological etc. From these phenomena, geophysical factor is prominent for occurring natural hazards in Ramu Upazila from where four types of hazards have been identified for the project area that are categorized in planning process according to responsive stages to confine under a contingency plan. Which are:

- Earthquake
- Landslide
- Flood/Flash Flood
- Cyclone

8.4.2.2 Assessment of Natural Hazards

The above outlined hazards have been identified through different ways and assessment has been done to comprehend the extent of this hazards.

- **Earthquake**: Building vulnerability assessment has been done as a precautionary measure due to sustainable structure against earth quake.
- **Landslide:** Several landslides have been taken place during the project period which has been also examined.
- **Flood/Flash Flood:** Inundation map has been prepared for different returning period upon these scenarios main flood and sub flood flow zone has determined.
- **Cyclone:** Cyclone can be devastating for the project area according to the past trends. In recent era, thunder storm is also increasing its effect, Lightning Protection System (LPS) has suggested in several areas for upcoming threats.

8.4.2.3 Lightning Protection System

The fundamental principle in the protection of life and property against lightning is to provide a means by which a lightning discharge can enter or leave the earth without resulting damage or loss. A low-impedance path that the discharge current will follow in preference to all alternative high impedance paths offered by building materials such as wood, brick, tile, stone, or concrete should be offered. When lightning follows the higher impedance paths, damage can be caused by the heat and mechanical forces generated during the passage of the discharge. It can be defined as below:

- A system of strike termination devices on the roof and other elevated locations
- A system of grounding electrodes
- A conductor system connecting the strike termination devices to the grounding electrodes

Items to be considered during Planning of Protection:

- The best time to design a lightning protection system for a structure is during the structure's design phase, and the best time to install the system can be during construction
- Conductors should be installed to offer the least impedance to the passage of stroke current between the strike termination devices and earth.
- Properly made ground connections are essential to the effective functioning of a lightning protection system
- In general, the extent of the grounding arrangements depends on the character of the soil, ranging from simple extension of the conductor into the ground where the soil is deep and of high conductivity to an elaborate buried network where the soil is very dry or of very poor conductivity.

There are some cases where the need for protection should be given serious consideration regardless of the out-come of the risk assessment. Examples are those applications where the following are factors:

- Large crowds;
- Continuity of critical services;
- High lightning flash frequency;
- Tall isolated structure.

As well as some other factors should take into account which are:

- Building environment
- Type of construction
- Structure occupancy
- Structure contents
- Lightning stroke consequences

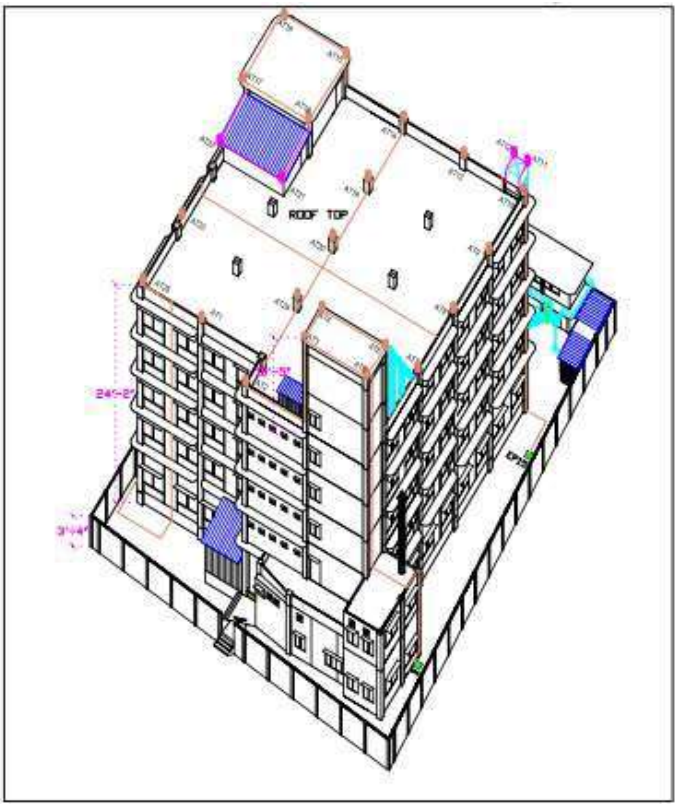


Figure 8.1: Lightning Protection System

Recommendation

- LPS should be installed above the structure depending on the use.
- For protection in open spaces LPS should be installed in electric pole which should be assessed by PDB and REB**.**
- Palm tree should be planted in open spaces, along the streets or in the aisle of agricultural land.

8.4.2.4 Components of Plan

Contingency plan included

- **Proposal of Connectivity Road and Multi-purpose Shelter**

  To protect the people and ensure their safety the possible evacuation roads have proposed in project area and for the emergency response multi-purpose shelter proposed in hilly areas. The location of shelter has determined by well connection of road and the hilly settlements.

- **Hill buffer area in where human intervention is not allowed**

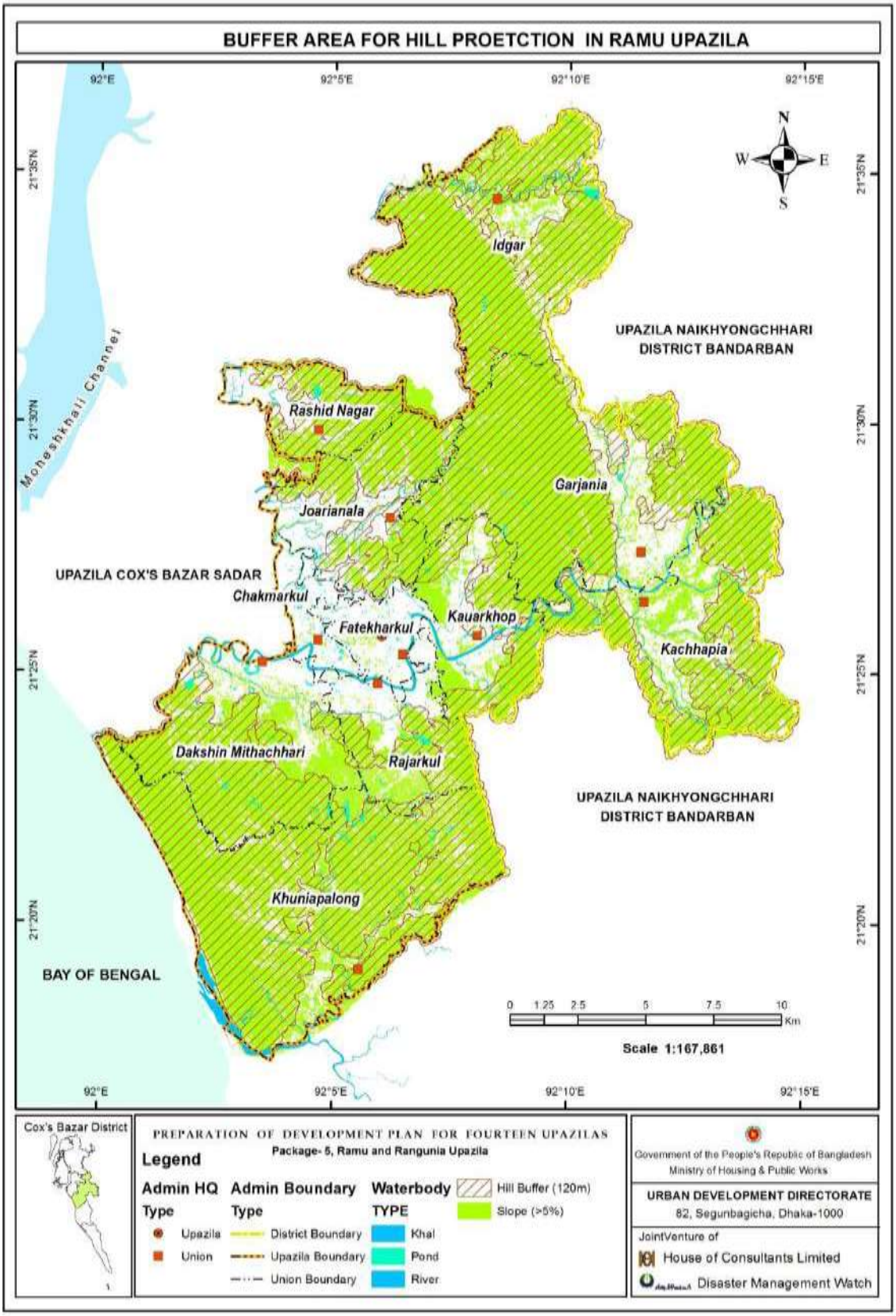
  Hilly areas are prone to landslide. Human intervention is preferable within 5% slope in respect of planning perspective in our country. Landslide becomes hazard when properties or people are being affected. Human intervention is not allowed up to 120 meters from the edge of hill presented in the **Map 8.1**.

Table 8.15: Proposal of Multi-purpose Shelter according to the Plot wise Location

Sl. No.	Mouza	JL No	Sheet No	Plot No	Union
1	Dariar Dighi	037	005	2585	Khuniapalong Union
2	Khuniapalong	035	002	123	Khuniapalong Union
3	Rajarkul	025	008	8864	Rajarkul Union
4	Rajarkul	025	009	10679	Rajarkul Union
5	Dakshin Kachhapia	005	005	8552	Kacchapia Union
6	Lot Ukhiarghona	039	007	3177	Kauarkhop Union
7	Idgar	002	003	2197	Idgar Union
8	Idgar	002	003	2197	Idgar Union

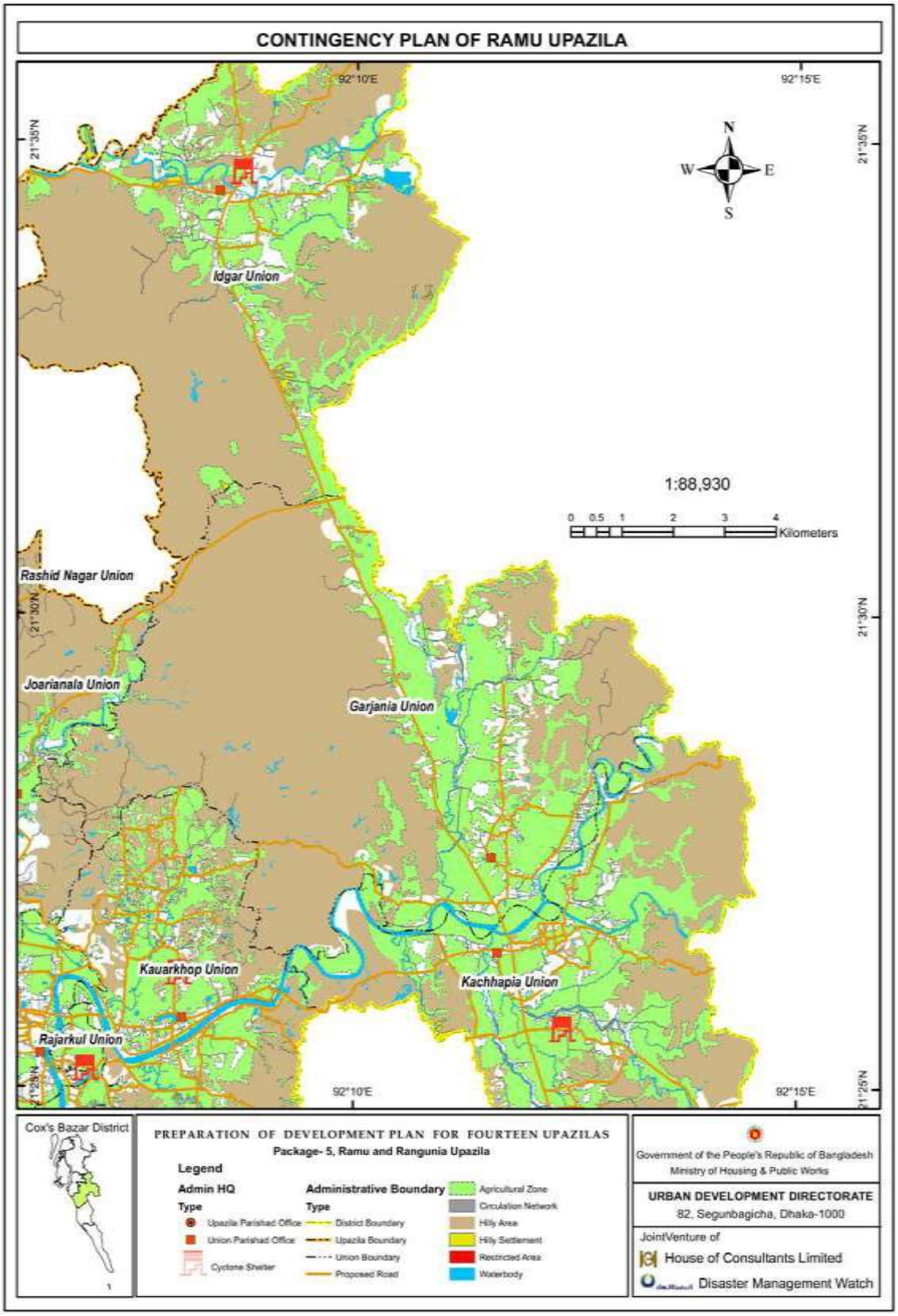
Source: Proposed by Consultants

The above table depicted the locations of multi-purpose shelter**.** Shelter has proposed for Natural disaster such as cyclone, flood and earthquake. The shelter has presented in the map. It will provide shelter to the effected people during the disaster. The road connectivity is also satisfying. Specially the inhabitants living in the hilly areas will get help. Among the proposed shelters in three locations are presented in **Map 8.2**and **Map 8.3.**



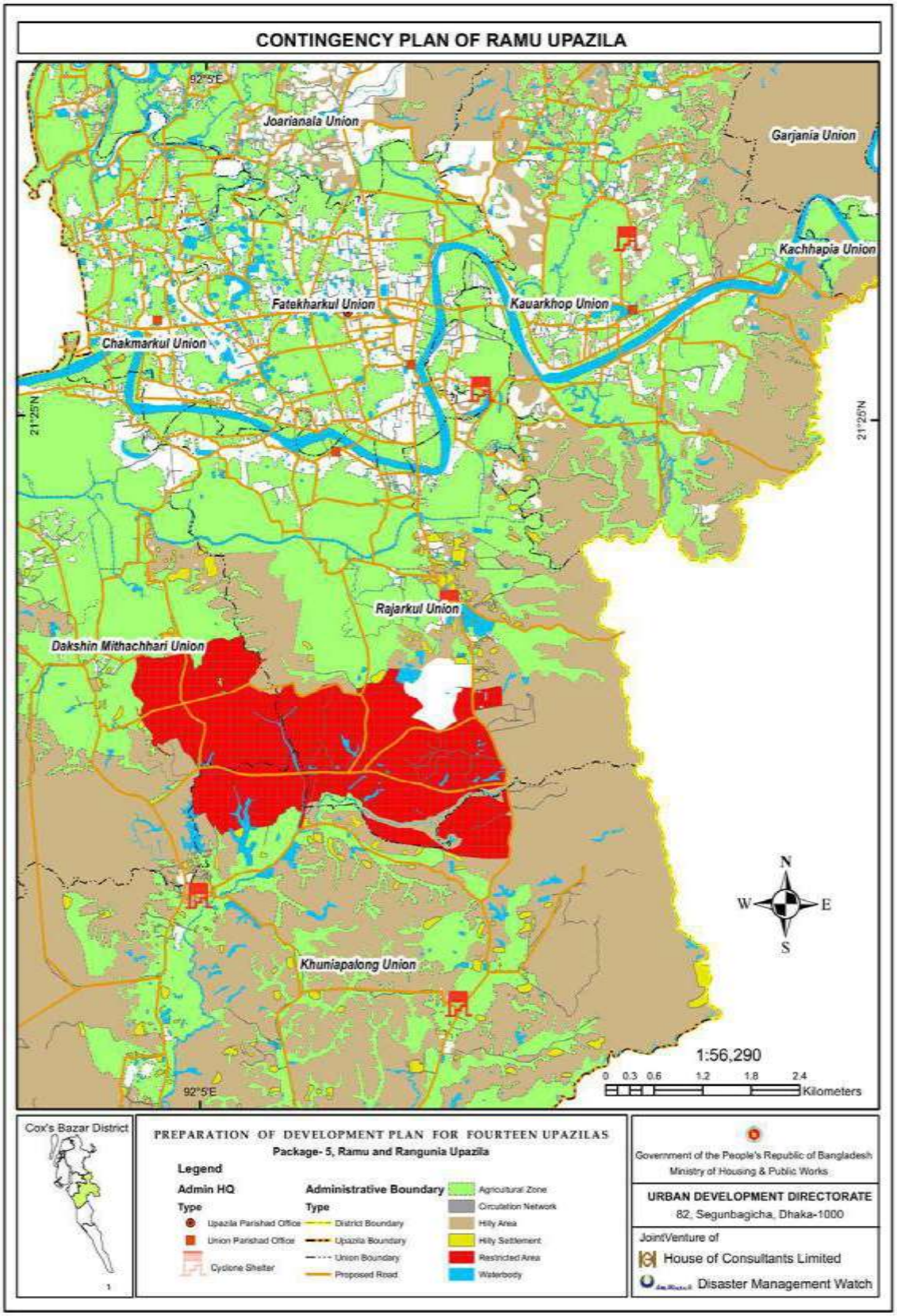
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 8.1: Hill Buffer Map of Ramu Upazila



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

Map 8.2: Contingency Plan Map (Kachhapia Union)



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

Map 8.3: Contingency Plan Map (Khuniapalong Union)

8.4.2.5 Mitigation Measures for Natural Hazards

Earthquake

Preparation for An Earthquake

There is no such thing as "earthquake weather" or earthquake seasons. Earthquakes can occur at any time and any place.

- Make necessary repairs to home and office buildings
- Know location of emergency exits, fire alarms, and fire extinguishers
- Check for cracks in building foundations
- Insure building is attached directly to foundation, e.g., with bolts through the sill; this may require an inspection by an expert
- Keep emergency supply kits in home, vehicle, and office.

During an Earthquake

- Get under a desk, table or doorway, and hang on
- Avoid panic and help others to remain calm
- Stay clear of windows, mirrors, fireplaces, heaters, heavy furniture and appliances

After an Earthquake

- Quickly estimate damage and further danger and make decision on a full/partial evacuation
- Check evacuation routes for obstacles, such as water (electrical hazard), fire, fallen debris, or blocked passages. If safe, evacuate staff away from buildings, light posts, electric power lines, etc.

Flood

From the flooding scenario analysis of this Upazila it is concluded that this Upazila is vulnerable to flood. The flooded area has been divided into five categories according to the depth of the water. In this situation some measurement should be taken to fight with the flood. Some mitigation measurements are recommended at two stages which are before flood and during flood.

Before a Flood

- Keep first aid supplies, batteries, drinking water, water purification kits, and canned food at hand;
- Arrange for auxiliary electrical supplies;
- Know the elevation above flood stage;
- Know the evacuation route;
- If warning signal is received, move to safe area before access is cut by flood water.

During a Flood

- Act quickly to save yourself, children and handicapped
- Avoid already flooded and high velocity flow areas -- do not attempt to cross flowing streams on foot where water is above the knee
- Be especially cautious at night as it is harder to recognize flood danger.

Cyclone

Before the Storm

Countries with high natural disaster profiles will likely have a cyclone/hurricane/typhoon warning or alert systems in place. If an effective alert system is not available, be aware of: seasonal factors, ocean temperatures at or above 27 degrees Celsius, and distant formations of thin horizontal or spiraling clouds, proceeded by strong winds and rain.

- When a storm is imminent, plan your time before storm arrives and avoid last minute rushes, which might leave you unprepared
- Stock up on fresh water, canned food and batteries
- Check location and contents of first aid kits
- Know where emergency medical assistance can be obtained and where disaster stations will be set up before storm arrives

During the Storm

- Remain indoors, preferably in an interior room without windows
- If outdoors, leave low-lying areas that may be swept by high tides or storm waves and seek shelter from flying debris
- Stay calm and wait for all clear signal

After the Storm

- Stay out of disaster areas. Unless you are qualified to help, your presence might hamper first-aid and rescue work
- Drive carefully along debris-filled streets, as damaged roads may collapse under the weight of a car -- landslides along roadways are also a hazard
- Avoid loose or dangling wires
- Avoid use of candles (flashlights are preferred) and other fire hazards, as lowered water pressure will make firefighting difficult
- Stay away from river banks and streams as cyclones moving inland can cause severe flooding
- When electric power is disrupted, turn off appliances and light switches so that electric circuits will not be overloaded when electricity is restored
- Eat food stored in refrigerators and freezers within first few hours only, otherwise eat canned food
- Check on colleagues and assist anyone in need of medical attention

Landslide

The work group evaluated potential strategies to reduce landslide interruptions and impacts. Strategies were outlined and evaluated for implementation time, complicating factors and effectiveness to reduce or prevent landslides over the short-, moderate- and long-term strategies include:

Conduct Community Outreach and Education:

- Engage adjacent landowners to improve slope management practices.
- Develop a public information campaign on best practices.
- Construct demonstration projects in coordination with adjacent land owners.
- Work with Upazila to streamline slope management permit process and provide clear direction on best practices (i.e. storm water, vegetation management).

Implement Vegetation Management Program:

- Work with adjacent landowners to identify and implement vegetation management plans in specific areas based on recommendations from geotechnical and vegetation specialists. Work with adjacent landowners to retain and replant native vegetation where it benefits slope stabilization.

Review Feasibility of Improving Monitoring Tools:

- Research available systems and tools. Representatives from participating agencies have discussed whether monitoring tools can be developed.

Explore Options for Long-term Debris Disposal Plan:

- Evaluate beach nourishment as an option to remove slide debris. The strategy seeks to improve near-shore habitat and ecological function, as well as to reduce the amount of landslide debris to be removed offsite. Provides benefit for salmon restoration efforts through the restoration of forage fish spawning habitat.

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. There 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 wellbeing 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, inclusiveand 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
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
Goal14: 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

SDG		
Goal 2: 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 Ramu Upazila 1 wholesale trade zone 1Fruit Processing Zone, 1 retail trade zone have been proposed.
Goal 4: 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.
Goal 6: 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.
Goal 7: 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.

SDG		
Goal 8: 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.
Goal 9: 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.
Goal 11: 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.
Goal 12: 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 Ramuupazila 1 food processing zone, 1 retail trade zone have been proposed, poultry and fish processing zones have been proposed.
Goal 13: 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.
Goal 15: 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.

Figure 9.2: Ensure Inclusive and Quality Education for All

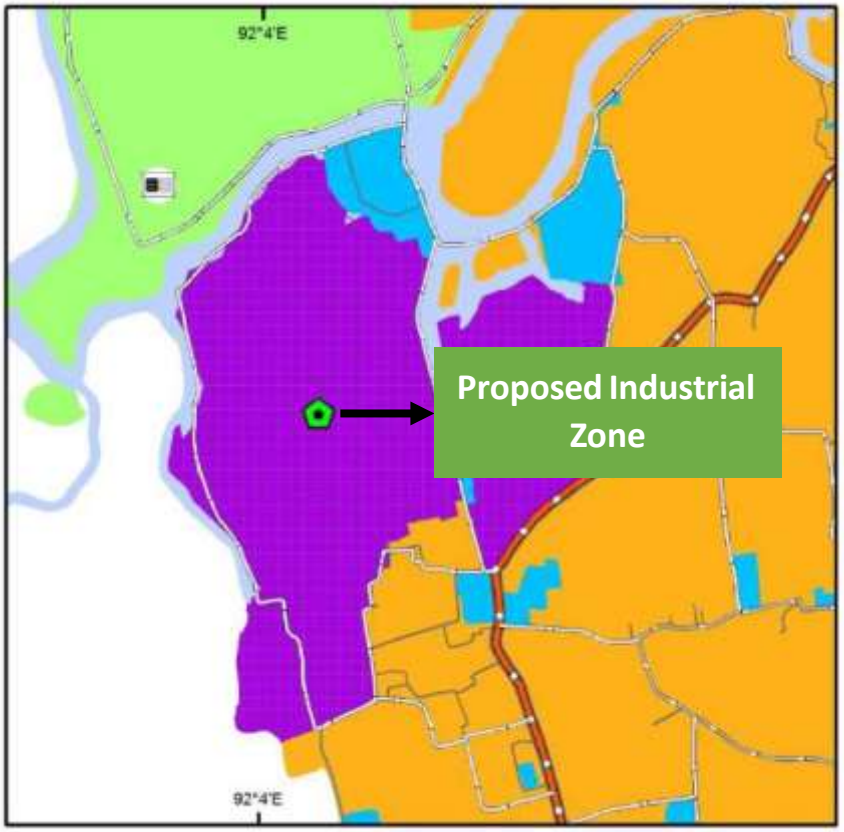


Figure 9.3: Promote Sustainable Industrialization

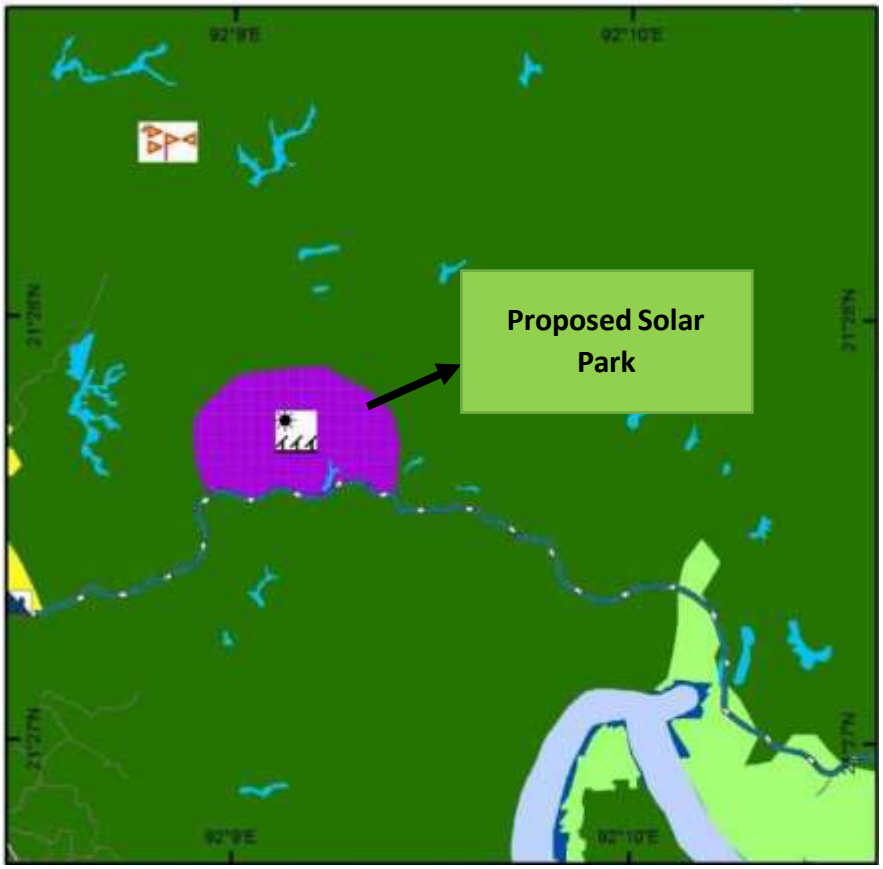


Figure 9.4: Promote affordable, reliable, sustainable and modern energy

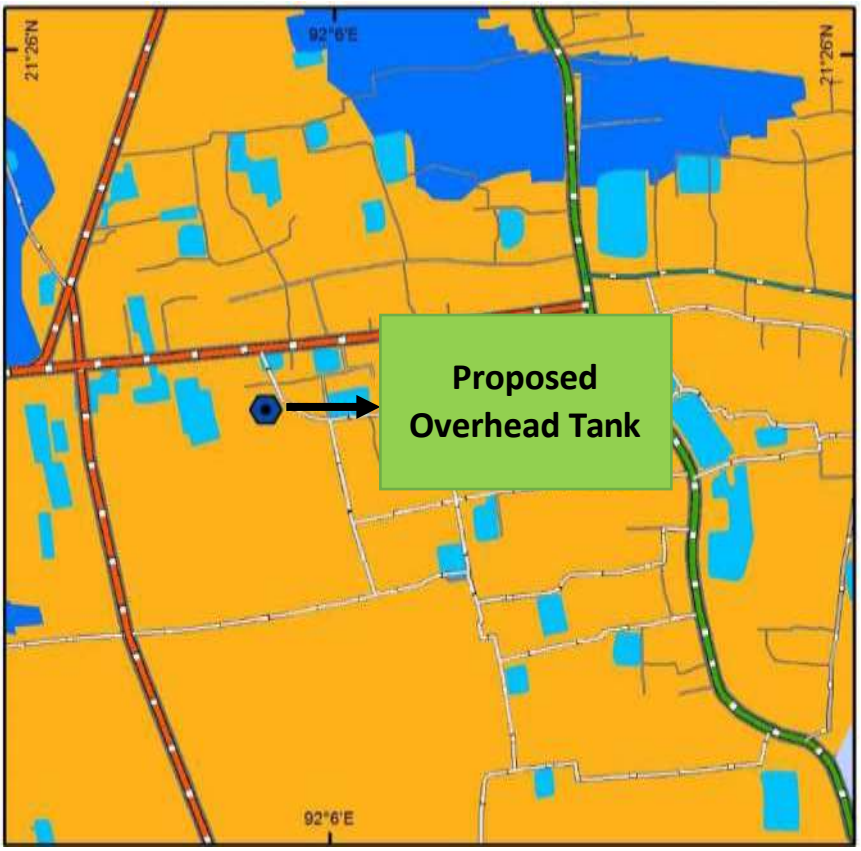


Figure 9.5: Promote water and sanitation for All

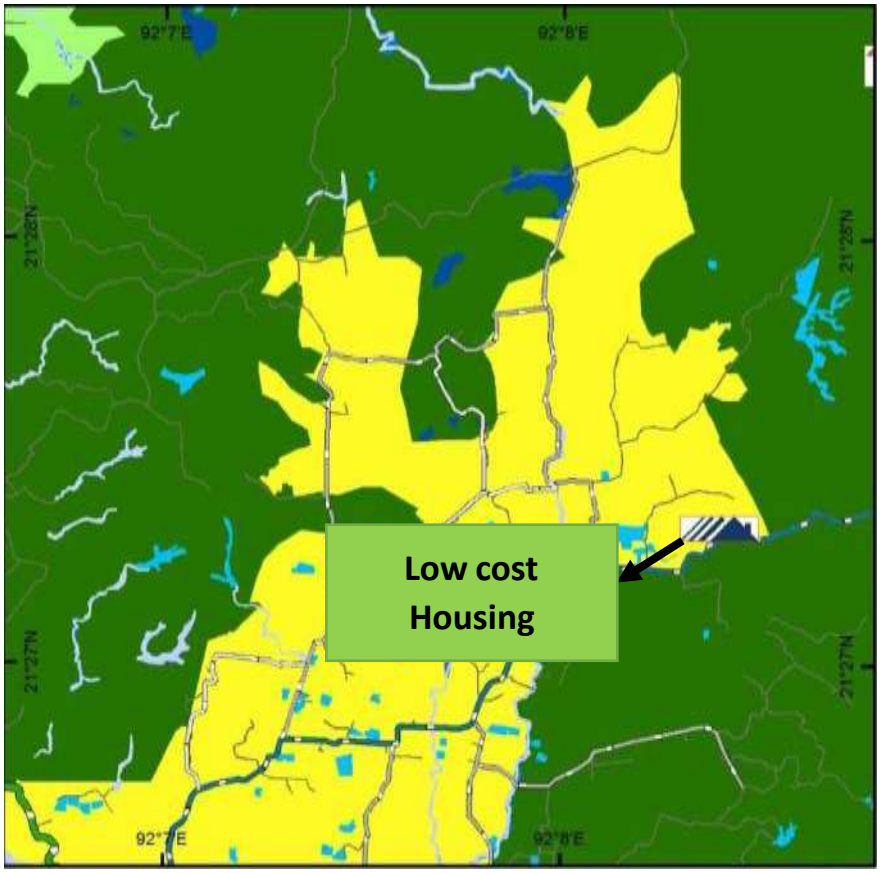
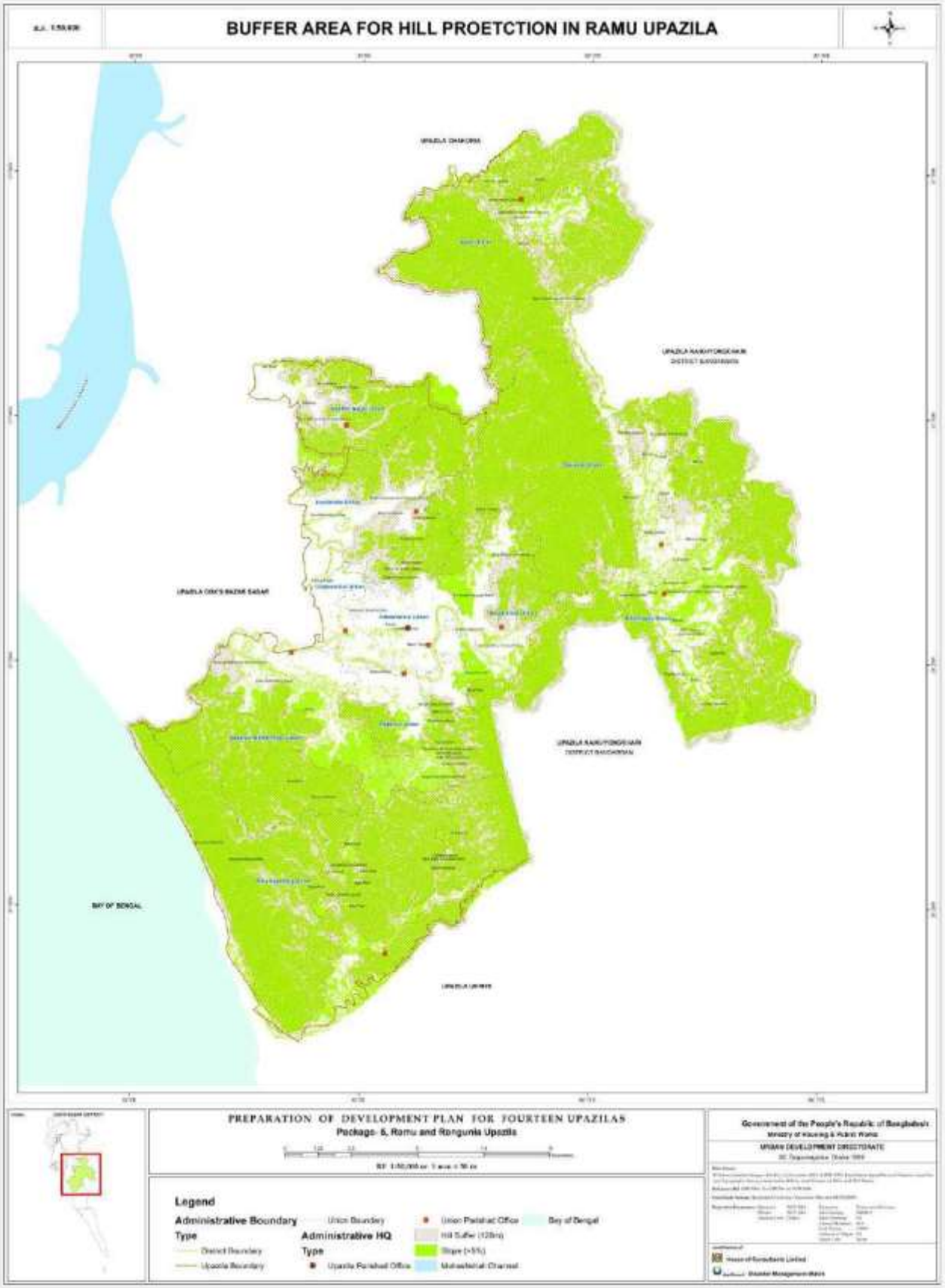


Figure 9.6: Affordable Housing



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

Map 9.1: Buffer Area for Hill Protection in Ramu Upazila

CHAPTER 10

IMPLEMENTATION MODALITY AND LANDUSE CONTROL

10.1 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 highlighted the various measure needed to be taken in order to execute the plan proposals.

10.2 Priority Development Projects for Ramu Upazila

A list of type of development, implementation responsibility, source of fund and, monitoring and evaluation was prepared and presented in **Table 10.1** to make easy for implementation modality and land use control.

Table 10.1: Implementation Modality based on 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	
Low Income Housing/Slum Upgradation	Upazila/NGO/ Other–City Corporation/ Private	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			Pourashava/Upazila
Private Business Enterprise	Company /Proprietor	Company /Proprietor	
Town Centre	Private Joint Venture	Private Joint	
Shopping Centre	Private Joint Venture	Private Joint, Government	
INDUSTRY			BSCIC, BEPZA
Industrial Area	BEPZA	Government	
Export Processing Zone	BEPZA	Government	
EDUCATION AND CULTURE			Department of Education, Ministry of Science and Technology, LGED
School, College	Ministry of Education, Ministry of Science & Technology,	Government, Community ,Government-Community Joint	
IT Village	Ministry of Industry	Government	
Library	Upazila, Ministry of Education	Government	
Social Welfare	Upazila, NGO	Government	

Type of Development Project	Implementation Responsibility	Source of Fund	Monitoring and Evaluation
OPEN SPACE			Upazila/Pourashava/ LGED
Park, Stadium, Play ground	Pourashava/District and National, Divisional Sports Council	Government	
UTILITY SERVICES			PWD, DPHE, LGED
Post Office, Water Supply Installations, Drainage Installations, Fire Station, Waste Disposal Site, etc.	Postal Department, Pourashava/Fire Service and Civil Défense Authority,	Government	
Regulator, Embankment	BWDB, LGED	Government	BWDB, LGED

Source: Developed by Consultants

10.3 Landuse Control

Land-use zoning is an evitable element of development plan that regulates the haphazard land use and ensure enough space for proper uses and creates homogeneous land uses. Land use zoning practices have practiced in local planning system since the beginning of the post-World War II in the form of physical planning approach. The aim of land use zoning is outlined below:

- Landuse control or regulation and land use development will ensure sustainable development of the environment and urban growth.
- Enables issuance of land use clearance for development.

10.4 Land Use Regulation for Different Land Use Zones

Summary of permitted & conditional uses of different land use category for the study area is presented in the **Table 10.2**.

Table 10.2: Permitted & conditional uses of different Land use category

		Agriculture Zone	Commercial Zone	Eco Sensitive, Water Retention Zone	Industrial Low Hazard	Main Flood and Sub Flood Zone	Restricted Special	Urban Settlement	Rural Settlement	Water Supply Protection Zone and Waterbody
PERMITTED USE	**Y**									
CONDITIONAL USE	**C**									
PLAN REVIEW REQUIRED	**P**									
NOT PERMITTED	**N**									
LAND USES										
Agriculture. Forestry & Grazing		Y	Y	Y	N	Y	C	C	C	N
Aquaculture & Fisheries		C	N	Y	N	Y	N	N	C	Y
Brick fields		N	Y	N	C	N	N	N	N	N
Cemeteries / Graveyard		N	N	N	N	N	N	Y	Y	N
Cinemas		N	C	N	N	N	N	Y	C	N
Clinics, Medical		N	C	N	N	N	N	Y	Y	N

Clubs	N	C	N	N	N	N	Y	Y	N
Colleges & Universities	C	C	N	N	N	N	Y	Y	N
Farm	Y	C	N	N	N	C	Y	Y	N
Dwellings-Minimal Housing	N	N	N	N	N	N	Y	Y	N
Dwellings-Single/Multi Family	Y	N	N	N	N	N	C		C
Flood Management Structures	Y	Y	Y	Y	Y	Y	Y	Y	Y
Hospitals (with morgue)	N	N	N	N	N	N	Y	Y	N
Hotel /Guest House	N	P	N	N	N	P	Y	Y	N
Hotel International Class	N	P	N	N	N	P	Y	Y	N
Industrial, Orange A	N	C	N	Y	N	N	N	C	N
Industrial, Orange B	N	N	N	Y	N	N	N	C	N
Industrial, Red	N	C	N	Y	N	N	N	N	N
Institutions	N	C	N	N	N	N	Y	Y	N
Major Development	C	C	C	C	N	C	Y	Y	N
Offices, Services	N	N	N	N	N	N	Y	Y	N
Parking Facilities, Commercial	N	Y	N	C	N	N	Y	Y	N
Petrol Stations	N	C	N	N	N	N	Y	Y	N
Public Uses & Structures	N	C	N	N	N	N	Y	Y	N
Recreation Facilities, Outdoor	N	C	C	N	N	C	Y	Y	N
Religious Uses & Structures	N	N	N	N	N	N	Y	Y	N
Repair Shops, Major	N	C	N	N	N	N	Y	Y	N
Repair Shops. Minor	N	C	N	N	N	N	Y	Y	N
Retail Shops & Restaurants	N	C	N	N	N	N	Y	Y	N
Schools, Private	N	C	N	N	N	N	Y	Y	N
Schools, Government, Religious	N	N	N	N	N	N	Y	Y	N
Shopping Centres, Large Market	N	C	N	N	N	N	Y	Y	N
Stadium, Sports	N	P	N	N	N	C	Y	Y	N
Terminals, train, bus	N	C	N	N	N	N	Y	Y	N
Trade Centres	N	C	N	N	N	N	Y	Y	N
Utility Installations	N	C	N	N	N	N	Y	Y	N
Ware Housing & Distribution	N	Y	N	N	N	N	Y	Y	N
Waste Disposal & Processing	N	Y	N	Y	N	Y	Y	Y	N

Source: Developed by Consultants

10.5 Plan Review Committee

Ministry of Housing & Public Works will provide administrative orders regarding the specific land-use change and it will be included during review of the plan on specific interval as stated in the plan. If there is any land-use change required on any plot for Government/Non-Government/Private Intervention/Project/Land Acquisition on General Welfare that is not in consistent to the proposed land-use or it's permitted, conditionally permitted, restricted or special use stated in the Gazetted plan, it must be approved by the Ministry of Housing and Public Works through the following Plan Review Committee:

Plan Review Committee Formation

1. Secretary, Ministry of Housing & Public Works- Chairman
2. Upazila Nirbahi Officer (UNO) of concerned Upazila - Member
3. Mayor of Concerned Pourashava - Member
4. Upazila Engineer of Concerned Upazila - Member
5. Director, UDD - Member
6. Concerned Senior Planner, UDD - Member
7. Deputy Secretary, Ministry of Housing & Public Works, Member - Secretary

ToR:

1. Plan Review Committee will meet on need basis.
2. Any decisions taken by the committee will be Gazetted by the Ministry of Housing & Public Works.
3. Plan Review Committee can Co-opt any member if necessary.

CHAPTER 11

CONCLUSION

The development of urban and rural areas is the inevitable destiny of the human civilization especially in most densely populated country. Major and minor cities including secondary towns in Bangladesh are densely populated. Therefore, development plan for secondary towns along with cities is utmost essential. Final plan of Ramu Upazila will give a guideline to develop the area according to the demand of local people. The plan consists of a written statement of objectives and a map or series of maps. The motto of development plan of a urban or rural areas are to provide planned development, renewal of absolute areas; preserving, improving and extending amenities; provision for better utility services, waste recovery and disposal facilities; zoning of areas for residential, commercial, industrial, agricultural, forestry, flood plains; provision of accommodation for travellers and provision of services for the community etc. However, the five-tier plan devised in this report will be effective tools for planned development of most of the areas in Ramu. The planned township 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. According to the Development Plan, Detail Land Schedule of Proposed Landuse as mentioned in Structure Plan, Urban Area Plan & Proposed Road Network Plan can be found in Land Schedule Book.

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APPENDIX-A
Policies according to Five Tier Plan

National Agriculture Policy 1999

Policy	Five Tier Plan	Key Issues
National Agriculture Policy 1999	**Sub-regional Plan**	• Groundwater irrigation programmes will be coordinated at the national level. • 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.
	Structure Plan	• 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. • Measures will be taken to minimize post-harvest losses by introducing appropriate technologies. • With a view to transforming crop production system into a profitable and sustainable sector, a two-dimensional agricultural research management programme will be followed. • Government, private sector agencies and NGOs involved in agriculture sector will in principle agree to exchange information among them. • Special development programmes will be taken with a view to increasing production of potential crops suitable for the coastal areas and the hill tracts. • ensure a profitable and sustainable agricultural production system and raise the purchasing power by increasing real income of the farmers • 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
	Action Area Plan	• 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. • Pest surveillance and monitoring system will be strengthened. • Salt tolerant crop varieties will be developed and extended along with possible measures to resist salinity. • Irrigation programmes will be undertaken following proper strategy according to the availability of surface and groundwater. • Number of agricultural education institutions will be increased up to the required level. • take supportive programmes for inter-cropping in a field instead of single cropping; • Land zoning programme will be taken up by the Soil Resources Development Institute (SRDI) on a priority basis.

Climate Change Strategy 2009

Policy	Five Tier Plan	Key Issues
Climate Change Strategy 2009	**Sub-regional Plan**	• Model climate change scenarios for Bangladesh by applying global climate change models and methodologies at regional and national levels • Regional and international cooperation is essential in order to build necessary capacity and resilience • Strengthen the government's capacity and that of civil society partners and communities to manage natural disasters • To review energy and technology policies and incentives to promote efficient production, consumption, distribution and use of energy • To build the capacity of the country to meet the challenge of climate change over the next 20-25 years.
	Structure Plan	• Repair and rehabilitate existing infrastructure (e.g., coastal embankments, river embankments and drainage systems, urban drainage systems) and ensure effective operation and maintenance systems • 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 • Strengthen cyclone, storm surge and flood early warning systems to enable more accurate short, medium and long-term forecasts.
	Urban Area Plan	• New urban areas must be built to be climate resilient. • Flood protection and drainage schemes to protect urban areas from rainwater and river flooding during the monsoon season
	Action Area Plan	• .Monitor changes in water quality and quantity available for drinking and forecast future changes due to climate change • flood management schemes to raise the agricultural productivity of many thousands of km2 of low-lying rural areas and to protect them from extremely damaging severe floods • Monitor and research the impacts of climate change on ecosystems and biodiversity • Model the likely hydrological impacts of climate change on the Ganges-Brahmaputra-Meghna system to assess future system discharges and river levels The Climate Change Action Plan is built on six pillars: ➢ Food Security, Social Protection and Health ➢ Comprehensive disaster management ➢ Infrastructure to ensure existing and maintainences. ➢ Research and Knowledge Management ➢ Migration and low carbon development ➢ Capacity Building and institutional strengthening

Disaster Management Act 2012

Policy	Five Tier Plan	Key Issues
Disaster Management Act 2012	**Sub-regional Plan**	• National Disaster Management Council should provide ➢ strategic guidelines concerned to policies and plans about disaster management; ➢ Implementation progress review of government projects and programs taken to face the disaster and rehabilitation • 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.
	Action Area Plan	The following requirements will need assistance: • Unusable or destroyed disaster protection infrasturcture for essential services. • Extensive death or disaster like any unnatural event or any such natural event.

National Plan for Disaster Management 2008-2015

Policy	Five Tier Plan	Key Issues		
		Strategic Goal	**Action Agenda for 2008-2015**	**Supporting Agency/ dept.**
National Plan for Disaster Management 2008-2015	**Sub-regional Plan**	Strengthening Institutional Mechanisms	Identify national, regional, sub-regional and local institutional mechanisms including informal systems and undertake an audit to validate roles and linkages	Ministry of Establishment /Ministry of Law, Justice and Parliamentary Affairs/ Cabinet Division/ Sectoral Ministries/NGOs Affairs Bureau/NGOs / Development Partners
		Strengthening Emergency Response Systems	Use SAARC, RCC and other available frameworks and platforms to establish regional networks for real time data/information sharing	Armed Forces Division; Ministry of Post and Telecommunication; MoHA/ MoFA/ SMRC NGO Affairs Bureau/ NGOs Development Partners
		Developing and Strengthening regional and global Networks	Identify key regional collaborating organizations and develop systems for coordination, and knowledge sharing. Use SAARC,	Relevant Ministries/ Departments,NGO Affairs Bureau, NGOs, Academic Institutions MoFDM/MoD/ / MoWR/ MoP&T/NGO Affairs Bureau/NGOs/ /

National Plan for Disaster Management 2008-2015

Policy	Five Tier Plan	Key Issues
		ASEAN and RCC platforms to establish regional networks for real time data/information sharing as well as sharing of new knowledge and technology. Regional and International Organisations • Developing and strengthening networks of relevant national, regional and international organizations. • To mitigate the impacts of floods, the government has been developing and implementing various measures to better equip the country to deal with floods.
	Structure Plan	• Strengthening disaster management and risk reduction capacity • The plan followed by the strategic plan and operational plan of the different directorate of the ministry. Purpose of the Corporate Plan includes □ Articulate the Ministry's long-term Strategic Focus. □ 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). □ Provide a framework within which to report performance and success in achieving goals and strategies • Different stakeholders in a multi-sectoral approach, including the development sector, should address the strategic goals and priorities for action. STRATEGIC GOALS OF THE PLAN The strategic goals of the plan are drawn from the SAARC Disaster ManagementFramework • Goal 1: Professionalising the Disaster Management System • Goal 2: Mainstreaming Risk Reduction • Goal3: Strengthening Institutional Mechanisms • Goal 4: Empowering at Risk Communities • Goal 5: Expanding Risk Reduction Programming • Goal 6: Strengthening Emergency Response Systems • Goal 7: Developing and Strengthening Network
	Action Area Plan	• to develop a Tsunami early warning system and mass awareness of Tsunami threat at the coastal areas

Population Policy 2004

Policy	Five Tier Plan	Key Issues
Population Policy 2004	**Sub-regional Plan**	• Ministry of Planning/Planning Commission will be responsible for ➢ policy planning, ➢ integration of population variables in the relevant sectoral plans and programs, as well as ➢ co-ordination of adequate resource allocation to concerned ministries. The Population Policy proposals can broadly be divided into four sectors, ➢ human resources development, ➢ decentralization of population activities, ➢ participation of NGOs and private sector in population planning, ➢ building of planned family
	Structure Plan	• Roads and communication systems should be linked with the growth centers; along with health, education housing and other welfare services created in those places
	Rural Area Plan	• 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 • Support the programs for re-excavation of canals and ponds in rural area and to undertake measures against soil and river erosion.
	Action Area Plan	• A detailed time-bound integrated Action Plan shall be prepared to implement this policy with specific measurable indicators to monitor progress • satellite towns and growth centers should be established with adequate facilities to provide alternative destinations to rural migrants.

National policy for safe water supply and sanitation 1998

Policy	Five Tier Plan	Key Issues
National policy for safe water supply and sanitation 1998	**Sub-regional Plan**	The overall works to be done- ➢ Power to formulate international and regional agreement ➢ Formulation of National Disaster Management Policy. ➢ Declaration as distress zone • Drainage system in the cities and municipalities will be integrated with the overall drainage system with the coordination of Ministry of Water Resources. • Department of Environment will be consulted on solid waste management.
	Structure Plan	• A comprehensive strategic plan of operations shall be prepared • Within a specified period legislation will be enacted making use of sanitary latrine compulsory. • Support poverty alleviating strategies for improved quality of life

Population Policy 2004

Policy	Five Tier Plan	Key Issues
	Urban Area Plan	• Ensuring storm-water drainage in urban areas. • Making safe drinking water available to each household in the urban areas. • Adoption of necessary measures in urban areas to prevent contamination of ground and surface water by solid and liquid wastes. • To prevent contamination of ground and surface water by solid and liquid wastes. • The City Corporations or Paurasabhas shall be responsible for solid waste collection, disposal and their management.
	Rural Area Plan	• Ensuring the use of waste for the production of organic fertilizer (compost) in the rural areas. • Ensuring the installation of one sanitary latrine in each household in the rural areas • To improve public health standard through inculcating the habit of proper use of sanitary latrines.
	Action Area Plan	• Paurasabhas and WASAs will take actions to present the wastage of water. • Necessary measures shall also be taken to prevent contamination and damage of tube wells during natural disaster.

The Building Construction Act, 1952

Policy	Five Tier Plan	Key Issues
The Building Construction Act, 1952	**Structure Plan**	In order to power to make Bangladesh National Building Code , the following requirements are: ❖ general building requirements, control and regulation; ❖ fire protection; ❖ building materials; ❖ structural design; ❖ construction practices and safety; ❖ building services; ❖ alteration, addition to and change of use of existing building; ❖ sign and outdoor display;
	Urban Area Plan	This act includes as follows: • Restriction on construction of building and excavation of tank • Restriction on improper use of lands and building • Direction for removal of construction, etc • Power of removal of temporary building • Power of removal of building under construction
	Action Area Plan	• Restriction on cutting of hills • Direction for stopping cutting or razing of hill • Power of seizure and arrest without warrant

National Water policy 1999

Policy	Five Tier Plan	Key Issues
National Water policy 1999	**Sub-regional Plan**	This plan will guide water management Institutions at the national, regional, and local levels in the formulation and implementation of policies and plans for irnproved water management and investment. • The Government will exercise its water allocation power in identified scarcity zones on the basis of specified priorities • 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 • To environmental protection, restoration and enhancement measures consistent with the National Environmental Management Action Plan (NEMAP) and the National Water Management Plan (NWMP) • For sustaining rechargeable shallow groundwater aquifers. The Government will regulate the extraction of water in the identified scarcity zones with full public knowledge.
	Structure Plan	• Water development plans will make adequate provision in control structure for allowing fish migration and breeding. • Brackish aquaculture will be confined to specific zones designated by the Government
	Urban Area Plan	• Preserve natural depressions and water bodies in major urban areas for recharge of underground aquifers and rainwater management • Improve efficiency of resource utilization through conjunctive use of all forms of surface water and groundwater for irrigation and urban water supply.
	Rural Area Plan	• 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.
	Action Area Plan	• The contingency plan will include action to limit the use of groundwater according to priorities. • To assist the process of building public support

Industrial Policy 2005

Policy	Five Tier Plan	Key Issues
Industrial Policy 2005	**Sub-regional Plan**	• Establishment of Special Economic Zone based on the Importance of Industries, • Availability of Inputs and Regional Facilities • To reduce poverty and generate employment opportunities • 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.
	Structure Plan	• Develop planned industrial areas by establishing Special Economic Zones in areas with vast economic potentials, and utilizing local resources • Cluster villages can be set up in especial economic zones for industries • Provide structural and other facilities to establish and develop compact industrial areas.
	Action Area Plan	• Necessary action will be taken to update the relevant legislation and • The establishment of a separate bank under public or private initiative will be considered

Burning Bricks Act 1989

Policy	Five Tier Plan	Key Issues
Burning Bricks Act 1989	**Action Area Plan**	The conditions of the act as follows ❖ Supremacy of the Act. ❖ Licence for burning bricks ❖ Prohibition of burning bricks with firewood ❖ Inspection ❖ Punishment ❖ Filing suit ❖ .Power to make rules

National Urban Sector Policy 2011

Policy	Five Tier Plan	Key Issues
National Urban Sector Policy 2011	**Sub-regional Plan**	• In order to make urban plans flexible and adaptable to changing circumstances, following three levels of planning activity are required ❖ structure planning, ❖ local planning and ❖ action planning • Associations at local and regional levels can form partnerships in local economic development which are then connected to national and international opportunities. • Formulation of Urban, Rural and Regional Planning Act (i.e., Physical Planning Act) • facilitate economic development, employment generation, reduction of inequality and poverty eradication through appropriate regulatory frameworks and infrastructure provisions
	Structure Plan	• Regional development planning at district level would pave the

National Urban Sector Policy 2011

Policy	Five Tier Plan	Key Issues
		way for practical application of bottom-up planning approach as present planning activities in Bangladesh are too much centralized. • 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. • urban planning and management strategies including: ❖ Regulatory frameworks ❖ Appropriate by-laws, standards and norms, ❖ and planning guidelines should be developed and adopted. ❖ Informal and home-based income-generating activities • Specific responsibilities for provision of services in urban areas will be formulated for government agencies and • encouraging community participation in maintaining law and order. • Develop and implement urban management strategies and governance arrangements for enhancing complementary roles of urban and rural areas in sustainable development • local level rural plans can be prepared at the union level while the local level urban plan can be prepared at the Paurashava level
	Urban Area Plan	• Protect hills in urban areas, specially Chittagong, Sylhet, Khagrachari, Cox's Bazar etc.Protectperi-urban areas from unplanned development. • Promote hierarchical structure of educational institutions, such as from the kindergartens to universities, at appropriate locations with catchment areas/zones in urban areas. • 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. • Promote hierarchal distribution of recreational places in all urban areas with planned coverage as per physical planning rules. • Plan for adequate number, size and location of graveyards and provision for burning ghats in all urban areas. • Conserve natural water bodies, forests if they exist in and around urban areas as public recreation open spaces. • Government will enact law and adopt prevention measures through police and special system for crime prevention and personal safety in urban areas.
	Action Area Plan	• 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. • Union plans can be integrated at the upazila level to prepare the upazila plan.

National Fisheries Policy 1998

Policy	Five Tier Plan	Key Issues
National Fisheries Policy 1998	**Sub-regional Plan**	• 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. • 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. • 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 • All water bodies of the country will be identified and their primary use as areas of fish production ensured. • To ensure high quality of exportable fish and shrimp products, laboratory facilities for Quality Control will be expanded and modernised. • Appropriate preventive measures will be taken against dumping of hazardous chemicals and nuclear wastes into the sea.
	Structure Plan	• 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. • Fish culture will be encouraged in all ponds, dighis and other water bodies. • Biodiversity will be maintained in all natural water bodies and in marine environment.
	Action Area Plan	• 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. • 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 • Union based demonstration farms will be established with the assistance of the private sector, for the dissemination of aquaculture technologies. • 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.

Bangladesh National Building Code 1993

Policy	Five Tier Plan	Key Issues
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 • Definitions • Symbols 2. Adminstrative requirements necessary for enforcement of the code • Seismic zoning Design earthquake forces for primary framing systems • Selection of lateral force method • Seismic Dead Load • Design Base Shear • Seismic zone coefficient • Structure Importance coefficients • Structure period • Response Modification coefficient for structural systems • Site coefficient • Vertical distribution of lateral force • Combination of structural systems • Ground motion • Response spectrum Analysis • Seismic laterak forces on components and equipment supported by structures • Horizontal force coefficient • Seismic lateral forces on nonbuilding structures • Horizontal force coefficient • Coefficient for nonbuilding structures • Combination of loads and stress increase for allowable stress design method • Combinations of load for strength design method

Policy	Five Tier Plan	Key Issues
		3. General Planning and architectural requirements of buildings based on classification in accordance with occupancy, fire resistence 4. The requirements for fire prevention and protection measures 5. The standard materials to be used in building construction 6. Requirements governing structural design that ensure safety and serviceability of buildings 7. Ensuring safety of life during construction and minimization of construction hazards 8. Standards of minimum requirements for the various services
		• Earth quake resistant Design • Strengthening of Masonry Buildings fo EarthquakeSeismic • Band Reinforcement • Strengthening of Corner and Junctions • Vertical Reinforcement for Brick an Hollow Block Masonry • provisions for high wind regions • Special Splice Requirements fo Columns • special provision for seismic design • Detailing of Reinforced Concret Structures • Analysis and Proportioning of Structur a Members • Detailing of Reinforced Concret Structures • Structural Walls and Diaphragms • Shear Strength Requirements • Frame Members not Proportioned t Resist Forces Induced by Earthquak Motion • Requirements for Special Momen Frames (SMF)

Seventh Five Year Plan (FY2016 – FY2020)

Policy	Five Tier Plan	Key Issues
Seventh Five Year Plan	**Action Area Plan**	• Seventh plan strategy for enhancing the role of the services sector in economic development includes: i) Modernizing the service sector with emphasis on export of non-factor services; ii) Improve the incentive policies iii) Increasing public investment in key service sector infrastructure; iv) Strengthening the skills base for the service industry; v) Strengthening implementation of prudential regulations to boost service quality increase public safety, improve compliance and ensure accountability of service providers; vi) Strengthen monitoring and enforcement services and Strengthening public institutions 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 • Provide infrastructure and services • Strategies for Reduction of Urban Poverty • Special Zones for the Urban Poor • Ensure availability and sustainable management of water and sanitation for all • Build resilient infrastructure • Take urgent action to combat climate change and its impacts • Conserve and sustainably use the oceans, seas and marine resources for sustainable development

National Land Use Policy 2001

Policy	Five Tier Plan	Key Issues
National Land Use Policy 2001	**Sub-regional Plan**	• Execution of coordinated land conservation projects aimed at prevention of desertification in the northern region. • Take up effective programmes aimed at preventing weathering of land, conservation of land fertility, • development and conservation of land in coastal areas. • identification of zones for land uses by Paurashavas and other places of Upazilas
	Structure Plan	• Formulation, categorization and effective implementation of land use plan in order to ensure planned occupancy and / or use of land. • 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. • 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.
	Urban Area Plan	• 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.
	Action Area Plan	• Prevention of destroying the hilly landscape by earth cutting, excavation and removal of land. • Appropriate measures to be taken against indiscriminate collection of earth and stone from hilly areas and disturbance ecological balance. • Emphasis on watershed management • 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. • use of embankments for controlling flood as roads as far as possible • planned tree plantation on the embankments • 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

Housing Policy 2008 (Draft)

Policy	Five Tier Plan	Key Issues
Housing Policy 2008 (Draft)	Sub-regional Plan	• সরকার গৃহায়ন ...য়া বা...বায়নকালে উদ্ভূত পরিস্থিতিসমূহ পর্যালোচনা করবেএবংএ সংস্থা প্রতিগত বাধাবিপত্তি...লা অপসারণে স...য় ভূমিকা পালন করেব। • ব...বাসীদের বা কোন নিম্নবিত্ত বসিত স্থানান্তর করার সিদ্ধান্ত অপিরহায স্থিবেবিচত হেল প্রয়োজনীয় সামিক আথসামাজক তথ্যাবলীর সমন্বয় বিশেষ স্থারা ণীত একট উপযোগিতা সমীক্ষা জাতীয়গৃহায়নকতৃপক্ষের মতামতের জন দাখিল করা হেব। • ব... এলাকা যেখানে আবাসিক এলাকার পিরেবশ ও অবকাঠামোর উন্নয়ন, গুরুত্বেসবা সুবিধার প্রমোয়ন এবং যখন যেখানে সম্ভ
	Structure Plan	• একট আধুনিক আবাসিক ভূমি তথ প্রতি তৈরী করা হবে।জমির সরবরাহ বৃ..., যেথাপযু ও সময়াপযাগী ব্যবহার নিন...তকরণ এবংফতকাবাজী রোধ করার লে... জিম ফেলে রাখাকে অলাভজনক ও নিন্দসাহিত করার ব্যবস্থা নেয়া হেব। • গৃহায়নের জন ভূমি ও অবকাঠামো উন্নয়ন এবং সাবিক
	Urban Area Plan	• দেশের সকল প্রী ও শহরাঞ্চলের জন সমভাবে প্রযোজ এই নীতির আওতায় গৃহনিমাণে সরকার মাধ্যে সহয়তাকারীর ভূমিকা নিবে। • নগর ও গ্রামীন এলাকায় অব্যবহৃত খাস ওপিততজিম ও জেগে উঠা চর নিয়ে আলাদা 'ভূমিবণ্টন' স... কের তালিক সমৃ করা হবে। • উপিবেশের আবাসনের জন ভূমি ও ইমারত এবং শিল্প-বাণিজ জাতীয় অনাবাসিক ভূমি মুনাফা মূলে বরা কের মুনাফা দিয়ে নিম্নবিত্তের সুবিধাদিত ভত্তিক দেয়া হেব। • একট সমিত আধুনিক উন্নয়ন পিরকনার আওতায় ছোট ও মাঝারি শহেরর সংগে সংল গ্রামাঞ্চল ও হাটবাজারের সংযোগ গেড়ে তোলে, এলাকাত অথৈ নতিক ...য়াকা ও কমস্থ ংস্থানের সুযোগ বৃ... করা হবে ও সামাজক ও সাংস্কৃতিকভাবে আকষণীয় করে গড়ে তোলা হবে। • দেশের সব কয়ট নগর এলাকার মহাপিরকনা ণয়ন সমা কেরতদনুযায়ী অবকাঠামো নিমাণ ও ব্যবহার নিয়ন্ত্রত করা হবে। • নগর অঞ্চল অনুমোদন বিহীন এবং ব্য... মালিকানাধীন বী গজেয় ওঠা রোধ করার উদ্দেশ বিভ বিধমালা কেঠারভাবে প্রয়োগ করা হেব।
	Rural Area Plan	• গ্রামাঞ্চল অধিক হারের কমসংস্থান, রসদের ঘাটি ও গৃহায়ন কের অভিবাসনজিনত গৃহায়ন চাহিদা হ্রাসকরণ। • পল্লীর জনগেণর জন উপযু নিরমান উপকরণ সহজলভ করা সাথে পরিবেশ সংরণ, অবাধব নিধন, ইটভাটার স্থালানী, করার প্রয়োজনীয় ব্যবস্থা নেয়া হেব। **গ্রামীণগৃহায়নঃ** • কৃষি জমির উপর বাড়ীঘর নিমাণের বণতা নিন্দসাহিত করা পরিকিত নিবিড় আবাসন স্থর উৎসাহ ও নিদেশনা গৃহায়নের জন খাসজমির প্রাপতা সাপেক্ষে অনুপ কারজম বিবাধিরত করা হেব। গ্রামীণ জনগণের গৃহনিমাণ , মেরামত, পরিবতন , পরিবধন ও ছোটখাটো প্রয়োজন বিনাসূদে বা সহজশেত ছোট ছোট ঋণের ব্যবস্থা

National Forest Policy 1994

Policy	Five Tier Plan	Key Issues
National Forest Policy 1994 জাতীয়বননীি ত, ১৯৯৪ (সংেশাধিত)	**Sub-regional Plan**	• To fulfill national responsibilities and commitments by implementing various eforts and government ratified agreements relating to global warming, desertification and the control of trade and commerce of wild birds and animals; • To encourage efective use and utilization of forest products at various stages of processing ;
	Structure Plan	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.
	Rural Area Plan	• To strengthen agriculture by extending assistance to those sectors related with forest development, especially by conserving land and water resources; • To encourage efective use and utilization of forest products at various stages of processing ; • To provide for and implement aforestation programmes on both public and private lands.
	Action Area Plan	• To prevent illegal occupation of forest lands, illegal tree felling and hunting of wild animals through the promotion of participation of local people

National Environment Policy 1992

Policy	Five Tier Plan	Key Issues
National Environment Policy 1992	**Sub-regional Plan**	Key elements of the policy statement are: • 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; • Ensuring proper Environment Impact Assessment prior to undertaking of industrial and other development projects; and • Ensuring sustainable use of natural resources.

National Tourism Policy 1992

Policy	Five Tier Plan	Key Issues
National Tourism Policy 1992	**Sub-regional Plan**	• 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. • 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.
	Action Area Plan	Its main objectives are: • To create interest in tourism among the people. • To preserve, protect, develop and maintain tourism resources. • To take steps for poverty-alleviation through creating employment. • To build a positive image of the country abroad. • To open up a recognized sector for private capital investment. • To arrange entertainment and recreation. • To strengthen national solidarity and integrity

Private Residential Land Development Rule 2004

Policy	Five Tier Plan	Key Issues
Private Residential Land Development Rule 2004	**Urban Area Plan**	• ক বা বায়নের সময় পাহাড়ের ঢালু এলাকায় যাহাতে কোন ধরনের জলাবদ্ধতা সৃষ্টি বা পরিবেশের ভারসাম্য না হয় উহা নিশ্চিতকরন • বিভিন্ন ইউটিলিটি সার্ভিস এর রক্ষণাবেক্ষণের জন্য সংরক্ষিত জায়গা সংরক্ষণ সংরক্ষণ নিয়ম-নীতি অনুসরেণ হওয়া উচিত যা সেই সকল বরাদ্দ ও হওয়া উচিত যা সেই সকল বরাদ্দ • ক এলাকার উন্নয়নের সময় পানি এবং বিদ্যুৎ সরবরাহ সুবিধাবাবস্থা না থাকলে উদ্যোক্তার নিজস্ব খরচে অস্থায়ী কালীন পানি এবং বসবাস্থাকরণ • নগর পরিকল্পনার দৃষ্টিতে কোন হইতে ক এলাকার প্রতিটি বাড়ীর অবস্থান, ক, সেক্টর, পাড়া বা বাড়ীর অবস্থান (Block/Sector/Zone/Neighbourhood) এ নিবন্ধিত জনসংখ্যার বিবেচনায় বিভাজিত ভূমি ব্যবহার সিডিউল তৈরি করয়েল-অউত তৈরির প্রদর্শন করিতে হইবে। ➢ Sectoral/ Block/Zonal/ Naighbourhood Plan including detailed sub–division of lands; ➢ Road Network Plan; ➢ Drainage Plan; ➢ Utility Services Plan of Water Supply, Sewerage System(Treatment & Final Disposal),Solid Waste Collectoin & Disposal, Gas Supply, Electricity Supply,Telephone Facilities,etc. ➢ Traffic Circulation Plan; **Space Standards for Urban Community Facilities in acres by Population size** **Community Facilities** — **Facility per 1000 Population** **EDUCATION** Nursery — 0.08 Primary School — 0.08 Secondary School — 0.10 College* — 0.08 **HEALTH** Small Clinic* — 0.04 Hospital* — 0.04

Private Residential Land Development Rule 2004

Policy	Five Tier Plan	Key Issues
		Play-Ground/ Play-field 0.08 Park 0.12 **COMMERCIAL** Corner Shop/ Market/Kutcha Bazar* 0.04 Residential Roads** 0.34 Total Area for community Facilities (minimun) 1.00
	Action Area Plan	• ক এলাকা ঢাকা সিটিকেপোরেশন ও ঢাকা ওয়াসার আওতার বাহিরে হইলে নিজ উদ্যোগে নিজস্ব খরচে Waste Water & Sewerage Composting Plant ইত্যাদি নির্মাণে পরিবেশ সংরক্ষণ; • The Building Construction Act,1952(E.B. Act // of 1953) এবং প্রচলিত ইমারত বিধিমালা অনুসারে অনুমোদন গ্রহণ করিয়া সরকার কর্তৃক অনুমোদিত অনুযায়ী কাজের বাস্তবায়ন এবং ইমারত নির্মাণকরণ; • এলাকায় বসতবাড়ী আছে এমন সকল প্রতিষ্ঠানকে পুনর্বাসন করিতে হইবে। • এলাকার আয়তন অজন সংখ্যা নির্ধারন সাপেক্ষে: ➢ বেসরকারী আবাসিক এলাকা হেণর জন্য ঢাকা সিটি কেপোরেশন অভ্যন্তরের নূন্যতম ৫ (পাঁচ) একর এবং সিটিকেপোরেশন বা পৌর এলাকা নূন্যতম ১০(দশ) একর জিমর জন্য প্রযোজন হইবে। ➢ বেসরকারী আবাসিক এলাকে প্রতি একরের সর্বোচ্চ Density) হইবে ৩৫০জন। • এলাকার ৩০(ত্রিশ) ভাগ জিমর সম্পূর্ণ ভাবে অবিক্রয়যোগ্য বিলয়া গণ্য এবংএই জিম এলাকার বসবাসকারীদের প্রয়োজনীয় নাগরিক সুযোগ-প্রদানসহ বিভিন্ন ইউটিলিটি সার্ভিসের সেসর জন্য সংরিক্ষত থাকেব • বেসরকারী আবাসিক এলাকার মৌজা মানচিত্রের উপর আধুনিক জরীপ (GPS bases Survey) করিয়া existing topographical Survey Map প্রস্তুতকরিতেহইবে • এলাকার ৩০(ত্রিশ) ভাগ জিম নাগরিকসুবিধাদি এবং বিবিন্ন সার্ভিসের সর জন্য সংরক্ষিত থাকেব • সড়ক যোগাযোগ ব্যবস্থার বিন্যাস, এলাকার আয়তন, জনসংখ্যা এবং পাশের Traffic Circulation বিবেচনায় রাখিতে হইবে, কেন্দ্রের প্রধান (Main/Primary Road) প্রশস্তা (Right of Way or ROW) নূন্যতম ৬০ ফুট, মাধ্যমিক সড়কের (Secondary Road) প্রশস্তা (ROW) নূন্যতম ৪০ ফুট অভ্যন্তরীণ বা সংযোগ সড়কের (Internal/Access/Residential Roads) (ROW) নূন্যতম ২৫ ফুট হইতে হইবে • এলাকায় নিম্নপিত জনসংখ্যার ভিত্তিতে প্রয়োজনীয় নির্ধারণ, হাইস্কুল কলেরসংখ্যানির্ধারণ, প্রয়োজনীয়কলেজ এবং পার্কের ব্যবস্থা করিতে হইবে।

Building Construction Rules 1996

Policy	Five Tier Plan	Key Issues
	Urban Area Plan	**Density Control**- 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. **Payment of Betterment fee-** 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. **Control of private housing estates** 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.
	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.

Coastal Zone Policy 2005

Policy	Five Tier Plan	Key Issues
	Structure plan	• Coastal Development Strategy (CDS) shall be developed and adopted in line with national strategy documents as a commonly agreed framework document; • 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 • Conservation and enhancement of critical ecosystems
	Urban Area Plan	• 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
	Action Area Plan	• Khas land will be distributed among the landless and a more transparent process of land settlement will be ensured; • An effective program for land reclamation will be developed • A Coastal Development Strategy (CDS) shall be developed and adopted in line with national strategy documents as a commonly agreed framework document

Climate Change Policies

Policy	Five Tier Plan	Key Issues
Climate Change Policies	Structure plan	• According to the Intergovernmental Panel on Climate Change (IPCC), to keep global warming below 2 °C, emissions of carbon dioxide (CO2) 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. • 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). • 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. 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. • 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. • 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.

The United Nations Framework Convention on Climate Change

Policy	Five Tier Plan	Key Issues
The United Nations Framework Convention on Climate Change	Structure plan	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 ºC or 1.5 ºC, 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. 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. 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. 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. 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. 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.

The Sendai Framework for Disaster Risk Reduction 2015-2030

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

Priorities of the 2017 G20 Summit (Agenda3)

Policy	Five Tier Plan	Key Issues
Quito Implementation Plan for the New Urban Agenda	Structure plan	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. **1. The Transformative Commitments for Sustainable Urban Development** The transformative commitments for sustainable urban development are grounded in social, economic and environmental dimensions, which are seen as integrated and indivisible. ***a. Sustainable Urban Development for Social Inclusion and Ending Poverty*** Land tenure, the value of public space, and the sustainable leverage of natural and cultural heritage are among the issues that this section elaborates. ***b. Sustainable and Inclusive Urban Prosperity and Opportunities for All*** 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. ***c. Environmentally Sustainable and Resilient Urban Development*** Climate change, unsustainable consumption, slum upgrading, energy efficiency and the social and ecological function of land are some of the topics of concern. **2. Effective Implementation** 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.

Policy	Five Tier Plan	Key Issues
		a. Building the Urban Governance Structure: Establishing a Supportive Framework 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. ***b. Planning and Managing Urban Spatial Development*** 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. ***c. Means of Implementation*** 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. **3. Follow-up and Review** 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.

Sustainable Development Goals

Policy	Five Tier Plan	Key Issues
Sustainable Development Goals	Sub Regional PLan	▪ 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
	Structure plan	▪ Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation ▪ Goal 12. Ensure sustainable consumption and production patterns ▪ 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 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development
	Urban Area Plan	▪ Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable
	Rural Area Plan	▪ Goal 10. Reduce inequality within and among countries ▪ 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
	Action Area Plan	▪ Goal 13. Take urgent action to combat climate change and its impacts

APPENDIX-B
Policies according to Setors

Agriculture Sector

Policy	Key Issues
National Agriculture Policy 1999	• To grow more profitable crops as an alternative to only rice-rice cropping pattern. • reduce excessive dependence on any single crop • Salt tolerant crop varieties will be developed • Special development programmes will be taken with a view to increasing production of potential crops suitable for the coastal areas and the hill tracts. • Maximum utilization of land will be ensured through promotion of inter-cropping with the main crops • preserve existing bio-diversity of different crops • encourage farmers in providing supplementary irrigation during drought with a view to increasing cropping intensity and yield • take supportive programmes for inter-cropping in a field instead of single cropping • Modern cultivation practices will be followed
Climate Change Strategy 2009	• Develop climate change resilient cropping systems (e.g. agricultural research to develop crop varieties, which are tolerant of flooding, drought and salinity • 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 • agricultural research programmes to develop saline, drought and flood-adapted high yielding varieties of rice and other crops
National Plan for Disaster Management 2008-2015	• Develop and establishpolicy and planningframeworks to incorporate allhazard risk reductionperspectives into Agriculture, livestock with the support agency Ministry of Agriculture, • Agriculture cannot be practiced without irrigation so irrigation is must.
Population Policy 2004	• discourage housing in the villages and cities by destroying agricultural lands;
Safe Water Supply and Sanitation 1998	• To ensure the use of waste for the production of organic fertilizer (compost) in the rural areas.
National Water policy 1999	• Strengthen crop diversification programmes • Encourage and promote continued development of minor Irrigation
Industrial Policy 2005	• To establish agro-based industries as well as to raise agricultural production. • Prioritize the expansion and development of agro-based and agricultural processing industries • Take steps to preserve and market agro-based goods hygienically by processing in frozen, pasteurized, canned or dry form
National Urban Sector Policy 2011	• Protect productive agricultural lands by limiting the intrusion of non-agricultural uses
Seventh Five Year Plan	• develop technologies of crops • develop the capacity of agriculture to effectively respond to market signals • New technology generation for vulnerable areas e.g. stress tolerant varieties and management practices, quality improvement of major crop varieties • Promote adoption of modern agricultural practices in dry land, wetland, hills.
National Environment Policy 1992	• Ensuring proper Environment Impact Assessment prior to undertaking of industrial and other development projects; and • Ensuring sustainable use of natural resources.

PRA, Socio-Economic and Formal-Informal Economic Sector

Policy	Key Issues
National Agriculture Policy 1999	• Land zoning programme will be taken up by the Soil Resources Development Institute (SRDI) on a priority basis. • 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. • 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.
Climate Change Strategy 2009	• Implement drinking water and sanitation programmes in areas at risk from climate change (e.g., coastal areas, flood-and drought-prone areas) • to ensure food security, social protection and health for the poorest and most vulnerable in society, including women and children • 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 • comprehensive disaster management projects, involving community-based programmes and early warning systems for floods and cyclones
Disaster Management Act 2012	• National Disaster Management Council should provide necessary guidelines to all concern about law, policy and plan implementation on disaster management • 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. • 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
National Plan for Disaster Management 2008-2015	• Restoration of emergency services, such as water supply, gas supply, power, telecommunication, road links • To ensure socioeconomic development of the country through food security, relief and disaster management programmes. **Health** • Improve maternal health Combat HIV/AIDS, malaria and other diseases • Reduce child mortality • Maintaining and strengthening the National Food Security System **Education** • Achieve universal primary education • Promote gender equality and empower women **Environment** • Ensure environmental sustainability • launch national strategies for addressing greenhouse gas emissions and adapting to expected impacts, including the provision of financial and technological support to developing countriesEconomy • Develop a global partnership for developmentEducation • to take measures for prevention and mitigation of disasters by government agencies, NGOs, CBOs and the private sector within the district, • capacity building and preparedness measures to be taken by government agencies, NGOs, CBOs and the private sector • Make provision in the national budget for funding of activities related to Disaster Reduction • 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.

PRA, Socio-Economic and Formal-Informal Economic Sector

Policy	Key Issues
	• 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 • Non-structural mitigation measures such as community disaster preparedness, training advocacy and public awareness must be given a high priority
Population Policy 2004	• **Health** • Improve maternal health with emphasis on reduction of maternal mortality • Reduce RTIs/STIs and prevent spread of HIV/AIDS • Establishment of Union level Health and Family Welfare Centers, wherever needed and appointment of a doctor in these centers • Ensure and support gender equity and empower women • provide food and social security and shelter for the disadvantaged including the elderly, destitute, physically and mentally retarded persons; • Ensure availability, access to safe and arsenic free water. • 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 • Environment • Support measures for environmental sustainability with emphasis on access to safe drinking water.; • **Education** • Provide formal and non-formal education to both in-school and out-of-school adolescent boys and girls; • Provide adolescent RH and life skills education as well as counseling for parents, teachers and service providers • Impart education and skill training to the young men and women to become competent and skillful **Social Consciousness** • Ensure Early Childhood Development (ECD) program • Eliminate all forms of violence and sexual abuse, including trafficking of women and children; • Promote male participation in household responsibilities; • Create equal opportunity for both boys and girls in education, nutrition and health services. • Ensuring rural employment opportunities in agriculture and agro-based industries. • **Ministry of Health and Family Welfare** shall be the lead Ministry for overseeing family planning, maternal and child health and reproductive health care services. • **Ministry of Primary and Mass Education and Ministry of Education** may ensure improved quality and completion of primary and secondary education levels. • **Ministry of Agriculture** may make useful efforts to motivatefarm population on small family norm through its extension workers. • **Ministry of Information** will be encouraged • **Ministry of Local Government, Rural Development and Co-operatives** strengthen institutional capacity and resources of the women's development related institutions. • 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; • 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

PRA, Socio-Economic and Formal-Informal Economic Sector

Policy	Key Issues
Safe Water Supply and Sanitation 1998	❖ **Health** • To ensure that all people have access to safe water and sanitation services at an affordable cost. • Removal of arsenic from drinking water and supply of arsenic free water from alternate sources in arsenic affected areas. ❖ **Social Consequences** • Bringing about behavioural changes regarding use of water and sanitation; • 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. ❖ **Environment Consequences** • To preserve environmental quality and to mitigate arsenic contamination research and field surveys are being carried out. • Use of organic waste material for compost and bio-gas will be promoted • The City Corporations or Paurasabhas shall be responsible for solid waste collection, disposal and their management • 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. • Private sector and NGO investment will be encouraged in manufacturing, sale and distribution of different types of tube wells, sanitary latrines etc • During natural disaster WASAs and relevant agencies shall take appropriate measures for providing safe drinking water • Building capacity in local governments and communities to deal more effectively with problems relating to water supply and sanitation; • Water Supply, Sewerage Authorities (WASAs) shall be responsible for sustainable water supply in the metropolitan areas where WASAs exist. • Drainage system in the cities and municipalities will be integrated with the overall drainage system with the coordination of Ministry of Water Resources. 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 & Children Affairs and DPHE, NGOs, CBOs, local government bodies and other related agencies
National Water policy 1999	❖ **Social Consequences** • Rcreational activities at or around water bodies will be allowed ❖ **Environment Consequences** • Natural water bodies such as heels, haors, and baors will be preserved for maintaining the aquatic environment and facilitating drainage • Mandate local governments to create awareness among the people in checking water pollution and wastage • Mandate relevant public water and sewerage institutions to provide necessary drainage and sanitation, including treatment of domestic wastewater and sewage • 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 • Alleviation of poverty through creation of job opportunities and finding options for diversifiedlivelihoods would be the major principles of all economic activities. • Economic opportunitiesbased on local resources will be explored to enhance income of the people;

PRA, Socio-Economic and Formal-Informal Economic Sector

Policy	Key Issues
Industrial Policy 2005	• Social Consequences • Provide special facilities as well as infrastructural support to Cottage and Small and Medium Enterprises (SME) • establish more backward linkage industries in order to accelerate the export of high value-added garments • 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 • Provide financial, technical, technological and infrastructural facilities in order to inspire setting up and developing agro-based industries. • 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: • (a) Electric and gas connections; • (b) Water and sewerage connections; • (c) Telecommunications facilities; • (d) Customs clearance of imported machineries, spare parts and raw materials; • (e) Clearance from environmental agencies; and • (f) Other necessary facilities and services for speedy setting up and running of industries
National Urban Sector Policy 2011	❖ **Social Consequences** • assure health, safety and security of all citizens through multifaceted initiatives to reduce crime and violence; • 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 • Strengthen local government bodies by increasing efficiency through adequate and trained manpower. • Each Paurashava should have a Paurashava Development Committee and there should be a Ward Committee in each ward of a City Corporation.
Seventh Five Year Plan	❖ **Education** ➢ The religious education at primary level will be well organized & systemic. Islamic ideals, values culture will be disseminated and flourished among the students at primary schools. ➢ Achieving 100 percent net enrolment rate for primary and secondary education ❖ **Health** ➢ Creating Medicare facilities by creating a permanent infrastructural facilities for each Centre. ➢ Providing free Medicare service will be given to the poor and disadvantaged people. ➢ Safe drinking water for all and Proportion of urban population with access to sanitary latrines to be increased to 100 percent. ❖ **Culture** ➢ Preserve and present national history, culture and heritage ➢ Preserve and promote language arts and culture of small ethnic group communities within the framework of national unity; ➢ **Access to education, language, and culture**: **Recreation** ➢ 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. ➢ Regional botanical garden will also be setup for uniform biodiversity conservation in the country.

PRA, Socio-Economic and Formal-Informal Economic Sector

Policy	Key Issues
	Water and Sanitation · Safe drinking water for all · Proportion of urban population with access to sanitary latrines to be increased to 100 percent · Proportion of rural population with access to sanitary latrines to be raised to 90 percent
National Environment Policy 1992	Key elements of the policy statement are: 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;
National Tourism Policy 1992	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: • To create interest in tourism among the people. • To preserve, protect, develop and maintain tourism resources. • To take steps for poverty-alleviation through creating employment. • To build a positive image of the country abroad. • To open up a recognized sector for private capital investment. • To arrange entertainment and recreation
Housing Policy 2008 (Draft)	• ভাসমান ও সাময়িক ব্যবহারকারীদের জন্য পানীয়জল ও পয়ঃনিষ্কাসেনর সুবিধা সম্বলিত রাস্তাকালীন আশ্রয় এবং গন-শৌচাগার নির্মাণ করা হবে। • সরকারী,আধা-সরকারী এবং বেসরকারী সকল স্কুল আবাসন স্কুল পানি, পয়ঃ, গ্যাস, বজ্যনিষ্কাশন, ব্রেনেজ ইত্যাদি সেবামূলক কাযক্রেমর রাখা হেব। • পরিবারহীন বৃদ্ধেদর িহায়েন শহর ও গ্রামাঞ্চেল প্রেয়াজনীয় নির্মাণ করাহবে। • পল্লী অঞ্চেলর আবাসন ব্যবস্থার লক্ষ্যে পরিকল্পনা প্রণয়ন, অথের করণ, বাস্তবায়ন, তদারক ও পযবেক্ষণ সংস্থা সাবিক দায়িত্ব পযায়ের সংগঠন গ্রেলাকে জাতীয় গৃহায়ন কতৃপেক্ষর সহায়তায় শক্তিশালী করা উপযুক্ত আথিমক কাঠামো, জনবল ও সম্পদ সরবরাহ করা হেব। • লাগসই ও সহজ বেবাধ্য প্রযুক্তি, পিরেবশ বান্ধব সামগ্রী উৎপাদন, বাজারজাতকরণ ব্যবহার, গ্রাহক সম্ভত গৃহায়ন ও পিরেবশ উন্নয়ন ইত্যাদি বিষেয় এনজিও, বিভিন্ন বেসরকারী সংস্থা, সেবা সংস্থা সমূহের কমচ্চারী ও মাঠকম সামথ্য বৃদ্ধির জন্য প্রয়োজনীয় তথ্য পুস্তিকা, প্রচার এবং কমশ্ হেব। • সকল গ্রাম আবাসিক ভূমি ও আবাদী ভূমি চিহ্নিত করে েসঅনুসারে গেড় তোলা হেব। এেক্ষে বেসরকারী উদ্যোক্তাদের অংশ গ্রহণেক হেব।
Forest Policy 1994	• Bufer zones attached to protected areas may be allocated for tree farming and agroforestry on a long term lease basis • 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 • To enrich biodiversity in the existing degraded forests by conserving the remaining natural habitats of birds and animals; • To strengthen agriculture by extending assistance to those sectors related with forest development, especially by conserving land and water resources

Geology Sector

Policy	Key Issues
Climate Change Strategy 2009	• Afforestation and reforestation can protect land from soil erosion and landslides, particularly in hilly areas.
National Plan for Disaster Management 2008-2015	• 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 • Prepare an Institutional Resource Map of Coastal Zone by Disaster Management Bureau and CDMP
Private Residential Land Development Rule 2004	• ভূত◯ অিধদ◯র হইেত ◯ক◯ এলাকার বন◯ানি ও ◯নঅ পানি নি◯ানশ সুিবধা ◯দান সং◯া◯ ছাড়প◯

Transport Sector

Policy	Key Issues
Population Policy 2004	• Roads and communication systems should be linked with the growth centers • disallow air polluting vehicles Reduce vehicular pollution by implementing appropriate laws
Coastal Zone Policy	• development of communication network with islands for passengers and freight traffic; • An integrated network of communication including highways, major roads, rural roads, railways and waterways will be developed • development of two existing seaports and installation of a communication network between main river ports, ghat and inland container ports and depots; • Initiatives of establishing deep sea port; • development of communication network with islands for passengers and freight traffic; • ensuring shipping security for passengers and freight;

Hydrology Sector

Policy	Key Issues
Population Policy 2004	• Support the programs for re-excavation of canals and ponds in rural area and to undertake measures against soil and river erosion
National Water policy 1999	• replacement of open drains and construction of sewers • Dredging and other suitable measures would be undertaken, • Develop and disseminate appropriate technologies for conjunctive use of rainwater ground water and surface water • Develop and promote water management techniques to prevent wastage and generate efficiency of water and energy use • Investigate thoroughly important flood control and management issues, such as the efficacy of coastal polders, for guiding future policy on structural Interventions • Haors that naturally dry up during the winter will he developed for dry season agriculture
National Urban Sector Policy 2011	• protect, preserve and enhance the urban environment, particularly water bodies; • Conserve natural water bodies.
National Fisheries Policy 1998	• Proper arrangement will be initiated to develop water control and drainage system for sustainable fish production in the baor. • 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.

Hydrology Sector	
Policy	**Key Issues**
	• To ensure high quality of exportable fish and shrimp products, laboratory facilities for Quality Control will be expanded and modernised.
Private Residential Land Development Rule 2004	• ক এলাকায় ভূমির উচ্চতা বন্যার পানি-প্রবাহ সীমার উপর (Highest Flood Level) এর উপের রাখার জন্য প্রয়োজনীয় ব্যবস্থা গ্রহণ; • কক এলাকায় এলাকায় কোন খাল, বিল, নদী, নালা বা অন্যকোন জলাশয় থাকিলে উহার পানি প্রবাহে বিঘ্ন সৃষ্টি নাকিরয়া প্রবাহিত পানি যাহাতে কেন্দ্রের শেষ প্রান্ত হইয়া কোনমত খাল, বিল, নদী, নালা বা জলাধার পথে প্রবাহিত হইতে পারে, উহা নিশ্চিত করণ;

Physical, Landuse and Topographic Features Sector

Policy	Key Issues
National Agriculture Policy 1999	• Maximum utilization of land will be ensured through promotion of inter-cropping with the main crops. • Acquisition of land in excess of requirement for non-agricultural purposes will be discouraged.
Climate Change Strategy 2009	• Flood management embankments, coastal polders and cyclone shelters have been built
National Plan for Disaster Management 2008-2015	• restoration of damaged public infrastructure, resumption of educational institutions, • restoration of livelihood, rehabilitation of affected people, especially the disabled, and elderly women and children • Map out critical vulnerable infrastructure and communities within the high risk zones
Building Construction Rules 1996	• 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. • 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. • 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. • Control of private housing estates • Control of informal Development • Density Control- At present, Paurashava follows Building Construction Rule, 1952 (amended in 1996) which restricts the height of Building in respect of adjacent road. • Taxation • Payment of Betterment fee
National Water policy 1999	• replacement of open drains and • construction of sewers to the interest of public health
Industrial Policy 2005	• By creating special economic zones, cluster villages can be established quickly for running industrial enterprises. • Provide structural and other facilities to establish and develop compact industrial areas. • Develop planned industrial areas by establishing Special Economic Zones in areas with vast economic potentials, and utilizing local resources.
Burning Bricks Act 1989	• No person may burn bricks without a licence. • No person may use firewood for burning bricks. • No suit shall be filed in any court against offences under this Act without the written accusation of the chairman of the Upazila Parishad

<table>
<tr><td>National Urban Sector Policy 2011</td><td>• Allocating khas land/acquired land for housing the poor
• Protect hills in urban areas, specially Chittagong, Sylhet, Khagrachari, Cox's Bazar etc.;
• Protect peri-urban areas from unplanned development.
• Manage floodplains by controlling uses of land within hydrologically defined areas subject to floods of a designated frequency;
• Promote hierarchical structure of educational institutions, such as from the kindergartens to universities, at appropriate locations with catchment areas/zones in urban areas.
• Preserve open space by designating land areas for a variety of purposes such as recreation, future use, green belt etc</td></tr>
<tr><td>Coastal Zone Policy 2005</td><td>• Enforcement of existing legal coverage will be facilitated with adequate logistics and support, to relevant agencies.</td></tr>
<tr><td>National Fisheries Policy 1998</td><td>• To increase production and to conserve biodiversity, part or the whole water bodies/jalmohals shall be converted into fish sanctuaries
• Emphasis will be given for extension of rice-cum-fish culture.
• Biodiversity will be maintained in all natural water bodies and in marine environment.
• Chemicals harmful to the environment will not be used in fish and shrimp culture</td></tr>
<tr><td>Seventh Five Year Plan</td><td>• Coastal pollution & marine resource management
• Crop Zoning and Land Use Planning:</td></tr>
<tr><td>Private Residential Land Development Rule 2004</td><td>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
<table>
<tr><td>Distance between Front side road and space of the building</td><td>Building’s Highest Height (meter)</td></tr>
<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>
</table>
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.
<table>
<tr><td>Width of the Road of Adjacent Site</td><td>Building’s Highest Height (meter)</td></tr>
<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>
<tr><td colspan="2">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.</td></tr>
</table></td></tr>
<tr><td>The Building Construction Act, 1952</td><td>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.
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.</td></tr>
</table>

APPENDIX-C
Existing and Proposed Facilities of Ramu Unions

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	• Transportation Problem • Lack of Educational Institutions • Lack of Medical Facilities
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**	**Proided 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)
Health	Health centre/Maternity clinic	5000	1	13	13	Ward-04 (1);Ward-03 (1);Ward-02 (1);Ward-06 (1);Ward-09 (1)
Community Facilities	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)

Khuniapalong Union-Proposed						
Facilities	**Category**	**Population**	**Standard Area per acre**	**No. of Facilities**	**Proided Area (acre)**	**Location Ward (No.of Facilities)**
	Post office	20000	0.5	3	1.5	Ward-02 (1),Ward-08 (1)
Utilities	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)
Commerce and Shopping	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)
Industry	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 (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 transporta-tion 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	

Chakmarkul 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-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	

Chakmarkul Union-Proposed						
Facilities	**Category**	**Population**	**Standard Area per acre**	**No. of Facilities**	**Provided Area (acre)**	**Location Ward (No. of Facilities)**
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 (1);Ward-06 (1);Ward-07 (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-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	• Bad transportation condition • Lack of Embankment
	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-08(1)	12.60	0.12	0.18	
	Temple	3	1	Ward-02(2), Ward-03(1)	5.83	0.06		

Dakshin Mithachari Union-Existing								
Facilities	**Type**	**No of Facilities**	**From PRA**	**Location (No of Facilities)**	**Area (Acre)**	**%**	**Total %**	**Major Findings From PRA**
Graveyard		8		Ward-01(4), Ward-02(1), Ward-05(1), Ward-07(2)	56.56	0.56	0.15	
Health Facilities	Communit y 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**	**Provided 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)
	Neighborhood park/Park	10000	1	5	5	Ward-01 (1); Ward-02 (1); Ward-04 (1); Ward-07 (1)
Health	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)
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)

Dakshin Mithachhari Union-Proposed						
Facilities	**Category**	**Population**	**Standard Area per acre**	**No. of Facilities**	**Provided Area (acre)**	**Location Ward (No. of Facilities)**
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	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)
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	• Transportation Problem • Flood
	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),	6.80	0.28		

Fatekharkul Union-Existing								
Facilities	**Type**	**No of Facilities**	**From PRA**	**Location (No of Facilities)**	**Area (Acre)**	**%**	**Total %**	**Major Findings From PRA**
				ward-09(1),ward-08(1)				
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-08(3),ward-09(5)	6.07	0.25	0.70	
	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**	**Proided Area (acre)**	**Location Ward (No.of Facilities)**
Education	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)
Open Space	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)
Health	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)
Community Facilities	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)
Utilities	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)

Fatekharkul Union-Proposed						
Facilities	**Category**	**Population**	**Standard Area per acre**	**No. of Facilities**	**Proided Area (acre)**	**Location Ward (No.of Facilities)**
Commerce and Shopping	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)
Industry	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)
Transportation	Bus terminal	20000	1	3	3	Ward-04 (1)
	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	• No community clinic • River erosion • No provision of bridge or culvert • Cultivation of Tobacco • Lack of Embankment
	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/ 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	5000	1	9	9	Ward-02(1); Ward-03 (1);

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

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	• No community clinic • High school, Madrasha. • River erosion is excessive • Irrigation problem in agriculture • Bad transportation condition • No Electricity connection in full ward • Cultivation of Tobacco • Lack of drinking water
	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-07(1), Ward-08(2), Ward-09(3),	15.75	0.10	0.10	
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**	**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)

Garjania Union-Proposed						
Facilities	**Category**	**Population**	**Standard Area per acre**	**No. of Facilities**	**Provided Area (acre)**	**Location Ward (No. of Facilities)**
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 %**	**Majopr Findings From PRA**
Education	Primary School	5		Ward-02(2), ward-05(1), ward-07(2)	3.68	0.03	0.06	• Transportation Problem • Lack of Educational Institutions • River Erosion • Lack of employment • Flash flood due to hilly water
	Madrasa	10		Ward-01(1), Ward-02(4), ward-05(1), ward-07(3), ward-08(1)	3.85	0.03		
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-	4.59	0.04	0.04	

Idgar Union-Existing								
Facilities	**Type**	**No of Facilities**	**From PRA**	**Location (No of Facilities)**	**Area (Acre)**	**%**	**Total %**	**Majopr Findings From PRA**
				07(1),ward-08(1),				
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			

Idgar Union Proposed						
Facilities	**Category**	**Popul-ation**	**Standard Area per acre**	**No. of Facili-ties**	**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)
Transportation	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**
Education	Primary School	7	11	Ward-01(1), Ward-06(2), ward-07(1), ward-09(3)	2.07	0.03	0.06	• Salinity in water • Weak Embankment • Water Logging • Problem of graveyard • River Erosion
	Secondary School	0	2					
	Madrasa	8	6	Ward-01(3), Ward-06(2), ward-09(3)	2.18	0.03		
Religious	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		
Graveyard		10		Ward-01(4), Ward-02(1), Ward-06(1), Ward-07(2), Ward-09(4)	61.18	0.88	0.88	
Health	Community Clinic	4		Ward-07(1), Ward-09(3)	15.52	0.22	0.22	
Community	Community Center	3		Ward-02(1), Ward-05(1), Ward-06(1),	1.57	0.02	0.02	
Open Space		2		Ward-02(1) Ward-06(1),	2.39	0.03	0.03	

Joarianala Union-Proposed						
Facilities	**Category**	**Population**	**Standard Area per acre**	**No. of Facilities**	**Proided Area (acre)**	**Location Ward (No. of Facilities)**
Education	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);
Open Space	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);
Health	Health centre/Maternity clinic	5000	1	14	14	Ward-01 (2); Ward-02 (1); Ward-06 (2); Ward-07 (3); Ward-09 (6);
Community Facilities	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);
Utilities	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-station	20000	1	4	4	Ward-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);

Joarianala Union-Proposed						
Facilities	**Category**	**Population**	**Standard Area per acre**	**No. of Facilities**	**Proided Area (acre)**	**Location Ward (No. of Facilities)**
						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-08(1)	3.03	0.03	0.06	• River erosion • No provision of college • Electricity connection problem • Flash Flood due to hill.
	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	

Kachapia Union-Proposed						
Facilities	**Category**	**Populat-ion**	**Standard Area per acre**	**No. of Facili-ties**	**Provided Area (acre)**	**Location Ward (No. of Facilities)**
Education	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)
Open Space	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)
Health	Health centre/Maternity clinic	5000	1	10	10	Ward-02(4);Ward-03 (1);Ward-05(1);Ward-08 (1);Ward-09 (4);
Community Facilities	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)
Utilities	Water supply	20000	1	3	3	Ward-02(1);Ward-09 (1)
	Gas	20000	1	3	3	Ward-02(1);Ward-09 (1)
	Electric sub-station	20000	1	3	3	Ward-02(1);Ward-09 (1)
Commerce and Shopping	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)
Industry	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)
Transportation	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)

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	• No community clinic • River erosion is excessive • No provision of bridge or culvert • Cultivation of Tobacco • Lack of Embankment
	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**	**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-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);

Kauarkhop Union Proposed						
Facilities	**Category**	**Population**	**Standard Area per acre**	**No. of Facilities**	**Provided Area (acre)**	**Location Ward (No. of Facilities)**
						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	• Problem of Transportation • Flood
	Madrasa	8	4	Ward-01(1), Ward-02(3), Ward-07(3), ward-09(1)	5.04	0.10		
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-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-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-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	• Problem of Transpor-tation • Flood
	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-09(3)	5.48	0.14		
	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	

Rashid Nagar Union Proposed						
Facilities	**Category**	**Populat-ion**	**Standard Area per acre**	**No. of Facili-ties**	**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)
Transportation	Bus terminal	20000	1	1	1	
	Truck terminal	20000	0.5	1	0.5	

APPENDIX-D
Planning Standard Review

Urban Development Directorate

Table E 1: Broad Category of Landuse

Broad Category	Percentage (%)
Commerce and Industry	10-15
Social, Admin, Cultural and urban services	20-30
Roads (including local)	5-10
Residential	35-45
Urban deferred	About 10
Reserves	About 5
Total	100

Source: Urban Development Directorate (UDD), 1980

Table E 2: Specefic Landuse Standard

Facilities			Landuse Standard (in acre)
a) Commerce and Industry			
		Market	1.5 acre per 1,000 population
		Shop	
		Office	
		Small Scale Industry	
b) Social, Administrative, Cultural and Urban Services			
Social Services	Education	Nursery School	2 acre per 5,000 population
		Primary School	
		Secondary School	1 acre per 5,000 population
		College	
	Health	Dispensary	1 acre per 5,000 population
		Maternity/Child Care	
		Health Center	5 acre per 20,000 population
		Hospital	
Administrative		Administrative/Judiciary including Officers' Residences	12 acres per Upazila Shahar
Recreational Facilities		Parks, Open Space	1 acre per 1,000 population
		Cinema	0.5 acre per 20,000 population
		Sports Stadium	3 acres per 20,000 population
Socio-Cultural		Community Center	1 acre per 20,000 Population
		Religious Facilities	0.5 acre per 20,000 population
		Graveyard	5 acre per 20,000 population
		Post Office	0.5 acre per 20,000 population

Facilities		Landuse Standard (in acre)
Urban Services	Telephone Exchange	0.5 acre per 20,000 population
	Police Station	2 acre per 20,000 population
	Bus/Ghat/Rail Station	1 acre per 20,000 population
	Others	1 acre per 20,000 population
c) Roads		
Category	Reserve	Surface
Major	60'	30'
Secondary	40'	20'
Local	24'	12'

Source: Urban Development Directorate (UDD), 1980

MASTER PLAN FOR BARISAL DIVISIONAL TOWN, 2010

Table E 3: Standard for Road

Road Type		Construction Type	RoW
Overall Road Hierarchy	Primary Road	New Construction	30.45m (100 ft.)
		Widening of Existing Road	18.29m- 24.39m (60-80 ft)
	Secondary Road	New Construction	12.20(40 ft.)
		Widening of Existing Road	9.15m (30ft)
	Collector Road	New Construction	9.15 (30 ft.)
		Widening of Existing Road	6.09m (20ft. minimum)
	Access Road	New Construction	9.15 (30 ft.)
		Widening of Existing Road	6.09m (20ft. minimum)
Neighborhood and Local Road	All neighborhood (mahallah) Roads ROW may be in between 20 ft. to 40 ft wide depending on their functions		

MASTER PLAN FOR SYLHET DIVISIONAL TOWN, 2010

Table E 4: Standrad for Different Landuses

Use	Recommended Standard	Comments
Open space		
Open space	1 acre/ 1000 population Within 1 acre 0.5 acre for Play field and 0.5 acre for Park	
Official park	Minimum 5 acres	
City level park	Minimum 10 acres	
Education		
Primary School	1 primary school/7000 population Area: 1 acre	There should be two shifts in every school
Secondary School	1 secondary school/8000 population Area: 2 acres	890 students in each school
College (Higher secondary and Degree)	1 college/30000 population	1800 students in each college and there will be an open space equivalent to one formal football field for each college.
Health	1 bed/1000 population	
Katcha Bazar	0.30 acre	

Table E 5: Standard as per Population

Landuse Components	Standard (Acre per population)	Remarks
A. General Landuse		
1. Residential Density		
Private/General	100-150 person/1 acre	
Public/Government	150-200 person/1 acre	
2. Administrative		
Upazila Complex	10 acre	
Pourashava Office	3 acre	
Ward Councillor's office	0.10 acre	For each Ward
Jail/Sub-Jail	10 acre	
3. Commercial		
Wholesale Market	3-5 acre	1 in each Pourashava
Retail/Neighborhood shops	0.5 acre/10,000 population	
Shopping Complex	0.5 acre/20,000 population	
Cattle Market/Hat	1-1.5 acre	1 in each Pourashava
Slaughter House		
4. Education		
Nursery/Elementary School	2 acre/10,000 population	
Primary School	5 acre/5,000 population	
Secondary School	10 acre/20,000 population	

Landuse Components	Standard (Acre per population)	Remarks
College/University	5-10 acre/20,000 population	
Vocational Training Center	5 acre	1 in each Pourashava
Others	0.5 acre/20,000 population	1 in each Pourashava
5. Community and Social Services		
Eidgah	2 acre/20,000 pop.	
Graveyard	1 acre/20,000 pop.	
Cremation Ground	0.5 acre /20,000 population	
Mosque/Temple/Church	0.5 acre/20,000 pop.	
Community Center/Auditorium	0.5 acre/20,000 pop.	
Club/Gymnasium	0.10 acre	Optional
Day Care Center	0.10 acre	Optional
6. Government Services		
Police Station	3-5 acre	1 in each Pourashava
Police Box	0.5 acre/Box	
Post Office	0.5 acre /20,000 population	
Fish Landing Station	0.5 acre	Optional 1 in each Pourashava
Fire Service	1 acre/20,000 population	
Telephone Exchange	0.25 acre/20,000 population	
7. Industrial		
General/Agro/Cottage Industry	2-5acre/10,000 population	
Heavy Industry	10-15 acre	As per local requirement. 1 in each Pourashava
8. Open Space and Recreation		
Central Park	5-10 acre	1 in each Pourashava
Neighborhood/Community Park	1 acre/10,000 population	
Playground/Play Field	3 acre/20,000 population	
Stadium Complex (Indoor and Outdoor)	5-10 acre	Optional 1 in each Pourashava
Cinema Hall	3 acre/20,000 population	
Club House	1 acre	Optional 1 in each Pourashava
B. Utility/Physical Infrastructure Facilities		
1. Health		
General Hospital	5 acre/50 bed hospital	1 in each Pourashava
Specialized Hospital	1 acre	1 in each Pourashava
Maternity/ Child Care Center	1 acre/20,000 population	
Clinic	0.25 acre /20,000 population	
2. Water Supply, Sewerage and Garbage Disposal		
Water Supply Station with Treatment Plant	1 acre /20,000 population	

Landuse Components	Standard (Acre per population)	Remarks
Waste Disposal Ground	2-3 acre	
Waste Collection Point		As per local requirement
Sewerage Treatment Plant		As per local requirement
3. Electrification		
Electric Sub-station	1 acre /20,000 population	1 in each Pourashava
4. Gas		
Supply Station	1 acre	1 in each Pourashava
5. Transportation and Communication Infrastructure		
Bus Terminal	1 acre	1 in each Pourashava
Bus Stand	0.5 acre /20,000 population	
Truck Terminal	1 acre	1 in each Pourashava
Launch/Steamer Terminal	1 acre	1 in each Pourashava
Rickshaw/Van/Tempo Stand	0.25 acre/Station	
Fuel/Filling Station	0.5 acre /20,000 population	
Railway Station	4 acre	
6. Circulation Network		
a. Road		
Type	Right of Way/Width	Remarks
Primary	60-100 feet	
Secondary	30-40 feet	
Local/Connector	Minimum 20 feet	
Walkway/Footpath	5-8 feet	
b. Drain		
Primary		As per local requirement
Secondary		As per local requirement
Household		As per local requirement

Urban Development Directorate (UDD), 2013

Table E 6:Recommended General Planning Standards as per Population Distribution

Land use/ Community Facilities/Utility service		**Standards**
Commercial and industry	Commerce (market, shop, office)	1.5 acres per 1,000 population served
	Industry/factory (small scale)	1.5 acres per 1,000 population served
Residential	Private/government Housing Estate	1acre per 100 population served
Post Office		0.5 acre per 20,000 population served
Telephone Exchange		0.5 acre per 20,000 population served
Police line/Police Station		2 acres per 20,000 population served
Bus/Railway Station/Ghat		1 acre per 20,000 population served
Other (Power supply, Water supply, Gas station, Garbage, Disposal site/Rickshaw/Baby taxi/ truck stand)		1 acre per 20,000 population served
Reserve		5% of the total buildable land which will not be used for further development purpose. (if possible)
Education	Nursery	0.08 acre per 1,000 population served
	Primary school	0.08 acre per 1,000 population served
	Secondary school	0.1 acre per 1,000 population served
	College	0.08 acre per 1,000 population served
Health	Small Clinics	0.04 acre per 1,000 population served
	Hospitals	0.04 acre per 1,000 population served
Community Organization	Community Center/Mosque	0.04 acre per 1,000 population served
	Play Ground/Playfield	0.08 acre per 1,000 population served
Recreation	Park	0.12 acre per 1,000 population served
Commercial	Corner Shop/ Katcha bazar	0.04 acre per 1,000 population served
Utility Service	Electricity (Million/Hour)	Per Capita/day 6.5 Kw/h
	Water (Million Liter)	Per Capita/day 119 liter
	Gas(Million cubic feet)	Per Capita/day 45 cubic feet
	Garbage disposal (Metric ton	Per Capita/day 0.03 kg
Land use/ Community Facilities/Utility service		**Standards**
	Used water drainage (Million liter)	55.12% of used water/day
Recreational	Cinema Hall	0.5 acre per 20,000 population served
	Stadium	5-10 acres per pourashava
Eidgah		0.5 acre per 20,000 population served

Land use/ Community Facilities/Utility service	Standards
Graveyard/Crematorium	1 acre per 20,000 population served
Police Box/outpost	0.5 acre per Box
Fire Station	1 acre per 20,000 population served
District Head Quarter	15 acres
Pourashava Office	3-5 acres
Jail/Sub-jail	10 acres/Upazilla HQ

Development Plan for Cox's Bazar Town and Sea Beach upto Teknaf (2011-31)

Table E 7: Recommended Planning Standards

Types of Land Uses	Recommended Standard Provision (Unit)
Residential	
General residential	100 -150 persons/1 acre
Real Estate - Public/Private	150-200 population/ 1 acre
Settlements/ Rural Homestead	50 person/1 acre
Roads	
Paurashava primary roads	80 - 100 feet
Paurashava secondary roads	40 - 60 feet
Paurashava tertiary roads	30 - 40 feet
Paurashava access/ local roads	20 - 25 feet
Education	
Nursery	
Primary School/ kindergarten	0.5 acre/10,000 population
Secondary/High School	2.00 acres/5000 population
College	5.00 acres /20,000 population
Vocational Training/ Polytechnic	10.00 acres/20,000 population
Institute	5 - 10 acres/ Paurashava/ Upazila
College for XII grand/ Vocational	5 acres/ Union
Center	
Others (Library, Public library)	5.00 acres / 20,000 population
Open Space	
Play field/ground	3.0 acres/20,000 population/Paurashava/
Central Park	Union HQ
Neighborhood/ Community park	5-10 acres/ Paurashava/ Upazila HQ
Types of Land Uses	**Recommended Standard Provision (Unit)**
Stadium/sports complex Cinema/ Theatre	1.0 acre /10000 population 5-10 acres/ Paurashava/ Upazila HQ 1.0 acres/20,000 population/Paurashava/ Union HQ
Health Upazila health complex/ hospital Specialized Hospital Maternity/ Child Care Center Health Centre/ Clinic	10 -20 acres/Upazila HQ 1 acre/ Paurashava/ Union HQ 1 acre/ 20000 population 0.25/ 20000 population

Types of Land Uses	Recommended Standard Provision (Unit)
Community Facilities Mosque/Church/Temple Eidgah Graveyard Community Centre Police Station Police Box/ Outpost Fire Station Post office	0.5 acre /20,000 population 2.0 acre/20,000 population 1.0 acre /20,000 population 0.50 acre /20,000 population 3-5 acres/Paurashava/Union HQ 0.5 acre/ per box 1 acre/20000pop/Dist. HQ/Union HQ 0.5acre/20000 pop/Paurashava/union
Commerce and Shopping Wholesale market Retail sale market Neighborhood market Super Market Cattle Market (Cow Hat) Slaughter House	3-5 acres/Paurashava/Union HQ 0.5 acre / 10000 population 1.00 acre/per neighborhood market 1.50-2.50 acres/per super market 1-2.5 acres/Paurashava 0.15/20000 pop/Paurashava/Union HQ
Utilities Drainage Water supply Gas Supply Station Solid waste disposal site Waste transfer station/ collection point Electric sub-station Telephone exchange Fuel Station	As per local requirement 1.0 acre /20,000 population 1.0 acre /20,000 population 4-10 acres/Upazila HQ 1 acre/ ground/Union 0.2 acres/per waste transfer station 1.0 acre/20,000 population 0.5 acre/20,000 population 0.5 acres/20000pop/Union HQ/Paurashava
Industry Small scale Cottage/agro-based	1.50 acres /10,000 population 2.5 acres/10,000 population
Transportation Bus terminal Truck terminal Launch/steamer terminal Railway station Baby taxi/tempo stand Rickshaw/van stand	1.0 acre /20,000 population 1 acre/20,000 pop/ Paurashava/Union HQ 2.0 acre /20,000 population 4 acre/per station/Dist HQ/Union HQ 0.25 acre /one baby taxi/tempo stand 0.25 acre /one baby taxi/tempo stand
Administration Upazila complex Paurashava office Jail/Sub-Jail Ward Councilor Office	10 acres / Upazila 3 acres / Paurashava 10 acres/Upazila HQ 0.10acre/office
Agri-extension Farm	10 acres/Upazila HQ
Urban Deferred	5 percent of the total build up area

Madaripur/Rajoir Master Plan, (UDD, 2015-2035)

Preparation of Detailed Area Plan for Dhaka Metropolitan Development Planning (DMDP) Area (RAJUK, 1995-2015)

Table E 8: Standards for Provisions of Community Services

Type of Service	Number of Area Inhabitants served Per Unit	Surface Area Needed per Unit	Remark
Primary School	15000	1 acre	• 'ideal' standard is 1 per 7000; present situation is 1 per 220000. • 16% primary schools are government schools; • the 1 acre surface includes playgrounds; • can also be double shift / dual use.
Secondary Schools	23000	2 acres	• the surface area includes playgrounds.
Colleges	-	-	• Threshold number of students and area of land to be defined case by case
Playgrounds	Double usage of primary and secondary school yards.	-	-
Parks	25000	4 acres	• Larger parks may serve larger number of inhabitants.
Graveyards	Ward basis	Minimum 5 acres	-
Neighbourhood centers	Ward basis	0.30 acre	-
Health post	Ward basis	-	-
Welfare centre	Ward basis	-	• Also included in community center
Hospital	**-**	**-**	**• To be determined in a case by case basis**
Markets	**Ward basis**	**-**	
Police/Fire Station	**-**	**-**	**• To be determined in a case by case basis.**

Source: DMDP Urban Area Plan, 1995.

Table E 9: Facility Standard at Neighbourhood Level

Sl. No.	Name of the Facility	Quantity		Area		
		Min. (No.)	Max. (No.)	Minimum for Unit Facility	Sub Class Total	Class Total (Acre)
1	Primary School (Public or private)	2	3	1 Acre		3
2	High School (Public or private)	1	2	1.5 Acre		3
3	Open space			10 Acre		12
	i) Park/children's park	1	2	0.3 Acre	1 Acre	
	ii)Water body/ Canal/Pond	As per Planner		1.5 Acre	6 Acre	
	iii)Play field	2	3	1 Acre	3 Acre	
	iv) Green/Vegetation/Water Front	As per Planner		0.5 Acre	2 Acre	
4	Mosque and Maktab/ Worship Places	2	3	0.2 Acre		0.6
5	Library(central)	1	1	0.1 Acre		0.2
6	Services			0.3 Acre		0.5
	i)Dentist/Doctor's Chamber	2	3	40 sq.m	120 sq.m	
	ii) Beauty Parlour	1	2	50 sq.m	100 sq. m	
	iii) Laundry	2	3	16 sq.m	50 sq.m	
	iv) Hair Dresser	2	3	12 sq.m	40 sq.m	
	v) Cyber Cafe/Internet service provider	1	2	50 sq.m	100 sq.m	
	vi) Photocopy / mobile / land phone / fax	2	2	12 sq.m	40 sq.m	
	vii) Computer based (word processing, printing etc) services	1	1	30 sq.m	30 sq.m	
	viii) Motor bike Repair, vulcanising etc.(optional)	1	1	50 sq.m	50 sq.m	
	ix) NMT repair service (Rickshaw, bicycle etc)	1	2	30 sq.m	60 sq.m	
	x) Post Office / Courier Services	1	2	20 sq.m	40 sq.m	
	xi) Sports / Recreational facilities(games, indoor games etc)	1	2	50 sq.m	100 sq.m	
	xii) Rickshaw/Auto stand (General)	2	4	100 sq.m	400 sq.m	
	xiii) Restaurant, Tea bar, Fast food	2	4	10 sq.m	100 sq.m	
	xiv) Tailoring	1	2	20 sq.m	40 sq.m	
7	Solid waste transfer station(may also small scale processing)	1	1	0.5 Acre		1
8	Utility Facilities					1*
9	Neighborhood Co-operative Office Complex			0.33 Acre		0.5
	i) Offices	2	4	15 sq.m	60 sq.m	
	ii) Committee rooms	2	3	40 sq.m	120 sq.m	
	iv) Community Club including indoor games (male and female)	2	2	200 sq.m	400 sq.m	

Sl. No.	Name of the Facility	Quantity		Area		
		Min. (No.)	Max. (No.)	Minimum for Unit Facility	Sub Class Total	Class Total (Acre)
	v) Cultural Facilities (Rehearsal, Music room etc)	1	2	30 sq.m	60 sq.m	
	vi) Community Police Barrack	1	1	40 sq.m	50 sq.m	
	vii) Technician Service (Electrical, Plumber, AC, Freeze etc.)	2	4	25 sq.m	100 sq.m	
10	Community Hall	1	2	0.33 Acre		0.5
11	Shops			0.33 Acre		0.5
	i) General store	3	4	25 sq.m	100 sq.m	
	ii) Grocery	4	6	25 sq.m	150 sq.m	
	iii) Stationary	2	3	25 sq.m	150 sq.m	
	iv) Confectionary / Bakery	2	3	25 sq.m	80 sq.m	
	v) Departmental Store**	1	2	100 sq.m	200 sq.m	
	vi) Medicine Shop	2	3	25 sq.m	80 sq.m	
	vii) Sweet Meat Shop	2	3	25 sq.m	80 sq.m	
	viii) Book / Newspaper Stall	2	3	10 sq.m	30 sq.m	
	ix) Fresh Corner (Vegetable, fish, meat, egg, chicken etc.)	2	3	12 sq.m	40 sq.m	
	x) Fruit Shop	2	3	10 sq.m	30 sq.m	
	xi) Flower Stall	2	2	10 sq.m	30 sq.m	
	xii) Gift shop	1	2	10 sq.m	30 sq.m	
Total Area for the Neighborhood Facilities				**22.8 Acres (approx.)**		

Urban residential zone shall be developed in neighbourhood concept with following approximate standard that will be free of through traffic.

Gross area of neighbourhood: 50 acres [approx.]. It may vary depending on the population density of the planning area.

Gross density: 225 to 250 persons per acre.

Table E 10: Proposed Road Standard for DAP Area

SL No.	Road Category	Type	ROW (Meter)	ROW (Ft)
1	Primary Road	Type-1	51.82	170
2	Primary Road	Type-2	39.63	130
3	Primary Road	Type-3	30.48	100
4	Secondary Road	Type-1	24.39	80
5	Secondary Road	Type-2	18.29	60
6	Secondary Road	Type-3	12.19	40
7	Tertiary Road	Type-1	9.14	30
8	Access Road	Type-1	7.31	24
9	Access Road	Type-2	6.09	20

Table E 11: Standards for Road

The minimum road standards for **Proposed in Structure plan are as follows**			
Main Road	24.0 m	(78 ft.)	ROW
Arterial Road	14.5 m	(47.5 ft.)	ROW
Collector Road	13.0 m	(42.6 ft.)	ROW
Access Road	9.0 m	(29.5 ft.)	ROW
Access Road	6.0 m	(19.7 ft.)	ROW
Non-Motorized Road	4.0 m	(13.0 ft.)	ROW
Footpath	2.5 m	(8.2 ft.)	ROW

Table E 12: Standards for Road Hierarchy

Functional Basis	RoW	Hierarchical Basis
Arterial I	30 m	Primary Road I
Arterial II	27 m	Primary Road II
Distributor I	25 m	Secondary Road I
Distributor II	20 m	Secondary Road II
Collector I	15 m	Tertiary Road I
Collector II	12.5 m	Tertiary Road II
Access I	10 m	Access I

Khulna Master Plan, 2001-2020

Table E 13: Landuse Facility Standard

Facility	Home to Facility (Distance in Km)		Area Required (Acre)		Population Served	
	Desired	Max.	Min	Desired	Min	Desired
Primary School	0.25	0.5	1	1.5	1500	5000
High School up to Std. X / Madrasha up to Dakhil	1	1.5	1.5	2.5	5000	10000
High School up to Std. XII / Madrasha up to Kamil	1	1.5	2	3	5000	15000
Vocational Institute	2	3	3	5	-	-
College	2	3	3	4	15000	25000
University College	-	-	10	15	-	100000
University	-	-	20	50	-	100000
Mosque	0.15	0.25	0.2	0.67	1500	5000
Temple	5	-	0.2	0.5	-	-
Library	1	1.5	0.2	0.5	-	-
Community Hall	-	-	0.5	1.5	-	-
Cinema Hall	3	-	0.3	0.5	25000	-
Play Ground/Eidgah	0.25	0.5	1.5	2.5	3000	5000
Children's Park	0.25	0.5	0.5	1.5	1500	5000
Community Park	0.5	1	2	10	-	-
Graveyard	1	2	3	5	30000	50000
Crematorium	3	-	1	2	-	50000
Health Centre	0.5	1	0.3	0.5	5000	10000
Hospital	-	-	-	-	-	-
Police Outpost	-	-	0.2	0.3	-	-
Fire Service	5	10	0.2	0.33	-	-
Post Office	-	-	0.1	0.15		-
Katcha Bazaar	0.75	1.5	0.3	1	25000	50000
Solid Waste Processing Yard	-	-	3	5	-	-

Table E 14: Description of Proposed Roads

Road Type	Width (ROW) in meter	Length in kilometer	Area in Acre
1. Primary Road “a”	36.58 (120 ft)	19.83	178.92
2. Primary Road “a”	39.63 (130 ft)	16.54	161.91
3. Primary Road “a”	60.97 (200 ft)	9.83	148.06
4. Primary Road “a”	36.58 (120 ft)	3.04	27.54
5. Primary Road “a”	36.58 (120 ft)	19.88	179.96
6. Primary Road “b”	30.50 (100 ft)	51.56	421.75
7. Secondary Road “a”	24.40 (80 ft.)	14.12	253.80
8. Secondary Road “b”	18.30 (60 ft)	63.21	274.28
9. Local Road “a”	15.25 (50 ft.)	24.38	91.84
10 Local Road “b”	12.20 (40 ft.)	36.99	113.28
Total		**259.38**	**1851.34**

Table E 15: Highway Standard

Road Type on Functional Basis	Road Width	Right of Way	Road Type on Hierarchical Basis	Remarks
National/Regional Links-I	60m	Four times of Road height from the existing ground level + Road Width	Highway	With flanking major road on both sides
				Difference to house slope on both sides
National/Regional Links-II	45m		Highway	With flaking major road on one side
				Road passing through embankment
				Difference to house slope on both sides

Table E 16: Area Connector Standard

Road Type on Functional Basis	Road Width	Right of Way	Road Type on Hierarchical Basis	Remarks
Areal Link-I	30m	Four times of Road height from the existing ground level + Road Width	Area Connector-I	Variable RoW from place to place
Areal Link-II	20m		Area Connector-ll	Variable RoW from place to place

Table E 17: Local Urban Road Standard

Road Type on Functional Basis	Road Width	Right of Way	Road Type on Hierarchical Basis	Remarks
Arterial Road	20m	Four times of Road height from the existing ground level + Road Width	Primary Road	Variable RoW from place to place
Distributor	15m		Secondary Road	
Collector	12.5m		Tertiary Road	
Access I	10m		Access I	
Access II	8m		Access II	

Table E 18: Local Rural Road Standard

Road Type on Functional Basis	Road Width	Right of Way	Road Type on Hierarchical Basis	Remarks
Distributor	10m	Four times of Road height from the existing ground level + Road Width	Primary Road	Variable RoW from place to place
Collector	8m		Secondary Road	
Access	6m		Tertiary Road	

RAJSHAHI METROPOLITAN DEVELOPMENT PLAN (RDA, 2004-2024)

Table E 19: Recommended Planning Standards for Selected Facilities

Use	Recommended Standard for Rajshahi Functional Master Plan	Comment
i. Population Density	200 / acre gross	-
	220 / acre net	
ii. Open Space	1.5 acre / 1000 Population	-
iii. Road		
Roads in General		-
Primary Road	New Construction: ROW 100 ft. to 120 ft.	
	Widening of Existing Road: ROW 60-80 ft.	
Secondary Road	New Construction: ROW 60 ft.	-
	Widening of Existing Road: ROW 40 ft.	
Collector Road	New Construction: ROW 30 ft. to 40 ft.	-
	Widening of Existing Road: ROW 30 ft. (Minimum)	
Access Road	New Construction: ROW 30 ft.	-
	Widening of Existing Road: ROW 20 ft. (Minimum).	
Neighbourhood Road		
Secondary Road	Minimum recommended width (ROW): 40 ft.	
Collector Road	Minimum recommended width (ROW): 30 ft.	
Access Road	Minimum recommended width (ROW): 20 ft.	
iv. Education		
Primary School	One School / 4000 Population	This gives total 190 primary schools in the year 2014 for a study area population of 758227 persons.
	Area: 1 acre to 1.50 acres	
Secondary School	One school /6,000 Population Approx.	There will be need for total 127 secondary schools in the year 2014 for a study area population of 758227 persons.
	Area: 2 acres to 3 acres	
College	One college /30,000 population	This gives total 26 colleges in the year 2014 for a study area population of 758227 persons.
	Area: max. 10 acres each.	
v. Health	354 persons / bed	-
vi. Urban Services		
Katcha Bazar	One in Each Ward/SPZ in urban area only.	-
	Area: mini. 0.30 acre each.	
Fire Station	1 acre	Lump sum
Post Office	0.50 acre /20,000 population	-
Graveyard	5 acres /20,000 population	-
vii. Neighbourhood and Its Services		
MaximumNeighboorhood Size	50.00 acres	-
Neighbourhood Centre	One for each declared neighbourhood, 0.30 acre max. for each.	-

UPAZILLA TOWN INTEGRATED DEVELOPMENT PROJECT (UTIDP): LOCAL GOVERNMENT ENGINEERING DEPARTMENT (LGED)

Table E 20: Recommended Planning Standards

Types of Land Uses	Recommended Standard Provision (unit)
Residential	
General residential	50 - 100 persons/1 acre
Real Estate - Public/Private	200 population/ 1 acre
Roads	
Paurashava primary roads	60 -100 feet
Paurashava secondary roads	40 - 20 feet
Paurashava local roads	24 - 20 feet
Education	
Nursery/kindergarten	0.5 acre/10,000 population
Primary School	2.00 acres/5 000 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 / 20,00Q0 population
Open Space/Recreation	
Play field/ground	3.00 acres/20,000 population
Park	1.00 acre /1000 population
Neighborhood park	1.00 acre /1000 population
Stadium/sports complex	5-10 acres/Upazila HQ
Cinema	0.5 acre /20,000 population
Health	
Upazila health complex/hospital	10-20 acres/Upazila HQ
Health centre/ Maternity clinic	1 acre/5000 population
Community Facilities	
Mosque/Church/Temple	0.5 acre / 20000 population
Eidgah	0.5 acre / 20000 population
Graveyard	1 acre/ 20000 population
Community centre	1 acre/ 20000 population
Police Station	3-5 acres/ Upazila HQ
Police Box/outpost	0.5 acre per box
Fire Station	1 acre/ 20000 population
Post Office	0.5 acre / 20000 population
Commerce and Shopping	
Wholesale market	1 acre/ 1000 population
Retail market	1 acre/ 1000 population
Corner shops	0.25 acre/corner shop
Neighborhood market	1 acre/ neighbourhood market
Super market	1.50-2.50 acres/super market
Industry	

Types of Land Uses	Recommended Standard Provision (unit)
Small scale	1 acre/ 1000 population
Cottage/Agro based	1 acre/ 1000 population
Transportation	
Bus terminal	1 acre/ 20000 population
Truck terminal	0.5 acre/ 20000 population
Launch/steamer terminal	1 acre/ 20000 population
Railway station	2 acre/ 20000 population
Baby taxi/tempo stand	0.25 acre/one baby taxi/tempo stand
Rickshaw/van stand	0.25 acre/one rickshaw/ van stand
Passenger shed	0.25 acre/ one passenger shed
Administration	
Upazila complex	15 acres
Paurashava office	3-5 acres
Jail/ Sub jail	10 acres/Upazila HQ
Agri extension farm	10 acres/Upazila HQ
Urban Deferred	10 percent of the total build up area
Reserve	

Utility Service		Standards
Utility Service	Electricity (Million/hour)	Per capita /day 6.5 k w/h
	Water (Million Litre)	Per capita / day 119 litre
	Gas (Million cubic feet)	Per capita /day 45 cubic feet
	Garbage disposal (Metric ton)	Per capita /day 0.03 kg
	Used water drainage (Million litre)	55.12% of used water/day
Solid waste disposal site, Waste Generation Capacity		
Domestic waste per HH @ 0.25kg/cap/day		18252 kg/day
Commercial waste @ 8% of domestic waste		1460 kg/day
Market waste @ 12% of domestic waste		2190 kg/day

KALAPARA/PATHARGHATA PAURASHAVA MASTER PLAN (LGED, 2011-2031)

Table E 21: Land Requirement, Existing and Proposed Land Use of Kalapara Paurashava for the Year 2031

Sl. No	Landuse Categories	Types of Landuses	Recommended Standard	Projected Required Land for 2031(Acre)	Exis-ting Land (Acre)	Defici-ency/ Surplus (Acre)	Actual Propo-sed Land (acre)
1	Residential	General residential	100 – 150 persons/1 acre	239.02	398.57	-159.55	
		Real Estate – Public/Private	200 population/ 1 acre				10.14
		Total		**239.02**	**398.5**	**-159.55**	**10.14**
2	Education and Research	Nursery	0.5 acre/10,000 population	1.20			
		Primary School/ kindergarten	2.00 acres/5000 population	9.56			
		Secondary/High School	5.00 acres /20,000 population	5.98			
		College	10.00 acres/20,000 population	11.95			
		Vocational Training Centre	5 - 10 acres / Upazila	5.00			
		Other	5.00 acres / 20,000 population	0			
		Total		**33.69**	**13.31**	**20.38**	**2.93**
3	Open Space	Play field/ground	3.00 acres/20,000 population	3.59			
		Park	1.00 acre /1000 population	23.90			
		Neighborhood park	1.00 acre /1000 population	23.90			
		Stadium/sports complex	5 – 10 acres/ Upazila HQ	6.00			
		Total		**57.39**	**47.97**	**9.42**	**13.67**
4	Recreational Facility	Cinema/ Theatre	1.0 acre /20,000 population	1.20			
		Total		**1.20**	**0.38**	**0.82**	**0**
5	Health Service	Upazila health complex/ hospital	10 -20 acres/ Upazila HQ	10			
		health centre/Maternity clinic	1.00 acre/ 5,000 population	4.78			
		Total		**14.78**	**2.02**	**12.76**	**4.45**

Sl. No	Landuse Categories	Types of Landuses	Recommended Standard	Projected Required Land for 2031(Acre)	Exis-ting Land (Acre)	Defici-ency/ Surplus (Acre)	Actual Propo-sed Land (acre)
6	Community Facilities	Mosque/Church/ Temple	0.5 acre /20,000 population	0.60			
		Eidgah	1.0 acre/20,000 population	1.20			
		Graveyard	1.00 acre /20,000 population	1.20			
		Community centre	1 acre /20,000 population	1.20			
		Police Station	3 – 5 acres/ Upazila HQ	3.00			
		Police Box/outpost	0.5 acre/ per box	0.5			
		Fire Service	1.00 acre/ 20,000 population	1.20			
		Post office	0.5 acre /20,000 population	0.60			
		Total		**9.50**	**10.26**	**-0.76**	**6.67**
7	Commercial	Wholesale market	1.0 acres/ 10000 population	2.39			
		Retail sale market	1.0 acres/ 1000 population	23.90			
		Corner shops	0.25 acre/per corner shop	0.50			
		Neighborhood market	1.00 acre/per neighborhood market	1.00			
		Super Market	1.50 – 2.50 acres/per super market	2.00			
		Total		**29.79**	**22.08**	**7.71**	**3.32**
8	Utility Services	Water supply	1.00 acre /20,000 population	1.20			
		Gas	1.00 acre /20,000 population	1.20			
		Solid waste disposal site	4-10 acres/ Upazila HQ	5.00			
		Waste transfer station (9 nos)	0.25 acres/per waste transfer station	2.25			
		Electric Sub station	1.00 acre /20,000 population	1.20			
		Telephone exchange	0.5 acre/20,000 population	0.60			
		Water Treatment Plant	1.00 acre/20,000 population	1.20			
		Total		**12.65**	**0**	**12.65**	**8.67**
9	Industrial	Small scale	1.00 acre/1,000 population	23.90			
		cottage/agro-based	1.00 acre/1,000 population	23.90			
		Total		**47.80**	**16.72**	**31.08**	**5.30**

Sl. No	Landuse Categories	Types of Landuses	Recommended Standard	Projected Required Land for 2031(Acre)	Exis-ting Land (Acre)	Defici-ency/ Surplus (Acre)	Actual Propo-sed Land (acre)
10	Transportation Facilities	Bus terminal	1.0 acre /20,000 population	1.20			
		Truck terminal	0.50 acre /20,000 population	0.60			
		Launch/steamer terminal	1.00 acre /20,000 population	1.20			
		Railway station	4.00 acre / per Station	0			
		Baby taxi/tempo stand	0.25 acre /one baby taxi/tempo stand	0.50			
		Rickshaw/van stand	0.25 acre /one baby taxi/tempo stand	0.50			
		Passenger Shed	0.25 acre /one baby taxi/tempo stand	0.25			
		Fuel Station	0.5 acre/20,000 population	0.60			
		Total		**4.85**	**0.78**	**4.07**	**4.93**
11	Administrative	Upazila complex	10-15.00 acres	10.00			
		Paurashava office/Ward Councilor's Office	3 – 5 acres	5.00			
		Jail/Sub-Jail	10 acres/Upazila HQ	10.00			
		Total		**25.00**	**17.21**	**7.79**	**6.72**
12	Circulation Networks	Paurashava primary roads	150 – 100 feet				
		Paurashava secondary roads	100 – 60 feet				
		Paurashava local roads	40 - 20 feet				
		Total			**30.82**		**126.20**
13	Agriculture	Agri-extension Farm	10 acres/Upazila HQ	10	196.45		
		Total		**10**	**178.33**	**-168.33**	
14	Urban Deferred	Urban Deferred	10 percent of the total build up area	9.95	0	9.95	15.56
		Total		**9.95**	**0**	**9.95**	**15.56**

Table E 22: Standards for Proposed Roads

Landuse Category	Hierarchy of Roads	Right of Way (ROW)
Circulation Network	Primary Roads	150-100 feet
	Secondary Roads	100-60 feet
	Tertiary Road	20-40 feet

Table E 23:Standard for Future Development of the Road Network of Kalapara Paurashava

Landuse Category	Hierarchy of Roads	Right of Way (ROW)
Circulation Network	Paurashava Primary Roads	60-150 feet
	Paurashava Secondary Roads	40-50 feet
	Paurashava Local Roads	20-30 feet

Comilla Master Plan (2014-2034)

Table E 24: Planning Standard and Land Required for Different Sector for the Preparation of Master Plan for Comilla City and Its Influence Area

Sl. No	Sectoral land use	Recommended Standard Provision	Year-wise Cumulative demand					Unit
			2014	2019	2024	2029	2034	
1.	**Residential**							
	General residential	Gross density 150-200 person per acre	3490	4900	6625	9160	13600	acre
	Real Estate – Public/Private / Neighborhood	Maximum 50 acre; 1.0 acre/ 150-200 population: Will follow Land Development Rules of Private housing Project, 2004						
	Neighborhood centers	0.5 acre					100	acre
2.	**Educational**							
	Nursery	0.4 acre/ 5,000 Population; seats/school: 160, the walking distance of school should normally be 0.5 Km	105	145	200	275	410	Number
			40	60	80	110	165	acre
	Primary School	1.6 acre/ 5,000 Population; infrastructure in 0.6 acre and 1.0 acre for Playground; seats/school:200; 2 Shifts; the walking distance of school should normally be 1.5 Km	105	145	200	275	410	Number
			170	235	320	440	650	acre
	Secondary/ High School	2-2.5 acre/ 10,000 Population; seats/school: 720; 2 shifts; infrastructure in 0.6 acre and 1.4 acres for Playground. the walking distance of school should normally be 2 Km	50	70	100	140	205	Number
			130	180	250	340	510	acre
	Intermediate / Degree College	4-6 acre/ 20,000 Population; seats/college: 1500 seats; 2 shifts	25	40	50	70	100	Number
			160	220	300	410	610	acre
	Technical School & college	Minimum land for establishment of Engineering College 8 acre; Minimum land for Polytechnic Institute 5 acre; Minimum land for Technical School & College 2 acre					15	acre
	Vocational Training Centre	2 institutes/ one City Corporation; 2.5 acre/ one institutes					5	acre
	Alim & Dakhil Madrasha	Minimum land within City Corporation 0.75 acre						
	Fazil & Kamil Madrasha	Minimum land within City Corporation 1 acre						
	University	Minimum land for establishment of private university 2 acres						
	Others (Madrasha)	3-5 acre/ 20,000 Population; 1000 seats	25	40	50	70	100	Number
			130	180	250	340	510	acre

Sl. No	Sectoral land use	Recommended Standard Provision	Year-wise Cumulative demand					Unit
			2014	2019	2024	2029	2034	
3.	**Open spaces & Recreational**							
	Play field/ground	2.0 acre per 25,000 Population; minimum walking distance 1.5 km	20	30	40	55	80	Number
			40	60	80	110	160	acre
	Park/ Neighborhood park	2 acre/ 10,000 Population						
	Open Space	1.75 acre/ 1000 Population	915	1280	1740	2400	3570	acre
	Stadium/sports complex	5 acre/ 50,000 Population	10	15	20	30	40	Number
			50	70	100	135	205	acre
	Cinema/ Theatre	0.5 acre/25,000 Population	20	30	40	55	80	Number
			10	15	20	30	40	acre
4.	**Health**							
	N agar sashto kandro / hospital	4 acre/ 50,000 Population; 500 persons/ bed	10	15	20	30	40	Number
			40	60	80	110	160	acre
	Health Center/Clinic / Maternity	0.6 acre/ 5000 Household, Basic Health and family welfare services within 1-2 km. distance of residents.	20	30	45	60	90	Number
			15	20	25	35	55	acre
4.	**Community Facilities**							
	Mosque	0.2 acre/10,000 Population	50	70	100	135	205	Number
			10	15	20	30	40	Acre
	Church/Temple	As per requirement						
	Eidgah	0.5 acre/ 20,000 Population	25	40	50	70	100	Number
			15	20	25	35	50	acre
	Graveyard	5 acre/ 50,000 Population	50	70	100	135	205	acre
	Community centre	0.5 acre/ 10,000 Population	50	70	100	135	205	Number
			25	40	50	70	100	acre
	Police Station	As per requirement made by Police						
	Police Box/outpost	As per requirement made by Police						
5.	**Commercial**							
	Wholesale market	6 acre per city centre including services/ repairing & supplies					12	acre
	Retail sale market	5 acre includes market square, occasional supplies & shop like use						
	Corner Shop	0.2/ 2,500 Population	210	295	400	550	815	Number
			40	60	80	110	160	acre
	Retail Katcha Bazaar	One in each ward and one for every 20,000 Population, 0.3 acre minimum space for each	8	10	15	20	30	acre
	Neighborhood Market	0.5 acre/ 10,000 population					100	acre
6.	**Utilities**							
	Bangladesh Oil, Gas & Mineral Resource Corporation	For establishment of CNG station: 120 feet X 120 feet; (1400 sq. ft or 33 decimal along the road) Distance within two station: 3 km considering one side of road & 2 km						

Sl. No	Sectoral land use	Recommended Standard Provision	Year-wise Cumulative demand					Unit
			2014	2019	2024	2029	2034	
		considering both sides of roads Necessary requirements of the corporation must have to be fulfilled						
	Power Development Board	Minimum land for construction of 33/11 KV & 2*10 MVA Substation .07 acre Minimum land for construction of GIS Substation less than .07 acre Minimum distance for installation of 33 KV, 11 KV & 4 KV line 30-40 meters Height of the poles: 15 meter for 33 KV line; 11/12 meter for 33 KVline & 9 meter for 4 KV line						
	Solid waste disposal site	5 acre / 500,000 Population					20	acre
	Waste Transfer Station	Minimum 20 decimal per ward					5	acre
	Fire Services	2/ City Corporation; Minimum 50 decimal for "A" Category Minimum 30 decimal for "B" Category					1	acre
	Post office	0.05 acre/ 20,000 Population					5	acre
7.	**Industry**							
	small scale	BSCIC area minimum 15 acres						
8.	**Transportation**							
	Bus terminal	Minimum 3 acres per terminal 3 acres per 1,00,000 Population						
	Truck terminal	Minimum 3 acres per terminal						
	Water way & Landing Station	Minimum 2.0 acres for landing station & office						
		For off-shore land: 500 meter on both sides of the landing station						
	Railway & Station	From one home signal to another home signal: length 3,000 feet & width 500 feet broad Gauge and 90 feet for meter Gauge (considerable average height of the embankment 10 feet) Minimum land width for establishment of double line: 125 feet for Broad Gauge and 115 feet for meter Gauge (considerable average height of the embankment 10 feet)						
	RHD	Road network of RHD within the study area will follow as per RHD Rules						
9.	**Administration**							
	DC Office/ residence	Office: 4.0 acre, residence: 1.50 bigha						

Sl. No	Sectoral land use	Recommended Standard Provision	Year-wise Cumulative demand					Unit
			2014	2019	2024	2029	2034	
	Youth Development center	Minimum 2 - 3 acres lands for establishment of Youth training center & Regional Human Development Center						
	Jail	Minimum land 5.0 acres						
	Judge Court ·	District Judge Court: 1.0 acre, Residence 33 decimal						
	SP Office ·	Sp's office: 1.0 acre, Residence 33 decimal						
	Police Headquarter	10 acres						
	Thana	1.0 acre						
	Police Fari	33 decimal						
	Circuit House	1.5 acres						
	Civil Surgeon	Office: 0.25 acre; Residence 33 decimal						
	Office for Islamic Foundation	Minimum 0.10 decimal						
	XEN (PWD) ·	Office: 0.25 acre; Residence 33 decimal						
	Others	As per concern department						

Private Landuse Development Rule, 2004

Table E 25: Space Standards for Urban Community Facilities in Acres by Population Size

Community Facilities	Size of Population									Facility per 1000 Population
	2500	5000	10000	15000	20000	25000	50000	100000	150000	
EDUCATION										
Nursery	0.2	0.4	0.8	1.2	1.6	2.0	4.0	8.0	12.0	0.08
Primary School	0.3	0.6	1.0	1.2	1.6	2.0	4.0	8.0	12.0	0.08
Secondary School			1.2	1.5	2.0	2.5	5.0	10.0	15.0	0.10
College*				1.2	1.6	2.0	4.0	8.0	12.0	0.08
HEALTH										
Small Clinic*				0.6	0.8	1.0	2.0			0.04
Hospital*								4.0	6.0	0.04
COMMUNITY ORGANIZATION										
Community Center/Mosque	0.1	0.2	0.5	0.6	0.8	1.0	2.0	4.0	6.0	0.04
RECREATION										
Play-Ground/ Play-field	0.5	1.0	1.0	1.2	1.6	2.0	4.0	8.0	12.0	0.08
Park	0.5	1.0	1.5	1.8	2.4	3.0	6.0	12.0	18.0	0.12
COMMERCIAL										
Corner Shop/ Market/Kutcha Bazar*	0.2	0.3	0.5	0.6	0.8	1.0	2.0	4.0	6.0	0.04
ROADS										
Residential Roads**	0.9	1.7	3.5	5.0	6.8	8.5	17.0	34.0	51.0	0.34
Total Area for community Facilities (minimum)	2.7	5.2	10.0	14.90	20.0	25.0	50.0	100.0	150.0	1.00
Net Residential Area	4.44	9.08	18.5	27.95	37.14	46.43	92.85	185.71	278.57	
Gross Residential Area	7.14	14.28	28.57	42.85	57.14	71.43	142.85	285.71	428.57	
Persons per Area	350	350	350	350	350	350	350	350	350	

APPENDIX-E
Fact Sheet

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

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
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
Total	**384409028.498**	**384.409**	**94989.54**	**100**	**202683**	**100**

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	92.1000833733558	21.4493350646374	Along the road side from Ramu-Chittagong Highway to Naikhangchari Road (Chabagan). Union: Jowarianala
2	7.459	92.1013191275162	21.4491715884396	Around 220m North Side of BM 1 and left side of the road (Chabagan) Union: Jowarianala
3	7.984	92.050290838744	21.4110587705827	South west side of Daskhin Mithachari Madrasha Jame Mosque. Union: Daskhin Mithachari
4	5.411	92.0501229861793	21.410712890018	South side of the Madrasha and North side of the Road. Union: Daskhin Mithachari
5	5.434	92.0926311351313	21.3177635170108	In front of the Khunia Palong Union Parishad along the Link Road. Union: Khunia Palong
6	3.991	92.0928844219428	21.3187207302964	From North side of BM 5 (around 200m) to North south side of Morichha-Ramu Road. (Road toe level, Paddy Land) Union: Khunia Palong
7	6.409	92.1066712814313	21.4232797278185	North-East opposite side of the Boundary Wall of Ramu Police Station. Union: Fatekharkul
8	5.502	92.1061150390961	21.4239934582426	North side of BM 7 point approximately 200m distance and near the pucca road. Union: Fatekharkul
9	12.291	92.1966167922503	21.4398602553225	North-West and East side of the Road in front of The Grameen Bank, Kocchopia. Union: Kocchopia
10	12.204	92.1964577325996	21.4404473683218	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	92.1403190529085	21.57414277029	Along the Island of Road in front of Eidghar Police Fari. Union: Eidghar
12	20.464	92.141503717775	21.5741526744391	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	92.0756865657672	21.4988204104676	South side of the Rashidnagar Ershad Filling Station and near the West side of the Highway Road. Union: Rashidnagar
14	3.891	92.0764399777709	21.4978790530554	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

Existing Land Use

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 Residential Zone	998	4604526.419	4.605	1137.803	1.198
Utility Services	17	8435.645	0.008	2.084	0.002
Vacant Land	213	1320859.246	1.321	326.391	0.344
Waterbody	5658	12892289.342	12.892	3185.754	3.354
Total	15975	384400796.034	384.401	94987.505	100

Structure Type in Urban and Rural Area

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

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

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

	Union	No of Facilities
Health Facilities(Clinic)	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

	Union	Mosque	Hindu Temple	Buddhist Temple
Religious	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		

	Union	**Frequency**
Graveyard	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

Other Facilities			
	Type	**Union Name**	**No of Facilities**
Utility 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

Table: Cropping Intensity

Cropping Pattern	Area in Sq.m	Area in Sq.Km	Percentage
Double Cropping	73468832.14	73.46883214	62.939
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_km	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

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

Flooding Scenario

Table: Different Flooding Scenario

Flooded Land Category	Depth (m)	Area (sq.m)	Area (sq.km)	Area (Acre)	Percentage	Remarks
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
Total		**115628500**	**115.63**	**28572.42**	**100.00**	

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

Geology

Table: Bore Hole Information Summary at Ramu Upazila, Cox's Bazar

Borehole ID	Location Name	Latitudes	Longitude	Depth of penetration (m)	N value (min.)	N value (max.)
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. Praimary School, Mitachari	21°25'3.54''	92°04'26.88"	24	1	32
BH-6	RayarkulIslamiaMohilaDakhil 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
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 RahmaniaIslamiaAlim 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, CawerkhabModhompara	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: Proposed Road

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	Frequnecy	Union
Bridge/ Culvert 436	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
• Growth Center • Wholesale Market • Retail Market • CNG/Tempo/Auto Rickshaw /Rickshaw Stand • Primary School/Kindergarten • High School • Health Center/Maternity Clinic • Play Ground/Field • Eidgah • Graveyard • Mosque/Pagoda/Temple • Community Center • Post Office • Electric Substation • Small Scale Industry	➢ Primary School/Kindergarten ➢ High School ➢ College ➢ Neighborhood Park ➢ Play Ground/Field ➢ Health Center/Maternity Clinic ➢ Mosque/Pagoda/Temple ➢ Eidgah ➢ Graveyard ➢ Community Center ➢ Post Office ➢ Water Reservoir ➢ Waste Secondary Transfer Station ➢ Electric Substation ➢ Wholesale Market ➢ Retail Market	✓ Retail Trade Zone ✓ Wholesale Trade Zone ✓ Dairy Food Zone ✓ Fruit processing Zone ✓ Hi Tech Park ✓ Hotel Motel Zone ✓ Economic Zone ✓ Poultry and Fish Processing Zone ✓ Amusement park ✓ IT Park ✓ Low Income/Landless Affordable Housing ✓ Stadium ✓ Water Treatment Plant ✓ Textile and Sweetmeat Zone ✓ Bus Stand ✓ Truck Stand and Freight Zone ✓ Solid Waste Disposal ✓ Botanical Garden ✓ Tourist Zone ✓ Eco Park ✓ Auditorium/Cinema Hall ✓ Monument

Proposed Facilities

Table: Union & Plot-wise 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 & Frieght 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	04	05	Kachhapia_004_005	2978
Fruit Processing Zone	Kachhapia Union	Kachhapia	04	05	Kachhapia_004_005	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

Features	Union	Mouza	JL_ No	Sheet _No	Mauza_JL_S	Plot_ No
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_0 05	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_0 07	99999

Table: Plot-wise 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
	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
	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
	Kawarkhop_W_07	Kauarkhop Union	Manirjhil	006	001	803
	Kawarkhop_W_09	Kauarkhop Union	Sonaichhari	024	005	936
	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	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
	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

Low cost housing

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

APPENDIX-F
RTK Deviation

Report on Deviation Found by RTK-GPS Survey in Ramu Upazila

Introduction

To estimate the accuracy of GIS dataset a field survey was carried out by using Survey Grade GPS to measure the location of a number of well-defined features (corners of Building, Bridge, Culvert) and road centerline within the project area. The Real-Time Kinematic Global Positioning System (RTK-GPS) was the integral part of the surveys.

Methodology

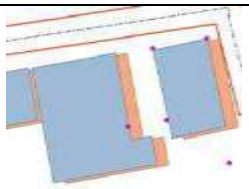
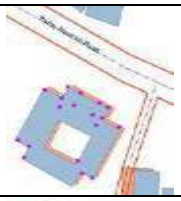
The Bench Mark established by of Survey of Bangladesh was used as base station for the RTK-GPS survey. After setting up, the base unit was initialized with the coordinates of the BM. The crew then navigated with the roving unit to the target locations to survey the topographic features. RTK measurements were taken by the rover receiver in real time. Upon completion of the topographic survey, the data logger was downloaded and the information was mapped with ArcGIS software.

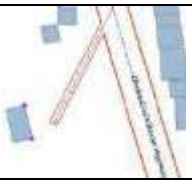
Findings of the RTK-GPS Survey in Ramu Upazila

It is found that there exist deviations between RTK-GPS points on some target features and the same features which were captured by the photogrammetry based physical feature survey. The findings are presented in the following tables.

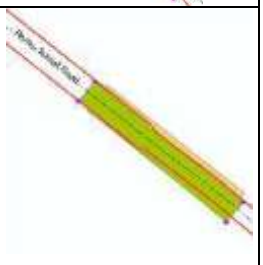
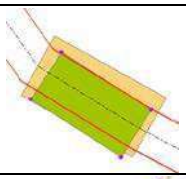
Structure

Structures have been corrected with respect to RTK-GPS points. In the snapshots, red structures are before corrections and blue structures are after the corrections. Two structures were missing which are created by using the GPS points and ortho-rectified satellite image.

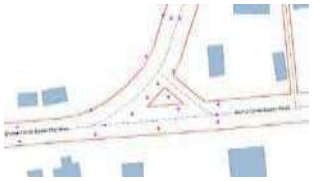
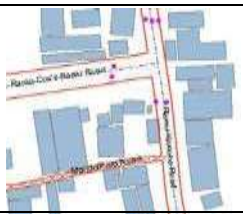
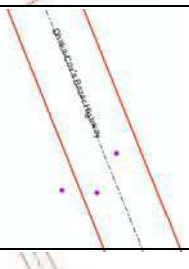
SL No	Description	Location	No of Points Surveyed	Average Deviation in meter	Snapshot	Remarks
1	Upazila Parishad	Fatekharkul Union	5	1.9		Surveyed structures are corrected with respect to GPS points.
2	Ramu Thana	Fatekharkul Union	18	2.2		Surveyed structures are corrected with respect to GPS points.
3	Idgar Union Parishad Office	Idgar Union	6	10.5		Surveyed structures are corrected with respect to GPS points.

4	Ramu Hospital	Joarianala Union	8	3.5		Surveyed Structure was missing.
5	Ramu Fire Service	Joarianala Union	2	2.8		Surveyed Structure was missing.

Bridge/Culvert

SL No	Description	No of Points Surveyed	Average Deviation in meter	Width Deviation in meter	Length Deviation in meter	Snapshot
1	Bridge on Dhaka-Cox's Bazar Highway, Joarianala Union	5	3.78	0.29	5.4	
2	Teknaf Bridge, Khuniapalong Union	4	3.69	2.48	6.18	
3	Khuniapalong Bridge, Khuniapalong Union	4	2.49	2.12	3.48	
5	Choumohoni Bypass Bridge, Joarianala Union	4	2.64	1.72	2.86	

Road

SL No	Description	No of Points Surveyed	Average Deviation in meter	Average Width Deviation in meter	Snapshot
1	Road Centerline, Dhaka-Cox's Bazar Highway, Fatekharkul Union	3	1.07	-	
2	Road Edge, Dhaka-Cox's Bazar Highway, Fatekharkul Union	15	1.98	3.06	
3	Road Centerline, Ramu-Moricha Road, Fatekharkul Union	1	0.49	-	
4	Road Edge, Ramu-Moricha Road, Fatekharkul Union	6	1.02	1.94	
5	Road Edge, Idgar to Baishari Road, Idgar Union	2	0.93	0.94	
6	Road Centerline, Dhaka-Cox's Bazar Highway, Rashid Nagar Union	1	1.97	-	
7	Road Edge, Dhaka-Cox's Bazar Highway, Rashid Nagar Union	2	1.87	0.48	
8	Road Centerline, Dhaka-Cox's Bazar Highway, Rashid Nagar Union	2	1.35	-	
9	Road Edge, Dhaka-Cox's Bazar Highway, Rashid Nagar Union	4	1.61	2.77	
10	Road Centerline, Dhaka-Cox's Bazar Highway, Choumohoni Bypass, Joarianala Union	1	1.52	-	
11	Road Edge, Dhaka-Cox's Bazar Highway, Choumohoni Bypass, Joarianala Union	2	3.25	6.32	
12	Road Centerline, Ramu-Moricha Road, Choumohoni Bypass, Joarianala Union	1	0.44	-	
13	Road Edge, Ramu-Moricha Road, Choumohoni Bypass, Joarianala Union	2	0.54	0.86	

Appendix-G

Comments during Public Consultation at Ramu Upazila

Date: 09-11-2017 to 11-11-2017

ক্রমিক	ইউনিয়নের নাম	Existing Map এ ভুল সমূহ সংশোধিত	Existing Map	নতুন প্রস্তাবনা	প্রস্তাবনায়
১	১ নং ঈদগড় ইউনিয়ন	১। ঈদগড় টু বাইসারী রোডের উপর ব্রীজ	Stakeholder এর পরামশ র্ নুযায়ী বতমান Database এ	তাদের কোন নতুন কোন প্রস্তাবনা নাই।	
		২। ঈদগড় টু বাইসারী রোডের পাশে কবরস্থান দেখানো হয় নাই।	চিহ্নিতকরণ না থাকায় সংযুক্ত করা সম্ভব হয়নি		
		৩। করিময়া মারা রাস্তা: বিদ্যালেয়র পাশে কাঁচা রাস্তা	Stakeholder এর পরামশ র্ নুযায়ী বতমান Database এ		
		৪। বৌদ্ধ মন্দির দেখানো হয় নাই।	চিহ্নিতকরণ না থাকায় সংযুক্ত করা সম্ভব হয়নি		
		৫। বৌদ্ধ মন্দির এর পাশে কাঁচারাস্তার			
		৬। কেয়ক টি ব্রীজ, পুকুর, রাস্তা এর অবস্থান (বড় স্কেলের মানচিত্র) ভুল আছে। যা সংশোধন			
		৭। এক টি মসজদ এর অবস্থান মানচিত্র ভুল আছে। (বড় স্কেলের মানচিত্র)যা			
২	২ নং গজনিয়া	টাইম বাজার রোড দেখানো হয় নাই।	LGED Database অনুযায়ী বতমান Database এ সংযুক্ত করা হেয়েছ	এল জি ইড কতৃক প্রস্তুত রামু উপেজলা মানচিত্র থেক গজনিয়া ইউনিয়ন মানচিত্র এর সাথে মিল রেখে রোড মানচিত্র	LGED Database অনুযায়ী বতমান প্রস্তাবনায় সংযুক্ত করা
৩	৩ নং কচুপিয়া ইউনিয়ন	১। মৌলভীর কাঁটা রাবার ডাম মানচিত্র	Stakeholder এর পরামশ র্ নুযায়ী বতমান Database এ	১। মৌলভীর কাঁটা রাবার ডামের নিকেট হাইমারী স্কুল (নিমাণাধীন)	Stakeholder এর পরামশ অনুযায়ী বতমান প্রস্তাবনায় সংযুক্ত করা
		২। Existing রাস্তা স্কেলা মানচিত্র সঠক ভাবে	LGED Database অনুযায়ী বতমান Database এ সংযুক্ত করা	২। গজনিয়া প্রল্লীজ এর প্রস্তাব করার	Stakeholder এর পরামশ অনুযায়ী বতমান প্রস্তাবনায় সংযুক্ত করা হেয়েছ

ি্রমিক	ইউনিয়নের নাম	Existing Map এ ভুল সমূহ সংশোধিত	Existing Map সংশোধন	নতুন প্রস্তাবনা	প্রস্তাবনায়
				৩। ৩ নং কুপিয়া ইউনিয়নের মেধুপিনিক দরকার	বর্তমান ডাটাবেস এ সংযুক্ত করা হেয়েছ
				৪। প্রস্তাবিত সঠিক স্থানে হয় নাই।	
৪	৪ নং কাউয়ারেখাপ ইউনিয়ন				
৫	৫ নং ফেতখারা কূল ইউনিয়ন			১। মালিপাড়া কুল দরকার।	Stakeholder এর পরামশ অনুযায়ী বর্তমান প্রস্তাবনায় সংযুক্ত করা হেয়েছ
				২। মলপাড়া টু মালিপাড়া সড়ক সংস্কার দরকার।	Stakeholder এর পরামশ অনুযায়ী বর্তমান প্রস্তাবনায় সংযুক্ত করা হেয়েছ
				৩। হাইওয়ে রাস্তার পাশে স্লুইস দরকার।	বর্তমান ডাটাবেস এ সংযুক্ত করা হেয়েছ
				৪। পশ্চিম মেমলা থেকে উত্তর ফেতখারকূল সংস্কার দরকার।	
				৫। ফালিড়ং খালের স্লুইচ গেট	Stakeholder এর পরামশ অনুযায়ী বর্তমান Database এ সংযুক্ত করা হেয়েছ
				৬। বাকখালী নদীর ধারে বিড় বাধ দরকার।	Stakeholder এর পরামশ অনুযায়ী বর্তমান প্রস্তাবনায় সংযুক্ত করা হেয়েছ
৬	৬নং জোয়ারিয়ানালা ইউনিয়ন	১। জোয়ারিয়ানালা বাংকেটবা বাইসারী সড়ক	চিহ্নিতকরণ না থাকায় সংযুক্ত করা সম্ভব হয়িন	**Road**	
		২। বতমান জোয়ারিয়ানালা ইউনিয়ন পিরষদ মানচিত্র নাই।	Stakeholder এর পরামশ অনুযায়ী বর্তমান Database এ সংযুক্ত করা হেয়েছ	১। কালুর দোকান হেতে ফিকরা সেতু সড়ক নির্মাণ হেব।	২০৩৩ সাল এর সম্ভাব্য জনসংখ্যা উপর ভিত্তি

ি◌ক	ইউনিয়নের নাম	Existing Map এ ভ◌ল সমূহ সংশোধিত	Existing Map সংশোধন	নত◌ন◌◌াবনা	◌◌াবনায়
		৩। পূব েজায়ারিয়ানালা ট◌ মালাপাড়া সড়ক	িচি◌তকরণ না থাকায় সংযু◌ করা স◌ব হয়িন	২। ন◌াখালী ট◌ েনানাছিড় সংযোগ েসত◌ দরকার	কের Consultants ও Stakeholder এর পরামশ◌ অনুযায়ী বত◌মান ◌◌াবনায় সংযু◌ করা হেয়েছ
				৩। িবেকএসিপ হেত পুব েনানাছিড় পাহাড়ীপাড়া হেয় উ◌র িমঠাছিড় ভাবনা পয◌◌ সড়ক করেত হেব।	
				৪। মাছ◌ িময়া েগইট হেত কাহারিয়া পাড়া পয◌◌ সড়ক িনম◌াণ করেত	
				৫। পূব কুলাল পাড়া ◌শান পয◌◌ সড়ক িনম◌াণ করেত	
				৬। ন◌াখালী ট◌ উ◌াখালী সংযোগ সড়ক দরকার।	
				৭। ন◌াখালী সরকারী ◌া: িবদ◌ালয় হেত িমঠাছিড় সড়ক করেত হেব।	
				৮। ভরাচেরর কূল ন◌াখালী সংযোগ সড়ক দরকার।	
				৯। েজায়ারিয়ানালা ব◌াংকেটবা বাইসারী সড়ক িনম◌াণ হেব।	
				১০। েজায়ারিয়ানালা হেত গজ◌িনয়া সড়ক পয◌◌ সড়ক িনম◌াণ করেত	
				Bridge	২০৩৩ সাল এর স◌াব◌ জনসংখ◌া উপর িভি◌ কের Consultants ও Stakeholder এর পরামশ অনুযায়ী বত◌মান ◌◌াবনায় সংযু◌ করা হেয়েছ
				১১। পুব ◌ েজায়ারিয়ানালা – মালাপাড়া েসত◌ দরকার।	
				১২। বাককল েসত◌	
				১৩। ভরাচেরর কূল মহশাকু ম েসত◌ দরকার।	
				১৪। কাটাখালী েসত◌ দরকার।	
				১৫। ম◌াখালী ট◌ েনানাছিড় দরকার।	

ি◯মক	ইউনিয়নের নাম	Existing Map এ ভ◯ল সমূহ সংশোধিত	Existing Map সংশোধন	নত◯ন◯◯াবনা	◯◯াবনায়
				School	২০৩৩ সাল এর স◯াব◯ জনসংখ◯া উপর িভি◯ কের Consultants ও Stakeholder এর পরামশ◯ অনুযায়ী বত◯মান ◯◯াবনায় সংযু◯ করা
				১৬। উ◯র িমঠাছিড় পাহাড়ী পাড়া◯া:	
				১৭। আশকর িখল◯া:	
				১৮। ন◯াখালী ট◯ মুরাপাড়া◯া: িবদ◯ালয়	
				Embankment	Action Area Plan এ েদখাে না
				১৯। েজায়ারিয়ানালা, ন◯াখালী, েনানাছিড়, উ◯র িমঠাছিড়, পরীখাল	
৭	৭ নং রাজারকূল ইউনিয়ন	১। পাহাড়তলী◯ীজ ম◯াপ নাই।	Consultants ও Stakeholder এর পরামশ◯ অনুযায়ী বত◯মান Database এ সংযু◯ করা হেয়েছ	১। ◯◯াবিত ইউনিয়ন পিরষদ (আর এস দাগ নং-	Stakeholder এর পরামশ◯ অনুযায়ী বত◯মান ◯◯াবনায় সংযু◯ করা হেয়েছ
		২। চিকদারপাড়া◯ীজ ম◯াপ নাই।		২। বাকখালী নদীর ধারে েবিড় বাধ◯েয়াজন।	
		৩। পাহাড়পুরপাড়া হেত প◯খানা েরাড ম◯াপ		৩। ৭ নং রাজারকূল	
৮	৮ নং দি◯ণ িমঠাছিড় ইউনিয়ন	১। ২ নং ওয়াে◯ড◯ এক◯ট মস◯জদ ম◯াপ নাই।	Consultants ও Stakeholder এর পরামশ◯ অনুযায়ী বত◯মান Database এ সংযু◯ করা হেয়েছ	১। তালতলা েমাে◯ড় ইউনিয়ন অিফস করার ◯◯াব রাখেন।	Consultants ও Stakeholder এর পরামশ◯ অনুযায়ী বত◯মান ◯◯াবনায় সংযু◯ করা হেয়েছ
		২। ২ নং ওয়াে◯ড◯ এক◯ট কাচারা◯া (৬ ফুট◯◯) ম◯াপ নাই		২। েচই◯া চরপাড়া ট◯ কা◯ঠরমাথা	
		৩। তালতলা েমাে◯ড় কাচারা◯া ম◯াপ নাই।		৩। সাে◯দরপাড়া◯ীজ দরকার (৭ নং	
				৪। বাকখালী নদীর পাে◯ড় েবিড় বাধ দরকার।	
				৫। বাকখালী নদীর উপর◯ীজ দরকার (২ নং ওয়াে◯ড◯)	
				৬। ১ ও ২ নং ওয়াে◯ড◯ ৫-৬◯ট কালভাট◯ দরকার। (যা	
৯	৯ নং খুিনয়াপালং ইউনিয়ন, রামু উপেজলা,	১। ক◯া◯নেম◯ সংল◯ ইউনিয়েনর উ◯র সীমানা স◯ঠক নাই।	Stakeholder এর পরামশ◯ অনুযায়ী বত◯মান Database এ	১। হাই◯ুল◯েয়াজন	Consultants ও Stakeholder এর পরামশ◯ অনুযায়ী

ক্রমিক	ইউনিয়নের নাম	Existing Map এ ভুল সমূহ সংশোধিত	Existing Map সংশোধন	নতুন পরিকল্পনা	পরিকল্পনায়
		২। কলেজ কেলজ দেখানো হয় নাই	চিহ্নিতকরণ না থাকায় সংযুক্ত করা সম্ভব হয়নি	২। হেলথ কমপ্লেক্স হাসপাতালের স্থান পরিবর্তন	বর্তমান পরিকল্পনায় সংযুক্ত করা হয়েছে
		৩। ফিকফেরপাশে রাস্তা সঠিক অবস্থানে		৩। ৫,৭,৮ নং ওয়ার্ডে নিচু বাধ ও স্লুইস	
		৪। গোজালিয়া ব্রিজ নাই।		৪। ৫ ও ৮ নং ওয়ার্ডে রাবার ড্যাম স্থাপন করা প্রয়োজন।	
		৫। রামু সেনানিবাস এলাকায় ও তুলাবাগান সীমানায় অনেক			
১০	১০ নং চাকমার কূল ইউনিয়ন	১। ফিলিয়ারছিড় ফাড়ি খালের উপর স্লুইচ গেট মাপে নাই।	Stakeholder এর পরামর্শ অনুযায়ী বর্তমান Database এ সংযুক্ত করা হয়েছে	১। ফিলিয়ারছিড় ফাড়ি খালের উপর নির্মিত স্লুইচ গেট এর পূর্ব পাশে রাবার ড্যাম দরকার।	Stakeholder এর পরামর্শ অনুযায়ী বর্তমান পরিকল্পনায় সংযুক্ত করা
১১	১১ নং রিশদনগর ইউনিয়ন	১। একটি মসজিদ ও মাদ্রাসার স্থান পরিবর্তন করতে	Consultants এর পরামর্শ অনুযায়ী বর্তমান Database এ সংযুক্ত করা হয়েছে	১। পানিরছড়া ছড়ার দুই পাশে গাইড ওয়াল দরকার।	Consultants এর পরামর্শ অনুযায়ী বর্তমান পরিকল্পনায় সংযুক্ত করা হয়েছে
		২। ফিশারিজ প্রজেক্ট এর পাশে মসজিদ মাপে নাই।		২। সিকদার পাড়া চিংড়ি প্রজেক্ট এর পাশে বেড়ি বাধ দরকার	
				৩। উখালী বেড়ি বাধের উপর স্লুইচেগট দরকার (৯ নং ওয়ার্ড)	
				৪। লবেণর ডিমল দরকার	
				৫। মামুন মিয়ার বাজারে ল্যান	
				৬। ১১ নং রিশদনগর ইউনিয়ন পিরষেদর বাউন্ডারী দরকার।	

Appendix-H

Comments during Public Hearing at Ramu Upazila

গর্জনিয়া ইউনিয়নের খসড়া পরিকল্পনার গণশুনানীর মন্তব্য

Date: 04-02-2018 to 04-03-2018

ক্রমিক নং	নাম	ঠিকানা	মোবাইল নং	মতামত	তারিখ	Attained Activities	Page No in Report
০১	আজিজুল হক সিকদার	গর্জনিয়া ইউনিয়ন,ওয়ার্ড নং-০৫	০১৮১৫৫৪১৭২১	আমার মতামত বাকখালী নদী মেরামত করা, গ্রাম্য রাস্তা মেরামত করা, এলাকার উন্নয়নের জন্য কাজ করা, হিমছড়ি রাস্তা কার্পেটিং করা, ৫ নং ওয়ার্ডের অবহেলিত কাজ সম্পুর্ন করা, কবর স্থানে তারকাঁটা দ্বারা ঘেড়া দেওয়া, মোক্তার ঘোনার কাজ সম্পন্ন করা, চলাচলের রাস্তার অসম্পন্ন কাজ সম্পন্ন করা।	৪-২-২০১৮	- Embankment and regulator has been Proposed - Pucca roads are proposed according to RHD standard	- Chapter 7 Page-7-45 Figure:7.7 Page-7-45-7-47 -Chapter-7 Page-7-12-7-18

রামু উপজেলার খসড়া পরিকল্পনার গণশুনানীর মন্তব্য

ক্রমিক নং	নাম	ঠিকানা	মোবাইল নং	মতামত	তারিখ	Attained Activities	Page No in Report
০১	জয়নাল উদ্দীন	**রশিদনগর ইউনিয়ন** গ্রাম: কাহাতিয়া পাড়া, ওয়ার্ড নং-০৫	০১৮১৪৫০৯৬৮৪৯	আমার বাড়ি, স্কুল, মসজিদ, মাদ্রাসা এবং রাস্তা ঠিক আছে। সরকারের মন্তব্যটা খুব ভাল হয়েছে।	২২-২-২০১৮		
০২	মোয়াজ্জম মোর্শেদ	**রশিদনগর ইউনিয়ন** উত্তর কাহাতিয়া পাড়া, ওয়ার্ড নং-০৪	০১৮১৪১৮১০২৩	আমাদের গ্রামের রাস্তাটার একমাত্র সংযোগ নতুন বাজারের সাথে, অবশ্যই এই রাস্তার পাকাকরণ দরকার। এই রাস্তাটি ৫ নং, ৪ নং, ২ নং, ১ নং ওয়ার্ডকে সংযুক্ত করেছে। আমাদের গ্রামের ড্রেনেজ ব্যবস্থা খুবই দুর্বল। আমাদের গ্রামে একটি প্রাথমিক নেই। আমাদের প্রামে দৃষ্টিগোচর হওয়ার জন্য অন্ততঃ আমাদের একমাত্র রাস্তাটি পাকা করা দরকার।	২৫-২-২০১৮	- Katcha roads has been proposed as pucca roads - drainage network has been proposed for the urban area fathekharkul and chakmarkul	-Chapter-7 Page-7-12-7-18 -Chapter-7 Page-7-19-7-21
০৩	শেখ আহমদ	**রশিদনগর ইউনিয়ন** পাহাড়তলী, ওয়ার্ড নং-০৪		আমাদের গ্রামে যৌতুক প্রথার জন্য প্রাপ্ত বয়স্ক ছেলেমেয়েদের বিয়ে হচ্ছে না।এই প্রথার বিলুপ্তি অবশ্যই দরকার। আমাদের গ্রামে এখনও বিদ্যুৎ নেই। কোন পাকা রাস্তা নেই। মানুষের জীবিকা অর্জনের পন্থা খুরই সীমিত।	২৫-২-২০১৮	- Katcha roads has been proposed as pucca roads	- Chapter-7 Page-7-19-7-21

ক্রমিক নং	নাম	ঠিকানা	মোবাইল নং	মতামত	তারিখ	Attained Activities	Page no in report
০১	আল মাহমুদ ভুট্টো, গণমাধ্যম কর্মী	রামু, ফতেখাঁরকুল ওয়ার্ড নং-০৭	০১৮১১৬৪৭২২৬	পরিকল্পনামত পানি নিস্কাশনের জন্য কালভার্ট, ড্রেন প্রয়োজন, খাল খননের ব্যবস্থা রাখতে হবে। রাস্তা প্রশস্তসহ ফুটপাত রাখতে হবে।	০৮/০২/১৮	-Katcha roads has been proposed as pucca roads -drainage network has been proposed for the urban area as well as Outfalls of these manmade drainages have been identified	Chapter-7 Page-7-19-7-21 -Chapter-7 Page-7-19-7-21
০২	সিপন বড়ুয়া	**রামু জোয়ারয়া নালা ইউনিয়ন** উত্তর কাহাতিয়া পাড়া, ওয়ার্ড নং-০২ বড়ুয়াপাড়া	০১৯২২৮৪৬২৩৫	এই পরিকল্পনা অত্যন্ত ইতিবাচক মনে করি। বর্তমান সরকারের এই মহতী উদ্যোগকে স্বাগত জানাই। তবে আমাদের ৪০ পরিবারের চলাচলের রাস্তাটি ম্যাপে আসলে আরো ভাল হয়। মেইন রোড থেকে চন্দন বড়ুয়ার বাড়ি হইয়া মগি মোহনের বাড়ি পর্যন্ত চলাচলের রাস্তার পার্শ্বে ১০ফিট এবং লম্বা ৪০০ ফিট হবে। এই রাস্তাটি করে দিলে সুবিধা বঞ্চিত মানুষের উপকার হবে।	১১/০২/১৮	Katcha roads has been proposed as pucca roads	Chapter-7 Page-7-12-7-22
০৩	অথনু শর্মা	ওয়ার্ড নং-০৬, পূর্ব মেরংলেমা, শর্মা পাড়া,ফতেখাঁরকুল, রামু, কক্সবাজার	০১৮১৩১৪২২১৩	পরিকল্পনাটি অত্যন্ত ইতিবাচক মনে করি। পরিকল্পনাটির সাথে সংশ্লিষ্ট সকলের সফলতা কামনা করি। আমাদের এলাকার শর্মা পাড়া সড়কটি মাষ্টার সবুজ শর্মার বাড়ি পর্যন্ত বিস্তৃত যেটি এখানে উল্লেখ নেই। পানি নিস্কাশনের জন্য প্রয়োজনীয় ব্যবস্থা রাখতে হবে।	১১/০২/১৮		
০৪	মোহাং ইসলাম	গ্রাম পুলিশ পূর্ব দ্বীপ ফতেখাঁরকুল, ১ র্ন ওয়ার্ড	০১৮২১৫৭৬০৬৬	ইমান শরিফের বাড়ী হইতে আমির হোসেনের বাড়ী পর্যন্ত ৭ ফিট করে ব্রিক্স সোলিং দরকার এবং রশিদের বাড়ী হইতে ছফরের বাড়ী পর্যন্ত ব্রিক্স	১১/২/১৮		

ক্রমিক নং	নাম	ঠিকানা	মোবাইল নং	মতামত	তারিখ	Attained Activities	Page no in report
				সোলিং দরকার। আর বিদ্যুৎ লাইনের খুঁটী পূর্বদিক জামে মসজিদ পর্যন্ত যাওয়া দরকার।			
০৫	রশিদ মিয়া	নন্দা খালী বড় বাড়ি, ৩নং ওয়ার্ড, জোয়ারিয়ানালা	০১৮৬৪২৯৬০৬১	আমি বাংলাদেশ সরকারকে ধন্যবাদ জানাই, গণ শুনানী করাতে বাংলাদেশের অনেক অবহেলিত এলাকেত উন্নয়নের ছোয়া লাগবে। অনক দিন পর একটি সঠিক কাজ বাংলাদেশ সরকার করছেন। আমার এলাকায় বহুদিন ধরে কাঁচা রাস্তা ও বাঁশের শাকো রয়ে গেছে। ৬নং জোয়ারিয়ানালা থেকে নন্দা খালী হয়ে মুহশিনীয়া সংখর ঘাট একটি ব্রিজ খুবই প্রয়োজন।	১১/০২/১৮	-Bridges and culverts has been proposed according to need. In Joarianala 2 brides and culverts have been proposed	-Appendix-D Page-D-44 See map in Page-D-42
০৬	মনিরুল হক	জোয়ারীয়ানালা চা-বাগান, ১০০ ফুট বৌদ্ধ মন্দির	০১৮৪৩৪৫৪৩৫০	এষ্টার প্ল্যানটি খুব ভালো কার্যকর হবে বলে আশা করি।	১২/০২/১৮		
০৭	রেজাউল করিম	গর্জনিয়া ৭ নং ওয়ার্ড		ভালো উদ্দ্যোগ, রাস্তা গুলো প্রসস্ত ও পানি সরার ব্যবস্থা চাই, ৭নং ওয়ার্ড	১২/০২/১৮	-Roads widening has been proposed	-chapter-7 Page-7-11-7-19
০৮	মিঠুন চ্দ্র নাথ	ফতেখাঁরকুল, ০২ নং ওয়ার্ড	০১৮২৯৬০৬৬৮১	আপনাদেও উদ্দ্যোগটা খুব ভালো। ২নং ওয়ার্ডের রাস্তা ঘাট উন্নয়ন দরকার।	১২/০২/১৮		See Map 7.9: Development Plan of Garjania Union
০৯	প্লাবন বড়ুয়া	উত্তর ফতেখাঁরকুল, ৯নং ওয়ার্ড, রামু	০১৮১২০২০৮৮৫	এই উদ্দ্যোগের জন্য আপনাদেও ধন্যবাদ। আমি চাই আগামী যে উন্নয়ন হবে তা ধারাবাহিক ভাবে ড্রেন প্রস্থ বড় করতে হবে এবং রাস্তা প্রস্থ ১২ ফুট করলে আগামিতে আমাদের খুব উপকারে আসবে বলে মনে করি।		- Roads widening has been proposed	-chapter-7 Page-7-11-7-19 See Map 7.8: Development Plan for Fatekharkul Union
১০	আনিছু জ্জামান	উত্তর মিঠাছরী, জোয়ারীয়ানালা ইউনিয়ন, ০১ নং ওয়ার্ড	০১৮১৫৩৩৩৫৭	১। আমি গোলপাতার উচ্ছেদ চাই কারন নেশায় তরুণ সমাজ ধ্বংশ হয়ে যাচ্ছে। এই গোলপাতার বাগানের রস থেকে নেশা তৈরি করে, খায় আর বিক্রি করে। এই নেশা	১৩/০২/১৮	-Embankment	-Chapter-7

ক্রমিক নং	নাম	ঠিকানা	মোবাইল নং	মতামত	তারিখ	Attained Activities	Page no in report
				দেশের বিভিন্ন জায়গায় চলে যাচ্ছে। ২। আমার উত্তর মিঠাছরী গ্রামের গোলপাতা বাগানের পাশদিয়ে একটি নদী বয়ে গেছে নুনাছরী পর্যন্ত। এই নদীতে লবনাক্ত জোয়ারের পানি আসা যাওয়া করে, যে কারনে অত্র ইউনিয়নের ১ নং এবং ৪নং ওয়ার্ডের চাষাবাদের ফসল নষ্ট হয়ে যায়। সেই সাথে বর্ষার সময় একটু বৃষ্টি হলে বন্যার পানিতে অনেক ঘর তলিয়ে যায় এবং নদীর পাড় ভেঙ্গে চাষাবাদের জমির পরিমান কমে যাচ্ছে। যাথকে খাদ্যঘার্তি দেখাদিতে পারে। এথেকে পরিত্রানের জন্য এখানে অতিদ্রুত একটি স্থায়ী বেড়ি বাধ দরকার। ৩। এই নদী থেকে আমাদের গ্রামে ছোট একটি খাল প্রবেশ করেছে। খালের মুখে একটি সুইচ গেইট দরকার। এগুলো আমাদের দির্ঘ্য দিনের প্রাণের দাবি।		and regulator has been proposed	Page-7-44, 7-47-7-50 See Figure-7.7, 7.9-7.12
১১	আজিজুল হক সিকদার	০৫ নং ওয়ার্ড গর্জনিয়া	০১৮১৫৫৪১৭২১	আমার জানামতে সরকারী ভাবে বেশী ভাল লাগছে। কাজগুলি আমার প্রচন্ড মত রয়েছে। আমার ওয়ার্ড বন্যা হয়ে ঘরবাড়ি ডুবে যায় সেজন্য ৫নং ওয়ার্ডে বেরীবাধ দরকার। রাস্তায় পানি উঠে নষ্ট হয়ে যায়। বালির পার দরকার মনে করি। ওখানে একটি বেসরকারী ভাবে স্কুলের প্রয়োজন আর রাস্তা ঘাট মেরামত করা প্রয়োজন। বিশেষ করে ফুরকানিয়া মকতব প্রয়োজন।	১৩/০২/১৮	Embankment and regulator has been proposed	-Chapter-7 Page-7-44, 7-47-7-50 See Figure-7.7, 7.9-7.12

ক্রমিক নং	নাম	ঠিকানা	মোবাইল নং	মতামত	তারিখ	Attained Activities	Page no in report
১২	অনুপম কান্তি শর্মা	০৭ নং ওয়ার্ড, গর্জনিয়া	০১৮১৩৩৮৭৮৯৯	আমার জানামতে সরকারী ভাবে বেশী উন্নয়ন কাজ হচ্ছে। এই কাজ পরিপেক্ষীতে আমাদেও ওয়ার্ড ৪টি মসজিদ ও একটি মন্দিও আছে কিন্তু মন্দিরটি উন্নয়ন দরকার। ঐ মন্দিওে প্রতিনিয়ত ১২০০ পরিবার পুজা প্রাবন কওে আসছে। মন্দিরের পাশে বাকখালি নদী হওয়ায় প্রতি বছওে বর্ষা মৌসুমে প্লাবিত হয়, সামনে বল্লি স্পেয়ার সহ জিও ব্যাগ দিয়ে বাধ দিলে পুরা ৩২০টি পরিবার উপকৃত হবে। তার কারন হল ঐ ওয়ার্ডেও ৫টি মসজিদ ও ১টি প্রাইমারি স্কুল রয়েছে। জনস্বার্থে অতিব জরুরি।	১৩/০২/১৮	-Union wise educational facilities have been proposed	-Chapter-7-page-7-25 See map 7.9 page-7-34
১৩	জয়নাল উদ্দিন	কাহাতিয়া পাড়া, ওয়াডং নং ০২	০১৮৪৫০৯৬৮৪৯	আমার বাড়িটা ঠিক আছে। সরকারের উদ্দেশ্যটা ভাল আছে।	১৪/০২/১৮		
১৪	মোয়াজ্জম মোর্শেদ	উত্তর কাহাতিয়া পাড়া ৪নং ওয়ার্ড, রশিদনগর ইউনিয়ন	০১৮১৪১৮১০২৩	পরিকল্পনা খুবই ইতিবাচক। আমাদেও রশিদনগর ইউনিয়নের চার নম্বও ওয়ার্ডে কোন প্রাথমিক বিদ্যালয় নেই। গ্যাস নেই, রাস্তা ও ড্রেইন প্রশস্ত চাই। একটি আদর্শ গ্রামের জন্য সর্বপ্রথম চাই শিক্ষাকেন্দ্র, মানুষ শিক্ষার আলো পেলে তবেই সমাজ, দেশ এর উন্নতি হবে। মানুষের জীবিকা নির্বাহের একমাত্র উপায় হচ্ছে দিনমুজুরি, তাই কর্মসংস্থানের দরকার। শিক্ষা পেলে আমার এলাকার মানুষ কর্মসংস্থান করে নিতে শিখবে। আমাদের রাস্তাগুলো কাঁচা হওয়ার কারণে লোকজন বাজার (নতুন বাজার),	১৪/০২/১৮	-Roads, Drainages have been proposed See map-7.16 Page-7-41	Chapter-7 See map-7.16 Page-7-41

ক্রমিক নং	নাম	ঠিকানা	মোবাইল নং	মতামত	তারিখ	Attained Activities	Page no in report
				শিশু কিশোরদের স্কুলে যেতে খুবই কষ্ট হয়। যাতায়াত সুবিধার জন্য রাস্তার উন্নয়ন আবশ্যক। সমজিদেও পুকুওে সিড়ির ব্যবস্থা করা দরকার। ১০০% বিদ্যুৎ ব্যবস্থা দরকার।			
১৫	সাবেকুন্নাহার (মেম্বর ৪,৫,৬ নং ওয়ার্ড)	৬ নং ওয়ার্ড, খুনিয়া পালং	০১৮২৪৮৯৭৭৫১	প্রসংশনীয় উদ্দেগ। রাস্তাঘাটের খুবই সমস্যা। রাস্তা প্রসস্ত ও লম্বা চাই। মৃত পেচান আলীর বাড়ি থেকে ঘুনার পাড়া বেলালের বাড়ি পর্যন্ত এবং দোয়াপালং নয়াপাড়া থেকে আবুল হোসেরন বাড়ি পর্যন্ত পাকা ও প্রসস্ত রাস্তা চাই। দোয়াপালং নয়াপাড়া আব্দুল হাকিমের বাড়ি থেকে সৈয়দ আলমের বাড়ি পর্যন্ত পাকা ও প্রসস্ত রাস্তা চাই। ঘুনার পাড়া হোসেন আহমেদেও বাড়ি থেকে সামসুর বাড়ি পর্যন্ত কালভাট চাই। মৃত বসির আহমেদেও বাড়ি থেকে মৃত গেডি কালুর বাড়ি পর্যন্ত রাস্তার অবস্থা খুবই খারাপ। ধুয়াপালং এর রাস্তা মাথা থেকে মিলঘর পর্যন্ত ১২ ফিট রাস্তা চাই এবং এই উদ্দ্যেগের দ্রুত কার্যকর চাই। ৪,৫,৬ নং ওয়ার্ডে প্রচুর কালর্ভাট চাই।	১৮/০২/১৮	-Roads, Pucca roads, widening of roads, bridges, culverts have been proposed	-Chapter-7 see map-7.14 page-7-39
১৬	এম. শফিউল ইসলাম, স্বাস্থ্য বিষয়ক সম্পাদক উপজেলা আওয়ামী লীগ	জোয়ারিয়ানালা, ৮নং ওয়ার্ড	০১৮১১৬৮১৬১৮	১। জোয়ারিয়ানালা মাদ্রাসা গেইট পূর্ব জোয়ারিয়ানালা সরকারী প্রাথমিক বিদ্যালয় হয়ে বেঙবেপা বাইশাআড়ী পর্যন্ত যোগাযোগ রাস্তা প্রয়োজন। এই রাস্তা হলে কম সময়ে বাইশাআড়ী পর্যন্ত যাওয়া যাবে, আর ঈদগড় হয়ে ঘুড়ে যেতে হবে না ফলে রাস্তায় ডাকাতিও কমে যাবে।	২২/০২/১৮	-Roads, Bridges/culverts, educational facilities, drainage network have been proposed	-Chapter-7 See map-7.11 page-7-36

ক্রমিক নং	নাম	ঠিকানা	মোবাইল নং	মতামত	তারিখ	Attained Activities	Page no in report
				২। জোয়ারিয়ানালা মাদ্রাসা গেইট হয়ে পি এম খালী পর্যন্ত সংযোগ সড়ক সোনাইছড়ি নদীতে একটা ব্রিজ দিলে সুদুর কক্সবাজারের দুরত্ব কমে যাবে। ৩। মহিলাদেও উচ্চ শিক্ষার জন্য জোয়ারিয়ানালাতে একটি মহিলা কলেজ প্রয়োজন। ৪। সোনাইছড়ির দুইপাশে উচ্চবেড়িবাধের ব্যবস্থা গ্রহন। খরস্রোতা নদীর বন্যায় বাড়ীঘর সহ ফসলী জমি প্রতি বৎসর নষ্ট হয়ে যায়। গ্রাম্য রাস্তাগুলো নিচু হওয়ায় বন্যায় ক্ষতিগ্রস্থ বেশী হয়। রাস্তাগুলো ৩-৪ ফুট উচু কারার ব্যবস্থা নিতে হবে। ৫। পূর্ব জোয়ারিয়ানালা সরকারী প্রাথমিক বিদ্যালয়ে উচ্চ শিক্ষিত প্রাইমারী স্কুলের শিক্ষক নিয়োগ ও অষ্টম শ্রেণী পর্যন্ত এই স্কুল চালু করার ব্যবস্থা গ্রহন। ৬। প্রত্যেকটা মসজিদে মসজিদ ভিত্তিক পাঠাগার এর ব্যবস্থাগ্রহন ও মসজিদেও বিদ্যুৎ বিল মওকুফের ব্যবস্থা গ্রহন।			
১৭	আহামদ ছৈয়দ	বৈদ্যপাড়া	০১৮২৭৯২৯৫৭০	রাস্তা চলাচলের জন্য রাখাপ	২২/০২/১৮		
১৮	দবির আহামদ	দারিয়ার দিঘী, খুনিয়া পালং, ০১ নং ওয়ার্ড	০১৮১৬২৩৩৭..	রাস্তা ঘাট প্রসস্ত করন, শিক্ষার উন্নয়ন, কৃষি উন্নয়ন, বিদ্যুৎ ক্ষাতে বিশেষ গুরুত্বারূপের অনুরোধ করছি।	২৬/০২/১৮	-widening of roads have been proposed	-Chapter-7 Page-7-12-7-22
১৯	ডবভাস সেন গুপ্ত	সঙ্গীত ভবন, পঃ মেরংলেরা ৮নং ওয়ার্ড, ফঁতেখারকুল রামু, কক্সবাজার	০১৭১৩৬১৮৪৪২	কক্সবাজার জেলার অন্যতম পর্যটন নগরী রম্য ভুমি রামু। বর্তমান সরকারের অন্যতম উপজেলা হিসাবে রামু উপজেলা তাদের নজরে আছে। পর্যটন ক্ষেত্রে এর	২৭/০২/১৮	-Overhead Tank, Auditorium/Cinema Hall Bus Stand Retail Trade Zone Monument	-Chapter-7 Table-7.9

ক্রমিক নং	নাম	ঠিকানা	মোবাইল নং	মতামত	তারিখ	Attained Activities	Page no in report
				উন্নয়ন করা আরো প্রয়োজন। এখানে উল্লেখ্য সাংস্কৃতিক কর্মকান্ডে রামু উপজেলা কক্সবাজার জেলায় এর অবস্থান অন্যতম সেইদিক থেকে গুরুত্ব বহন করে রামু উপজেলা। আমার মতে শিক্ষা, সাংস্কৃতি এবং পর্যটন এর দিকে নজর দিলে ভাল হবে।		Truck Stand & Frieght Zone Water Treatment Plant Water Treatment Plant have been proposed to develop ramu	
২০	মোজাফ্ফর আহমদ	রামু খিজারী বার্মিজ সরকারী প্রাথমিক বিদ্যালয়	০১৮১৭৭০৩১৩৬	কক্সবাজার রম্যভুমী রামুকে আগামী ২০ বছরের মধ্যে আমি শিক্ষাখাতে আরও বেশি বেশি শিক্ষাপ্রতিষ্ঠান, মানসম্মত শিক্ষার জন্য কুদরাত ঈ-খুদা শিক্ষা কমিশনের পূর্ণ বাস্তবায়ন চাই। এছাড়া রাস্তাঘাট সহ রামুকে একটি এ ক্যাটাগরির পৌরসভায় উন্নিতকরন চাই। এছাড়া বর্তমান সরকারের ধারাবাহিকতা রক্ষা হলে যোগাযোগ খাতে রেল ও সড়ক পথে উন্নয়ন হবে বলে আমি মনে করি।	২৭/০২/১৮	-Development Plan has been proposed acctording to union	
২১	সেলিনা আক্তার	উত্তর মেরং লোয়া	০১৭৫৭৩২২৯৫৮	রামুতে বর্তমানে যে উন্নয়ন কার্যক্রম হচ্ছে তাতে চাষের জমি নষ্ট হচ্ছে প্রচুর কারণ হচ্ছে নিয়ন্ত্রনহীনতা। আমি মনে করি রামুতে ক্যন্টনমেন্ট, বিকেএসপি, কক্সবাজার পর্যটন কেন্দ্র হওয়ার কারনে এখানে পরিকল্পিত বাবে রাস্তাঘাট নির্মান, শিক্ষা প্রতিষ্ঠান এর উন্নয়ন এবং বাড়িঘর নির্মানে নির্দিষ্ট পরিকল্পনা মোতাবেক ছক অনুযায়ী গৃহনির্মান করার প্রতি সরকারের দৃষ্টি দিতে হবে যাতে পরিবেশের ভারসাম্য রক্ষা হয়।	২৮/০২/১৮	- Development Plan has been proposed acctording to union	

ক্রমিক নং	নাম	ঠিকানা	মোবাইল নং	মতামত	তারিখ	Attained Activities	Page no in report
২২	মোঃ রেজাউল করিম	মেরাং লোয়া	০১৮১৮০৪৯৩১০	রামুর বর্তমান উন্নয়ন কর্মকান্ডে নিশ্চয়ই প্রশংসার দাবী রাখে। তবে ক্রীড়ার উন্নয়নের ক্ষেত্রে আরো বেশী গ্রহনযোগ্য সিদ্ধান্ত ক্রীড়ার মানকে ত্বরান্বিত করবে। যেমন খেলার জন্য গ্যালারী।	২৮/০২/১৮	-stadium has been proposed in in Fatekharkul union	
২৩	মোছাঃ বিলকিচ বানু	READপ্রকল্প, দঃ বাহারছড়া। (প্রকল্প সমন্বয়কারী) ৬নং ওয়ার্ড জোয়ারীয়ানালা	০১৭১৬০৭১১৭৩	বষ্টির সময় ড্রেন বন্ধ হয়ে জলাবদ্ধতার সৃষ্টি হয়। তাই ড্রেনেজ ব্যবস্থার যথাযথ উন্নয়ন দরকার। লিংক রোড এর উন্নয়ন হলে যাতায়াত ব্যবস্থা ভালো হবে যা উন্নয়নের সাথে জড়িত।	০১/০৩/১৮	-drainage network has been proposed for the urban area as well as Outfalls of these manmade drainages have been identified	-Chapter-7 Page-7-20-7-22
২৪	মোঃ জুবাইর	খুনিয়াপালং, রামু	০১৮২১৮১৮৩৬৭	আমাদের এলাকায় শিক্ষার ক্ষেত্রে অনেক পেছনে পড়ে আছে তাই এই এলাকায় শিক্ষার ক্ষেত্রে জোড় দেয়ার জন্য বিশেষ অনুরোধ করছি। আর কিছু রাস্তা অবহেলিত আছে সেগুলো মেরামত করা।	০১/০৩/১৮	-Union and plot wise Educational facilities have been proposed	-Chapter-7 Table-7.10 Page7-25
২৫	মোঃ শাহ নেওয়াজ	উত্তর মিঠাছড়ি, জোয়ারিয়ানালা	০১৮২৭০৪৫৪৯৪	প্রাইমারী স্কুল এর ব্যবস্থা করলে ভাল হয়। ছেলে মেয়েরা অনেক কষ্ট কওে অনেক দুরে গিয়ে স্কুলে পরতে হয়। এই গ্রামে যদি একটি প্রাইমারী স্কুল দেওয়া হয় তাহলে অনেক ভাল হয়।	০৪/০৩/১৮	-Primary schools have been proposed according to union and plot wise	-Chapter-7 Table-7.11 Page7-26
২৬	জয়নাল আবেদীন	৭নং রাজারকুল ইউনিয়ন	০১৮১২৯৯৪২৯৯	রাস্তাঘাট উন্নয়ন, নদী ভাঙ্গন রোধ, তিচ্ছরীপুল থেকে রাজারকুল বাকখালী খালের উপর ব্রীজ প্রয়োজন।	০৪/০৩/১৮	-Bridges and culverts have been proposed	-see appendix-D Page page-D-44
২৭	মোঃ ছৈয়দুল হক	৬নং জোয়ারীয়ানালা ইউনিয়ন, নন্দাখালী ৩ নং ওয়ার্ড		নন্দাখালী মুরাপাড়া একটি প্রাইমারী বিদ্যালয়, রাস্তাঘাটের বেহালদশা। রাস্তা ভাংগন প্রতিরোধ। ভাঙ্গা রাস্তা দিয়ে প্রায় জ্জ কিঃমিঃ পায়ে হেটে জোঃনালা ঘোনার পাড়া স্কুলে যেতে হয়। আমি চাই অতি শিগ্রহই উক্ত সমস্যার সমাধান করা	০৫/০৩/১৮	-Joarianala union development plan has been proposed	-Chapter-7 Map-7.11 page-7-36

ক্রমিক নং	নাম	ঠিকানা	মোবাইল নং	মতামত	তারিখ	Attained Activities	Page no in report
				হউক যা আমাদের নায্য দাবী			
২৮	আবুল কাশেম	খুনকারপাড়া, ৩নং ওয়ার্ড, ফতেখার কুল	০১৮৩০০৯৯৯০৫	বাকখালীল বেড়িবাধ দরকার। যোগাযোগ ব্যবস্থার উন্নয়ন প্রযোজন। বিদ্যুতের খুটি প্রযোজন।	০৬/০৩/১৮	Development plan of Fatekharkul union has been proposed	-Chapter-7 Map-7.8 Page-7-33
২৯	তাজল বড়ুয়া	মেরংলোয়া, রামু	০১৮১৬৮৬১৪৮১	নিঃসন্দেহে মহতি উদ্যোগ। উদ্যেগী যাঁরা সকলের প্রতি কৃতজ্ঞ। বাস্তবায়নে কোনরূপ সহযোগীতার সুযোগ থাকলে গর্বিত হতাম। রামু তথা সারা বাংলাদেশ হয়ে উঠুক উন্নয়নের উন্নয়ন।	০৬/০৩/১৮		
৩০	নোমান এরশাদ	ঈশ্চিম মেরংলোয়া, রামু	০১৮২৪৪৬৬৪১৪	অতি আনন্দিত সরকারের এই মহৎ উদ্যোগে সংশ্লিষ্ট সকলের প্রতি আন্তরিক ভাবে কৃতজ্ঞতা প্রকাশ করছি। প্রনয়নকৃত পরিবর্তনের ধারায় সহযোগীতার আশ্বা স প্রদান করছি। এবং ফঁতেখারকুল ইউনিয়নের বন্যা প্রতিরোধ বাধটির সংস্কারের জন্য সুদৃষ্টি কামনা করছি।	০৭/০৩/১৮		
৩১	আতাউর রহমান	৯নং জোঃনালা	০১৮৫৮৫৬৬৯৪৩	প্রশংসানীয় উদ্যোগ। দ্রুত বাস্তবায়ন চাই। যোগাযোগ খাতটা উন্নত করা প্রয়োজন।	০৭/০৩/১৮		
৩২	জীতময় বড়ুয়া	মন্দিরের পাশে, চৌমুহনী, ফঁতেখারকুল	০১৮৭৫৮০৮৫৮৬	ঠিক আছে।	০৭/০৩/১৮		

রশিদনগর ইউনিয়নের খসড়া পরিকল্পনার গণশুনানীর মন্তব্য

ক্রমিক নং	নাম	ঠিকানা	মোবাইল নং	মতামত	তারিখ	Attained Activities	Page No in report
০১	জয়নাল উদ্দীন	কাহাতিয়া পাড়া, ২নং ওয়ার্ড	০১৮৪৫০৯৬৮৪৯	আমার বাড়ি, স্কুল, মসজিদ, মাদ্রাসা এবং রাস্তা ঠিক আছে। সরকারের উদ্যোগটা খুব ভাল আছে।	২২/০২/১৮		
০২	মোয়াজ্জম মোর্শেদ	উত্তর কাহাতিয়া পাড়া ৪নং ওয়ার্ড	০১৮১৪১৮১০২৩	আমাদের গ্রামের রাস্তাটা একমাত্র সংযোগ নতুন বাজার এর সাথে, অবশ্যই এই রাস্তার পাকাকরন দরকার। এই রাস্তাটি ৫নং, ৪নং, ২নং, ১নং ওয়ার্ডকে সংযুক্ত করেছে। আমাদেও গ্রামের একটি প্রাথমিক বিদ্যালয় নেই। এই সরকারের উন্নয়নের জোয়ার আমাদেও গ্রামে দৃষ্টি গোচর হওয়ার জন্যে অন্তত আমাদের একমাত্র রাস্তাটি পাকা করা দরকার।	২৫/০২/১৮	-New roads as well as pucca roads , widening of roads have been proposed. Development plan of Rashidnagar union has been proposed	-Chapter-7 Map-7.16 Page-7-41
০৩	শেখ আহমদ	পাহাড়তলী ৪নং ওয়ার্ড		আমাদের গ্রামে যৌতুক প্রথার জন্য প্রাপ্ত বয়স্ক ছেলে মেয়েদেও বিয়ে হচ্ছে না। এই প্রথার বিলুপ্তির অবশ্যই দরকার। আমাদের গ্রামে এখনও বিদ্যুৎ নেই। কোন পাকা রাস্তা নেই। মানুষের জীবিকা অর্জনের পন্থা খুবই সীমিত।	২৫/০২/১৮		

Appendix-I

Comments during Workshop at Ramu Upazila

Date: 12-04-2018

উপস্থিত সদস্য বৃন্দ	মন্তব্য	Attained Activities	Page no in Report
ইউ এন ও	• জনপ্রতিনিধিদের সাথে সম্পর্কযুক্ত করতে হবে। • রামু চৌমুহনী ড্রেনেজ ব্যবস্থা নয় কারণ আইনগত জটিলতা আছে। • ইউ এন ও মহোদয় ডেভেলপমেন্ট প্ল্যান এর গুরুত্ব বুঝতে কক্সবাজারের এর প্রসঙ্গ তুলে ধরেন। • পরিকল্পিত উন্নয়ন ও শিক্ষার হার বাড়াতে হবে। • বি এম পিলার এর তথ্য কিভাবে সংরক্ষন করা যায় তা চিন্তা করতে হবে। • বাজেট • সংশ্লিষ্ট অধিদপ্তরকে নিয়োগ করতে হবে। • বাস্তবায়ন করতে হবে।	• According to population projection, existing condition, all necessary plans have been included in development plan	
চেয়ারম্যান, খুনিয়া পালং	• রামুর বৃহৎ ইউনিয়ন, জনসংখ্যা অধিক। • খুনিয়া পালং এ উদ্বাস্তু অনেক (মহেশখালী ও অন্যান্য জায়গা) • কলেজ খুবই দরকার • ১৫টি স্বস্থ্য কেন্দ্র দরকার। • ধুচুয়াপালং বাজার । • ধুয়াপালং (রাস্তার পার্শ্বে) বাজার দরকার গ্রোথ সেন্টার)। • ৫-৭টি প্রাইমারী স্কুল দরকার (ওয়ার্ড-২ - ২টি, ৫, ২টি, ৮)। • বর্তমানে হাইস্কুল আছে ৩টি। • কালার পাড়াতে (ওয়ার্ড-১ অথবা ২) ১টি হাইস্কুল দরকার। • **Multi-Disciplinary Shahid AIM Academy – Trade Work Training/Training** উত্তর খুনিয়াপালং ৫৫ একর টেকনাফ রোডের পার্শ্বে একুয়ার করা হয়েছে। • হিমছড়িতে শিশু পার্ক দরকার। • রেজুখানে বেড়িবাধ দরকার (উভয় পার্শ্বে)। • টেকনাফ রোডের পার্শ্বে **Access Road** নাই। • ক্যান্টনমেন্ট এলাকার মাঝে গ্যাপ থাকবে না।	• 34 health center/ clinic have been proposed in Ramu Upazila • 33 primary school has been proposed in Ramu Upazila • According to population projection, existing condition, all necessary plans have been included in development plan •	-CHAPTER 7 Page-7-25-7-26 -CHAPTER 7 Page-7-24

উপস্থিত সদস্য বৃন্দ	মন্তব্য	Attained Activities	Page no in Report
	• খুনিয়াপালং এ বহিরাগত বেশি, জনসংখ্যা দ্বিগুন হবে। • অনেক রাস্তা দরকার, (Village Road আনেক বেশী দরকার)। • উপকৃত করার জন্য অনুরোধ করা হল। • খুনিয়াপালং এ ১২টি ইট ভাটা হবে (বর্তমানে ৫টি আছে, ভুল তথ্য।		
চেয়ারম্যান, রাজারকুল	• পাহাড়ী এলাকায় ঘরবাড়ি আছে, এগুলো ম্যাপে অন্তর্ভুক্ত করতে হব। • ইউ এন ও সাহেব এর বিপক্ষে বলেন, তার মতে পরিবেশ ঠিক রাখতে রিজার্ভ ফরেষ্ট রাখতে হবে। • চৌকিদার পাড়াতে রাস্তা দরকার। • ৪, ৫ ও ৭ নং ওয়ার্ডে মাদ্রাসা দরকার।	• Any kind of development • Has been prohibited in hills which have slopes more than 5% • Pucca roads are proposed according to RHD standard	- Ramu Upazila CHAPTER 6 Page-6-31-6-32 - Chapter-7 Page-7-12-7-17
চেয়ারম্যান, ফতেখাঁরকুল	• ধন্যবাদ জ্ঞাপন করেন। • বন্যাকবলিত এলাকা। • বর্ষ মৌসুমে বেড়িবাঁধ ভেঙ্গে যায়। • বর্ষ মৌসুমে হাইটুনি এলাকা বণ্যা কবলিত হয়। • বাঁকখালীতে বেড়িবাঁধ দরকার। • ওয়ার্ড-২ এ ১টি এবং ওয়ার্ড-৯ এ ২টি হেলথ কেন্দ্র দরকার। • ফাঁড়ি খালের সংযুক্ত দরকার। • ওয়ার্ড-৯ এ প্রাইমারী স্কুল দরকার। • ওয়ার্ড-৬ এ প্রাইমারী স্কুল দরকার। • রাস্তাঘাট মেরামত/বড় করা দরকার। • চৌমুহনীতে ড্রেন দরকার (বর্তমান ড্রেন চওড়া করা দরকার)। • ওয়ার্ড-৯ এ শেল্প নগরী দরকার। • ইউনিয়ন উন্নয়ন হবে।	- drainage network has been proposed for the urban area as well as Outfalls of these manmade drainages have been identified - 33 primary school has been proposed in Ramu Upazila -	-Chapter-7 Page-7-19-7-21 -CHAPTER 7 Page-7-24
চেয়ারম্যান, কাওয়ারখোপ	• গণশুনানী হয় নাই। • বালিকা বিদ্যালয় দরকার। • কলেজ দরকার। • মরিঝিলের মাঝে ব্রিজ দরকার। • রাস্তাঘাট আসে নাই। • ইউ এন ও সাহেব - রামু উপজেলার গেজেট সংগ্রহ করা দরকার (LGED, AC Land, নির্বাচন, ইউনিয়ন এ থাকবে)	• According to population projection, existing condition, all necessary plans have been included in development plan • Development plan of this union has been proposed	- -CHAPTER-7 Page-7-35

উপস্থিত সদস্য বৃন্দ	মন্তব্য	Attained Activities	Page no in Report
এল জি ই ডি ইঞ্জিনিয়ার	• ইউনিয়ন-ওয়াইজ নেটওয়ার্ক - • গ্রোথ স্টোরের জায়গা কতটুকু।	• Union wise Development plan have been proposed	-CHAPTER-7
সদস্য, দক্ষিণ মঠাছড়ি	• ওয়ার্ড-৮ এ পানির ছড়া প্রাইমারী স্কুলে ড্রেন দরকার। • ওয়ার্ড-৮ এবং ওয়ার্ড-৮ এ কালভার্ট দরকার। • প্রাইমারী স্কুলে ড্রেন দরকার।	• 33 primary school has been proposed in Ramu Upazila • Bridges and culverts has been proposed according to need.	-CHAPTER 7 Page-7-24-7-25 -Appendix-D
মহিলা ভাইস চেয়াম্যান, উপজিলা	• গানজানিয়া, ঈদগর, কাছাপিয়াতে স্কুল নাই। এখানে বালিকা বিদ্যালয়, মহিলা মাদ্রাসা এবং কলেজ দরকার। • বাল্য বিবাহ বেশি। • বাস্তবায়ন হলে আনন্দিত হবো। •	• 33 primary school has been proposed in Ramu Upazila	-CHAPTER 7 Page-7-24-7-25

APPENDIX-J

Comments on Ramu Upazila Draft Plan TMC

Date: 19.4.2017

Comments	Attained Activities	Page no in Report
- Corrections in Thematic Maps	All corrections of Thematic Maps has done	Presented in CHAPTER 6 Page-6-4-6-16
- Labeling of Natural forest need to be changed in all maps.	Restricted special in the place of natural forest has included in proposed structure plan	
- Policy Review •SDG, Agenda3, should be reviewed.	SDG has reviewed and all activities under development plan has related to SDG and separate chapter has included	-Presented in CHAPTER-9
-Alternative proposal for stadium in Ramu should be based on suitability analysis	Proposed Stadium has added	-Presented in CHAPTER-9
-On the basis of the location of railway station proposals should be given in urban area plan -Urban area cannot be demarcated by crossing the rail line. -Hotel, motel zone for tourists. -For the surface runoff in urban area no. of bridges should be fixed -Salinity in Ramu should be analyzed on the basis of available secondary data.	-Proposal of Railway has given in sub-regional plan -Hotel-motel zone has added in proposed Upazila features	- Presented in CHAPTER-7 - Presented in CHAPTER-7
- **Structure Plan Policy** • Geological policy must be incorporated in structure plan. • Undesirable area more than 5%should be removed from the policy. • Suitable buildable land should be corrected as buildable land. • The term low density should be removed from rural settlement policy. • The word navigable in case of chara should be replaced with active. • In agricultural policy there are no policies for single. double and triple cropped land. • Policies should be given to protect the existing agricultural set-up. • Specific policies should be given under the policy title. • Analysis based policies should be given. • Technology driven policy for agriculture should be given under economic policy.	Structure Plan policies has included and all necessary corrections has done	-Presented in CHAPTER-7 7.2.4-7.2.5 Page No-7-7-7-10

Appendix-K

Comments on Ramu Upazila at Final Plan TMC

Date: 24.4.2018

TMC Members	Comments	Attained Activities	Page no in Report
LGED	-Common guidelines of Implementation modality -Action Area Plan- SWTP (proposed) -SDG (Directly and indirectly guidelines)	• SDG guidelines have been interlinked with the project.	Presented in CHAPTER-9
BIWTA	-Pure Water supply system - Ensure Child education - how many cubic waters needed for rangunia? - develop water system -protect surface/ground water	• Overhead tank has been proposed for water supply • Proposal for surface water treatment has been given	-Presented in Page-9-5 (CHAPTER 9) Attachment -1
RHD	-Natural Hazard -What are the mitigation measures for landslide and hill cutting	• Any kind of development is prohibited in hills which have slopes more than 5% except agriculture • Buffered zone has been indicated in the report to prohibit development on the hill toe.	-Presented in Page-6-31-6-32 (CHAPTER 6) Attachment -2 - Presented in Page-9-7 (CHAPTER 9) Attachment-3
Md Shafiqul SOB	-Coordinate system develop according to SOB	- Coordinate system is done according to SOB	
Railway person	-Railway Facilities ensure -Proposal of Rail line -Proposal of Demo train in respect of tourism	• Rail line has been shown in case of Ramu upazila in the plan. • In the recent railway master plan there is no rail line proposal for Rangunia Upazila.	-Presented in Page-7-4 CHAPTER 7 Attachment-4
Director	• Affordable housing-Total Area for low cost housing must mentioned -Total Population of area must be mentioned -Basic services should be highlighted • Indigenous people- number of indigenous people should be identified? • Show buffer zone -the foot hill area should be calculated -How many buildings are more sensitive or less sensitive?	• Total population and area have been calculated for low cost housing project. • Buffered zone from the foot hill has been calculated	- Presented in Page-7-43 (CHAPTER 7) Attachment-5 - Presented in Page-9-7 (CHAPTER 9) Attachment-3

Attained Activities according to Final Plan TMC comments

Attachment -1

Overhead tank has been proposed for water supply

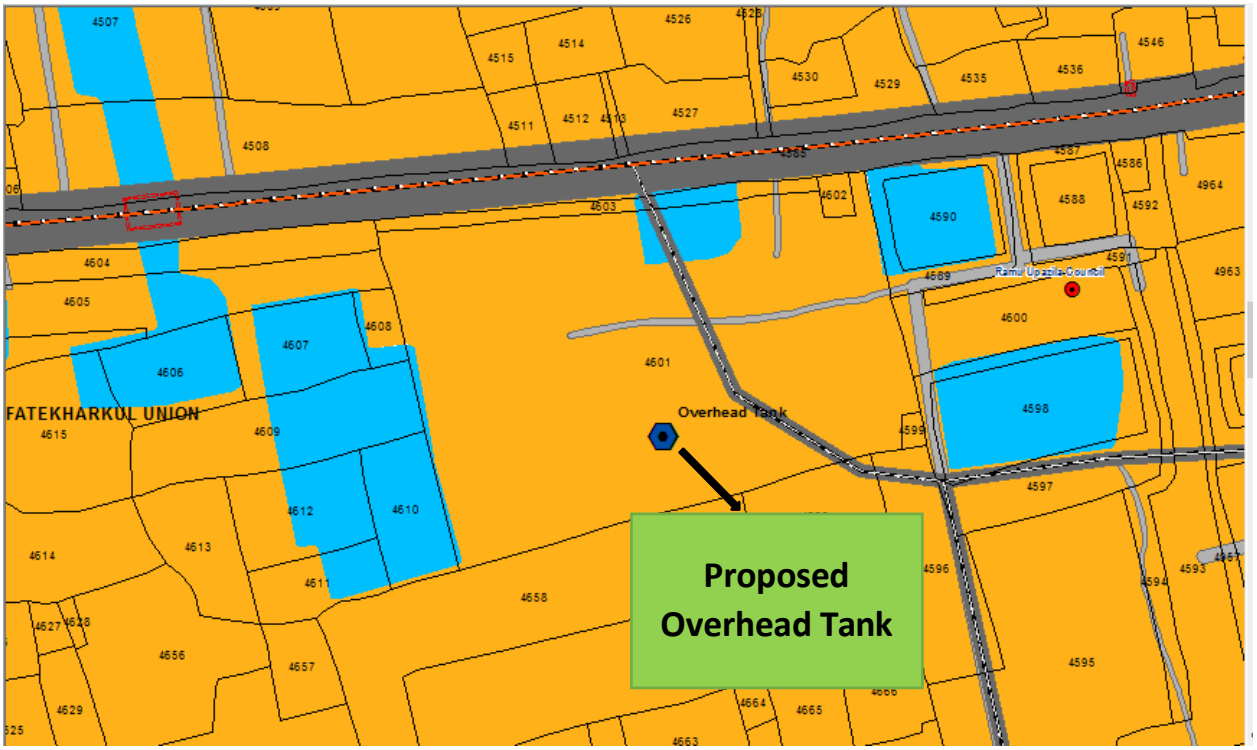
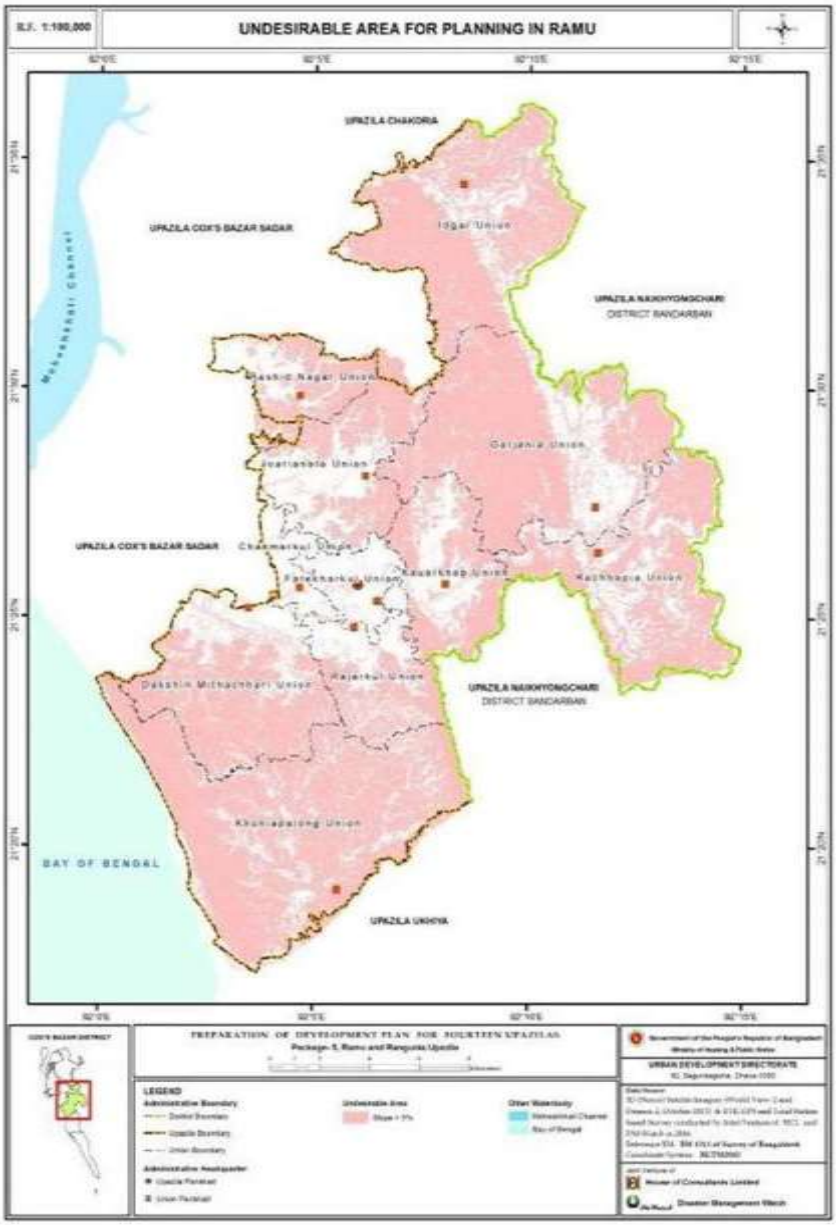


Figure 1: Proposed Overhead Tank to Promote water and sanitation for all

Attachment -2

Any kind of development is prohibited in hills which have slopes more than 5%.

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

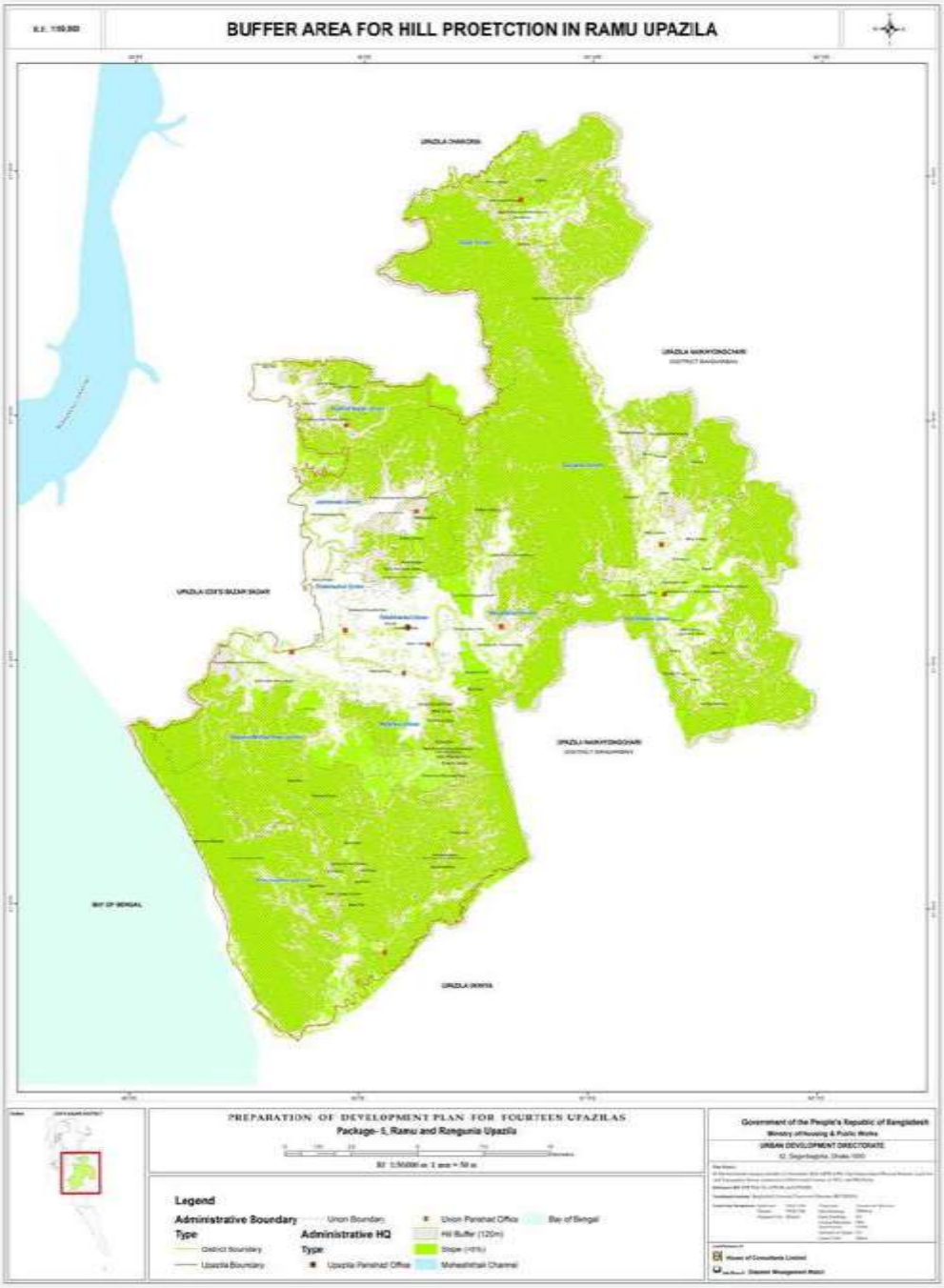


Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 1: Undesirable Area for Planning

Attachment -3

Buffered zone has been indicated in the report to prohibit development on the hill toe.



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

Map 2: Buffer Area for Hill Protection in Ramu Upazila

Attachment -4

Chittagong CoxBazar Railway Link has been shown in sub-regional plan.

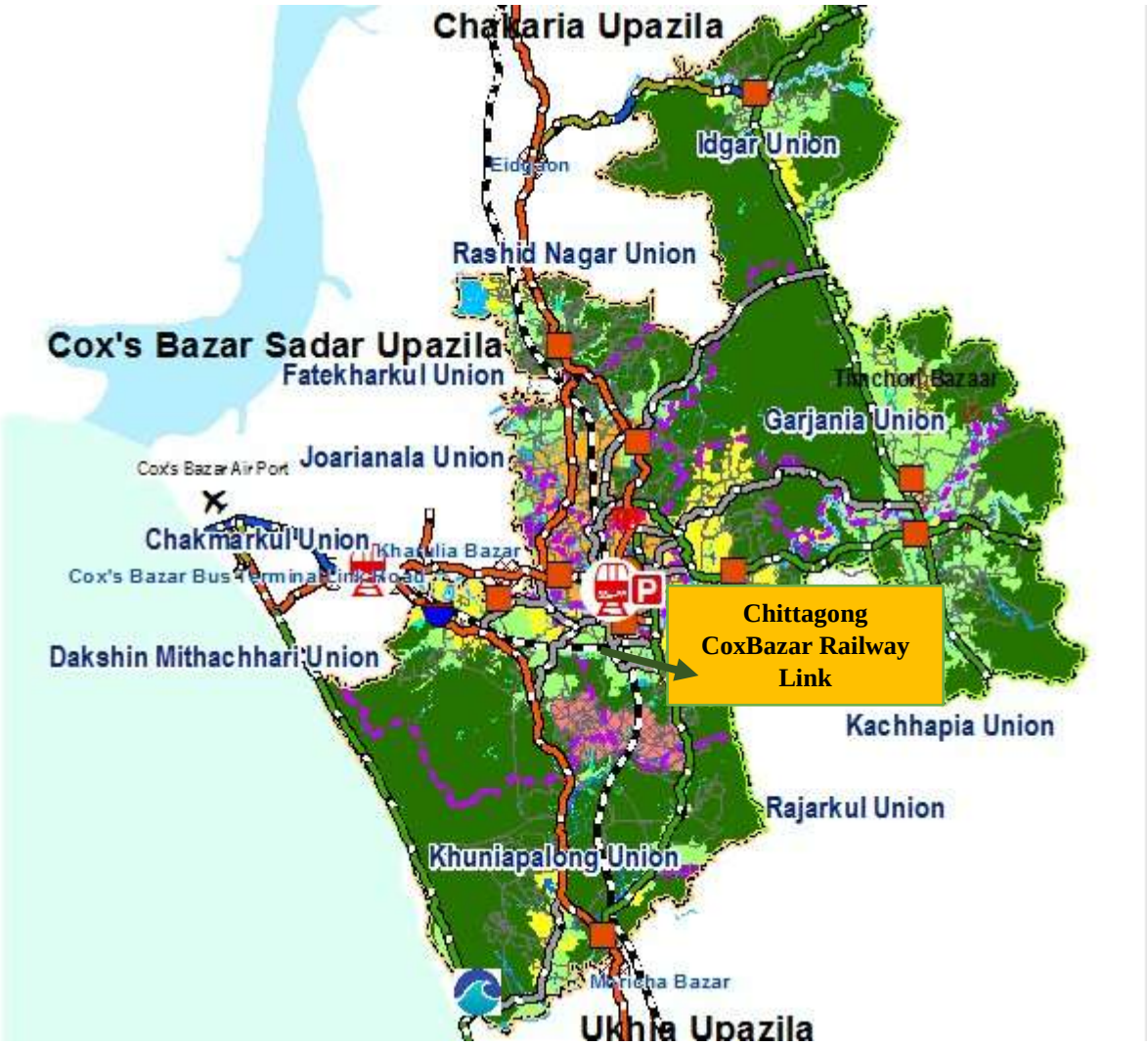


Figure 2: Chittagong CoxBazar Railway Link

Attachment -5

Total population and area have been calculated for low cost housing project.

Table: 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

APPENDIX-L

Ramu Tofsil

Proposed Upazila Features

Features	Union	Mouza	JLNo	Sheet No	Plot No
Hotel Motel Zone	Khuniapalong	Jungle Goalia Palong	032	000	19
Monument	Khuniapalong	Dhechua Palong	036	003	3042
Dairy Food Zone	Khuniapalong	Dariar Dighi	037	007	4385
	Khuniapalong	Dariar Dighi	037	007	4388
	Khuniapalong	Dariar Dighi	037	007	4384
Poultry and Fish Processing Zone	Khuniapalong	Dariar Dighi	037	007	4611
	Khuniapalong	Dariar Dighi	037	007	4612
Tourist Spot	Khuniapalong	Jungle Khunia Palong	029	000	41
Botanical Garden	Dakshin Mithachhari	Dakshin Mithachhari	027	011	12542
Tourist Spot	Rajarkul	Rajarkul	025	007	7776
College	Kauarkhop	Kauarkho	008	002	606
Bus Stand	Fatekharkul	Fotekhar Kul	022	002	1787
Truck Stand & Frieght Zone		Maronglowa	021	001	914
Retail Trade Zone	Fatekharkul	Fotekhar Kul	022	003	5560
Monument	Fatekharkul	Fotekhar Kul	022	003	5555
Water Treatment Plant	Fatekharkul	Hightupi	020	000	395
	Fatekharkul	Hightupi	020	000	394
Fruit Processing Zone	Kachhapia	Kachhapia	04	05	2978
	Kachhapia	Kachhapia	04	05	2979
Economic Zone	Chakmarkul	Chakmarkul	018	003	3607
	Chakmarkul	Chakmarkul	018	003	3605
	Chakmarkul	Chakmarkul	018	003	3649
Monument	Joarianala	Uttar Mithachhari	019	002	2021
Sewage Treatment Plant	Chakmarkul	Chakmarkul	018	003	3184
	Chakmarkul	Chakmarkul	018	003	3107
Wholesale Trade Zone	Joarianala	Uttar Mithachhari	019	002	1926
Low Income Housing	Kauarkhop	Lot Ukhiarghona	039	006	2527
	Kauarkhop	Lot Ukhiarghona	039	001	675
	Kauarkhop	Lot Ukhiarghona	039	001	563
Solar Park	Garjania	Jungle Garjania	010	000	119
BKSP	Joarianala	Nonachhari	017	003	3432
	Joarianala	Nonachhari	017	003	3431
	Joarianala	Nonachhari	017	003	3436
College	Joarianala	Joarianala	012	005	7295

Tourist Spot	Garjania	Jungle Garjania	010	000	56
	Garjania	Jungle Garjania	010	000	119
	Joarianala	Joarianala	012	007	99999

Proposed Amusement Park							
Proposed Features	**Proposed Landuse**	**Union**	**Mouza**	**JL No**	**Sheet No**	**Plot No**	**Area Acre**
Proposed Amusement Park	Recreational Facilities	Rajarkul	Rajarkul	025	006	7670	0.328

Proposed Auditorium							
Proposed Features	**Proposed Landuse**	**Union**	**Mouza**	**JL No**	**Sheet No**	**Plot No**	**Area Acre**
Proposed Auditorium	Recreational Facilities	Fatekharkul Union	Fotekhar Kul	022	003	4601	0.222

Proposed Clinic

Proposed Features	**Proposed Landuse**	**Union**	**Mouza**	**JL No**	**Sheet No**	**Plot No**	**Area Acre**
Proposed Clinic	**Health Facilities**	Khuniapalong	Khuniapalong	035	004	1329	0.084
		Khuniapalong	Khuniapalong	035	004	1328	1.563
		Kachhapia	Dakshin Kachhapia	005	006	11161	0.048
		Kachhapia	Dakshin Kachhapia	005	006	11160	0.382
		Kachhapia	Dakshin Kachhapia	005	006	11159	0.142
		Kachhapia	Dakshin Kachhapia	005	006	11152	0.472
		Kachhapia	Dakshin Kachhapia	005	006	11153	0.429
		Kauarkhop	Sonaichhari	024	005	937	0.128
		Kachhapia	Dakshin Kachhapia	005	006	11158	0.006
		Kauarkhop	Sonaichhari	024	005	936	0.160
		Kauarkhop	Sonaichhari	024	005	935	0.085
		Kauarkhop	Sonaichhari	024	005	934	0.090
		Kauarkhop	Sonaichhari	024	005	933	0.090
		Rajarkul	Rajarkul	025	002	1878	0.000
		Rajarkul	Rajarkul	025	002	1874	0.017
		Rajarkul	Rajarkul	025	002	1873	0.018
		Rajarkul	Rajarkul	025	002	1902	0.124
		Rajarkul	Rajarkul	025	002	1872	0.001
		Rajarkul	Rajarkul	025	002	1903	0.063
		Rajarkul	Rajarkul	025	002	1898	0.008
		Rajarkul	Rajarkul	025	002	1901	0.081
		Rajarkul	Rajarkul	025	002	1900	0.008

Proposed Features	Proposed Landuse	Union	Mouza	JL No	Sheet No	Plot No	Area Acre
		Rajarkul	Rajarkul	025	002	1894	0.063
		Rajarkul	Rajarkul	025	002	1910	0.065
		Rajarkul	Rajarkul	025	002	1904	0.077
		Rajarkul	Rajarkul	025	002	1909	0.193
		Rajarkul	Rajarkul	025	002	1905	0.022
		Rajarkul	Rajarkul	025	002	1899	0.001
		Rajarkul	Rajarkul	025	002	1897	0.013
		Dakshin Mithachhari	Dakshin Mithachhari	027	002	2188	0.015
		Fatekharkul	Fotekhar Kul	022	004	8154	0.381
		Dakshin Mithachhari	Dakshin Mithachhari	027	002	2187	0.015
		Dakshin Mithachhari	Dakshin Mithachhari	027	002	2186	0.011
		Fatekharkul	Fotekhar Kul	022	004	8155	0.017
		Dakshin Mithachhari	Dakshin Mithachhari	027	002	2185	0.024
		Fatekharkul	Fotekhar Kul	022	004	8185	0.134
		Dakshin Mithachhari	Dakshin Mithachhari	027	002	2184	0.018
		Dakshin Mithachhari	Dakshin Mithachhari	027	002	2121	0.124
		Fatekharkul	Fotekhar Kul	022	004	8156	0.614
		Dakshin Mithachhari	Dakshin Mithachhari	027	002	2120	0.005
		Dakshin Mithachhari	Dakshin Mithachhari	027	002	2127	0.105
		Dakshin Mithachhari	Dakshin Mithachhari	027	002	2124	0.131
		Dakshin Mithachhari	Dakshin Mithachhari	027	002	2122	0.221
		Dakshin Mithachhari	Dakshin Mithachhari	027	002	2123	0.274
		Dakshin Mithachhari	Dakshin Mithachhari	027	002	2140	0.171
		Fatekharkul	Fotekhar Kul	022	005	8933	0.001
		Fatekharkul	Fotekhar Kul	022	005	8928	0.044
		Fatekharkul	Fotekhar Kul	022	005	8929	0.408
		Rajarkul	Rajarkul	025	009	10687	0.091
		Rajarkul	Rajarkul	025	009	10685	0.046
		Rajarkul	Rajarkul	025	009	10684	0.039
		Rajarkul	Rajarkul	025	009	10683	0.044
		Rajarkul	Rajarkul	025	009	10682	0.232
		Rajarkul	Rajarkul	025	009	10681	0.209
		Rajarkul	Rajarkul	025	009	10680	0.147
		Rajarkul	Rajarkul	025	009	10679	0.001
		Rajarkul	Rajarkul	025	009	11409	0.002
		Rajarkul	Rajarkul	025	009	10688	0.070
		Kauarkhop	Manirjhil	006	001	802	0.001
		Kauarkhop	Manirjhil	006	001	519	0.001
		Kauarkhop	Manirjhil	006	001	801	0.084

Proposed Features	Proposed Landuse	Union	Mouza	JL No	Sheet No	Plot No	Area Acre
		Kauarkhop	Manirjhil	006	001	800	0.077
		Rajarkul	Rajarkul	025	009	10686	0.043
		Kauarkhop	Manirjhil	006	001	521	0.009
		Kauarkhop	Manirjhil	006	001	799	0.215
		Kauarkhop	Manirjhil	006	001	522	0.268
		Kauarkhop	Manirjhil	006	001	798	0.189
		Kauarkhop	Manirjhil	006	001	531	0.182
		Kauarkhop	Manirjhil	006	001	520	0.013
		Fatekharkul	Fotekhar Kul	022	003	4682	0.085
		Fatekharkul	Fotekhar Kul	022	003	4681	0.285
		Fatekharkul	Fotekhar Kul	022	003	4680	0.067
		Fatekharkul	Fotekhar Kul	022	003	4679	0.021
		Fatekharkul	Fotekhar Kul	022	003	4677	0.000
		Fatekharkul	Fotekhar Kul	022	003	4676	0.042
		Kauarkhop	Lot Ukhiarghona	039	007	3176	0.134
		Fatekharkul	Maronglowa	021	002	2313	0.002
		Kauarkhop	Ukhiarghona	009	003	4621	0.212
		Kauarkhop	Ukhiarghona	009	003	4620	0.117
		Fatekharkul	Hightupi	020	000	526	0.444
		Fatekharkul	Maronglowa	021	002	2310	0.003
		Kauarkhop	Lot Ukhiarghona	039	007	3175	0.123
		Fatekharkul	Hightupi	020	000	525	0.218
		Kauarkhop	Ukhiarghona	009	003	4439	0.163
		Fatekharkul	Hightupi	020	000	524	0.231
		Kauarkhop	Ukhiarghona	009	003	4446	0.098
		Fatekharkul	Hightupi	020	000	523	0.196
		Fatekharkul	Hightupi	020	000	522	0.209
		Kauarkhop	Lot Ukhiarghona	039	007	3173	0.117
		Fatekharkul	Maronglowa	021	001	503	0.033
		Fatekharkul	Maronglowa	021	001	499	0.008
		Fatekharkul	Hightupi	020	000	519	0.155
		Fatekharkul	Maronglowa	021	001	500	0.001
		Fatekharkul	Maronglowa	021	001	513	0.000
		Fatekharkul	Maronglowa	021	001	504	0.277
		Fatekharkul	Maronglowa	021	001	501	0.186
		Fatekharkul	Maronglowa	021	001	502	0.247
		Fatekharkul	Maronglowa	021	001	509	0.049
		Fatekharkul	Maronglowa	021	001	508	0.336
		Fatekharkul	Maronglowa	021	001	510	0.114
		Fatekharkul	Maronglowa	021	001	506	0.000
		Fatekharkul	Maronglowa	021	001	505	0.012
		Fatekharkul	Maronglowa	021	002	2118	0.014
		Fatekharkul	Maronglowa	021	001	512	0.057
		Kauarkhop	Lot Ukhiarghona	039	004	1902	0.035
		Kauarkhop	Lot Ukhiarghona	039	004	1905	0.115
		Kauarkhop	Lot Ukhiarghona	039	004	1903	0.068

Proposed Features	Proposed Landuse	Union	Mouza	JL No	Sheet No	Plot No	Area Acre
		Kauarkhop	Lot Ukhiarghona	039	004	1904	0.139
		Kauarkhop	Lot Ukhiarghona	039	004	1901	0.337
		Kauarkhop	Lot Ukhiarghona	039	004	1900	0.179
		Kauarkhop	Lot Ukhiarghona	039	004	1899	0.000
		Kauarkhop	Ukhiarghona	009	002	1531	1.146
		Garjania	Garjania	003	012	9773	0.298
		Garjania	Garjania	003	012	9774	0.233
		Garjania	Garjania	003	012	9665	0.309
		Garjania	Garjania	003	012	9767	0.001
		Garjania	Garjania	003	012	9666	0.314
		Joarianala	Uttar Mithachhari	019	001	515	0.755
		Joarianala	Uttar Mithachhari	019	001	519	0.228
		Joarianala	Uttar Mithachhari	019	001	516	0.038
		Kauarkhop	Ukhiarghona	009	001	55	0.000
		Kauarkhop	Ukhiarghona	009	001	56	0.522
		Kauarkhop	Ukhiarghona	009	001	58	0.208
		Kauarkhop	Ukhiarghona	009	001	42	0.506
		Kauarkhop	Ukhiarghona	009	001	59	0.013
		Kauarkhop	Ukhiarghona	009	001	50	0.100
		Joarianala	Joarianala	012	004	5530	0.026
		Joarianala	Nonachhari	017	002	1848	0.064
		Joarianala	Nonachhari	017	002	1858	0.110
		Joarianala	Joarianala	012	004	5555	0.043
		Joarianala	Joarianala	012	004	5553	0.000
		Joarianala	Joarianala	012	004	5556	0.026
		Joarianala	Nonachhari	017	002	1849	0.066
		Joarianala	Joarianala	012	004	5557	0.023
		Joarianala	Nonachhari	017	002	1856	0.060
		Joarianala	Nonachhari	017	002	1857	0.083
		Joarianala	Joarianala	012	004	5558	0.052
		Joarianala	Nonachhari	017	002	1851	0.139
		Joarianala	Nonachhari	017	002	1850	0.057
		Joarianala	Joarianala	012	004	5559	0.063
		Joarianala	Nonachhari	017	002	1852	0.051
		Joarianala	Joarianala	012	004	5560	0.051
		Joarianala	Joarianala	012	004	5939	0.000
		Joarianala	Joarianala	012	004	5549	0.007
		Joarianala	Joarianala	012	004	4951	0.039
		Rashid Nagar	Dhalichora	014	004	9840	0.000
		Rashid Nagar	Dhalichora	014	004	9804	0.051
		Rashid Nagar	Dhalichora	014	004	9805	0.137
		Rashid Nagar	Dhalichora	014	004	9803	0.271
		Rashid Nagar	Dhalichora	014	004	9801	0.017

Proposed Features	Proposed Landuse	Union	Mouza	JL No	Shee t No	Plot No	Area Acre
		Rashid Nagar	Dhalichora	014	004	9802	0.041
		Rashid Nagar	Dhalichora	014	003	6466	0.025
		Rashid Nagar	Dhalichora	014	003	6465	0.227
		Rashid Nagar	Dhalichora	014	003	6463	0.083
		Rashid Nagar	Dhalichora	014	003	6464	0.239
		Rashid Nagar	Dhalichora	014	003	6469	0.057
		Rashid Nagar	Dhalichora	014	004	9783	0.109
		Rashid Nagar	Dhalichora	014	002	3307	0.034
		Rashid Nagar	Dhalichora	014	002	3306	0.037
		Rashid Nagar	Dhalichora	014	002	2285	0.004
		Rashid Nagar	Dhalichora	014	002	3309	0.025
		Rashid Nagar	Dhalichora	014	002	3310	0.013
		Rashid Nagar	Dhalichora	014	002	3308	0.116
		Rashid Nagar	Dhalichora	014	002	3311	0.028
		Rashid Nagar	Dhalichora	014	002	3313	0.017
		Rashid Nagar	Dhalichora	014	002	3306	0.096
		Rashid Nagar	Dhalichora	014	002	3314	0.007
		Rashid Nagar	Dhalichora	014	001	1198	0.003
		Rashid Nagar	Dhalichora	014	002	3312	0.060
		Rashid Nagar	Dhalichora	014	001	1197	0.050
		Rashid Nagar	Dhalichora	014	002	2280	0.022
		Rashid Nagar	Dhalichora	014	002	2279	0.008
		Rashid Nagar	Dhalichora	014	002	2275	0.001
		Rashid Nagar	Dhalichora	014	002	2274	0.063
		Rashid Nagar	Dhalichora	014	001	1196	0.036
		Rashid Nagar	Dhalichora	014	001	1028	0.030
		Idgar	Idgar	002	006	7703	0.742
		Idgar	Idgar	002	006	7702	0.194
		Idgar	Idgar	002	006	7709	0.004
		Idgar	Idgar	002	004	5045	0.039
		Idgar	Idgar	002	004	4630	0.321
		Idgar	Idgar	002	004	4631	0.030
		Idgar	Idgar	002	004	4643	0.701
		Idgar	Idgar	002	004	4633	0.193
		Idgar	Idgar	002	004	4634	0.017

Proposed High School

Proposed Features	Proposed Landuse	Union	Mouza	JL No	Sheet No	Plot No	Area Acre
Proposed High School	Education Facilities	Khuniapalong	Dariar Dighi	037	005	2586	0.01
		Khuniapalong	Dariar Dighi	037	005	2585	1.07
		Khuniapalong	Dariar Dighi	037	005	2584	0.65
		Khuniapalong	Dariar Dighi	037	005	2686	0.17
		Khuniapalong	Dariar Dighi	037	005	2583	0.92
		Khuniapalong	Dariar Dighi	037	005	2582	0.00
		Khuniapalong	Dariar Dighi	037	002	577	0.13
		Khuniapalong	Dariar Dighi	037	002	654	0.21
		Khuniapalong	Dariar Dighi	037	002	576	0.01
		Khuniapalong	Dariar Dighi	037	002	575	0.05
		Khuniapalong	Dariar Dighi	037	002	574	0.14
		Khuniapalong	Khuniapalong	035	004	1339	0.07
		Khuniapalong	Khuniapalong	035	004	1340	0.15
		Khuniapalong	Khuniapalong	035	004	1341	0.77
		Khuniapalong	Khuniapalong	035	004	1330	0.01
		Khuniapalong	Khuniapalong	035	004	1316	3.01
		Khuniapalong	Dariar Dighi	037	002	591	0.00
		Rajarkul	Rajarkul	025	008	8866	0.05
		Rajarkul	Rajarkul	025	008	8867	0.37
		Rajarkul	Rajarkul	025	008	8868	0.23
		Rajarkul	Rajarkul	025	008	8863	0.01
		Rajarkul	Rajarkul	025	008	8862	1.45
		Rajarkul	Rajarkul	025	008	8869	0.33
		Rajarkul	Rajarkul	025	008	8870	0.01
		Rajarkul	Rajarkul	025	008	8861	1.36
		Rajarkul	Rajarkul	025	008	8860	0.73
		Dakshin Mithachhari	Umkhali	026	004	2717	0.01
		Dakshin Mithachhari	Umkhali	026	004	3337	0.00
		Dakshin Mithachhari	Umkhali	026	004	2720	0.07
		Dakshin Mithachhari	Umkhali	026	004	2724	0.02
		Dakshin Mithachhari	Umkhali	026	004	2721	0.18
		Dakshin Mithachhari	Umkhali	026	004	2722	0.27
		Dakshin Mithachhari	Umkhali	026	004	2723	0.23
		Chakmarkul	Chakmarkul	018	004	8917	0.00
		Chakmarkul	Chakmarkul	018	004	8916	0.05
		Chakmarkul	Chakmarkul	018	004	8915	0.13
		Chakmarkul	Chakmarkul	018	004	8914	0.08
		Chakmarkul	Chakmarkul	018	004	8913	0.08
		Chakmarkul	Chakmarkul	018	004	8910	0.06

Proposed Features	Proposed Landuse	Union	Mouza	JL No	Sheet No	Plot No	Area Acre
		Chakmarkul	Chakmarkul	018	004	8912	0.16
		Chakmarkul	Chakmarkul	018	004	8891	0.02
		Chakmarkul	Chakmarkul	018	004	8892	0.02
		Chakmarkul	Chakmarkul	018	004	8911	0.16
		Dakshin Mithachhari	Umkhali	026	004	2741	0.08
		Chakmarkul	Chakmarkul	018	004	8909	0.06
		Chakmarkul	Chakmarkul	018	004	8897	0.04
		Chakmarkul	Chakmarkul	018	004	8908	0.12
		Chakmarkul	Chakmarkul	018	004	8883	0.16
		Chakmarkul	Chakmarkul	018	004	8905	0.04
		Chakmarkul	Chakmarkul	018	004	8907	0.07
		Chakmarkul	Chakmarkul	018	004	8890	0.12
		Dakshin Mithachhari	Umkhali	026	004	2742	0.00
		Chakmarkul	Chakmarkul	018	004	8896	0.06
		Chakmarkul	Chakmarkul	018	004	8906	0.10
		Chakmarkul	Chakmarkul	018	004	8904	0.10
		Chakmarkul	Chakmarkul	018	004	8895	0.07
		Chakmarkul	Chakmarkul	018	004	8903	0.05
		Chakmarkul	Chakmarkul	018	004	8894	0.04
		Chakmarkul	Chakmarkul	018	004	8902	0.09
		Chakmarkul	Chakmarkul	018	004	8898	0.19
		Chakmarkul	Chakmarkul	018	004	8901	0.02
		Chakmarkul	Chakmarkul	018	004	8900	0.03
		Chakmarkul	Chakmarkul	018	004	8889	0.16
		Chakmarkul	Chakmarkul	018	004	8899	0.12
		Chakmarkul	Chakmarkul	018	004	8893	0.23
		Rajarkul	Rajarkul	025	002	1710	0.00
		Rajarkul	Rajarkul	025	002	1709	0.00
		Rajarkul	Rajarkul	025	002	1708	0.00
		Chakmarkul	Chakmarkul	018	004	8863	0.26
		Chakmarkul	Chakmarkul	018	004	8865	0.10
		Chakmarkul	Chakmarkul	018	004	8864	0.09
		Chakmarkul	Chakmarkul	018	004	8866	0.10
		Chakmarkul	Chakmarkul	018	004	8867	0.06
		Chakmarkul	Chakmarkul	018	004	8868	0.16
		Chakmarkul	Chakmarkul	018	004	8862	0.31
		Chakmarkul	Chakmarkul	018	004	8818	0.01
		Chakmarkul	Chakmarkul	018	004	8861	0.05
		Chakmarkul	Chakmarkul	018	004	8860	0.05
		Chakmarkul	Chakmarkul	018	004	8859	0.04
		Chakmarkul	Chakmarkul	018	004	8858	0.04
		Chakmarkul	Chakmarkul	018	004	8857	0.03
		Chakmarkul	Chakmarkul	018	004	8854	0.05
		Chakmarkul	Chakmarkul	018	004	8855	0.03
		Chakmarkul	Chakmarkul	018	004	8845	0.00
		Chakmarkul	Chakmarkul	018	004	8846	0.00
		Chakmarkul	Chakmarkul	018	004	8824	0.07
		Chakmarkul	Chakmarkul	018	004	8437	0.17

Proposed Features	Proposed Landuse	Union	Mouza	JL No	Sheet No	Plot No	Area Acre
		Chakmarkul	Chakmarkul	018	004	8439	0.08
		Chakmarkul	Chakmarkul	018	004	7802	0.02
		Chakmarkul	Chakmarkul	018	004	7801	0.02
		Chakmarkul	Chakmarkul	018	004	7803	0.14
		Chakmarkul	Chakmarkul	018	004	7806	0.03
		Chakmarkul	Chakmarkul	018	004	7805	0.64
		Chakmarkul	Chakmarkul	018	004	7754	0.14
		Chakmarkul	Chakmarkul	018	004	8154	0.67
		Chakmarkul	Chakmarkul	018	004	7749	0.16
		Chakmarkul	Chakmarkul	018	004	7753	0.30
		Chakmarkul	Chakmarkul	018	004	7818	0.01
		Chakmarkul	Chakmarkul	018	004	8937	0.00
		Chakmarkul	Chakmarkul	018	004	7752	0.16
		Chakmarkul	Chakmarkul	018	004	7750	0.06
		Chakmarkul	Chakmarkul	018	004	7819	0.01
		Chakmarkul	Chakmarkul	018	004	7751	0.17
		Chakmarkul	Chakmarkul	018	004	7822	0.00
		Chakmarkul	Chakmarkul	018	004	7821	0.03
		Kauarkhop	Ukhiarghona	009	003	4254	0.09
		Kauarkhop	Kauarkho	008	002	547	0.09
		Kauarkhop	Ukhiarghona	009	003	4256	0.16
		Kauarkhop	Ukhiarghona	009	003	4618	0.01
		Kauarkhop	Ukhiarghona	009	003	4257	0.11
		Kauarkhop	Ukhiarghona	009	003	4265	0.04
		Kauarkhop	Ukhiarghona	009	003	4258	0.14
		Kauarkhop	Ukhiarghona	009	003	4259	0.17
		Kauarkhop	Ukhiarghona	009	003	4260	0.00
		Kauarkhop	Ukhiarghona	009	003	4264	0.01
		Kauarkhop	Ukhiarghona	009	003	4255	0.10
		Joarianala	Uttar Mithachhari	019	001	487	0.41
		Joarianala	Uttar Mithachhari	019	001	488	0.45
		Joarianala	Uttar Mithachhari	019	001	511	0.08
		Joarianala	Uttar Mithachhari	019	001	512	0.05
		Joarianala	Uttar Mithachhari	019	001	485	0.11
		Joarianala	Uttar Mithachhari	019	001	513	0.34
		Joarianala	Uttar Mithachhari	019	001	506	0.00
		Joarianala	Uttar Mithachhari	019	001	522	0.00
		Joarianala	Uttar Mithachhari	019	001	520	0.05
		Joarianala	Uttar Mithachhari	019	001	521	0.13
		Joarianala	Uttar Mithachhari	019	001	515	0.65
		Joarianala	Uttar Mithachhari	019	001	514	0.56

Proposed Features	Proposed Landuse	Union	Mouza	JL No	Sheet No	Plot No	Area Acre
		Joarianala	Uttar Mithachhari	019	001	536	0.05
		Joarianala	Uttar Mithachhari	019	001	519	0.29
		Joarianala	Uttar Mithachhari	019	001	524	0.00
		Garjania	Garjania	003	011	6758	0.00
		Garjania	Garjania	003	011	6764	0.03
		Garjania	Garjania	003	011	6757	0.02
		Garjania	Garjania	003	011	6763	0.09
		Garjania	Garjania	003	011	6761	0.08
		Garjania	Garjania	003	010	5688	0.20
		Garjania	Garjania	003	011	6760	0.30
		Garjania	Garjania	003	011	6762	0.09
		Garjania	Garjania	003	011	6731	0.04
		Garjania	Garjania	003	011	6752	0.00
		Garjania	Garjania	003	011	6756	0.16
		Garjania	Garjania	003	011	6755	0.04
		Garjania	Garjania	003	011	6753	0.41
		Garjania	Garjania	003	011	6754	0.08
		Garjania	Garjania	003	010	5689	0.51
		Garjania	Garjania	003	010	5686	0.14
		Garjania	Garjania	003	010	5687	1.01
		Garjania	Garjania	003	011	6749	0.10
		Garjania	Garjania	003	011	6748	0.13
		Garjania	Garjania	003	011	6750	0.11
		Garjania	Garjania	003	011	6735	0.01
		Garjania	Garjania	003	011	6703	0.01
		Garjania	Garjania	003	011	6746	0.10
		Garjania	Garjania	003	011	6702	0.02
		Garjania	Garjania	003	011	6745	0.10
		Garjania	Garjania	003	011	6747	0.16
		Garjania	Garjania	003	011	6737	0.16
		Garjania	Garjania	003	010	5684	0.33
		Garjania	Garjania	003	010	5685	0.33
		Garjania	Garjania	003	011	6698	0.01
		Garjania	Garjania	003	010	5683	0.03
		Garjania	Garjania	003	011	6736	0.15
		Joarianala	Joarianala	012	004	4881	0.00
		Joarianala	Joarianala	012	004	4880	0.01
		Joarianala	Joarianala	012	004	4879	0.06
		Joarianala	Joarianala	012	004	4887	0.02
		Joarianala	Joarianala	012	004	4886	0.02
		Joarianala	Joarianala	012	004	4888	0.08
		Joarianala	Joarianala	012	004	4878	0.14
		Joarianala	Joarianala	012	004	4889	0.12
		Joarianala	Joarianala	012	004	4890	0.08
		Joarianala	Joarianala	012	004	4891	0.09
		Joarianala	Joarianala	012	004	4920	0.01
		Joarianala	Joarianala	012	004	4913	0.00
		Joarianala	Joarianala	012	004	4914	0.03

Proposed Features	Proposed Landuse	Union	Mouza	JL No	Sheet No	Plot No	Area Acre
		Joarianala	Joarianala	012	004	4894	0.10
		Joarianala	Joarianala	012	004	4892	0.05
		Joarianala	Joarianala	012	004	4916	0.02
		Joarianala	Joarianala	012	004	4912	0.11
		Joarianala	Joarianala	012	004	4915	0.04
		Joarianala	Joarianala	012	004	4893	0.09
		Joarianala	Joarianala	012	004	4910	0.10
		Joarianala	Joarianala	012	004	4895	0.40
		Joarianala	Joarianala	012	004	4911	0.07
		Joarianala	Joarianala	012	004	99999	0.19
		Joarianala	Joarianala	012	004	99999	0.17
		Joarianala	Joarianala	012	004	4901	0.02
		Joarianala	Joarianala	012	004	4899	0.11
		Joarianala	Joarianala	012	004	4952	0.01
		Joarianala	Joarianala	012	004	4909	0.04
		Joarianala	Joarianala	012	004	4902	0.01
		Joarianala	Joarianala	012	004	4908	0.00
		Joarianala	Joarianala	012	004	4897	0.12
		Joarianala	Joarianala	012	004	4896	0.15
		Joarianala	Joarianala	012	004	4904	0.07
		Joarianala	Joarianala	012	004	4898	0.10
		Joarianala	Joarianala	012	004	4900	0.10
		Joarianala	Joarianala	012	004	4903	0.22
		Joarianala	Joarianala	012	004	4753	0.15
		Joarianala	Joarianala	012	004	4763	0.12
		Joarianala	Joarianala	012	004	4761	0.13
		Joarianala	Joarianala	012	004	4905	0.07
		Joarianala	Joarianala	012	004	4754	0.14
		Joarianala	Joarianala	012	004	4762	0.15
		Joarianala	Joarianala	012	004	4760	0.22
		Joarianala	Joarianala	012	004	4768	0.10
		Joarianala	Joarianala	012	004	4759	0.11
		Joarianala	Joarianala	012	004	4756	0.17
		Joarianala	Joarianala	012	004	4755	0.00
		Joarianala	Joarianala	012	004	4758	0.35
		Joarianala	Joarianala	012	004	4747	0.25
		Joarianala	Joarianala	012	004	4757	0.15
		Joarianala	Joarianala	012	004	4748	0.11
		Rashid Nagar	Dhalichora	014	002	2476	0.05
		Rashid Nagar	Dhalichora	014	002	2475	0.00
		Rashid Nagar	Dhalichora	014	002	2477	0.06
		Rashid Nagar	Dhalichora	014	002	2478	0.03
		Rashid Nagar	Dhalichora	014	002	2678	0.01
		Rashid Nagar	Dhalichora	014	002	2480	0.06
		Rashid Nagar	Dhalichora	014	002	2676	0.12
		Rashid Nagar	Dhalichora	014	002	2675	0.29
		Rashid Nagar	Dhalichora	014	002	2679	0.01
		Rashid Nagar	Dhalichora	014	002	2479	0.10
		Rashid Nagar	Dhalichora	014	002	2481	0.46
		Rashid Nagar	Dhalichora	014	002	2501	0.09

Proposed Features	Proposed Landuse	Union	Mouza	JL No	Sheet No	Plot No	Area Acre
		Rashid Nagar	Dhalichora	014	002	2674	0.11
		Rashid Nagar	Dhalichora	014	002	2680	0.76
		Rashid Nagar	Dhalichora	014	002	2500	0.46
		Rashid Nagar	Dhalichora	014	002	2666	0.02
		Rashid Nagar	Dhalichora	014	002	2502	0.05
		Rashid Nagar	Dhalichora	014	002	2510	0.12
		Rashid Nagar	Dhalichora	014	002	2509	0.22
		Rashid Nagar	Dhalichora	014	002	2511	0.21
		Rashid Nagar	Dhalichora	014	002	2508	0.10
		Rashid Nagar	Dhalichora	014	002	2503	0.06
		Rashid Nagar	Dhalichora	014	002	2667	0.35
		Rashid Nagar	Dhalichora	014	002	2665	0.02
		Rashid Nagar	Dhalichora	014	002	2673	0.06
		Rashid Nagar	Dhalichora	014	002	2507	0.17
		Rashid Nagar	Dhalichora	014	002	2668	0.05
		Rashid Nagar	Dhalichora	014	002	2504	0.05
		Rashid Nagar	Dhalichora	014	002	2671	0.02
		Rashid Nagar	Dhalichora	014	002	2672	0.08
		Rashid Nagar	Dhalichora	014	002	2669	0.09
		Rashid Nagar	Dhalichora	014	002	2664	0.00
		Rashid Nagar	Dhalichora	014	002	2634	0.22
		Rashid Nagar	Dhalichora	014	002	2670	0.30
		Idgar	Idgar	002	003	2195	0.28
		Idgar	Idgar	002	003	2193	0.51
		Idgar	Idgar	002	003	2194	0.21
		Idgar	Idgar	002	003	2216	0.30
		Idgar	Idgar	002	003	2196	0.81
		Idgar	Idgar	002	003	2197	0.27
		Idgar	Idgar	002	003	2198	0.03
		Idgar	Idgar	002	003	2215	0.08
		Idgar	Idgar	002	003	2199	0.03
		Idgar	Idgar	002	003	2200	0.30
		Idgar	Idgar	002	003	2214	0.06
		Idgar	Idgar	002	003	2202	0.06
		Idgar	Idgar	002	003	2213	0.07
		Idgar	Idgar	002	003	2201	0.35
		Idgar	Idgar	002	003	2212	0.12
		Idgar	Idgar	002	003	2203	0.50
		Idgar	Idgar	002	003	2204	0.07
		Idgar	Idgar	002	003	2205	0.09
		Idgar	Idgar	002	003	2206	0.10
		Idgar	Idgar	002	003	2208	0.05
		Idgar	Idgar	002	003	2207	0.07
		Idgar	Idgar	002	003	2209	0.06
		Idgar	Idgar	002	003	2210	0.09
		Idgar	Idgar	002	003	2211	0.05
		Idgar	Idgar	002	003	2131	0.00

Proposed Primary School

Proposed Features	Proposed Landuse	Union	Mouza	JL No	Sheet No	Plot No	Area Acre
Proposed Primary School	Education Facilities	Khuniapalong	Dariar Dighi	037	005	2557	0.029
		Khuniapalong	Dariar Dighi	037	005	2556	0.006
		Khuniapalong	Dariar Dighi	037	005	2555	0.270
		Khuniapalong	Dariar Dighi	037	005	2551	0.127
		Khuniapalong	Dariar Dighi	037	005	2552	0.018
		Khuniapalong	Dariar Dighi	037	005	2553	0.017
		Khuniapalong	Dariar Dighi	037	005	2550	0.095
		Khuniapalong	Dariar Dighi	037	005	2549	0.064
		Khuniapalong	Dariar Dighi	037	005	2548	0.085
		Khuniapalong	Dariar Dighi	037	005	2582	1.328
		Khuniapalong	Dariar Dighi	037	005	2547	0.000
		Khuniapalong	Dariar Dighi	037	002	571	0.054
		Khuniapalong	Dariar Dighi	037	002	570	0.151
		Khuniapalong	Dariar Dighi	037	002	572	0.180
		Khuniapalong	Dariar Dighi	037	002	653	0.119
		Khuniapalong	Dariar Dighi	037	002	561	0.001
		Khuniapalong	Khuniapalong	035	004	1334	0.007
		Khuniapalong	Khuniapalong	035	004	1333	0.195
		Khuniapalong	Khuniapalong	035	004	1783	0.004
		Khuniapalong	Khuniapalong	035	004	1332	0.239
		Khuniapalong	Dariar Dighi	037	002	562	0.039
		Khuniapalong	Khuniapalong	035	004	1330	1.494
		Khuniapalong	Khuniapalong	035	004	1316	0.002
		Dakshin Mithachhari	Dakshin Mithachhari	027	004	6122	0.066
		Dakshin Mithachhari	Dakshin Mithachhari	027	004	6121	0.057
		Dakshin Mithachhari	Dakshin Mithachhari	027	004	6120	0.140
		Dakshin Mithachhari	Dakshin Mithachhari	027	004	6141	0.104
		Dakshin Mithachhari	Dakshin Mithachhari	027	004	6119	0.139
		Dakshin Mithachhari	Dakshin Mithachhari	027	004	6140	0.124
		Dakshin Mithachhari	Dakshin Mithachhari	027	004	6118	0.156
		Dakshin Mithachhari	Dakshin Mithachhari	027	004	6136	0.001
		Dakshin Mithachhari	Dakshin Mithachhari	027	004	6139	0.161
		Dakshin Mithachhari	Dakshin Mithachhari	027	004	6138	0.085
		Dakshin Mithachhari	Dakshin Mithachhari	027	004	6137	0.068
		Dakshin Mithachhari	Dakshin Mithachhari	027	004	6117	0.167
		Dakshin Mithachhari	Dakshin Mithachhari	027	004	6116	0.000
		Dakshin Mithachhari	Dakshin Mithachhari	027	004	6142	0.832

Proposed Features	Proposed Landuse	Union	Mouza	JL No	Sheet No	Plot No	Area Acre
		Dakshin Mithachhari	Dakshin Mithachhari	027	004	6157	0.001
		Dakshin Mithachhari	Dakshin Mithachhari	027	004	6112	0.017
		Kachhapia	Dakshin Kachhapia	005	006	11185	0.207
		Kachhapia	Dakshin Kachhapia	005	006	11186	0.044
		Kachhapia	Dakshin Kachhapia	005	006	11184	0.405
		Kachhapia	Dakshin Kachhapia	005	006	11176	0.502
		Kachhapia	Dakshin Kachhapia	005	006	11175	0.498
		Kachhapia	Dakshin Kachhapia	005	006	11173	0.120
		Kachhapia	Dakshin Kachhapia	005	006	11161	0.189
		Kachhapia	Dakshin Kachhapia	005	006	11159	0.070
		Kauarkhop	Sonaichhari	024	005	937	0.004
		Kauarkhop	Sonaichhari	024	005	936	0.177
		Kauarkhop	Sonaichhari	024	005	935	0.102
		Kauarkhop	Sonaichhari	024	005	934	0.139
		Kauarkhop	Sonaichhari	024	005	990	0.490
		Kauarkhop	Sonaichhari	024	005	933	0.016
		Rajarkul	Rajarkul	025	002	1947	0.001
		Rajarkul	Rajarkul	025	002	1939	0.022
		Rajarkul	Rajarkul	025	002	1921	0.018
		Rajarkul	Rajarkul	025	002	1946	0.148
		Rajarkul	Rajarkul	025	002	1922	0.004
		Rajarkul	Rajarkul	025	002	1940	0.063
		Rajarkul	Rajarkul	025	002	1941	0.101
		Rajarkul	Rajarkul	025	002	1942	0.043
		Rajarkul	Rajarkul	025	002	1943	0.026
		Rajarkul	Rajarkul	025	002	1919	0.229
		Rajarkul	Rajarkul	025	002	1920	0.349
		Rajarkul	Rajarkul	025	002	1924	0.084
		Rajarkul	Rajarkul	025	002	1925	0.090
		Rajarkul	Rajarkul	025	002	1923	0.600
		Rajarkul	Rajarkul	025	002	1936	0.055
		Rajarkul	Rajarkul	025	002	1928	0.157
		Dakshin Mithachhari	Dakshin Mithachhari	027	001	730	0.006
		Dakshin Mithachhari	Dakshin Mithachhari	027	001	729	0.008
		Dakshin Mithachhari	Dakshin Mithachhari	027	001	728	0.004
		Dakshin Mithachhari	Dakshin Mithachhari	027	001	727	0.004
		Dakshin Mithachhari	Dakshin Mithachhari	027	001	726	0.002

Proposed Features	Proposed Landuse	Union	Mouza	JL No	Sheet No	Plot No	Area Acre
		Dakshin Mithachhari	Dakshin Mithachhari	027	001	725	0.000
		Dakshin Mithachhari	Dakshin Mithachhari	027	001	724	0.195
		Dakshin Mithachhari	Dakshin Mithachhari	027	002	2188	0.019
		Dakshin Mithachhari	Dakshin Mithachhari	027	001	721	0.216
		Fatekharkul	Fotekhar Kul	022	004	8182	0.251
		Dakshin Mithachhari	Dakshin Mithachhari	027	001	720	0.074
		Dakshin Mithachhari	Dakshin Mithachhari	027	001	718	0.297
		Dakshin Mithachhari	Dakshin Mithachhari	027	001	717	0.188
		Dakshin Mithachhari	Dakshin Mithachhari	027	001	716	0.161
		Dakshin Mithachhari	Dakshin Mithachhari	027	001	715	0.208
		Fatekharkul	Fotekhar Kul	022	004	8181	0.792
		Dakshin Mithachhari	Dakshin Mithachhari	027	001	712	0.220
		Dakshin Mithachhari	Dakshin Mithachhari	027	001	713	0.170
		Dakshin Mithachhari	Dakshin Mithachhari	027	001	714	0.212
		Fatekharkul	Fotekhar Kul	022	004	8167	0.189
		Fatekharkul	Fotekhar Kul	022	004	8180	0.157
		Dakshin Mithachhari	Dakshin Mithachhari	027	001	722	0.129
		Dakshin Mithachhari	Dakshin Mithachhari	027	001	723	0.002
		Fatekharkul	Fotekhar Kul	022	004	8176	0.144
		Fatekharkul	Fotekhar Kul	022	004	8177	0.091
		Fatekharkul	Fotekhar Kul	022	004	8168	0.202
		Dakshin Mithachhari	Dakshin Mithachhari	027	002	2140	0.005
		Fatekharkul	Fotekhar Kul	022	005	8933	0.210
		Fatekharkul	Fotekhar Kul	022	005	8934	0.032
		Fatekharkul	Fotekhar Kul	022	005	8935	0.229
		Fatekharkul	Fotekhar Kul	022	005	8928	0.055
		Fatekharkul	Fotekhar Kul	022	005	8929	0.045
		Rajarkul	Rajarkul	025	009	10674	0.011
		Rajarkul	Rajarkul	025	009	10679	0.552
		Rajarkul	Rajarkul	025	009	10678	0.227
		Rajarkul	Rajarkul	025	009	10677	0.211
		Rajarkul	Rajarkul	025	009	10676	0.164
		Rajarkul	Rajarkul	025	009	10675	0.515
		Rajarkul	Rajarkul	025	009	10673	0.004
		Kauarkhop	Manirjhil	006	001	521	0.052
		Kauarkhop	Manirjhil	006	001	522	0.359

Proposed Features	Proposed Landuse	Union	Mouza	JL No	Sheet No	Plot No	Area Acre
		Kauarkhop	Manirjhil	006	001	523	0.060
		Kauarkhop	Manirjhil	006	001	524	0.201
		Kauarkhop	Manirjhil	006	001	531	0.190
		Kauarkhop	Manirjhil	006	001	1338	0.010
		Kauarkhop	Manirjhil	006	001	527	0.112
		Kauarkhop	Manirjhil	006	001	529	0.022
		Kauarkhop	Manirjhil	006	001	530	0.080
		Kauarkhop	Manirjhil	006	001	525	0.004
		Kauarkhop	Manirjhil	006	001	526	0.045
		Kauarkhop	Manirjhil	006	001	528	0.022
		Kauarkhop	Manirjhil	006	001	532	0.021
		Kauarkhop	Manirjhil	006	001	536	0.037
		Chakmarkul	Chakmarkul	018	004	7801	0.000
		Chakmarkul	Chakmarkul	018	004	7762	0.042
		Chakmarkul	Chakmarkul	018	004	7761	0.030
		Chakmarkul	Chakmarkul	018	004	7763	0.034
		Chakmarkul	Chakmarkul	018	004	7804	0.178
		Chakmarkul	Chakmarkul	018	004	7759	0.137
		Chakmarkul	Chakmarkul	018	004	7758	0.008
		Chakmarkul	Chakmarkul	018	004	7760	0.179
		Chakmarkul	Chakmarkul	018	004	7757	0.098
		Chakmarkul	Chakmarkul	018	004	7756	0.152
		Chakmarkul	Chakmarkul	018	004	7805	0.000
		Chakmarkul	Chakmarkul	018	004	7720	0.036
		Chakmarkul	Chakmarkul	018	004	7754	0.059
		Chakmarkul	Chakmarkul	018	004	7755	0.109
		Kauarkhop	Ukhiarghona	009	003	4252	0.011
		Kauarkhop	Ukhiarghona	009	003	4250	0.113
		Kauarkhop	Kauarkho	008	002	548	0.124
		Kauarkhop	Ukhiarghona	009	003	4253	0.276
		Kauarkhop	Ukhiarghona	009	003	4249	0.223
		Kauarkhop	Ukhiarghona	009	003	4254	0.288
		Kauarkhop	Kauarkho	008	002	549	0.000
		Kauarkhop	Ukhiarghona	009	003	4248	0.370
		Kauarkhop	Ukhiarghona	009	003	4255	0.108
		Kauarkhop	Ukhiarghona	009	003	4469	0.342
		Kauarkhop	Ukhiarghona	009	003	4468	0.213
		Fatekharkul	Hightupi	020	000	541	0.002
		Fatekharkul	Hightupi	020	000	540	0.058
		Fatekharkul	Hightupi	020	000	539	0.009
		Kauarkhop	Ukhiarghona	009	003	4478	0.151
		Fatekharkul	Maronglowa	021	002	2316	0.020
		Fatekharkul	Hightupi	020	000	533	0.065
		Kauarkhop	Lot Ukhiarghona	039	007	3178	0.120
		Kauarkhop	Ukhiarghona	009	003	4467	0.259
		Kauarkhop	Ukhiarghona	009	003	4450	0.119
		Fatekharkul	Hightupi	020	000	537	0.068
		Fatekharkul	Hightupi	020	000	532	0.111
		Fatekharkul	Hightupi	020	000	534	0.160

Proposed Features	Proposed Landuse	Union	Mouza	JL No	Sheet No	Plot No	Area Acre
		Kauarkhop	Ukhiarghona	009	003	4449	0.202
		Fatekharkul	Hightupi	020	000	531	0.169
		Kauarkhop	Lot Ukhiarghona	039	007	3177	0.210
		Kauarkhop	Ukhiarghona	009	003	4448	0.262
		Fatekharkul	Hightupi	020	000	530	0.179
		Fatekharkul	Maronglowa	021	002	2314	0.001
		Fatekharkul	Maronglowa	021	002	2315	0.000
		Fatekharkul	Hightupi	020	000	529	0.196
		Fatekharkul	Maronglowa	021	002	2313	0.001
		Fatekharkul	Hightupi	020	000	526	0.063
		Kauarkhop	Lot Ukhiarghona	039	007	3173	0.085
		Fatekharkul	Hightupi	020	000	519	0.192
		Garjania	Garjania	003	012	9666	0.060
		Garjania	Garjania	003	012	9768	0.130
		Garjania	Garjania	003	012	9766	0.109
		Garjania	Garjania	003	012	9765	0.094
		Garjania	Garjania	003	012	9667	0.135
		Garjania	Garjania	003	012	9668	0.153
		Garjania	Garjania	003	012	9669	0.159
		Garjania	Garjania	003	012	9758	0.265
		Garjania	Garjania	003	012	9764	0.107
		Garjania	Garjania	003	012	9763	0.052
		Garjania	Garjania	003	012	9762	0.059
		Garjania	Garjania	003	012	9670	0.430
		Joarianala	Uttar Mithachhari	019	001	502	0.001
		Joarianala	Uttar Mithachhari	019	001	490	0.000
		Joarianala	Uttar Mithachhari	019	001	501	0.240
		Joarianala	Uttar Mithachhari	019	001	489	0.438
		Joarianala	Uttar Mithachhari	019	001	500	0.233
		Joarianala	Uttar Mithachhari	019	001	509	0.094
		Joarianala	Uttar Mithachhari	019	001	744	0.007
		Joarianala	Uttar Mithachhari	019	001	510	0.056
		Joarianala	Uttar Mithachhari	019	001	508	0.467
		Joarianala	Uttar Mithachhari	019	001	507	0.462
		Joarianala	Uttar Mithachhari	019	001	506	0.775
		Joarianala	Uttar Mithachhari	019	001	536	0.078
		Kauarkhop	Ukhiarghona	009	001	33	0.381

Proposed Features	Proposed Landuse	Union	Mouza	JL No	Sheet No	Plot No	Area Acre
		Kauarkhop	Ukhiarghona	009	001	34	0.054
		Kauarkhop	Ukhiarghona	009	001	60	0.009
		Kauarkhop	Ukhiarghona	009	001	35	0.464
		Kauarkhop	Ukhiarghona	009	001	59	0.006
		Kauarkhop	Ukhiarghona	009	001	50	0.075
		Kauarkhop	Ukhiarghona	009	001	32	0.423
		Kauarkhop	Ukhiarghona	009	001	62	0.016
		Kauarkhop	Ukhiarghona	009	001	31	0.012
		Kauarkhop	Ukhiarghona	009	001	22	0.253
		Joarianala	Joarianala	012	002	210	0.074
		Joarianala	Joarianala	012	002	209	0.586
		Joarianala	Joarianala	012	002	208	0.413
		Joarianala	Joarianala	012	002	204	0.483
		Rashid Nagar	Dhalichora	014	004	9839	0.023
		Rashid Nagar	Dhalichora	014	004	9840	0.001
		Rashid Nagar	Dhalichora	014	004	9841	0.449
		Rashid Nagar	Dhalichora	014	004	9842	0.243
		Rashid Nagar	Dhalichora	014	004	9803	0.002
		Rashid Nagar	Dhalichora	014	004	9843	0.626
		Rashid Nagar	Dhalichora	014	004	9837	0.021
		Rashid Nagar	Dhalichora	014	003	6467	0.123
		Rashid Nagar	Dhalichora	014	003	6468	0.217
		Rashid Nagar	Dhalichora	014	003	6471	0.344
		Rashid Nagar	Dhalichora	014	003	6458	0.403
		Rashid Nagar	Dhalichora	014	003	6457	0.335
		Rashid Nagar	Dhalichora	014	003	6455	0.001
		Rashid Nagar	Dhalichora	014	004	10002	0.045
		Rashid Nagar	Dhalichora	014	004	9783	0.115
		Rashid Nagar	Dhalichora	014	002	2043	0.100
		Rashid Nagar	Dhalichora	014	002	2047	0.142
		Rashid Nagar	Dhalichora	014	002	2050	0.007
		Rashid Nagar	Dhalichora	014	002	2042	0.088
		Rashid Nagar	Dhalichora	014	002	2044	0.111
		Rashid Nagar	Dhalichora	014	002	2041	0.154
		Rashid Nagar	Dhalichora	014	002	2046	0.557
		Rashid Nagar	Dhalichora	014	002	2045	0.119
		Rashid Nagar	Dhalichora	014	002	2051	0.013
		Rashid Nagar	Dhalichora	014	002	2039	0.051
		Rashid Nagar	Dhalichora	014	002	2040	0.091
		Rashid Nagar	Dhalichora	014	002	2038	0.075
		Rashid Nagar	Dhalichora	014	002	2037	0.023
		Rashid Nagar	Dhalichora	014	002	2031	0.014
		Rashid Nagar	Dhalichora	014	002	2121	0.122
		Rashid Nagar	Dhalichora	014	002	2027	0.077
		Rashid Nagar	Dhalichora	014	002	2026	0.045
		Idgar	Idgar	002	006	8135	0.808
		Idgar	Idgar	002	006	8134	0.946
		Idgar	Idgar	002	006	8143	0.001
		Idgar	Idgar	002	006	8131	0.160

Proposed Features	Proposed Landuse	Union	Mouza	JL No	Sheet No	Plot No	Area Acre
		Idgar	Idgar	002	006	8146	0.000
		Idgar	Idgar	002	006	8132	0.299
		Idgar	Idgar	002	006	8133	0.357
		Idgar	Idgar	002	004	4935	0.002
		Idgar	Idgar	002	004	4920	0.035
		Idgar	Idgar	002	004	4922	0.409
		Idgar	Idgar	002	004	4924	0.120
		Idgar	Idgar	002	004	4934	0.064
		Idgar	Idgar	002	004	4928	0.239
		Idgar	Idgar	002	004	4921	0.467
		Idgar	Idgar	002	004	4923	0.771
		Idgar	Idgar	002	004	4925	0.034
		Idgar	Idgar	002	004	4926	0.065
		Idgar	Idgar	002	004	4927	0.008
		Idgar	Idgar	002	004	4929	0.573
		Idgar	Idgar	002	004	4645	0.003

Proposed Overhead Tank							
Proposed Features	**Proposed Landuse**	**Union**	**Mouza**	**JL No**	**Sheet No**	**Plot No**	**Area Acre**
Proposed Overhead Tank	**Utility Facilities**	Fatekharkul	Fotekhar Kul	022	003	4601	1.663

Proposed Solid Waste Disposal Site							
Proposed Features	**Proposed Landuse**	**Union**	**Mouza**	**JLNo**	**Sheet No**	**Plot No**	**Area Acre**
Proposed Solid Waste Disposal Site	**Utility Facilities**	Dakshin Mithachhari	Chainda	028	003	4868	0.796
		Dakshin Mithachhari	Chainda	028	003	4869	0.399
		Dakshin Mithachhari	Chainda	028	003	4869	0.009
		Dakshin Mithachhari	Chainda	028	003	4863	1.417
		Dakshin Mithachhari	Chainda	028	003	4859	0.437
		Dakshin Mithachhari	Chainda	028	003	4870	1.075
		Dakshin Mithachhari	Chainda	028	003	4860	0.940
		Dakshin Mithachhari	Chainda	028	003	4858	0.541
		Dakshin Mithachhari	Chainda	028	003	5711	0.324

Proposed Stadium							
Proposed Features	**Proposed Landuse**	**Union**	**Mouza**	**JL No**	**Sheet No**	**Plot No**	**Area Acre**
Proposed Stadium	**Community Facilities**	Fatekharkul	Hightupi	020	000	37	2.569
		Fatekharkul	Hightupi	020	000	11	2.878
		Fatekharkul	Hightupi	020	000	38	0.805
		Fatekharkul	Hightupi	020	000	39	0.600
		Fatekharkul	Hightupi	020	000	10	0.511
		Fatekharkul	Hightupi	020	000	9	0.433
		Fatekharkul	Hightupi	020	000	8	1.744

Proposed Planned Urban Residential Unit

Proposed Features	Union	Mouza	JL No	Sheet No	Plot No	Area Acre
Planned Urban Residential 1	Chakmarkul Union	Chakmarkul	018	003	4958	0.145
	Chakmarkul Union	Chakmarkul	018	003	4959	0.235
	Chakmarkul Union	Chakmarkul	018	003	4950	0.086
	Chakmarkul Union	Chakmarkul	018	003	4951	0.136
	Chakmarkul Union	Chakmarkul	018	003	4849	0.013
	Chakmarkul Union	Chakmarkul	018	003	4848	0.063
	Chakmarkul Union	Chakmarkul	018	003	4847	0.036
	Chakmarkul Union	Chakmarkul	018	003	4846	0.033
	Chakmarkul Union	Chakmarkul	018	003	4850	0.173
	Chakmarkul Union	Chakmarkul	018	003	4845	0.015
	Chakmarkul Union	Chakmarkul	018	003	4844	0.017
	Chakmarkul Union	Chakmarkul	018	003	4843	0.045
	Chakmarkul Union	Chakmarkul	018	003	4838	0.047
	Chakmarkul Union	Chakmarkul	018	003	4837	0.019
	Chakmarkul Union	Chakmarkul	018	003	4836	0.055
	Chakmarkul Union	Chakmarkul	018	003	4249	0.365
	Chakmarkul Union	Chakmarkul	018	003	4250	0.091
	Chakmarkul Union	Chakmarkul	018	003	4833	0.049
	Chakmarkul Union	Chakmarkul	018	003	4832	0.067
	Chakmarkul Union	Chakmarkul	018	003	4830	0.005
	Chakmarkul Union	Chakmarkul	018	003	4831	0.030
	Chakmarkul Union	Chakmarkul	018	003	4854	0.359
	Chakmarkul Union	Chakmarkul	018	003	4829	0.065
	Chakmarkul Union	Chakmarkul	018	003	4297	0.304
	Chakmarkul Union	Chakmarkul	018	003	4823	0.153
	Chakmarkul Union	Chakmarkul	018	003	4821	0.099
	Chakmarkul Union	Chakmarkul	018	003	4814	0.323
	Fatekharkul Union	Fotekhar Kul	022	001	253	0.036
	Fatekharkul Union	Fotekhar Kul	022	001	254	0.044
	Fatekharkul Union	Fotekhar Kul	022	001	251	0.123
	Fatekharkul Union	Fotekhar Kul	022	001	255	0.124
	Fatekharkul Union	Fotekhar Kul	022	001	257	0.085
	Fatekharkul Union	Fotekhar Kul	022	001	256	0.109
	Fatekharkul Union	Fotekhar Kul	022	001	250	0.230
	Fatekharkul Union	Fotekhar Kul	022	001	246	0.095
	Fatekharkul Union	Fotekhar Kul	022	001	218	0.187
	Fatekharkul Union	Fotekhar Kul	022	001	244	0.038

Proposed Features	Union	Mouza	JL No	Sheet No	Plot No	Area Acre
	Fatekharkul Union	Fotekhar Kul	022	001	222	0.038
	Fatekharkul Union	Fotekhar Kul	022	001	217	0.048
	Fatekharkul Union	Fotekhar Kul	022	001	245	0.024
	Fatekharkul Union	Fotekhar Kul	022	001	223	0.033
	Fatekharkul Union	Fotekhar Kul	022	001	248	0.037
	Fatekharkul Union	Fotekhar Kul	022	001	249	0.335
	Fatekharkul Union	Fotekhar Kul	022	001	261	0.175
	Fatekharkul Union	Fotekhar Kul	022	001	224	0.043
	Fatekharkul Union	Fotekhar Kul	022	001	243	0.155
	Fatekharkul Union	Fotekhar Kul	022	001	258	0.440
	Fatekharkul Union	Fotekhar Kul	022	001	247	0.163
	Fatekharkul Union	Fotekhar Kul	022	001	212	0.150
	Fatekharkul Union	Fotekhar Kul	022	001	225	0.057
	Fatekharkul Union	Fotekhar Kul	022	001	221	0.163
	Fatekharkul Union	Fotekhar Kul	022	001	262	0.155
	Fatekharkul Union	Fotekhar Kul	022	001	219	0.166
	Fatekharkul Union	Fotekhar Kul	022	001	242	0.126
	Fatekharkul Union	Fotekhar Kul	022	001	220	0.313
	Fatekharkul Union	Fotekhar Kul	022	001	229	0.061
	Fatekharkul Union	Fotekhar Kul	022	001	260	0.399
	Fatekharkul Union	Fotekhar Kul	022	001	213	0.284
	Fatekharkul Union	Fotekhar Kul	022	001	230	0.094
	Fatekharkul Union	Fotekhar Kul	022	001	216	0.409
	Fatekharkul Union	Fotekhar Kul	022	001	226	0.192
	Fatekharkul Union	Fotekhar Kul	022	001	231	0.040
	Fatekharkul Union	Fotekhar Kul	022	001	209	0.097
	Fatekharkul Union	Fotekhar Kul	022	001	215	0.053
	Fatekharkul Union	Fotekhar Kul	022	001	214	0.064
	Fatekharkul Union	Fotekhar Kul	022	001	210	0.177
	Fatekharkul Union	Fotekhar Kul	022	001	155	0.080
	Fatekharkul Union	Fotekhar Kul	022	001	234	0.210
	Fatekharkul Union	Fotekhar Kul	022	001	154	0.074
	Fatekharkul Union	Fotekhar Kul	022	001	232	0.043
	Fatekharkul Union	Fotekhar Kul	022	001	259	0.699
	Fatekharkul Union	Fotekhar Kul	022	001	233	0.064
	Fatekharkul Union	Fotekhar Kul	022	001	228	0.073
	Fatekharkul Union	Fotekhar Kul	022	001	207	0.112
	Fatekharkul Union	Fotekhar Kul	022	001	208	0.102
	Fatekharkul Union	Fotekhar Kul	022	001	206	0.087
	Fatekharkul Union	Fotekhar Kul	022	001	227	0.148
	Fatekharkul Union	Fotekhar Kul	022	001	235	0.138
	Fatekharkul Union	Fotekhar Kul	022	001	205	0.032
	Fatekharkul Union	Fotekhar Kul	022	001	156	0.092
	Fatekharkul Union	Fotekhar Kul	022	001	241	0.188
	Fatekharkul Union	Fotekhar Kul	022	001	204	0.060
	Fatekharkul Union	Fotekhar Kul	022	001	197	0.153
	Fatekharkul Union	Fotekhar Kul	022	001	239	0.116
	Fatekharkul Union	Fotekhar Kul	022	001	153	0.095
	Fatekharkul Union	Fotekhar Kul	022	001	270	0.093
	Fatekharkul Union	Fotekhar Kul	022	001	203	0.086

Proposed Features	Union	Mouza	JL No	Sheet No	Plot No	Area Acre
	Fatekharkul Union	Fotekhar Kul	022	001	602	0.052
	Fatekharkul Union	Fotekhar Kul	022	001	196	0.063
	Fatekharkul Union	Fotekhar Kul	022	001	603	0.055
	Fatekharkul Union	Fotekhar Kul	022	001	157	0.101
	Fatekharkul Union	Fotekhar Kul	022	001	200	0.045
	Fatekharkul Union	Fotekhar Kul	022	001	198	0.063
	Fatekharkul Union	Fotekhar Kul	022	001	201	0.169
	Fatekharkul Union	Fotekhar Kul	022	001	236	0.335
	Fatekharkul Union	Fotekhar Kul	022	001	264	0.620
	Fatekharkul Union	Fotekhar Kul	022	001	271	0.452
	Fatekharkul Union	Fotekhar Kul	022	001	188	0.050
	Fatekharkul Union	Fotekhar Kul	022	001	195	0.084
	Fatekharkul Union	Fotekhar Kul	022	001	240	0.099
	Fatekharkul Union	Fotekhar Kul	022	001	152	0.071
	Fatekharkul Union	Fotekhar Kul	022	001	202	0.059
	Fatekharkul Union	Fotekhar Kul	022	001	263	0.854
	Fatekharkul Union	Fotekhar Kul	022	001	124	0.135
	Fatekharkul Union	Fotekhar Kul	022	001	158	0.135
	Fatekharkul Union	Fotekhar Kul	022	001	194	0.105
	Fatekharkul Union	Fotekhar Kul	022	001	123	0.104
	Fatekharkul Union	Fotekhar Kul	022	001	151	0.133
	Fatekharkul Union	Fotekhar Kul	022	001	193	0.084
	Fatekharkul Union	Fotekhar Kul	022	001	237	0.386
	Fatekharkul Union	Fotekhar Kul	022	001	265	0.225
	Fatekharkul Union	Fotekhar Kul	022	001	159	0.101
	Fatekharkul Union	Fotekhar Kul	022	001	604	0.141
	Fatekharkul Union	Fotekhar Kul	022	001	125	0.116
	Fatekharkul Union	Fotekhar Kul	022	001	189	0.305
	Fatekharkul Union	Fotekhar Kul	022	001	126	0.086
	Fatekharkul Union	Fotekhar Kul	022	001	150	0.075
	Fatekharkul Union	Fotekhar Kul	022	001	192	0.172
	Fatekharkul Union	Fotekhar Kul	022	001	199	0.830
	Fatekharkul Union	Fotekhar Kul	022	001	190	0.057
	Fatekharkul Union	Fotekhar Kul	022	001	183	0.159
	Fatekharkul Union	Fotekhar Kul	022	001	266	0.128
	Fatekharkul Union	Fotekhar Kul	022	001	128	0.061
	Fatekharkul Union	Fotekhar Kul	022	001	181	0.024
	Fatekharkul Union	Fotekhar Kul	022	001	127	0.159
	Fatekharkul Union	Fotekhar Kul	022	001	238	1.086
	Fatekharkul Union	Fotekhar Kul	022	001	122	0.406
	Fatekharkul Union	Fotekhar Kul	022	001	129	0.075
	Fatekharkul Union	Fotekhar Kul	022	001	162	0.406
	Fatekharkul Union	Fotekhar Kul	022	001	149	0.199
	Fatekharkul Union	Fotekhar Kul	022	001	161	0.177
	Fatekharkul Union	Fotekhar Kul	022	001	176	0.018
	Fatekharkul Union	Fotekhar Kul	022	001	160	0.221
	Fatekharkul Union	Fotekhar Kul	022	001	175	0.101
	Fatekharkul Union	Fotekhar Kul	022	001	191	0.350
	Fatekharkul Union	Fotekhar Kul	022	001	148	0.042
	Fatekharkul Union	Fotekhar Kul	022	001	178	0.245

Proposed Features	Union	Mouza	JL No	Sheet No	Plot No	Area Acre
	Fatekharkul Union	Fotekhar Kul	022	001	166	0.175
	Fatekharkul Union	Fotekhar Kul	022	001	130	0.234
	Fatekharkul Union	Fotekhar Kul	022	001	111	0.076
	Fatekharkul Union	Fotekhar Kul	022	001	131	0.128
	Fatekharkul Union	Fotekhar Kul	022	001	267	0.434
	Fatekharkul Union	Fotekhar Kul	022	001	120	0.389
	Fatekharkul Union	Fotekhar Kul	022	001	163	0.100
	Fatekharkul Union	Fotekhar Kul	022	001	121	0.328
	Fatekharkul Union	Fotekhar Kul	022	001	146	0.046
	Fatekharkul Union	Fotekhar Kul	022	001	112	0.226
	Fatekharkul Union	Fotekhar Kul	022	001	167	0.120
	Fatekharkul Union	Fotekhar Kul	022	001	147	0.109
	Fatekharkul Union	Fotekhar Kul	022	001	174	0.241
	Fatekharkul Union	Fotekhar Kul	022	001	177	0.197
	Fatekharkul Union	Fotekhar Kul	022	001	165	0.075
	Fatekharkul Union	Fotekhar Kul	022	001	132	0.166
	Fatekharkul Union	Fotekhar Kul	022	001	269	1.659
	Fatekharkul Union	Fotekhar Kul	022	001	164	0.020
	Fatekharkul Union	Fotekhar Kul	022	001	145	0.164
	Fatekharkul Union	Fotekhar Kul	022	001	268	1.171
	Fatekharkul Union	Fotekhar Kul	022	001	108	0.120
	Fatekharkul Union	Fotekhar Kul	022	001	272	0.405
	Fatekharkul Union	Fotekhar Kul	022	001	144	0.031
	Fatekharkul Union	Fotekhar Kul	022	001	140	0.183
	Fatekharkul Union	Fotekhar Kul	022	001	107	0.077
	Fatekharkul Union	Fotekhar Kul	022	001	134	0.082
	Fatekharkul Union	Fotekhar Kul	022	001	133	0.072
	Fatekharkul Union	Fotekhar Kul	022	001	119	0.206
	Fatekharkul Union	Fotekhar Kul	022	001	143	0.055
	Fatekharkul Union	Fotekhar Kul	022	001	110	0.154
	Fatekharkul Union	Fotekhar Kul	022	001	109	0.073
	Fatekharkul Union	Fotekhar Kul	022	001	142	0.070
	Fatekharkul Union	Fotekhar Kul	022	001	135	0.136
	Fatekharkul Union	Fotekhar Kul	022	001	141	0.093
	Fatekharkul Union	Fotekhar Kul	022	001	117	0.119
	Fatekharkul Union	Fotekhar Kul	022	001	118	0.087
	Fatekharkul Union	Fotekhar Kul	022	001	139	0.097
	Fatekharkul Union	Fotekhar Kul	022	001	490	3.285
	Fatekharkul Union	Fotekhar Kul	022	001	138	0.125
	Fatekharkul Union	Fotekhar Kul	022	001	136	0.116
	Fatekharkul Union	Fotekhar Kul	022	001	114	0.040
	Fatekharkul Union	Fotekhar Kul	022	001	113	0.291
	Fatekharkul Union	Fotekhar Kul	022	001	104	0.208
	Fatekharkul Union	Fotekhar Kul	022	001	116	0.063
	Fatekharkul Union	Fotekhar Kul	022	001	115	0.091
	Fatekharkul Union	Fotekhar Kul	022	001	106	0.603
	Fatekharkul Union	Fotekhar Kul	022	001	105	0.214
	Fatekharkul Union	Fotekhar Kul	022	001	103	0.119
	Fatekharkul Union	Fotekhar Kul	022	001	137	0.247
	Fatekharkul Union	Fotekhar Kul	022	001	1	2.630

Proposed Features	Union	Mouza	JL No	Sheet No	Plot No	Area Acre
Planned Urban Residential 2	Kauarkhop	Sonaichhari	024	005	850	0.228
	Kauarkhop	Sonaichhari	024	005	846	0.186
	Kauarkhop	Sonaichhari	024	005	845	0.244
	Kauarkhop	Sonaichhari	024	005	844	0.566
	Kauarkhop	Sonaichhari	024	005	854	0.253
	Kauarkhop	Sonaichhari	024	005	853	0.033
	Kauarkhop	Sonaichhari	024	005	840	0.624
	Kauarkhop	Sonaichhari	024	005	856	0.706
	Kauarkhop	Sonaichhari	024	005	855	0.381
	Kauarkhop	Sonaichhari	024	005	838	0.917
	Kauarkhop	Sonaichhari	024	005	841	0.310
	Kauarkhop	Sonaichhari	024	005	843	0.711
	Kauarkhop	Sonaichhari	024	005	837	0.722
	Kauarkhop	Sonaichhari	024	005	842	0.074
	Kauarkhop	Sonaichhari	024	005	857	0.291
	Kauarkhop	Sonaichhari	024	005	832	0.276
	Kauarkhop	Sonaichhari	024	005	852	4.001
	Kauarkhop	Sonaichhari	024	005	833	1.918
	Kauarkhop	Sonaichhari	024	005	835	0.273
	Kauarkhop	Sonaichhari	024	005	829	0.538
	Kauarkhop	Sonaichhari	024	005	828	1.068
	Kauarkhop	Sonaichhari	024	005	834	0.959
	Kauarkhop	Sonaichhari	024	005	831	4.865
	Kauarkhop	Sonaichhari	024	005	806	3.605
	Kauarkhop	Sonaichhari	024	003	521	66.337