

CHAPTER 1

INTRODUCTION

1.1 General

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

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

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

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

Table-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	150.04	1.37	33.55	23.30	17.27	1.59
2011*	150.40	1.37	42.11	28.40	47.19	4.12

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

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

1.2 The Context of Rangunia Upazila

By considering the imminent change, the present urban exercise has been taken in Rangunia Upazila, Chittagong District by Urban Development Directorate (UDD) namely “Preparation of Development Plan for Fourteen Upazilas”. The project might have potential for development within the next 20 years up to 2033 A.D. The development plan will be comprised of five tier plans (sub-regional, structure, urban, rural and action area) to address the challenges, opportunities and immediate interventions.

CHAPTER 2

POPULATION PROJECTION

2.1 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.

2.2 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.

2.3 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

2.4 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 Rangunia Upazila for next 20 years.

2.4.1 *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.

2.4.2 *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.

2.4.3 *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.

2.4.4 *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

2.4.5 *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.

2.4.6 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.

2.5 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 Rangunia Upazila. The justifications of selected methods are given below:

Table 2.1: Justifications of Reviewed Projection Methods

Methods	Data Sufficiency or Adaptability	Justification
Cohort Component method	<ol style="list-style-type: none"> 1) Requires more detailed data <ul style="list-style-type: none"> • 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 Rangunia Upazila is under Chittagong 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 Rangunia 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	Though Rangunia Upazila has increased growth rate, the growth rate will be more varied for future

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Methods	Data Sufficiency or Adaptability	Justification
	under normal condition where the growth rate is found to be in increasing order.	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 Rangunia 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 Rangunia 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 Rangunia Upazila, it is suitable for projection from 5 to 10 years. After considering merits, it can be accepted for population projection.

2.6 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 Rangunia Upazila for next 20 years. The projected population for Rangunia Upazila as a whole are outlined below:

Table 2.2: Projected Population based on BBS, 1991-2011.

Compound Growth Method	Geometrical Growth Method	Exponential Growth Method
Growth Rate-1.27	Geometrical Mean -1.13	Growth Rate-1.26
Population of Rangunia Upazila will be 447489 (Year, 2033)	Population of Rangunia Upazila will be 489148 (Year, 2031)	Population of Rangunia Upazila will be 447293 (Year, 2033)

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

Rangunia Upazila has the population of 339004 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 489148 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

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the separate methods and on the basis of calculated growth rate the population of Rangunia Upazila in 2011 would have been according to the Compound, Geometrical and Exponential respectively 329750, 329127 and 329193. 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 338169 and 338098 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 Rangunia Upazila according to the BBS, 2011 is 339004. 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 Rangunia 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 Rangunia 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 2.3: 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 329750 (1981-2001)	Population in 2011 would be 329127 (1981-2001)	Population in 2011 would be 329193 (1981-2001)	Almost same result and three methods are perfect.
Population in 2011 would be 338169 (1991-2001)		Population in 2011 would be 338098 (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.

2.7 Adopted Population Projection Method

Compound Growth Method has been applied for population projection of Rangunia 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

2.7.1 Basic Assumptions

- The recent trend of change of development is expected to be continued into future.
- The existing population, growth rate, density, literacy rate, urbanization rate reveal that Rangunia 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.

2.7.2 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

2.7.3 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.

2.8 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, 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

2.8.1 Calculation of Observed Compound Growth Rate

Rangunia 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.

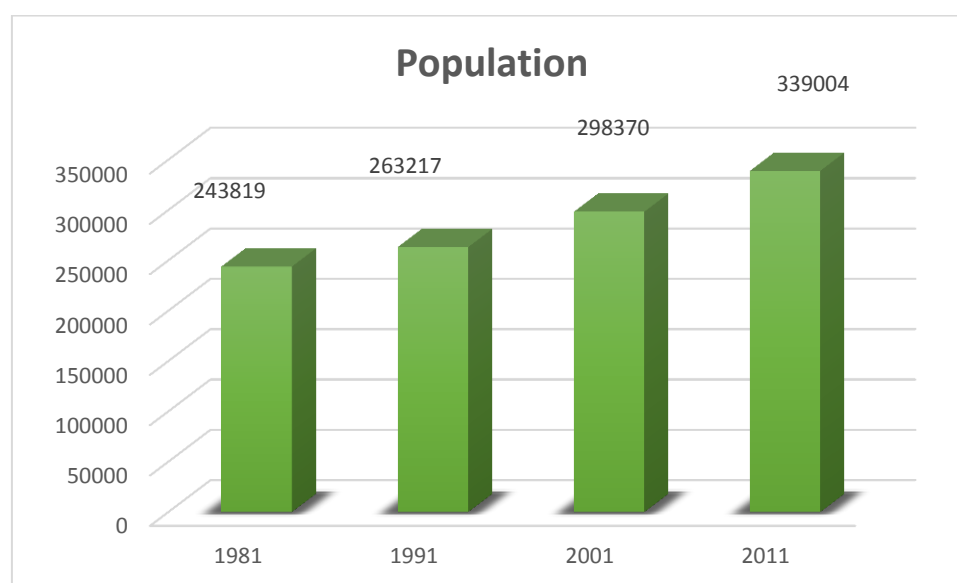


Figure 2.1: Number of Population from 1981 to 2011

Source BBS, 1981-2011.

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

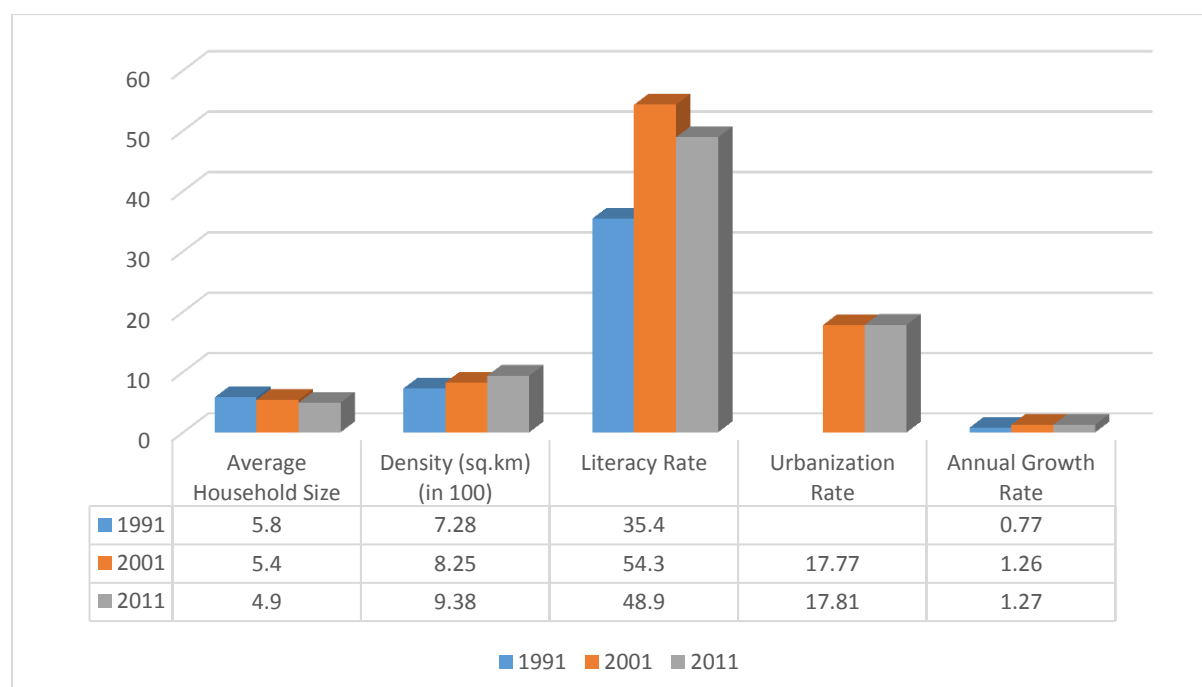
Table 2.4: Calculation of Compound Growth Rate

Year	Compound Growth Rate	Remarks
1981-2011	1.10%	Low
1991-2011	1.27%	Medium
2001-2011	1.28%	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 1.28% is for Rangunia 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 1.27%. 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 1.10 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 1.27 and 1.28. 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 1.28% because it is gradually increasing not steadily increasing. So, the growth rate will be considered greater than 1.28% for the population projection of Rangunia Upazila.

2.8.2 Factors Analysis for Determining Growth Rate

**Figure 2.2: Different Attributing Factors from 1991 to 2011**

Source: BBS, 1991-2011.

The above chart represents some factors which have impact on the population distribution or change. This can vary the growth rate so that the population projection may fluctuate. From the chart, it has been shown that average household size is decreasing but density is increasing in last three census which imply that people agglomeration is increasing as increased opportunities, employments or service facilities. Population is increasing and urbanization is also going on the pace now at the rate of 17.81 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 50% 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 1.27% according to the BBS, 2011 and calculated compound growth rate is 1.28% (**Table: 2.4**). The growth rate for projecting population for next 20 years will be amenable to consider more than 1.28% according to the above attributing factors.

2.8.3 Analysis of Natural Birth Rate and Decadal Growth Rate

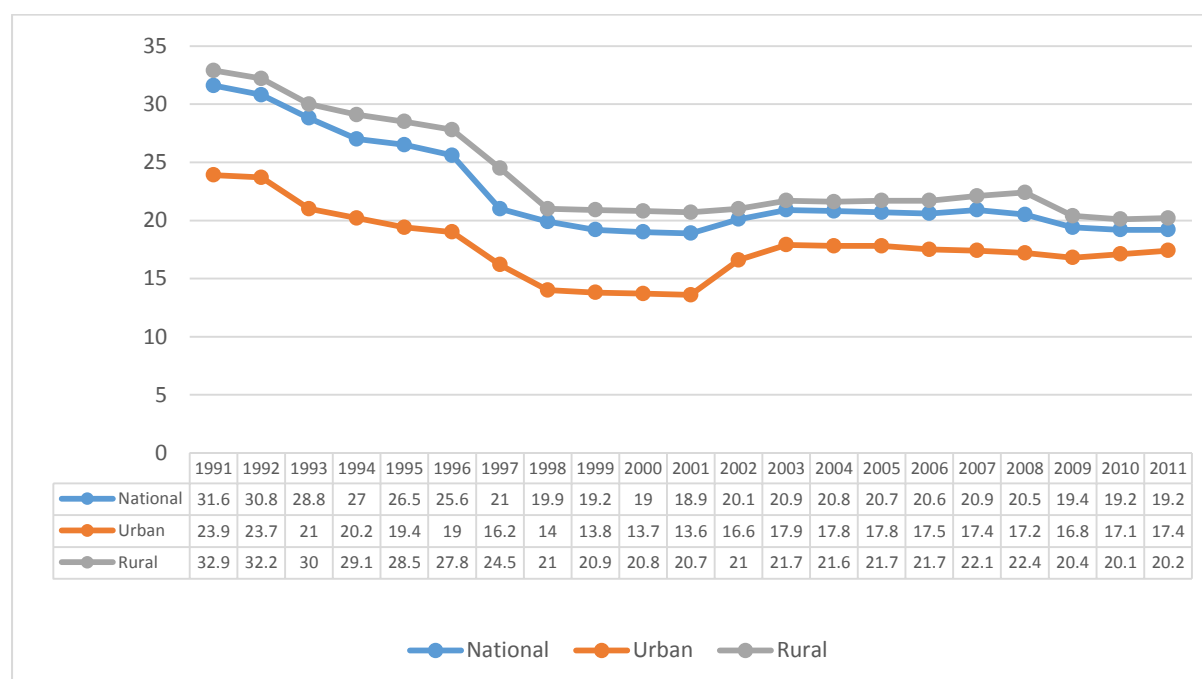


Figure 2.3: Crude Birth Rate (CBR) per 1000

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.

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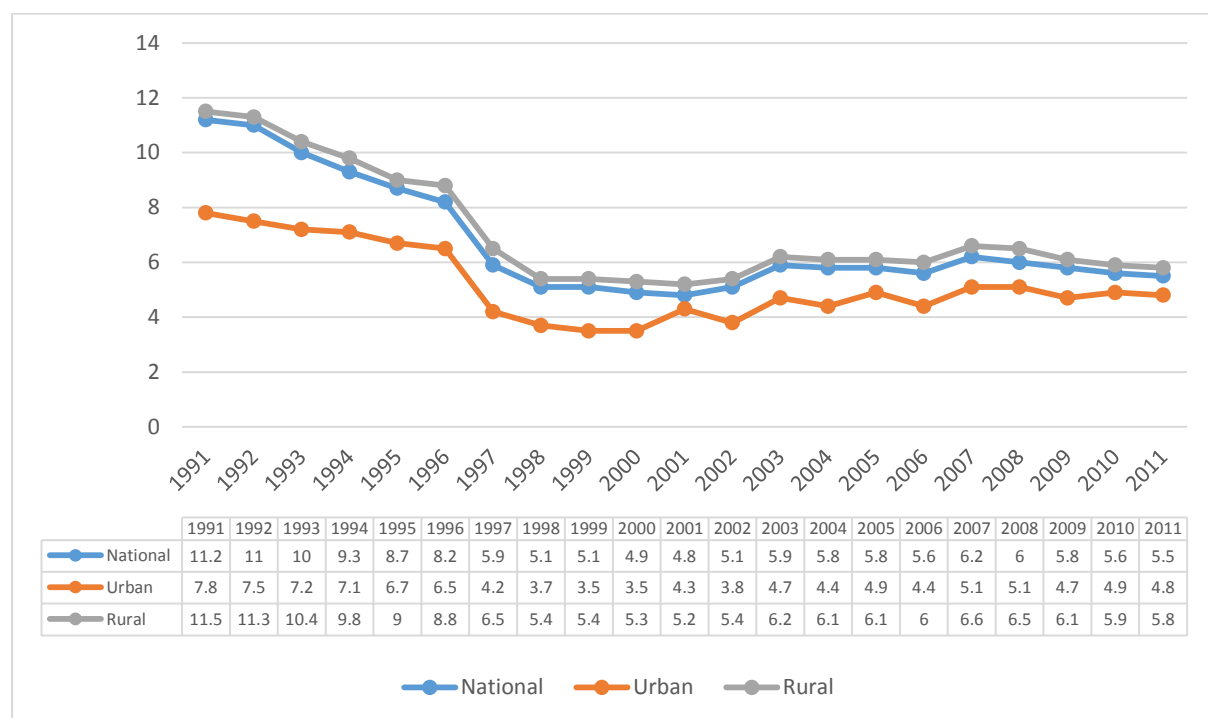


Figure 2.4: Crude Death Rate (CDR) per 1000

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 Rangunia Upazila is located at a distant region in Chittagong Zila, it is advisable that the natural growth rate can be maximum limit after ignoring net migrants.

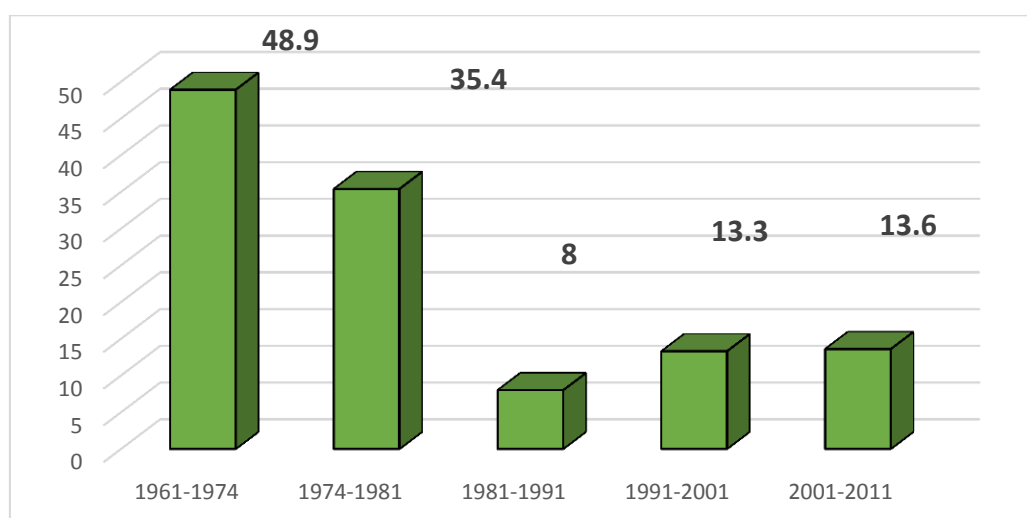


Figure 2.5: Decadal Growth Rate (%)

Source: BBS, 2011

From the above bar diagram, it has been shown that decadal growth rate was higher indiscriminately before 1981 but population growth rate was lower between 1981 and 1991.

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After 1991, population is increasing gradually where it has been seen that 13.3 and 13.6 respectively for 1991-2001 and 2001-2011. So, population is marking a steep accretion for last three decades.

2.8.4 Sector wise Analysis for Determination of Growth Rate

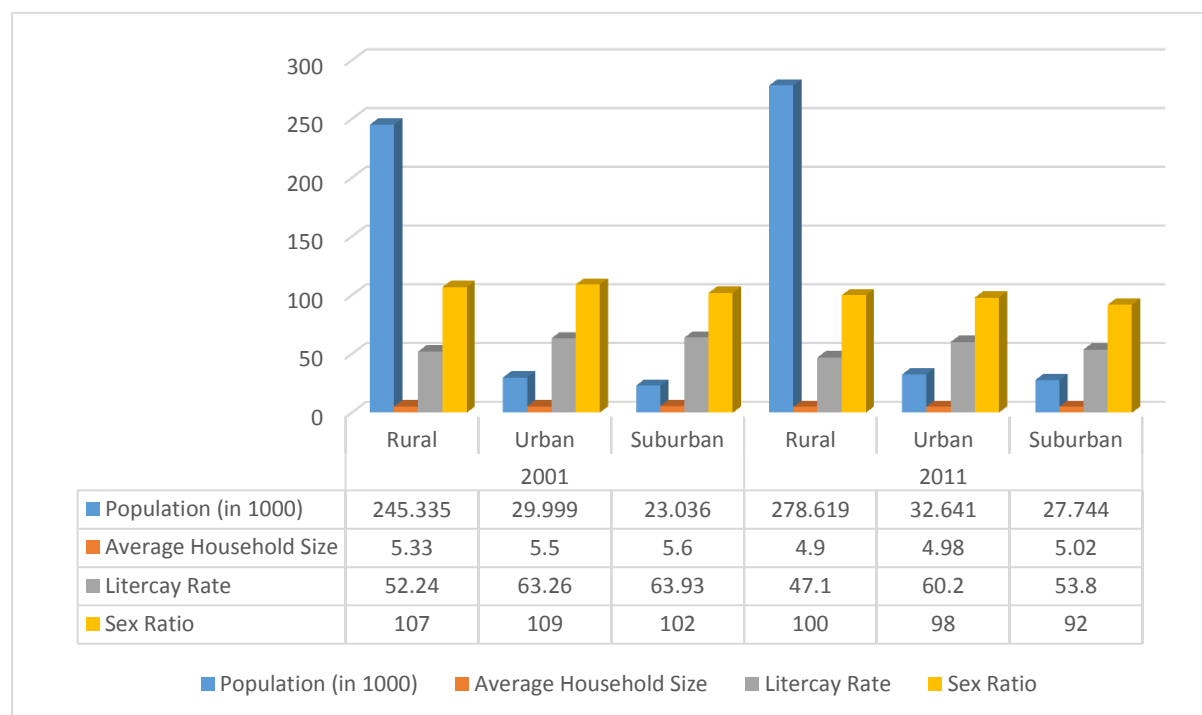


Figure 2.6: Attributing Factors in Influential Areas

Source: BBS, 2001 & 2011

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

2.8.5 Area wise Change of Growth Rate

Rangunia Upazila has 12 Unions and 1 Pourashava (Established at 2000) during the census of 2001. In 2011, it has 15 Unions and the same Pourashava. Hosnabad Union has divided into Hosnabad and Lalanagar Union and Rajanagar has divided into Rajanagar, Dakshin Rajanagar and Islampur Union. The following table represents the area wise population change rate according to the adjustment of 2001 and 2011 census.

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Table 2.5: Percentage of Change in Unions and Pourashava

Union/Pourashava	Population (2001)	Population (2011)	Increase	% Change
Rangunia Pourashava	29999	32641	2642	9
Betagi Union	20618	20510	-108	-1
Chandraghona Kadamtali Union	24689	30221	5532	22
Rajanagar, Dakshin Rajanagar & Islampur Union	44344	56136	11792	27
Hosnabad & Lalanagar Union	26398	29416	3018	11
Kodala Union	15494	18965	3471	22
Mariamnagar Union	17142	18658	1516	9
Padua Union	29922	35668	5746	19
Parua Union	14365	14423	58	0
Pomra Union	24716	25659	943	4
Rangunia Union	10242	13354	3112	30
Sarapbhata Union	23470	25344	1874	8
Silok Union	16971	18009	1038	6
Rangunia Upazila	298370	339004	40634	14

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

From the table, it is seen that Rangunia Union, Rajanagar, Dakshin Rajanagar and Islampur Union 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. For flourishing its development Rangunia Union has divided into three Unions after 2001 census. In 15 unions, only Betagi union has slightly negative growth rate. On the basis of population in 2001 and 2011, different annual growth rates have been observed which is shown in below figure.

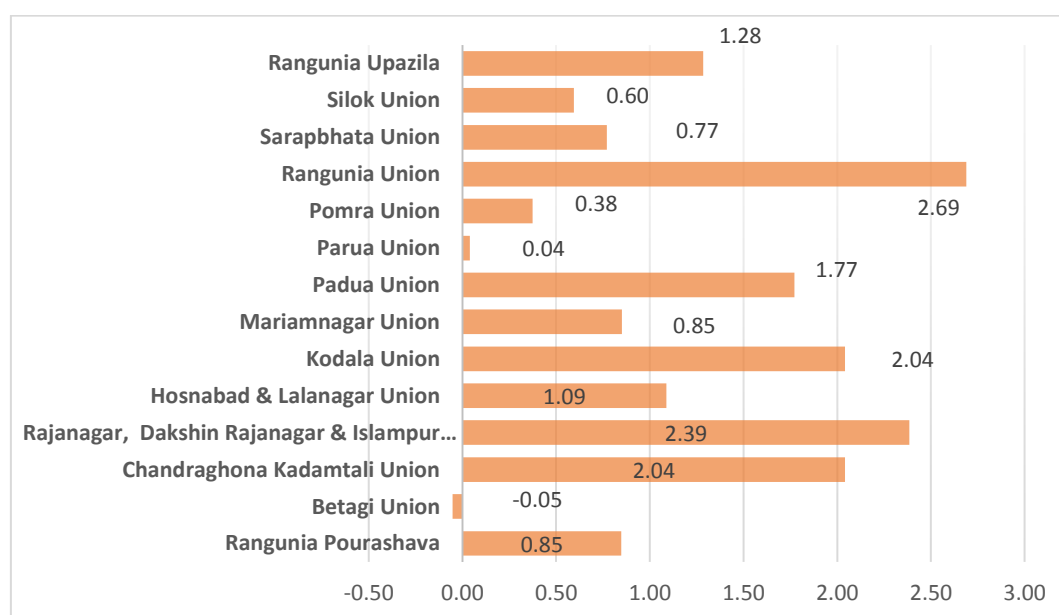


Figure 2.7: Annual Growth Rate in Unions and Pourashava

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

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From the figure, it is seen that Rangunia Pourashava has the annual growth rate of 0.85 and Rangunia Upazila has overall 1.28 growth rate. Between Unions, Rangunia, Kodala, Rajanagar, Dakshin Rajanagar, Isalmpur and Chondroghona 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, Suburban and Rural areas.

Table 2.6: Change of Annual Growth Rate in Influential Areas

Jurisdiction Area	Population (2001)	Population (2011)	Growth Rate
Urban/Rangunia Pourashava	29999	32641	0.85
Suburban/Other Urban	23036	27744	1.88
Urban & Suburban Areas	53035	60385	1.31
Rural/Unions	245335	278619	1.28
Betagi Union	20618	20510	-0.05
Chandraghona Kadamtali Union	24689	30221	2.04
Rajanagar, Dakshin Rajanagar & Islampur Union	44344	56136	2.39
Hosnabad & Lalanagar Union	26398	29416	1.09
Kodala Union	15494	18965	2.04
Mariamnagar Union-Rural	15118	15903	0.51
Padua Union	29922	35668	1.77
Parua Union	14365	14423	0.04
Pomra Union-Rural	3704	670	-15.72
Rangunia Union	10242	13354	2.69
Sarapbhata Union	23470	25344	0.77
Silok Union	16971	18009	0.60
Rangunia Upazila	298370	339004	1.28
*Suburban areas include areas from Mariamnagar Union and Pomra Union			

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

The above table represents the recent growth rate 1.31 for Urban and Suburban areas and 1.28 for rural areas. At a glance, it is seen that highest growth rate 2.69 has been observed at Rangunia Union and 2.39 at Rajanagar, Dakshin Rajanagar and Islampur Union. In above table, highly negative growth rate 15.72 has shown at rural areas in Pomra Union but it has not occurred. It is showing because of annexation of some areas in Other Urban areas according to the 2011 census. In an overall Pomra Union has 4% growth rate where some areas are included in suburban areas and others are Rural. Thus, the rural areas and suburban areas in Pomra Union has different data but not negatively growth of population. The result is showing because of more people or areas are now included in Other Urban area in 2011 than in 2001. As the population was higher at rural areas in Pomra Union in 2001 than that of 2011, the result is showing negative. So, the result is negative for diversion of population between areas or annexation of areas with other urban area but overall union has positive growth rate.

2.8.6 Adjustment and Determination of Compound Annual Growth Rate

As Rangunia Upazila is growing Upazila and economic development will be grown as Pourashava and other Governing Bodies have flourished in this area. The above analysis asserts that the recent growth rate 1.28 will not be worked. 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. After considering all effects, the study has found that the recent growth rate 1.28 in 2011 have increased by 1% of the growth rate 1.27 in 2001. The projection will be done for 20 years, so on an average it is clear that 1% of growth rate will be increased by 10 years.

Table 2.7: Determination of Growth Rate

Jurisdiction Area	Compound Annual Growth Rate		
	Low	Medium	High
Urban	1.31	1.32	1.34
Suburban	1.31	1.32	1.34
Rural	1.28	1.29	1.31
Justification	As usual growth rate	1% adjustment for attributing factors	2% adjustment for attributing factors

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

The following table represents the indication about Urban, Sub Urban and Rural Area.

Table 2.8: Notion about Urban, Suburban and Rural Areas

Urban Area	Suburban/Other Urban Area	Rural Area
Rangunia Pourashava consists of 9 Wards	Saidbari under Mariamnagar Union and Pomara, Dakshin Pomara, Bacha Shahnagar, Hajipara Maijpara, Hila Gazipara, Madhya Pomara, Hajipara Sikdarpara and Sapleza Para under Pomra Union.	15 Unions but excluding Suburban areas and Pourashava.

2.9 Population Projection and Distribution

Rangunia 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, Suburban and Rural areas. The following table represents the projected population on the basis of low, medium and high growth rate in the respective areas.

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Table 2.9: Projected Population according to the Different Growth Rate

Jurisdiction Area	Population (Base Year 2011)	Growth Rate	Projected Population			
			Year 2018	Year 2023	Year 2028	Year 2033
Urban/Pourashava	32641	Low-1.31	35754	38158	40724	43462
		Medium-1.32	35779	38204	40793	43557
		High-1.34	35829	38294	40930	43746
Suburban/Other Urban	27744	Low-1.31	30390	32434	34615	36942
		Medium-1.32	30411	32472	34673	37022
		High-1.34	30453	32549	34789	37183
Rural/Union	278619	Low-1.28	304563	324560	345870	368580
		Medium-1.29	304773	324945	346451	369382
		High-1.31	305195	325716	347616	370990
Rangunia Upazila	339004	Low	370707	395152	421209	448985
		Medium	370964	395621	421917	449961
		High	371477	396559	423335	451919

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

The recent compound annual growth rate of Rangunia Upazila is 1.28 which is then adjusted on the basis of different criteria and three different viable growth rates have been calculated for three influential areas. If it is considered overall development of Rangunia 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 Rangunia Upazila, medium growth rates have been determined for Urban, Suburban and Rural areas and the projected results are summarised in below tables respectively Urban, Suburban and Rural Areas.

Table 2.10: Projected Population in Urban Areas

Rangunia Pourashava	Years	Projected Population according to the Age Group										Total
		0-4	5-9	10-14	15-19	20-24	25-29	30-49	50-59	60-64	65+	
Ward-01	2011 (Base)	340	476	509	360	340	260	679	173	70	123	3329
	2018	372	522	558	394	372	285	744	190	77	135	3649
	2023	397	557	596	421	397	304	795	203	82	144	3896
	2028	424	595	637	449	424	325	849	216	87	154	4160
	2033	453	635	680	480	453	346	906	231	93	164	4442
Ward-02	2011 (Base)	267	347	337	267	227	195	552	142	65	97	2497
	2018	293	380	370	293	249	213	605	156	71	107	2737
	2023	313	406	395	313	266	228	646	167	76	114	2923
	2028	334	434	421	334	284	243	690	178	81	122	3121
	2033	357	463	450	357	303	260	736	190	87	130	3332
Ward-03	2011 (Base)	591	664	833	641	546	551	1277	259	113	152	5625
	2018	647	728	913	703	598	604	1400	284	123	166	6166
	2023	691	777	974	751	639	645	1494	303	132	178	6584
	2028	738	830	1040	801	682	689	1596	323	141	190	7030
	2033	788	886	1111	856	728	736	1704	345	150	203	7506
	2011 (Base)	297	335	383	347	267	261	685	211	62	119	2967
	2018	325	368	420	381	293	286	751	231	68	130	3252

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Rangunia Pourashava	Years	Projected Population according to the Age Group										Total
		0-4	5-9	10-14	15-19	20-24	25-29	30-49	50-59	60-64	65+	
Ward-04	2023	347	392	448	406	313	306	802	247	73	139	3473
	2028	371	419	478	434	334	326	857	263	78	148	3708
	2033	396	447	511	463	356	348	915	281	83	158	3959
Ward-05	2011 (Base)	320	368	405	344	293	242	664	184	82	115	3016
	2018	351	404	443	377	321	265	728	202	89	126	3306
	2023	375	431	473	403	343	283	777	216	95	134	3530
	2028	400	460	506	430	366	302	830	230	102	143	3769
	2033	427	491	540	459	391	322	886	246	109	153	4025
Ward-06	2011 (Base)	272	312	347	312	288	285	758	226	93	201	3094
	2018	298	343	380	343	315	312	831	248	102	220	3391
	2023	319	366	406	366	337	333	887	264	109	235	3621
	2028	340	391	433	391	360	356	947	282	116	251	3867
	2033	363	417	462	417	384	380	1012	301	124	268	4129
Ward-07	2011 (Base)	361	504	532	445	342	334	933	258	99	163	3971
	2018	396	553	583	488	374	366	1023	283	109	178	4353
	2023	423	590	623	521	400	390	1092	302	116	191	4648
	2028	452	630	665	556	427	417	1166	323	124	203	4963
	2033	482	673	710	593	456	445	1245	344	132	217	5299
Ward-08	2011 (Base)	427	556	537	527	472	457	1317	333	124	214	4963
	2018	468	610	588	577	517	501	1443	365	136	234	5440
	2023	500	651	628	616	552	535	1541	390	145	250	5809
	2028	534	695	671	658	590	571	1645	416	155	267	6202
	2033	570	742	716	703	630	610	1757	444	166	285	6623
Ward-09	2011 (Base)	285	390	371	381	263	231	691	244	101	209	3168
	2018	313	428	407	417	288	254	758	268	111	229	3472
	2023	334	457	434	445	308	271	809	286	119	245	3708
	2028	357	487	464	476	329	289	864	305	127	262	3959
	2033	381	520	495	508	351	309	922	326	135	279	4227

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

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Table 2.11: Projected Population in Suburban Areas

Suburban Areas	Years	Projected Population according to the Age Group										Total
		0-4	5-9	10-14	15-19	20-24	25-29	30-49	50-59	60-64	65+	
Union: Mariamnagar	2011(Base)	262	331	350	350	292	262	601	143	55	110	2755
	2018	287	362	384	384	320	287	658	157	60	121	3020
	2023	306	387	410	410	342	306	703	168	64	129	3225
Community: Saidbari	2028	327	413	437	437	365	327	751	179	69	138	3443
	2033	349	441	467	467	390	349	801	191	74	147	3676
Union: Pomra	2011(Base)	235	310	323	246	238	217	651	193	82	151	2646
	2018	258	339	354	270	261	238	713	212	90	165	2900
	2023	276	362	378	288	279	254	762	226	96	177	3097
	2028	294	387	403	308	298	271	813	241	103	188	3307
	2033	314	413	431	328	318	290	869	258	109	201	3531
Community: Dakshin Pomara	2011(Base)	289	312	353	260	218	218	530	130	59	83	2453
	2018	317	341	387	285	239	239	581	143	65	91	2689
	2023	339	365	413	304	256	256	620	152	69	98	2871
	2028	362	389	441	325	273	273	662	162	74	104	3066
	2033	386	416	471	347	291	291	707	173	79	111	3273
Union: Pomra	2011(Base)	279	343	348	351	258	181	539	149	77	133	2657
	2018	306	376	382	384	283	198	591	163	84	146	2912
	2023	327	401	407	410	302	211	631	174	90	155	3110
	2028	349	428	435	438	322	226	674	186	96	166	3321
	2033	372	457	464	468	344	241	720	199	103	177	3546
Community: Hajipara Maijpara	2011(Base)	379	398	454	382	300	263	692	188	79	155	3290
	2018	415	437	498	419	328	289	758	206	87	170	3606
	2023	443	466	532	447	351	308	809	220	93	181	3850
	2028	473	498	568	477	374	329	864	235	99	193	4111
	2033	505	532	606	510	400	352	923	250	105	207	4390
Union: Pomra	2011(Base)	893	1099	1219	953	790	756	1855	455	215	352	8586
	2018	979	1205	1336	1045	866	828	2033	499	235	386	9411
	2023	1045	1286	1427	1115	925	884	2171	533	251	412	10049
	2028	1116	1373	1524	1191	987	944	2318	569	268	440	10730
	2033	1192	1467	1627	1272	1054	1008	2475	607	286	470	11457
Community: Madhya Pomara	2011(Base)	223	279	318	260	230	193	527	118	86	86	2321
	2018	244	306	349	285	252	211	578	130	94	94	2544
	2023	261	326	372	305	269	226	617	139	101	101	2716
	2028	279	348	398	325	287	241	659	148	107	107	2900
	2033	298	372	425	347	307	257	704	158	115	115	3097
Union: Pomra	2011(Base)	255	358	373	309	267	261	788	188	79	155	3031
	2018	279	392	409	339	292	286	864	206	86	169	3322
	2023	298	419	436	362	312	305	922	220	92	181	3548
	2028	318	447	466	386	333	326	985	235	98	193	3788
	2033	340	477	497	413	356	348	1052	251	105	206	4045
Community: Sapleza Para	2011(Base)	255	358	373	309	267	261	788	188	79	155	3031
	2018	279	392	409	339	292	286	864	206	86	169	3322
	2023	298	419	436	362	312	305	922	220	92	181	3548
	2028	318	447	466	386	333	326	985	235	98	193	3788
	2033	340	477	497	413	356	348	1052	251	105	206	4045

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

Table 2.12: Projected Population in Rural Areas

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Unions	Years	Projected Population according to the Age Group										Total
		0-4	5-9	10-14	15-19	20-24	25-29	30-49	50-59	60-64	65+	
Betagi Union	2011 (Base)	2051	2502	2748	2215	1846	1723	4512	1313	574	1005	20489
	2018	2244	2737	3006	2423	2019	1885	4936	1436	628	1099	22413
	2023	2392	2918	3205	2583	2153	2009	5262	1531	670	1172	23896
	2028	2550	3111	3417	2754	2295	2142	5611	1632	714	1250	25478
	2033	2719	3317	3644	2937	2447	2284	5982	1740	761	1332	27164
Chandraghona Kadamtali Union	2011 (Base)	3022	3657	4050	3324	3083	2720	6618	1723	756	1209	30161
	2018	3306	4000	4430	3636	3372	2975	7240	1884	826	1322	32992
	2023	3525	4265	4723	3877	3595	3172	7719	2009	881	1410	35175
	2028	3758	4547	5036	4134	3833	3382	8230	2142	939	1503	37503
	2033	4007	4848	5369	4407	4087	3606	8774	2284	1002	1603	39986
Rajanagar Union	2011 (Base)	2071	2588	2377	1879	1860	1821	4371	997	479	709	19153
	2018	2265	2831	2600	2055	2034	1992	4782	1091	524	776	20951
	2023	2415	3019	2773	2191	2169	2124	5098	1163	559	827	22337
	2028	2575	3218	2956	2336	2312	2265	5435	1240	596	882	23816
	2033	2745	3431	3152	2491	2465	2415	5795	1322	635	940	25392
Hosnabad Union	2011 (Base)	1532	1948	1814	1547	1338	1294	3480	892	372	654	14871
	2018	1675	2131	1985	1692	1464	1415	3806	976	407	716	16267
	2023	1786	2272	2116	1804	1561	1509	4058	1041	434	763	17344
	2028	1905	2422	2256	1923	1664	1609	4327	1109	462	814	18491
	2033	2031	2583	2405	2050	1774	1715	4613	1183	493	867	19715
Islampur Union	2011 (Base)	1543	2209	2057	2019	2171	1981	5123	895	419	628	19044
	2018	1687	2416	2250	2208	2375	2166	5604	979	458	687	20832
	2023	1799	2576	2399	2354	2532	2310	5975	1044	489	733	22210
	2028	1918	2747	2557	2510	2700	2463	6370	1113	521	781	23680
	2033	2045	2929	2727	2676	2878	2626	6792	1187	555	833	25248
Kodala Union	2011 (Base)	1934	2465	2428	2029	1953	1669	4172	1100	398	797	18946
	2018	2116	2697	2655	2220	2137	1826	4564	1203	436	871	20725
	2023	2256	2875	2831	2367	2278	1946	4866	1283	464	929	22096
	2028	2405	3066	3019	2523	2429	2075	5188	1368	495	990	23559
	2033	2565	3269	3218	2690	2590	2213	5531	1458	528	1056	25118
Lalanagar Union	2011 (Base)	1469	1876	1920	1673	1324	1164	3025	887	436	771	14545
	2018	1607	2052	2100	1830	1448	1273	3309	971	477	843	15910
	2023	1713	2188	2239	1951	1544	1357	3528	1035	509	899	16963
	2028	1827	2333	2387	2080	1646	1447	3762	1103	543	959	18086
	2033	1948	2488	2545	2218	1755	1543	4011	1176	578	1022	19283
Mariamnagar Union	2011 (Base)	1463	1813	2004	1908	1590	1399	3499	970	429	811	15887
	2018	1600	1983	2192	2087	1740	1531	3827	1061	470	887	17378
	2023	1706	2114	2337	2226	1855	1632	4080	1131	501	946	18529
	2028	1819	2254	2492	2373	1977	1740	4350	1206	534	1009	19755
	2033	1940	2404	2657	2530	2108	1855	4638	1286	569	1075	21062
Padua Union	2011 (Base)	4102	5065	4673	3317	3103	3032	7776	2140	963	1462	35632
	2018	4487	5540	5111	3629	3394	3316	8506	2341	1053	1600	38977
	2023	4784	5907	5449	3869	3619	3536	9068	2496	1123	1706	41557

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Unions	Years	Projected Population according to the Age Group										Total
		0-4	5-9	10-14	15-19	20-24	25-29	30-49	50-59	60-64	65+	
	2028	5100	6298	5810	4125	3859	3770	9669	2661	1197	1818	44307
	2033	5438	6715	6195	4398	4114	4019	10309	2837	1277	1939	47240
Parua Union	2011 (Base)	1428	1832	1918	1471	1240	1183	3303	966	389	678	14409
	2018	1562	2004	2098	1609	1357	1294	3613	1057	426	742	15761
	2023	1665	2136	2237	1716	1447	1379	3852	1127	454	791	16804
	2028	1776	2278	2385	1829	1542	1471	4107	1202	484	843	17916
	2033	1893	2428	2543	1950	1644	1568	4379	1281	516	899	19102
Pomra Union	2011 (Base)	71	96	88	90	59	55	150	28	13	20	669
	2018	78	105	96	98	64	60	164	31	14	22	732
	2023	83	112	102	105	69	64	175	33	15	23	781
	2028	88	119	109	112	73	68	187	35	16	25	832
	2033	94	127	116	119	78	73	199	37	17	27	887
Dakshin Rajanagar Union	2011 (Base)	1702	2186	2204	1953	1649	1487	4032	1147	538	1021	17920
	2018	1862	2391	2411	2137	1803	1627	4410	1255	588	1117	19602
	2023	1985	2550	2571	2278	1923	1735	4702	1338	627	1191	20900
	2028	2117	2719	2741	2429	2050	1849	5014	1426	668	1270	22283
	2033	2257	2898	2922	2590	2186	1972	5345	1520	713	1354	23758
Rangunia Union	2011 (Base)	1269	1509	1589	1335	1229	1055	3111	961	441	855	13354
	2018	1388	1651	1738	1461	1344	1154	3404	1052	482	935	14608
	2023	1480	1760	1853	1557	1433	1230	3629	1121	514	997	15574
	2028	1577	1876	1976	1661	1528	1312	3869	1196	548	1063	16605
	2033	1682	2001	2107	1770	1629	1399	4125	1275	584	1133	17704
Sarapbhata Union	2011 (Base)	2864	3421	3675	2864	2230	2002	5170	1470	634	1014	25344
	2018	3133	3743	4020	3133	2440	2190	5656	1608	693	1109	27723
	2023	3340	3990	4286	3340	2601	2335	6030	1714	739	1182	29558
	2028	3561	4254	4570	3561	2773	2490	6429	1828	788	1261	31514
	2033	3797	4536	4872	3797	2957	2654	6854	1949	840	1344	33600
Silok Union	2011 (Base)	1891	2287	2323	2017	1513	1513	3926	1099	576	864	18009
	2018	2068	2502	2541	2206	1655	1655	4294	1202	630	946	19700
	2023	2205	2667	2709	2352	1764	1764	4579	1281	672	1008	21003
	2028	2351	2844	2889	2508	1881	1881	4882	1366	717	1075	22393
	2033	2507	3032	3080	2674	2006	2006	5205	1456	764	1146	23876

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

CHAPTER 3**DEVELOPMENT RELATED 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 tier of development plan such as- Sub-Regional Plan, Structure Plan, Urban Area Plan, Rural Area Plan and Action Area Plan to facilitate the improvement of infrastructure and services of the upazilla.

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

Objectives of the study

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

3.2. Terminology**Policy**

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

Law

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

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

Act

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

Sub-Regional Plan

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

3.4 Five Tier Plan wise policy Review

3.4.1 Framework of Five Tier plan

Table 3.1: Strategy and Time Frame of Five Tier Plan

Five Tier Plan	Duration	Strategy
Sub-Regional Plan	20 years	Long term
Structure Plan	20 years	Long term
Urban Area Plan	10 years	Mid-term
Rural Area Plan	20 years	Long term
Action Area Plan	5 years	Short term

Among 22 policies, the policies are reviewed according to duration and strategy. So, according to duration and strategic point of view some policies are shortlisted.

Table 3.2: List of policies according to five tier plan

Five Tier Plan	Review policies
Sub-regional Plan	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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

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Five Tier Plan	Review policies
	<ul style="list-style-type: none">• National Urban Sector Policy 2011• National Fisheries Policy 1998
Urban Area Plan	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• Population Policy 2004• National policy for safe water supply and sanitation 1998• National Water policy 1999
Action Area Plan	<ul style="list-style-type: none">• 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

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

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

3.5 Sector wise policy Review

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

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

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

Table 3.3: Sectors are categorized as per policy review

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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	1. National Agriculture Policy 1999	1. National Agriculture Policy 1999	1. Climate Change Strategy 2009	1. Population Policy 2004	1. Population Policy 2004
2. Climate Change Strategy 2009	2. Climate Change Strategy 2009	2. Climate Change Strategy 2009	2. National Plan for Disaster Management 2008-2015	2. National Water policy 1999	
3. National Plan for Disaster Management 2008-2015	3. Disaster Management Act 2012	3. National Plan for Disaster Management 2008-2015	• The Sendai Framework for Disaster Risk Reduction 2015-2030	3. National Urban Sector Policy 2011	
4. Population Policy 2004	4. National Plan for Disaster Management 2008-2015	4. Population Policy 2004		4. National Fisheries Policy 1998	
5. Safe Water Supply and Sanitation 1998	5. Population Policy 2004	5. The Building Construction Act, 1952	3. The United Nations Framework Convention on Climate Change	• Climate Change Policies	
6. National Water policy 1999	6. Safe Water Supply and Sanitation 1998	6. National Water policy 1999		5. The United Nations Framework Convention on Climate Change	
7. Seventh Five Year Plan	7. National Water policy 1999	7. Industrial Policy 2005			
8. National Environment Policy 1992	8. Industrial Policy 2005	8. Burning Bricks Act 1989			
9. Industrial Policy 2005	9. National Urban Sector Policy 2011	9. National Urban Sector Policy 2011			
10. National Urban Sector Policy 2011	10. Seventh Five Year Plan(FY2016 – FY2020)				
	• Quito Implementation Plan for the New				

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Sector Wise Policy list					
Agriculture Sector	PRA and Socio-Economic Formal-informal Sector	Physical, Landuse and Topographic Features	Geology	Hydrology	Transport
11. The United Nations Framework Convention on Climate Change	Urban Agenda <ul style="list-style-type: none"> Sustainable Development Goals (SDG) 	10. National Fisheries Policy 1998 11. Seventh Five Year Plan (FY2016 – FY2020)			

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

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

Table 3.5: Summary of sectors according to policies

Policy	Sector
National Agriculture Policy 1999	<ul style="list-style-type: none"> Agriculture PRA and Socio-Economic Formal-informal Economic Sector Physical, Landuse and Topographic Features
Climate Change Strategy 2009	<ul style="list-style-type: none"> Agriculture PRA and Socio-Economic Formal-informal Economic Sector Physical, Landuse and Topographic Features Geology
Disaster Management Act 2012	<ul style="list-style-type: none"> Formal-informal Sector
National Plan for Disaster Management 2008-2015	<ul style="list-style-type: none"> Agriculture PRA and Socio-Economic Formal-informal Economic Sector Physical, Landuse and Topographic Features Geology
Population Policy 2004	<ul style="list-style-type: none"> Agriculture PRA and Socio-Economic Formal-informal Economic Sector Transport Hydrology
Safe Water Supply and Sanitation 1998	<ul style="list-style-type: none"> Agriculture PRA and Socio-Economic Formal-informal Economic Sector
The Building Construction Act, 1952	<ul style="list-style-type: none"> Physical, Landuse and Topographic Features
National Water policy 1999	<ul style="list-style-type: none"> Agriculture PRA and Socio-Economic Formal-informal Economic Sector Physical, Landuse and Topographic Features Hydrology

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Policy	Sector
Industrial Policy 2005	<ul style="list-style-type: none"> • Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features • Formal-informal Sector
Burning Bricks Act 1989	<ul style="list-style-type: none"> • Physical, Landuse and Topographic Features
National Urban Sector Policy 2011	<ul style="list-style-type: none"> • Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Formal-informal Sector • Physical, Landuse and Topographic Features • Hydrology
National Fisheries Policy 1998	<ul style="list-style-type: none"> • Physical, Landuse and Topographic Features • Hydrology
Seventh Five Year Plan(FY2016 – FY2020)	<ul style="list-style-type: none"> • Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features
National Land Use Policy 2001	<ul style="list-style-type: none"> • Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features • Hydrology • Transport
Climate Change Policies	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Agriculture • Physical, Landuse and Topographic Features • Geology • Hydrology
Quito Implementation Plan for the New Urban Agenda	<ul style="list-style-type: none"> • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features
Sustainable Development Goals	<ul style="list-style-type: none"> • Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features • Geology • Hydrology
The United Nations Framework Convention on Climate Change	<ul style="list-style-type: none"> • Agriculture • Geology • Hydrology

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

CHAPTER 4

SHIFT SHARE ANALYSIS

4.1 Introduction

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

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

4.2 Objectives

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

4.3 Concept of Shift Share Analysis

Shift share analysis is a regional economic growth tool. This process helps in order to determine trend of local economy, prioritizing the industry which have 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 deals with 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 is usually attributed to some local comparative advantage such as natural resources, linked industries or favorable local labor situations. It helps to identify how many jobs are created/not created as a result of the region's competitiveness and the region's progressive and less progressive industries.

Calculation of shift share components

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

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

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

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

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

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

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.

4.4 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 that means required data and excel spread sheet. Here its scopes are mention below-

- Showing the connection between different region and 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.

4.5 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 Rangunia Upazilla and the national employment growth in Bangladesh have been taken from the Economic Census District Report – Chittagong Bazar 2001, 2003 and 2013 respectively from Bangladesh Bureau of Statistics.

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

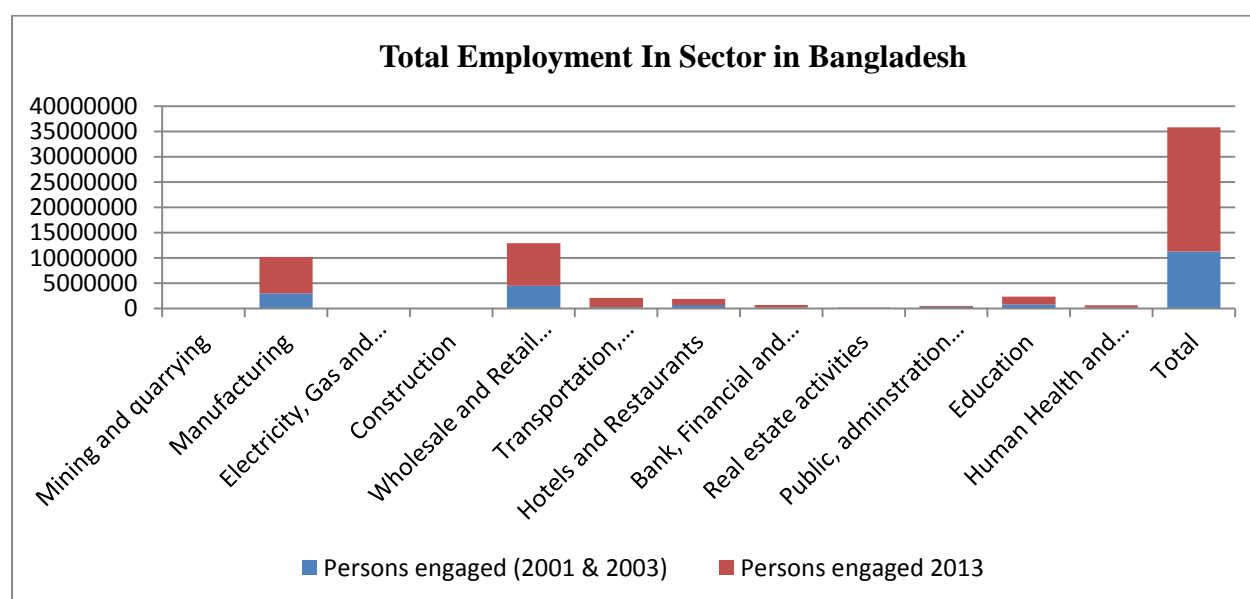
National growth rate analysis

Figure 4.1: Distribution of industries according to growth of employment in national level between 2001 & 03 and 2013

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

Shift Share Analysis in Rangunia Upazila

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

Table 4.1: Employment Data for Rangunia Upazila: 2003 and 2013

Employment Category	2003	2013	Change in Jobs	% change
Mining and quarrying	0	1	1	-
Manufacturing	3841	10777	6936	1.81
Electricity, Gas and water supply	20	20	0	0.00
Construction	18	0	-18	-1.00
Wholesale and Retail Trade, Repair of motor vehicles & motorcycle	8982	11349	2367	0.26
Transportation, storage and communication	612	230	-382	-0.62
Hotels and Restaurants	2948	2534	-414	-0.14
Bank, Financial and insurance Activities	418	1195	777	1.86
Real estate activities	97	19	-78	-0.80
Public, administration and Defense, Compulsory Social security	311	893	582	1.87

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Employment Category	2003	2013	Change in Jobs	% change
Education	2141	3648	1507	0.70
Human Health and Social work	444	957	513	1.16
Total	19832	31623	11791	0.59

Source: BBS Economic Census, 2003 and 2013

According to the analysis, from table 1 it shows that the Upazila only added 11791 jobs during the period of (2003-2013). This suggests that the area is not performing as well as the national average.

Table 4.2: Shift Share Components of Rangunia Upaila in context of national: 2003 and 2013

Employment Category	National share	Industrial Mix	Regional Shift	Total Regional Growth	Net Shift
Mining and quarrying	0.00	0	0	0	0.00
Manufacturing	4201.42	1230.26	1504.31	6936	2734.58
Electricity, Gas and water supply	21.88	6.48	-	28.35282552	6.48
Construction	19.69	-14.55	-23.14	-18.00	-37.69
Wholesale and Retail Trade, Repair of motor vehicles & motorcycle	9824.84	-2081.19	-5376.65	2367	-7457.84
Transportation, storage and communication	669.43	3767.03	-4818.46	-382	-1051.43
Hotels and Restaurants	3224.63	-1020.24	-2618.39	-414	-3638.63
Bank, Financial and insurance Activities	457.22	-14.39	334.16	777	319.78
Real estate activities	106.10	-170.14	-13.96	-78	-184.10
Public, administration and Defense, Compulsory Social security	340.18	-512.88	754.69	582	241.82
Education	2341.90	-760.94	-73.96	1507	-834.90
Human Health and Social work	485.66	-126.22	153.56	513	27.34
Total	21692.96	303.22	-10177.83	11818.35	-9874.61

Source: BBS Economic Census, 2003 and 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 21692 between 2003 and 2013.

Mining and quarrying, electricity, gas and water supply and construction 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.

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The overall industrial mix component of 303 means that Rangunia Upazila has nearly 303 added jobs than it would have if its structure was identical to the nation. Though construction, wholesale and retail trade, repair of motor vehicles & motorcycle, hotels and restaurants, bank, financial and insurance activities, real estate activities, public administration and defense, compulsory social security, education, human health and social sectors are growing slower.

According to the regional shift component, the negative value means there are 10177 less jobs are generated in Rangunia Upazila. Most of the sectors have negative values so that means these industries are growing slower.

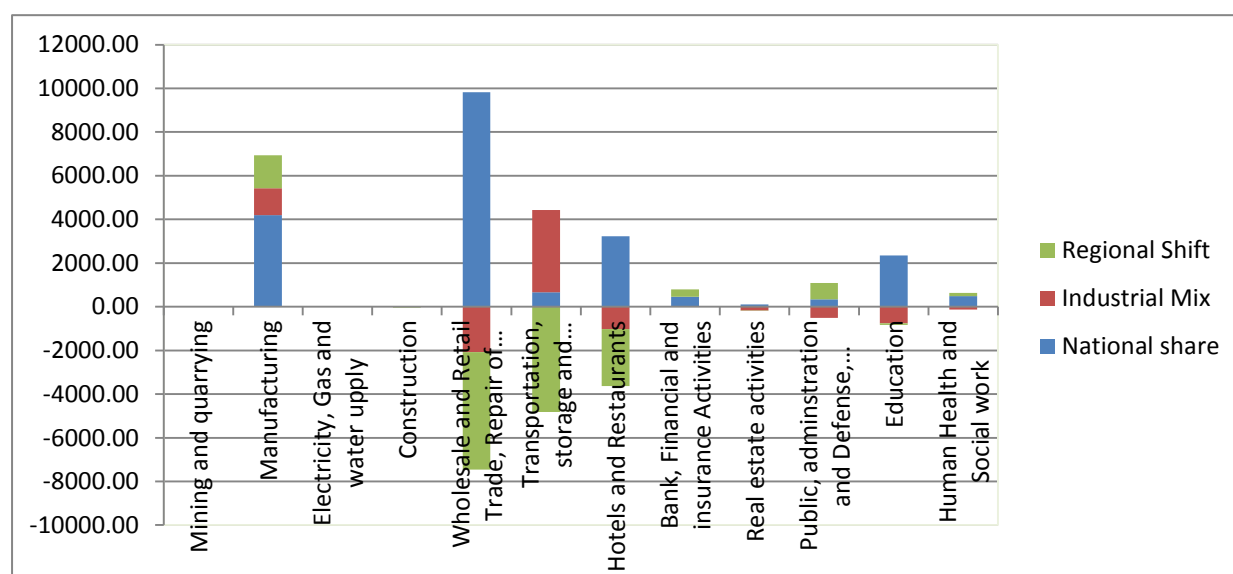


Figure 4.2: Distribution of industries according to shift share components in Rangunia Upazila

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

In Rangunia Upazila, differential shift for manufacturing, bank, financial and insurance activities, public, administration and defense, compulsory social, human health and social work have a positive values but all other sector have negative impact. So, these sectors have some slow growing industries which generate employment at a lower rate.

Sector wise Analysis

The aim of sector wise analysis is to compare the employment growth of each sector in Rangunia 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.

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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 2 shows progressive and less progressive sectors of Rangunia Upazila as per Shift-share analysis. Net Shift Component for Rangunia Upazila provides negative value which means overall economic growth of Rangunia Upazila is less progressive than national growth.

Table 4.3: Progressive and Less Progressive Sectors of Rangunia 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 Defence	✓	
Education		✓
Health and Social Works	✓	
Total		✓

It is important to keep in mind that this is a descriptive tool rather than a diagnostic one is important. 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

TABLE: 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	40 feet
Upazila local/Tertiary roads	32 feet
Access Road	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
Other	5.00 acres / 20,000 population
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 HQ
Cinema/ Theatre	1.0 acre /20,000 population
6. Health	
Upazila health complex	10 -20 acres/Upazila HQ
health centre/Maternity clinic	1.00 acre/ 5,000 population
7. Community Facilities	

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Types of Land Uses	Recommended Standard
Mosque/Church/Temple	0.5 acre /20,000 population
Eidgah	1.0 acre/20,000 population
Graveyard	1.00 acre /20,000 population
Community centre	1.00 acre /20,000 population
Police Station	3 – 5 acres/Upazila HQ
Police Box/outpost	0.5 acre/ per box
Fire Station	1.00 acre/ 20,000 population
Post office	0.5 acre /20,000 population
8. Utilities	
Water supply	1.00 acre /20,000 population
Gas	1.00 acre /20,000 population
Solid waste disposal site	5– 10 acres/Upazila HQ
Waste transfer station	0.25 acres/per waste transfer station
Electric sub-station	1.00 acre/20,000 population
Telephone exchange	0.5 acre/20,000 population
Fuel Station	0.5 acre/20,000 population
Others	-
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	1.50 acres /1000 population
Heavy Industry	5.0 acres /10000 population
11. Transportation	
Bus terminal	1.0 acre /20,000 population
Truck terminal	0.50 acre /20,000 population
Launch/steamer terminal	1.00 acre /20,000 population
Rickshaw/van/Tempoo stand	0.25 acre /one baby taxi/tempo stand
Passenger Shed	0.25 acre /one baby taxi/tempo stand

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Types of Land Uses	Recommended Standard
Others	-
12. Administration/Govt. Service	
Upazila complex	10-15.00 acres
Paurashava office	3 – 5 acres
Others	-

CHAPTER 6

SUB REGIONAL AND STRUCTURE PLAN

6.1 Sub-Regional Plan

6.1.1 Nature of Sub-Regional Plan

I) Strategic Plan at Sub-Regional Level

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

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

Strategic Plan would be prepared for 20 years for Rangunia 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.

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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.

Objectives

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

6.2 Structure Plan

6.2.1 Conceptualization of Structure Plan

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

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

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

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

Objectives

- (i) The main objective of Structure Plan is to demarcate the future growth areas and set a strategy for future development of Rangunia Upazila.
- (ii) To identify the urban areas and different rural centres of the upazila; and determine the planning requirements for the urban area, rural centres 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.

6.3 Description of the Project Area

Rangunia Upazila is situated under Chittagong District. It has total area of 410.73 sq.km, located in between 22°18' and 22°37' north latitudes and in between 91°58' and 92°08' east longitudes. It is bounded by Kawkhali Upazila of Rangamati on the North; Chandanaish, Patiya and Boalkhali on the South; Kaptai, Rajasthali and Bandarban Sadar Upazila on the East; and Raozan and Kawkhali Upazila on the West. It constitutes 15 unions along with one paurashava with an area of about 347.87 sq.km (**85959.47 acre**). The detail administrative boundary of the project area has been shown in the below table:

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Table 6.1: Study Area Demarcation

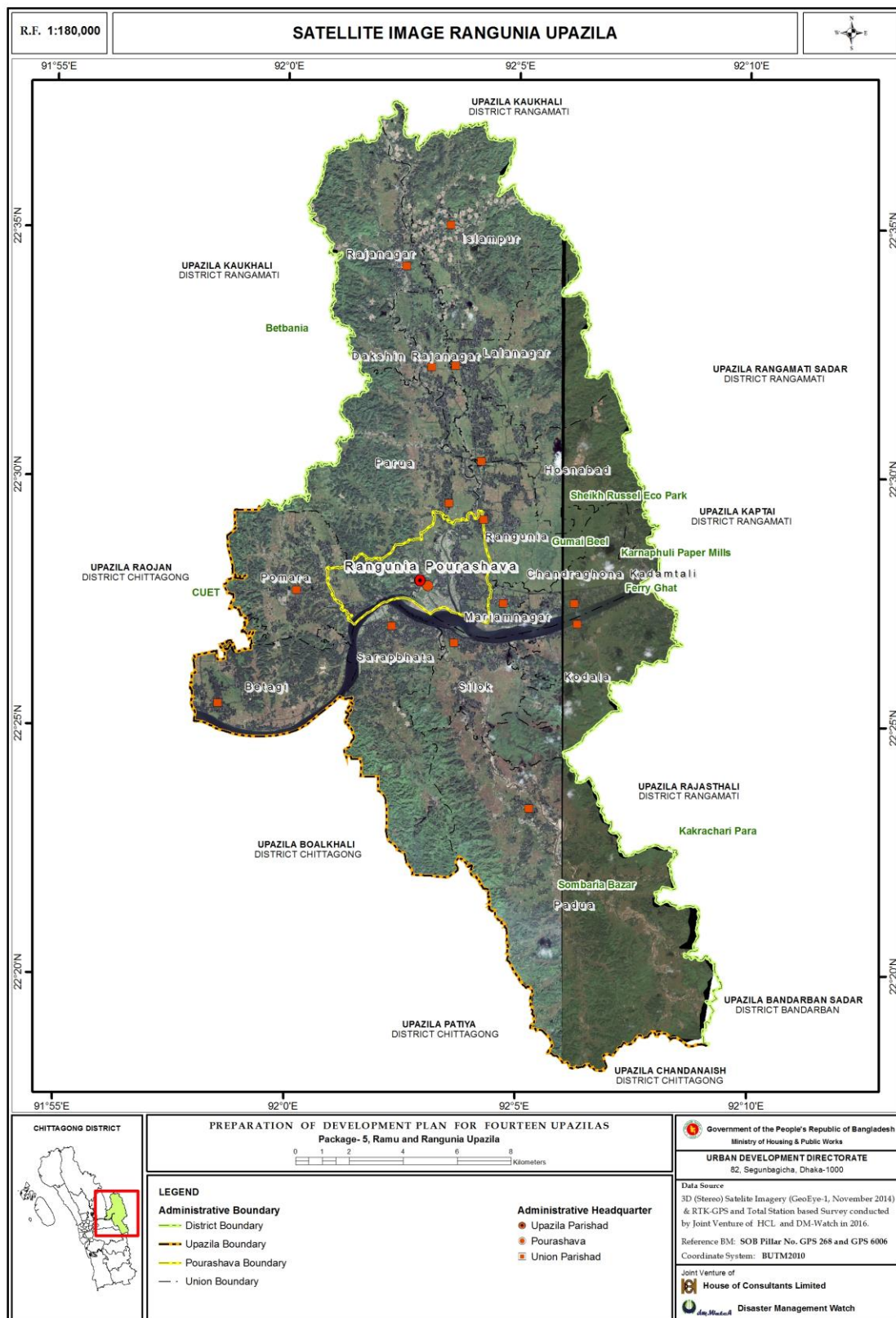
Study Area Demarcation						
Union	Area(sq.m)	Area (sq.km)	Area(Acre)	Percentage	Population (2011)	Density
Betagi	17828119.80	17.83	4405.42	5.13	20510.00	5
Chandraghona	10638268.36	10.64	2628.77	3.06	30221.00	11
Dakshin Rajanagar	7345580.55	7.35	1815.13	2.11	17920.00	10
Hosnabad	19489121.14	19.49	4815.87	5.60	14871.00	3
Islampur	32911103.87	32.91	8132.51	9.46	19044.00	2
Kodala	23411446.81	23.41	5785.09	6.73	18965.00	3
Lalanagar	21067359.91	21.07	5205.86	6.06	14545.00	3
Mariamnagar	4014744.46	4.01	992.06	1.15	21413.00	22
Padua	73346405.47	73.35	18124.29	21.08	35668.00	2
Parua	28424575.62	28.42	7023.87	8.17	14423.00	2
Pomra	18259656.86	18.26	4512.06	5.25	50643.00	11
Rajanagar	24672036.74	24.67	6096.59	7.09	19172.00	3
Rangunia	12710536.12	12.71	3140.84	3.65	13354.00	4
Sharapbhata	25760230.27	25.76	6365.49	7.41	25344.00	4
Shilok	12821476.51	12.82	3168.26	3.69	18009.00	6
Rangunia Paurashava	Area(sq.m)	Area (sq.km)	Area(Acre)	Percentage	Population (2011)	Density
Ward No.01	2302826.40	2.30	569.04	0.66	3329.00	6
Ward No.02	1118719.36	1.12	276.44	0.32	2497.00	9
Ward No.03	3477056.97	3.48	859.20	1.00	5625.00	7
Ward No.04	1432361.17	1.43	353.94	0.41	2967.00	8
Ward No.05	1700327.87	1.70	420.16	0.49	3019.00	7
Ward No.06	1694081.98	1.69	418.62	0.49	3094.00	7
Ward No.07	1272783.24	1.27	314.51	0.37	3971.00	13
Ward No.08	1645366.54	1.65	406.58	0.47	4968.00	12
Ward No.09	521462.93	0.52	128.86	0.15	3171.00	25
Total	347865648.94	347.87	85959.47	100	366743.00	185

Source: Field Survey, 2016

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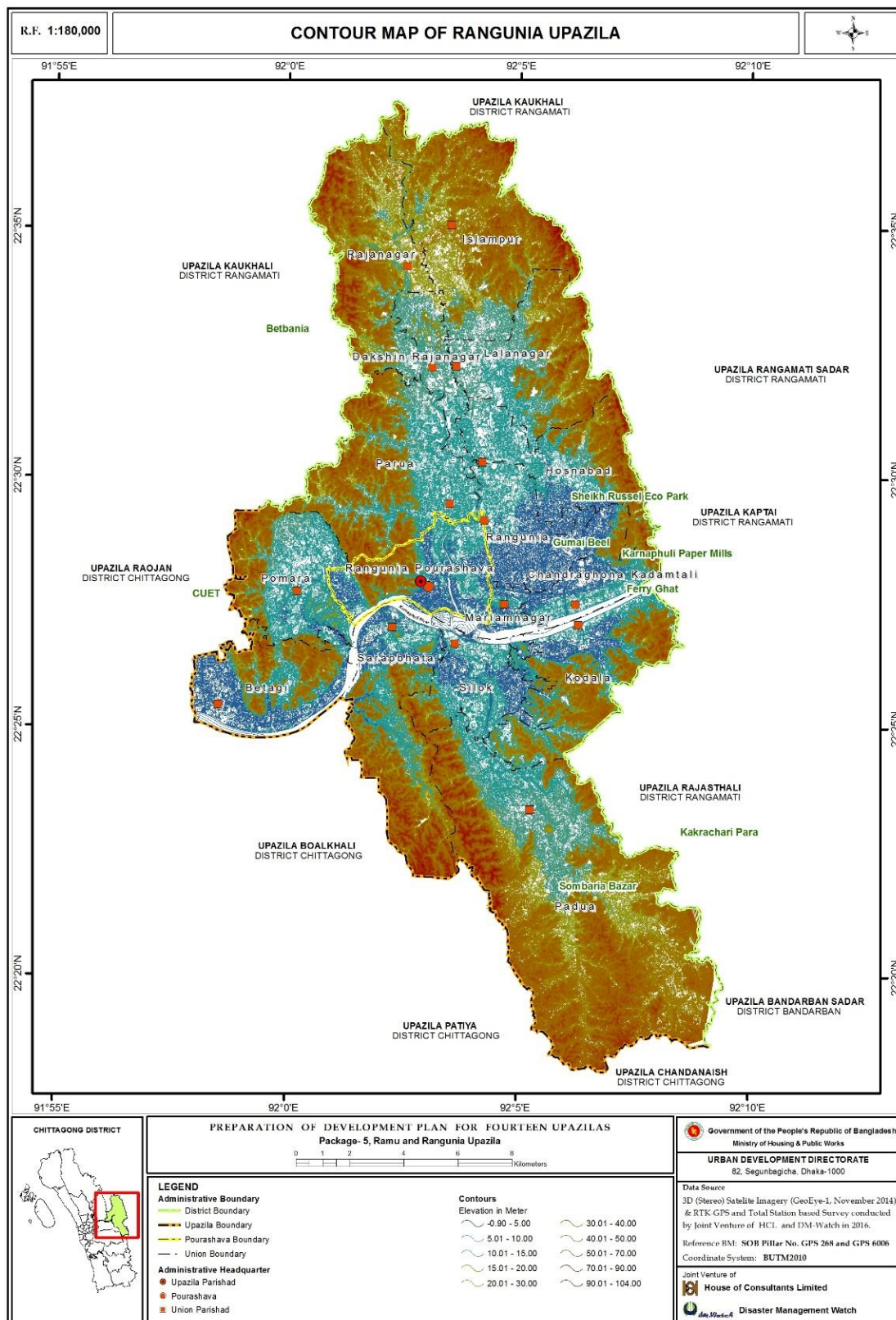
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.1: Satellite Image of Rangunia Upazila

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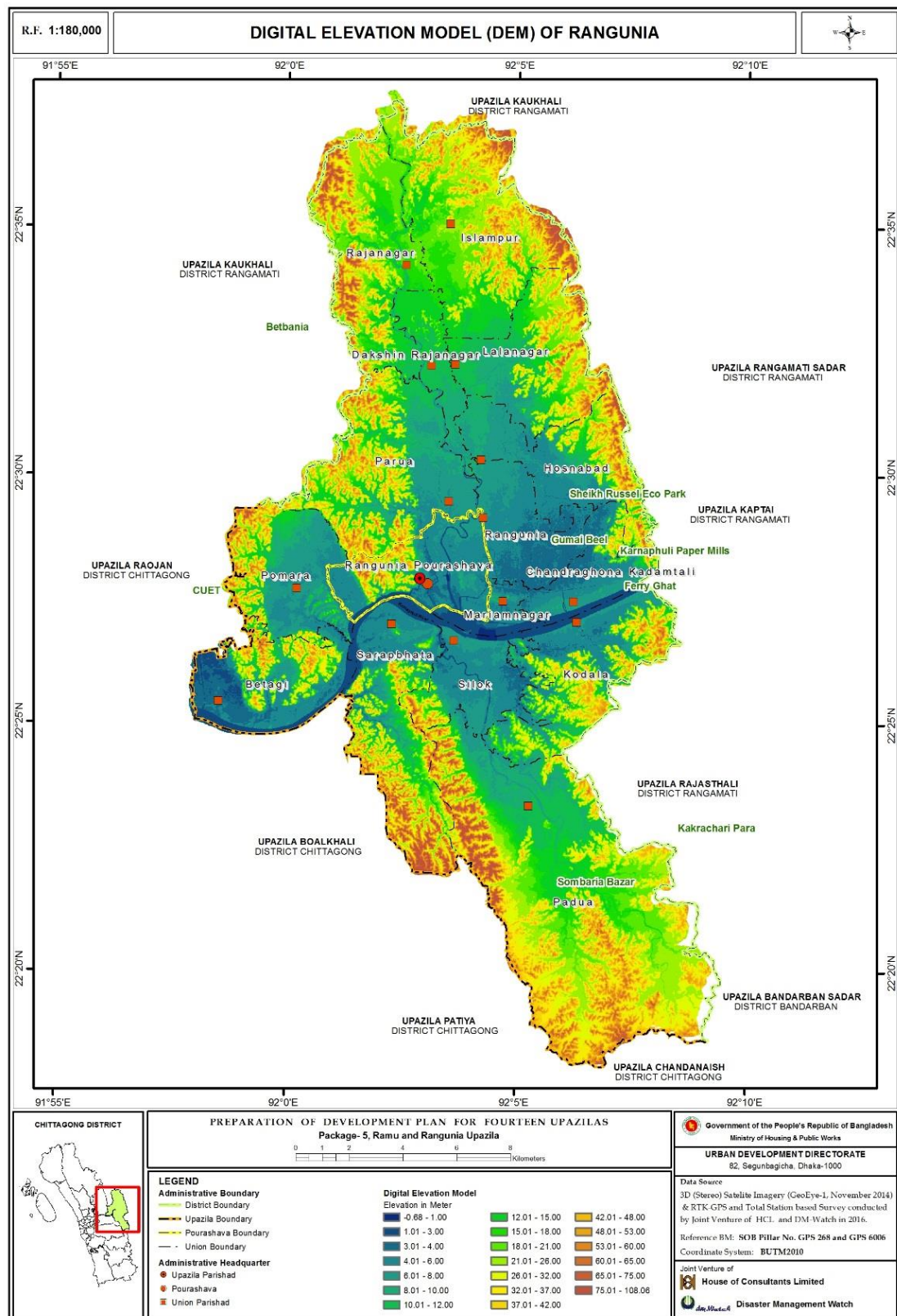
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.2: Contour Map of Rangunia Upazila

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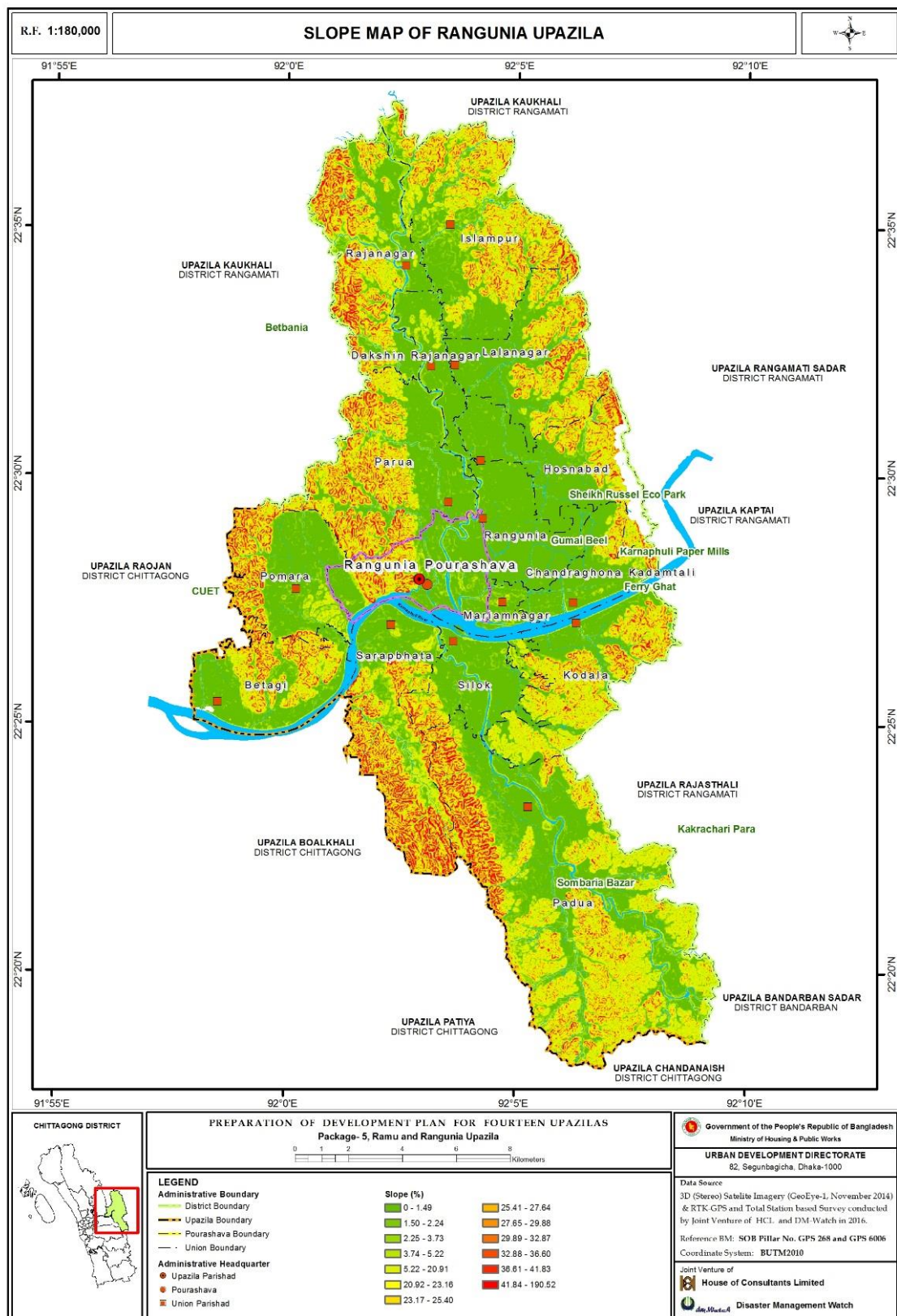
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.3: Digital Elevation Model (DEM) of Rangunia Upazila

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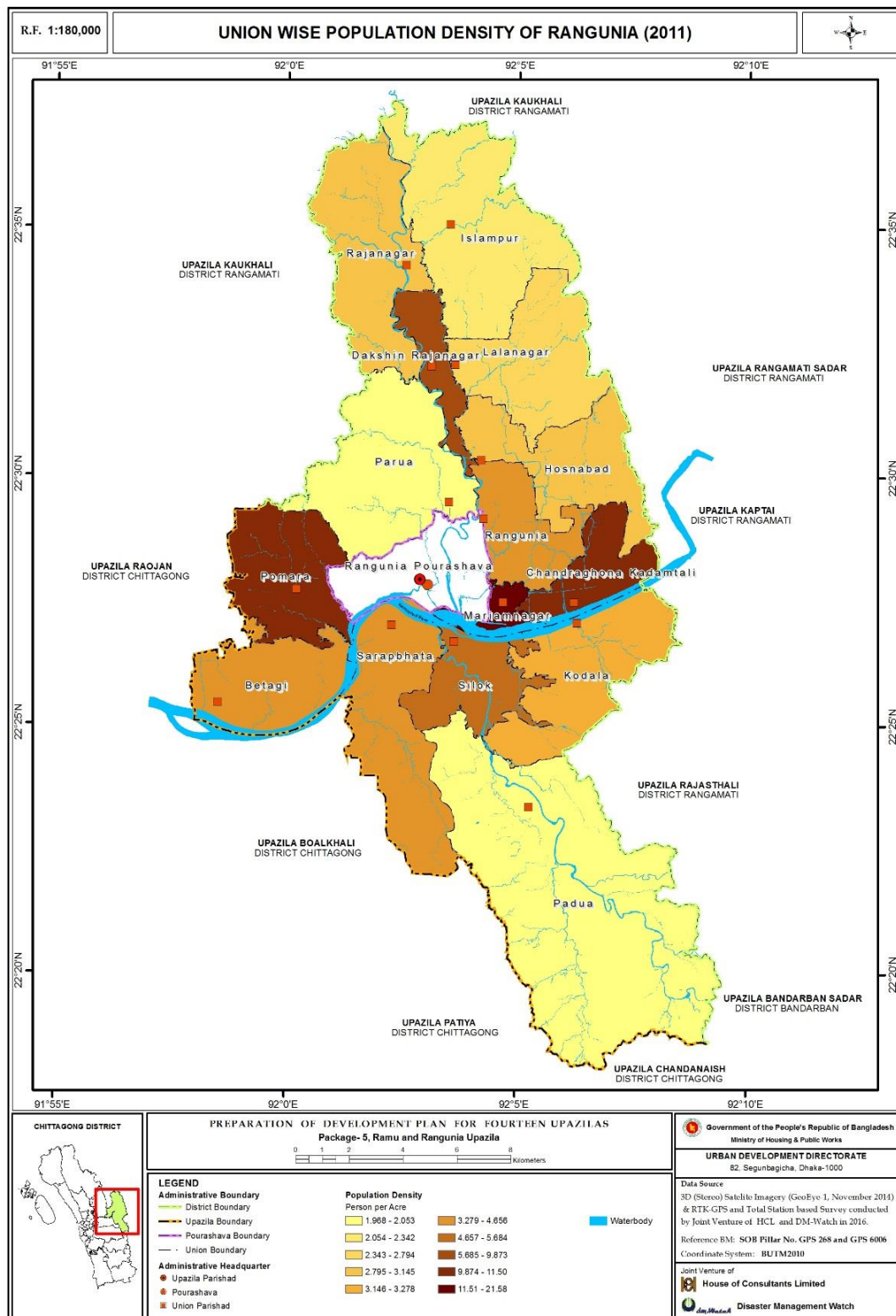
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.4: Slope Map of Rangunia Upazila

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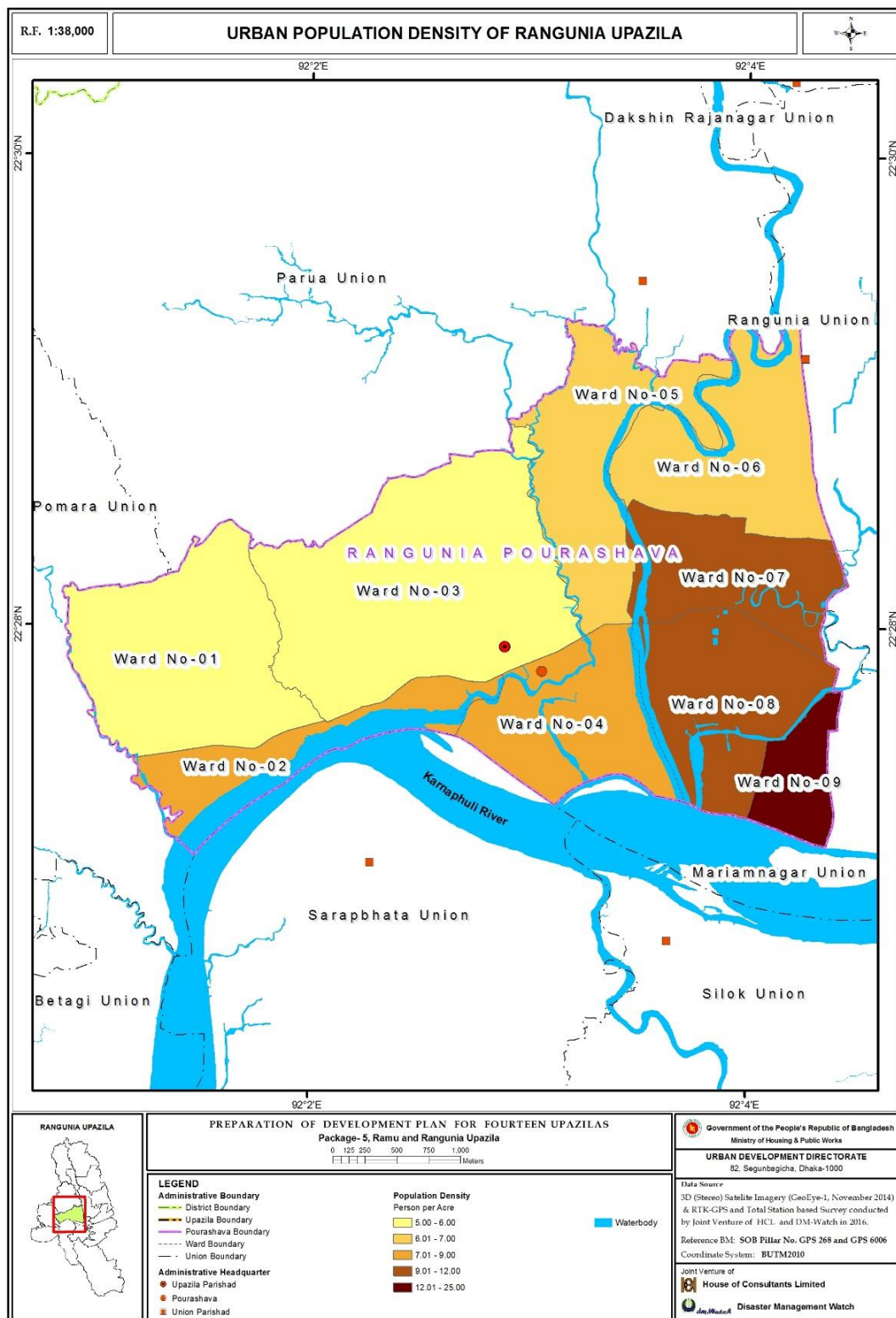
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.5: Union wise Population Density in Rangunia Upazila (2011)

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

Map 6.6: Urban Population Density in Rangunia Upazila (2011)

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6.4 Thematic Maps

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

6.4.1 Existing Land Use

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

Table 6.2: Existing Land use

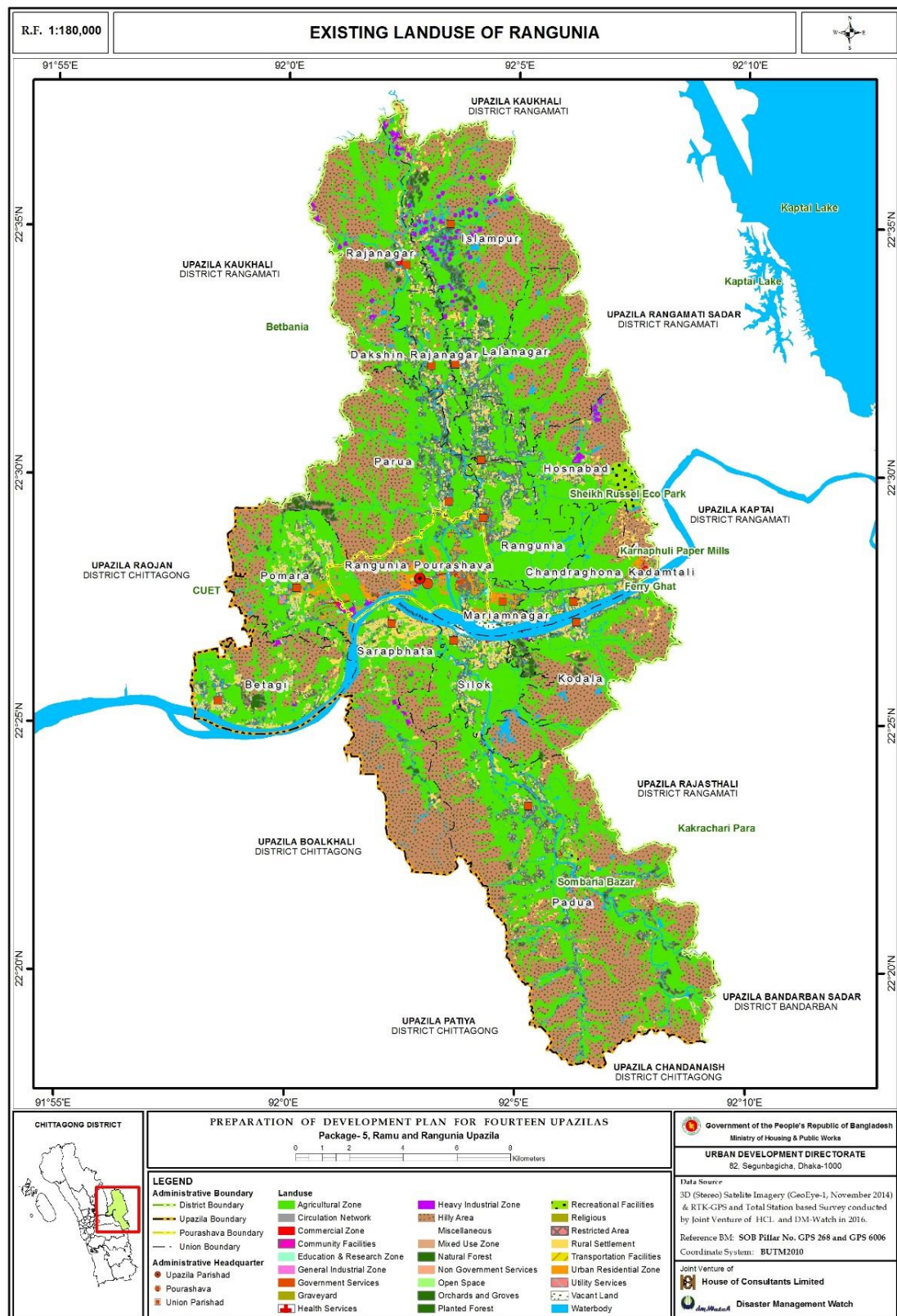
Landuse	Area (Sq.m)	Area (Sq. km)	Area (Hectre)	Area (Acre)	Percentage
Agriculture	151539067.69	151.54	15153.91	37446.12	43.56
Hilly Area	124615714.57	124.62	12461.57	30793.21	35.82
Water body	24232361.91	24.23	2423.24	5987.95	6.97
Rural Settlements	18071303.50	18.07	1807.13	4465.52	5.19
Orchards and Groves	7610220.96	7.61	761.02	1880.53	2.19
Natural Forest	5677036.03	5.68	567.70	1402.83	1.63
Circulation Network	3634375.53	3.63	363.44	898.07	1.04
Urban Residential Zone	3495578.09	3.50	349.56	863.78	1.00
Heavy Industrial Zone	2300944.72	2.30	230.09	568.58	0.66
Recreational Facilities	1560795.31	1.56	156.08	385.68	0.45
Planted Forest	1340688.46	1.34	134.07	331.29	0.39
Commercial Zone	898146.37	0.90	89.81	221.94	0.26
Vacant Land	588147.06	0.59	58.81	145.33	0.17
Education and Research	486269.29	0.49	48.63	120.16	0.14
Religious	462897.86	0.46	46.29	114.38	0.13
Graveyard	348928.43	0.35	34.89	86.22	0.10
Government Services	306666.08	0.31	30.67	75.78	0.09
Mixed Use Zone	230889.60	0.23	23.09	57.05	0.07
Open Space	141484.62	0.14	14.15	34.96	0.04
Utility Services	154702.60	0.15	15.47	38.23	0.04
Community Facilities	71158.44	0.07	7.12	17.58	0.02
General Industries	32424.36	0.03	3.24	8.01	0.01
Health Services	23420.94	0.02	2.34	5.79	0.01
Restricted Area	32569.63	0.03	3.26	8.05	0.01
Total	347865648.82	347.87	34786.56	85959.47	100.00

Source: Field Survey, 2016

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

Map 6.7: Landuse of Rangunia Upazila

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6.4.2 Existing Circulation Network

From the Physical feature survey the road network of the study area has been summarized in the Table 6.3. From the survey it is found that there are total 5333 roads in which HBB roads are 2048, katcha roads are 2541 and number of pucca roads are 744.

Table 6.3: Existing Circulation Network

Union/Ward	Type	Frequency	Length in meter	Length in kilometre	Percentage
Betagi	HBB	158	32212.56	32.21	1.77
	Katcha	137	30834.10	30.83	1.69
	Pucca	48	20379.14	20.38	1.12
Chandraghona Kadamtali	HBB	159	27621.45	27.62	1.52
	Katcha	95	22153.51	22.15	1.22
	Pucca	25	24122.50	24.12	1.33
Dakshin Rajanagar	HBB	61	17220.65	17.22	0.95
	Katcha	63	11300.11	11.30	0.62
	Pucca	28	15444.16	15.44	0.85
Hosnabad	HBB	142	36317.49	36.32	2.00
	Katcha	178	52085.92	52.09	2.86
	Pucca	39	34257.07	34.26	1.88
Islampur	HBB	56	16477.98	16.48	0.91
	Katcha	172	51145.44	51.15	2.81
	Pucca	39	26712.86	26.71	1.47
Kodala	HBB	107	21531.89	21.53	1.18
	Katcha	207	88744.38	88.74	4.88
	Pucca	22	11767.67	11.77	0.65
Lalanagar	HBB	126	28338.20	28.34	1.56
	Katcha	103	38168.19	38.17	2.10
	Pucca	19	10086.20	10.09	0.55
Mariamnagar	HBB	88	12873.77	12.87	0.71
	Katcha	31	2970.82	2.97	0.16
	Pucca	53	48535.89	48.54	2.67
Padua	HBB	160	40874.36	40.87	2.25
	Katcha	546	158830.68	158.83	8.73
	Pucca	81	35687.06	35.69	1.96
Parua	HBB	91	20718.25	20.72	1.14
	Katcha	238	62350.96	62.35	3.43
	Pucca	21	10321.95	10.32	0.57
Pomara	HBB	196	34748.90	34.75	1.91
	Katcha	179	34838.75	34.84	1.91
	Pucca	61	32996.29	33.00	1.81
Rajanagar	HBB	50	8687.60	8.69	0.48
	Katcha	103	37378.02	37.38	2.05
	Pucca	41	39847.34	39.85	2.19
Rangunia	HBB	142	30065.84	30.07	1.65
	Katcha	106	21044.66	21.04	1.16

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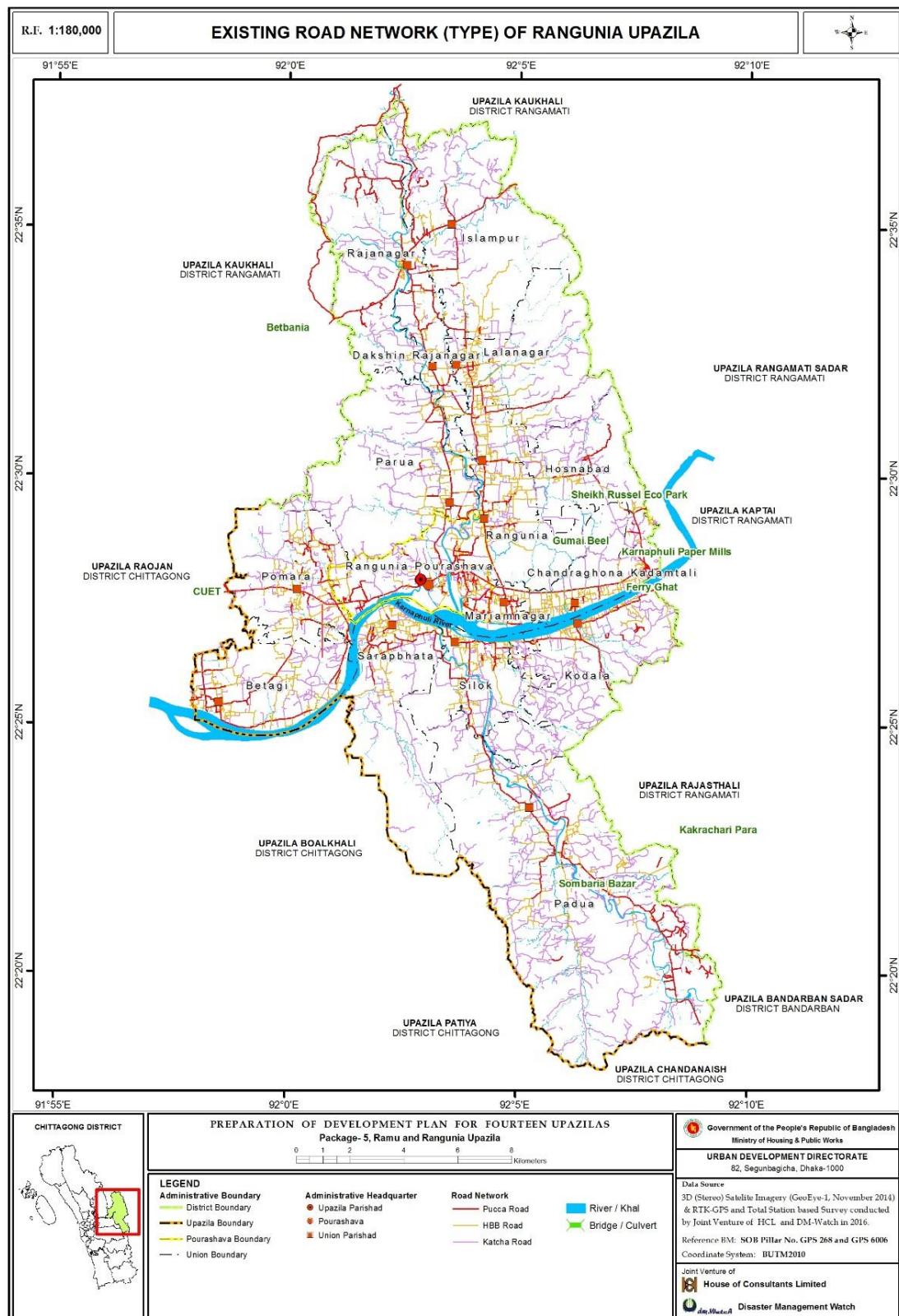
	Pucca	40	10160.60	10.16	0.56
Sarapbhata	HBB	153	26868.67	26.87	1.48
	Katcha	111	33580.21	33.58	1.85
	Pucca	33	12518.46	12.52	0.69
Silok	HBB	127	25857.61	25.86	1.42
	Katcha	88	34362.97	34.36	1.89
	Pucca	32	12610.67	12.61	0.69
Ward No-01	HBB	22	5796.66	5.80	0.32
	Katcha	19	4248.56	4.25	0.23
	Pucca	15	22324.64	22.32	1.23
Ward No-02	HBB	4	483.71	0.48	0.03
	Katcha	11	1198.84	1.20	0.07
	Pucca	12	58801.28	58.80	3.23
Ward No-03	HBB	16	3169.87	3.17	0.17
	Katcha	66	13748.58	13.75	0.76
	Pucca	25	60170.47	60.17	3.31
Ward No-04	HBB	25	3275.03	3.28	0.18
	Katcha	13	1442.53	1.44	0.08
	Pucca	7	38900.25	38.90	2.14
Ward No-05	HBB	22	2704.54	2.70	0.15
	Katcha	22	6288.44	6.29	0.35
	Pucca	14	42354.30	42.35	2.33
Ward No-06	HBB	39	6504.34	6.50	0.36
	Katcha	11	2705.88	2.71	0.15
	Pucca	10	3817.55	3.82	0.21
Ward No-07	HBB	25	3613.81	3.61	0.20
	Katcha	12	3229.89	3.23	0.18
	Pucca	31	44591.22	44.59	2.45
Ward No-08	HBB	60	8077.83	8.08	0.44
	Katcha	23	3004.58	3.00	0.17
	Pucca	32	64180.36	64.18	3.53
Ward No-09	HBB	19	2812.39	2.81	0.15
	Katcha	7	1144.94	1.14	0.06
	Pucca	16	5469.72	5.47	0.30

Source: Field Survey, 2016

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

Map 6.8: Road Network (Type) of Rangunia Upazila

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Map 6.9: Road Network (Width) of Rangunia Upazila

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6.4.3 Structure type in Urban and Rural Area

According to the interpretation of satellite image and field survey there are 55968 structures found within the Rangunia Upazila. Among them 30353 are katcha, 11369 are pucca and 14246 are semi-pucca. The statistic has been shown in the Table 6.4.

Table 6.4: Structure Type in Urban and Rural Area

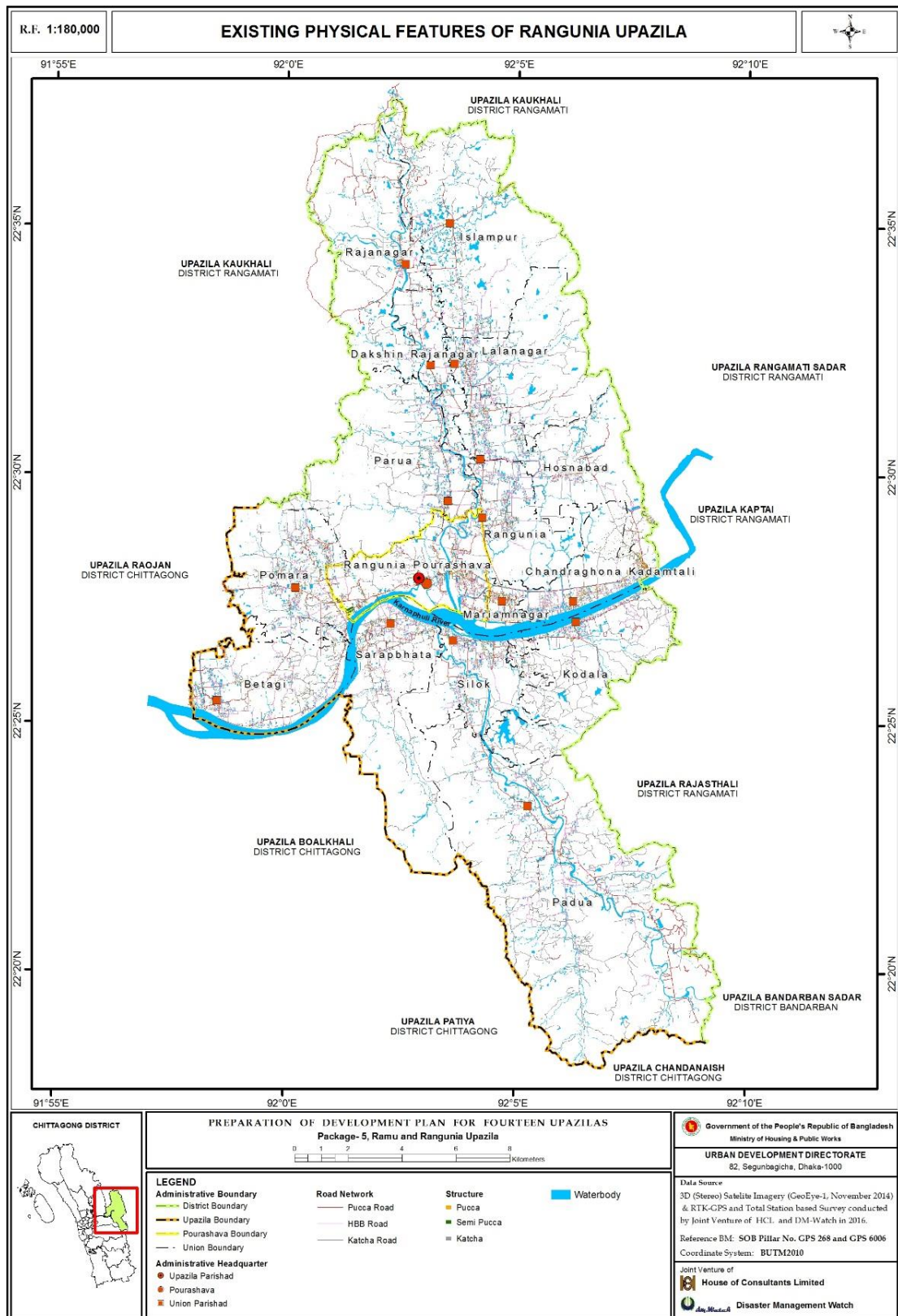
Rangunia Paurashava	Pucca	Percentage	Semi-Pucca	Percentage	Katcha	Percentage	Total
Ward No.01	165	24.55	136	20.24	371	55.21	672
Ward No.02	72	13.48	153	28.65	309	57.87	534
Ward No.03	176	16.76	259	24.67	615	58.57	1050
Ward No.04	134	22.98	184	31.56	265	45.45	583
Ward No.05	129	21.94	211	35.88	248	42.18	588
Ward No.06	155	27.63	135	24.06	271	48.31	561
Ward No.07	218	29.90	182	24.97	329	45.13	729
Ward No.08	279	27.38	305	29.93	435	42.69	1019
Ward No.09	130	25.49	140	27.45	240	47.06	510
Union	Pucca	Percentage	Semi-pucca	Percentage	Katcha	Percentage	Total
Betagi	903	21.10	877	20.50	2499	58.40	4279
Chandraghona	1220	24.36	1608	32.11	2180	43.53	5008
Dakshin Rajanagar	392	22.78	404	23.47	925	53.75	1721
Hosnabad	801	21.85	777	21.19	2088	56.96	3666
Islampur	189	6.15	1824	59.34	1061	34.52	3074
Kodala	342	13.11	867	33.23	1400	53.66	2609
Lalanagar	635	27.41	341	14.72	1341	57.88	2317
Mariamnagar	901	30.05	703	23.45	1394	46.50	2998
Padua	621	9.45	945	14.39	5002	76.16	6568
Parua	472	21.00	588	26.16	1188	52.85	2248
Pomra	1263	23.86	1135	21.44	2896	54.70	5294
Rajanagar	255	12.17	1057	50.45	783	37.37	2095
Rangunia	721	27.81	513	19.78	1359	52.41	2593
Sharapbhata	923	22.25	910	21.93	2316	55.82	4149
Shilok	791	25.78	531	17.31	1746	56.91	3068

Source: Field Survey, 2016

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

Map 6.10: Physical Feature of Rangunia Upazila

6.4.4 Cropping Pattern and Intensity of Rangunia Upazila

Cropping pattern of 15 unions of Rangunia area including Rangunia Paurashava has been identified through consultation with the Sub-Assistant Agricultural Officer (SAAO). From the consultation it has been found that there are single, double and triple cropping land which comprises 4.78%, 28.42% and 10.28% of total area respectively.

Table 6.5: Cropping Intensity of Rangunia

Cropping Intensity	Area (sq.m)	Area (Acre)	Percentage
Single	16633100.00	4110.13	4.78
Double	98855200.00	24427.65	28.42
Triple	35772200.00	8839.50	10.28

Source: Field Survey, 2016

6.4.5 Vegetation

The vegetation scenario of Rangunia Upazila has been summarized in the table (6.6) given below:

Table 6.6: Vegetation Scenario of Rangunia Upazila

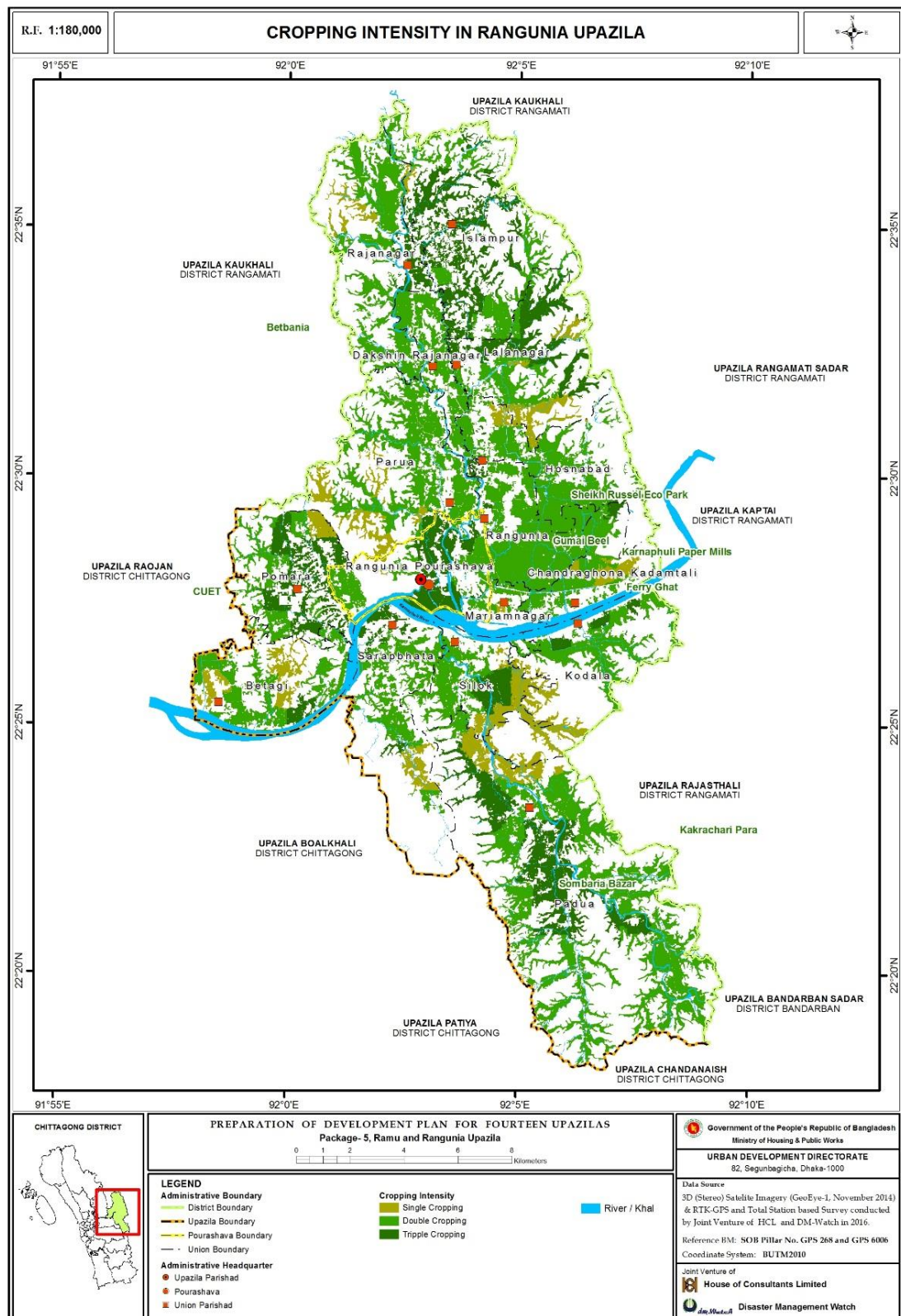
Vegetation	Area (Sq.m)	Area (Acre)	Percentage
Natural Forest	95534007.36	23606.96	27.46
Planted Forest	52293.85	12.92	0.02
Orchards and Groves	906103.62	223.90	0.26

Source: Field Survey, 2016

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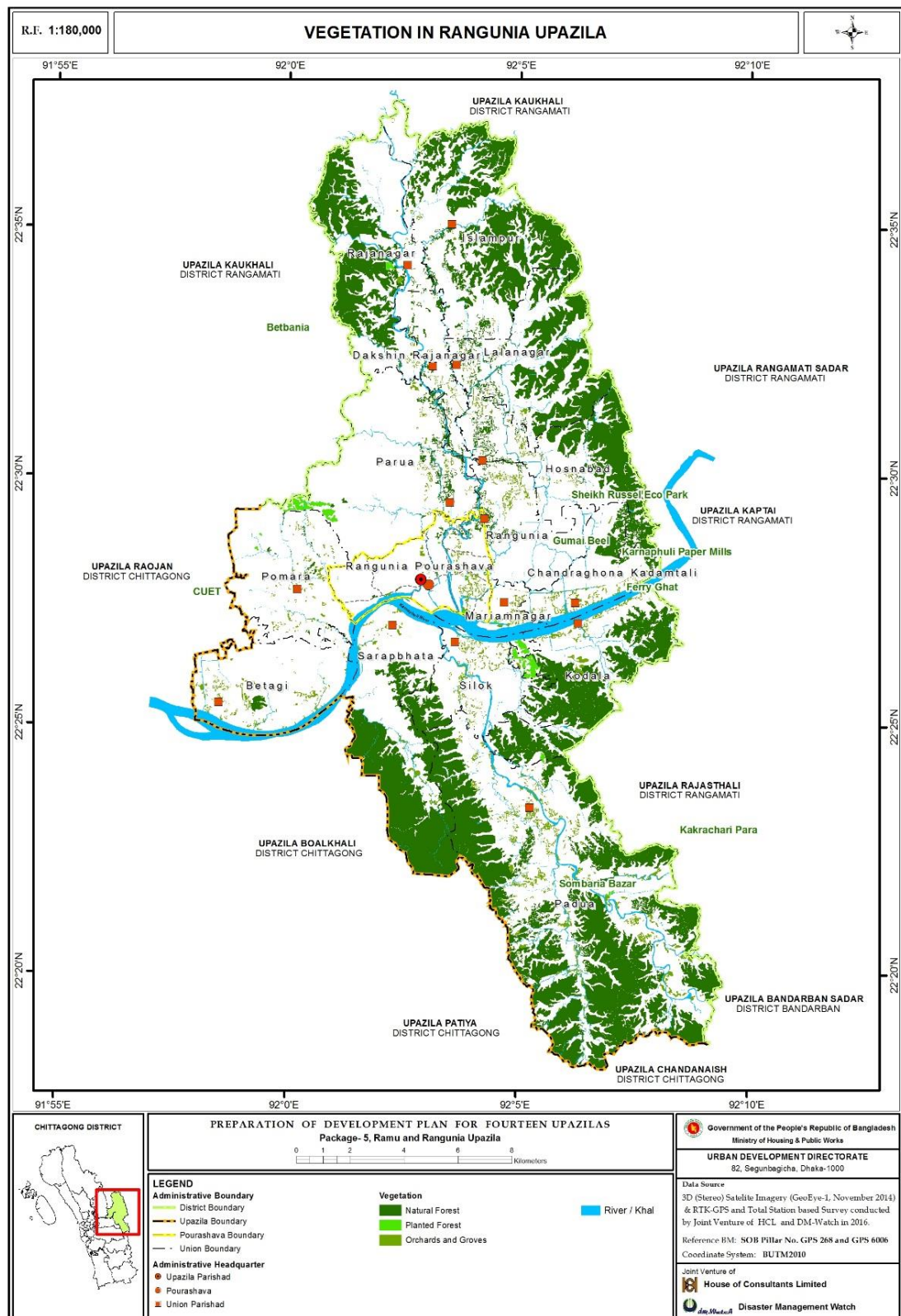
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.11: Cropping Intensity in Rangunia Upazila

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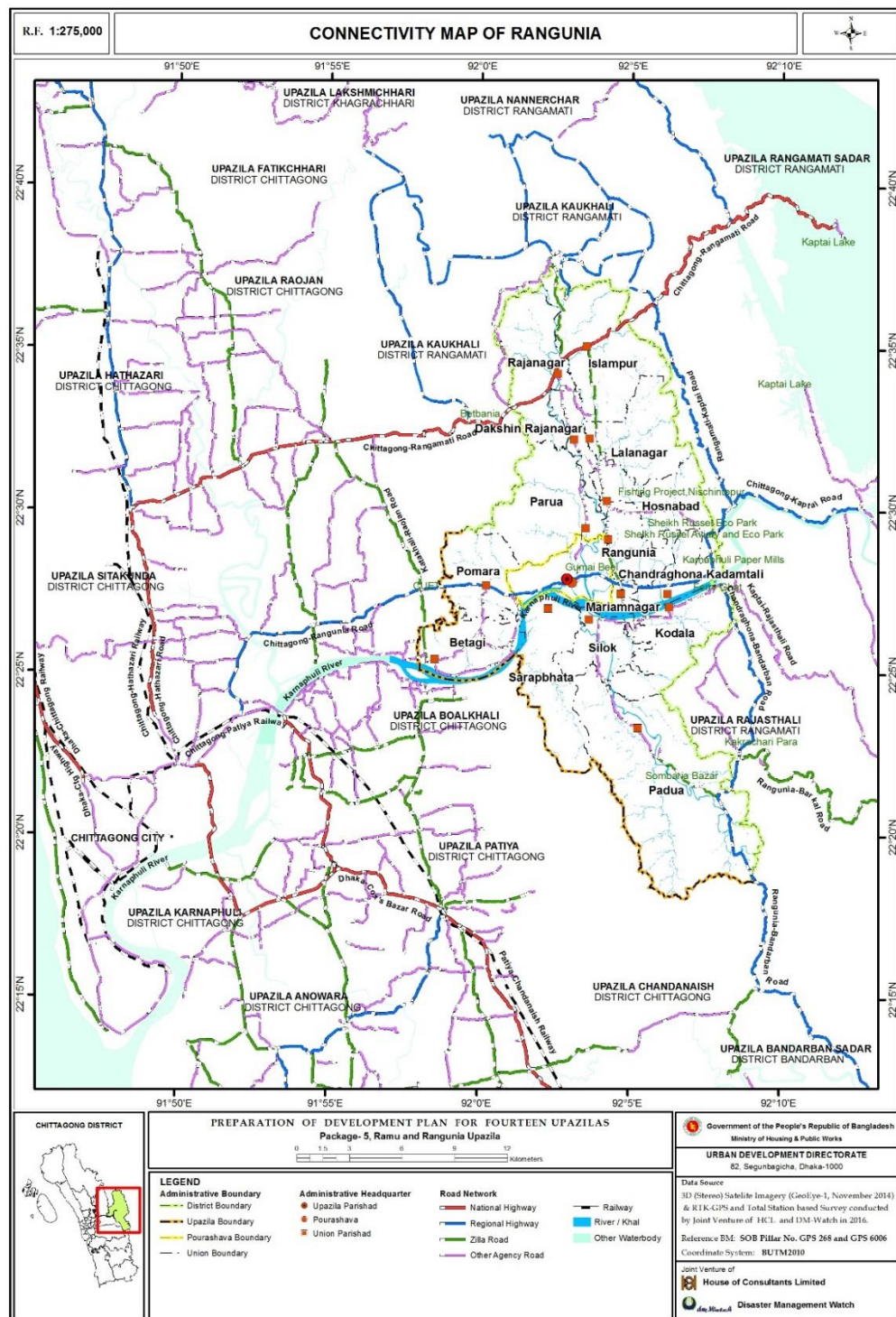
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.12: Vegetation Map of Rangunia Upazila

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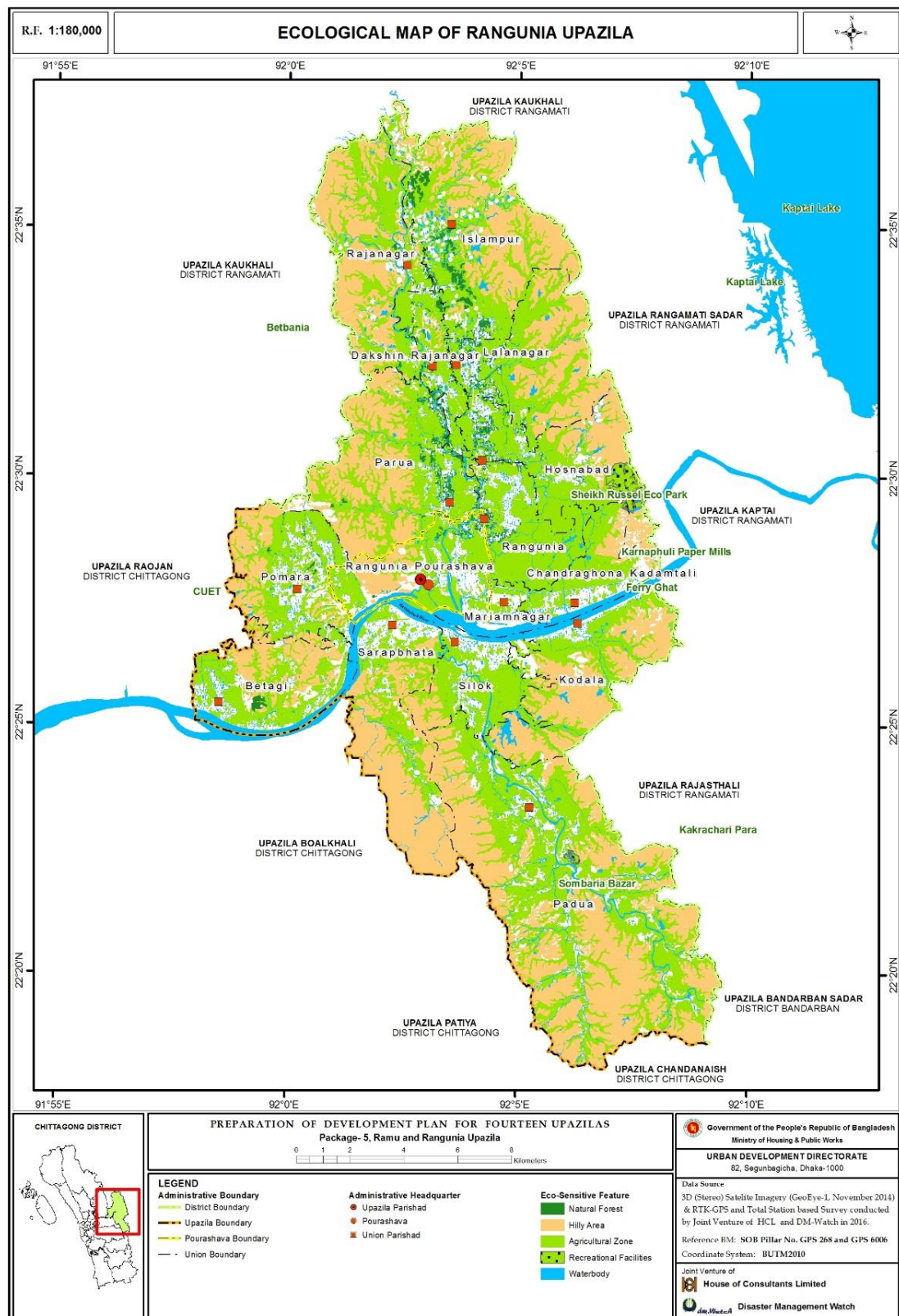
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.13: Connectivity Map of Rangunia Upazila

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

Map 6.14: Ecological Map of Rangunia Upazila

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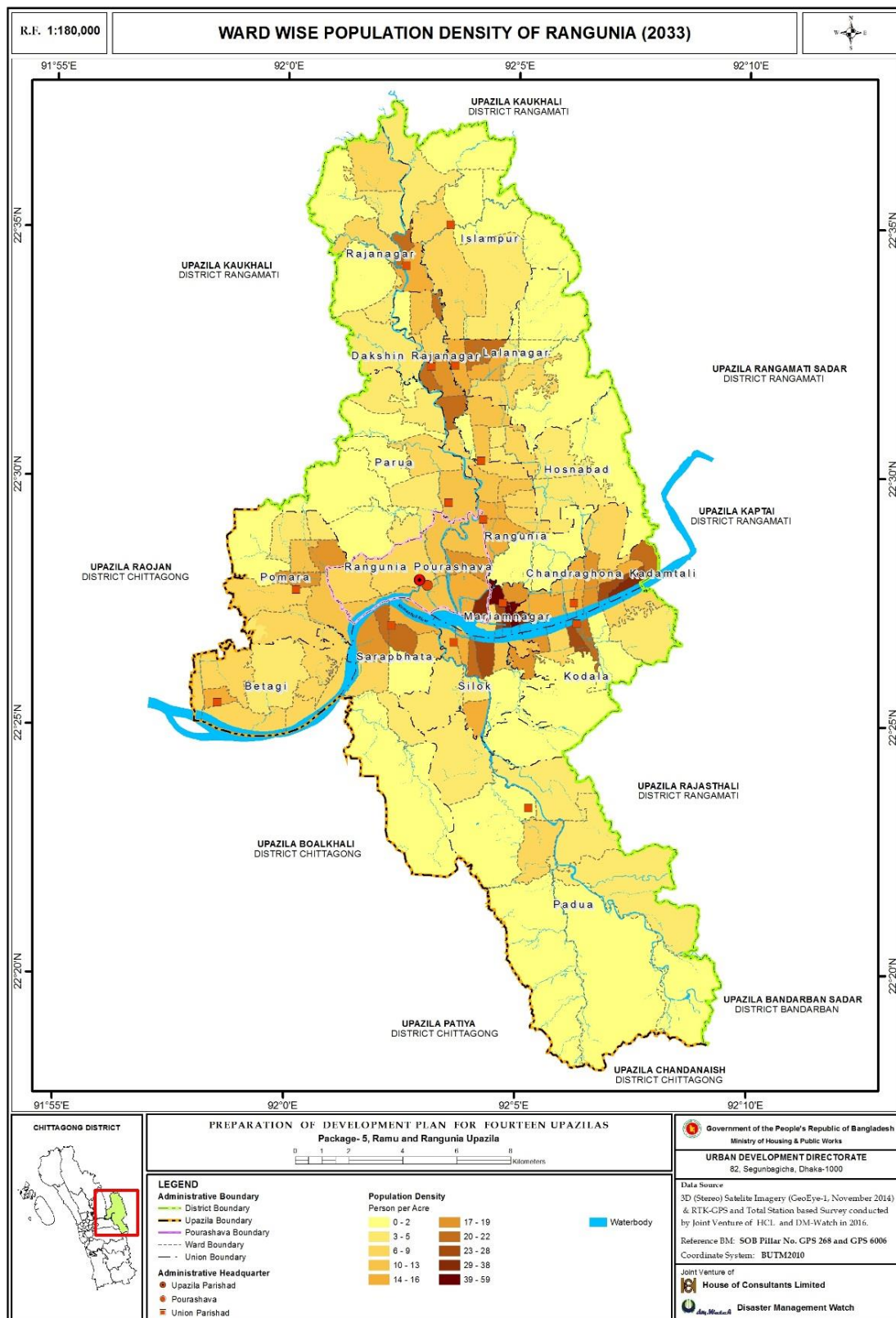


Map 6.15: Ward Wise Population Density in Rangunia Upazila (2011)

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

Map 6.16: Ward Wise Population Density in Rangunia Upazila (2033)

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6.5 Flooding Scenario

The project area has been divided into five categories depending on the flooding scenario which 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 been summarized in the table (6.7):

Table 6.7: Different Flooding Scenario

Different Flooding Scenario					
Flooded Land Category	Area (sq.m)	Area (sq.km)	Area (Acre)	Percentage	Remarks
1st Degree Flooded area	400	0.00	0.10	0.0003	
2nd Degree Flooded area	21406500	21.41	5289.66	18.5132	
3rd Degree Flooded area	35062500	35.06	8664.13	30.3234	
4th Degree Flooded area	35367100	35.37	8739.40	30.5868	Sub Flood Flow Zone
5th Degree Flooded area	23792000	23.79	5879.13	20.5762	Main Flood Flow Zone
Total	115628500	115.63	28572.42	100.00	

Source: Field Survey, 2016

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Map 6.17: Flood Scenario of Rangunia Upazila

6.6 Geology

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

Table 6.8: Foundation Layer Parameter

Foundation Layer	Area (Sq.m)	Area (Acre)
Very Poor	15625000.00	3861.02
Poor	6062500.00	1498.08
Moderate	4375000.00	1081.09
Good	11875000.00	2934.38
Very Good	156500000.00	38671.99

*Source: Field Survey, 2016***Table 6.9: PGA Parameter**

PGA	Area (Sq.m)	Area (Acre)
1st Degree Sensitive	75000000.00	18532.90
2nd Degree Sensitive	87375000.00	21590.83
3rd Degree Sensitive	32062500.00	7922.82

*Source: Field Survey, 2016***Table 6.10: Shear Wave Parameter**

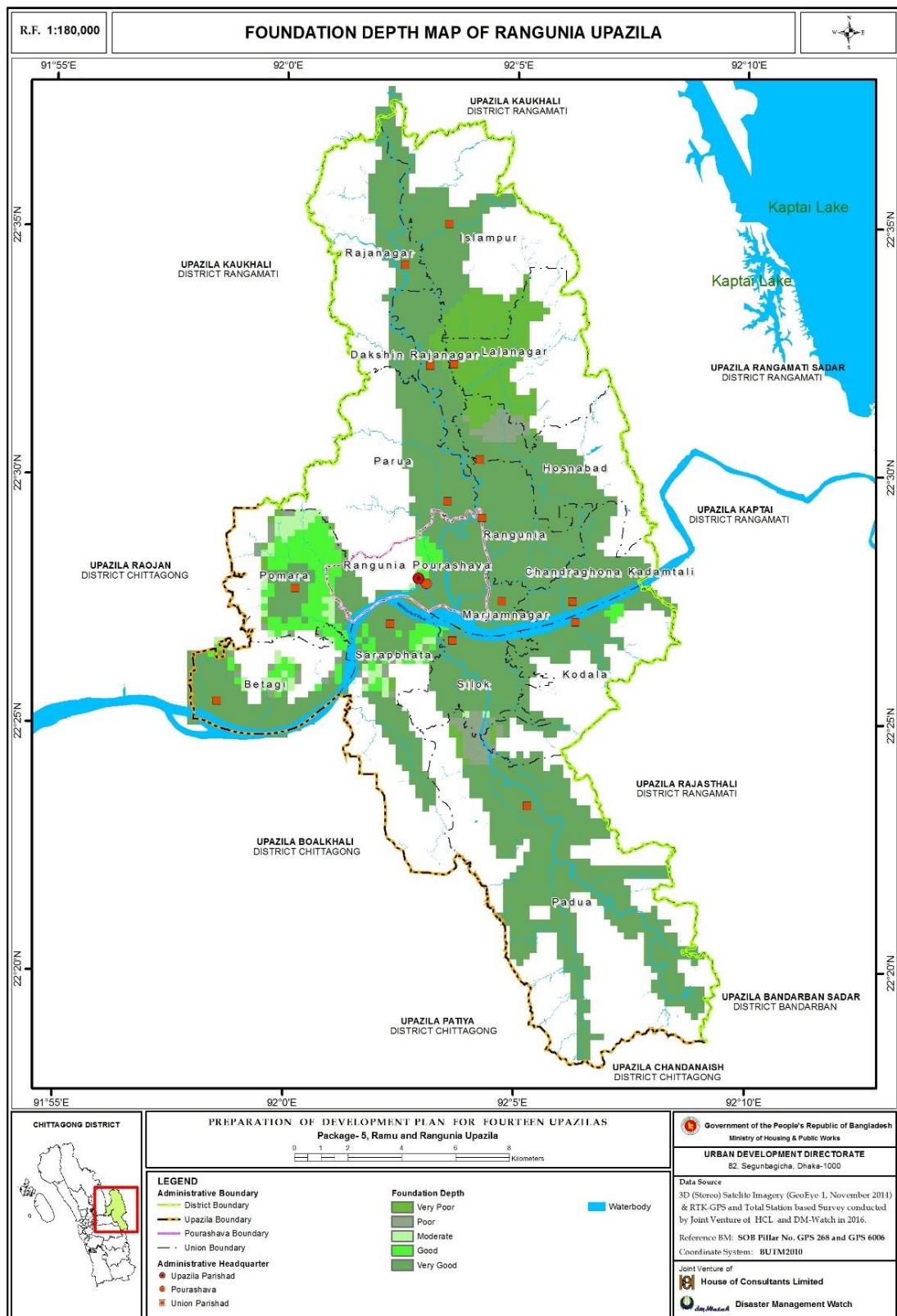
Shear Wave	Area (Sq.m)	Area (Acre)
Very Poor	9750000.00	2409.28
Poor	79500000.00	19644.88
Moderate	51125000.00	12633.26
Good	40375000.00	9976.88
Very Good	13687500.00	3382.25

Source: Field Survey, 2016

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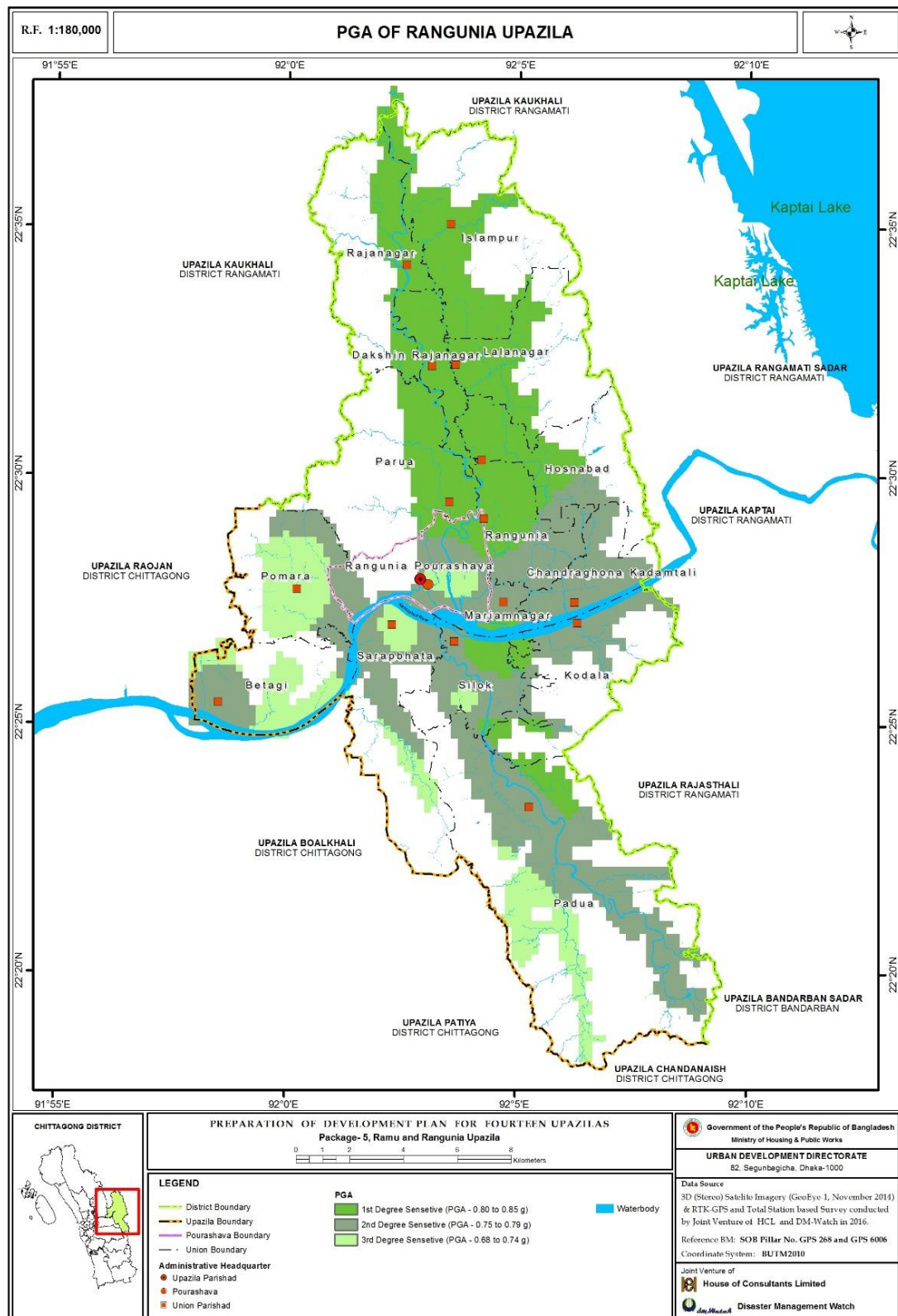
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.18: Geology (Foundation Depth) of Rangunia Upazila

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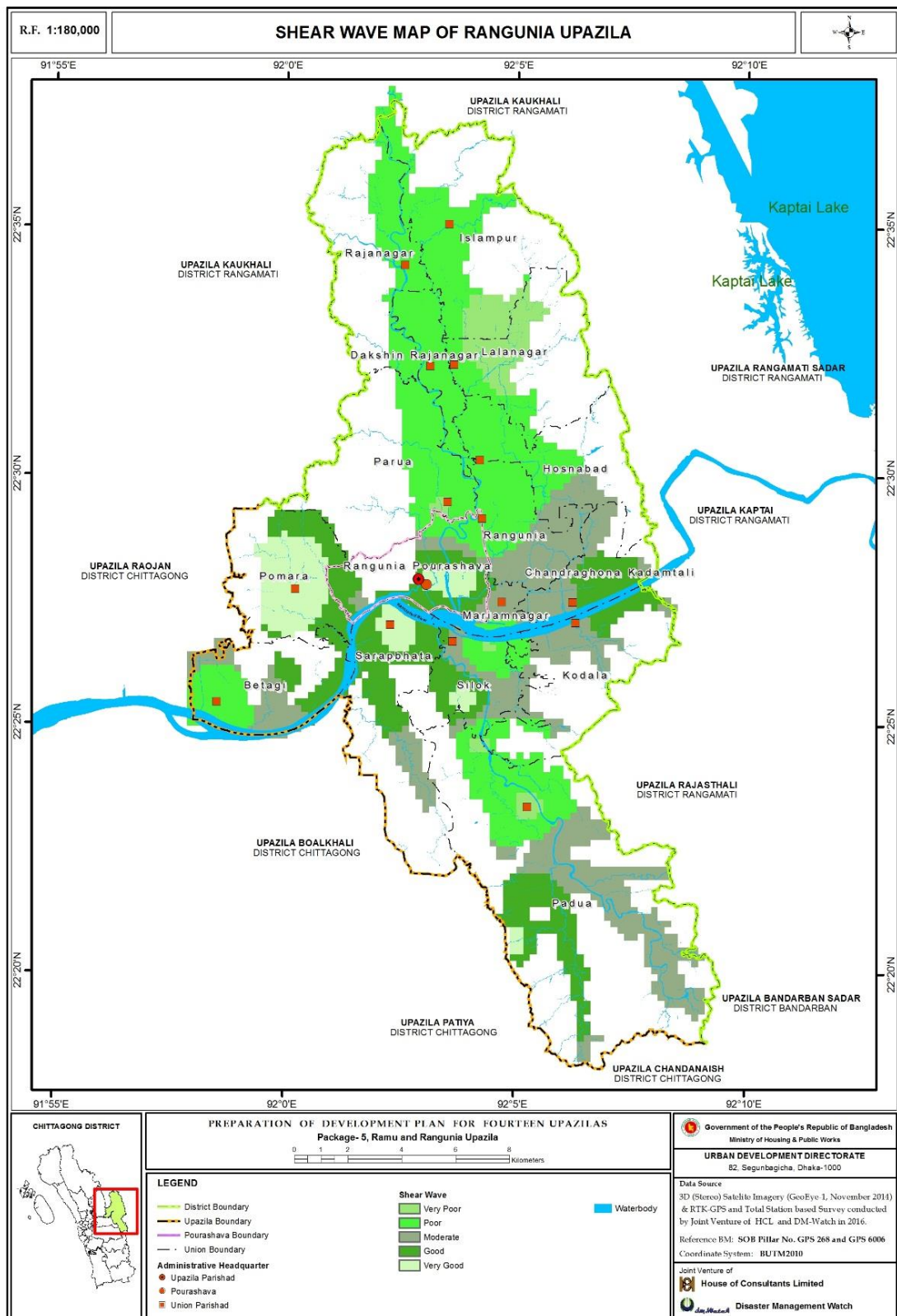
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.19: Geology (PGA) of Rangunia Upazila

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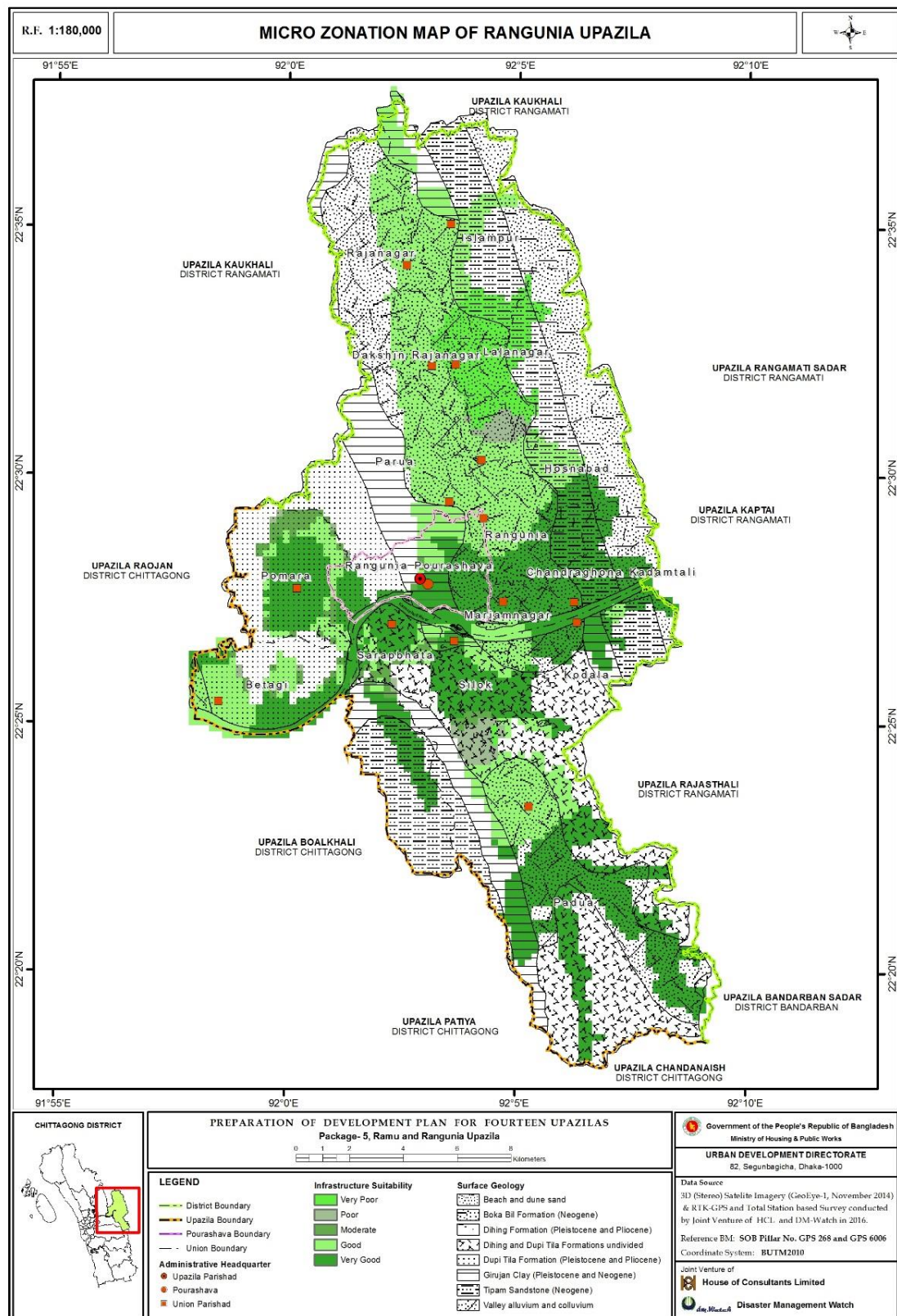
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.20: Geology (Shear Wave) of Rangunia Upazila

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

Map 6.21: Micro Zonation Map of Rangunia Upazila

6.7 Suitability Analysis

For the plan preparation of Rangunia 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 been delineated from Rangunia Upazila.

6.7.1 Consideration of Affecting Factors for Planning

There are some affecting factors to plan the Rangunia 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 63.48% area which comprises slope more than 5 %, main and Sub-flood flow zone.

Table 6.11: Affecting Factors for Planning

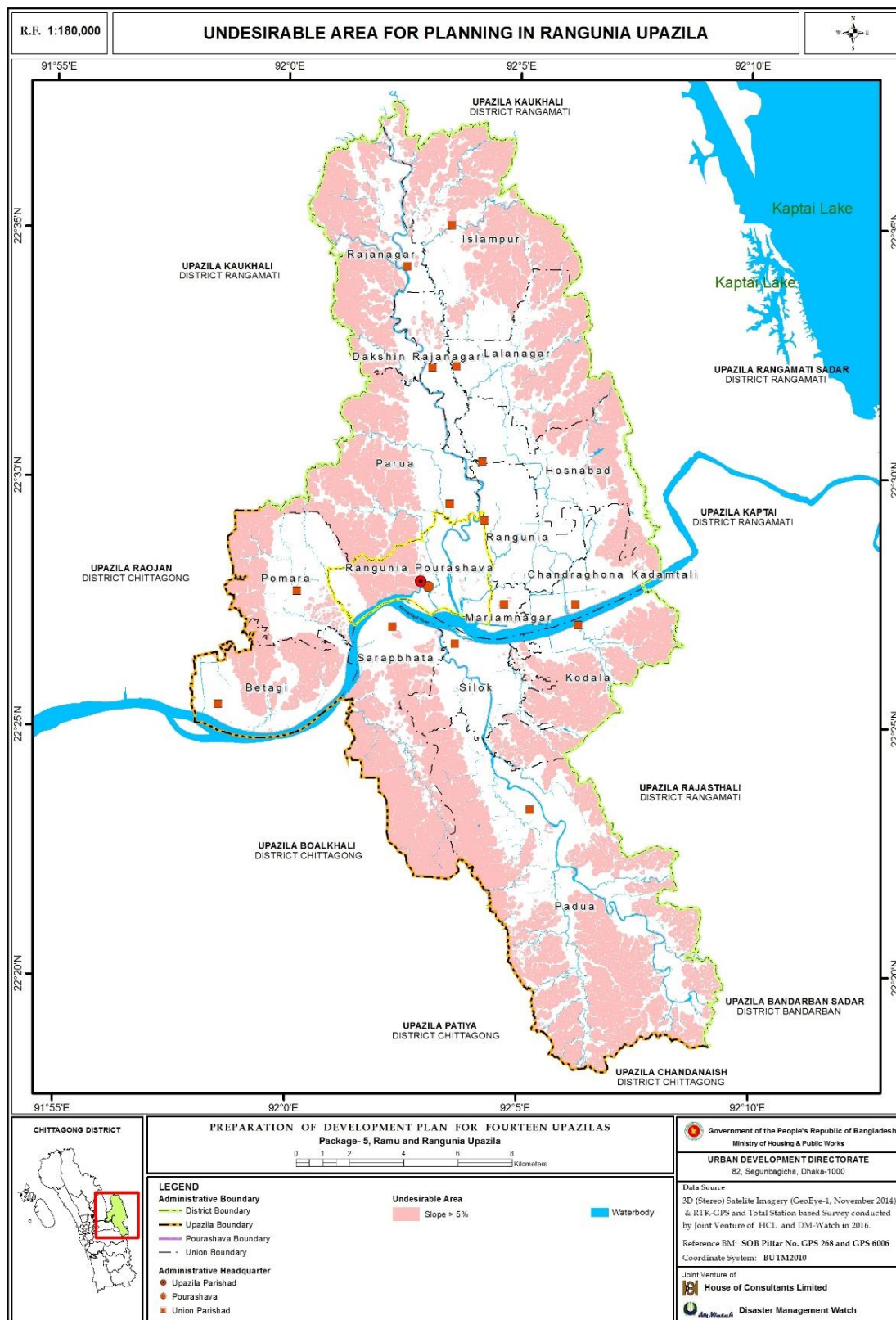
Consideration of Affecting Factors for Planning			
Factors	Area(sq.m)	Area (Acre)	Percentage
Slope more than 5%	161649700	39944.51	46.47
Main Flood Flow Zone	23792000	5879.13	6.84
Sub Flood Flow Zone	35367100	8739.40	10.17

Source: Field Survey, 2016

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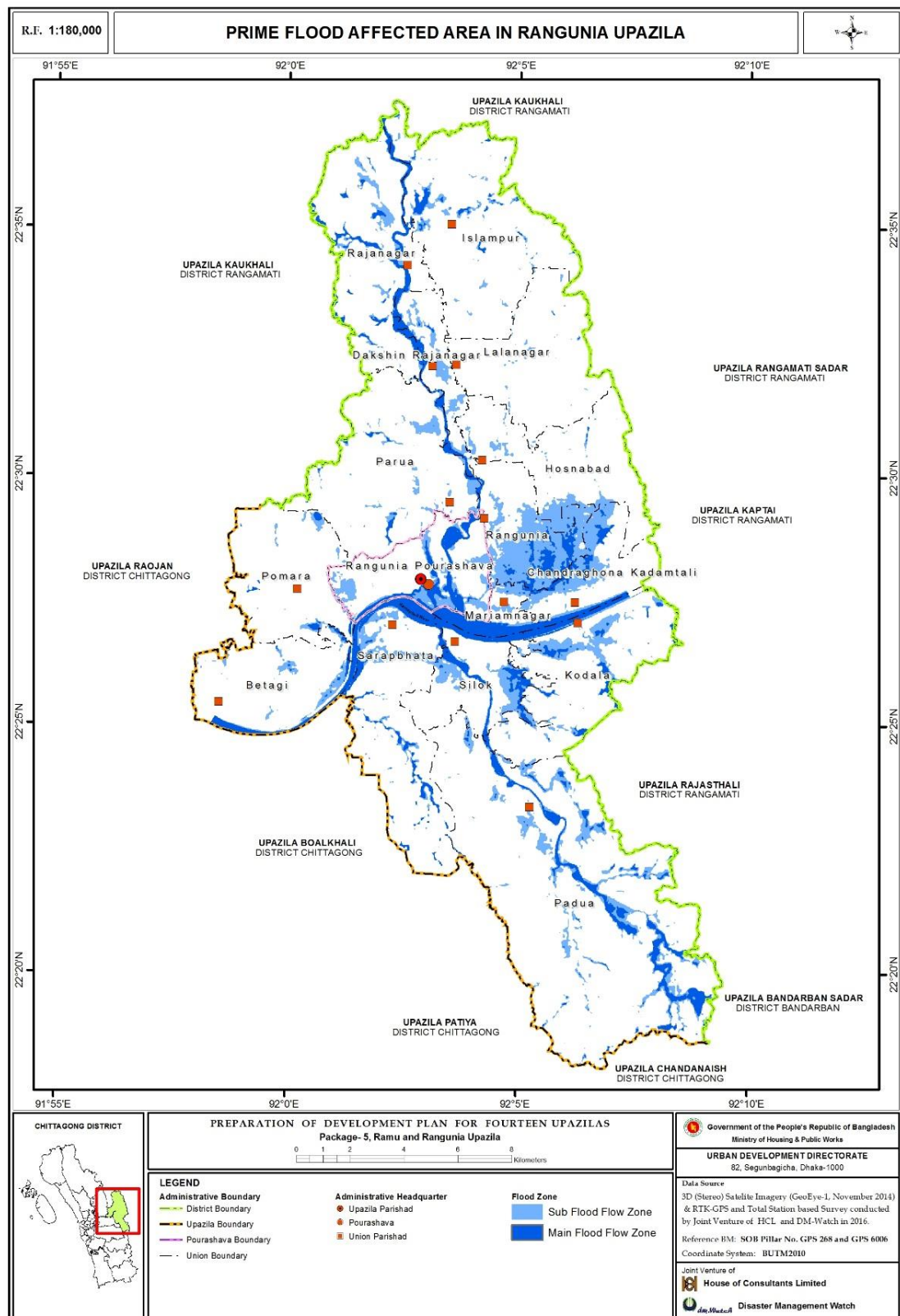
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.22: Undesirable Area for Planning in Rangunia Upazila

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

Map 6.23: Prime Flood Affected Area of Rangunia Upazila

6.7.2 Agricultural Suitability

To identify the best suitable area for agriculture an analysis has been done. It is derived from the data of water depth, slope and cropping intensity. The main reason of this analysis is to identify the most suitable agricultural land for conservation. The statistic has been given in the table (6.12) below:

Table 6.12: Agricultural Suitability

Category	Area (sq.m)	Area (Acre)	Percentage
Poor	26800	6.622	0.01
Moderate	9312400	2301.144	2.68
Good	45067500	11136.422	12.96
Very Good	20471200	5058.544	5.88

Source: Field Survey, 2016

6.7.3 Urban Suitability

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

Table 6.13: Urban Suitability

Category	Area (sq.m)	Area (Acre)	Percentage
Poor	312500	77.22	0.09
Moderate	7312500	1806.96	2.10
Good	34750000	8586.91	9.99
Very Good	68562500	16942.16	19.71

Source: Field Survey, 2016

6.7.4 Geological Suitability

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

Table 6.14: Infrastructure Suitability

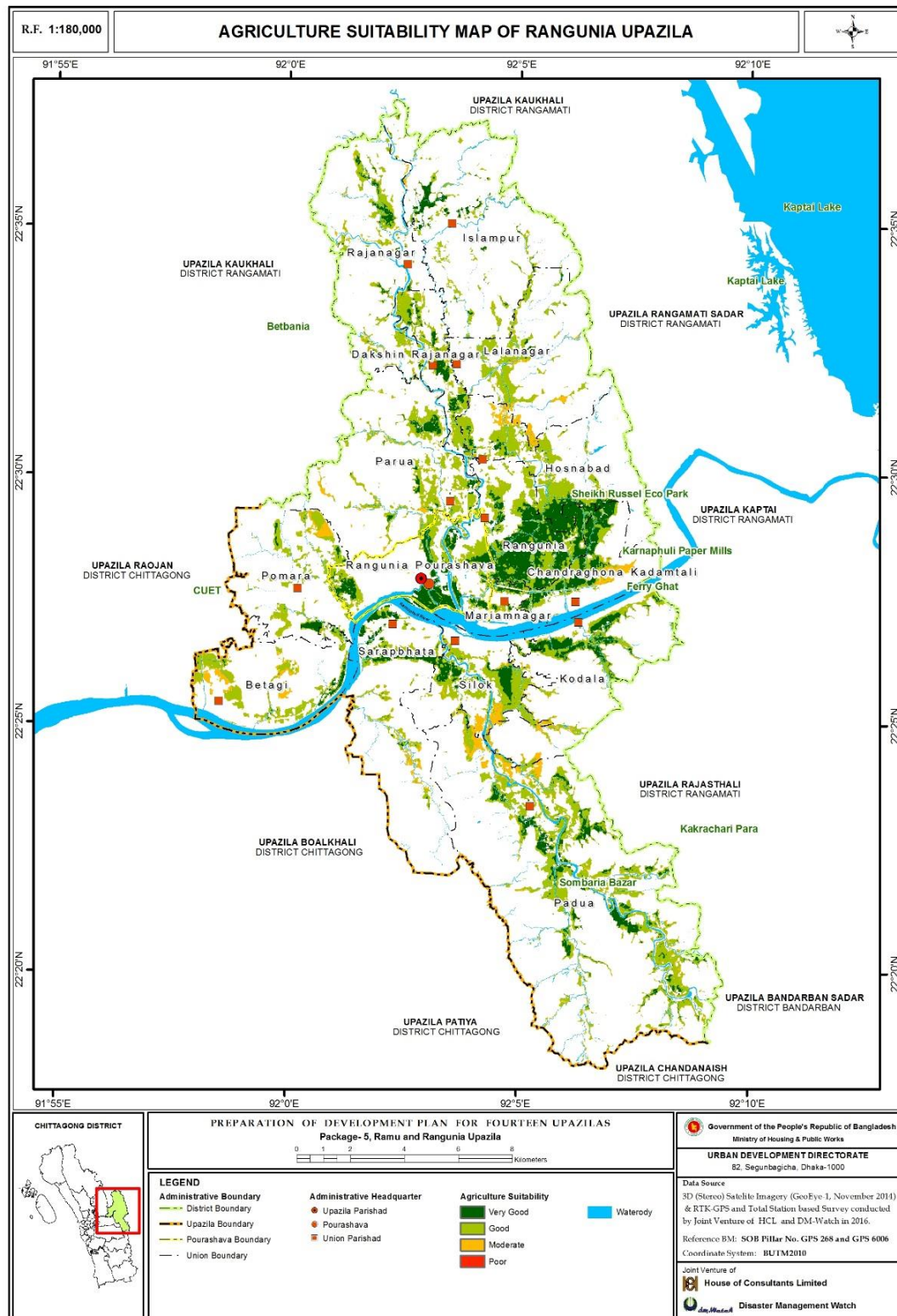
Category	Area (sq.m)	Area (Acre)	Percentage
Very Poor	14437500.00	3567.58	4.15
Poor	4687500.00	1158.31	1.35
Moderate	5437500.00	1343.64	1.56
Good	79312500.00	19598.55	22.80
Very Good	90562500.00	22378.48	26.03

Source: Field Survey, 2016

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

Map 6.24: Agriculture Suitability of Rangunia Upazila

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Map 6.25: Urban Suitability of Rangunia Upazila

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Map 6.26: Infrastructure Suitability of Rangunia Upazila

6.8 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 Rangunia Upazila which helps develop of zoning.

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Map 6.27: Conflict Map of Rangunia Upazila

6.9 Proposed Road

In Rangunia Upazila after observing the existing circulation network new roads are proposed. Three types of roads are proposed which are primary, secondary and tertiary.

Primary Road

Roads connecting the adjacent Upazila Headquarters and other important growth centres are primary roads.

Secondary Roads

Roads connecting the unions with the Upazila Headquarter are secondary roads.

Tertiary Roads

Roads connecting the villages, urban areas and growth centres are called tertiary roads.

The statistics of proposed road and affected structures due to buffer has been given below in the Table 6.15:

Table 6.15: Proposed Road and No. of Affected Structure

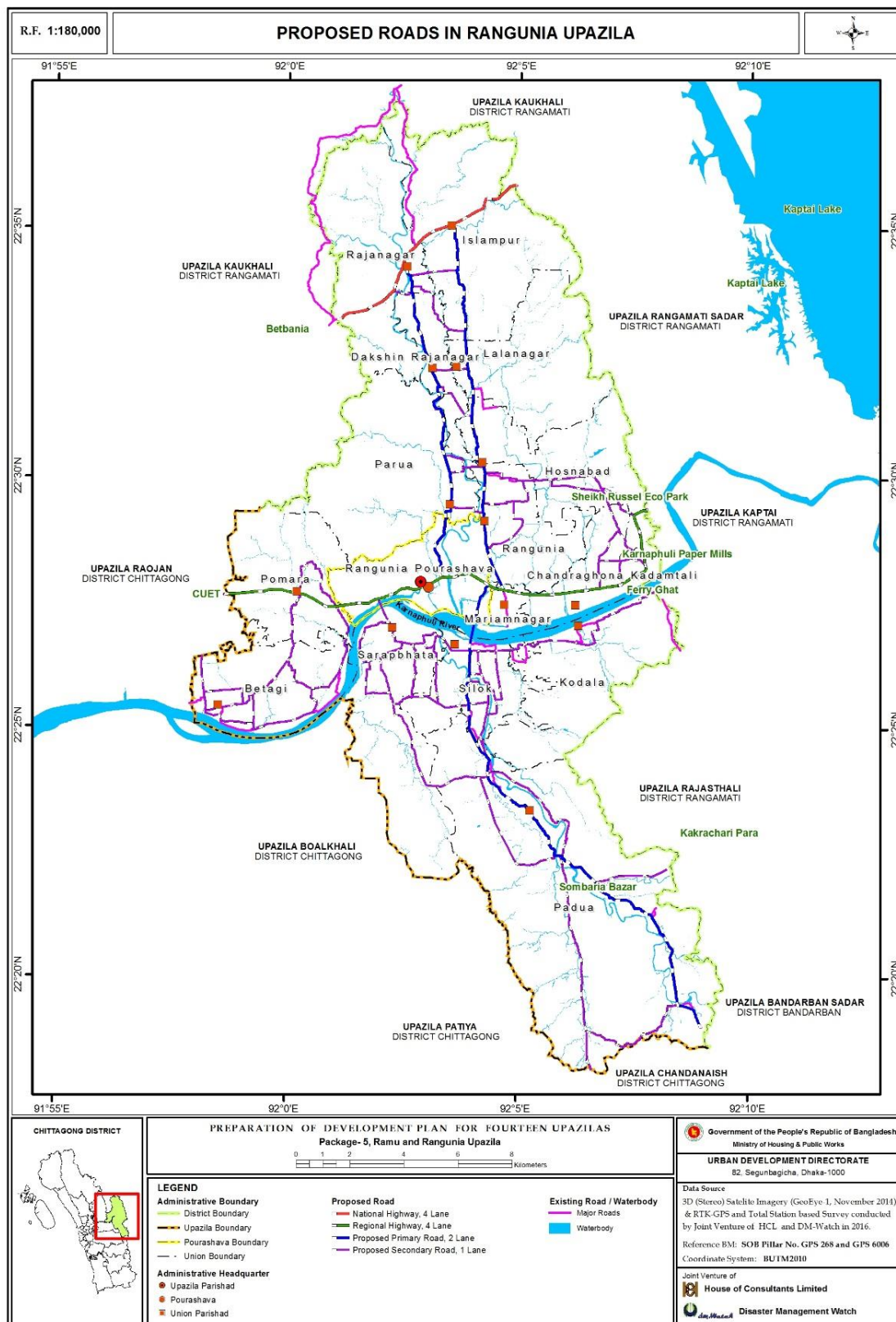
Road Category	Lane	Road Width	No. of Affected Structure			
			Pucca	Semi Pucca	Katcha	Total
National Highway	4	21.6 meter or 70 feet	21	18	38	77
Regional Highway	4	21.6 meter or 70 feet	112	253	173	538
Primary Road	2	12.1 meter or 40 feet	183	229	185	597
Secondary Road	1	9.8 meter or 32 feet	288	330	423	1041
Total Affected Structure			604	830	819	2253

Source: Field Survey, 2016

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

Map 6.28: Proposed Roads in Rangunia Upazila

6.10 Water Supply Protection Zone

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

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

Table 6.16: Water Supply Protection Zone and No. of Affected Structure

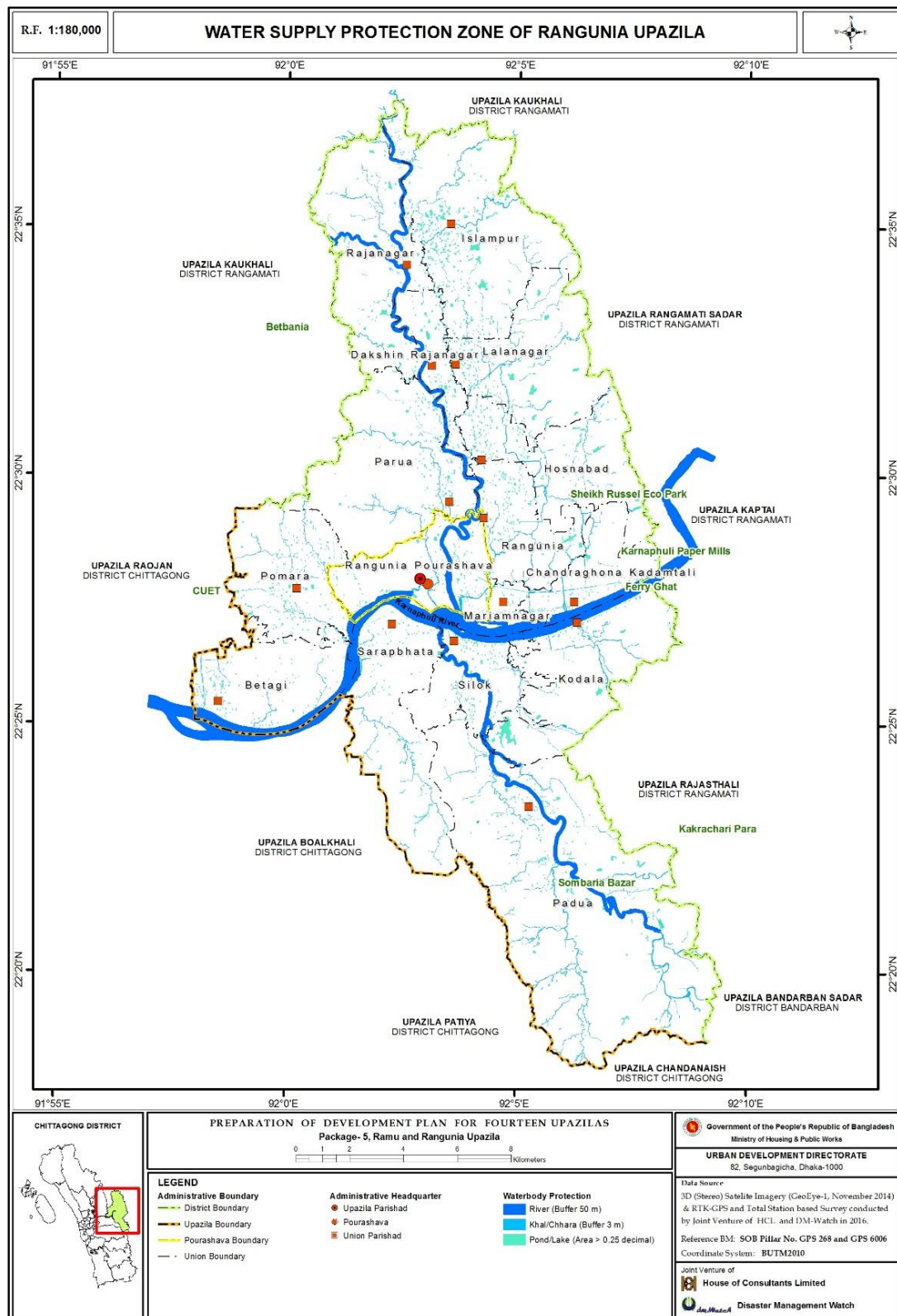
Category	Buffer Width	No. of Affected Structure			
		Pucca	Semi Pucca	Katcha	Total
Karnafully River	50 meter	251	534	1360	2145
Ichamati and Shilok River	50 meter	172	491	881	1544
Chara/Khal/Canal	3 meter	68	91	221	380
Total Affected Structure		491	1116	2462	4069

Source: Field Survey, 2016

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

Map 6.29: Water Supply Protection Zone of Rangunia Upazila

6.11 Structure Plan Preparation

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 Settlements

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.

Rural Settlements

The areas where the density of population is relatively low and located outside the paurashava area are declared as rural settlement. These areas are included agricultural lands as well.

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 1.8 meter 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 1.8 meter or 2.9 feet to 5.9 feet are declared as sub flood flow zone.

Grey Zone

The areas which are not suitable for agriculture and urban settlement are declared as grey zone.

Water Supply Protection Zone

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

Water Body

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

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Table 6.17: Area Coverage of Structure Plane Zoning

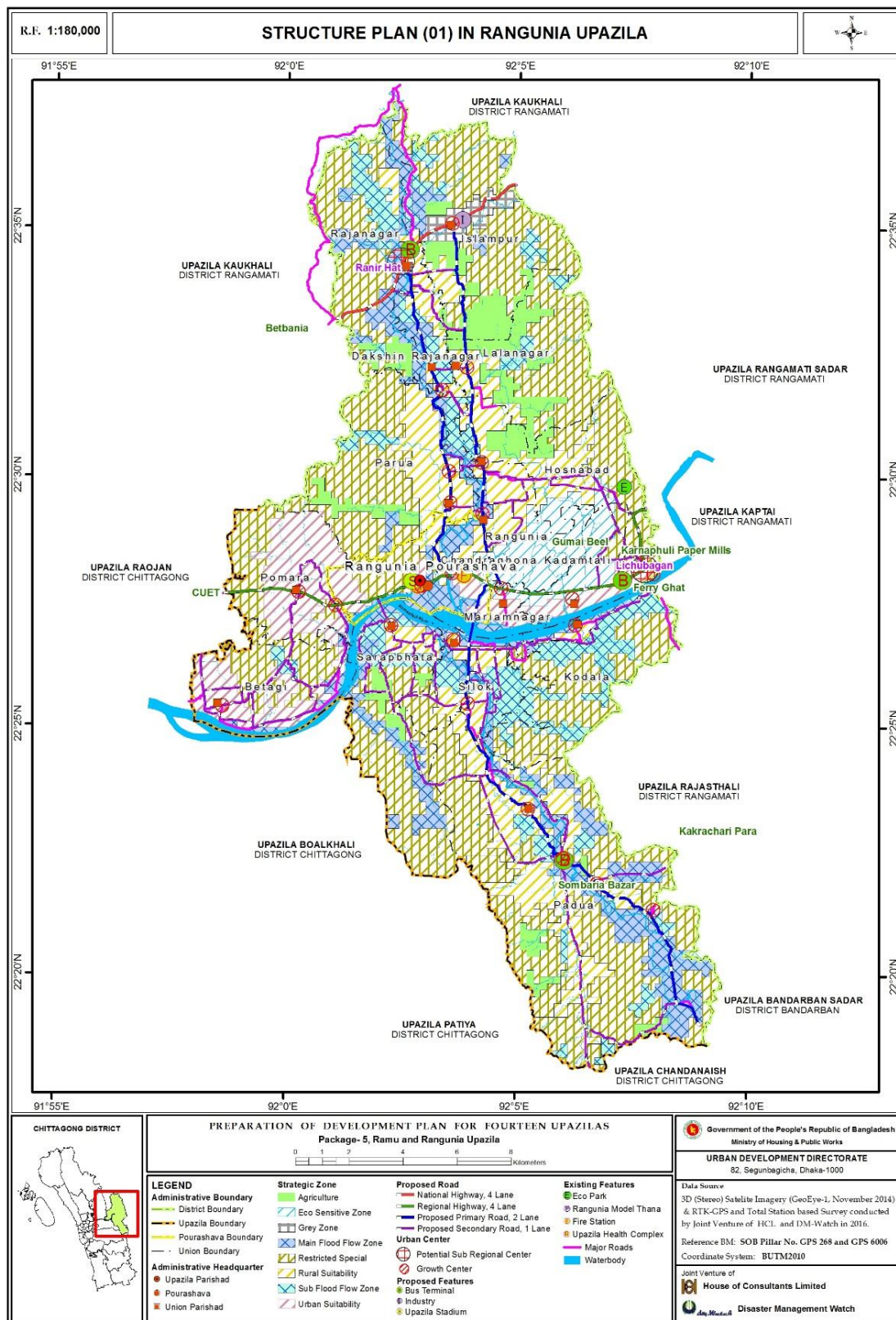
Zoning	Area(sq.meter)	Area(sq.km)	Area(Acre)	Percentage
Agriculture	49115452	49.115452	12136.6925	14.12
Circulation Network	2511658	2.511658	620.6442082	0.72
Eco sensitive	13362467	13.362467	3301.937505	3.84
Grey Zone	2369117	2.369117	585.42156	0.68
Main Flood Flow Zone	6466736	6.466736	1597.965266	1.86
Restricted Special	138811711	138.8117109	34301.12078	39.90
Rural Settlement	61211028	61.211028	15125.57442	17.60
Sub Flood Flow Zone	10820750	10.82075	2673.865557	3.11
Urban Settlement	25012196	25.012196	6180.648234	7.19
Water Supply Protection Zone	31300583	31.300583	7734.542502	9.00
Water Body	6883951	6.883951	1701.061338	1.98
Total	347865648.9	347.8656489	85959.47388	100.00

Source: Field Survey, 2016

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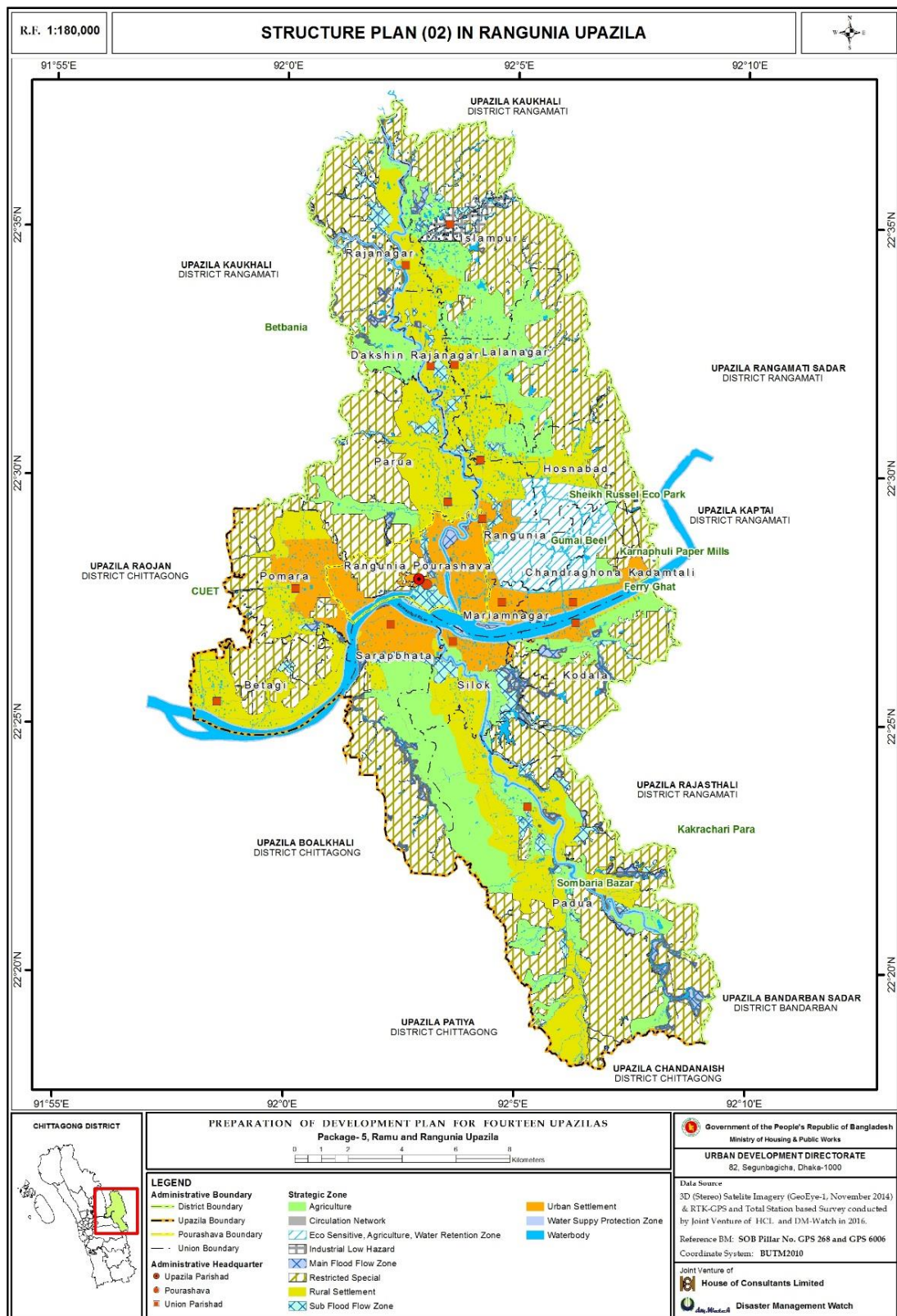
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.30: Structure Plan (01) in Rangunia Upazila

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

Map 6.31: Structure Plan (02) in Rangunia Upazila

6.11.1 Structure Plan for Rangunia Upazila

Components of Structure Plan

1. Restricted Special
2. Urban Settlements
3. Rural Settlements
4. Agriculture
5. Circulation Network
6. Flood Flow, Water Body and Water Supply Protection Zone
7. Grey Area
8. Geology
9. Tourism Development
10. Economic Development

Policies for Structure Plan

Restricted Special

Policy 1: Protect and preserve available hilly area.

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

Urban Settlements

Policy 1: Promote urban area to buildable lands.

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

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

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

Rural Settlements

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

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

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

Agriculture

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

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

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

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

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Circulation Network

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

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

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

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

Flood Flow, Water Body and Water Supply Protection Zone

Policy 1: Protect main flood flow zone from encroachment.

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

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

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

Grey Area

Policy 1: Protect grey area for alternative use (low hazard industry) rather than agriculture or settlements.

Policy 2: Prohibit polluting or high hazard creating establishments/industries from this zone.

Policy 3: Encourage better transportation circulation to and from this zone to other regions connected with Rangunia.

Geology

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

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

Tourism Development

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

Policy 2: Encourage creation of tourist spots such as eco-park (Sheikh Russel Aviary and Khurusia Eco-Park), wild-life sanctuary (Ghumai Beel and Dudh Pukuria) and safari park (Sukh Bilash) 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.

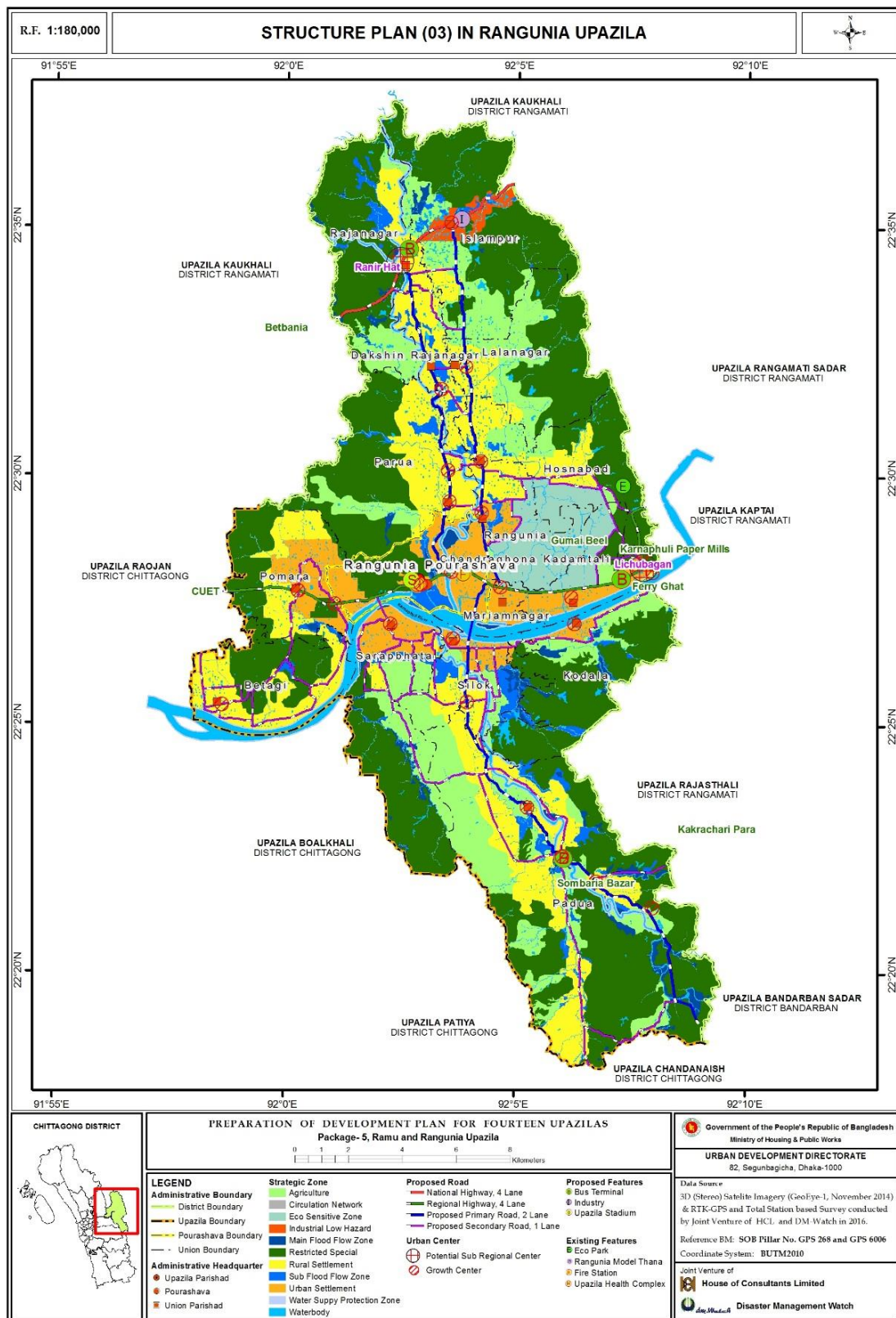
Policy 3: Develop advanced rural marketing mechanism for the quick shipment of agri-products.

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

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

Map 6.32: Structure Plan (03) in Rangunia Upazila

6.12 Sub-Regional Plan for Rangunia Upazila

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) and intra- (Urban-Rural-GC) regional connectivity.

Policy 2: Accelerate high standard road links through widening of primary and secondary and construction of new tertiary roads.

Policy 3: Build an integrated (land, rail and water) transportation network.

Biodiversity and Nature Conservation

Policy 1: Conserve natural/environmental resources like hills, reserve forests and water bodies.

Policy 2: Conserve ecosystem through the delineation or demarcation of eco-sensitive zones.

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

Community Resilience through Disaster Management

Policy 1: Identification of seismic hazard prone zones.

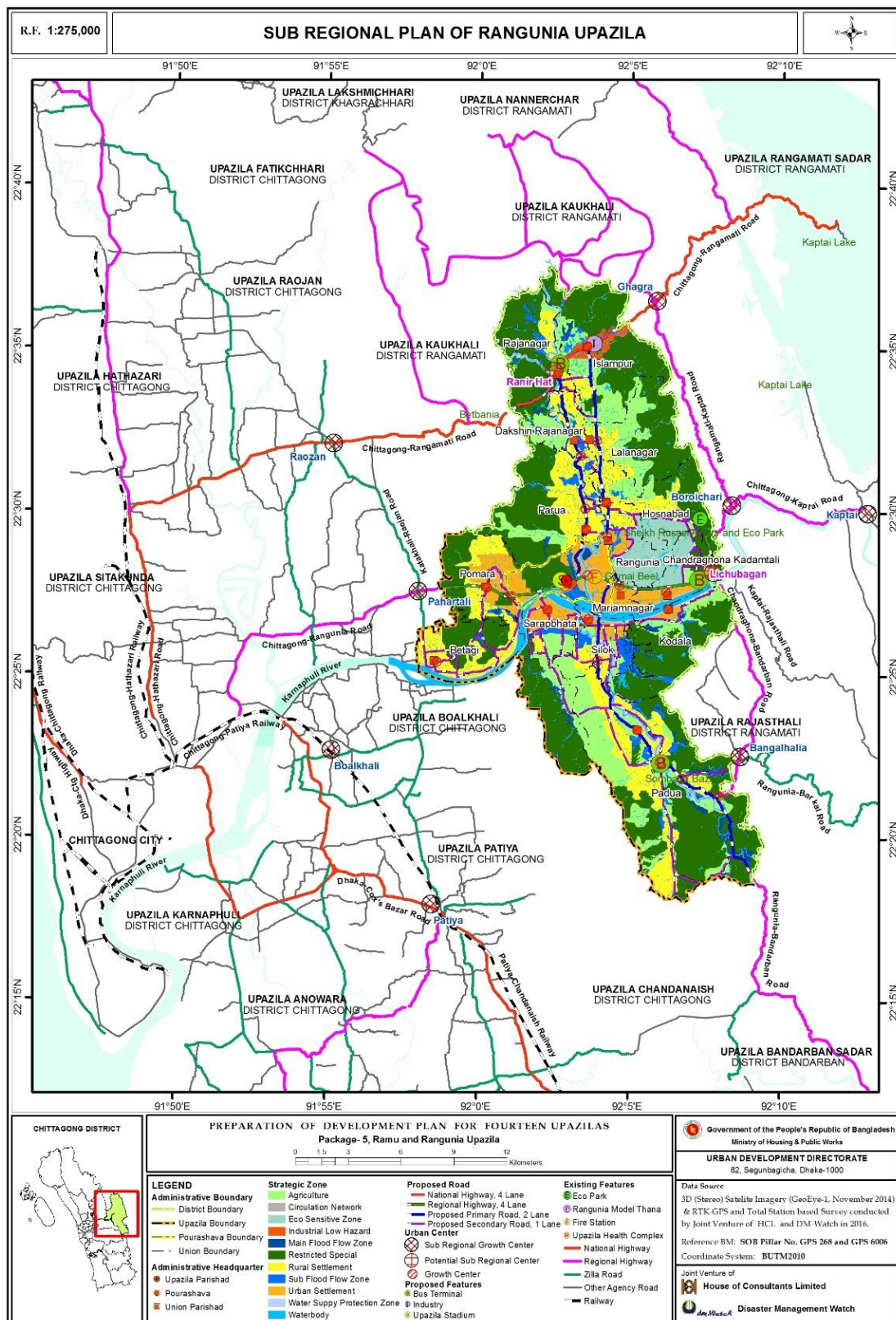
Policy 2: Identification of flood hazard prone zones and river erosion areas.

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

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Source: Prepared by Consultant Team Based on Field Survey, 2016
Map 6.33: Sub Regional Plan of Rangunia Upazila

CHAPTER 7

URBAN AREA PLAN

7.1 Conceptualization of Urban Area Plan

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

7.2 Extent and Nature of 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. 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 has been outlined in this chapter.

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Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Nursery	10000	0.5	4	2	Ward-03 (1), Ward-07(1), Ward-08(1)
	Primary School/ kindergarten	5000	2	9	18	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(1)
	Secondary/High School	20000	5	2	10	
	College	20000	10	2	20	
Open Space	Play field/ground	20000	3	2	6	
	Neighbourhood park/Park	10000	1	4	1	Ward-03 (1), Ward-07(1), Ward-08(1)
Recreational	Cinema/Theatre	20000	1	2	2	
Health	Health centre/Maternity clinic	5000	1	9	9	Ward-01 (1), Ward-02 (1), Ward-03(2), Ward-04 (1), Ward-05(1), Ward-06(1), Ward-08(1), Ward-09(1)
Community Facilities	Mosque/Church/Temple	20000	0.5	2	1	
	Eidgah	20000	1	2	2	
	Graveyard	20000	1	2	2	
	Community centre	20000	1	2	2	
	Fire Station	20000	1	2	2	
	Post office	20000	0.5	2	1	
Utilities	Water supply	20000	1	2	2	
	Gas	20000	1	2	2	
	Electric sub-station	20000	1	2	2	

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Rangunia Paurashava-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Commerce and Shopping	Telephone exchange	20000	0.5	2	1	
	Fuel Station	20000	0.5	2	1	
	Wholesale market	20000	1	2	2	
	Retail sale market	20000	1	2	2	
	Shopping Complex	20000	2.5	2	5	
	Corner Shop	2500	0.25	17	4.25	Ward-01(2), Ward-02 (1), Ward-03 (3), Ward-04 (2), Ward-05(2), Ward-06(2), Ward-07(2), Ward-08(3), Ward-09 (2)
	Neighborhood Market	10000	1	2	2	Ward-03 (1), Ward-07(1), Ward-08(1)
	Small scale	1000	1.5	44	66	Ward-01 (4), Ward-02 (3), Ward-03(8), Ward-04(4), Ward-05(4), Ward-06(4), Ward-07(5), Ward-08(7), Ward-09(4)
	Heavy Industry	10000	5	4	20	Ward-03 (1), Ward-07(1), Ward-08(1)
Transportation	Bus terminal	20000	1	2	2	
	Truck terminal	20000	0.5	2	1	

CHAPTER 8

RURAL AREA PLAN

8.1 Conceptualization of Rural Area Plan

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

8.2 Extent and Nature of 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. In the present project, Content of Rural Area Plan has been comprised as follows:

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

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

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

Betagi-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	5	10	Ward-04 (1); Ward-03 (1); Ward-02 (1); Ward-06 (1); Ward-09 (1)
	Secondary/High School	20000	5	1	5	
	College	20000	10	1	10	
Open Space	Play field/ground	20000	3	1	3	
	Neighborhood park/Park/Park	10000	1	3	3	Ward-04 (1);
Health	Health centre/Maternity clinic	5000	1	5	5	Ward-04 (1); Ward-03 (1); Ward-02 (1); Ward-06 (1); Ward-09 (1)
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	11	2.75	Ward-04 (2); Ward-05 (1); Ward-03 (1); Ward-07 (1); Ward-08 (1); Ward-01 (1); Ward-02 (2); Ward-06 (2); Ward-09 (2)
	Neighborhood Market	10000	1	3	3	Ward-04 (1);
Industry	Small scale	1000	1.5	27	40.5	Ward-04 (5); Ward-05 (2); Ward-03 (3); Ward-07 (2); Ward-08 (2); Ward-01 (2); Ward-02 (4); Ward-06 (5); Ward-09 (4);
	Heavy Industry	10000	5	3	15	Ward-04 (1);
Transportation	Bus terminal	20000	1	1	1	
	Truck terminal	20000	0.5	1	0.5	

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

Chandroghona Kadamtoli-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	8	16	Ward-01(1); Ward-07(1); Ward-06 (1); Ward-05 (1); Ward-03 (1); Ward-04 (1); Ward-08 (1); Ward-09 (1);
	Secondary/High School	20000	5	2	10	
	College	20000	10	2	20	
Open Space	Play field/ground	20000	3	2	6	
	Neighborhood park/Park	10000	1	4	4	Ward-01 (1); Ward-07 (1); Ward-05 (1); Ward-04 (1); Ward-08 (1); Ward-09 (1);
Health	Health centre/Maternity clinic	5000	1	8	8	Ward-01 (1); Ward-07 (1); Ward-06 (1); Ward-03 (1); Ward-04 (1); Ward-08 (1); Ward-09 (1);
Community Facilities	Mosque/Church/Temple	20000	0.5	2	1	
	Eidgah	20000	1	2	2	
	Graveyard	20000	1	2	2	
	Community centre	20000	1	2	2	
	Post office	20000	0.5	2	1	
Utilities	Water supply	20000	1	2	2	
	Gas	20000	1	2	2	
	Electric sub-station	20000	1	2	2	
Commerce and Shopping	Wholesale market	20000	1	2	2	
	Retail sale market	20000	1	2	2	
	Corner Shop	2500	0.25	16	4	Ward-01 (3); Ward-02 (1); Ward-07 (2); Ward-06 (2); Ward-05 (1); Ward-03 (1); Ward-04 (2); Ward-08 (2); Ward-09 (2);
	Neighborhood Market	10000	1	4	4	Ward-01 (1); Ward-07 (1); Ward-04 (1); Ward-08 (1); Ward-09 (1);
Industry	Small scale	1000	1.5	40	60	Ward-01 (7); Ward-

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

Chandroghona Kadamtoli-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
						02 (2); Ward-07 (6);Ward-06 (4); Ward-05 (3);Ward-03 (3); Ward-04 (5);Ward-08 (5); Ward-09 (5);
	Heavy Industry	10000	5	4	20	Ward-01 (1);Ward-07 (1); Ward-04 (1);Ward-08 (1); Ward-09 (1);
Transportation	Bus terminal	20000	1	2	2	
	Truck terminal	20000	0.5	2	1	

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

Rajanagar-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	5	10	Ward-06 (1); Ward-08 (1); Ward-07 (1); Ward-02 (1)
	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-08 (1); Ward-02 (1)
Health	Health centre/Maternity clinic	5000	1	5	5	Ward-06 (1); Ward-08 (1); Ward-07 (1); Ward-02 (1)
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	10	2.5	Ward-06 (1); Ward-08 (3); Ward-07 (1); Ward-03 (1); Ward-02 (2)
	Neighborhood Market	10000	1	3	3	Ward-08 (1); Ward-02 (1)
Industry	Small scale	1000	1.5	25	37.5	Ward-06 (3); Ward-09 (1); Ward-08 (6); Ward-07 (3); Ward-03 (2); Ward-02 (6)

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

Rajanagar-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
	Heavy Industry	10000	5	3	15	Ward-08 (1); Ward-02 (1)
Transportation	Bus terminal	20000	1	1	1	
	Truck terminal	20000	0.5	1	0.5	

Hosnabad-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	4	8	Ward-07 (1); Ward-02 (1); Ward-08 (1); Ward-03 (1); Ward-09 (1)
	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	2	2	
Health	Health centre/Maternity clinic	5000	1	4	4	Ward-07 (1); Ward-02 (1); Ward-08 (1); Ward-03 (1); Ward-09 (1)
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	8	2	Ward-07 (1); Ward-06

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Hosnabad-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
						(1);Ward-02 (1);Ward-08 (1);Ward-03 (2);Ward-09 (2);
	Neighborhood Market	10000	1	2	2	
Industry	Small scale	1000	1.5	20	30	Ward-07 (3);Ward-04 (1);Ward-06 (2);Ward-02 (3);Ward-08 (3);Ward-03 (4);Ward-09 (4)
	Heavy Industry	10000	5	2	10	
Transportation	Bus terminal	20000	1	1	1	
	Truck terminal	20000	0.5	1	0.5	

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Islampur-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	5	10	Ward-08 (1); Ward-07 (2); Ward-05 (1); Ward-01 (1)
	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-08 (1); Ward-07 (1);
Health	Health centre/Maternity clinic	5000	1	5	5	Ward-08 (1); Ward-07 (2); Ward-05 (1); Ward-01 (1)
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	10	2.5	Ward-08 (2); Ward-07 (4); Ward-05 (1); Ward-01 (2);
	Neighborhood Market	10000	1	3	3	Ward-08 (1); Ward-07 (1);
Industry	Small scale	1000	1.5	25	37.5	Ward-08 (6); Ward-07 (9); Ward-06 (1); Ward-05 (3); Ward-04 (1); Ward-02 (1); Ward-01 (4);
	Heavy Industry	10000	5	3	15	Ward-08 (1); Ward-07 (1);
Transportation	Bus terminal	20000	1	1	1	
	Truck terminal	20000	0.5	1	0.5	

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Kodala-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	5	10	Ward-02 (1);Ward-03(1);Ward-04 (1);Ward-05 (1);Ward-09 (1);
	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);
Health	Health centre/Maternity clinic	5000	1	5	5	Ward-02 (1);Ward-03(1);Ward-04 (1);Ward-05 (1);Ward-09 (1);
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	10	2.5	Ward-02 (2);Ward-03(1);Ward-04 (1);Ward-05 (1);Ward-06 (1);Ward-09 (2);Ward-07 (1);Ward-08 (1);
	Neighborhood Market	10000	1	3	3	Ward-02 (1);
Industry	Small scale	1000	1.5	25	37.5	Ward-01 (1);Ward-02 (6);Ward-03(3);Ward-04 (3);Ward-05 (4);Ward-06 (2);Ward-09 (5);Ward-07 (2);Ward-08 (1);
	Heavy Industry	10000	5	3	15	Ward-02 (1);
Transportation	Bus terminal	20000	1	1	1	
	Truck terminal	20000	0.5	1	0.5	

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

Lalanagar-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	4	8	Ward-08 (1); Ward-07 (1); Ward-02 (1); Ward-01 (1);
	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	2	2	Ward-02 (1);
Health	Health centre/Maternity clinic	5000	1	4	4	Ward-08 (1); Ward-07 (1); Ward-02 (1); Ward-01 (1);
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	8	2	Ward-08(2); Ward-07(2); Ward-02(2); Ward-01(2); Ward-09(1);
	Neighborhood Market	10000	1	2	2	Ward-02(1);
Industry	Small scale	1000	1.5	19	28.5	Ward-08(4); Ward-07(3); Ward-02(6); Ward-01(4); Ward-09(1);

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

Lalanagar-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
	Heavy Industry	10000	5	2	10	Ward-02 (1);
Transportation	Bus terminal	20000	1	1	1	
	Truck terminal	20000	0.5	1	0.5	

Mariamnagar-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	5	10	Ward-06 (1); Ward-07 (1); Ward-02 (1); Ward-09 (1); Ward-01 (1);
	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	2	2	
Health	Health centre/Maternity clinic	5000	1	5	5	Ward-06 (1); Ward-07 (1); Ward-02 (1); Ward-09 (1); Ward-01 (1);
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	20000	1	1	1	

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	market					
	Corner Shop	2500	0.25	10	2.5	Ward-04 (1); Ward-06 (1); Ward-07 (2); Ward-02 (1); Ward-03 (1); Ward-08 (1); Ward-09 (1); Ward-01 (2);
	Neighborhood Market	10000	1	2	2	
Industry	Small scale	1000	1.5	25	37.5	Ward-04 (2); Ward-06 (4); Ward-07 (4); Ward-02 (3); Ward-03 (2); Ward-05 (1); Ward-08 (1); Ward-09 (3); Ward-01 (5);
	Heavy Industry	10000	5	2	10	
Transportation	Bus terminal	20000	1	1	1	
	Truck terminal	20000	0.5	1	0.5	

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

Padua-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	9	18	Ward-07 (1); Ward-06 (2); Ward-08 (2); Ward-04 (1); Ward-05 (1); Ward-02 (1); Ward-03 (1); Ward-01 (1);
	Secondary/ High School	20000	5	2	10	
	College	20000	10	2	20	
Open Space	Play field/ground	20000	3	2	6	
	Neighborhood park/Park	10000	1	5	5	Ward-07 (1); Ward-06 (1); Ward-08 (1); Ward-04 (1); Ward-02 (1); Ward-03 (1);
Health	Health centre/Maternity clinic	5000	1	9	9	Ward-07 (1); Ward-06 (2); Ward-08 (2); Ward-04 (1); Ward-05 (1); Ward-02 (1); Ward-03 (1); Ward-01 (1);
Community Facilities	Mosque/Church/Temple	20000	0.5	2	1	
	Eidgah	20000	1	2	2	
	Graveyard	20000	1	2	2	
	Community centre	20000	1	2	2	
	Post office	20000	0.5	2	1	
Utilities	Water supply	20000	1	2	2	
	Gas	20000	1	2	2	
	Electric sub-station	20000	1	2	2	

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

Padua-Proposed Facilities						
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	
	Retail sale market	20000	1	2	2	
	Corner Shop	2500	0.25	19	4.75	Ward-07 (3); Ward-06 (3); Ward-08 (3); Ward-04 (2); Ward-05 (2); Ward-02 (2); Ward-03 (2); Ward-01 (2);
	Neighborhood Market	10000	1	5	5	Ward-07 (1); Ward-06 (1); Ward-08 (1); Ward-04 (1); Ward-02 (1); Ward-03 (1);
Industry	Small scale	1000	1.5	47	70.5	Ward-07 (7); Ward-06 (8); Ward-08 (8); Ward-04 (5); Ward-05 (5); Ward-02 (5); Ward-03 (5); Ward-01 (4);
	Heavy Industry	10000	5	5	25	Ward-07 (1); Ward-06 (1); Ward-08 (1); Ward-04 (1); Ward-02 (1); Ward-03 (1);
Transportation	Bus terminal	20000	1	2	2	
	Truck terminal	20000	0.5	2	1	

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

Parua-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	4	8	Ward-08 (1); Ward-09 (1); Ward-04 (1); Ward-02 (1);
	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	2	2	Ward-09 (1); Ward-04 (1);
Health	Health centre/Maternity clinic	5000	1	4	4	Ward-08 (1); Ward-09 (1); Ward-04 (1); Ward-02 (1);
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	8	2	Ward-08 (1); Ward-09 (2); Ward-04 (2); Ward-02 (1);
	Neighborhood Market	10000	1	2	2	Ward-09 (1); Ward-04 (1);
Industry	Small scale	1000	1.5	19	28.5	Ward-08 (3); Ward-09 (6); Ward-06 (1); Ward-04 (6); Ward-02 (4);
	Heavy Industry	10000	5	2	10	Ward-09 (1); Ward-04 (1);
Transportation	Bus terminal	20000	1	1	1	
	Truck terminal	20000	0.5	1	0.5	

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

Pomra-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	7	14	Ward-07 (1);Ward-06 (1);Ward-08 (1);Ward-04 (1);Ward-09 (1);Ward-02 (1);Ward-05 (1);
	Secondary/High School	20000	5	2	10	
	College	20000	10	2	20	
Open Space	Play field/ground	20000	3	2	6	
	Neighborhood park/Park	10000	1	3	3	Ward-08 (1);
Health	Health centre/Maternity clinic	5000	1	7	7	Ward-07 (1);Ward-06 (1);Ward-08 (1);Ward-04 (1);Ward-09 (1);Ward-02 (1);Ward-05 (1);
Community Facilities	Mosque/Church/Temple	20000	0.5	2	1	
	Eidgah	20000	1	2	2	
	Graveyard	20000	1	2	2	
	Community centre	20000	1	2	2	
	Post office	20000	0.5	2	1	
Utilities	Water supply	20000	1	2	2	
	Gas	20000	1	2	2	
	Electric sub-station	20000	1	2	2	
Commerce and Shopping	Wholesale market	20000	1	2	2	
	Retail sale market	20000	1	2	2	
	Corner Shop	2500	0.25	14	3.5	Ward-07 (2);Ward-06 (2); Ward-08 (3);Ward-04 (1); Ward-09 (2);Ward-02 (1); Ward-03 (1);Ward-05 (1);
	Neighborhood Market	10000	1	3	3	Ward-08 (1);

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

Pomra-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Industry	Small scale	1000	1.5	34	51	Ward-07 (4); Ward-06 (5); Ward-08 (7); Ward-04 (4); Ward-09 (5); Ward-02 (3); Ward-03 (2); Ward-01 (1); Ward-05 (3);
	Heavy Industry	10000	5	3	15	Ward-08 (1);
Transportation	Bus terminal	20000	1	2	2	
	Truck terminal	20000	0.5	2	1	

Dakshin Rajanagar -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	5	10	Ward-08 (1); Ward-06 (1); Ward-07 (1); Ward-02 (1);
	Secondary/High School	20000	5	1	5	
	College	20000	10	1	10	
Open Space	Play field/ground	20000	3	1	3	
	Neighborhood park/Park/Park	10000	1	2	2	Ward-07 (1);
Health	Health centre/Maternit y clinic	5000	1	5	5	Ward-08 (1); Ward-06 (1); Ward-07 (1); Ward-02 (1);
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	10	2.5	Ward-09 (1); Ward-08 (2); Ward-06

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Dakshin Rajanagar -Proposed						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Industry						(1);Ward-07 (2);Ward-05 (1);Ward-02 (2);Ward-04 (1);
	Neighborhood Market	10000	1	2	2	Ward-07 (1);
	Small scale	1000	1.5	24	36	Ward-09 (2);Ward-08 (5);Ward-06 (3);Ward-07 (5);Ward-03 (1);Ward-05 (2);Ward-02 (4);Ward-04 (2);
	Heavy Industry	10000	5	2	10	Ward-07 (1);
Transportation	Bus terminal	20000	1	1	1	
	Truck terminal	20000	0.5	1	0.5	

Rangunia-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	4	8	Ward-07 (1);Ward-06 (1);Ward-02 (1);
	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	2	2	Ward-07 (1);
Health	Health centre/Maternity clinic	5000	1	4	4	Ward-07 (1);Ward-06 (1);Ward-02 (1);
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	

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

Rangunia-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
	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	7	1.75	Ward-07 (2);Ward-05 (1);Ward-06 (1);Ward-04 (1);Ward-03 (1);Ward-02 (1);Ward-01 (1);
	Neighborhood Market	10000	1	2	2	Ward-07 (1);
Industry	Small scale	1000	1.5	18	27	Ward-07 (5);Ward-05 (2);Ward-06 (3);Ward-04 (1);Ward-03 (2);Ward-02 (3);Ward-01 (1);
	Heavy Industry	10000	5	2	10	Ward-07 (1);
Transportation	Bus terminal	20000	1	1	1	
	Truck terminal	20000	0.5	1	0.5	

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

Sharapbhata-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	7	14	Ward-03 (1); Ward-07 (1); Ward-04 (2); Ward-05 (1); Ward-08 (1);
	Secondary/High School	20000	5	2	10	
	College	20000	10	2	20	
Open Space	Play field/ground	20000	3	2	6	
	Neighborhood park/Park	10000	1	3	3	Ward-04 (1); Ward-08 (1);
Health	Health centre/Maternity clinic	5000	1	7	7	Ward-03 (1); Ward-07 (1); Ward-04 (2); Ward-05 (1); Ward-08 (1);
Community Facilities	Mosque/Church/Temple	20000	0.5	2	1	
	Eidgah	20000	1	2	2	
	Graveyard	20000	1	2	2	
	Community centre	20000	1	2	2	
	Post office	20000	0.5	2	1	
Utilities	Water supply	20000	1	2	2	
	Gas	20000	1	2	2	
	Electric sub-station	20000	1	2	2	
Commerce and Shopping	Wholesale market	20000	1	2	2	
	Retail sale market	20000	1	2	2	
	Corner Shop	2500	0.25	13	3.25	Ward-01 (1); Ward-02 (1); Ward-03 (1); Ward-09 (1); Ward-07 (2); Ward-04 (4); Ward-05 (1); Ward-08 (3);
	Neighborhood Market	10000	1	2	2	Ward-04 (1); Ward-08 (1);

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

Sharapbhata-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Industry	Small scale	1000	1.5	34	51	Ward-01 (2); Ward-02 (1); Ward-03 (4); Ward-06 (1); Ward-09 (2); Ward-07 (5); Ward-04 (9); Ward-05 (3); Ward-08 (6);
	Heavy Industry	10000	5	3	15	Ward-04 (1); Ward-08 (1);
Transportation	Bus terminal	20000	1	2	2	
	Truck terminal	20000	0.5	2	1	

Silok-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
Education	Primary School/ kindergarten	5000	2	5	10	Ward-02 (1); Ward-03(1); Ward-08 (1); Ward-06 (1); Ward-07 (1);
	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	2	2	Ward-08 (1);
Health	Health centre/Maternity clinic	5000	1	5	5	Ward-02 (1); Ward-03(1); Ward-08 (1); Ward-06 (1); Ward-07 (1);
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	

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

Silok-Proposed Facilities						
Facilities	Category	Population	Standard Area per acre	No. of Facilities	Provided Area (acre)	Location Ward (No. of Facilities)
	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	10	2.5	Ward-02 (1); Ward-03(1); Ward-08 (2); Ward-06 (1); Ward-07 (2); Ward-05 (1); Ward-04 (1);
	Neighborhood Market	10000	1	2	2	Ward-08 (1);
Industry	Small scale	1000	1.5	24	36	Ward-02 (4); Ward-01 (1); Ward-03(3); Ward-08 (6); Ward-06 (3); Ward-07 (4); Ward-05 (2); Ward-04 (2);
	Heavy Industry	10000	5	2	10	Ward-08 (1);
Transportation	Bus terminal	20000	1	1	1	
	Truck terminal	20000	0.5	1	0.5	

CHAPTER 9

ACTION AREA PLAN

9.1 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.

9.2 Extent and Nature of Action Area Plan

The Action Area Plan for Rangunia 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.

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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

Action Area Plan will reflect the immediate public demand which has been drawn from Participatory Rural Appraisal (PRA). In this chapter, some bankable projects have been outlined from PRA and Field Survey. Detail project design and estimation will be derived in next planning phase. The summarized PRA demand has been outlined below:

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Table 9.1: Unionwise PRA Demand

Unions	PRA Demand 1	PRA Demand 2	PRA Demand 3	PRA Demand 4	PRA Demand 5
Betagi Union	River Erosion	Gas	Transportation	Health	Education
Chandraghona Kadamtali Union	River Erosion	Gas	Transportation	Education	Waterlogging
Rajanagar Union	Transportation	Education	Health	Gas	
Hosnabad Union	Education-High School	Market and Hat Bazar	Transportation	Gas	
Islampur Union	Lack of Hat - Bazar	Health	Terrorism	Transportation	
Kodala Union	River Erosion	Transportation	Health	Education	
Lalanagar Union	Transportation	River Erosion	Health	Education	Agriculture Development
Mariamnagar Union	River Erosion	Transportation	Drainage System problem	Heath	Education
Padua Union	Transportation	Agriculture Development	Health	River Erosion	Disturbance by wild elephant
Parua Union	River Erosion	Transportation	Electricity Line	Health	Education
Pomra Union	Gas	Transportation	Agriculture Irrigations	Drainage System	Sanitation
Dakshin Rajanagar Union	River Erosion	Transportation	Health	Agriculture Development	Lack of Hat Bazar
Rangunia Union	Transportation	Electricity Line	Drainage System	Gas	
Sarapbhata Union	Transportation	Education	Health	Recreation	Housing
Silok Union	Health	River Erosion	Transportation	Industry	Education

Source: Field Survey, 2015

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Table 9.2: Pourashava wardwise PRA Demand

Rangunia Pourashava	PRA Demand 1	PRA Demand 2	PRA Demand 3	PRA Demand 4	PRA Demand 5
Ward-01	Gas	Transportation	Education- High school	Drainage System	Reduce Load shedding
Ward-02	River Erosion	Drainage System	Education- High school	Gas	Reduce Load shedding
Ward-03	Education- High school	Transportation	Drainage System	Gas	Water Supply System
Ward-04	River Erosion	Transportation	Drainage System		
Ward-05	River Erosion	Gas	Drainage System	Education-High school	
Ward-06	River Erosion	Drainage System	Transport	Gas	Health
Ward-07	Transport	River Erosion	Drainage System	Education	Gas
Ward-08	Transport	Drainage System	Solid Waste Management	Sanitation	Recreation
Ward-09	River Erosion	Transportation	Drainage System	Health	Recreation

*Source: Field Survey, 2015***9.3 Priority Development Projects for Rangunia Upazila**

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

Table 9.3: Priority Development Projects for Rangunia Upazila

SL	Project Name	Project Location
1.	Construction of Bridge	Chandraghona Ferryghat
2.	Sanitary land fill & Solid waste disposal site	Based on Suitability
3.	Establish Permanent area for cow hats	Based on Suitability
4.	Sluice gate (Gumai Beel) repair and maintenance	Gumai Beel
5.	Construction of Road network between Gumai beel	Gumai Beel

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6.	NHA housing Project-low income housing for urban poor	Chandraghona ,Karnaphuli Jute Mill
7.	Walkway for Karnaphuli river bank with Chandraghona Christian Hospital	Chandraghona
8.	Establish training Center for developing cottage industries	Lalanagar, Rangunia
9.	Construction of River Embankment	Chandraghona, Shamapara
10.	Establishment of Water Treatment Plant	Based on Suitability
11.	Construction of Bridge near Sialbokkha over Ichamati River	Sialbokkha, Rajanagar
12.	Separation and Construction of Elephant passing roads	
13.	Development of Ethnic Groups	
14.	Establish Fish Processing project	Nischintapur, Hosanabad Union

CHAPTER 10
CONCLUSION

Final draft plan of Rangunia Upazila will give a guideline to develop the area according to the demand of local people. However, the five-tier plan devised in this report will be effective tools for planned development of most of the areas in Rangunia. 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. Rangunia 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.