

## **CHAPTER 1**

### **INTRODUCTION**

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#### **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.

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**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**

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#### **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***

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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  |
|-------------------------------------|--|--|
| <b>Cohort Component method</b>      | <ol style="list-style-type: none"><li>1) Requires more detailed data<ul style="list-style-type: none"><li>• Fertility and mortality rates by tenure are approximations</li><li>• Needs a census for full validation</li></ul></li><li>2) Inflow/outflow concept are more difficult to interpret</li><li>3) Issues of consistency such as all tenure household projection</li></ol> | As 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. |
| <b>Arithmetical Increase Method</b> | Simple method and it will generate projection based on previous censuses.  | It is adaptable for short time and results are generated based on decade and gives low projection for developing areas. In Rangunia Upazila, the projection will be done for next 20 years, thus the projection may not provide the desired result.  |
| <b>Incremental Increase Method</b>  | This method is modification of arithmetical increase method and it is suitable for an average size town  | 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.  |
| <b>Geometrical Increase Method</b> | Previous census data and more decadal census data will create the result more accurate and it is suitable for new area is to be developed.             | As it gives the higher values, in adverse situation it may not correct. In respect of Rangunia Upazila where new development will be taken place, it is suitable for projection.                                 |
| <b>Compound Growth Method</b>      | This method is viable for long term projection. This method delineates the future projection more accurately if net migration rate is not high enough. | In 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. |
| <b>Exponential Growth Method</b>   | 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 <b>447489</b> (Year, 2033) | Population of Rangunia Upazila will be <b>489148</b> (Year, 2031) | Population of Rangunia Upazila will be <b>447293</b> (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**

| <b>Compound Growth Method</b>                         | <b>Geometrical Growth Method</b>                      | <b>Exponential Growth Method</b>                      | <b>Remarks</b>  |
|---|---|---|---|
| Population in 2011 would be <b>329750 (1981-2001)</b> | Population in 2011 would be <b>329127 (1981-2001)</b> | Population in 2011 would be <b>329193 (1981-2001)</b> | Almost same result and three methods are perfect.   |
| Population in 2011 would be <b>338169 (1991-2001)</b> |   | Population in 2011 would be <b>338098 (1991-2001)</b> | 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.

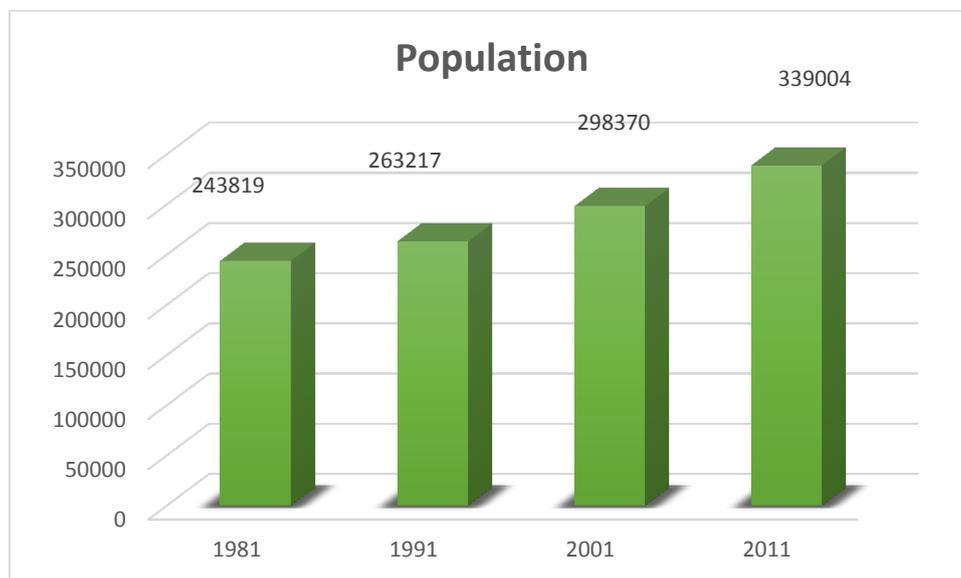
## 2.8 Determination of Compound Growth Rate

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.

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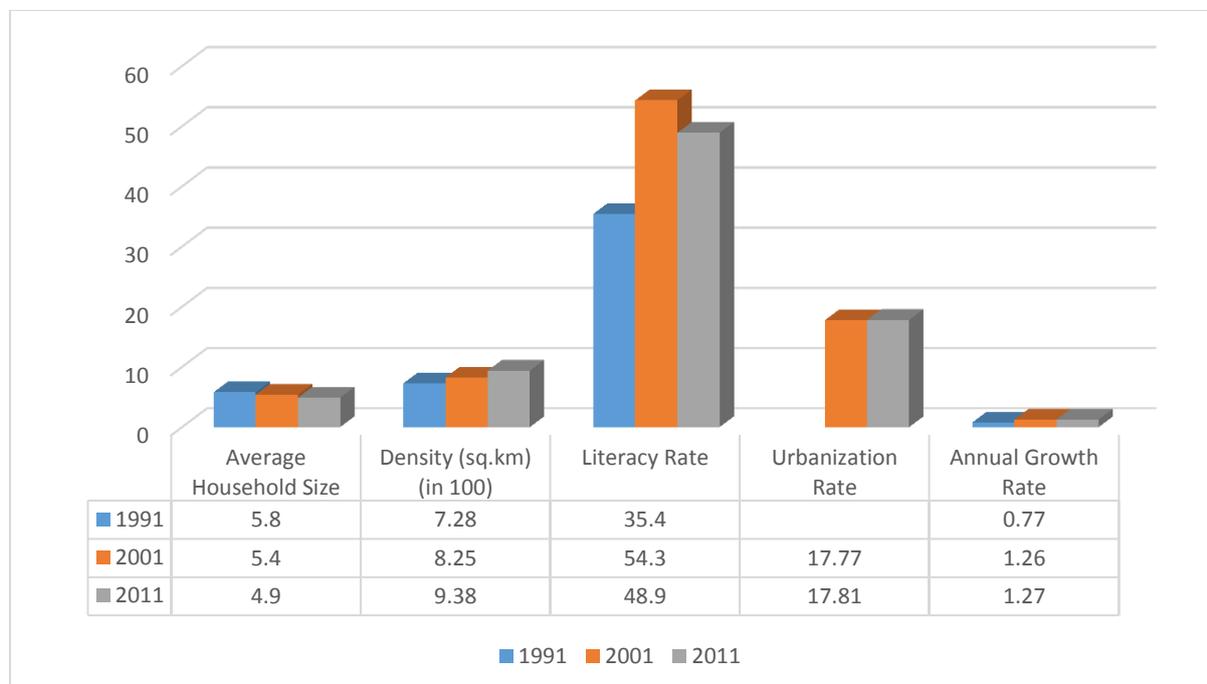
**Table 2.4: Calculation of Compound Growth Rate**

| 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.*

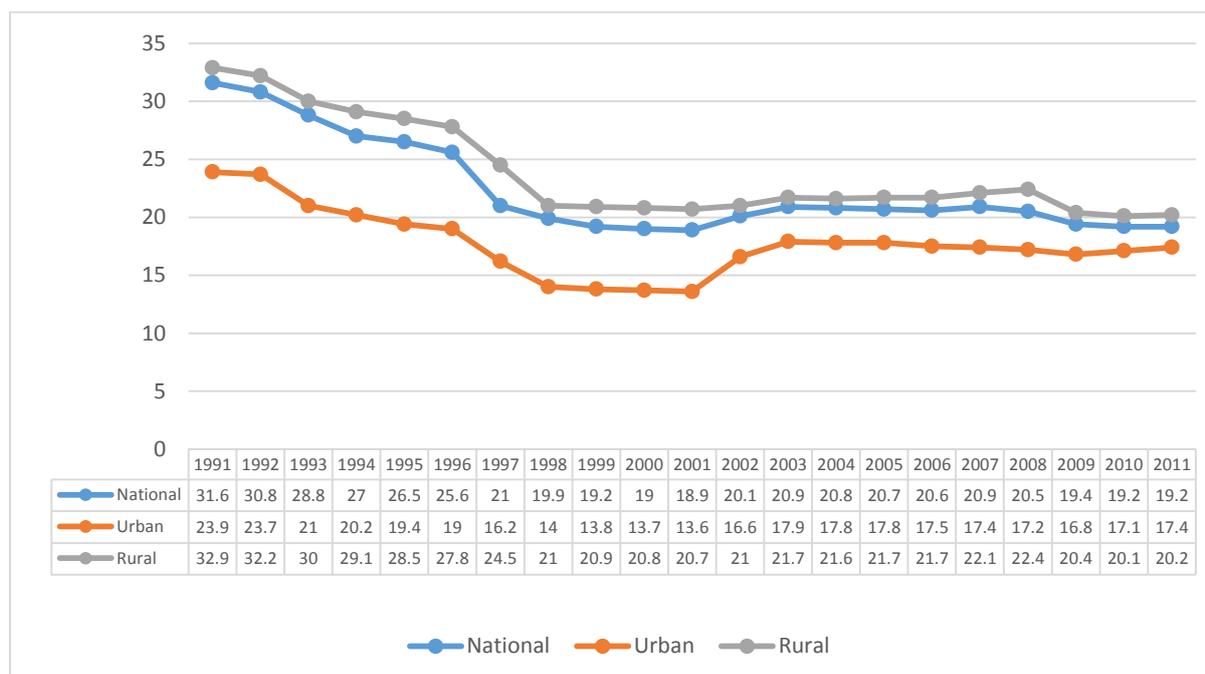
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The above chart represents some factors which have impact on the population distribution or change. This can vary the growth rate so that the population projection may fluctuate. From the chart, it has been shown that average household size is decreasing 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**

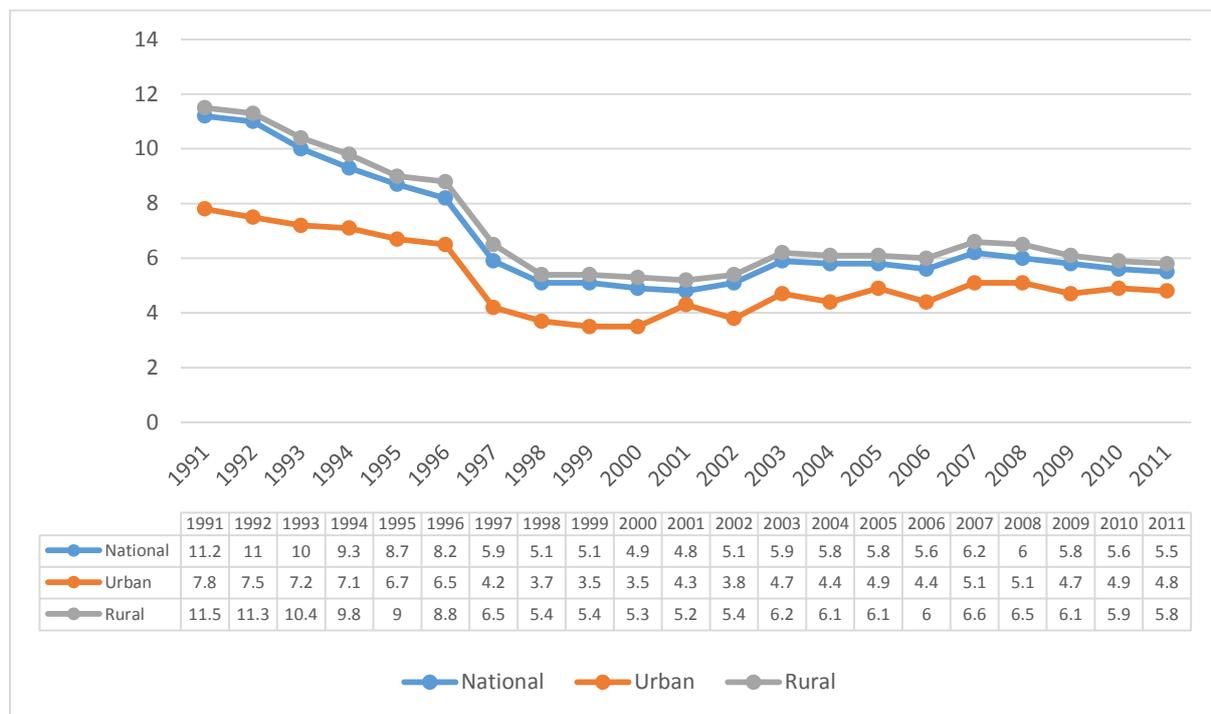
*Source: SVRS, BBS, 2011.*

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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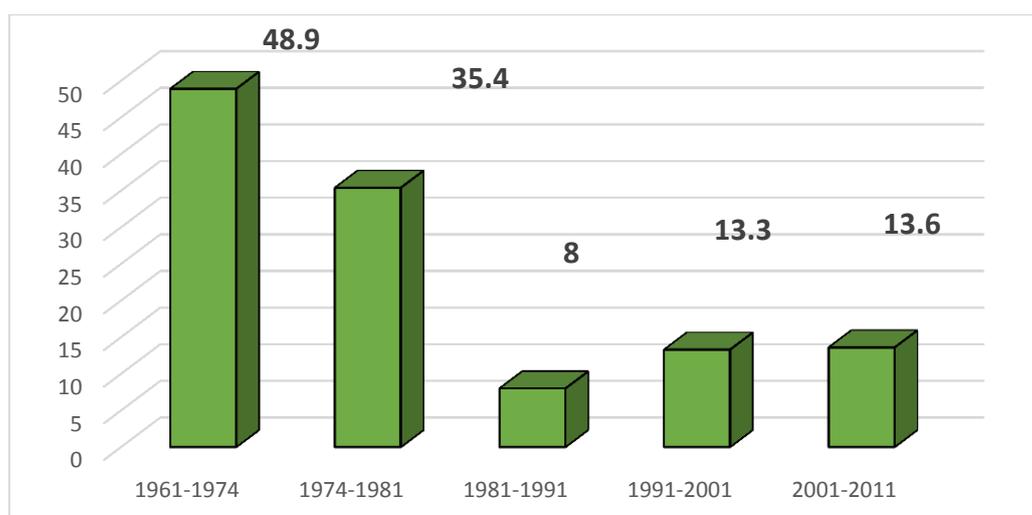


**Figure 2.4: Crude Death Rate (CDR) per 1000**

*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.

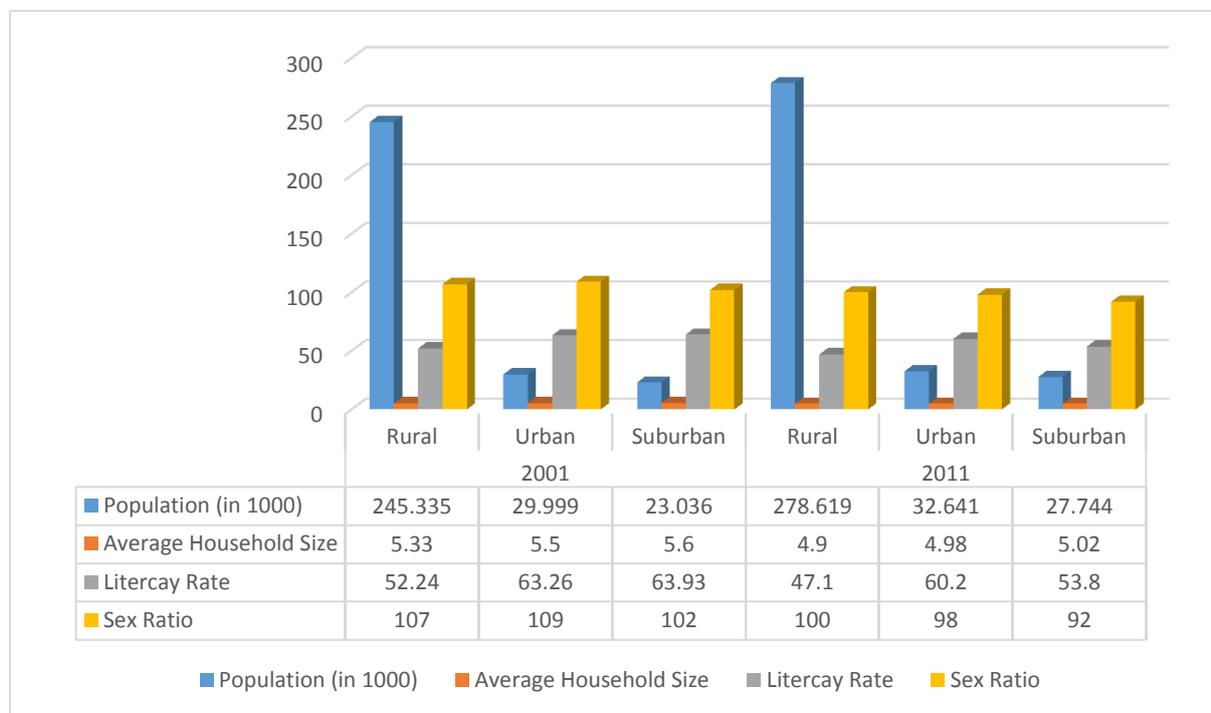
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After 1991, population is increasing gradually where it has been seen that 13.3 and 13.6 respectively for 1991-2001 and 2001-2011. So, population is marking a steep accretion for last three decades.

### 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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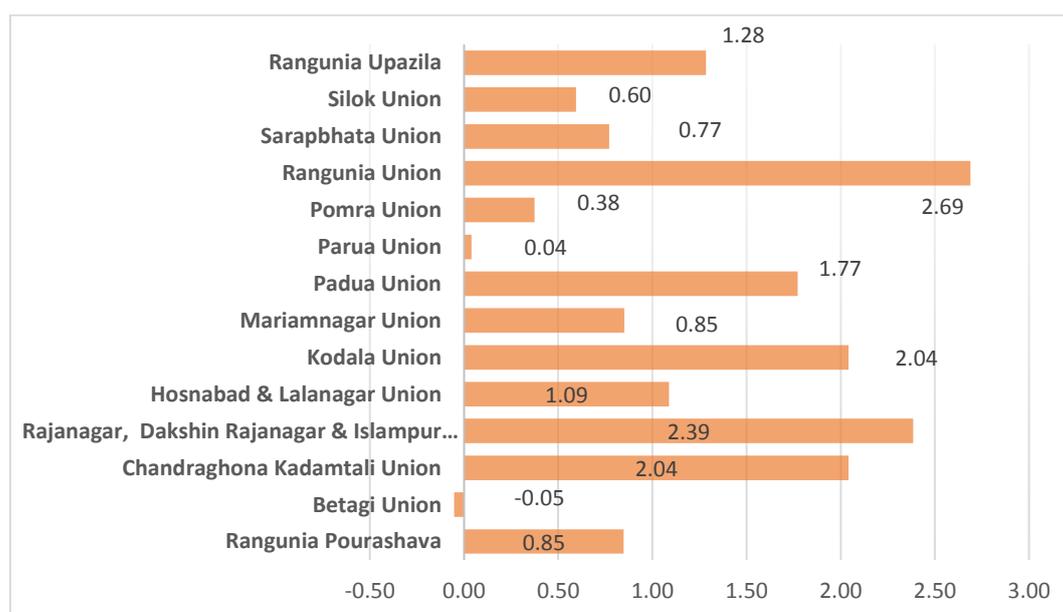
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**Table 2.5: Percentage of Change in Unions and Pourashava**

| 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         |
| <b>Rangunia Upazila</b>                       | <b>298370</b>     | <b>339004</b>     | <b>40634</b> | <b>14</b> |

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 Rajanagar 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 |
|---|-------------------|-------------------|-------------|
| <b>Urban/Rangunia Pourashava</b>  | 29999             | 32641             | 0.85        |
| <b>Suburban/Other Urban</b>   | 23036             | 27744             | 1.88        |
| <b>Urban &amp; Suburban Areas</b>   | <b>53035</b>      | <b>60385</b>      | <b>1.31</b> |
| <b>Rural/Unions</b>   | <b>245335</b>     | <b>278619</b>     | <b>1.28</b> |
| 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        |
| <b>Rangunia Upazila</b>   | <b>298370</b>     | <b>339004</b>     | <b>1.28</b> |
| <b>*Suburban areas include areas from Mariamnagar Union and Pomra Union</b> |                   |                   |             |

*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.

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

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

The recent compound annual growth rate of Rangunai 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<br>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) | <b>340</b>                                      | <b>476</b> | <b>509</b> | <b>360</b> | <b>340</b> | <b>260</b> | <b>679</b>  | <b>173</b> | <b>70</b>  | <b>123</b> | <b>3329</b> |
|                        | 2018        | 372   | 522        | 558        | 394        | 372        | 285        | 744         | 190        | 77         | 135        | <b>3649</b> |
|                        | 2023        | 397   | 557        | 596        | 421        | 397        | 304        | 795         | 203        | 82         | 144        | <b>3896</b> |
|                        | 2028        | 424   | 595        | 637        | 449        | 424        | 325        | 849         | 216        | 87         | 154        | <b>4160</b> |
|                        | 2033        | 453   | 635        | 680        | 480        | 453        | 346        | 906         | 231        | 93         | 164        | <b>4442</b> |
| Ward-02                | 2011 (Base) | <b>267</b>                                      | <b>347</b> | <b>337</b> | <b>267</b> | <b>227</b> | <b>195</b> | <b>552</b>  | <b>142</b> | <b>65</b>  | <b>97</b>  | <b>2497</b> |
|                        | 2018        | 293   | 380        | 370        | 293        | 249        | 213        | 605         | 156        | 71         | 107        | <b>2737</b> |
|                        | 2023        | 313   | 406        | 395        | 313        | 266        | 228        | 646         | 167        | 76         | 114        | <b>2923</b> |
|                        | 2028        | 334   | 434        | 421        | 334        | 284        | 243        | 690         | 178        | 81         | 122        | <b>3121</b> |
|                        | 2033        | 357   | 463        | 450        | 357        | 303        | 260        | 736         | 190        | 87         | 130        | <b>3332</b> |
| Ward-03                | 2011 (Base) | <b>591</b>                                      | <b>664</b> | <b>833</b> | <b>641</b> | <b>546</b> | <b>551</b> | <b>1277</b> | <b>259</b> | <b>113</b> | <b>152</b> | <b>5625</b> |
|                        | 2018        | 647   | 728        | 913        | 703        | 598        | 604        | 1400        | 284        | 123        | 166        | <b>6166</b> |
|                        | 2023        | 691   | 777        | 974        | 751        | 639        | 645        | 1494        | 303        | 132        | 178        | <b>6584</b> |
|                        | 2028        | 738   | 830        | 1040       | 801        | 682        | 689        | 1596        | 323        | 141        | 190        | <b>7030</b> |
|                        | 2033        | 788   | 886        | 1111       | 856        | 728        | 736        | 1704        | 345        | 150        | 203        | <b>7506</b> |
|                        | 2011 (Base) | <b>297</b>                                      | <b>335</b> | <b>383</b> | <b>347</b> | <b>267</b> | <b>261</b> | <b>685</b>  | <b>211</b> | <b>62</b>  | <b>119</b> | <b>2967</b> |
|                        | 2018        | 325   | 368        | 420        | 381        | 293        | 286        | 751         | 231        | 68         | 130        | <b>3252</b> |

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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  |       |
| Community: Dakshin Pomara | 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  |       |
| Union: Pomra              | 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  |       |
|                           | Community: Bacha Shahnagar     | 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  |       |
|                           | Community: Hajipara Maijpara   | 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  |
| Union: Pomra              | 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  |       |
|                           | Community: Hila Gazipara       | 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  |       |
|                           | Community: Madhya Pomara       | 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 |
| Union: Pomra              | 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  |       |
|                           | Community: Hajipara Sikdarpara | 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  |       |
|                           | Community: Sapleza Para        | 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**

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#### **3.1. Introduction**

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

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

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

Objectives of the study

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

#### **3.2. Terminology**

##### **Policy**

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

##### **Law**

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

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

##### **Act**

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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**

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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**

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

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| Five Tier Plan          | Review policies   |
|-------------------------|---|
|                         | <ul style="list-style-type: none"><li>• National Urban Sector Policy 2011</li><li>• National Fisheries Policy 1998</li></ul>  |
| <b>Urban Area Plan</b>  | <ul style="list-style-type: none"><li>• Quito Implementation Plan for the New Urban Agenda</li><li>• Sustainable Development Goals (SDG)</li><li>• Climate Change Strategy 2009</li><li>• National policy for safe water supply and sanitation 1998</li><li>• The Building Construction Act, 1952</li><li>• National Water policy 1999</li><li>• National Urban Sector Policy 2011</li><li>• Bangladesh National Building Code 1993</li></ul>   |
| <b>Rural Area Plan</b>  | <ul style="list-style-type: none"><li>• Population Policy 2004</li><li>• National policy for safe water supply and sanitation 1998</li><li>• National Water policy 1999</li></ul>   |
| <b>Action Area Plan</b> | <ul style="list-style-type: none"><li>• Quito Implementation Plan for the New Urban Agenda</li><li>• Sustainable Development Goals (SDG)</li><li>• National Agriculture Policy 1999</li><li>• Climate Change Strategy 2009</li><li>• National Plan for Disaster Management 2008-2015</li><li>• Population Policy 2004</li><li>• National policy for safe water supply and sanitation 1998</li><li>• The Building Construction Act, 1952</li><li>• National Water policy 1999</li><li>• Industrial Policy 2005</li><li>• Burning Bricks Act 1989</li><li>• National Urban Sector Policy 2011</li><li>• National Fisheries Policy 1998</li><li>• Seventh Five Year Plan</li></ul> |

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

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

### 3.5 Sector wise policy Review

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

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

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

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

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

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

| Sector Wise Policy list                            |  |  |   |  |                           |
|--|--|--|---|--|---------------------------|
| 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 | 3. 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                          | 3. The United Nations Framework Convention on Climate Change  | 4. National Fisheries Policy 1998                            |                           |
| 5. Safe Water Supply and Sanitation 1998           | 5. Population Policy 2004                          | 5. The Building Construction Act, 1952             |   | • 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<br>• Sustainable Development Goals (SDG) | 10. National Fisheries Policy 1998<br>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   |
|--|--|
| <b>National Agriculture Policy 1999</b>                | <ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> <li>• Physical, Landuse and Topographic Features</li> </ul>                      |
| <b>Climate Change Strategy 2009</b>                    | <ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> <li>• Physical, Landuse and Topographic Features</li> <li>• Geology</li> </ul>   |
| <b>Disaster Management Act 2012</b>                    | <ul style="list-style-type: none"> <li>• Formal-informal Sector</li> </ul>   |
| <b>National Plan for Disaster Management 2008-2015</b> | <ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> <li>• Physical, Landuse and Topographic Features</li> <li>• Geology</li> </ul>   |
| <b>Population Policy 2004</b>                          | <ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> <li>• Transport</li> <li>• Hydrology</li> </ul>                                  |
| <b>Safe Water Supply and Sanitation 1998</b>           | <ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> </ul>  |
| <b>The Building Construction Act, 1952</b>             | <ul style="list-style-type: none"> <li>• Physical, Landuse and Topographic Features</li> </ul>   |
| <b>National Water policy 1999</b>                      | <ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> <li>• Physical, Landuse and Topographic Features</li> <li>• Hydrology</li> </ul> |

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| <b>Policy</b>   | <b>Sector</b>  |
|---|--|
| <b>Industrial Policy 2005</b>                                     | <ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> <li>• Physical, Landuse and Topographic Features</li> <li>• Formal-informal Sector</li> </ul>                      |
| <b>Burning Bricks Act 1989</b>                                    | <ul style="list-style-type: none"> <li>• Physical, Landuse and Topographic Features</li> </ul>   |
| <b>National Urban Sector Policy 2011</b>                          | <ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> <li>• Formal-informal Sector</li> <li>• Physical, Landuse and Topographic Features</li> <li>• Hydrology</li> </ul> |
| <b>National Fisheries Policy 1998</b>                             | <ul style="list-style-type: none"> <li>• Physical, Landuse and Topographic Features</li> <li>• Hydrology</li> </ul>  |
| <b>Seventh Five Year Plan(FY2016 – FY2020)</b>                    | <ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> <li>• Physical, Landuse and Topographic Features</li> </ul>  |
| <b>National Land Use Policy 2001</b>                              | <ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> <li>• Physical, Landuse and Topographic Features</li> <li>• Hydrology</li> <li>• Transport</li> </ul>              |
| <b>Climate Change Policies</b>                                    | <ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> <li>• Physical, Landuse and Topographic Features</li> <li>• Geology</li> <li>• Hydrology</li> </ul>                |
| <b>The Sendai Framework for Disaster Risk Reduction 2015-2030</b> | <ul style="list-style-type: none"> <li>• Agriculture</li> <li>• Physical, Landuse and Topographic Features</li> <li>• Geology</li> <li>• Hydrology</li> </ul>  |
| <b>Quito Implementation Plan for the New Urban Agenda</b>         | <ul style="list-style-type: none"> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> <li>• Physical, Landuse and Topographic Features</li> </ul>   |
| <b>Sustainable Development Goals</b>                              | <ul style="list-style-type: none"> <li>• Agriculture</li> <li>• PRA and Socio-Economic Formal-informal Economic Sector</li> <li>• Physical, Landuse and Topographic Features</li> <li>• Geology</li> <li>• Hydrology</li> </ul>                |
| <b>The United Nations Framework Convention on Climate Change</b>  | <ul style="list-style-type: none"> <li>• Agriculture</li> <li>• Geology</li> <li>• Hydrology</li> </ul>  |

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

## CHAPTER 4

### SHIFT SHARE ANALYSIS

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#### 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)

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- 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:

$$\text{National Share, } N_j = \sum [ E_{ij0} (E_t/E_o) - E_{ij0} ]$$

$$\text{Proportionality Shift Component, } P_j = \sum [(E_{it}/E_{io}) - (E_t/E_o)] E_{ij0}$$

$$\text{Differential Shift Component, } D_j = \sum [(E_{ijt}/E_{ijo}) - (E_{it}/E_{io})] E_{ij0}$$

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

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

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

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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.

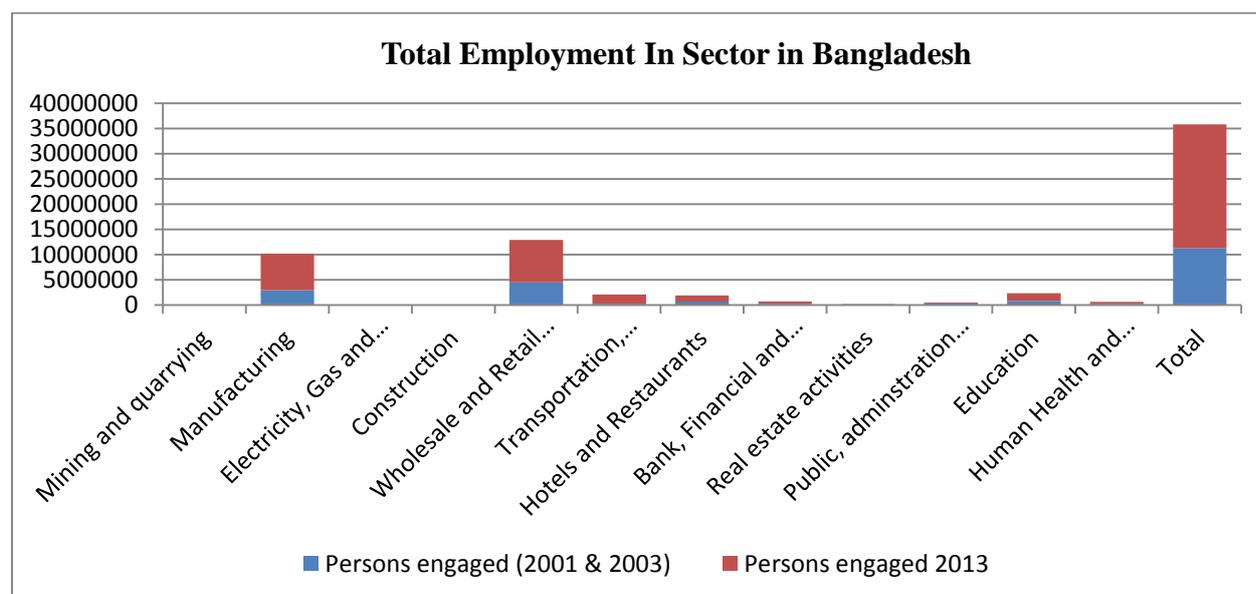
National growth rate with comparison to the growth rate of Rangunia Upazila in the following chart shows that national growth rate of industrial sector wise category.

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### 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        |
| <b>Total</b>                 | <b>19832</b> | <b>31623</b> | <b>11791</b>   | <b>0.59</b> |

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           |
| <b>Total</b>  | <b>21692.96</b> | <b>303.22</b>  | <b>-10177.83</b> | <b>11818.35</b>       | <b>-9874.61</b> |

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.

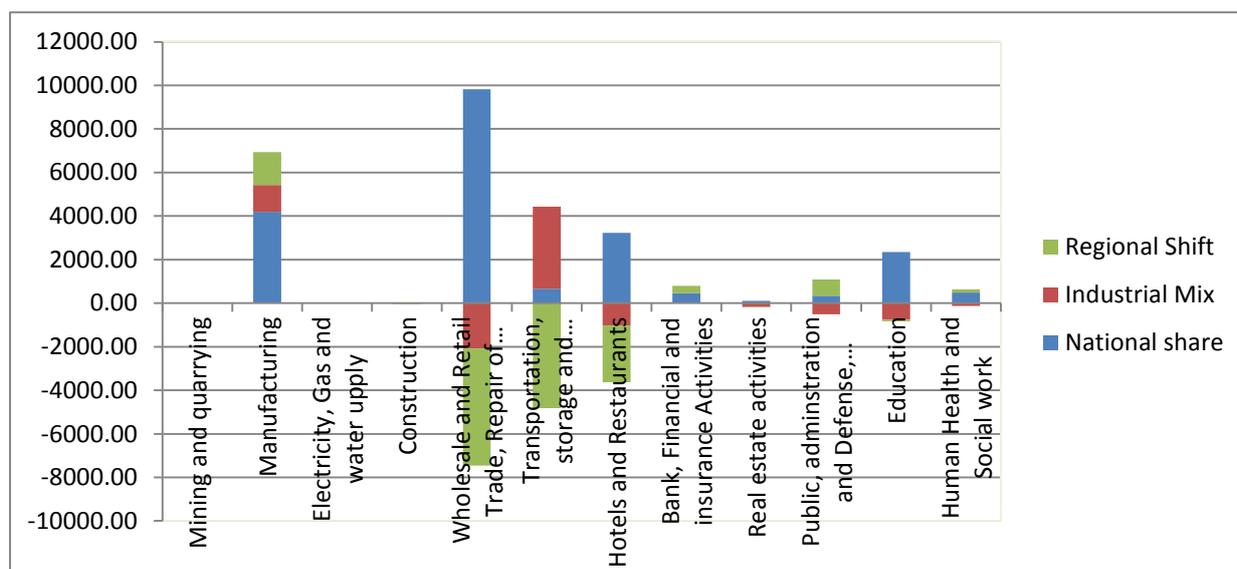
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The overall industrial mix component of 303 means that Rangunia Upazila has nearly 303 added jobs than it would have if its structure was identical to the nation. Though construction, wholesale and retail trade, repair of motor vehicles & motorcycle, 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  | ✓           |                  |
| <b>Total</b>   |             | ✓                |

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.

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**CHAPTER 5**  
**PLANNING STANDARD**

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

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

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

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

## **CHAPTER 6**

### **SUB REGIONAL AND STRUCTURE PLAN**

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#### **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 Ypazila 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**

| <b>Study Area Demarcation</b> |                     |                     |                   |                   |                          |                |
|-------------------------------|---------------------|---------------------|-------------------|-------------------|--------------------------|----------------|
| <b>Union</b>                  | <b>Area(sq.m)</b>   | <b>Area (sq.km)</b> | <b>Area(Acre)</b> | <b>Percentage</b> | <b>Population (2011)</b> | <b>Density</b> |
| 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              |
| <b>Rangunia Paurashava</b>    | <b>Area(sq.m)</b>   | <b>Area (sq.km)</b> | <b>Area(Acre)</b> | <b>Percentage</b> | <b>Population (2011)</b> | <b>Density</b> |
| 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             |
| <b>Total</b>                  | <b>347865648.94</b> | <b>347.87</b>       | <b>85959.47</b>   | <b>100</b>        | <b>366743.00</b>         | <b>185</b>     |

*Source: Field Survey, 2016*



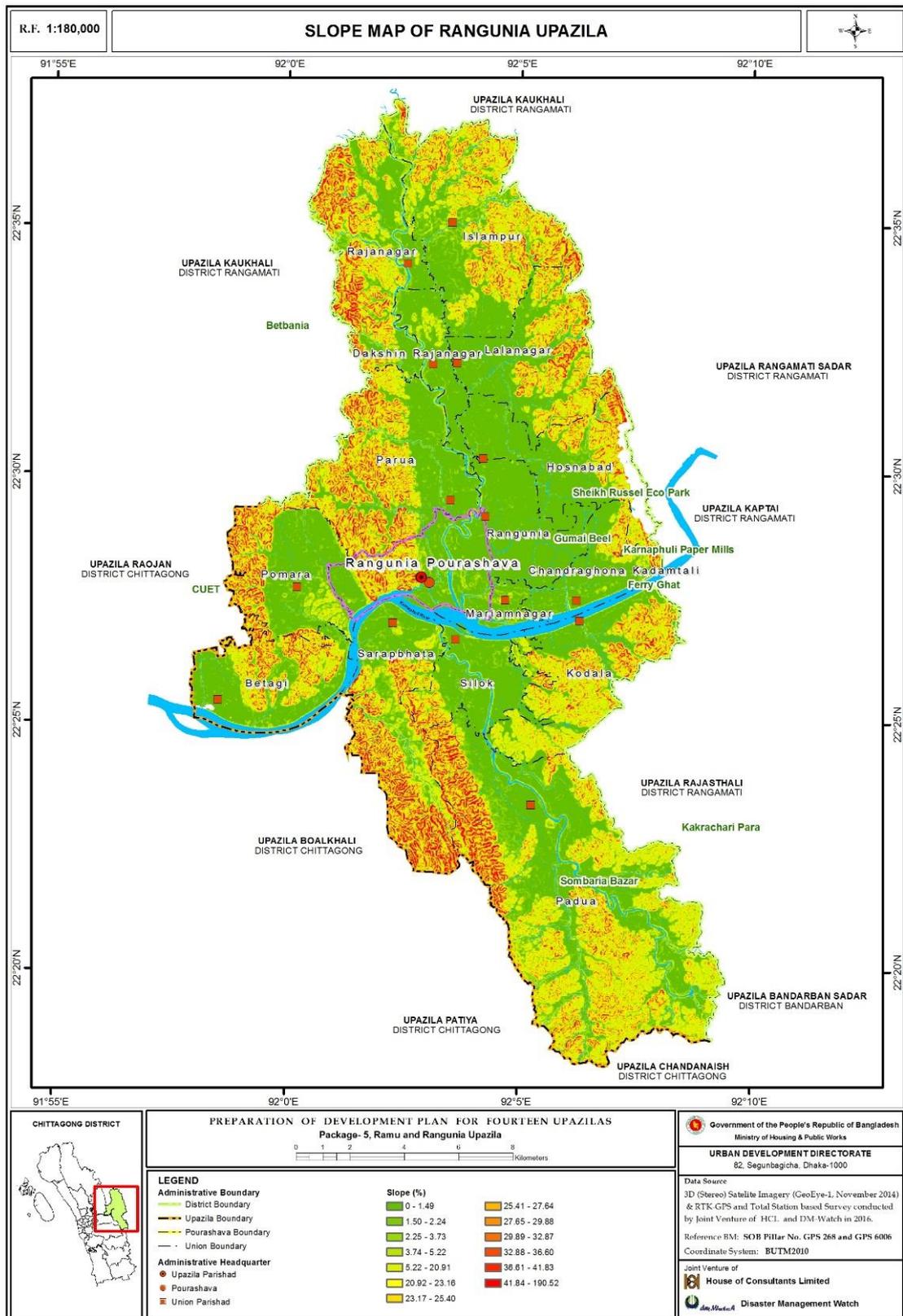




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Source: Prepared by Consultant Team Based on Field Survey, 2016

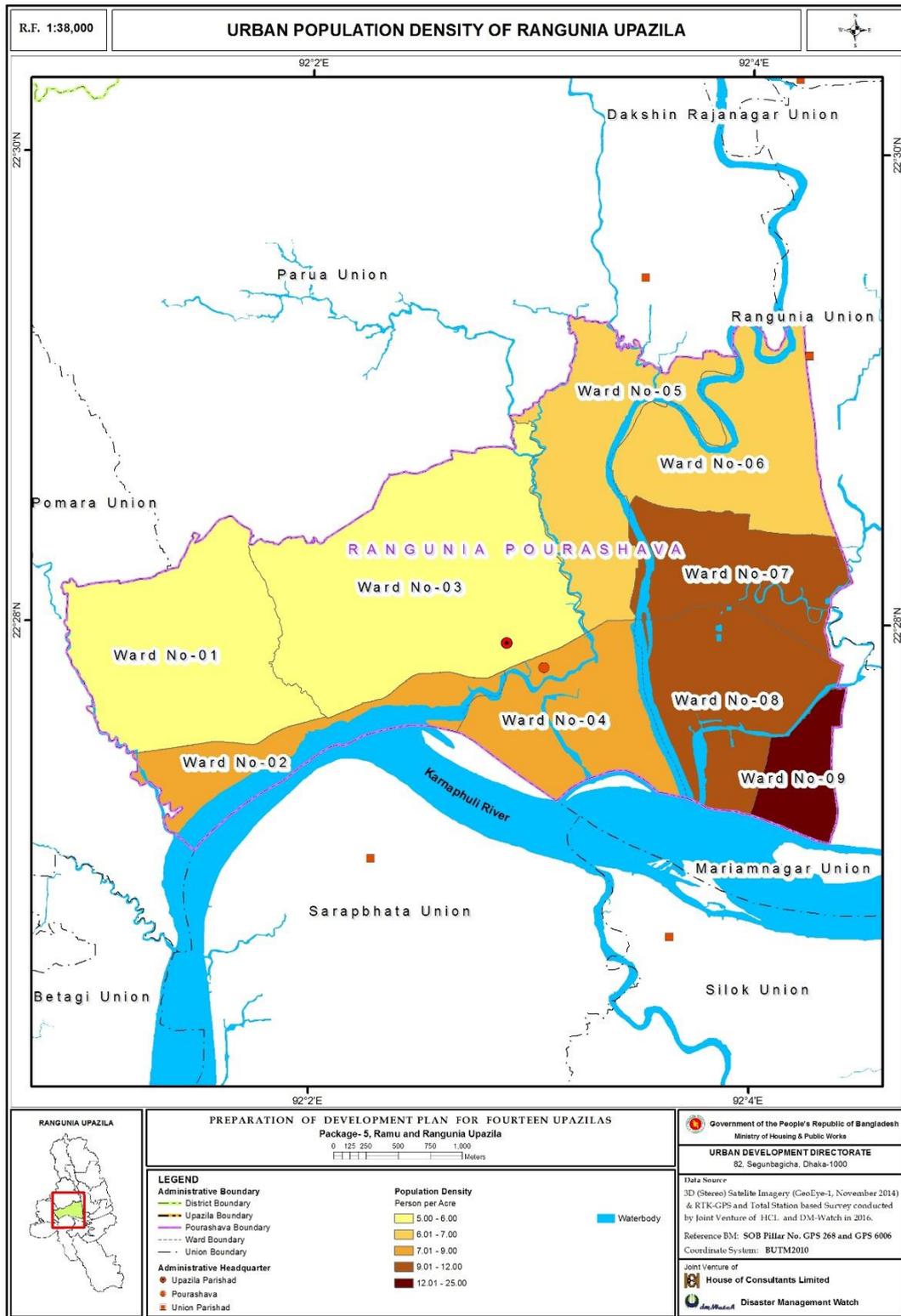
Map 6.4: Slope Map of Rangunia Upazila



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

Map 6.6: 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          |
| <b>Total</b>            | <b>347865648.82</b> | <b>347.87</b> | <b>34786.56</b> | <b>85959.47</b> | <b>100.00</b> |

Source: Field Survey, 2016



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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<br>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<br>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 |

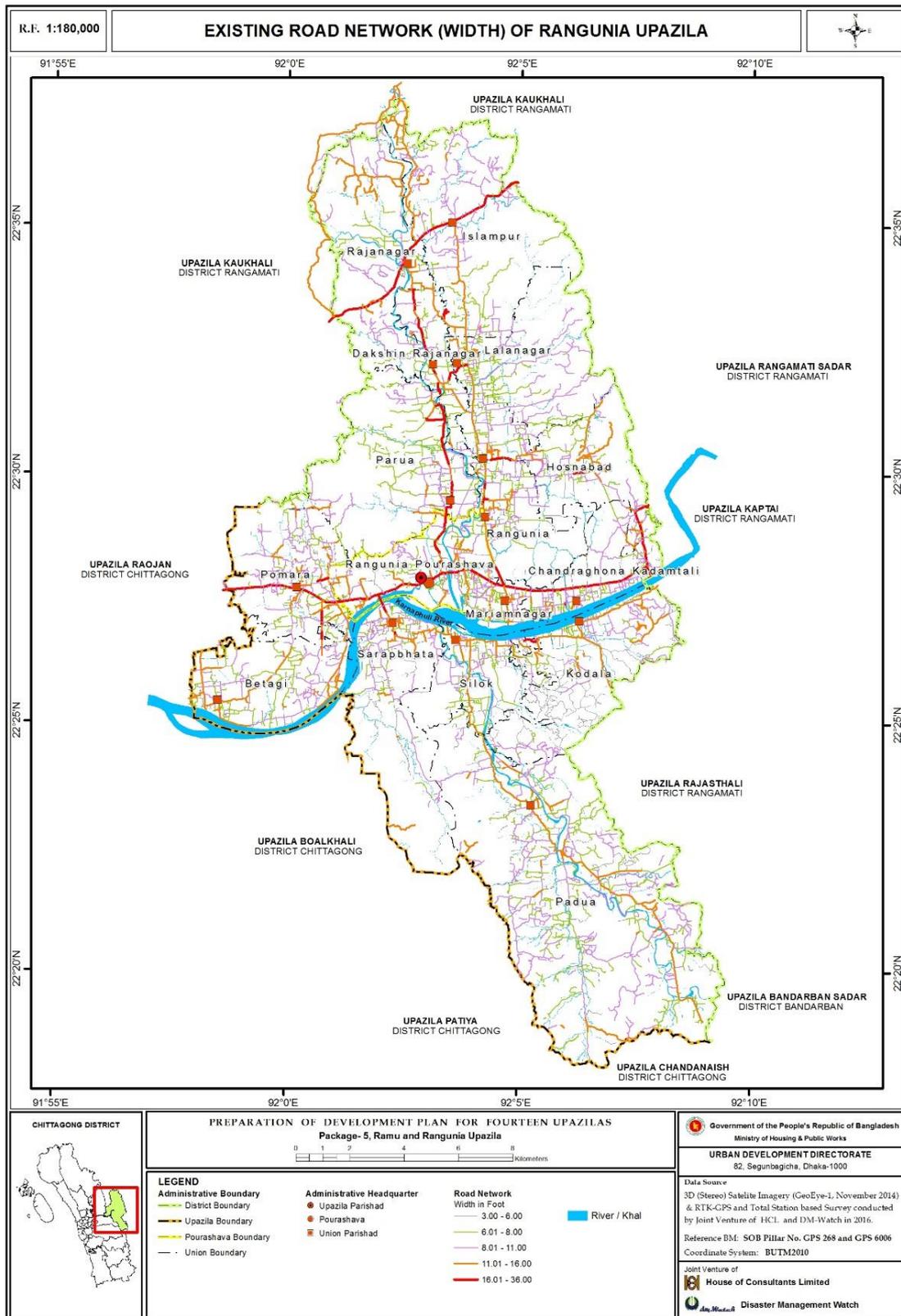
*Source: Field Survey, 2016*



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

Map 6.9: 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**

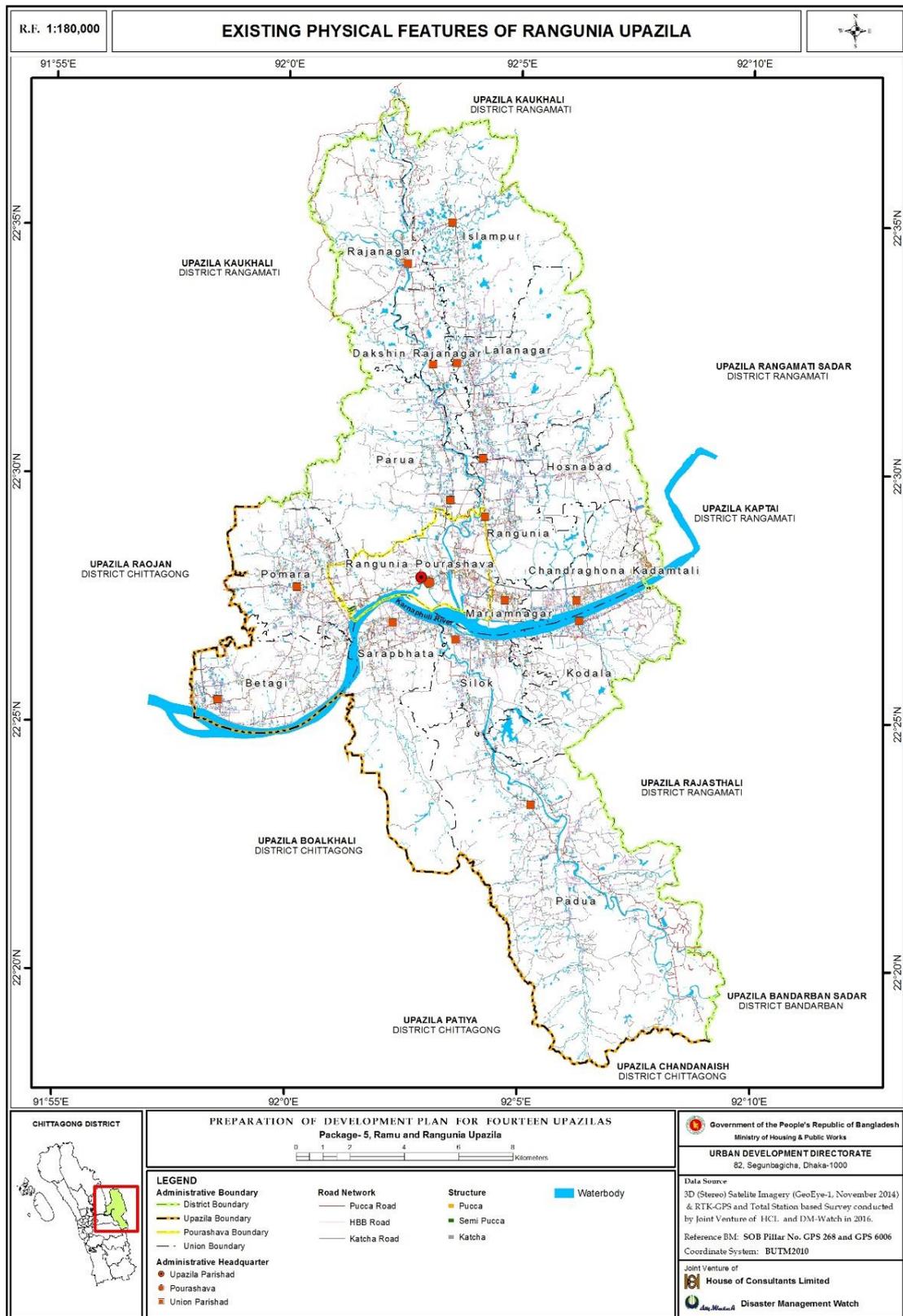
| <b>Rangunia Paurashava</b> | <b>Pucca</b> | <b>Percentage</b> | <b>Semi-Pucca</b> | <b>Percentage</b> | <b>Katcha</b> | <b>Percentage</b> | <b>Total</b> |
|----------------------------|--------------|-------------------|-------------------|-------------------|---------------|-------------------|--------------|
| 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          |
| <b>Union</b>               | <b>Pucca</b> | <b>Percentage</b> | <b>Semi-pucca</b> | <b>Percentage</b> | <b>Katcha</b> | <b>Percentage</b> | <b>Total</b> |
| 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

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### 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*



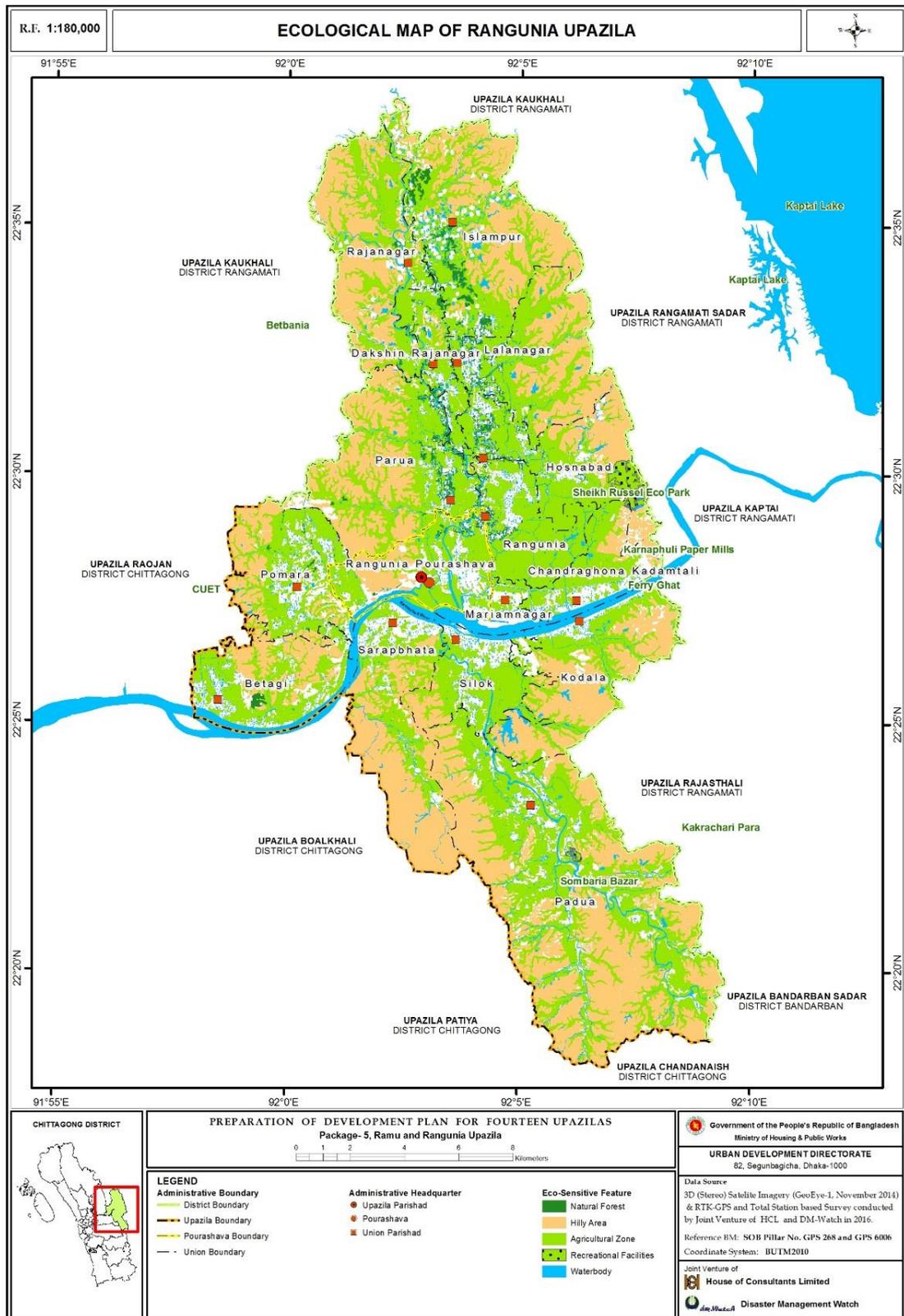




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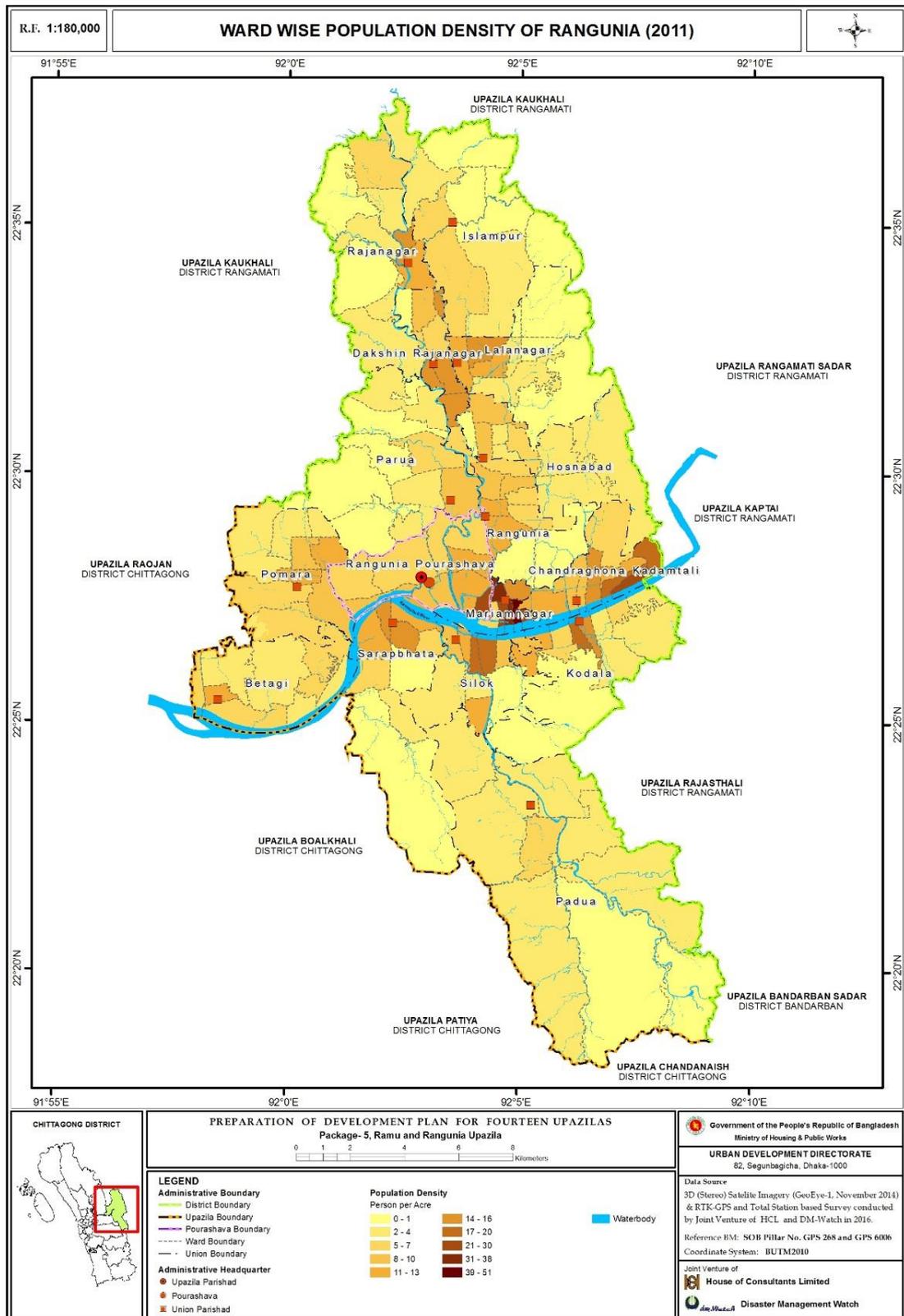
Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 6.14: Ecological Map of Rangunia Upazila

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

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



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### 6.5 Flooding Scenario

The project area has been divided into five categories depending on the flooding scenario which are 1<sup>st</sup> degree flooded area, 2<sup>nd</sup> degree flooded area, 3<sup>rd</sup> degree flooded area, 4<sup>th</sup> degree flooded area and 5<sup>th</sup> degree flooded area. The statistics has been summarized in the table (6.7):

**Table 6.7: Different Flooding Scenario**

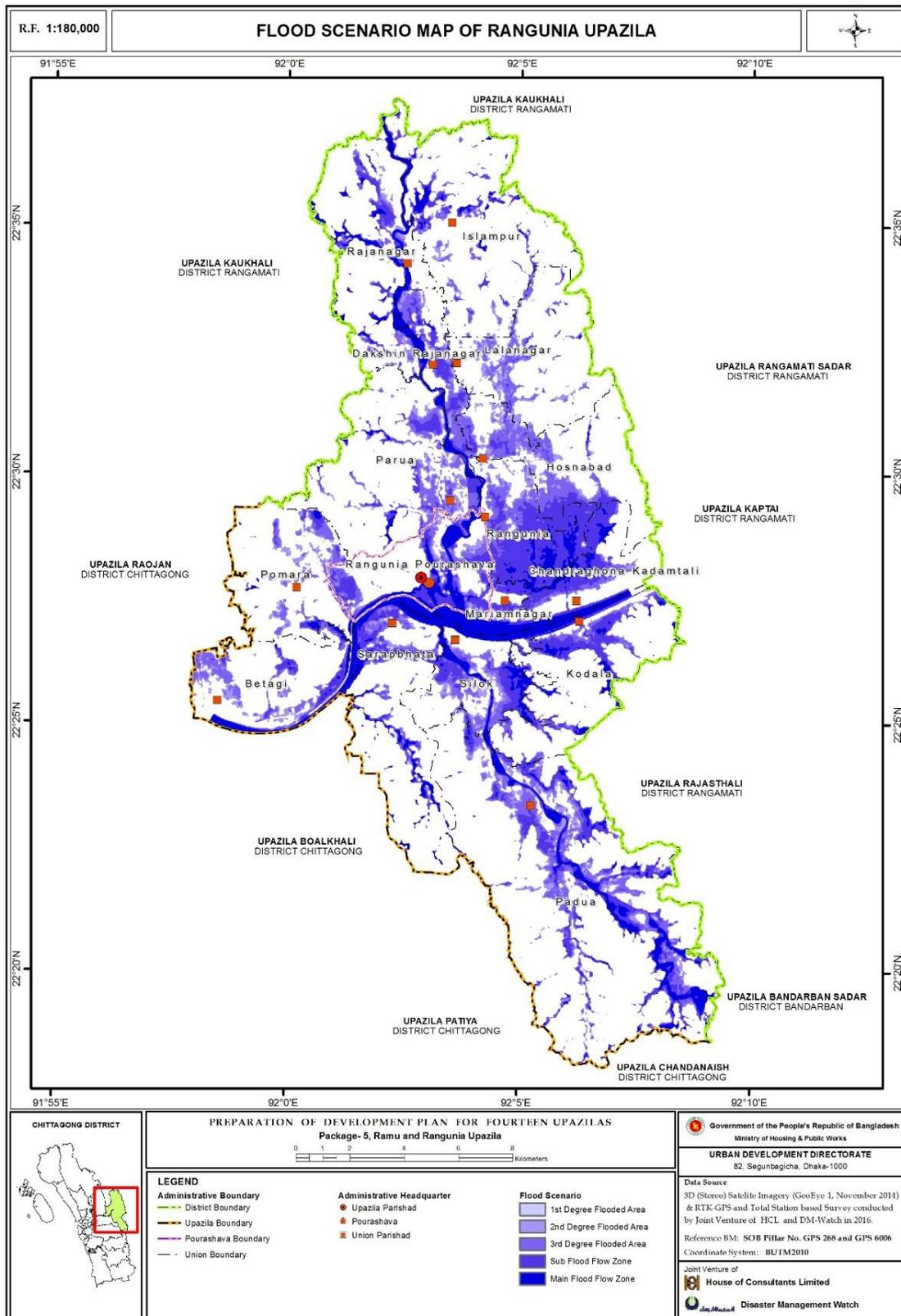
| Different Flooding Scenario |                  |               |                 |               |                      |
|-----------------------------|------------------|---------------|-----------------|---------------|----------------------|
| Flooded Land Category       | Area (sq.m)      | Area (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 |
| <b>Total</b>                | <b>115628500</b> | <b>115.63</b> | <b>28572.42</b> | <b>100.00</b> |                      |

*Source: Field Survey, 2016*

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

Map 6.17: Flood Scenario of Rangunia Upazila

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### 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     |

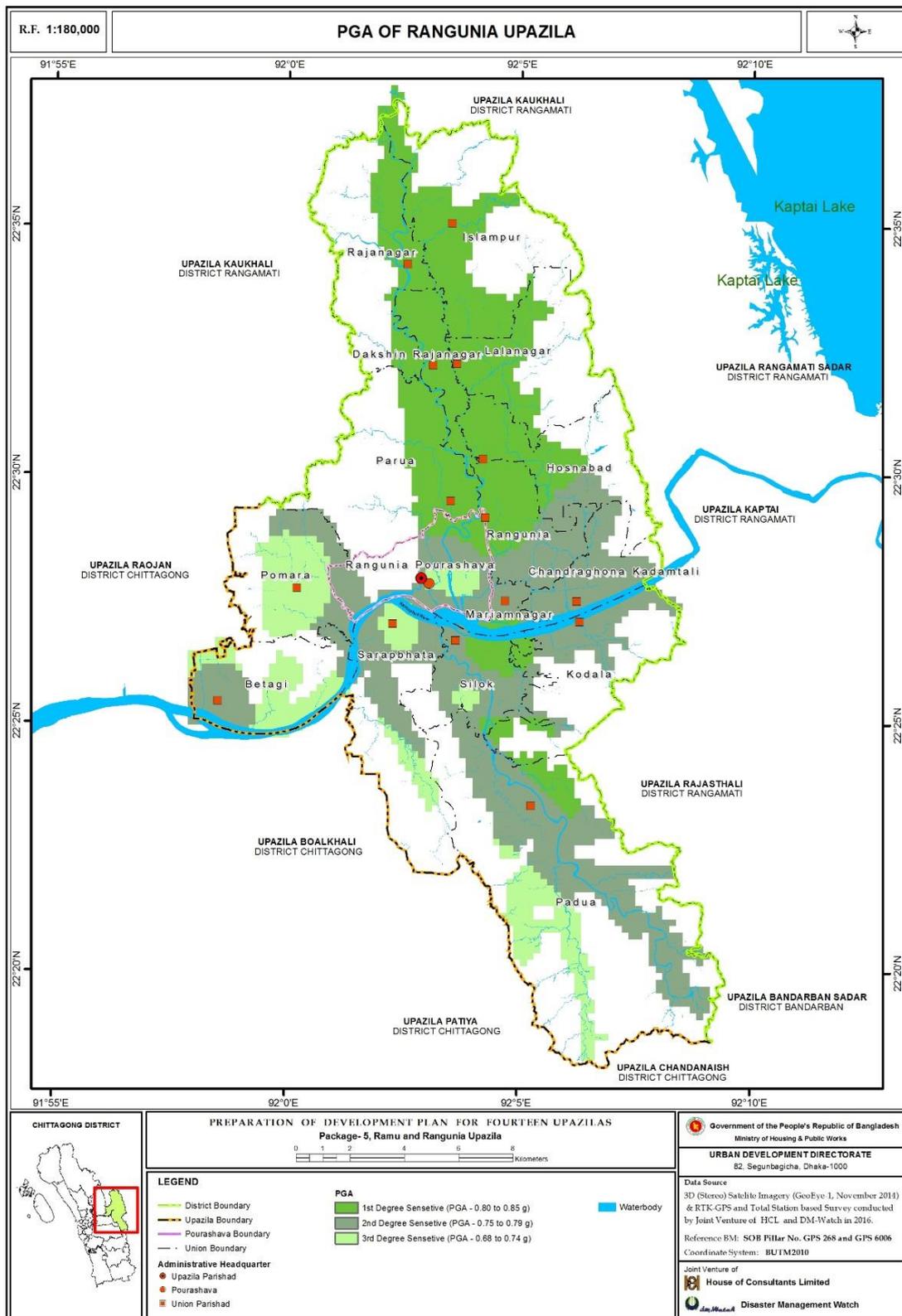
*Source: Field Survey, 2016*



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

Map 6.19: Geology (PGA) of Rangunia Upazila





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### 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**

| <b>Consideration of Affecting Factors for Planning</b> |                   |                    |                   |
|--|-------------------|--------------------|-------------------|
| <b>Factors</b>   | <b>Area(sq.m)</b> | <b>Area (Acre)</b> | <b>Percentage</b> |
| 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             |

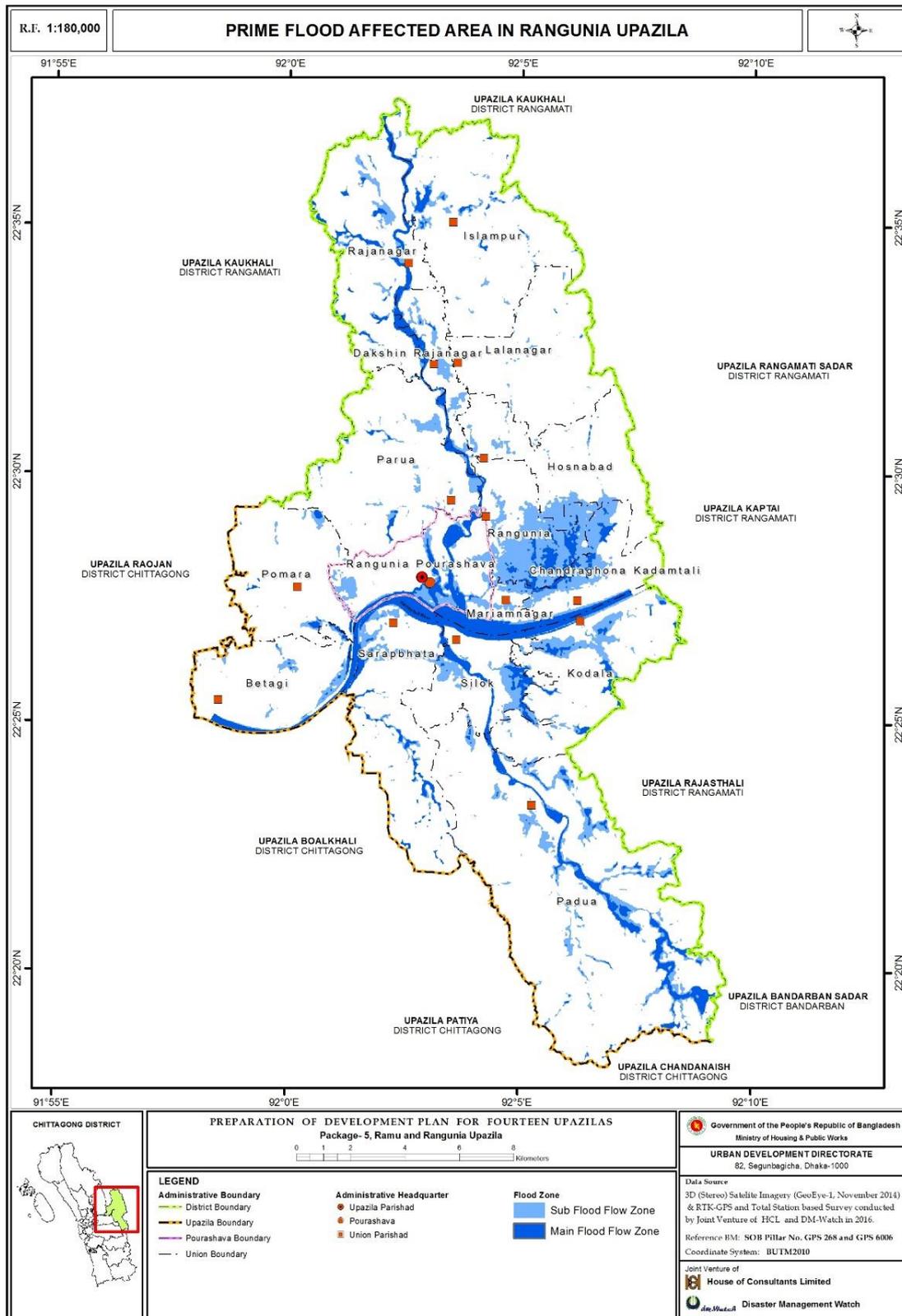
*Source: Field Survey, 2016*



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

Map 6.23: Prime Flood Affected Area of Rangunia Upazila

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### 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**

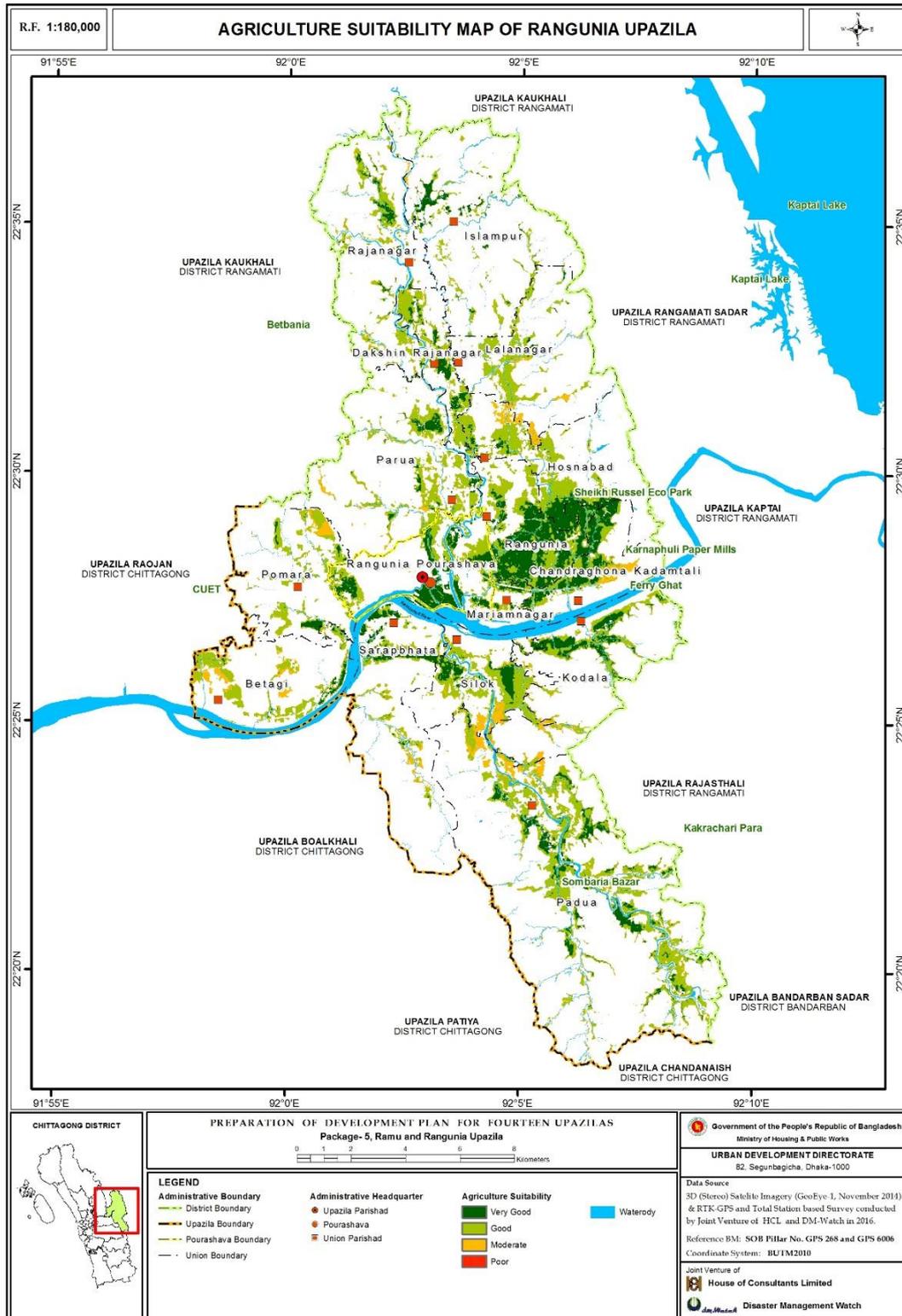
| Category  | Area (sq.m) | Area (Acre) | Percentage |
|-----------|-------------|-------------|------------|
| Very Poor | 14437500.00 | 3567.58     | 4.15       |
| Poor      | 4687500.00  | 1158.31     | 1.35       |
| Moderate  | 5437500.00  | 1343.64     | 1.56       |
| Good      | 79312500.00 | 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

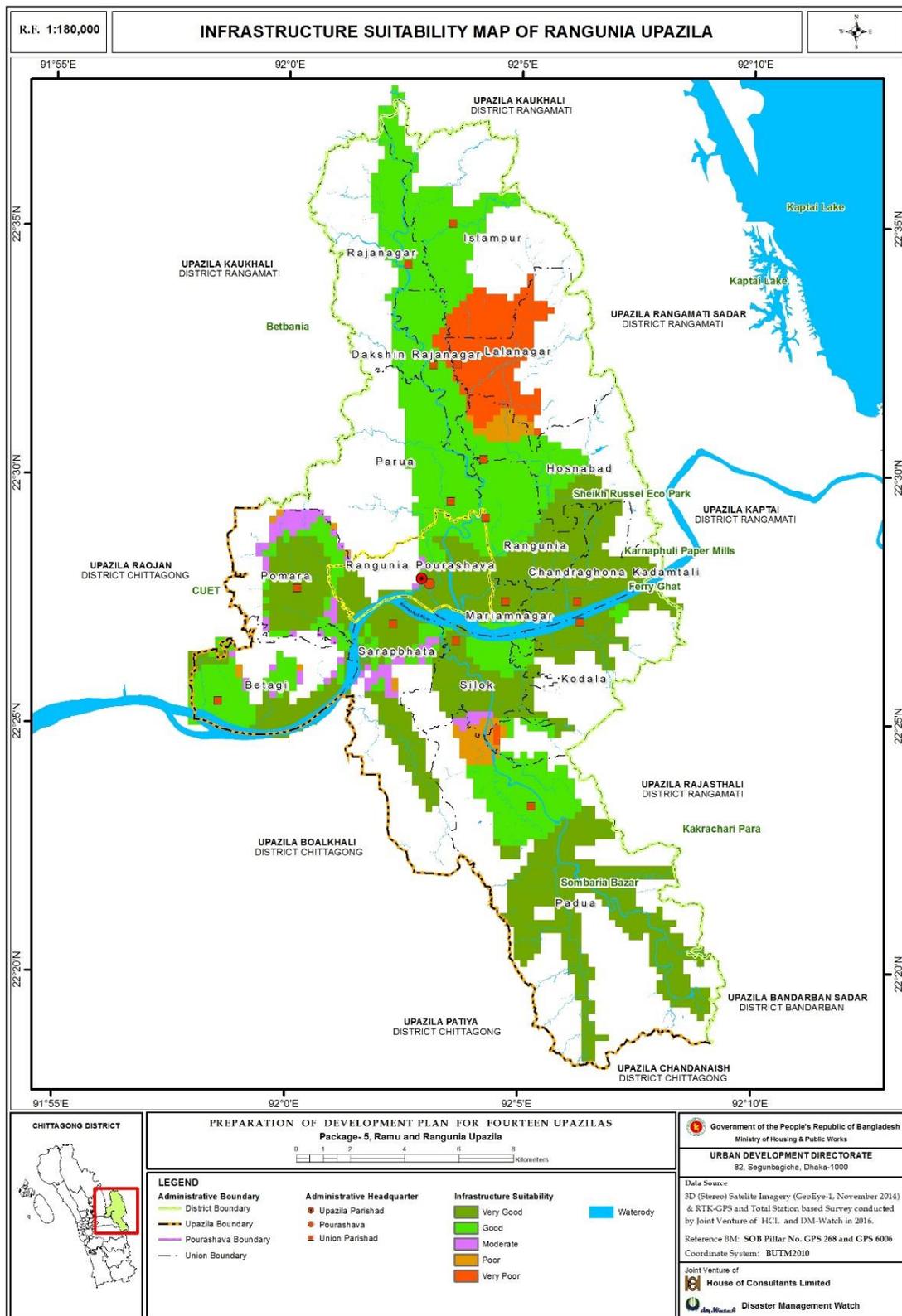
Map 6.24: Agriculture Suitability of Rangunia Upazila



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

Map 6.26: Infrastructure Suitability of Rangunia Upazila

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### **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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### 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**

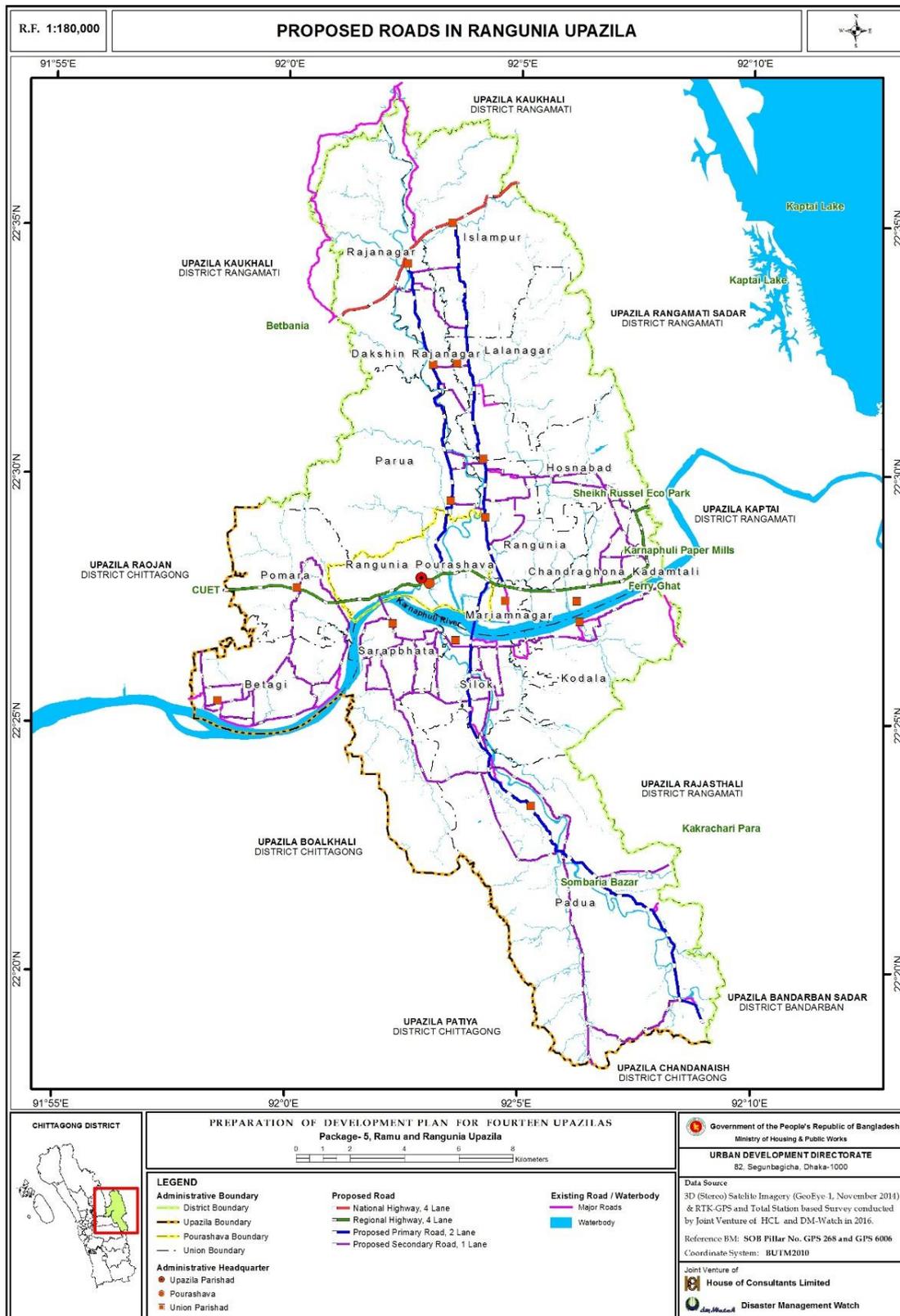
| Road Category                   | Lane | Road Width            | No. of Affected Structure |            |            |             |
|---------------------------------|------|-----------------------|---------------------------|------------|------------|-------------|
|                                 |      |                       | 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        |
| <b>Total Affected Structure</b> |      |                       | <b>604</b>                | <b>830</b> | <b>819</b> | <b>2253</b> |

*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

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### 6.10 Water Supply Protection Zone

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

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

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

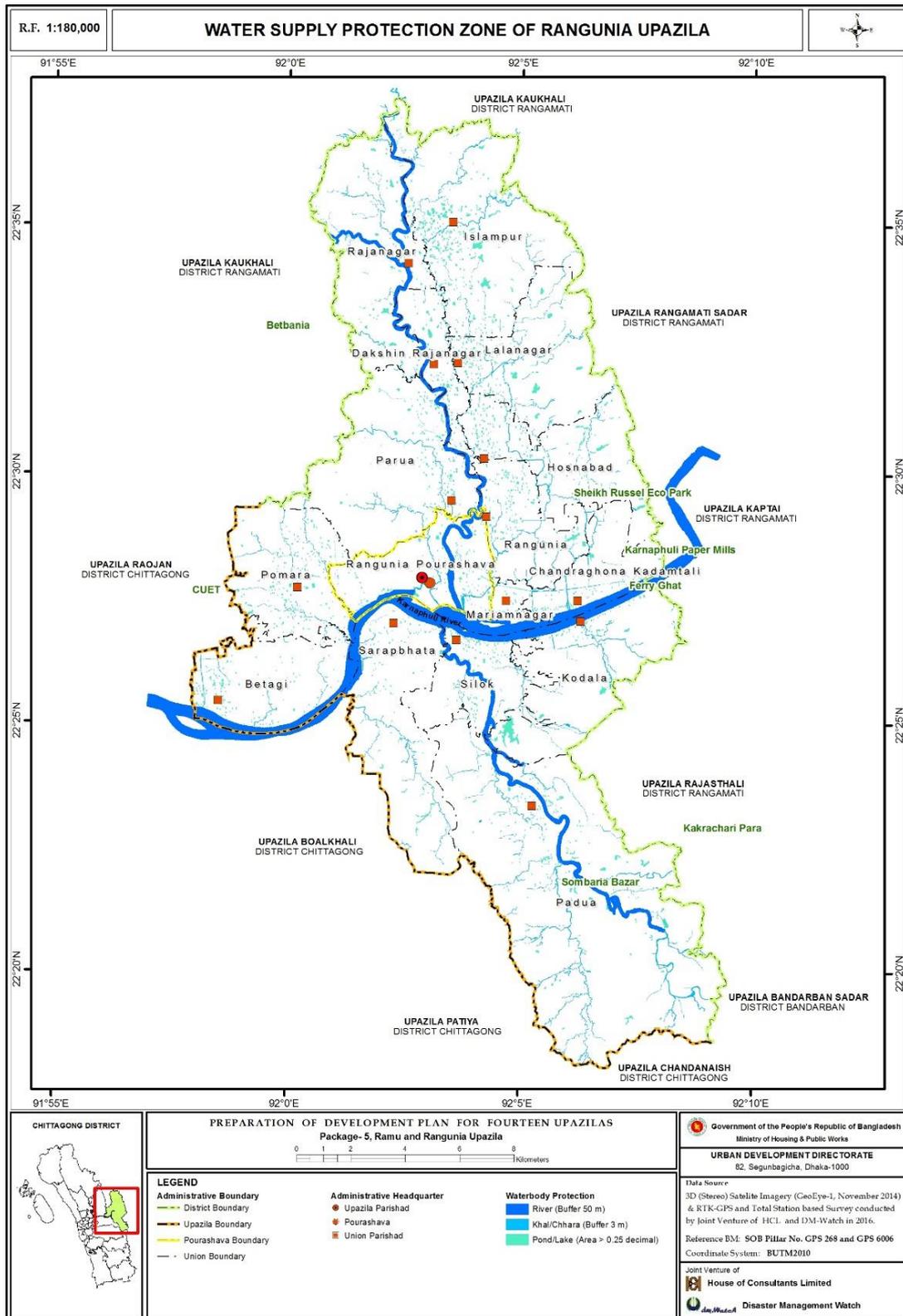
| Category                        | Buffer Width | No. of Affected Structure |            |        |       |
|---------------------------------|--------------|---------------------------|------------|--------|-------|
|                                 |              | Pucca                     | Semi 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   |
| <b>Total Affected Structure</b> |              | 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

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### **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**

| <b>Zoning</b>                | <b>Area(sq.meter)</b> | <b>Area(sq.km)</b> | <b>Area(Acre)</b>  | <b>Percentage</b> |
|------------------------------|-----------------------|--------------------|--------------------|-------------------|
| 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              |
| <b>Total</b>                 | <b>347865648.9</b>    | <b>347.8656489</b> | <b>85959.47388</b> | <b>100.00</b>     |

*Source: Field Survey, 2016*





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### ***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.



## **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.

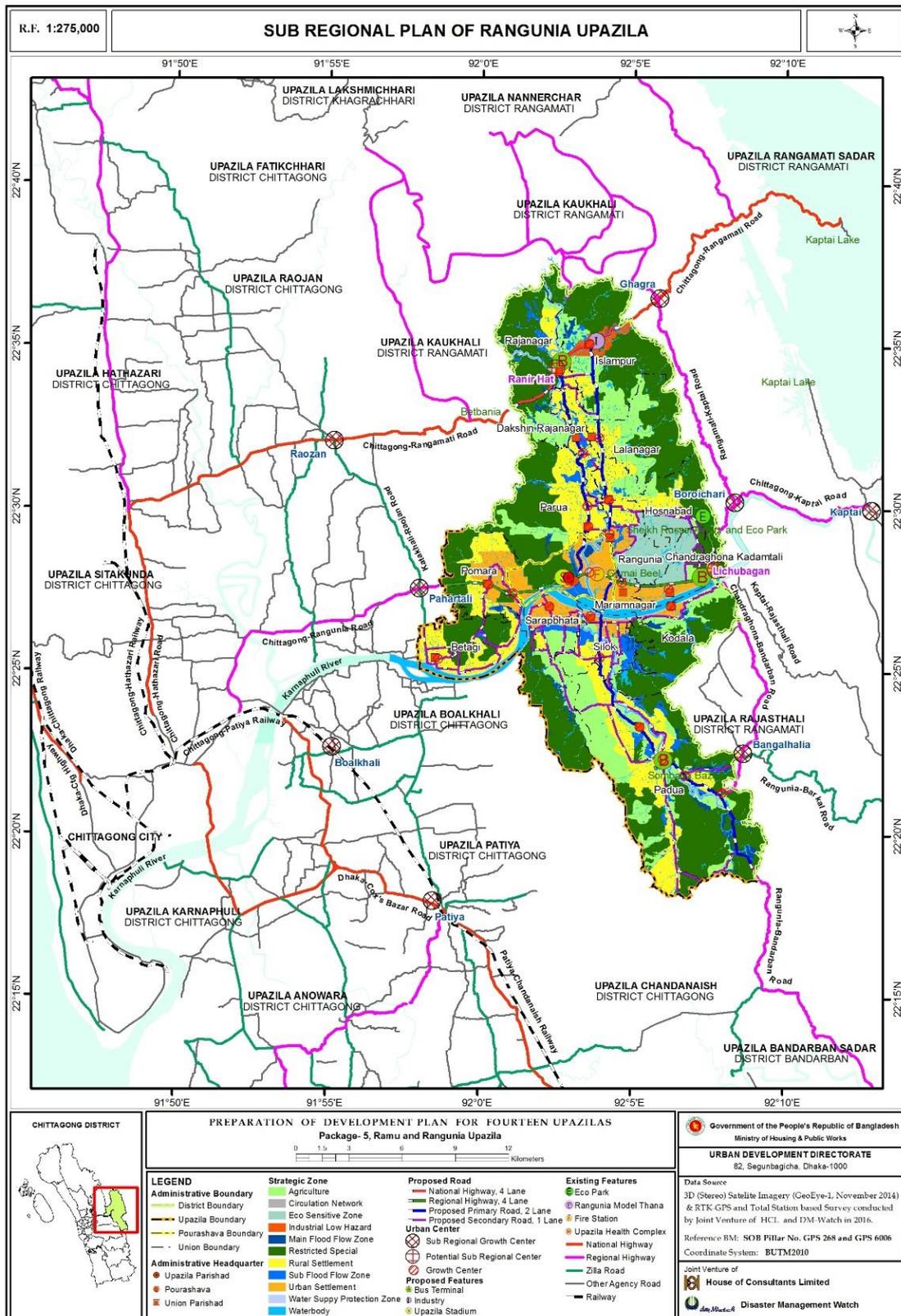
Policy 2: Identification of flood hazard prone zones and river erosion areas.

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**

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#### **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)   |
|-----------------------------|--------------------------------|------------|------------------------|-------------------|----------------------|---|
| <b>Education</b>            | 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                   |   |
| <b>Open Space</b>           | Play field/ground              | 20000      | 3                      | 2                 | 6                    |   |
|                             | Neighbourhood park/Park        | 10000      | 1                      | 4                 | 1                    | Ward-03 (1), Ward-07(1), Ward-08(1)   |
| <b>Recreational</b>         | Cinema/Theatre                 | 20000      | 1                      | 2                 | 2                    |   |
| <b>Health</b>               | 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)             |
| <b>Community Facilities</b> | 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                    |   |
| <b>Utilities</b>            | 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)  |
|   | Telephone exchange  | 20000      | 0.5                    | 2                 | 1                    |  |
|   | Fuel Station        | 20000      | 0.5                    | 2                 | 1                    |  |
| <b>Commerce and Shopping</b>            | 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),<br>Ward-02 (1),<br>Ward-03 (3),<br>Ward-04 (2),<br>Ward-05(2),<br>Ward-06(2),<br>Ward-07(2),<br>Ward-08(3),<br>Ward-09 (2) |
|   | Neighborhood Market | 10000      | 1                      | 2                 | 2                    | Ward-03 (1),<br>Ward-07(1),<br>Ward-08(1)  |
| <b>Industry</b>                         | Small scale         | 1000       | 1.5                    | 44                | 66                   | Ward-01 (4),<br>Ward-02 (3),<br>Ward-03(8),<br>Ward-04(4),<br>Ward-05(4),<br>Ward-06(4),<br>Ward-07(5),<br>Ward-08(7),<br>Ward-09(4)   |
|   | Heavy Industry      | 10000      | 5                      | 4                 | 20                   | Ward-03 (1),<br>Ward-07(1),<br>Ward-08(1)  |
| <b>Transportation</b>                   | Bus terminal        | 20000      | 1                      | 2                 | 2                    |  |
|   | Truck terminal      | 20000      | 0.5                    | 2                 | 1                    |  |

## **CHAPTER 8**

### **RURAL AREA PLAN**

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#### **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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| Betagi-Proposed Facilities   |                                |            |                        |                   |                      |  |
|------------------------------|--------------------------------|------------|------------------------|-------------------|----------------------|--|
| Facilities                   | Category                       | Population | Standard Area per acre | No. of Facilities | Provided Area (acre) | Location Ward (No. of Facilities)  |
| <b>Education</b>             | Primary School/ kindergarten   | 5000       | 2                      | 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                   |  |
| <b>Open Space</b>            | Play field/ground              | 20000      | 3                      | 1                 | 3                    |  |
|                              | Neighborhood park/Park/Park    | 10000      | 1                      | 3                 | 3                    | Ward-04 (1);   |
| <b>Health</b>                | Health centre/Maternity clinic | 5000       | 1                      | 5                 | 5                    | Ward-04 (1); Ward-03 (1); Ward-02 (1); Ward-06 (1); Ward-09 (1)  |
| <b>Community Facilities</b>  | Mosque/Church/Temple           | 20000      | 0.5                    | 1                 | 0.5                  |  |
|                              | Eidgah                         | 20000      | 1                      | 1                 | 1                    |  |
|                              | Graveyard                      | 20000      | 1                      | 1                 | 1                    |  |
|                              | Community centre               | 20000      | 1                      | 1                 | 1                    |  |
|                              | Post office                    | 20000      | 0.5                    | 1                 | 0.5                  |  |
| <b>Utilities</b>             | Water supply                   | 20000      | 1                      | 1                 | 1                    |  |
|                              | Gas                            | 20000      | 1                      | 1                 | 1                    |  |
|                              | Electric sub-station           | 20000      | 1                      | 1                 | 1                    |  |
| <b>Commerce and Shopping</b> | Wholesale market               | 20000      | 1                      | 1                 | 1                    |  |
|                              | Retail sale market             | 20000      | 1                      | 1                 | 1                    |  |
|                              | Corner Shop                    | 2500       | 0.25                   | 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);   |
| <b>Industry</b>              | 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);   |
| <b>Transportation</b>        | Bus terminal                   | 20000      | 1                      | 1                 | 1                    |  |
|                              | Truck terminal                 | 20000      | 0.5                    | 1                 | 0.5                  |  |

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| Chandroghona Kadamtoli-Proposed Facilities |                                |            |                        |                   |                      |   |
|--|--------------------------------|------------|------------------------|-------------------|----------------------|---|
| Facilities                                 | Category                       | Population | Standard Area per acre | No. of Facilities | Provided Area (acre) | Location Ward (No. of Facilities)   |
| <b>Education</b>                           | Primary School/ kindergarten   | 5000       | 2                      | 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                   |   |
| <b>Open Space</b>                          | 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);  |
| <b>Health</b>                              | 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);                           |
| <b>Community Facilities</b>                | 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                    |   |
| <b>Utilities</b>                           | Water supply                   | 20000      | 1                      | 2                 | 2                    |   |
|  | Gas                            | 20000      | 1                      | 2                 | 2                    |   |
|  | Electric sub-station           | 20000      | 1                      | 2                 | 2                    |   |
| <b>Commerce and Shopping</b>               | 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);  |
| <b>Industry</b>                            | Small scale                    | 1000       | 1.5                    | 40                | 60                   | Ward-01 (7);Ward-   |

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| <b>Chandroghona Kadamtoli-Proposed Facilities</b> |                 |                   |                               |                          |                             |   |
|---|-----------------|-------------------|-------------------------------|--------------------------|-----------------------------|---|
| <b>Facilities</b>                                 | <b>Category</b> | <b>Population</b> | <b>Standard Area per acre</b> | <b>No. of Facilities</b> | <b>Provided Area (acre)</b> | <b>Location Ward (No. of Facilities)</b>  |
|   |                 |                   |                               |                          |                             | 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);                                  |
| <b>Transportation</b>                             | Bus terminal    | 20000             | 1                             | 2                        | 2                           |   |
|   | Truck terminal  | 20000             | 0.5                           | 2                        | 1                           |   |

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

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| <b>Islampur-Proposed Facilities</b> |                                |                   |                               |                          |                             |  |
|-------------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------|-----------------------------|--|
| <b>Facilities</b>                   | <b>Category</b>                | <b>Population</b> | <b>Standard Area per acre</b> | <b>No. of Facilities</b> | <b>Provided Area (acre)</b> | <b>Location Ward (No. of Facilities)</b>   |
| <b>Education</b>                    | 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                          |  |
| <b>Open Space</b>                   | Play field/ground              | 20000             | 3                             | 1                        | 3                           |  |
|                                     | Neighborhood park/Park         | 10000             | 1                             | 3                        | 3                           | Ward-08 (1); Ward-07 (1);  |
| <b>Health</b>                       | Health centre/Maternity clinic | 5000              | 1                             | 5                        | 5                           | Ward-08 (1); Ward-07 (2); Ward-05 (1); Ward-01 (1)   |
| <b>Community Facilities</b>         | 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                         |  |
| <b>Utilities</b>                    | Water supply                   | 20000             | 1                             | 1                        | 1                           |  |
|                                     | Gas                            | 20000             | 1                             | 1                        | 1                           |  |
|                                     | Electric sub-station           | 20000             | 1                             | 1                        | 1                           |  |
| <b>Commerce and Shopping</b>        | Wholesale market               | 20000             | 1                             | 1                        | 1                           |  |
|                                     | Retail sale market             | 20000             | 1                             | 1                        | 1                           |  |
|                                     | Corner Shop                    | 2500              | 0.25                          | 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);  |
| <b>Industry</b>                     | 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);  |
| <b>Transportation</b>               | 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)   |
| <b>Education</b>             | 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                   |   |
| <b>Open Space</b>            | Play field/ground              | 20000      | 3                      | 1                 | 3                    |   |
|                              | Neighborhood park/Park         | 10000      | 1                      | 3                 | 3                    | Ward-02 (1);  |
| <b>Health</b>                | Health centre/Maternity clinic | 5000       | 1                      | 5                 | 5                    | Ward-02 (1);Ward-03(1);Ward-04 (1);Ward-05 (1);Ward-09 (1);   |
| <b>Community Facilities</b>  | 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                  |   |
| <b>Utilities</b>             | Water supply                   | 20000      | 1                      | 1                 | 1                    |   |
|                              | Gas                            | 20000      | 1                      | 1                 | 1                    |   |
|                              | Electric sub-station           | 20000      | 1                      | 1                 | 1                    |   |
| <b>Commerce and Shopping</b> | Wholesale market               | 20000      | 1                      | 1                 | 1                    |   |
|                              | Retail sale market             | 20000      | 1                      | 1                 | 1                    |   |
|                              | Corner Shop                    | 2500       | 0.25                   | 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);  |
| <b>Industry</b>              | 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);  |
| <b>Transportation</b>        | Bus terminal                   | 20000      | 1                      | 1                 | 1                    |   |
|                              | Truck terminal                 | 20000      | 0.5                    | 1                 | 0.5                  |   |

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| Lalanagar-Proposed Facilities |                                |            |                        |                   |                      |   |
|-------------------------------|--------------------------------|------------|------------------------|-------------------|----------------------|---|
| Facilities                    | Category                       | Population | Standard Area per acre | No. of Facilities | Provided Area (acre) | Location Ward (No. of Facilities)                           |
| <b>Education</b>              | Primary School/ kindergarten   | 5000       | 2                      | 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                   |   |
| <b>Open Space</b>             | Play field/ground              | 20000      | 3                      | 1                 | 3                    |   |
|                               | Neighborhood park/Park         | 10000      | 1                      | 2                 | 2                    | Ward-02 (1);  |
| <b>Health</b>                 | Health centre/Maternity clinic | 5000       | 1                      | 4                 | 4                    | Ward-08 (1);Ward-07 (1);Ward-02 (1);Ward-01 (1);            |
| <b>Community Facilities</b>   | 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                  |   |
| <b>Utilities</b>              | Water supply                   | 20000      | 1                      | 1                 | 1                    |   |
|                               | Gas                            | 20000      | 1                      | 1                 | 1                    |   |
|                               | Electric sub-station           | 20000      | 1                      | 1                 | 1                    |   |
| <b>Commerce and Shopping</b>  | Wholesale market               | 20000      | 1                      | 1                 | 1                    |   |
|                               | Retail sale market             | 20000      | 1                      | 1                 | 1                    |   |
|                               | Corner Shop                    | 2500       | 0.25                   | 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);   |
| <b>Industry</b>               | Small scale                    | 1000       | 1.5                    | 19                | 28.5                 | Ward-08(4); Ward-07(3); Ward-02(6); Ward-01(4); Ward-09(1); |

## Draft Final Plan - Rangunia Upazila

Preparation of Development Plan for Fourteen Upazilas

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);<br>Ward-07 (1);<br>Ward-02 (1);<br>Ward-09 (1);<br>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);<br>Ward-07 (1);<br>Ward-02 (1);<br>Ward-09 (1);<br>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);<br>Ward-06 (1);<br>Ward-07 (2);<br>Ward-02 (1);<br>Ward-03 (1);<br>Ward-08 (1);<br>Ward-09 (1);<br>Ward-01 (2);                 |
|                | Neighborhood Market | 10000 | 1    | 2  | 2    |  |
| Industry       | Small scale         | 1000  | 1.5  | 25 | 37.5 | Ward-04 (2);<br>Ward-06 (4);<br>Ward-07 (4);<br>Ward-02 (3);<br>Ward-03 (2);<br>Ward-05 (1);<br>Ward-08 (1);<br>Ward-09 (3);<br>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)   |
| <b>Education</b>            | 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                   |   |
| <b>Open Space</b>           | 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);                           |
| <b>Health</b>               | 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); |
| <b>Community Facilities</b> | 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                    |   |
| <b>Utilities</b>            | 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)   |
| <b>Commerce and Shopping</b> | 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);                           |
| <b>Industry</b>              | 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);                           |
| <b>Transportation</b>        | 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);<br>Ward-09 (1);<br>Ward-04 (1);<br>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);<br>Ward-04 (1);   |
| Health                    | Health centre/Maternity clinic | 5000       | 1                      | 4                 | 4                    | Ward-08 (1);<br>Ward-09 (1);<br>Ward-04 (1);<br>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);<br>Ward-09 (2);<br>Ward-04 (2);<br>Ward-02 (1);                 |
|                           | Neighborhood Market            | 10000      | 1                      | 2                 | 2                    | Ward-09 (1);<br>Ward-04 (1);   |
| Industry                  | Small scale                    | 1000       | 1.5                    | 19                | 28.5                 | Ward-08 (3);<br>Ward-09 (6);<br>Ward-06 (1);<br>Ward-04 (6);<br>Ward-02 (4); |
|                           | Heavy Industry                 | 10000      | 5                      | 2                 | 10                   | Ward-09 (1);<br>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)   |
| <b>Education</b>             | 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                   |   |
| <b>Open Space</b>            | Play field/ground              | 20000      | 3                      | 2                 | 6                    |   |
|                              | Neighborhood park/Park         | 10000      | 1                      | 3                 | 3                    | Ward-08 (1);  |
| <b>Health</b>                | 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);                |
| <b>Community Facilities</b>  | 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                    |   |
| <b>Utilities</b>             | Water supply                   | 20000      | 1                      | 2                 | 2                    |   |
|                              | Gas                            | 20000      | 1                      | 2                 | 2                    |   |
|                              | Electric sub-station           | 20000      | 1                      | 2                 | 2                    |   |
| <b>Commerce and Shopping</b> | 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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| 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/Maternity 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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Package 05-(Ramu Upazila, District-Cox's Bazar and Rangunia Upazila, District-Chittagong)

| Dakshin Rajanagar -Proposed |                     |            |                        |                   |                      |   |
|-----------------------------|---------------------|------------|------------------------|-------------------|----------------------|---|
| Facilities                  | Category            | Population | Standard Area per acre | No. of Facilities | Provided Area (acre) | Location Ward (No. of Facilities)   |
|                             |                     |            |                        |                   |                      | (1);Ward-07<br>(2);Ward-05<br>(1);Ward-02<br>(2);Ward-04 (1);   |
|                             | Neighborhood Market | 10000      | 1                      | 2                 | 2                    | Ward-07 (1);  |
| Industry                    | Small scale         | 1000       | 1.5                    | 24                | 36                   | Ward-09<br>(2);Ward-08<br>(5);Ward-06<br>(3);Ward-07<br>(5);Ward-03(1);Ward-05<br>(2);Ward-02<br>(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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| <b>Rangunia-Proposed Facilities</b> |                      |                   |                               |                          |                             |  |
|-------------------------------------|----------------------|-------------------|-------------------------------|--------------------------|-----------------------------|--|
| <b>Facilities</b>                   | <b>Category</b>      | <b>Population</b> | <b>Standard Area per acre</b> | <b>No. of Facilities</b> | <b>Provided Area (acre)</b> | <b>Location Ward (No. of Facilities)</b>   |
|                                     | Gas                  | 20000             | 1                             | 1                        | 1                           |  |
|                                     | Electric sub-station | 20000             | 1                             | 1                        | 1                           |  |
| <b>Commerce and Shopping</b>        | Wholesale market     | 20000             | 1                             | 1                        | 1                           |  |
|                                     | Retail sale market   | 20000             | 1                             | 1                        | 1                           |  |
|                                     | Corner Shop          | 2500              | 0.25                          | 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);   |
| <b>Industry</b>                     | 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);   |
| <b>Transportation</b>               | Bus terminal         | 20000             | 1                             | 1                        | 1                           |  |
|                                     | Truck terminal       | 20000             | 0.5                           | 1                        | 0.5                         |  |

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| Sharaphbata-Proposed Facilities |                                |            |                        |                   |                      |   |
|---------------------------------|--------------------------------|------------|------------------------|-------------------|----------------------|---|
| Facilities                      | Category                       | Population | Standard Area per acre | No. of Facilities | Provided Area (acre) | Location Ward (No. of Facilities)   |
| <b>Education</b>                | Primary School/ kindergarten   | 5000       | 2                      | 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                   |   |
| <b>Open Space</b>               | Play field/ground              | 20000      | 3                      | 2                 | 6                    |   |
|                                 | Neighborhood park/Park         | 10000      | 1                      | 3                 | 3                    | Ward-04 (1); Ward-08 (1);   |
| <b>Health</b>                   | Health centre/Maternity clinic | 5000       | 1                      | 7                 | 7                    | Ward-03 (1); Ward-07 (1); Ward-04 (2); Ward-05 (1); Ward-08 (1);  |
| <b>Community Facilities</b>     | 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                    |   |
| <b>Utilities</b>                | Water supply                   | 20000      | 1                      | 2                 | 2                    |   |
|                                 | Gas                            | 20000      | 1                      | 2                 | 2                    |   |
|                                 | Electric sub-station           | 20000      | 1                      | 2                 | 2                    |   |
| <b>Commerce and Shopping</b>    | 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);<br>Ward-02 (1);<br>Ward-03 (4);<br>Ward-06 (1);<br>Ward-09 (2);<br>Ward-07 (5);<br>Ward-04 (9);<br>Ward-05 (3);<br>Ward-08 (6); |
|                                 | Heavy Industry | 10000      | 5                      | 3                 | 15                   | Ward-04 (1);<br>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);<br>Ward-03(1);<br>Ward-08 (1);<br>Ward-06 (1);<br>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);<br>Ward-03(1);<br>Ward-08 (1);<br>Ward-06 (1);<br>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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| 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);<br>Ward-03(1);<br>Ward-08 (2);<br>Ward-06 (1);<br>Ward-07 (2);<br>Ward-05 (1);<br>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**

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

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### **CHAPTER 10 CONCLUSION**

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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.