

## **Chapter 6: SUB REGIONAL AND STRUCTURE PLAN**

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

#### **6.1.1 Nature of Sub-Regional Plan**

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

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

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

Strategic Plan would be prepared for 20 years for Rangunia Upazila according to the guidelines form which will dictate the development plan such policies as National policies, Formulated and Integrated different sectoral strategies at sub regional level, spatially interpreted sectoral strategies at sub regional level, formulated Conservation Plan at sub regional level and formulated Development Plan.

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

Zoning generally allows the authority to control the use of land and development of land. Zoning is an important tool for guiding the private development, so that land is used in a way that promotes both the best utilization of the land and the prosperity, health and welfare of the residents. Naturally, Zoning is enacted by the law by following respective procedures. Regional Structure Zoning is comprehensive planning process that allows a city or region to develop a plan for creating and maintaining a desirable environment and safe and healthy community. Once a plan is adopted, it guides local officials in making their day to day decisions and becomes a factor in their decision-making process. By creating zoning categories that separate uses, the city assures that adequate space is provided for each use and that a transition area or buffer exists between distinct and incompatible uses. Adequate separation of uses prevents congestion, minimizes fire and other health and safety hazards, and keeps residential areas free of potential commercial and industrial nuisances such as smoke, noise and light.

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

- ✓ Minimising adverse effect resulting from the inappropriate location or use of sites and structures,

- ✓ Conserving limited land resources and encouraging their efficient use.

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**

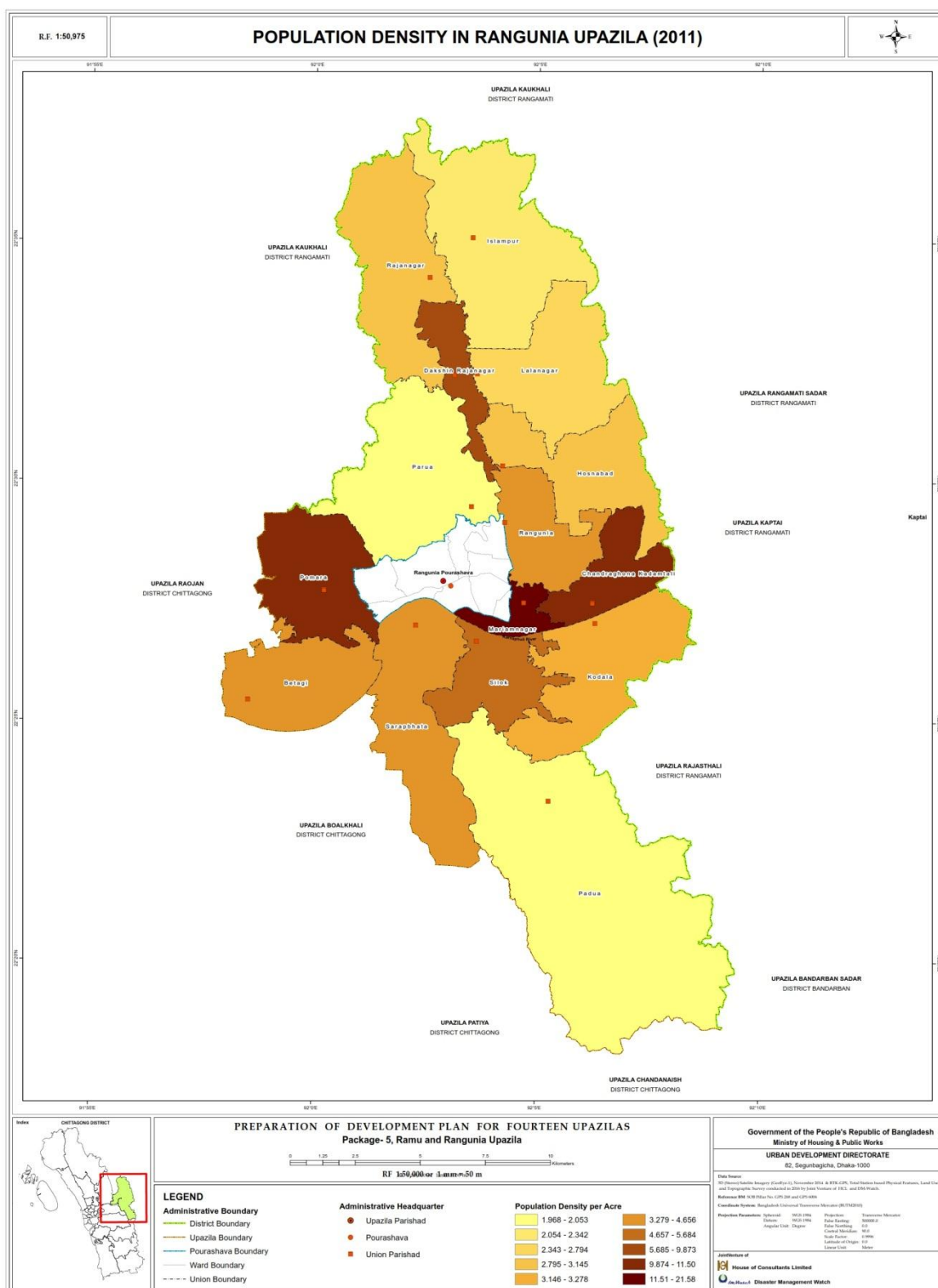
- (i) The main objective of Structure Plan is to demarcate the future growth areas and set a strategy for future development of Rangunia Upazila.
- (ii) To identify the urban areas and different rural centres of the upazila; and determine the planning requirements for the urban area, rural centers and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

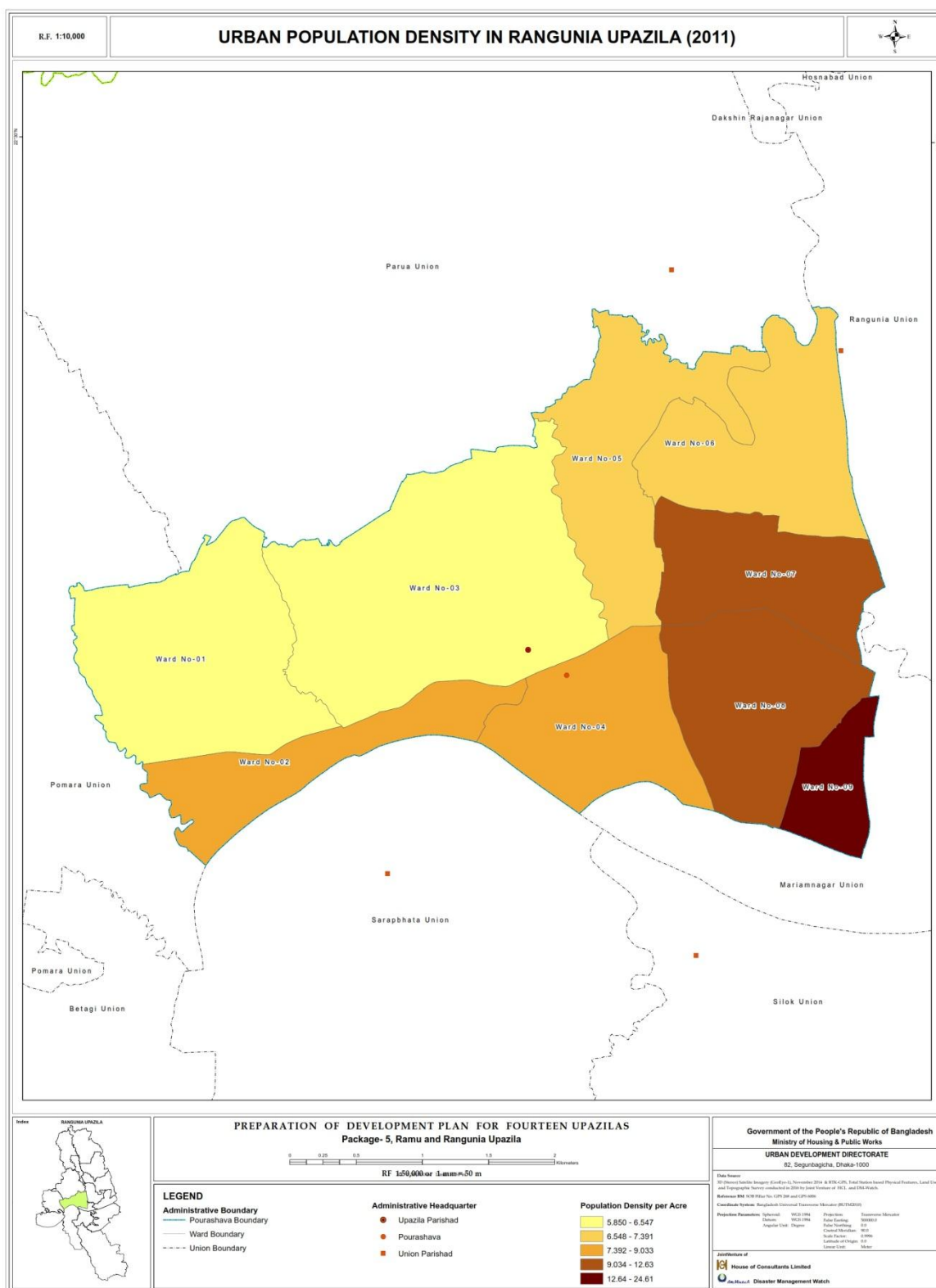
### 6.3 Description of the Project Area

Rangunia Upazila is situated under Chittagong District. It has total area of 410.73 sq.km, located in between 22°18' and 22°370' 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:

**Table 6.1: Study Area Demarcation**

Study Area Demarcation						
Union	Area(sq.m)	Area (sq.km)	Area(Acre )	Percentage	Population (2011)	Density
Betagi	17828119.80	17.83	4405.42	5.13	20510.00	5
Chandraghona	10638268.36	10.64	2628.77	3.06	30221.00	11
Dakshin Rajanagar	7345580.55	7.35	1815.13	2.11	17920.00	10
Hosnabad	19489121.14	19.49	4815.87	5.60	14871.00	3
Islampur	32911103.87	32.91	8132.51	9.46	19044.00	2
Kodala	23411446.81	23.41	5785.09	6.73	18965.00	3
Lalanagar	21067359.91	21.07	5205.86	6.06	14545.00	3
Mariamnagar	4014744.46	4.01	992.06	1.15	21413.00	22
Padua	73346405.47	73.35	18124.29	21.08	35668.00	2
Parua	28424575.62	28.42	7023.87	8.17	14423.00	2
Pomra	18259656.86	18.26	4512.06	5.25	50643.00	11
Rajanagar	24672036.74	24.67	6096.59	7.09	19172.00	3
Rangunia	12710536.12	12.71	3140.84	3.65	13354.00	4
Sharapbhata	25760230.27	25.76	6365.49	7.41	25344.00	4
Shilok	12821476.51	12.82	3168.26	3.69	18009.00	6
<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>





**Map 6.2: Urban Population Density in Rangunia Upazila (2011)**

## 6.4 Thematic Maps

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

### 6.4.1 Existing Land Use

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

**Table 6.2: Existing Land use**

<b>Landuse</b>	<b>Area (Sq.m)</b>	<b>Area (Sq. km)</b>	<b>Area (Hectre)</b>	<b>Area (Acre)</b>	<b>Percentag e</b>
Agriculture	151539067.69	151.54	15153.91	37446.12	43.56
Hilly Area	124615714.57	124.62	12461.57	30793.21	35.82
Waterbody	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 Recidental 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>



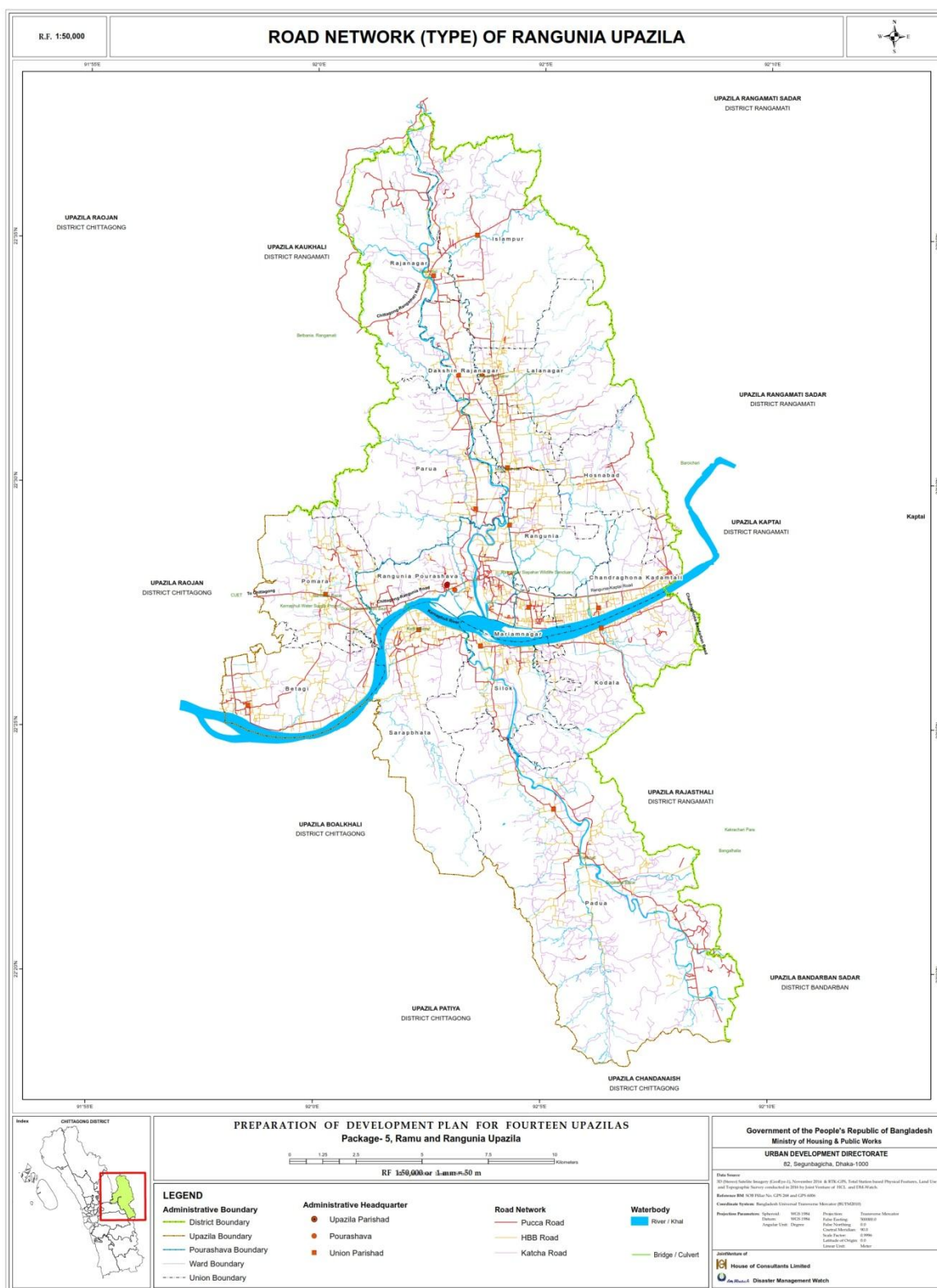


### 6.4.2 Existing Circulation Network

From the Physical feature survey the road network of the study area has been summarized in the below table. 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	HBB	Percentage	Katcha	Percentage	Pucca	Percentage	Total
Betagi	158	46.06	137	39.94	48	13.99	343
Chandraghona	159	56.99	95	34.05	25	8.96	279
Dakshin Rajanagar	61	40.13	63	41.45	28	18.42	152
Hosnabad	142	39.55	178	49.58	39	10.86	359
Islampur	56	20.97	172	64.42	39	14.61	267
Kodala	107	31.85	207	61.61	22	6.55	336
Lalanagar	126	50.81	103	41.53	19	7.66	248
Mariamnagar	88	51.16	31	18.02	53	30.81	172
Padua	160	20.33	546	69.38	81	10.29	787
Parua	91	26.00	238	68.00	21	6.00	350
Pomra	196	44.95	179	41.06	61	13.99	436
Rajanagar	50	25.77	103	53.09	41	21.13	194
Rangunia	142	49.31	106	36.81	40	13.89	288
Sharapbhata	153	51.52	111	37.37	33	11.11	297
Shilok	127	51.42	88	35.63	32	12.96	247
<b>Rangunia Paurashava</b>	<b>HBB</b>	<b>Percentage</b>	<b>Katcha</b>	<b>Percentage</b>	<b>Pucca</b>	<b>Percentage</b>	<b>Total</b>
Ward No.01	22	39.29	19	33.93	15	26.79	56
Ward No.02	4	14.81	11	40.74	12	44.44	27
Ward No.03	16	14.95	66	61.68	25	23.36	107
Ward No.04	25	55.56	13	28.89	7	15.56	45
Ward No.05	22	37.93	22	37.93	14	24.14	58
Ward No.06	39	65.00	11	18.33	10	16.67	60
Ward No.07	25	36.76	12	17.65	31	45.59	68
Ward No.08	60	52.17	23	20.00	32	27.83	115
Ward No.09	19	45.24	7	16.67	16	38.10	42
<b>Total</b>	<b>2048</b>		<b>2541</b>		<b>744</b>		<b>5333</b>



**Map 6.4: Road Network (Type) of Rangunia Upazila**



### 6.4.3 Structure type in Urban and Rural Area

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

**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



#### 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. From the consultation it has been found that there are single cropping, double cropping and triple cropping land which comprises 4.78%, 28.42% and 10.28% of total area respectively.

**Table 6.5: Cropping Intensity**

<b>Cropping Intensity</b>	<b>Acre</b>	<b>Area(Acre)</b>	<b>Percentage</b>
Single	16633100.00	4110.13	4.78
Double	98855200.00	24427.65	28.42
Triple	35772200.00	8839.50	10.28

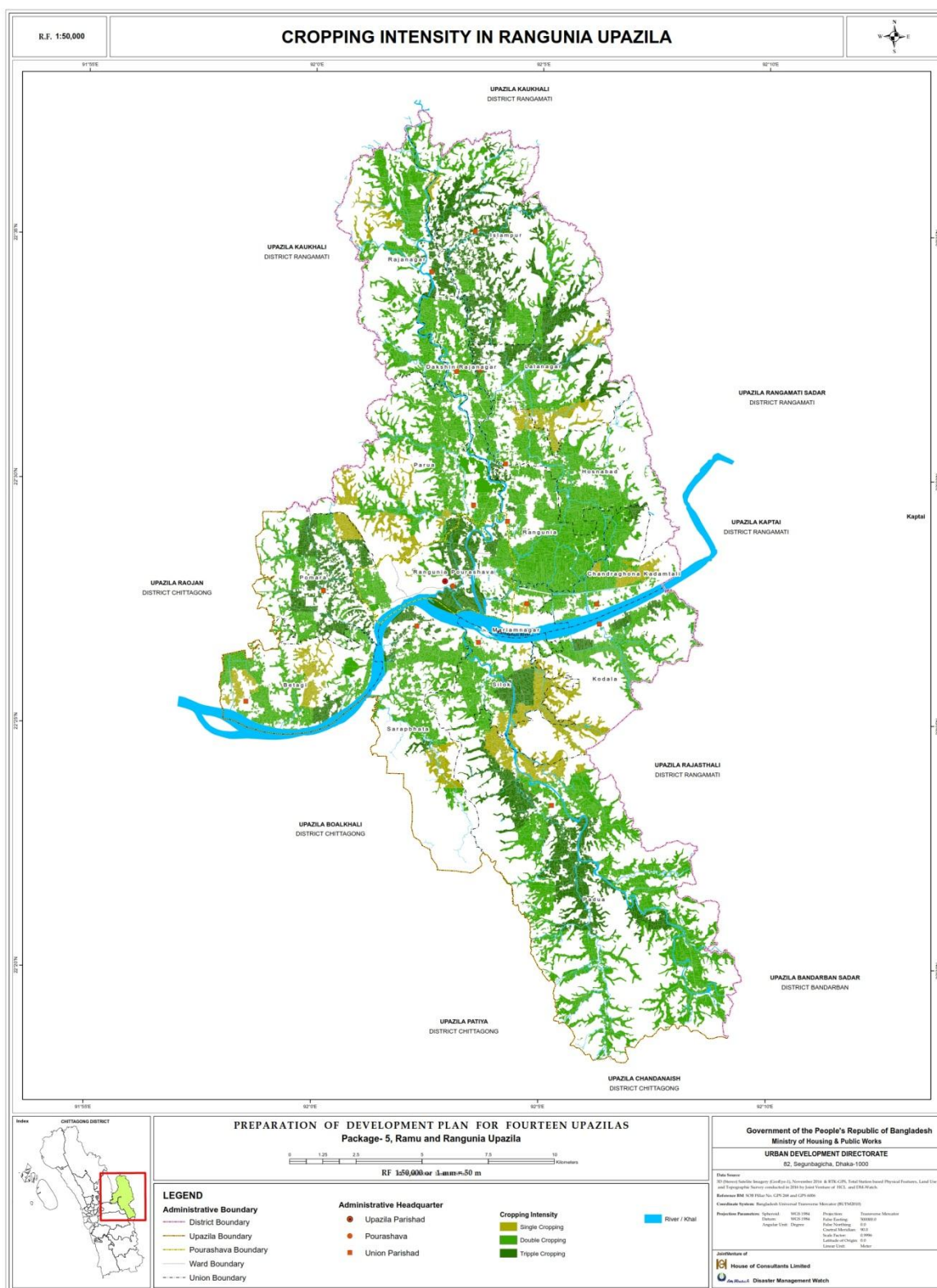
#### 6.4.5 Vegetation

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

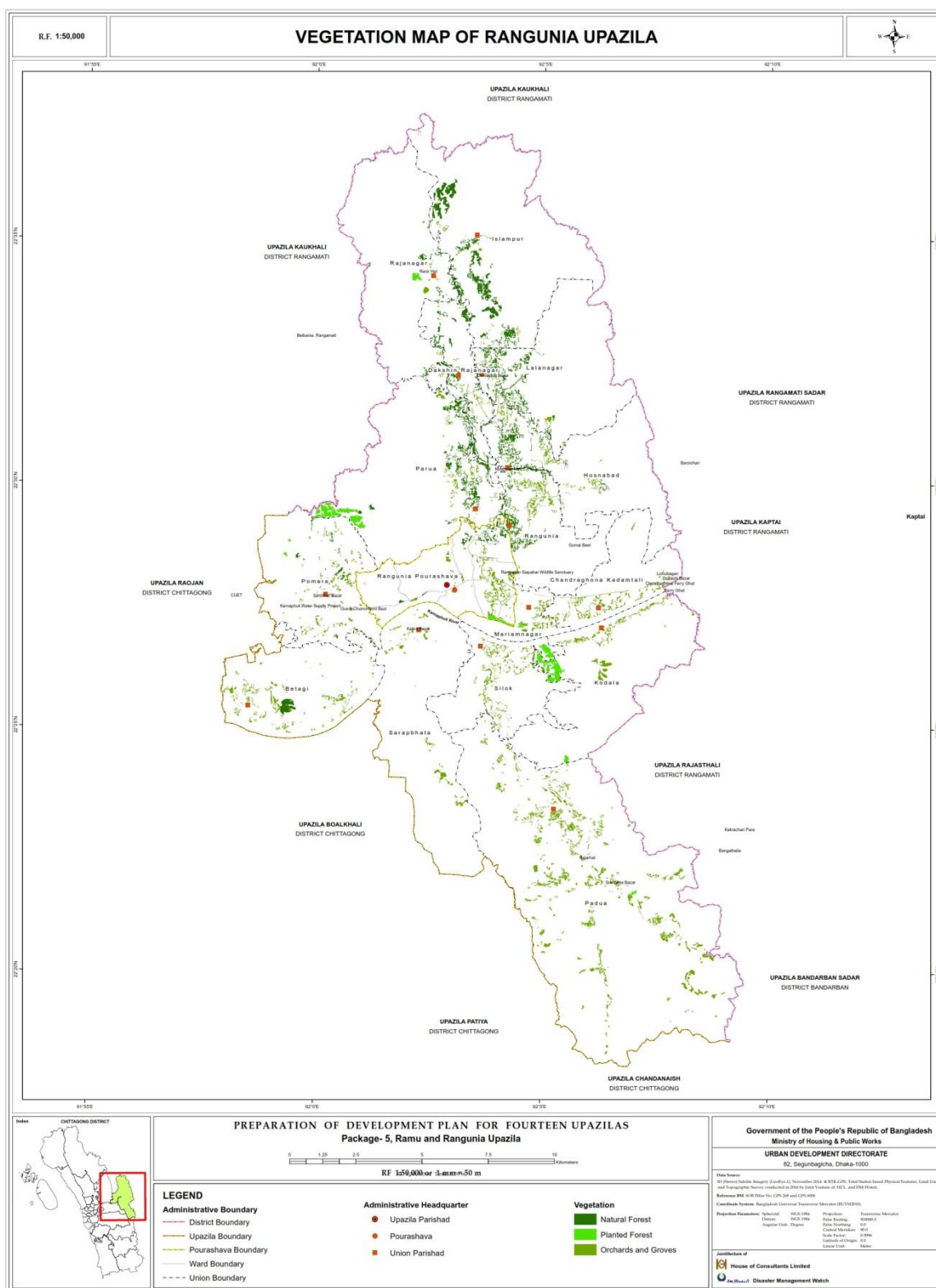
**Table 6.6: Vegetation Sceanrio of Rangunia Upazila**

<b>Vegetation</b>	<b>Area(Sq.m)</b>	<b>Area(Acre)</b>
Natural Forest	556393.6143	137.49
Planted Forest	52293.85	12.92
Orchards and Groves	906103.62	223.90





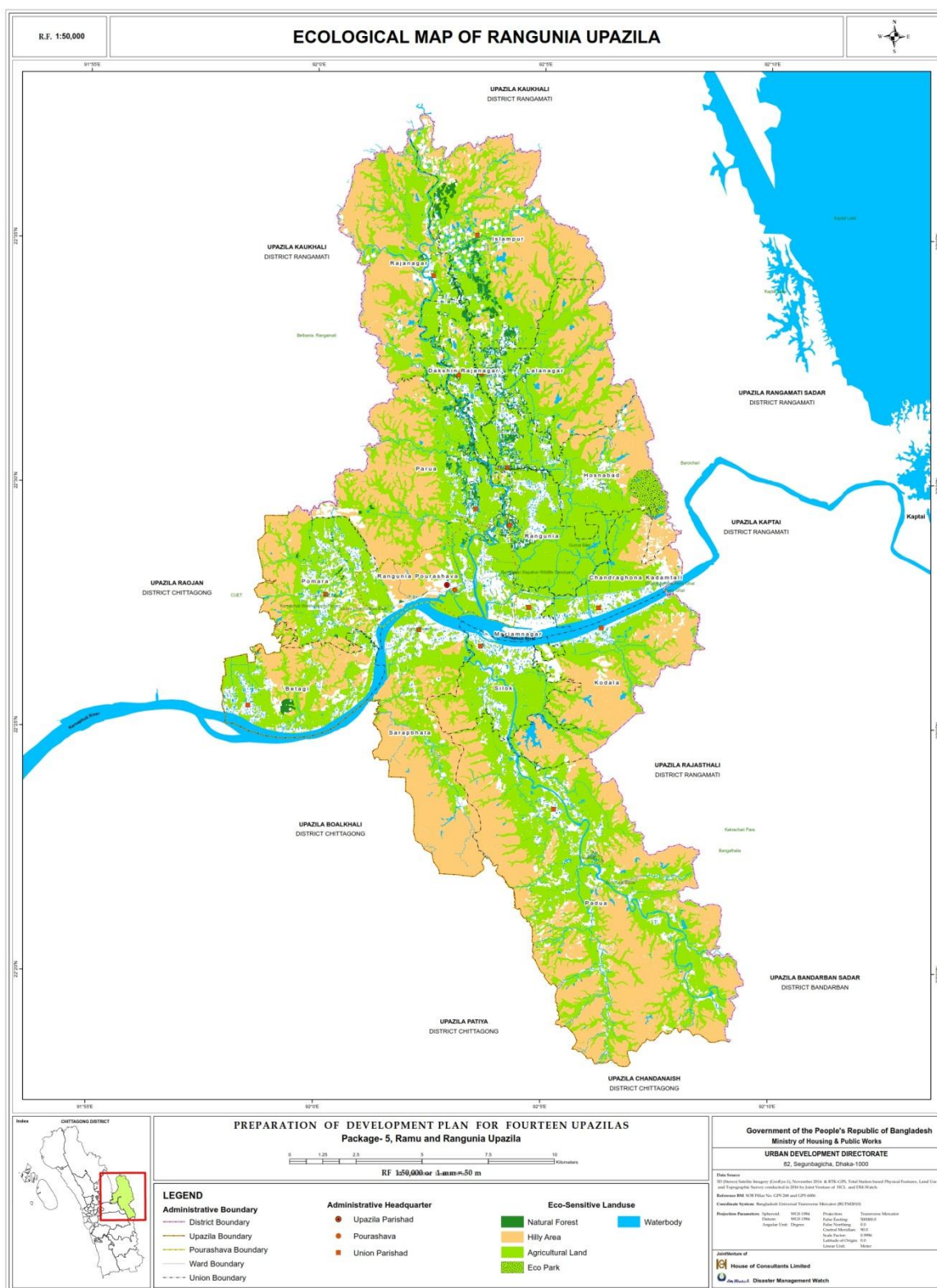
**Map 6.7: Cropping Intensity in Rangunia Upazila**

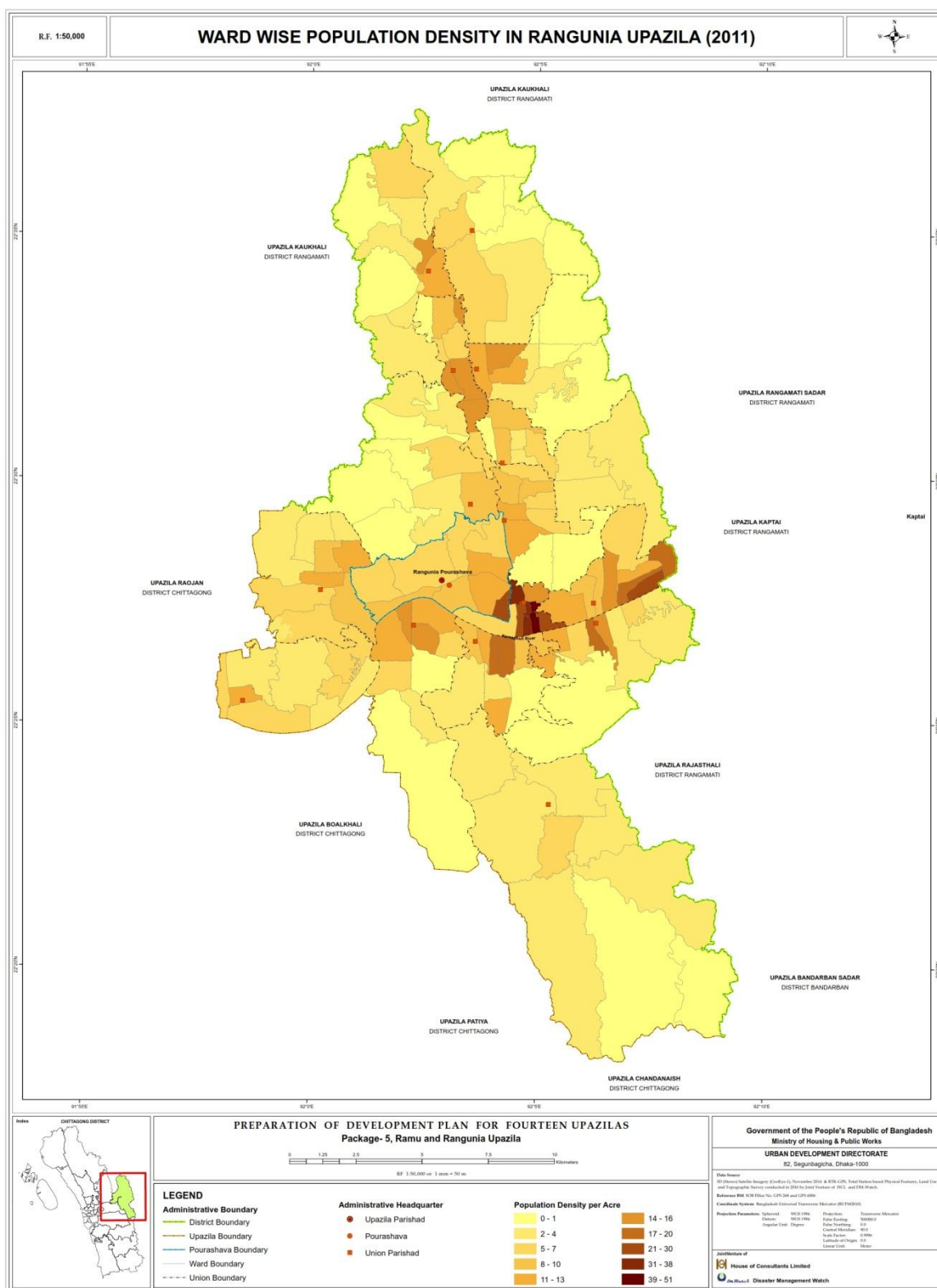


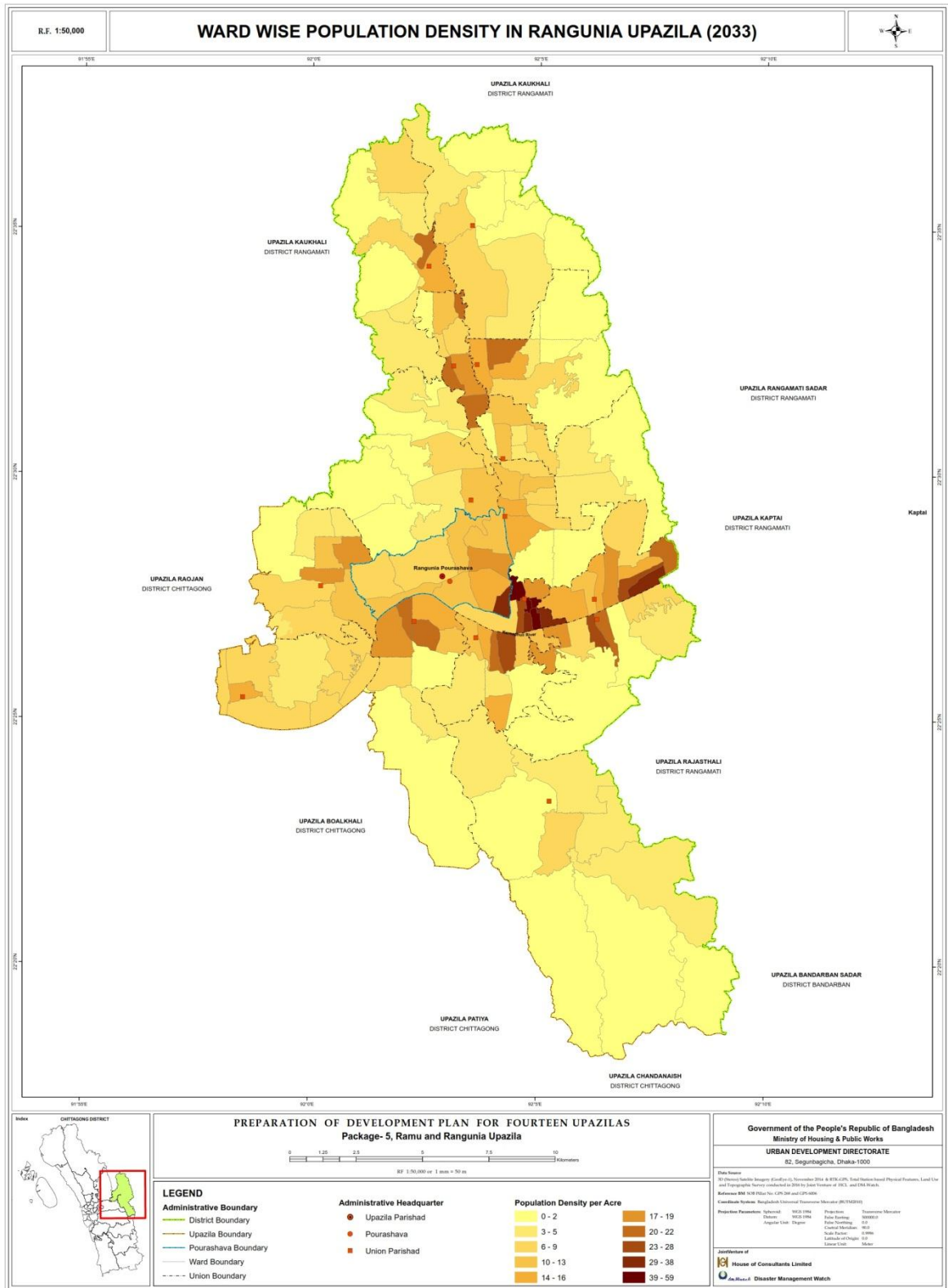
### Map 6.8: Vegetation Map of Rangunia Upazila











**Map 6.12: Ward Wise Population Density in Rangunia Upazila (2033)**

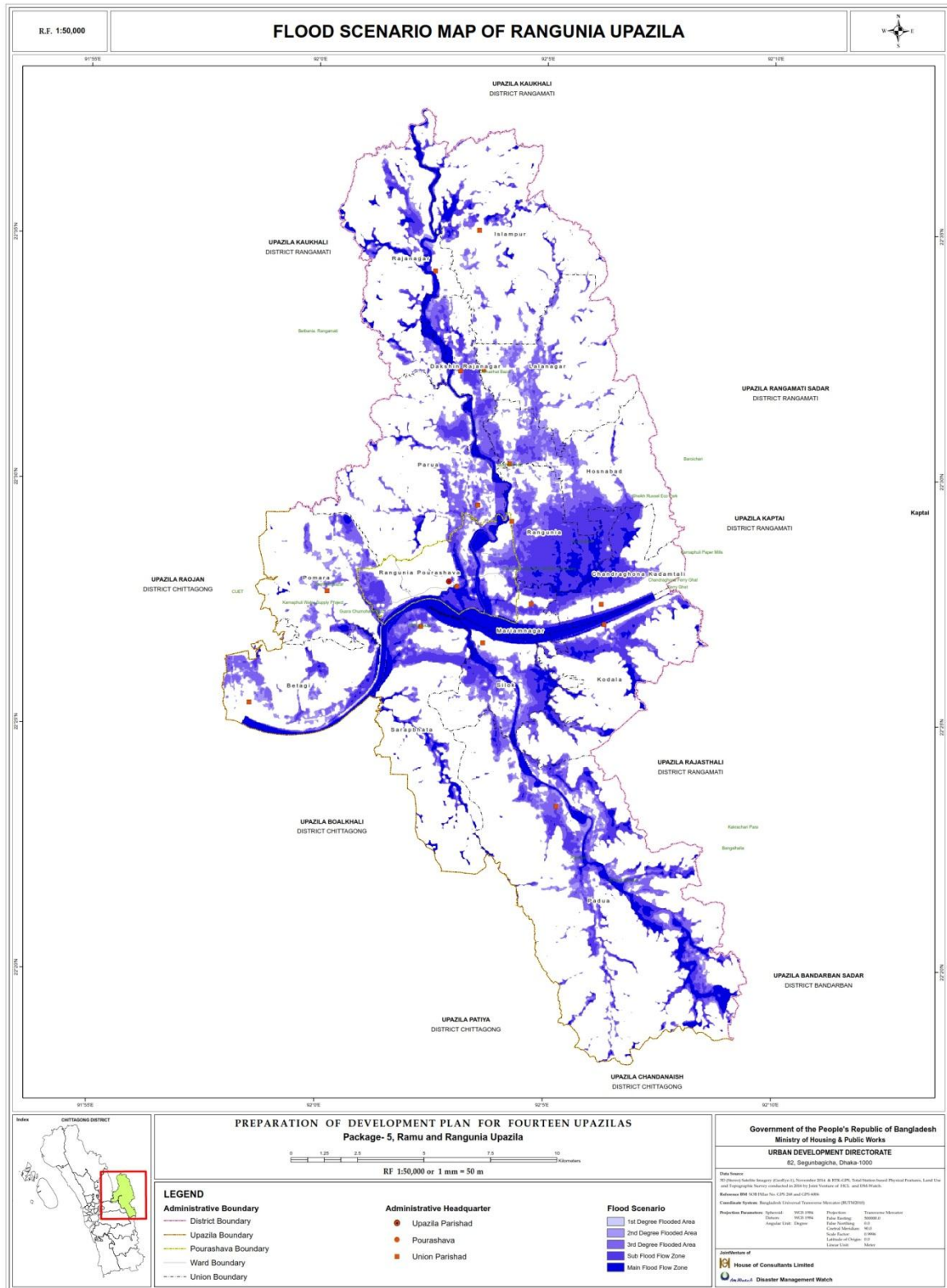


## 6.5 Flooding Scenario

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 5th degree flooded area. The statistics has been summarized in the table:

**Table 6.7: Different Flooding Scenario**

<b>Different Flooding Scenario</b>					
<b>Flooded Land Category</b>	<b>Area (sq.m)</b>	<b>Area(sq.km)</b>	<b>Area (Acre)</b>	<b>Percentage</b>	<b>Remarks</b>
1st Degree Flooded area	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>	



**Map 6.13: Flood Scenario of Rangunia Upazila**

## 6.6 Geology

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

**Table 6.8: Foundation Layer Parameter**

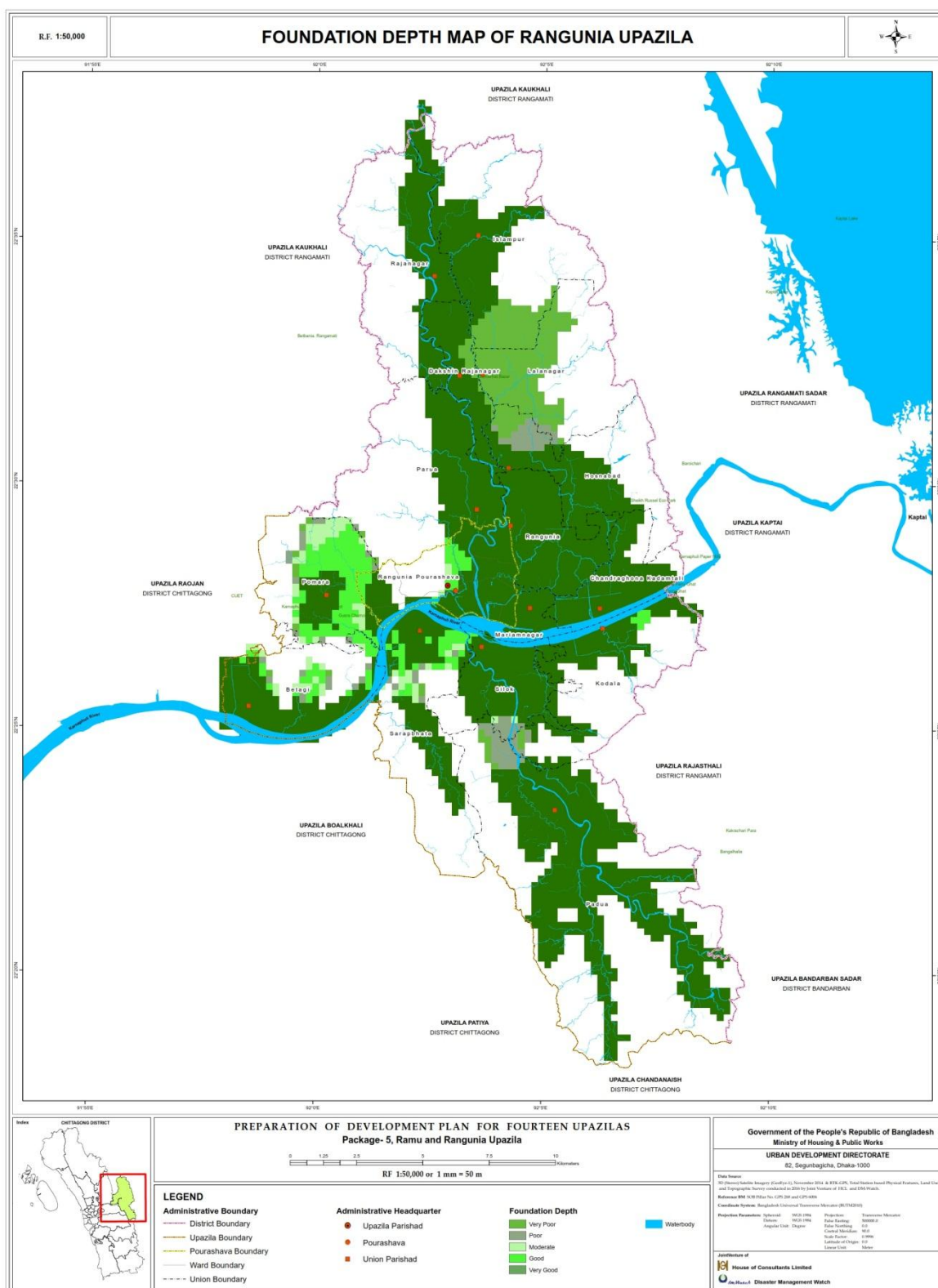
<b>Foundation Layer</b>	<b>Area(Sq.m)</b>	<b>Area(Acre)</b>
Very Poor	15625000.00	3861.02
Poor	6062500.00	1498.08
Moderate	4375000.00	1081.09
Good	11875000.00	2934.38
Very Good	156500000.00	38671.99

**Table 6.9: PGA Parameter**

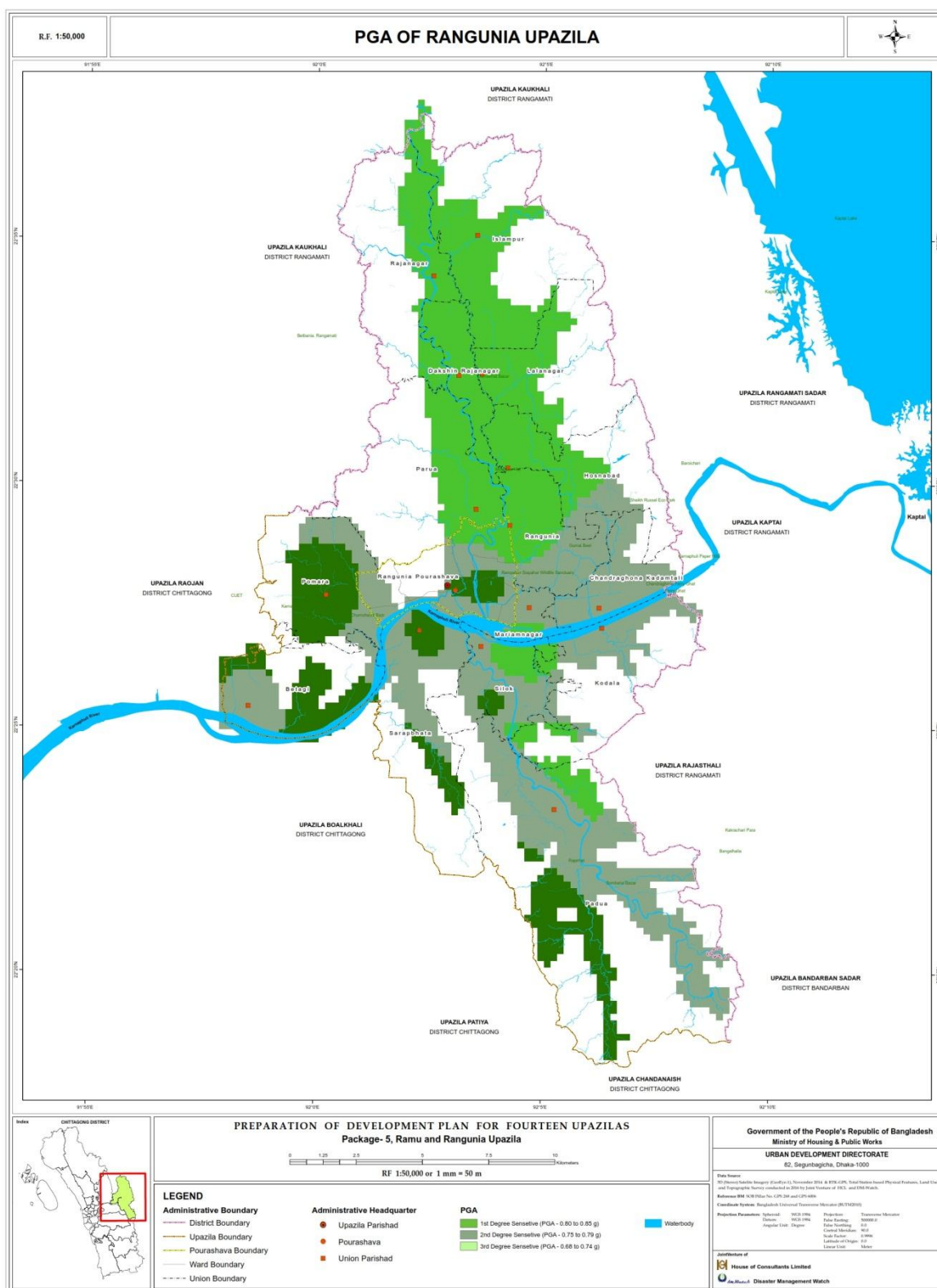
<b>PGA</b>	<b>Area(Sq.m)</b>	<b>Area(Acre)</b>
1st Degree Sensitive	75000000.00	18532.90
2nd Degree Sensitive	87375000.00	21590.83
3rd Degree Sensitive	32062500.00	7922.82

**Table 6.10: Shear Wave Parameter**

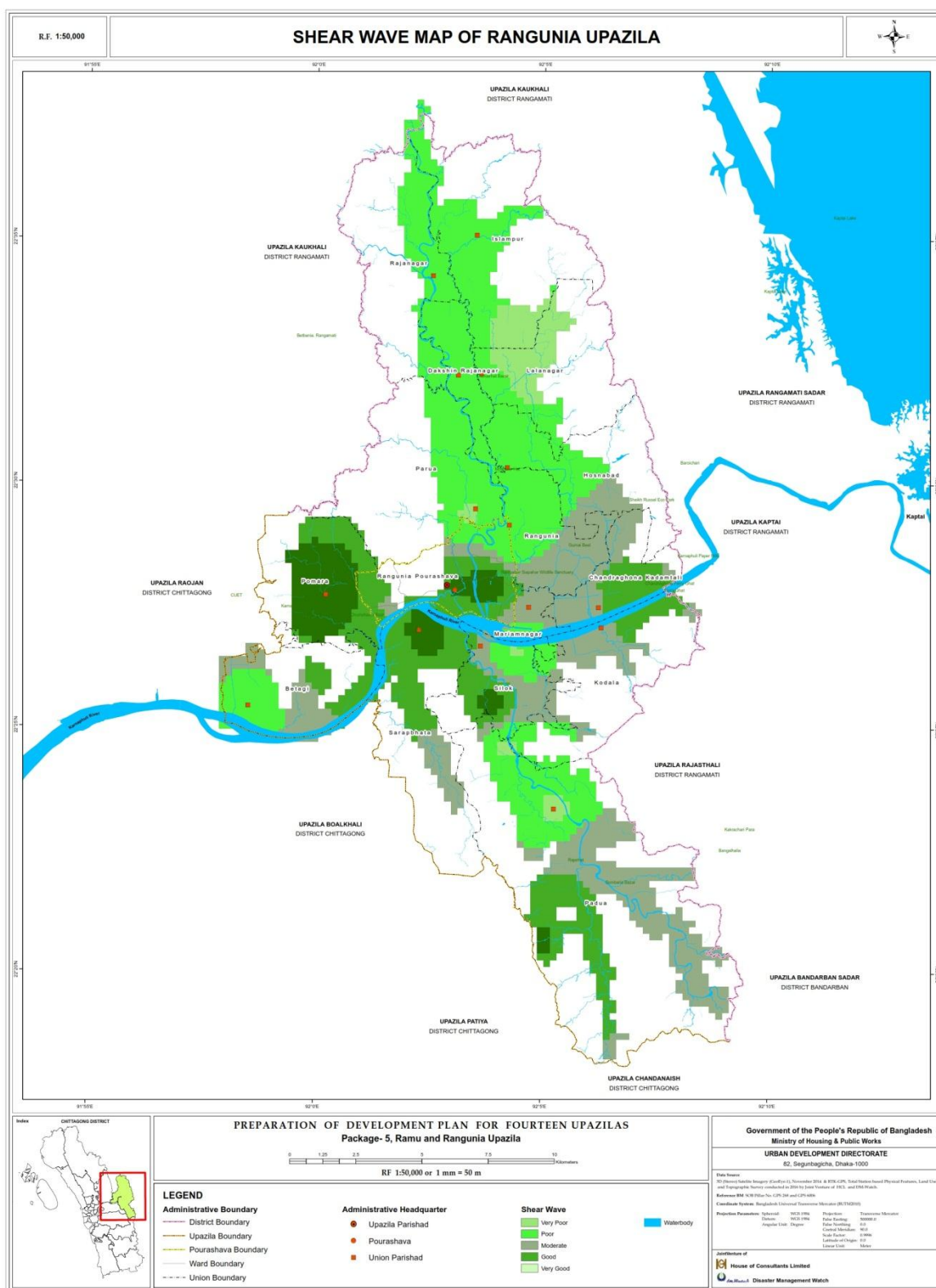
<b>Shear Wave</b>	<b>Area(Sq.m)</b>	<b>Area(Acre)</b>
Very Poor	9750000.00	2409.28
Poor	79500000.00	19644.88
Moderate	51125000.00	12633.26
Good	40375000.00	9976.88
Very Good	13687500.00	3382.25

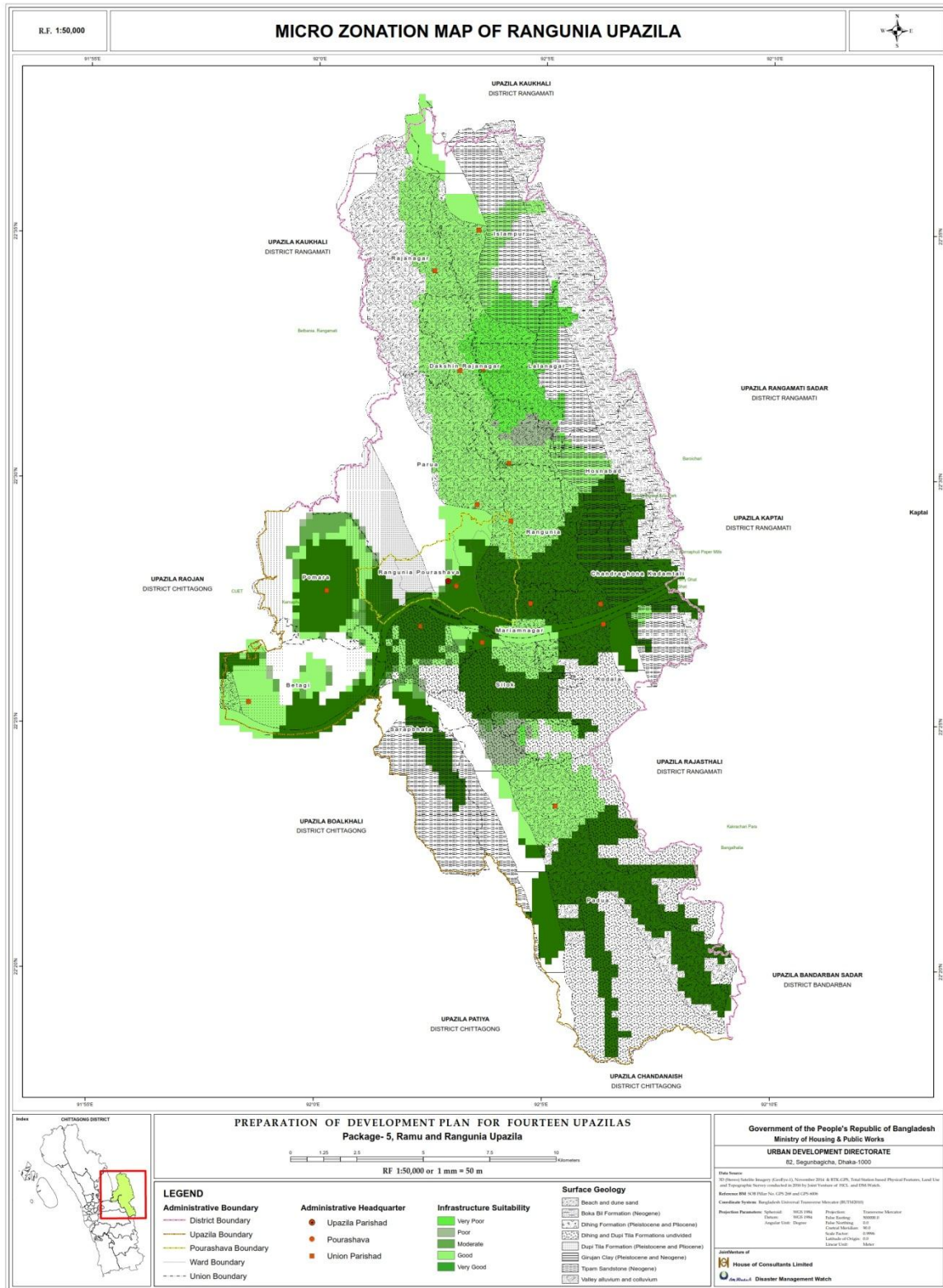






**Map 6.15: Geology (PGA) of Rangunia Upazila**





**Map 6.17: Micro Zonation Map of Rangunia Upazila**

## 6.7 Suitability Analysis

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

### 6.7.1 Consideration of Affecting Factors for Planning

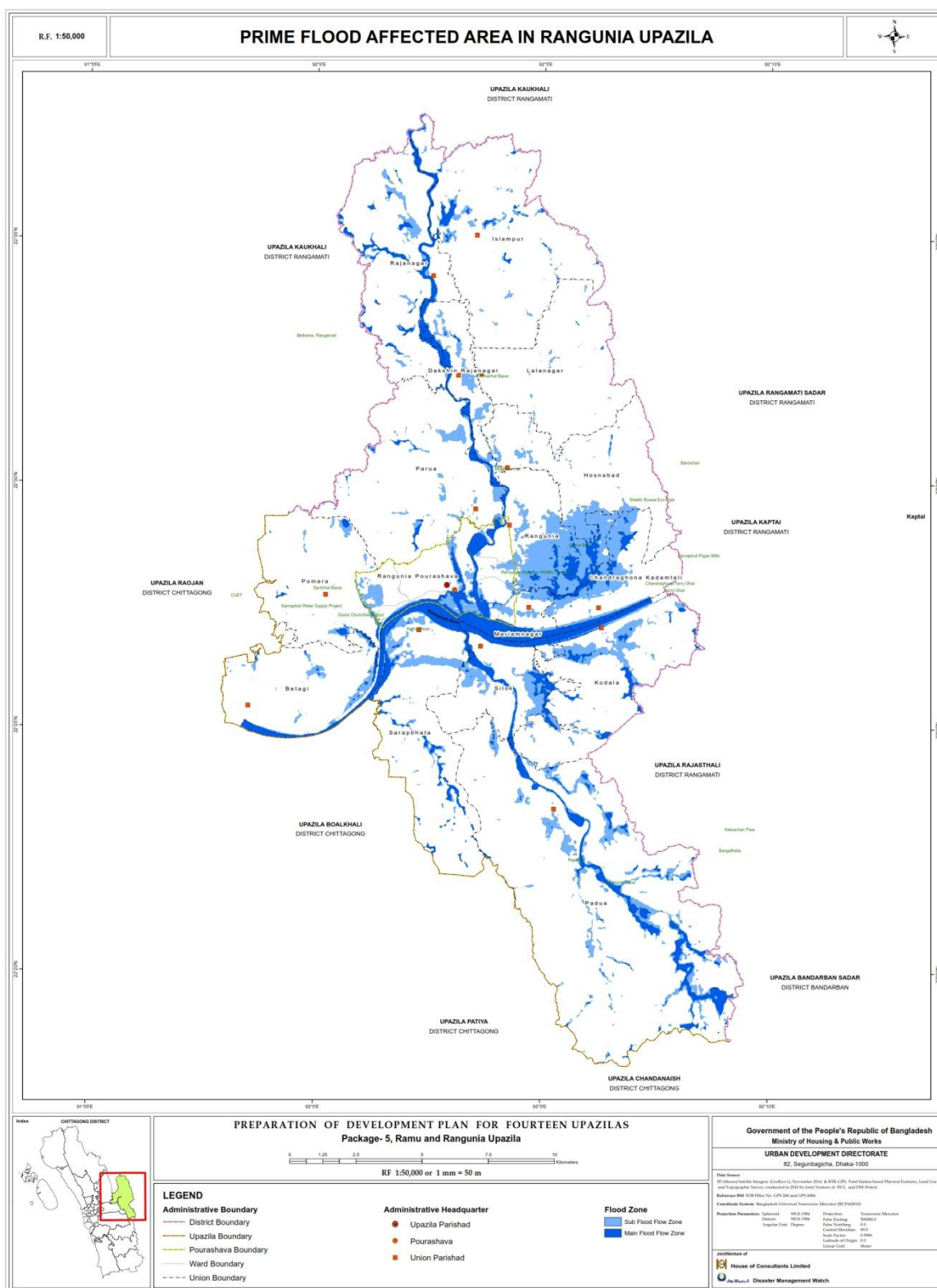
There are some affecting factors to plan the Rangunia Upazila. The factors are slope more than 5%, main flood flow zone and sub-flood flow zone. In these three types of areas development cannot take place. But these areas can be used for other purposes such as agriculture, afforestation, water retention 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







### Map 6.19: Prime Flood Affected Area of Rangunia Upazila

### 6.7.2 Agricultural suitability

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

**Table 6.12: Agricultural Suitability**

<b>Agricultural Suitability</b>			
<b>Category</b>	<b>Area (sq.m)</b>	<b>Area(Acre)</b>	<b>Percentage</b>
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

### 6.7.3 Urban Suitability

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

**Table 6.13: Urban Suitability**

<b>Urban Suitability</b>			
<b>Category</b>	<b>Area(sq.m)</b>	<b>Area(Acre)</b>	<b>Percentage</b>
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

### 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.

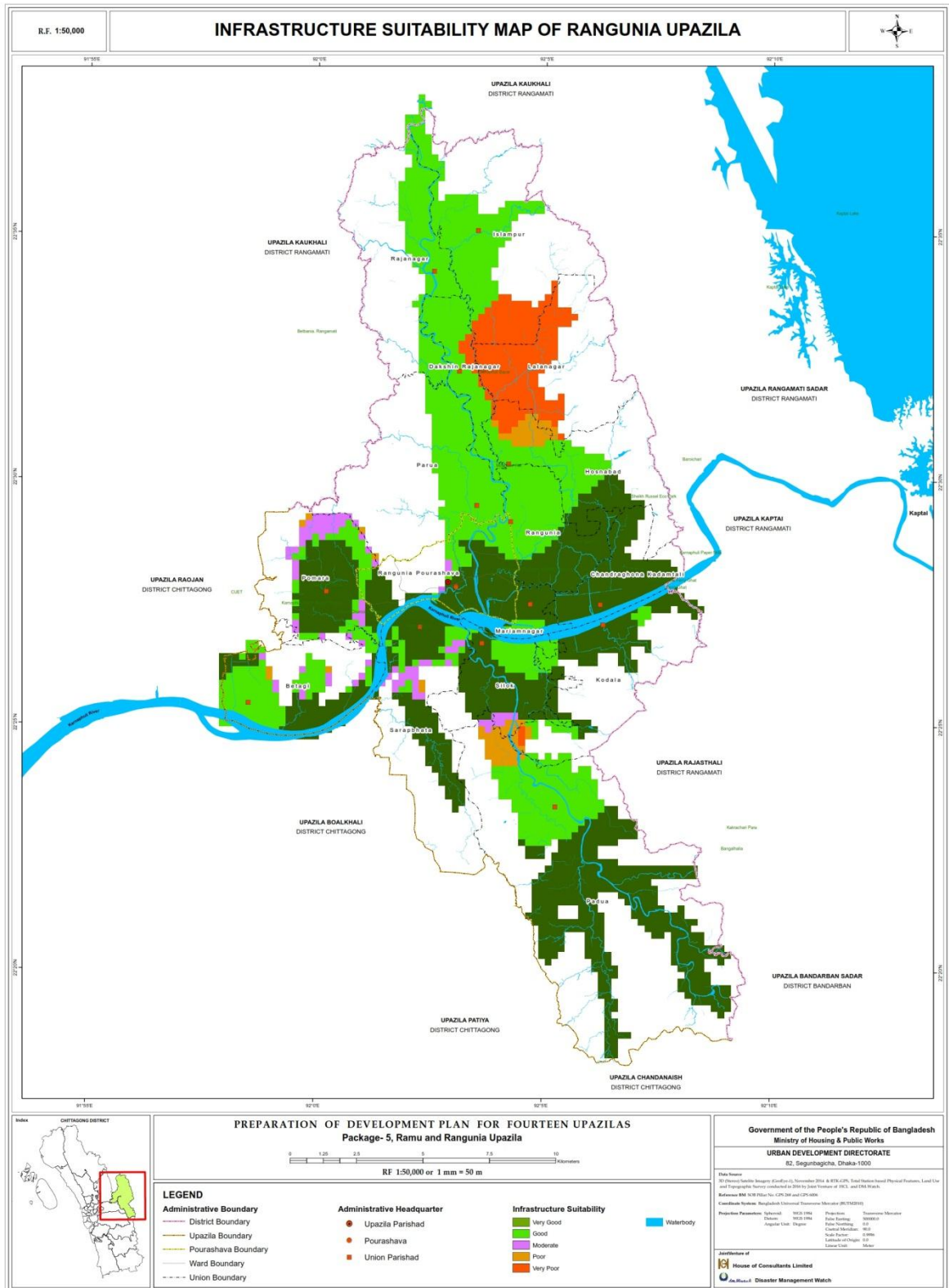
**Table 6.14: Infrastructure Suitability**

<b>Infrastructure Suitability</b>			
<b>Category</b>	<b>Area (sq.m)</b>	<b>Area (Acre)</b>	<b>Percentage</b>
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





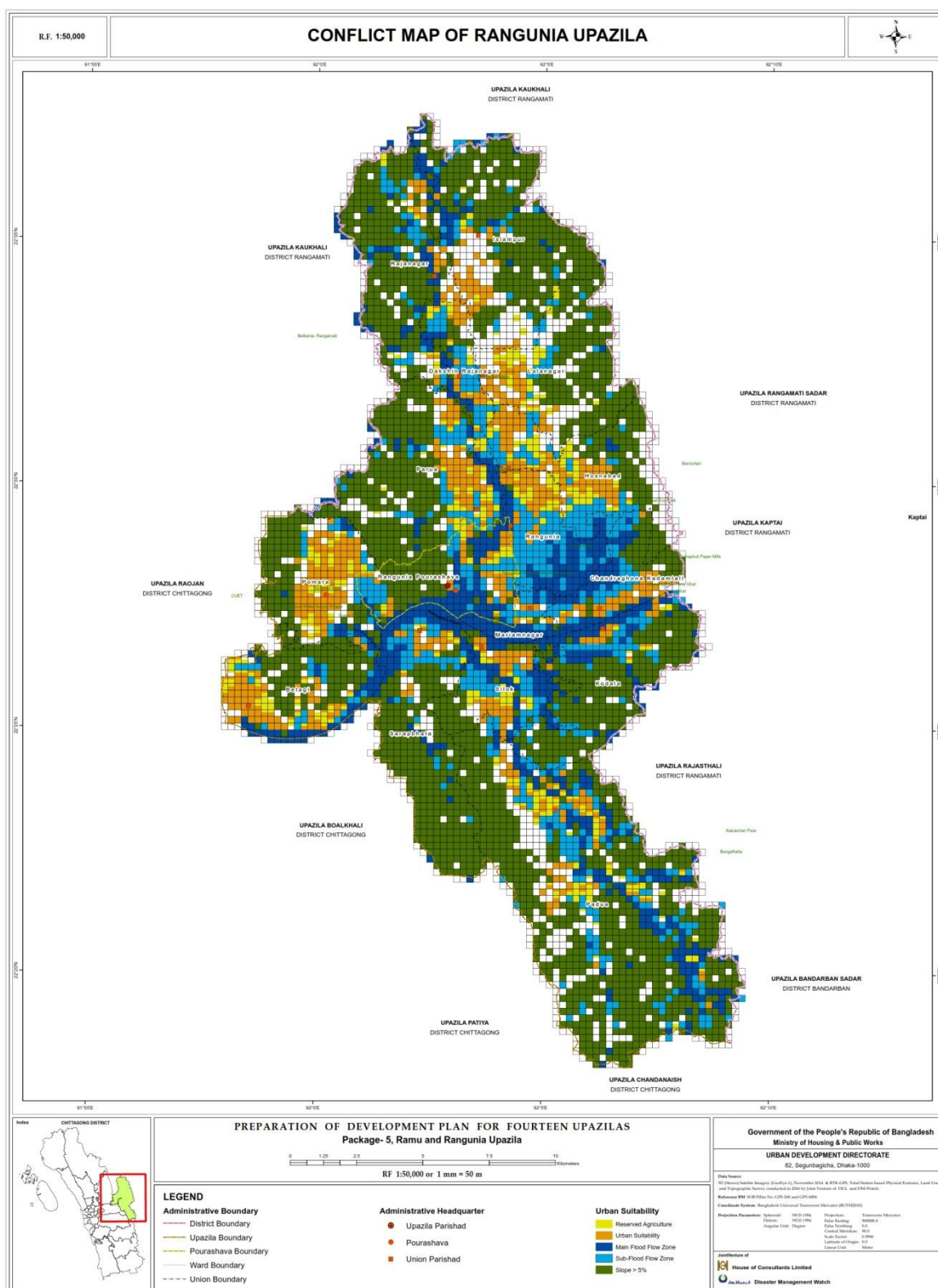




Map 6.22: Infrastructure Suitability of Rangunia Upazila

## **6.8 Conflict Map**

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



### Map 6.23: Conflict Map of Rangunia Upazila

## 6.9 Proposed Road

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

### Primary Road

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

### Secondary Roads

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

### Tertiary Roads

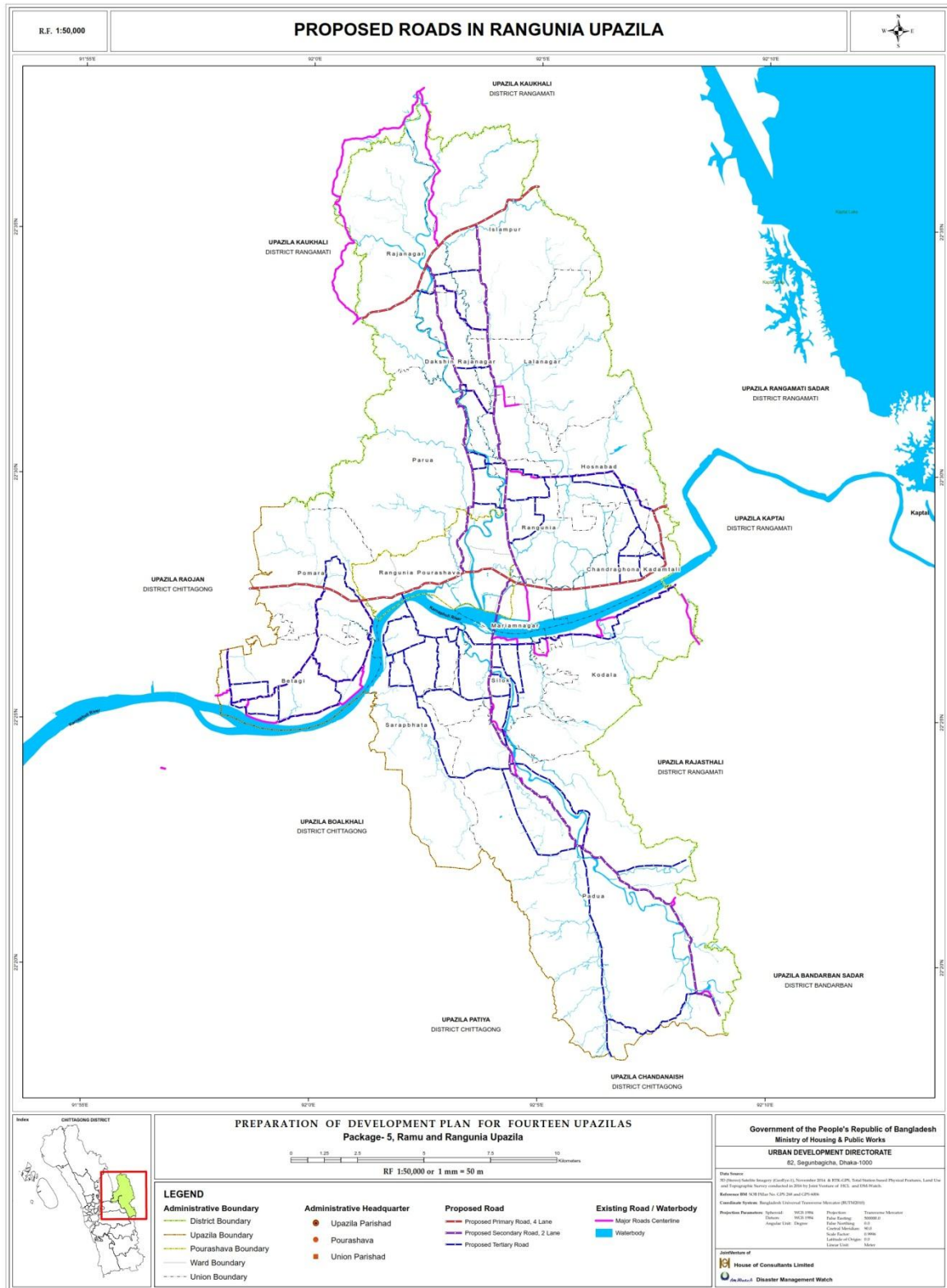
Roads connecting the villages, urban areas and growth centres are called tertiary roads.

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

**Table 6.15: Proposed Road and No. of Affected Structure**

Road Category	Lane	Road Width	No. of Affected Structure			
			Pucca	Semi Pucca	Katcha	Total
Primay Road	4	21.6 meter or 70 feet	133	271	211	615
Secondary Road	2	12.1 meter or 40 feet	183	229	185	597
Tertiary Road	1	9.8 meter or 32 feet	288	330	423	1041
Total Affected Structure			604	830	819	2253





**Map 6.24: Proposed Roads in Rangunia Upazila**

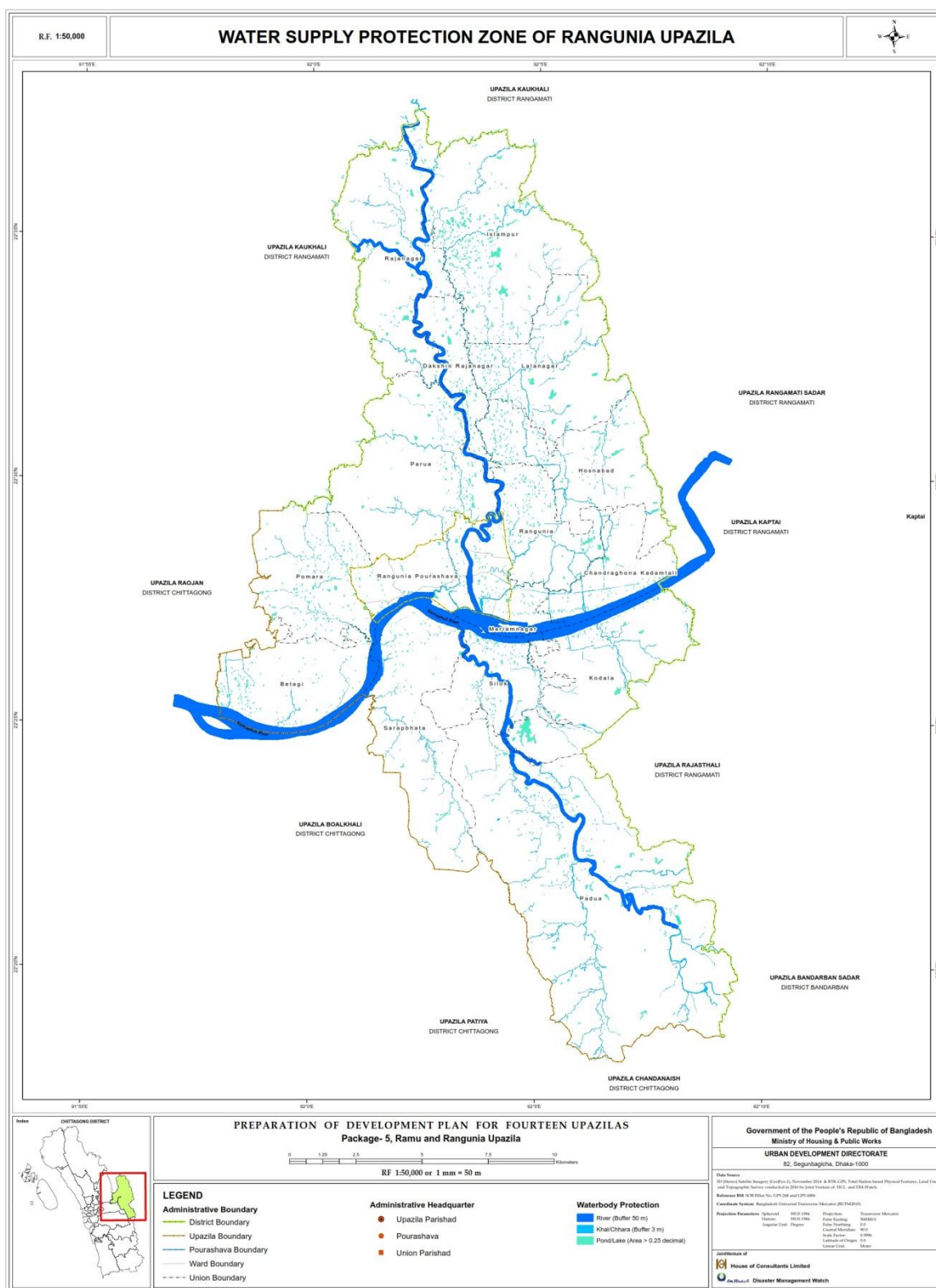
## 6.10 Water Supply Protection Zone

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

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

**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/Khla/Canal	3 meter	68	91	221	380
<b>Total Affected Structure</b>		491	1116	2462	4069



**Map 6.25: Water Supply Protection Zone of Rangunia Upazila**



## **6.11 Structure Plan Preparation**

### **Restricted Special**

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

### **Urban settlement**

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

### **Rural settlement**

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

### **Agriculture**

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

### **Circulation Network**

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

### **Main Flood Flow Zone**

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

### **Sub Flood Flow Zone**

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

### **Grey Zone**

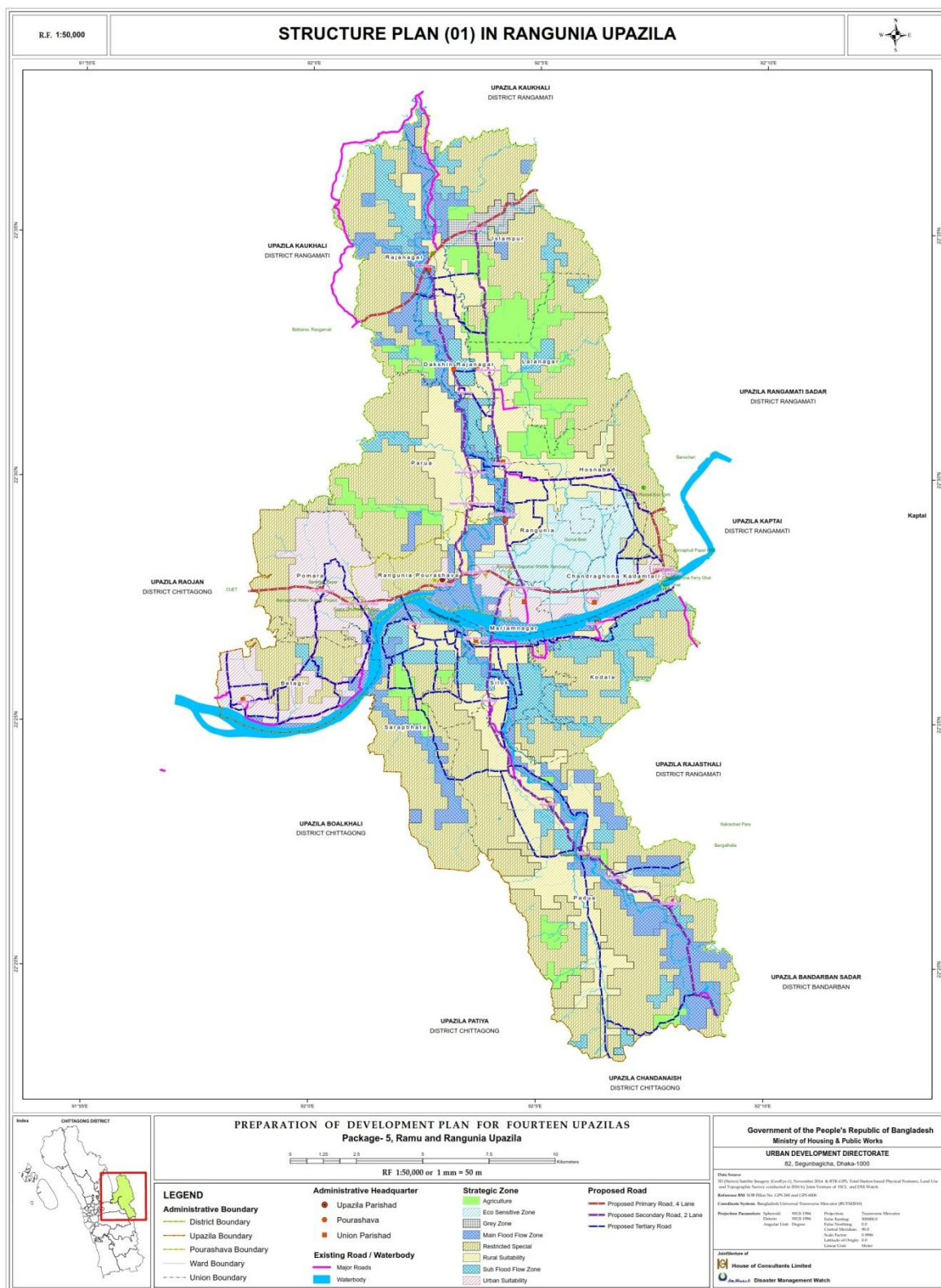
The areas which are not suitable for agriculture and urban settlement are declared as Grey zone.

### **Water Supply Protection Zone**

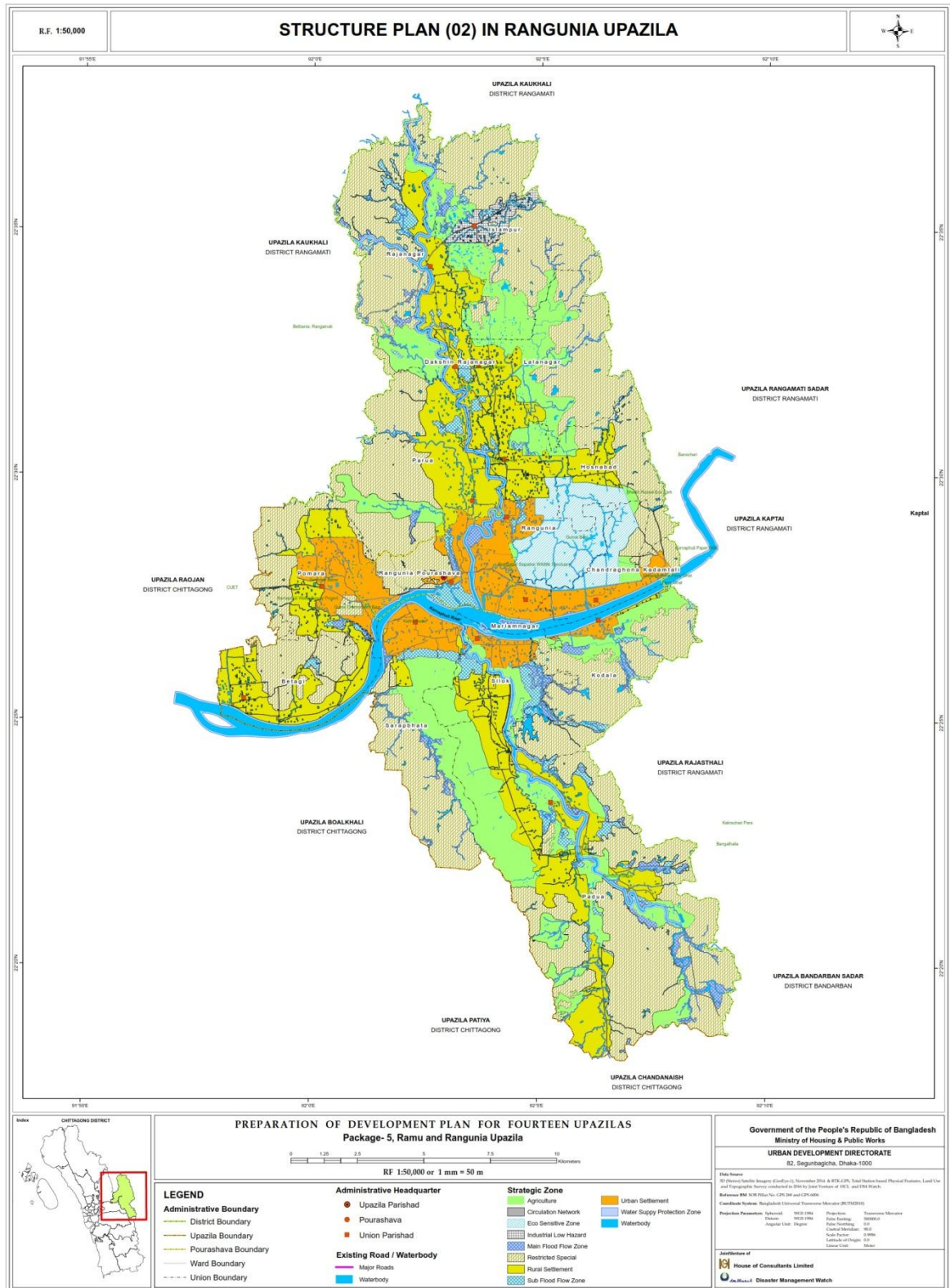
Water supply protection zone comprises river, canal/chara/khal.50 meter buffer from the edge of the rivers, 3 meter buffer from the chara/khal will be preserved for water supply protection zone.

### **Water body**

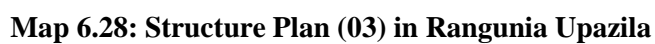
The water bodies which area is more than0.25 acre are shown in the structure plan.



Map 6.26: Structure Plan (01) in Rangunia Upazila



Map 6.27: Structure Plan (02) in Rangunia Upazila



### **6.11.1 Policies for Structure Plan**

#### **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

#### **Restricted Special**

Policy 1: Protect and preserve available hilly area which slope more than 5%.

Policy 2: Protect reserved forest on the hilly area.

Policy 3: Promote tourism as a mean of economic development at the restricted special zone.

Policy 4: Encourage creation of tourist spots such as eco-park (Rasel Aviary and Khurusia Eco-Park), wild-life sanctuary (Ghumai Beel and Dudh Pukuria) and safari park (Sukh Bilash) at the restricted special area without disturbing nature.

#### **Urban Settlements**

Policy 1: Promote urban area to suitable 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: Keep low density of population in rural areas.

Policy 2: Save agriculture lands in rural areas by encouraging nucleated/clustered villages.

Policy 3: Provision of better infrastructure and service facilities to the rural dwellers.

Policy 4: Promote integrated rural development connecting growth centers and villages.



## **Agriculture**

Policy 1: Keep suitable agriculture lands free from any kind of encroachments particularly from human settlements.

Policy 2: Ensure surface water irrigation keeping water bodies (canals and rivers) navigable for the sustainable agriculture development.

Policy 3: Promote technology-driven agriculture practices for intensive and extensive cultivation.

Policy 4: Encourage agro-based industries through agricultural development.

Policy 5: Develop advanced rural marketing mechanism for the quick shipment of agri-products.

## **Circulation Network**

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

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

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

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

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

Policy 1: Protect main flood flow zone from encroachment.

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

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

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

## **Grey Area**

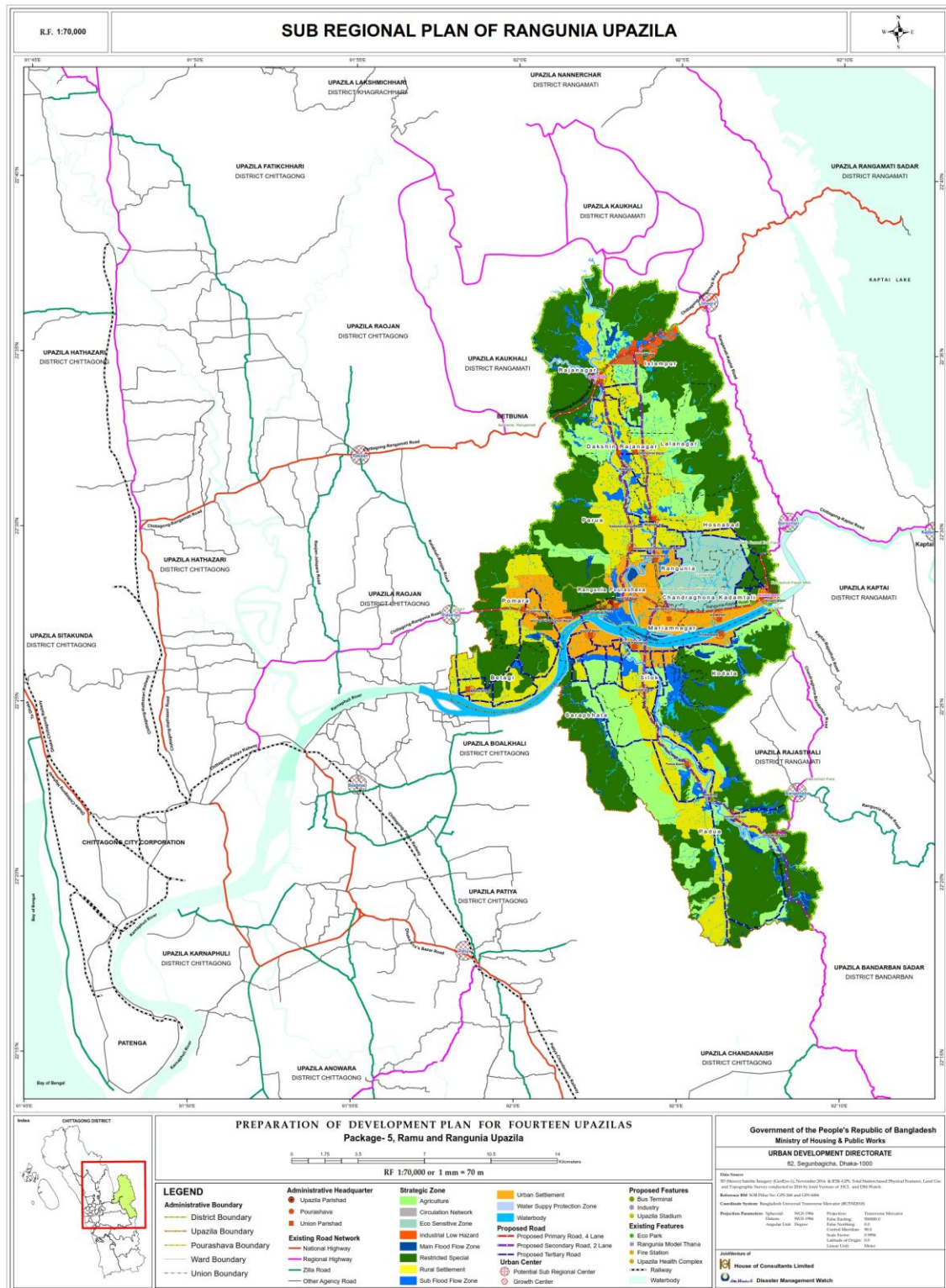
Policy 1: Protect grey area for alternative use (low hazard industry) rather than agriculture or settlements.

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.

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



**Map 6.29: Sub Regional Plan of Rangunia Upazila**

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

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

### **Connectivity and Transportation Network**

Policy 1: Prioritizing inter- (Zila-Upazila/Upazila-Upazila) and intra- (Urban-Rural-GC) regional connectivity.

Policy 2: Accelerating high standard road links through widening secondary and new tertiary roads.

Policy 3: Building an integrated (land, rail and water) transportation system.

### **Biodiversity and Nature Conservation**

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

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

Policy 3: Executing land use planning for ecosystem and species diversity.

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

Policy 1: Identifying seismic hazard prone zones

Policy 2: Identifying flood hazard prone zones and river erosion areas

Policy 3: Providing a risk sensitive land use planning