

Report
May 2016

Revised Land Use & Development Control Plan-2025 for Sriniketan–Santiniketan Planning Area



SRINIKETAN – SANTINIKETAN DEVELOPMENT AUTHORITY
(A statutory Authority under Govt. of West Bengal)

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**SRINIKETAN SANTINIKETAN
DEVELOPMENT AUTHORITY**
(A Statutory Authority under Govt. of West Bengal)

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Foreword

This document has been prepared in accordance to the section 40 of The West Bengal Town & Country (Planning & Development) Act, 1979(West Bengal Act XIII of 1979), by the SSDA as an amendment to the earlier LUDCP (herein called as 'Revised LUDCP SSPA -2025') for the planning area. Fresh surveys were carried out as was considered necessary and the findings were discussed in stakeholder meetings. Further, all the changes, in the interest of the public, with the suggestions and objections have been incorporated in the document. A separate land use register along with a set of proposed land use map in the scale of 1:2500 showing details of proposal have also been prepared.

Dated: 16/05/2016

S. Saha
16/05/16

Executive Officer
Sriniketan Santiniketan Development Authority

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Abbreviations

ARP	Architecture & Regional Planning
BOLPUR (P)	Bolpur (Part)
BSUP	Basic Services for Urban Poor
CBD	Commercial Business District
CDB	Community Development Block
CT	Census Town
EWS	Economically Weaker Section
FAR	Floor Area Ratio
GIS	geographic information system
GP	Gram Panchayat
ICDS Centres	Integrated Child Development Service Centres
IHSDP	Integrated Housing & Slum Development Program
IIT	Indian Institute of Technology
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
LIG	Low Income group
LISS	Linear Imaging Self Scanning (sensor)
LOS	Level of Service
LUDCP	Land Use Development & Control Plan
NUIS	National Urban Information System
PCU	Passenger Car Unit
PIL	Public Interest Litigation
SOI	Survey of India
SPAB	Society for the Protection of Ancient Buildings
SSDA	Sriniketan – Santiniketan Development Authority
SSK	Shishu Siksha Kendra
SSPA	Sriniketan – Santiniketan Planning Area
UDPFI	Urban Development Plans Formulation and Implementation
URDPFI	Urban & Regional Development Plans Formulation and Implementation
V/C	Volume / Capacity
WBIIDC	West Bengal Industrial Infrastructure Development Corporation
WBPCB	West Bengal Pollution Control Board
WBPDCCL	West Bengal Power Development Corporation Limited
WBSEDCL	West Bengal State Electricity Distribution Company Limited
WBTCPD Act, 1979	The West Bengal Town & Country (Planning & Development) Act, 1979

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1 BACKGROUND

1.1 INTRODUCTION

The SSDA is an autonomous body established in 1989 under the West Bengal Town & Country (Planning & Development) Act, 1979 (West Bengal Act XIII of 1979). The SSDA is guided by SSDA Board, which consists of thirteen members including Chairman.

SSPA, located in Birbhum District of West Bengal, was notified under provisions of West Bengal Town & Country (Planning & Development) Act 1979, vide Gazette notification no. 4069-T&CP/IS-25/87 dated 27th December, 1997, is estimated to be about 106.43 sq.km comprising 44 mouzas in full, under Bolpur Police Station of Birbhum District, West Bengal.

The SSPA consists of Bolpur Municipality, nine mouzas of Ruppur GP, fifteen mouzas of Raipur Supur GP, twelve mouzas of Shian Muluk GP, four mouzas of Kankalitala GP; all falling under Bolpur Sriniketan Block and Visva Bharati University Estate.

Sriniketan-Santiniketan Development Authority intends to revise the Land Use and Development Control Plan for Sriniketan-Santiniketan Planning Area.

1.2 STATUTORY PROVISION

The revision of Land Use and Development Control Plan had been proposed for SSPA as per provision under Section 40 of The West Bengal Town & Country (Planning and Development) Act, 1979 (West Bengal Act XIII of 1979) states:

(1) At any time after the date on which the Land Use and Development Control Plan for an area comes into operation, and at least once in every 10 years after that date, the concerned authority shall, after carrying out such fresh surveys as may be considered necessary, prepare and submit to the State Government a Land Use and Development Control Plan for any alterations or additions considered necessary.

(2) The provisions of sections 36, 37 and 38 shall, mutatis mutandis, apply to such a Land Use and Development Control Plan.

This document, including the proposed Land Use map, schemes and projects, may be called "The Revised Land Use and Development Control Plan 2025 for the Sriniketan-Santiniketan Planning Area".

In this document, the existing scenario of the whole planning area is being presented, which has been analysed and further compared to the past scenarios of SSPA and proposals have been given for solutions to major problems of the Planning Area .

1.3 NEED FOR REVISION (AMENDMENT) OF LUDCP

The existing Land Use and Development Control Plan, notified in 1997 should have been revised by the year 2007 as per the provision in Section 40 of the West Bengal Town and Country (Planning & Development) Act, 1979. As per the provision of Section 40 of WBTCPD Act, 1979, it is obligatory that, at any time after the date on which LUDCP for any planning area comes into operation, and at least once in every 10 years after that date, the concerned authority shall, after carrying out such fresh surveys as may be considered necessary, prepare and submit to the State Government a revised LUDCP for any alteration or additions

considered necessary. As per the provision the existing LUDCP had already completed its terminal year 2007 and revised LUDCP has not been prepared as per the provision of WBTCPD Act, 1979. Since the preparation of existing LUDCP, land use has changed drastically over the planning area. Several new developments have come up in the planning area as a result there are boundary and development related conflicts. The revision of the LUDCP is essential in order to make it relevant to present day needs, and to respond to the changing trends in the planning area.

Through LUDCP, the concerned authority, prescribes use of land within its area; identifies various developmental projects for the area and executes these directly or through other agencies; promotes industries and housing and commercial complexes; develops physical infrastructure like roads, electricity, water, sewerage and drainage and social infra-structure such as education institutions, health institutions, recreation facilities etc; and co-ordinates development activities of all concerned departments and agencies of State and Central government or local authorities operating within the planning area. In other words this acts as a mechanism to grant use permissions to the users and control the development to achieve planned growth. These regulations shall be effective in the entire Sriniketan – Santiniketan Planning Area.

1.4 OBJECTIVES

- To prepare a comprehensive, functional, implementable and enforceable plan with statutory back up as per the West Bengal Town & Country (Planning & Development) Act 1979, and existing laws/ rules and regulations. It will broadly follow the framework of UDPFI/ URDPFI guidelines and modern concept of planning and development followed in West Bengal and in India.
- To prepare an up-to-date land use map in detail using contemporary zoning and recommended land use classification techniques. This shall facilitate spatial analysis of present scenario. It shall be prepared on digital based geo referenced base map.
- To assess the present scenario in terms of environmental and ecological sensitivity of the area, tourism, heritage structures & precincts, housing and its transformation, resource capability likes available land & water, infrastructure capability like sewerage & drainage system, solid waste management, roads & public transport, education, healthcare, recreation and other infra services; enterprise sector, craft and cottage industries.
- To develop possible growth scenarios for 2020 & 2025 in terms of environment, ecology, conservation, heritage conservation, optimum utilisation of resources like land & water, population, tourism and other economic activities like craft & cottage industry, employment.
- To assess the housing demand and its provision and the various physical & social infrastructures required for the projected population.
- To translate the above analysis in proposed land use map and other thematic maps on a digital based geo referenced base map along with various norms & standards, and propose innovative development controls mechanism based on the past and current best practices across the country and abroad.
- The plan shall act as a tool for development permission with specific rules & regulation and procedure for permission and shall have statutory back up and practical approach to preparation of projects/ schemes. To propose a sustainable financing mechanism for implementation and enforcing of the plan.

2 DESCRIPTION OF THE STUDY AREA

2.1 SALIENT FEATURES OF SSPA

The history of SSPA dates back to 1850s when Bolpur, the core of SSPA, was a small village. Sahibgunj Loop Line of Eastern Railway was proposed in 1859 which was the main impetus for development of Bolpur and the area around.

Later, in 1862, Santiniketan, a place near Bolpur, which was previously called Bhubandanga named after Bhuban Sinha, was given to Rabindranath's father, Maharshi Debendranath Tagore, who found it very peaceful and renamed it Shantiniketan, which means abode (*niketan*) of peace (*shanti*). It was here that Rabindranath Tagore started Patha Bhavana, the school of his ideals, whose central premise was that learning in a natural environment would be more enjoyable and fruitful. After he received the Nobel Prize in 1913, the school was expanded into a university in 1921. By 1951, it had become one of India's central universities and became internationally famous over the time.

The importance of the place led to establishment of SSPA under SSDA, an autonomous body under the West Bengal Town & Country (Planning & Development) Act, 1979 in the year 1989 to regulate the unplanned development activities happening in the region.

SSPA has various important features which makes it a unique place. The important features of SSPA include heritage precincts within Visva Bharati, Khoai, which is a rare geological phenomenon, Ballavpur wildlife sanctuary, Baul Singers, Traditional Crafts like *Kantha* stitch, wood work, leather work etc; Santhal villages; Laha Bandh, Bada Bandh etc. The planning area is bounded by Rivers Kopai and Ajay on Northern and Southern side respectively. Benuria canal, which runs in northern portion of SSPA, is very important for region from agricultural point of view as well as aesthetics as it enhances and adds charm to the environment in and around Khoai.

The Planning area is located in the south of the Birbhum district of West Bengal. The location of Planning Area is shown in Map 2.1. The average elevation of the planning area varies between 35 to 60 metres. The planning area has a varied landscape. The landform shows a transitional character between the deltaic plain in the east and the plateau fringe in the west. The soil type of the region includes red lateritic which occupy the central part and old alluvium in other parts.

The climate of the area is usually pleasant. The region experiences winter, summer and rainy seasons distinctively. The other three seasons: spring, autumn and late autumn also make their presence felt but rather feebly. The rainfall occurs mainly due to southwest monsoon from late June to early September. The average rainfall of the region is 1410 mm and August receives the heaviest rainfall.

The average temperature of the region varies between 34°C to 45°C for summers and 8°C to 15°C for winters. The hottest month of the planning area is May and January is the coldest month. The air is highly humid throughout the southwest monsoon period. It reaches the maximum in the months of August and September. Wind speed is generally slow to moderate with slight increase in speed during the summers and monsoon. During March – April the direction of wind is from south and north west while in May it is from south and east. During the monsoon, it is from the southwest and in winters, from north and west.

The vegetation of the place belongs to tropical dry deciduous type with a few representations of evergreens here and there. Some of the common trees and plants found in the region include Sonajhuri, Chhatim, Sirish, Bot, Aswatta, Aam, Babla etc. Sal, Palas, Sisso, Pial,

Akashmoni, Pea Sal and Mahua are commonly found in forest area. The area used to be rich in fauna, however now it consists only of deer's, wild pigs, bears and wolves. The avian species of the area consists of Partridges, Green Pigeons, Snipes, Lapwings, Moorhens, Egrets, Coots, Teals, Grebe, Sandpiper, Geese, and Brahmin Ducks etc.

The SSPA is home to huge tribal population, as 10% of its population constitute of tribes. Santhali Tribes are one of the major tribe of the region, which is famous for its art, craft and culture.

2.2 JURISDICTION OF PLANNING AREA

The SSPA comprises of 44 mouzas under the jurisdiction of Bolpur Police Station. The total area of planning area is 106.43 Sq. Km. The local bodies falling within SSPA area includes Bolpur Municipality, Ruppur GP, Raipur Supur GP, Shian Muluk GP and Kankalitala GP (refer Table 2.1). Visva Bharati is a Central Government Organization and lies within SSPA area.

2.3 ADMINISTRATIVE UNITS

The SSPA comprises of five local bodies and one institutional body.

Bolpur municipality

Bolpur Municipality is the urban core of SSPA administered by Bolpur Municipality urban local body. It consists of four mouzas; two mouzas Bolpur & Bandhgora in part and two mouzas Kalikapur and Makrampur in complete. It has been divided into 19 wards. Earlier it was divided into 18 wards and has been recently delineated into 19 wards. The total area of municipality is 13.11 Sq. Km.

Ruppur Gram Panchayat

Ruppur Gram Panchayat lies on North West side of Bolpur Municipality. The GP has in total 16 mouzas out of which 9 mouzas namely; Benuria, Ballavpur, Kabi Mohanpur, Goalpara, Bayradihi, Shyambati, Madhusudanpur, Taltore, Surul; fall within SSPA boundary. The total area of these 9 mouzas taken together is 25.09 Sq. Km. Surul is another urban centre within SSPA, which has been declared a census town as per census 2011.

Raipur Supur Gram Panchayat

Raipur Supur Gram Panchayat lies on South West side of Bolpur Municipality. The GP has in total 18 mouzas and remaining portions of Bolpur and Bandhgora mouza, out of these 15 mouzas namely; Dakshin Chandipur, Shibpur, Uttar Radhanagar, Mahidapur, Raipur, Chandanpur, Udaipur, Ramchandrapur, Supur, Rusulganjahut, Nurpur, Purba Bahadurpur, Rajatpur, Gheropara, Dakshin Narayanpur; and portions of Bolpur and Bandhgora mouza fall within SSPA boundary. The total area of these 15 mouzas in complete and 2 mouzas in part taken together is 24.85 Sq. Km.

Shian Muluk Gram Panchayat

Shian Muluk Gram Panchayat lies on South East side of Bolpur Municipality. The GP has in total 18 mouzas out of which 12 mouzas namely; Mahuli, Muluk, Gayeshpur, Tatarpur, Arajji Muluk, Gobindapur, Bhatara, Dwarkanathpur, Shian, Purba Islampur, Durgapur, Gitgram; fall within SSPA boundary. The total area of these 12 mouzas taken together is 25.16 Sq. Km.

Kankalitala Gram Panchayat

Kankalitala Gram Panchayat lies on North East side of Bolpur Municipality. The GP has in total 23 mouzas out of which 4 mouzas namely; Adityapur, Khosh Kadambapur, Uttar Narayanpur, Layak Bazar; fall within SSPA boundary. The total area of these 4 mouzas taken together is 13.24 Sq.Km.

Visva Bharati

Visva Bharati is an autonomous body falling within SSPA, the administrative matter for which is looked after by Visva Bharati Authority and Estate Office. The total area of Visva Bharati Campus is 4.70 Sq.Km.

The SSPA also comprises of some patches of land which do not fall under any of the above listed bodies and come directly under jurisdiction of SSDA. The total area of such patches of land is 0.28 Sq.Km.

The Map 2.2 shows all the administrative units of SSPA with mouza boundary as well as ward boundary for Bolpur Municipality. The mouza list and other details are given in Annexure-I.

Table 2.1: Details of Administrative Areas within SSPA

Name of Administrative unit	Total No. of Mouzas	Mouzas falling within SSPA	Area (Sq. Km.)
Bolpur Municipality	4 mouzas	Kalikapur, Makrampur, Bolpur, Bandhgora	13.11
Ruppur GP	16 mouzas	9 mouzas Benuria, Ballavpur, Kabi Mohanpur, Goalpara, Bayradihi, Shyambati, Madhusudanpur, Taltore, Surul	25.09
Raipur Supur GP	18 mouzas in complete & 2 part mouzas	15 mouzas Dakshin Chandipur, Shibpur, Uttar Radhanagar, Mahidapur, Raipur, Chandanpur, Udaipur, Ramchandrapur, Supur, Rusulganjahut, Nurpur, Purba Bahadurpur, Rajatpur, Gheropara, Dakshin Narayanpur and portion of Bolpur, Bandhgora mouzas which is not included in Bolpur Municipality	24.85
Shian Muluk GP	18 mouzas	12 mouzas Mahuli, Muluk, Gayeshpur, Tatarpur, Araj Muluk, Gobindapur, Bhatura, Dwarkanathpur, Shian, Purba Islampur, Durgapur, Gitgram	25.16
Kankalitala GP	23 mouzas	4 mouzas Adityapur, Khosh Kadambapur, Uttar Narayanpur, Layak Bazar	13.24
Visva Bharati	-	Some portion of all the following mouzas: Taltore, Madhusudanpur, Shyambati, Bayradihi, Goalpara, Ballavpur, Surul, Bandhgora, Bolpur	4.70

Source: District Land & Land Reforms Office, Birbhum

2.4 HISTORICAL BACKGROUND - THE TOWN & ITS CULTURAL SETTING

Bolpur, the core of Sriniketan Santiniketan Planning Area, was a small village in 1850's. Bolpur had no place in historical records prior to opening up of Sahibgunj Loop line of Eastern Railway in the year 1859. It was located at the junction of two major roads- one connecting Bankura to Katwa and another connecting Berhampore. Bolpur began to prosper and develop as an urban area with opening of Railway line in 1858-60. Thereafter,

the pace of urbanization increased gradually on setting up of a Munsif's Court in 1871, the Police Station and Sub-Registry Office in 1876. The major impetus for its growth came from the establishment of Brahma Ashram, which subsequently became internationally famous as Santiniketan. The Visva-Bharati (Co-educational residential University) founded by Kabiguru Rabindra Nath Tagore at Santiniketan, became an international centre of eminence.

- **Major historical events: -**

- There were several large villages near Bolpur with silk, sugar or indigo factories, "Abkari" outposts and other government outposts. These were situated on either side of river Ajoy, then navigable for part of the year, or on the main roads connecting Sonamukhi, Baharampur, Suri, Burdwan and Katwa.
- Within a few decades of the opening of the railway line, followed by the shifting of government offices from other places or opening of new offices, followed by changing production techniques and commercialization of agriculture, Bolpur like other villages on the railway line, attracted people from nearby settlements.
- The regional setting and the transportation linkages influenced the growth of Bolpur town. There are major rice mills and agricultural production centres in the hinterland.
- With the presence of Visva-Bharati within SSPA, the town of Bolpur and its fringes also acquired a characteristic feature that made its growth and urban pattern different from the other non-industrial urban centres of the district.

3 DEMOGRAPHY

3.1 INTRODUCTION

Demography is the study of human population with respect to size, composition, spatial distribution, and changes in the population that occur over time. The importance of studying demography is to identify changes within the population such as the growth of the population, mortality and morbidity rates, migration and marriage. This information helps governments to evaluate their policies and helps in forecasting future trends. Study and analysis of population is important for planning as proposals and standards are made in relation to population of the planning area, its size, composition and distribution.

Bolpur - Sriniketan CDB

Bolpur – Sriniketan CDB is an administrative division in Bolpur Subdivision of Birbhum district. It has an area of 333.92 Sq. km. and population of 282763. The Block consists of 169 villages distributed over 9 GPs namely Bahiri-Panchosowa, Kankalitala, Kasba, Raipur Supur, Ruppur, Sarpalehanna-Albandha, Sattore, Shian-Muluk & Singhee; a municipality: Bolpur Municipality and a census town, Surul, falling under Ruppur GP.

Apart from the Municipality and the Gram Panchayats, the block has a statutory body named SSSDA, which has jurisdiction over SSPA.

3.1.1 SSPA

SSPA comprises of 44 Mouzas and it is under the jurisdiction of Bolpur Police Station. It has an area of 106.43 Sq.km. Table 3.1 outlines major demographic facts and figures associated with SSPA.

Table 3.1: SSPA–Demographics 2001 and 2011

Description	Census 2001	Census 2011
Population	130594	157188
Urban Population	65693	92370
Rural Population	64901	64818
Male Population	66168	79184
Female Population	64426	78004
SC Population	32286	38314
ST Population	12178	16007
No. of Households	27926	37197
Average Household Size	4.7	4.2

Source: Census of India, 2001 & 2011

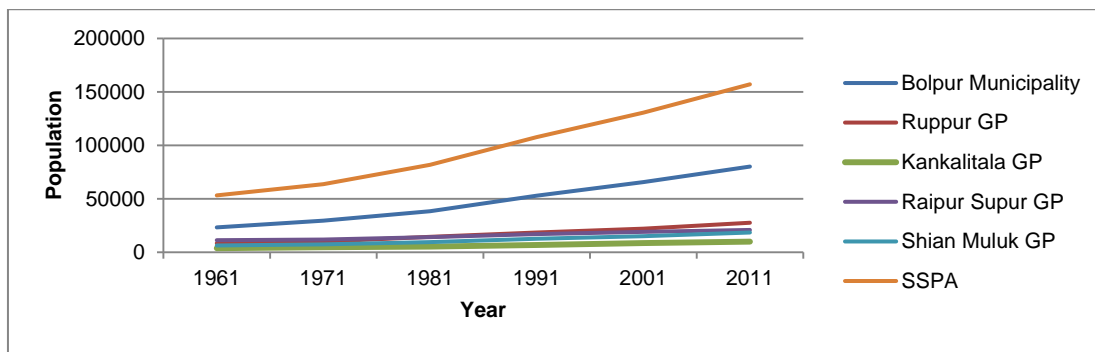
Population of SSPA

The urban area of SSPA consists of Bolpur Municipality and Surul, which had been declared a census town as per census 2011. The rural area consists of four gram panchayats; namely, Ruppur GP, Kankalitala GP, Shian Muluk GP & Raipur Supur GP. Table 3.2 shows the population of SSPA over various decades and Figure 3.1 shows the increase trend in population over decades.

Table 3.2: Population of SSPA

Year	Bolpur Municipality	Ruppur GP	Kankalitala GP	Raipur Supur GP	Shian Muluk GP	SSPA
1961	23335	8510	3762	11305	6329	53241
1971	29636	9905	4696	11975	7456	63668
1981	38436	14508	5257	14217	9447	81865
1991	52866	18464	6794	16950	12631	107705
2001	65693	22128	8662	19073	15036	130592
2011	80210	27618	9985	20867	18508	157188

Source: Census of India 1961- 2011

**Figure 3.1:** Increase in Population over decades

3.1.2 Bolpur Municipality

Bolpur Municipality currently has 19 wards. Earlier it consisted of 18 wards only, and has been re-delineated into 19 wards recently. All analyses in this report has been done based upon 18 wards, since all the available information are based on the older data. Table 3.3 displays major facts and figures related to Bolpur Municipality only.

Table 3.3: Bolpur Municipality - Facts and Figures

Description	Census 2001	Census 2011
Population	65693	80210
Male Population	33337	40468
Female Population	32356	39742
Population Density (Person/ Sq.km.)	5003	6109
SC Population	14994	17363
ST Population	1037	1200
No. of Households	14008	19032
Average Household Size	4.7	4.2

Growth trend in Municipality

The ward-wise comparison of population increase between year 2001 & 2011 has been presented and growth trend has been analyzed for the decade.

Figure 3.2 shows the ward wise comparison of population size for year 2001 & 2011.

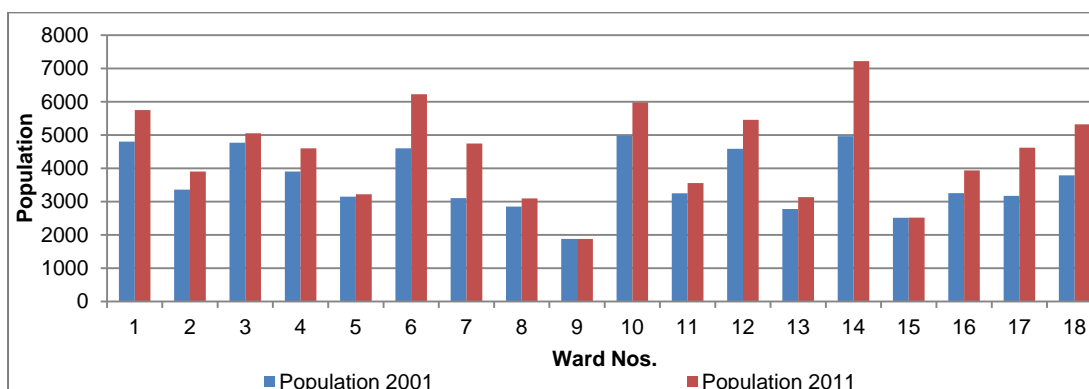


Figure 3.2: Ward wise population for year 2001 and 2011

Source: Census of India 2001 & 2011

3.2 GRAM PANCHAYATS

The four-gram panchayats form the rural part of SSPA. It consists of 40 mouzas and portions of Bolpur and Bandhgora mouzas, which do not fall under Bolpur Municipality. The Ruppur Panchayat consists of the other urban core of SSPA i.e. Surul C.T. In addition, Visva Bharati University has been carved out by taking some of the portion of seven mouzas from Ruppur Panchayat and two mouzas from Raipur-Supur Panchayat. Table 3.4 gives major facts and figure for the four-gram panchayats falling under SSPA.

Table 3.4: Gram Panchyats - Facts and Figures

Description	Census 2001	Census 2011
RUPPUR G.P.	AREA – 25.09 Sq.km.	
Population	22128	27618
Male Population	10979	13660
Female Population	11149	13958
Population Density (Person/ Sq.km.)	872	1089
SC Population	5499	6886
ST Population	3371	5029
No. of Households	5051	6749
Average Household Size	4.4	4.1
RAIPUR SUPUR G.P.	AREA – 24.85 Sq.km.	
Population	19075	20867
Male Population	9764	10625
Female Population	9311	10242
Population Density (Person/ Sq.km.)	716	783
SC Population	5734	6569
ST Population	2930	3788
No. of Households	3973	4865

Demography		LUDCP-2025
Average Household Size	4.8	4.3
SHIAN MULUK G.P.		AREA – 25.16 Sq.km.
Population	15036	18508
Male Population	7646	9382
Female Population	7390	9126
Population Density (Person/ Sq.km.)	580	714
SC Population	3335	4151
ST Population	2851	3758
No. of Households	3079	4212
Average Household Size	4.9	4.4
KANKALITALA G.P.		AREA – 13.24 Sq.km.
Population	8662	9985
Male Population	4442	5049
Female Population	4220	4936
Population Density (Person/ Sq.km.)	648	748
SC Population	2724	3345
ST Population	1989	2232
No. of Households	1815	2348
Average Household Size	4.8	4.3

Source: Census 2001 & 2011

3.3 SEX RATIO

Figure 3.3(a) reveals that the sex ratio of planning area is comparatively higher than that of the country, state, district and block. The sex ratio of urban areas is higher than that of rural areas within SSPA (refer figure 3.3(b)).

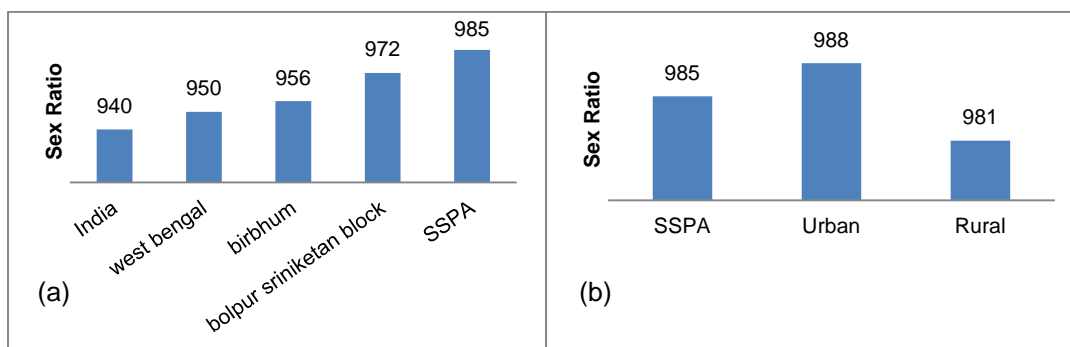


Figure 3.3: Comparison of Sex Ratio

From the figure 3.4, it is evident that Ruppur GP has comparatively higher sex ratio amongst the entire administrative area of SSPA.

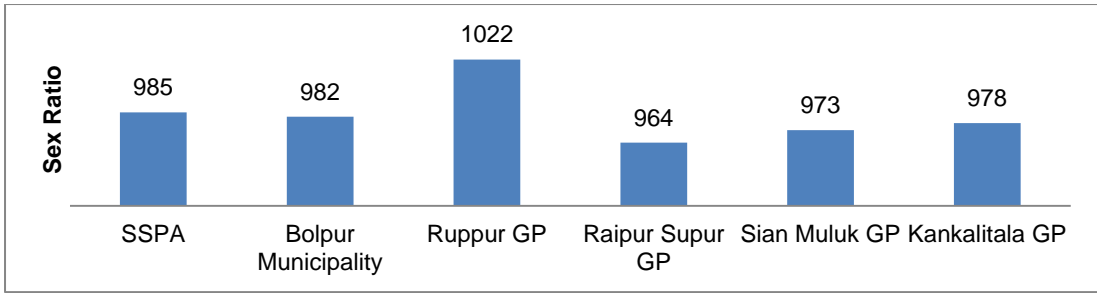


Figure 3.4: Sex Ratio within SSPA

3.4 CHILD POPULATION

The percent of child population of age group 0 to 6 is lower in SSPA than country, state, district and block as shown in figure 3.5(a), signifying a comparatively lower growth rate.

Also, the urban growth rate is comparatively lower than rural growth rate as per figure 3.5(b).

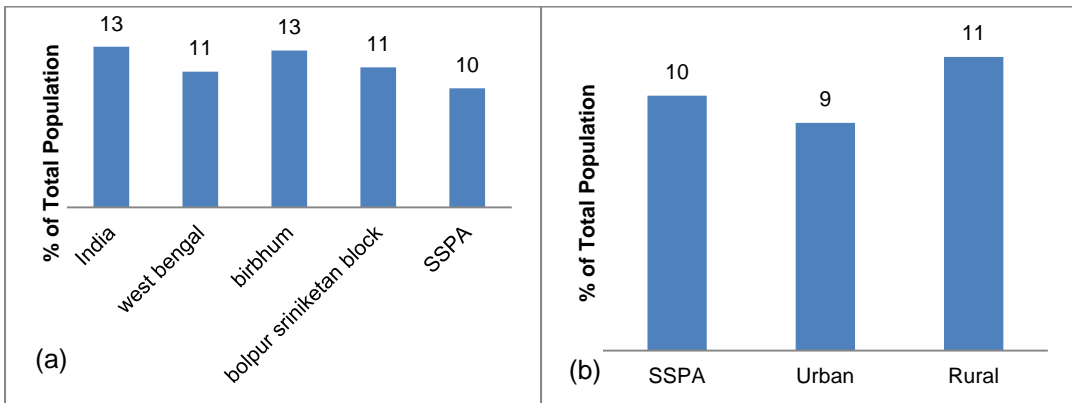


Figure 3.5: Comparison of Child Population

In terms of child population within SSPA, Figure 3.6 reveals that Shian Muluk GP has the highest growth and the Bolpur Municipality has the lowest growth among the various administrative entities.

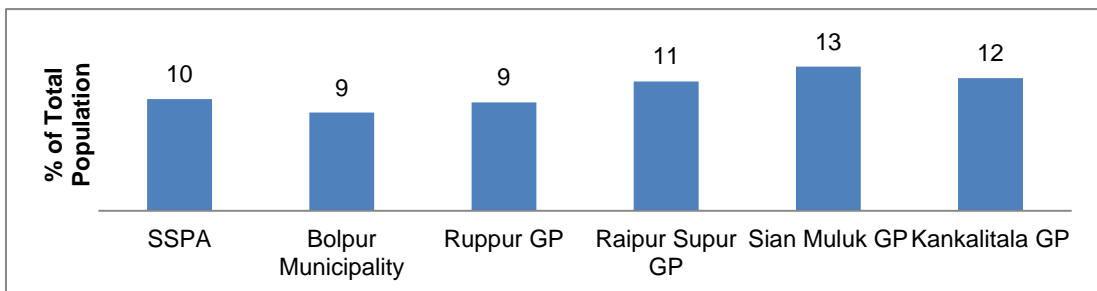


Figure 3.6: Child Population within SSPA

The findings from socio – economic survey further reveal that around 27% of respondents confirmed having at least one child in age group 0 to 5.

3.5 CHILD SEX RATIO

The child sex ratio of the planning area is higher than the country, state and district as evident from figure 3.7(a), signifying improved fertility rate. Even, the rural child sex ratio is better than urban child sex ratio as per figure 3.7(b).

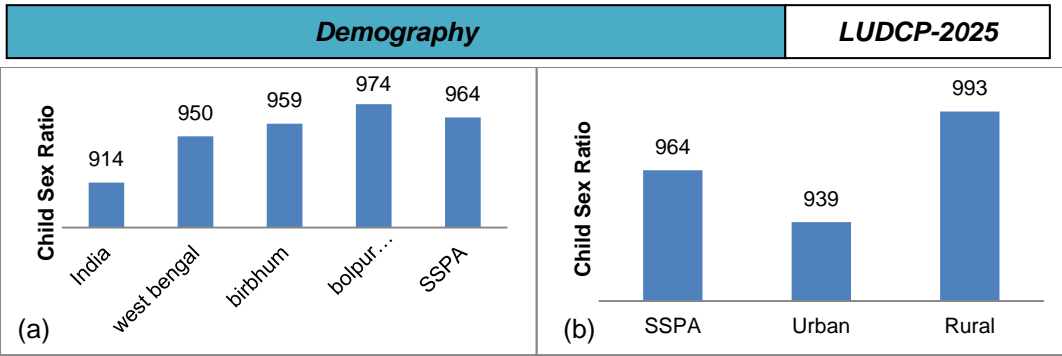


Figure 3.7: Comparison of Child Sex Ratio

Figure 3.8 signifies that Ruppur Supur GP has the highest child sex ratio and Municipality has the lowest amongst all administrative area of SSPA.

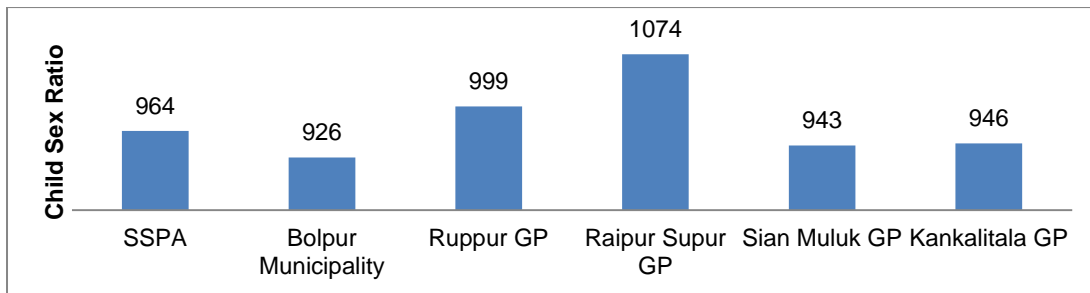


Figure 3.8: Child Sex Ratio within SSPA

3.6 LITERACY RATE

Figure 3.9 (a) shows that the average literacy rate as well as the male and female literacy rates are higher in planning area than that of the country, state, district and block. Also the literacy rate of urban area is higher in comparison to the rural area within SSPA as per figure 3.9(b). It signifies that there is need of better educational infrastructure in the rural area as well as literacy programs.

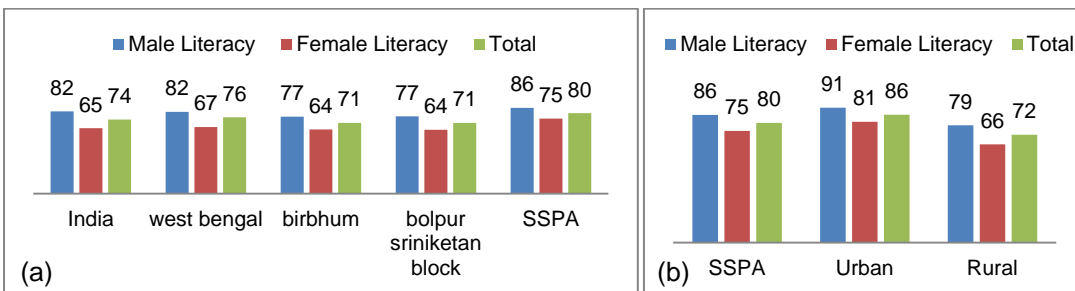


Figure 3.9: Comparison of Literacy Rate

From the Figure 3.10, it is evident that Bolpur Municipality has the highest literacy rate and Shian Muluk GP has the lowest literacy rate among all administrative area of SSPA. Hence, among all the panchayats, Shian Muluk GP lacks good educational infrastructure as well as literacy programs.

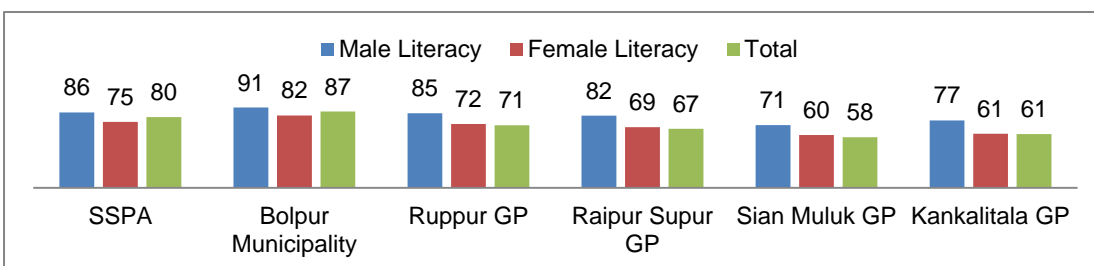


Figure 3.10: Literacy Rate within SSPA

3.7 POPULATION GROWTH TREND

Based on the previous decadal growth rates the population of the planning area has been projected through various methods. For population projection three methods have been adopted namely Arithmetic Increase Method, Geometric Increase Method and Incremental Increase Method (refer Table 3.5). Comparison of the same is shown in Figure 3.11.

Table 3.5: Population Growth Trends

	Arithmetical Growth Rate	Geometrical Growth Rate	Incremental Growth Rate
Bolpur Municipality	13.4	27.6	16.7
Ruppur GP	13.1	21.9	17.8
Kankalitala GP	11.9	14.9	13.1
Raipur Supur GP	8.8	8.0	10.6
Shian Muluk GP	12.5	22.1	16.5
SSPA	12.6	22.7	15.8

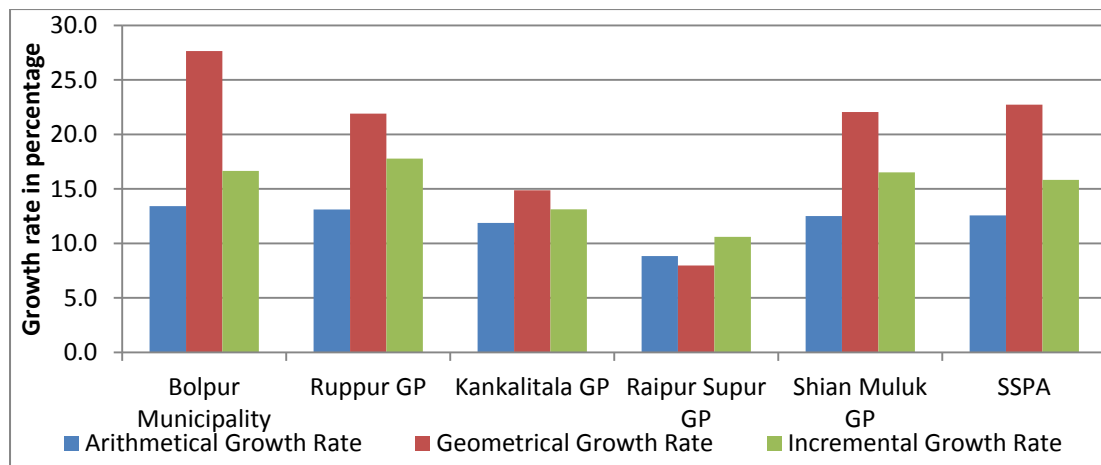


Figure 3.11: Decadal Growth Rate (%) for 2015 - 25

Comparing the population projection pattern from above three methods and considering the growth rate of population, the figure for projected population in case of Geometric Increase Method seems to be pragmatic, as it is the highest among the three methods and accordingly all other proposals have been suggested based upon this projected population.

Thus, for all practical purposes, the projected population of SSPA for the plan period 2025, has been considered as 2, 09,850 or 2,10,000 approximately.

3.8 POPULATION DENSITY

The population density of units of SSPA and Bolpur Municipality have been compared for the year 2001 and 2011.

Characteristics of density of Bolpur municipality:

Ward No. 1, 6,7,10 and 12 lies in the South-West side of the municipality, where the predominant land use character is Agricultural. Area-wise, these wards are the larger than others. Almost all the wards show an average growth in the past decade from 2001 to 2011, except for wards 9, and 15 which are in the core of the city. Wards lying in the North East side of the Planning Area show the highest increase in density, as seen in Figure 3.12.

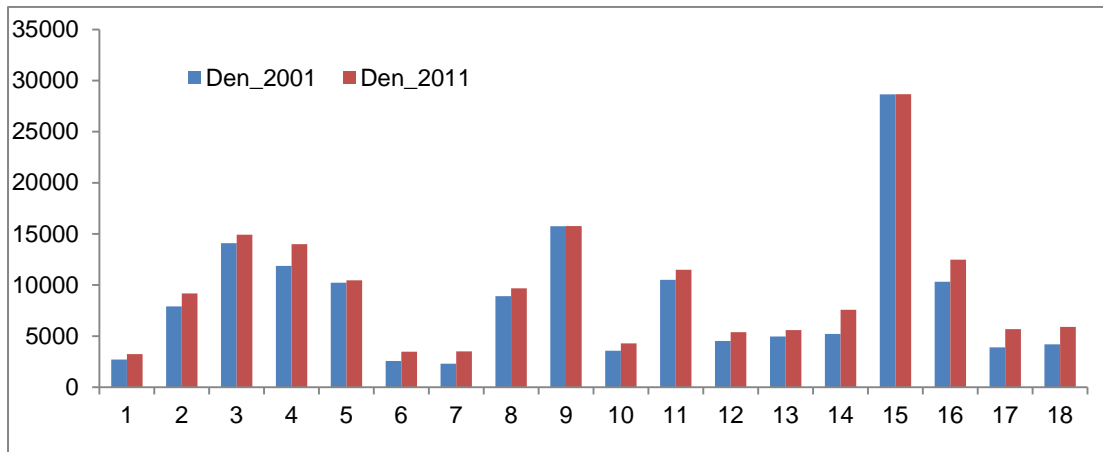


Figure 3.12: Comparison of population density Bolpur municipality

Population density of SSPA for the year 2011

Five of the mouzas namely Dakshin Chandipur, Shibpur, Uttar Radhanagar, Udaypur, Bhatura are Agricultural lands and have no population since last 5 decades. The mouzas to the South East have least density because of low lying area and lack of road connectivity. Mouzas near the Visva-Bharti and Prantik station show a high population density, mainly due to their proximity to tourist attraction areas like Khoai etc. Bolpur municipality has the highest density amongst all administrative units, as it is the main commercial centre in the Sriniketan-Santiniketan planning area.

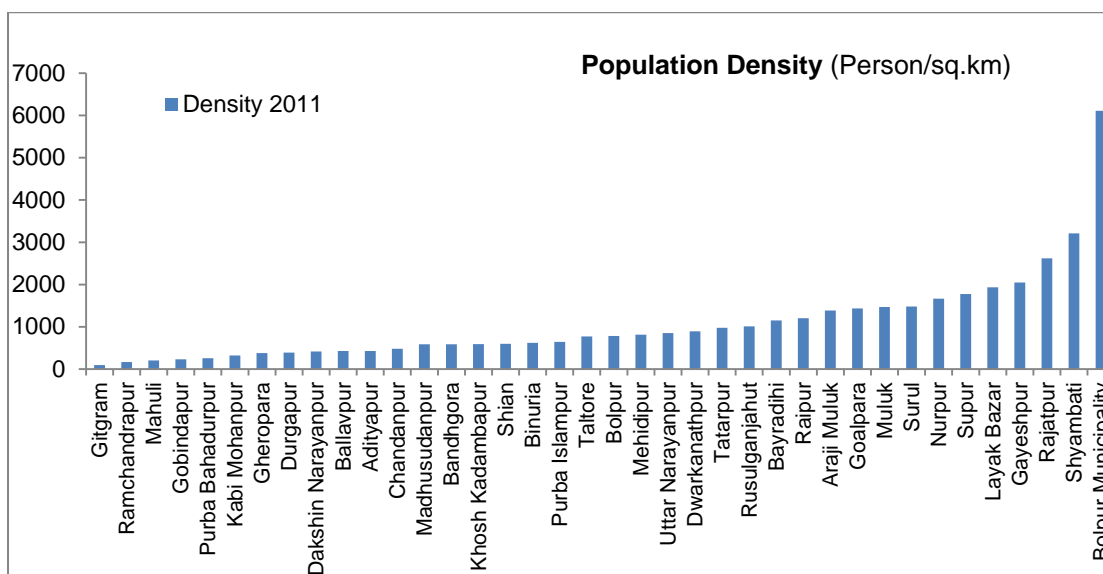


Figure 3.13: Population density of SSPA

4 SOCIO-ECONOMIC PROFILE

The Socio Economic Survey intends to determine the socio-economic-cultural perspectives of the region and to capture the people's perception. Socio-economic surveys related to land use planning adds another dimension by relating the contexts and perceptions to space indicating land use variations.

4.1 SOCIO ECONOMIC SURVEY

A sample of 2% has been considered for the socio-economic survey which was 640 in size.

On availability of published Census 2011 information providing a population of SSPA at 157188, the sample size of 640 was checked for statistical viability. For a population size of 157188, at 95% confidence level and at 5% margin of error, the estimated sample size is 534. The enhanced sample size of 640 brought down the Margin of Error to even lower at 3.9%.

The sample distribution was done based on available 2001 census. The percentage breakup of population in rural and urban SSPA as per the Census 2001 is 49.7: 50.3 respectively which suggest equal sample distribution. However a few additional samples had been included in the urban area considering the specific concerns. The sample size for rural area has been 310 while it is 330 for urban area.

The samples were collected from all the three income groups within a ward or mouza to reflect the character, economic, social and cultural profile of all the classes within a ward or mouza. So, a random stratified sampling technique was used to survey the five local administrative units of SSPA i.e. Bolpur Municipality and the four gram panchayats. It was not a Census survey where 100% households are covered, however adequate measures were taken to make the sample as representative as possible. Besides this, under socio-economic survey, interviews of stakeholders like business associations, hoteliers, builders, NGO/ CBOs and focused group discussion of the community groups, women groups were also conducted for a qualitative assessment the region.

The indicators assessed through economic survey included Demographics, Economic Profile, Housing Background, Stay in SSPA, Quality of Life, Awareness about SSPA and Planning & Development Perspective.

4.2 INPUTS FOR PLANNING

4.2.1 Economy

The economy of SSPA consists of all three sectors; primary, secondary and tertiary with all three sectors having remarkable components. The major primary activity of the planning area is agriculture and fishery to some extent. The secondary sector mainly includes art & craft-based household and cottage industries and to some extent other industries like rice milling. The tertiary sector activities include tourism, transportation, hospitality business, trade and commerce; and other private, government & semi-government activities in education and health sector. The tertiary sector is mainly dominant in urban area and the primary sector in rural area.

In recent decades the tertiary sector has seen maximum growth due to increased tourism activities, hospitality businesses and various developments in real estate. As suggested by the stakeholders; tourism industry, hospitality sector, construction industry or real estate sector, trade, business & service industry, craft and cottage industries are the sectors in which employment opportunities have increased. These sectors have potential to have a better growth provided it is properly planned and managed. The agriculture sector of the

planning area also has a huge potential that needs to be augmented with proper infrastructure, research and development facilities in the field.

The working population consists of 31% of the total population, of which 21% are male and 10% female. The percent share amongst main and marginal workers are 86% and 14% respectively, as seen in Figure 4.1 (a). The occupational structure of SSPA suggests 41% involvement in agricultural activities, 9% in household industries and 50% involvement in other sectors which mainly includes tertiary sector (Source: Census 2011). The income pattern of SSPA shows that most of the households of the planning area fall in LIG and MIG category and merely 7% of households have an income more than Rs. 25000. Similarly, only 3% of households have a monthly expenditure of more than Rs. 25000. (Source: Primary Survey Sep 2014,).

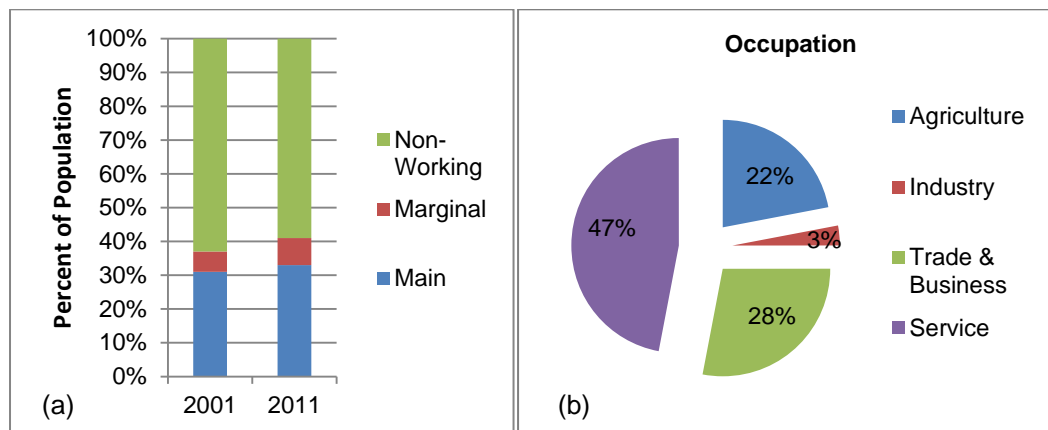


Figure 4.1: Working population breakups

The primary income source in rural areas within SSPA is agriculture whereas the service sector provides maximum income in urban areas. Around one percent of the respondents are engaged in tourism sector, 13 percent of the urban working population is involved in transport sector. A significant percentage (around 30%) are engaged in other service areas like government sector, health sector, IT-enabled services, or have retired from such services. This is shown in Figure 4.1(b).

Enterprise and industry

Birbhum is a major centre of cottage industries. Some of the notable forms of cottage industries of Birbhum include *batik*, *kantha stitch*, *macramé* (weaving by knotting threads), leather, pottery and terracotta, woodcarving, bamboo and cane craft, metal works and various tribal crafts. Other main industries in Birbhum are agriculture-based industries like textiles—especially cotton and locally-harvested tussar silk textiles, Non-Timber based Forest products (NTFP) based industries, arts and crafts. Sriniketan is known for its dairy industry and as a forestry centre. There are 8,883 small and medium scale industries. Principal industries of the district include cotton and silk harvesting and weaving, rice and oilseed milling, lac harvesting, and metal ware and pottery manufacture.

4.2.2 Tourism

Santiniketan is renowned for its unique blend of serenity, natural allure and a rich cultural heritage. Over the years it has grown to be a popular destination for people – students and tourists alike, from various cultures, backgrounds and nationalities. People visit the place due to a variety of reasons: to find inner peace amidst nature, to admire the small but beautiful

heritage buildings; as students of Science, Art, or culture, or to study the works of *Kobiguru*. Some visitors arrive at the place to revel in the various cultural fests occurring throughout the year.

Some of the major attractions in Sriniketan-Santiniketan are as follows:

- The Visva Bharati Complex: which Tagore defined as “Where the world makes a home in a nest.”
- Ashram complex: consists of many ancient structures such as:
 - Santiniketan Griha
 - Stained glass Mandir
 - Other buildings like the *Patha Bhavana* and *Santoshalay* with beautiful frescoes by artists of the 1920's.
- Other notable places are Taladhvaj, Ghantatala, Chhatimtala Cha-chakra etc.(Shown in Figure 4.2) There are many different trees in the area that adds to the overall natural beauty and appeal of the place.
- The Ballavpur Wildlife sanctuary houses the endangered deer, Indian jackals and wolves.



Figure 4.2: Major tourist attractions.

- The various cultural festivals like *Poush Mela* (December), *Joydev Mela* (January), *Basanta Utsav* (March) draws a significant section of tourists.
- *Shanibar-er Haat* is a unique concept of craft fair encouraging cultural tourism and is emerging as a nodal attraction of Santiniketan. It is forum for transaction and interaction within the eco- cultural setup of the Khoai region.
- Santiniketan is also home for the famous “*Bauls*” who are mystic minstrels, constituting both a syncretism religious sect and a unique musical tradition. *Baul* is another notable attraction of Santiniketan. Further, tribals are an integral part of the economic and cultural landscape of the area, which also is a point of interest for tourists and researchers.

Over the years, tourism has become a noticeable phenomenon and plays an important and unavoidable role in the economic development of SSPA. However, there is a lack of proper planning and systematic administration of the sector. There is no such organisation which handles the tourism activities solely and systematically; thus leading to a haphazard operation. The most important issue is the need for crowd control and monitoring of anti-social activities during the famous festivals like Basantotsav and Poush Mela. Unruly crowd,

deliberate or forced, induces a lot of pollution and destroys the serenity and placidity of Santiniketan, for which it is renowned. The normal life of residents is disrupted and high commodity prices and rickshaw tariffs unwarrantedly affect them.

4.2.3 Business and Trade

Business and Trade is a predominant sector in terms of engagement in SSPA. The explosion of trading services, particularly retail trading, is probably due to the failure of manufacturing. This happened due to absorption of growing labour force by the agriculture sector. It becomes almost a natural decision for an individual to set up at least a small shop depending on his means and capital. A vast number of the job seekers face barriers to enter in other sectors and then flock to the informal sector, mostly in retail trading. While in the rural sector a significant percentage are into agro-related business and trading either as a primary occupation or as a subsidiary occupation, in the urban sector there has been an upsurge of commercial activities especially those in line with tourism and education – both of which are prominent service sectors in Santiniketan – Sriniketan. These ventures range from small stationary outlets, handicrafts, hotels and restaurants, education equipment, café, Xerox centres etc.

4.2.4 Housing

Housing is the largest land use component of urban planning. It is not only a parameter of physical planning but also has socio-economic dimensions. The housing character of SSPA varies as per the region. Bolpur Municipality mainly consists of pucca housing type; the panchayats mainly have a mix of semi-pucca and kachcha structures. Ruppur panchayat has shown the maximum transformation from kachcha to semi pucca and pucca structures. Surul, which has been recently declared a census town, is gradually attaining urban character. In mouzas like Taltore, Madhusudanpur, Shyambati, of Ruppur panchayat (towards North West of Bolpur Municipality), various housing projects have come up recently, which has changed the face of these mouzas entirely. These housing projects have been developed as gated communities. Besides, there have been several private residences and villas coming up in the region.

The total area under residential land use category is 15.55 Sq.km, which forms 14.39% of total land use. The total number of households within SSPA is 37197, average household size is 4.2 and household density is 344 households per Sq.km.(Source: Census 2011).

The housing stock of SSPA consists of approximately 52% pucca housing, 19% semi-pucca housing and 29% kachcha housing as shown in Figure 4.3. As far as condition of dwelling units is concerned, 56% of housing are in good condition, 38% are in liveable condition and 6% in dilapidated condition (Source: Primary Survey Sep 2014).

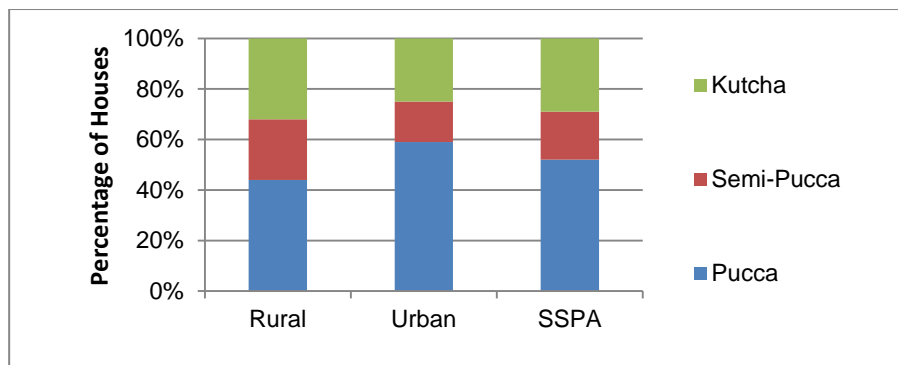


Figure 4.3: Housing Stock SSPA

Most of the housing stock of SSPA is one storied, the percentage being 77%, around 22% are of two storeys and a meagre 1% of houses are of three or more storeys as is displayed in Figure 4.4. The ownership pattern of SSPA shows mainly self-owned houses and only 12% of houses are rented or fall under any other category. Mixed-use residence, consisting of just 2% of the total houses, is not very prevalent in SSPA. The mixed uses mainly consist of home-stays or shops with residences. (Source: Primary Survey Sep 2014)

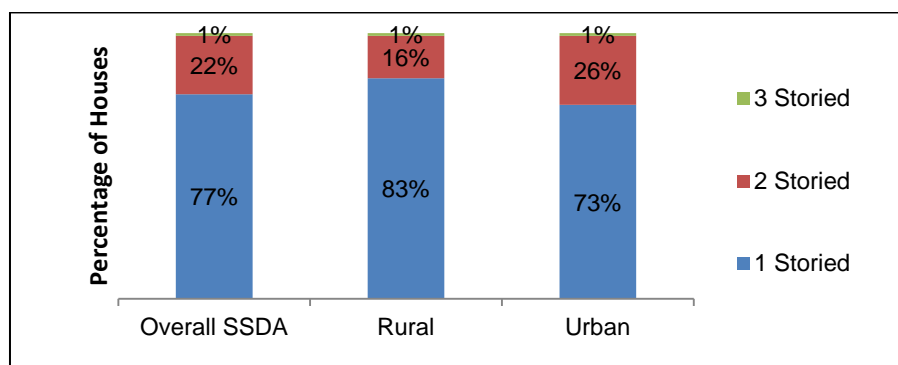


Figure 4.4: Height of buildings

Slums in SSPA are mostly clustered within the Bolpur Municipality area. There are altogether seventy-five slums in Bolpur Municipality; sixty-nine notified slums and six un-notified slums.

Bolpur Municipality has been running two schemes for slum dwellers namely: Integrated Housing & Slum Development Program (IHSDP) by JNNURM and Basic Services for Urban Poor (BSUP) by the state government. The total number of beneficiaries under IHSDP is 573 dwelling units spread over 38 slums and the grant given is Rs. 100000 per Dwelling Unit. The BSUP Scheme has three phases. Under Phase 1, the number of beneficiaries are 60 Dwelling Units (DU) and corresponding grant given is Rs. 1,00,000 per DU. Phase 2 consists of 40 DUs with a grant of Rs. 1,49,000 per DU; while Phase 3 includes 28 DUs with a grant of Rs.2,29,000 per DU.

4.2.5 Living and motivation

Human settlements do not just happen. They are the cumulative result of a multitude of needs and decisions, both public and private. Human settlement planning seeks to improve the quality of life of people while also considering indigenous, cultural and societal needs. The different aspects of housing and habitat have been analyzed based on respondent responses.

As per primary survey results, people in Santiniketan/ Sriniketan area have been found to live there since a long time; approximately more than 20 years as per the response of over 80% people(as shown in Figure 4.5) indicating that majority are sons of the soil.

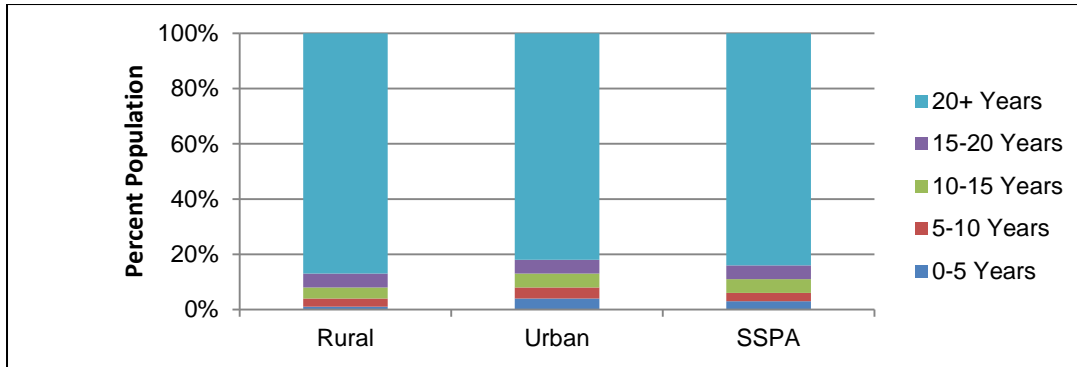


Figure 4.5: Duration of stay in SSPA

Motivation to stay

Some of the key motivators for staying in SSPA have been primarily the small town atmosphere, which implies knowing the people and developing a neighbourhood kinship. This has been the result of staying over generations as indicated by nearly three- fourths of the primary survey respondents. Access to educational facilities has been a prime motivator with the presence of Visva Bharati and its overwhelming influence on local people and outsiders. Some other inspiring factors for retaining people in SSPA are particularly Santiniketan and its culture, natural environment and overall convenience of being in a small town.

In terms of major motivations, some unique differences can be observed between urban & rural regions. A significant proportion of rural people feel easy marketability of agricultural products is a critical reason for staying in this area. This is a prime reason why Bolpur – Santiniketan has emerged as one of the major centre for trading and business. For the urban inhabitants, strong social networks emerge as key motivators followed by good educational facilities.

5 EXISTING LAND USE & INFRASTRUCTURE

5.1 LAND USE PATTERN

In this section, land use pattern of the planning area has been discussed briefly. Land use composition for various existing land uses is presented here for the better understandings about the utilisation of land in Planning Area. Further, to know the growth trend of the urban area in terms of extent and direction, sprawl analysis was done.

5.1.1 Land Use Classification

Table 5.1 gives a list of land use layers that would be used for existing land use maps.

Table 5.1: Land Use Layer for Land Use Maps

S.No.	Land Use Type	Colour	S.No.	Land Use Type	Colour
	Residential	Yellow		Public & Semi Public/ Institutional	Red
1	Primary Residential Zone		19	Govt/Semi Govt/ Public Offices	
2	Mixed Residential Zone(Residential+Commercial)		20	Other Offices	
3	Unplanned/Informal Residential Zone		21	Education &Research	
			22	Medical & Health	
	Commercial	Deep Blue	23	Social Cultural and Religious	
4	Retail Shopping Zone		24	Utilities and Services	
5	Wholesale, Godowns, warehouses/ Regulated markets				
				Recreational Area	Light Green
	Manufacturing/ Industrial	Violet	25	Playground/Stadium/Sports Complex	
6	Light Industry		26	Parks & Gardens-Public Open Space	
7	Heavy Industry				
8	Brick Kiln & Extractive Area			Water Bodies	Light Blue
			27	Pond/Tanks/Lakes	
	Agricultural	Light Green	28	River Course/Streams/ Canals	
9	Agriculture		29	Waterlogged areas	
	Forest & Plantation	Green		Special Area	Burnt clay
10	Forest		30	Eco Sensitive Area	
11	Orchard/Plantation			Heritage & Conservation Areas	
	Transportation	Black		Vacant Land	Light Brown
12	Major Roads			Vacant Land abutting Water Bodies	
13	Minor Roads			Embankments/Bunds	
14	Railway track			Barren Land	
15	Railway Station				
16	Bus Depots/Truck Terminals/Freight complexes/ Helipads				
17	Transmission &Communications				
18	Bus stops				

As discussed in previous plans, SSPA is predominantly agricultural with 53.38% of land area still under agricultural use. However, the share of agricultural land use has drastically decreased in last two decades. The share of land has mostly shifted to residential land use category. The recent decades have experienced higher growth and various housing projects have come up in the planning area. The vacant land use category is another land use category that shows an increase, which can be attributed to existence of barren lands lacking proper irrigation facilities. The decrease in percentage of area under water bodies shows that there could be cases of filling up of water bodies illegally for developmental purpose or that some of the water bodies of the region may have dried up. Table 5.2 provides a detailed classification of existing land use of the planning area. The same has been graphically represented in Figure 5.1.

Table 5.2: SSPA – Existing Land Use 2015

Ref. code	Land Use	Area in Sq. km.	Percentage
1	Primary Residential	13.53	12.53
2	Mixed Residential	0.43	0.40
3	Unplanned/ Informal Residential	1.59	1.47
	Residential	15.55	14.39
4	Retail Shopping	0.31	0.29
5	Wholesale, Godowns, Ware Houses/ Regulated Market	0.08	0.07
	Commercial	0.39	0.36
6	Light Industry	0.48	0.44
7	Heavy Industry	0.12	0.11
8	Brick Kiln and Extractive Areas	0.23	0.21
	Industrial	0.83	0.77
9	Major Roads	1.11	1.02
10	Minor Roads	1.77	1.64
11	Railway Track	0.53	0.49
12	Railway Station	0.04	0.04
13	Bus Depots/ Truck terminal/Helipads	0.03	0.03
14	Transmission and communication	0.00	0.00
	Transport	3.48	3.22
15	Govt/ Semi Govt/ Public offices	0.10	0.09
16	Other offices	0.02	0.02
17	Education and Research	3.58	3.31
18	Medical and health	0.26	0.24
19	Social Cultural and Religious	0.26	0.24
20	Utilities and Services	0.21	0.19
21	Cremation and Burial ground	0.07	0.07
	Public Semi Public	4.50	4.16
22	Playground/ Stadium / Sports Complex	0.20	0.18
23	Public Open Spaces	0.19	0.18
	Recreation	0.39	0.36
24	Agricultural Land	57.55	53.27
25	Poultry/ Animal Husbandry	0.02	0.02
26	Pisciculture	0.10	0.09
	Agriculture	57.67	53.38
27	Forest	2.99	2.76
28	Orchard/ Plantation	1.95	1.81
	Forest & Plantation	4.94	4.57
29	Lake/ Tank/ Pond	5.06	4.68
30	Water Logged Area	0.30	0.28
31	River/ Streams & canal	3.50	3.24
	Water Body	8.86	8.20
32	Vacant Land abutting Water bodies	2.85	2.63

LUDCP-2025	Existing Land Use and Infrastructure
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33	Embankments/ Bunds	0.25	0.23
34	Barren Land	8.02	7.42
	Vacant Area	11.11	10.29
35	Eco Sensitive Area	0.01	0.01
36	Heritage and Conservation Area	0.30	0.28
	Special Area	0.31	0.29
	Total	108.03	100.00

Source: Primary Survey Sep 2014

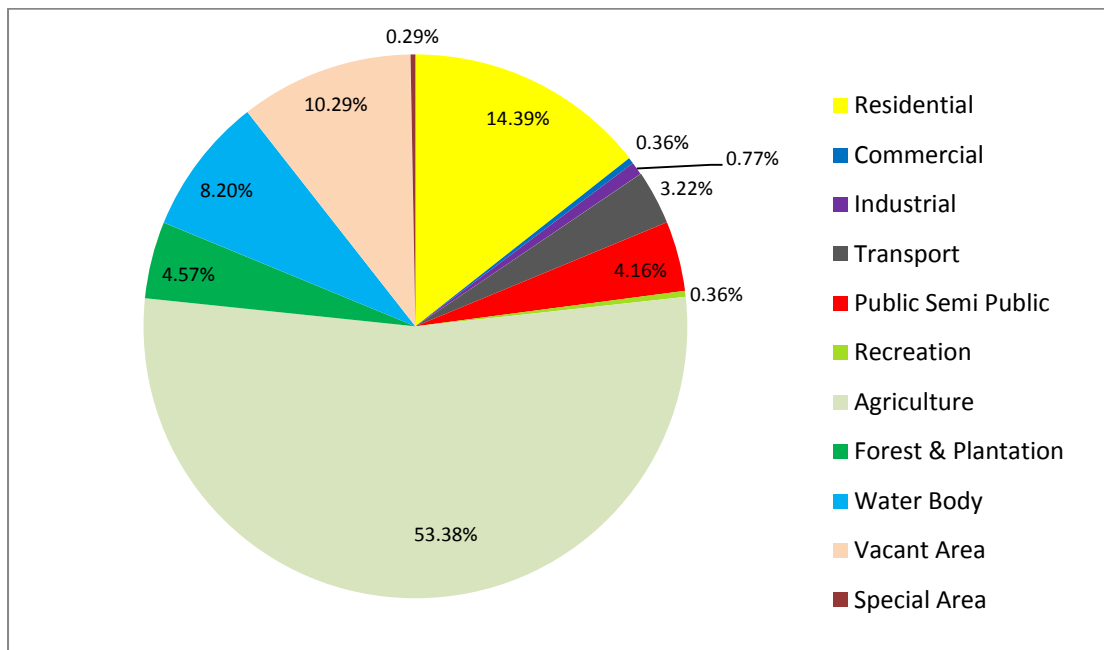


Figure 5.1: SSPA – Existing Land Use 2015

Source: Primary Survey Sep 2014

Map No. 5.1 shows the existing land use map of SSPA
 The detailed map for all the mouzas can be referred from the catalogue of land use maps.

Bolpur Municipality

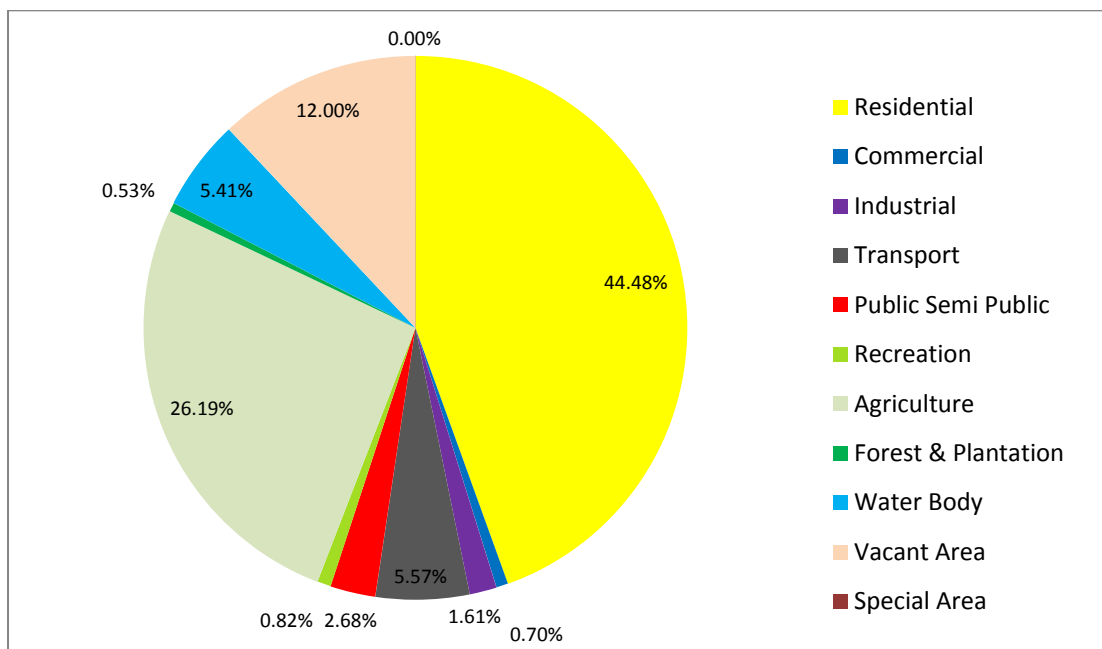
The predominant land use of Bolpur Municipality is 'residential' consisting of 44.48% of the total land area. The second dominant land use is 'agricultural' with 26.19% of the total land area. As per the land use survey, the Bolpur Municipality has 12.00% of land under vacant use category, which could be used for various developmental works. As per the population and population density, Bolpur Municipality falls under Medium Town category according to UDPFI Guidelines. The comparison with the standards provided as per UDPFI Guidelines shows that, Bolpur Municipality does not have adequate amount of land allocated to commercial, public & semi-public, transportation and recreational land uses which are significant for any urban area. This has been evident in the feedbacks received from local people as well as stakeholders.

Table 5.3 provides a detailed classification of existing land use for the Bolpur Municipality. The same has been graphically represented in Figure 5.2.

Table 5.3: Bolpur Municipality – Existing Land Use 2015

Land Use Type	Area in Hectare.	Percentage	Standards (UDPFI)
Residential	5841.14	44.48	45 to 50
Commercial	92.00	0.70	2 to 3
Industrial	211.99	1.61	8 to 10
Transport	732.00	5.57	10 to 12
Public Semi Public	352.00	2.68	6 to 8
Recreation	107.24	0.82	12 to 14
Agriculture	3439.77	26.19	Balance
Forest & Plantation	69.90	0.53	-
Water Body	711.00	5.41	Balance
Vacant Area	1576.23	12.00	-
Special Area	0.00	0.00	-

Source: Primary Survey Sep 2014

**Figure 5.2:** Bolpur Municipality – Existing Land Use 2015

Source: Primary Survey Sep 2014

Ruppur Gram Panchayat

Among all the gram panchayats, Ruppur panchayat has been mostly affected by urbanisation, which is evident from higher share of residential land use and lower share of agricultural land use with respect to other three panchayats. This panchayat has been mostly affected, after Bolpur Municipality, due to its proximity to major activity and tourism nodes of SSPA i.e. Visva Bharati, Khoai, Ballavpur Sanctuary.

Table 5.4 provides a detailed classification of existing land use for the Ruppur Gram Panchayat. The same has been graphically represented in figure 5.3.

Table 5.4: Ruppur GP – Existing Land Use 2015

Land Use Type	Area in Hectare.	Percentage
Residential	431.6	15.6
Commercial	24.2	0.9
Industrial	15.1	0.5
Transport	86.2	3.1
Public Semi Public	220.4	8.0
Recreation	18.8	0.7
Agriculture	1077.9	38.9
Forest & Plantation	365.8	13.2
Water Body	199.7	7.2
Vacant Area	301.6	10.9
Special Area	30.1	1.1

Source: Primary Survey Sep 2014

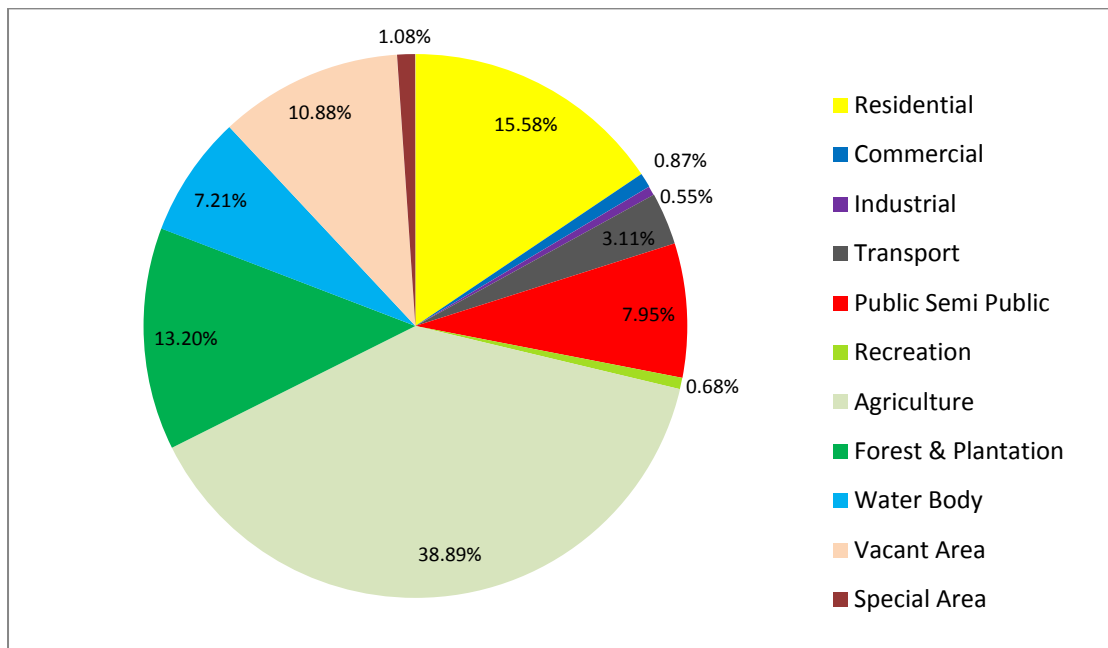


Figure 5.3: Ruppur GP – Existing Land Use 2015

Source: Primary Survey Sep 2014

Raipur Supur Gram Panchayat

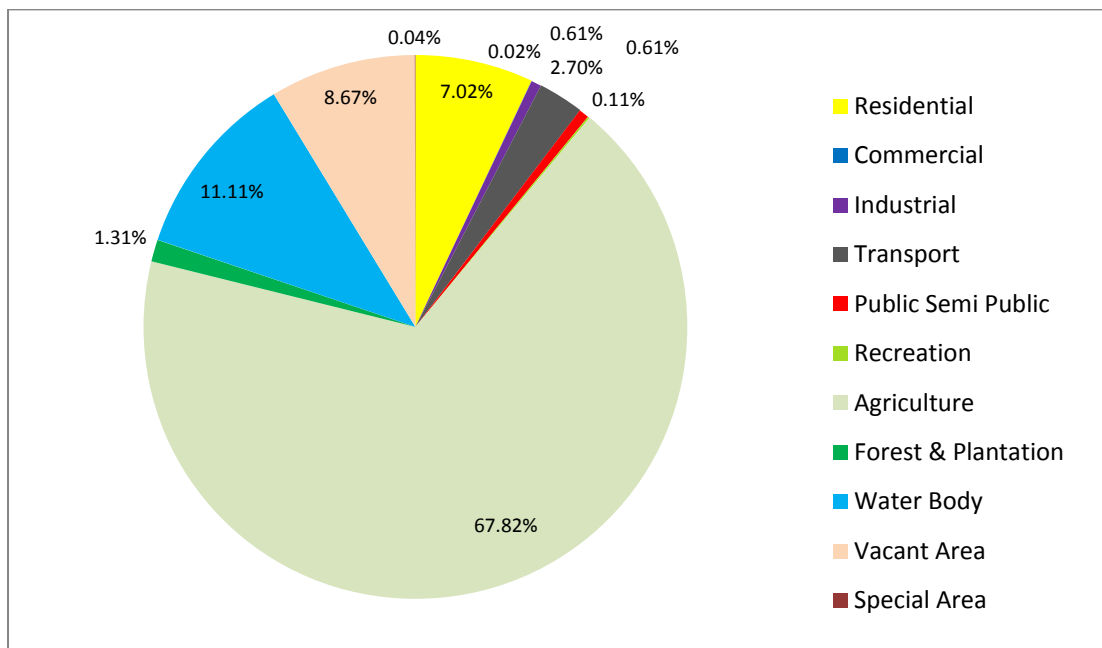
This panchayat also covers large area within SSPA and has comparatively higher share of agricultural land use. When compared to other panchayats, it has almost same degree of connectivity as the other two more-developed panchayats. This region is home to some of the prominent industries of the planning area.

Table 5.5 provides a detailed classification of existing land use for the Raipur Supur Gram Panchayat. The same has been graphically represented in Figure 5.4.

Table 5.5: Raipur Supur GP – Existing Land Use 2015

Land Use Type	Area in Hectare.	Percentage
Residential	180.2	7.0
Commercial	0.4	0.0
Industrial	15.6	0.6
Transport	69.3	2.7
Public Semi Public	15.6	0.6
Recreation	2.8	0.1
Agriculture	1741.2	67.8
Forest & Plantation	33.7	1.3
Water Body	285.3	11.1
Vacant Area	222.5	8.7
Special Area	0.9	0.0

Source: Primary Survey Sep 2014

**Figure 5.4:** Raipur Supur GP – Existing Land Use 2015

Source: Primary Survey Sep 2014

Shian Muluk Gram Panchayat

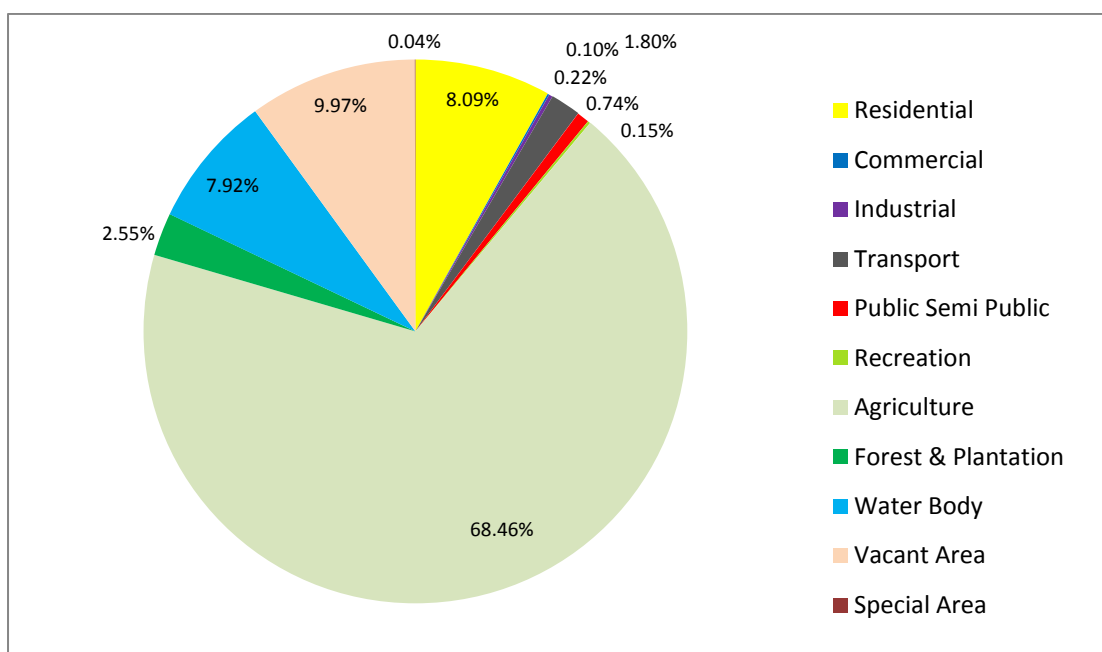
Among all the panchayats, it covers the maximum area within SSPA and has highest share of agricultural land use. This panchayat is also the least developed area within SSPA and is evident from the share of other land use categories like transportation, commercial, industrial etc. in this region. The area under transportation is also the least among the four panchayats, which signifies its weak connectivity.

Table 5.6 provides a detailed classification of existing land use for the Shian Muluk Gram Panchayat. The same has been graphically represented in Figure 5.5.

Table 5.6: Shian Muluk GP – Existing Land Use 2015

Land Use Type	Area in Hectare.	Percentage
Residential	213.14	8.09
Commercial	2.72	0.10
Industrial	5.73	0.22
Transport	47.56	1.80
Public Semi Public	19.40	0.74
Recreation	4.02	0.15
Agriculture	1803.92	68.46
Forest & Plantation	67.12	2.55
Water Body	208.55	7.92
Vacant Area	262.67	9.97
Special Area	0.00	0.00

Source: Primary Survey Sep 2014, IIT Kharagpur

**Figure 5.5:** Shian Muluk GP – Existing Land Use 2015

Source: Primary Survey Sep 2014

Kankalitala Gram Panchayat

This panchayat covers the least area within SSPA as only four mouzas of the panchayat falls in SSPA. It consist Layek Bazaar area, the other important growth node of SSPA. It houses various health facilities of SSPA, which is one of the important factors of its growth. The same is evident from the public semi-public land use share. It also has comparatively less agricultural land use and more of other uses. This gram panchayat is also comparatively less developed.

Table 5.7 provides a detailed classification of existing land use for the Kankalitala Gram Panchayat. The same has been graphically represented in figure 5.6.

Table 5.7: Kankalitala GP – Existing Land Use 2015

Land Use Type	Area in Hectare.	Percentage
Residential	145.85	10.79
Commercial	0	0
Industrial	25.44	1.88
Transport	44.23	3.27
Public Semi Public	40.38	2.98
Recreation	2.3	0.17
Agriculture	799.61	59.19
Forest & Plantation	20.21	1.49
Water Body	105.75	7.82
Vacant Area	167.01	12.36
Special Area	0	0

Source: Primary Survey Sep 2014

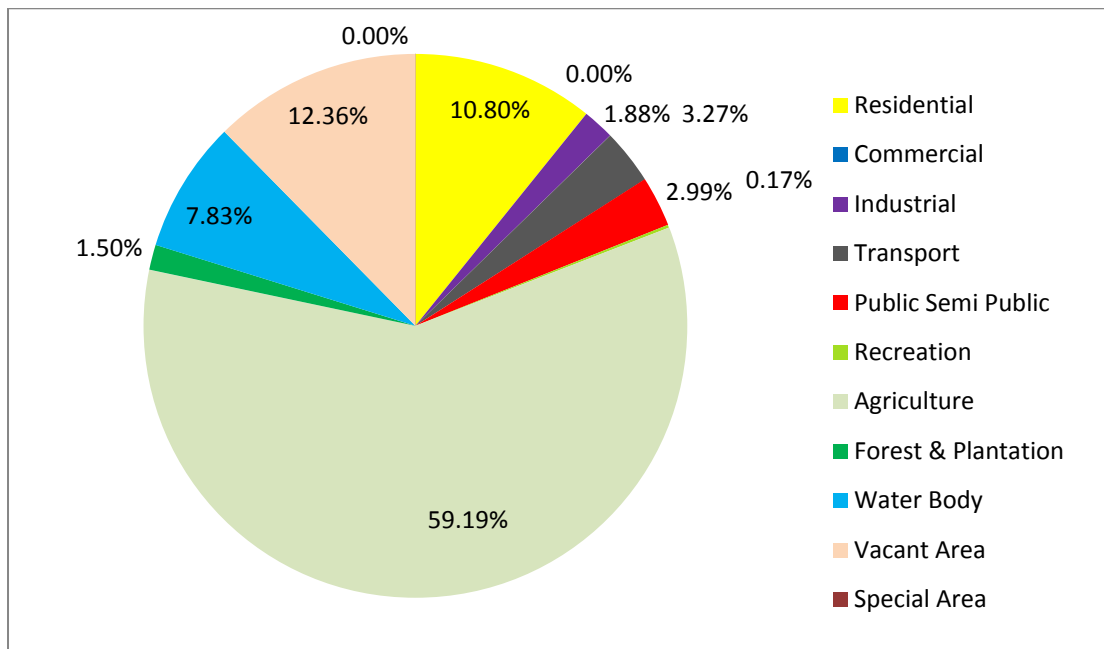


Figure 5.6: Existing Land Use of Kankalitala GP

Source: Primary Survey Sep 2014

5.1.2 Sprawl analysis

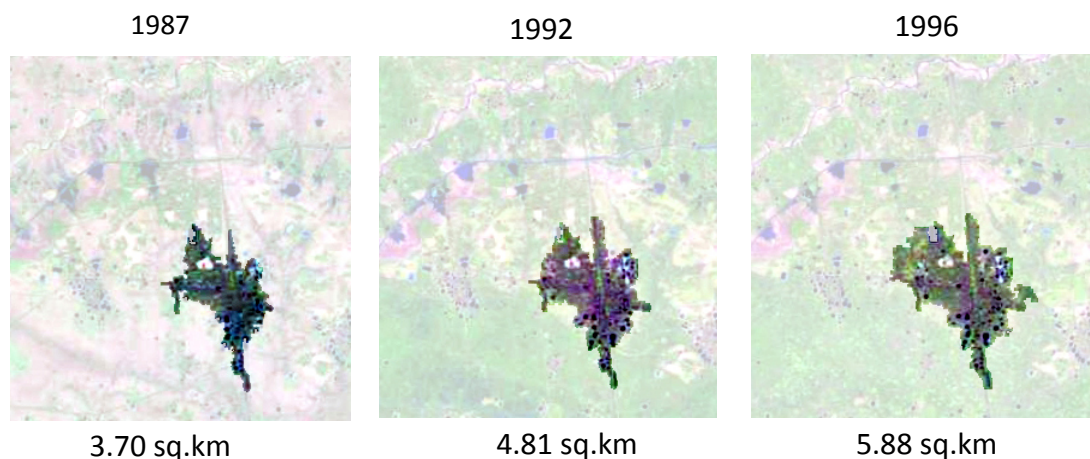
Sprawl is a term that is often used to describe perceived inefficiencies of development, including disproportionate growth of urban areas and excessive leapfrog development. Sprawl is a cumulative result of many individual decisions and it requires not only an understanding of the factors that motivate an individual landowner to convert land, but also an understanding of how these factors and individual land-use decisions aggregate over space. Some of the causes of the sprawl include - population growth, economy and proximity to resources and basic amenities.

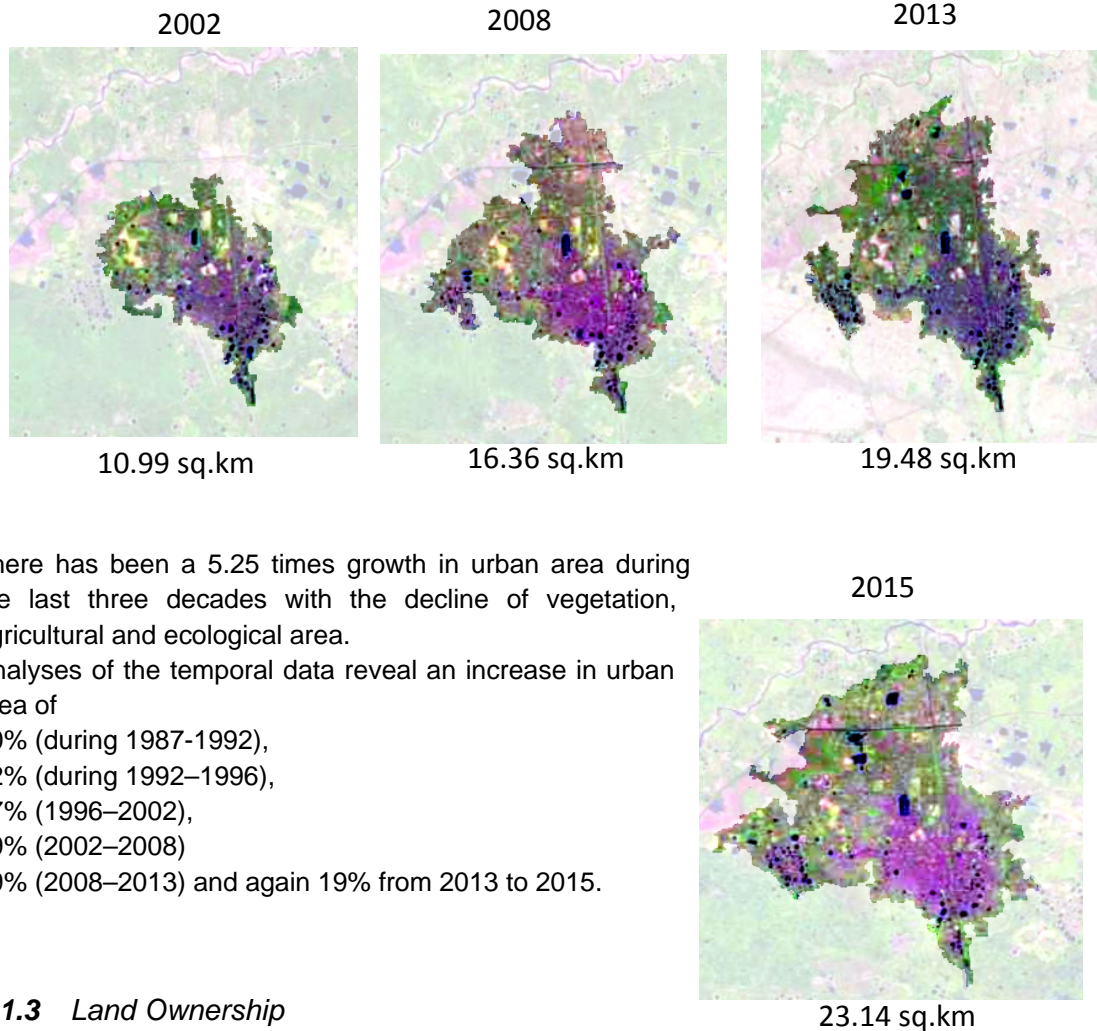
GIS and remote sensing data along with collateral data help in analyzing the growth, pattern and extent of sprawl. With the spatial and temporal analyses, it is possible to identify the pattern of sprawl and subsequently predict the nature of future sprawl.

Methodology and Analytical Framework:

The following methodology is adopted in the present study to meet the above mentioned objectives. The base map is generated at 1:25,000 scales from the Survey of India (SOI) Toposheet. The base layers like administrative boundaries, road network, mapping of water bodies, etc. were created from the SOI Toposheets. The following processes were done in ArcGIS : Cropping and mosaicking of data corresponding to the study area; classification of remote sensing data (1987 to 2015); land cover and land use analyses; change detection analysis using different techniques (Image differencing, Image ratioing, etc.); detection, visualization and assessment of change analysis. It was followed by generation of maps and images.

The growth of the city started slowly in early 90's after that it grew constantly from 1992 to 1996. The rapid growth of urban area was experienced for the period 1996-2008. In this period, a total increment of 10 square kms is observed. In 2008 city overall city sprawl was around 16.36 Sq. km. After 2008, the urban growth process became slower but was still continuously increasing.





There has been a 5.25 times growth in urban area during the last three decades with the decline of vegetation, agricultural and ecological area.

Analyses of the temporal data reveal an increase in urban area of

30% (during 1987-1992),

22% (during 1992-1996),

87% (1996-2002),

49% (2002-2008)

19% (2008-2013) and again 19% from 2013 to 2015.

5.1.3 Land Ownership

Ownership is provisionally defined as the greatest possible interest in a thing which a mature system of law recognizes, then it follows that, since all mature systems admit the existence of 'interests' in 'things', all mature systems have, in a sense, a concept of ownership.

Ownership comprises the right to possess, the right to use, the right to manage, the right to the income of the thing, the right to the capital, the right to security, the right or incidents of transmissibility and absence of term, the prohibition of harmful use, liability to execution, and the incident of residuary.

Ownership of plots in SSPA was found out from available khatiyani data, which were divided into 13 divisions under two classes, namely "Mixed Ownership" and "Complete Ownership". The former class include six categories of plots which have multiple ownership. These include majorly Government-owned, majorly forest department-owned, majorly tribal-owned, majorly private-owned, majorly trust-owned and majorly patta-owned plots. The next class includes six categories of fully owned plots; namely, Government-owned, Forest department-owned, tribal-owned, private-owned, trust-owned, and land given on patta. Few available plots which had no data in record was categorised separately.

Map No. 5.2, showing ownership pattern of Sriniketan-Santiniketan planning area reveals that the major percentage of land is under privately owned, as shown in yellow. Red colour is used to show the Government owned land whereas Blue is for tribal land. No data is available for hatched plots, which are probably railway land.

Ownership pattern of SSPA

Figure 5.7 shows that majority of the land is under private ownership whereas the rest of the land is owned by government and trusts etc. in these, the government share is highest as it accounts for the Visva-Bharti Institute as well as the environmental and ecological area. On the other hand, within the municipality, majority of the land is owned by private parties. The land under government ownership is distributed all over the municipality which contains infrastructure facilities and water bodies.

The map also reveal that the government ownership of land in Ruppur gram Panchyat is highest since it has the Visva-Bharti Institute as well as the ecological zone of Khoai.

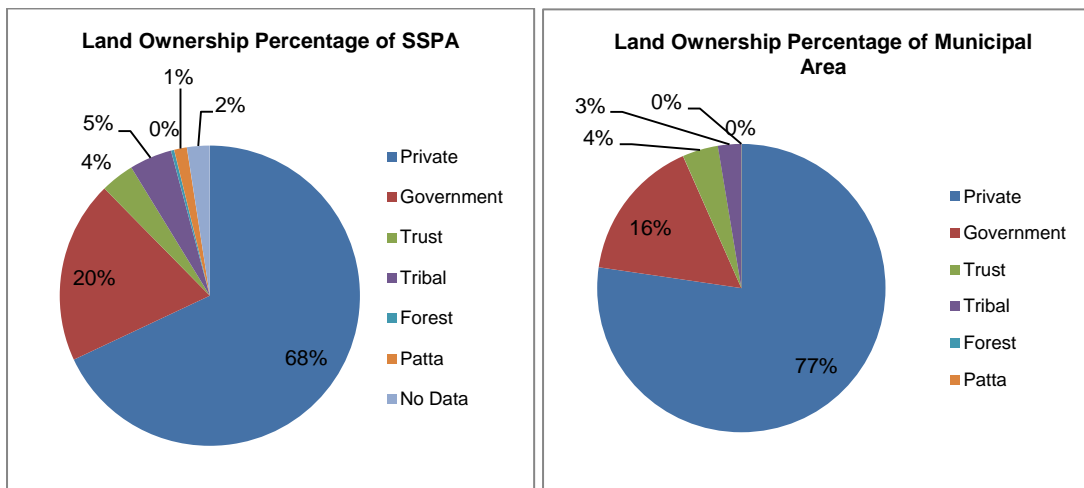


Figure 5.7: Ownership pattern Of SSPA and Municipal area.

5.1.4 Land use analysis

A map of Sriniketan-Santiniketan planning area was prepared by super imposing land use and ownership pattern. This would be helpful in identifying vacant land to be used for new development purposes as well as land without any building footprint on it. Out of 37 categories of existing land use classification, three major categories; namely, Agricultural land, waterlogged areas, and barren land were selected to merge with the land ownership to identify the probable site for proposal. The other categories of land use classification fall under built-up nature with different ownerships.

5.2 PHYSICAL INFRASTRUCTURE

5.2.1 Road Infrastructure

5.2.1.1 Introduction

Accessibility refers to people's overall ability to reach services and activities, and therefore the time and money that people and businesses must devote to transportation. The quality of accessibility has tremendous direct and indirect impacts.

Several general factors can affect accessibility, such as:

- Motor vehicle travel conditions, automobile travel speeds, affordability and safety.
- Quality of other modes, such as walking, cycling, public transit, telework, delivery services speeds, convenience, comfort, affordability and safety.

- Transport network connectivity. Density of paths and roadway connections, and therefore the directness of travel between destinations, plus the quality of connections between modes, such as the ease of walking and cycling to public transport stations.
- Land use proximity. Development density and mix, and therefore, distances between activities.

Transportation and land use planning decisions often involve trade-offs between different forms of accessibility. For example, road design features that maximize motor vehicle traffic speeds may reduce active transport (walking and cycling) accessibility, and transit accessibility since most transit trips include walking and cycling links. Locations convenient for automobile access, such as highways along urban fringes, where parking is abundant and inexpensive, tends to be difficult for access by other modes. Whereas more central locations tend to be easier for access by walking; cycling and public transit tend to have lower traffic speeds, more congestion and expensive parking.

Since accessibility is the ultimate goal of most transportation activities (excepting the small amount of travel that has no desired destination), transport planning should be based on accessibility. However, conventional planning tends to evaluate transport system performance based primarily on motor vehicle travel conditions using indicators such as roadway level-of-service, traffic speeds and vehicle operating costs; other accessibility factors are often overlooked or undervalued. This tends to favour mobility over accessibility and automobile transport over other modes. Many of these planning biases are subtle and technical, resulting from the statistics used to measure travel demands, the selection of performance indicators, and the formulas used to allocate resources.

Transportation surveys were conducted in Sriniketan Santiniketan Planning Area to study the existing condition of network of roads. These studies aim at the development of long term and short term transportation strategies for the planning area of Sriniketan Santiniketan city for the next 10 years.

The objectives of the studies are to:

- Determine the characteristics of traffic movement
- Identification of the zone and the extent of influence based on O-D survey.
- Determine the travel pattern as well as type and weight of commodities carried by goods vehicles
- Capacity assessment and recommendation for lanes based on demand forecast
- Determine the movement of traffic at road intersections as a guide for geometric design of intersections.
- Determine accident black spots and device methods for improvement of safety.

5.2.1.2 Regional Linkages:

Traffic and Transportation system forms the lifeline of any town or city. The SSPA is well connected at regional as well as local level. Sriniketan Santiniketan is well connected by road to the rest of West Bengal. The basic skeleton of the Sriniketan Santiniketan is formed by the major roads NH-2B Extension, Bolpur-Suri Road, Bolpur-Kabi Joydeb Road. The transportation network of the city operates on a system of inter-connected chowks.

Sriniketan Santiniketan is situated on NH-2B Extension. This road connects Sriniketan Santiniketan to Kolkata in the south. Nanur-Chanidas road connects to the eastern part of SSPA, Bolpur-Palitpur road connects to Palitpur in the East, Bolpur – Suri road connects the

place to the north-west, and Bolpur – Prantik Road, Bolpur –Mehidapur Road connects it to the west.

The main transport corridors in SSPA and their status in terms of carriage way are as follows-

- Bolpur - Santiniketan Road (Type –Major District Road - MDR) – Total Length 4.00 km (Carriageway 3.4 - 5.5 m)- Starts at Bolpur Station More and ends at Irrigation Canal (Kopai South Canal) Bridge.
- Sriniketan Bypass Road (Type –MDR) – Total Length 3.13 km (Carriage Way 7.0 m) – Starts at Bolpur Chowrasta (Junction of Bolpur – Santiniketan Road and Netaji Road) and ends at Surul More.
- Santiniketan – Sriniketan Road (Type – MDR) – Total Length 3.00 km (Carriageway 3.60 m) – Starts at Santiniketan Post Office and ends at Surul More.
- Netaji Road (Part of Bolpur – Palitpur Road ;Type – MDR) (Carriageway 5.5 m Avg.) – Bolpur Chowrasta to Palitpur Ajoy River Bridge.
- Bolpur Nanoor Road (Type - MDR) – Total Length 19.20 km (Carriageway – 5.5m)- Danglikalitala (Junction of Red bridge road and Rajgaon Road) to Nanoor, passing through Sian Hospital.
- Kabi Joydev Road (Type – MDR) – Station More to Court More (junction of Bolpur Illambazar & Rajatpur Road (Carriageway – 5.5m).
- Prabhat Mukhopadhaya Sarani (Type- MDR) – Total length 1.5 km(Carriageway – 7.00m); New Bye pass Linking Santiniketan Road and Sriniketan Bye pass. Starts at the registry office and ends at Jamboni Bus Stand.

Width of right of way and carriageway of regional linkages or main roads are shown in Table 5.8 .

Table 5.8: Regional linkages showing R.O.W. and carriageway.

Sl. No.	Road Name	Length (km)	ROW (M)	Carriageway (M)	Shoulder width (M)	
					Right	Left
1.	Bolpur-labhpur Road	3.28	9	5	2	2
2.	Bolpur-Palitpur Road	5.07	5	5	0	0
3.	Hattala Station Road	4.31	6.5	3.5	1.5	1.5
4.	By-pass Road	2	14.5	5.5	4.5	4.5
5.	Bolpur-Suri Road	2.98	14	6	4	4
6.	Bolpur-Sriniketan Road	3.87	12.5	6.5	3	3
7.	Boplur-Prantik Road	3.15	7.5	3.5	2	2
8.	Mehidipur Road	3.1	10.5	6.5	2	2
9.	Nanur-Chanidas Road	5.72	10.75	5.75	2.5	2.5
10.	Bolpur-Kolkata Road	4.06	9.5	6	1.5	1.5
11.	Bolpur-Santiniketan Road	2.6	8	5	1.5	1.5
12.	NH2B Extension	5.91	8.5	5.5	1.5	1.5
13.	Sriniketan-Santiniketan Road	2.9	8	4.5	1.5	1.5

Presently the main railhead to SSPA area is Bolpur Railway Station of Sahebgunj Loop; Eastern Railway. The new station viz., “Prantik”, is well located along the axis of symmetry of SSPA, but it needs to be developed so as to functionally complement Bolpur Station.

5.2.1.3 Road network and its characteristics

Road Inventory survey was conducted to appreciate the physical characteristics of the identified road network in terms of right-of-way, carriage way, number of access points, surface type, abutting land use, etc., to identify physical constraints and bottleneck points along the identified road network, to assess the capacity potential of the identified road

network and to appreciate traffic management measures presently adopted along the identified road network.

Sriniketan Santiniketan Planning Area has a total of 299 km of roads within its municipal expanse. Road length as well as density in different part of the Planning Area is shown in Table 5.9.

Table 5.9: Length of Roads

	Area in Sq.km.	Population	Road Length In km	Road Length per Person	Road Length per SQ.KM
MUNICIPAL AREA	13.11	101986	86.5	0.84	6.59
Rural AREA	94.69	68995	212.5	3.07	2.24
TOTAL AREA	108.8	170981	299	1.75	2.74

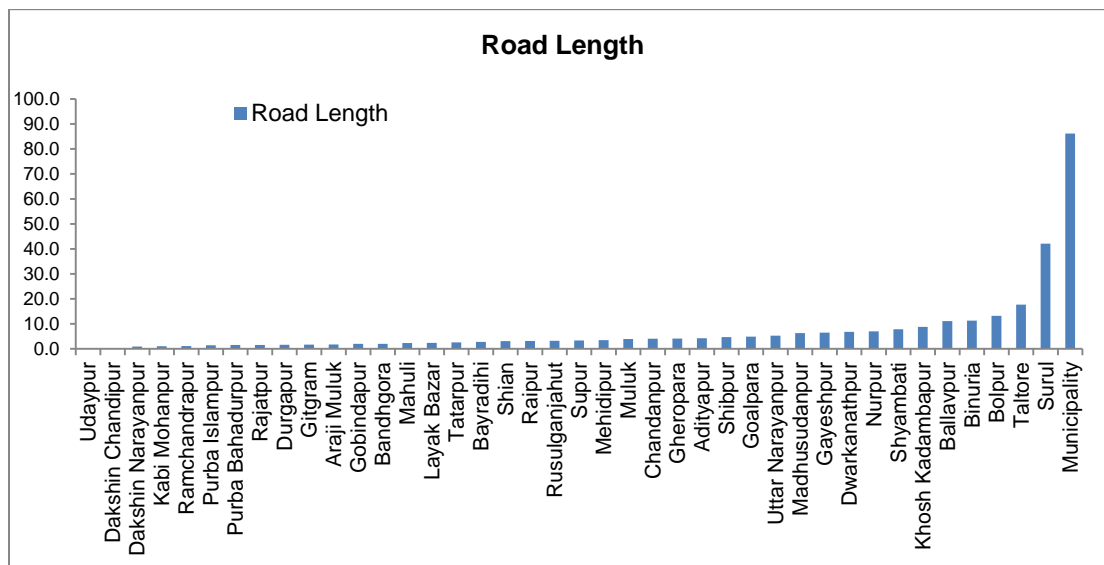


Figure 5.8: Road length statistics for SSPA

Two mouzas have no road as they are agricultural area. Mouzas in the South have least cumulative road length. Most of the existing roads are kuchcha roads and are under private ownerships. The municipality, as well as the mouzas around it has a fair share of road ways in and around thereby increasing the connectivity and allowing accesses to different places in around the city.

Level of Service

According to existing peak hour volume and capacity, the existing level of services (LOS) for different roads have been estimated to understand the congestion level and thereby assess the need of improvement. Table 5.10 gives the level of service for major roads of SSPA. Hattala Station Road and Bolpur-Santiniketan Road are operated under congestion with level of service C and above whereas Sriniketan-Santiniketan Road is experiencing heavy congestion with level of service E. Map .5.3 shows LOS for major roads spatially.

Table 5.10: Level of Service (LOS) for Major Road of SSPA

Sl. No.	Road Name	Capacity (PCU)	Volume (PCU)	V/C Ratio	Level of Service
1.	Bolpur-labhpur Road	1428	502	0.35	A
2.	Bolpur-Palitpur Road	1428	662	0.46	A

3.	Hattala Station Road	999	740	0.74	C
4.	By-pass Road	1571	403	0.25	A
5.	Bolpur-Suri Road	1714	611	0.35	A
6.	Sriniketan Road	1856	618	0.33	A
7.	Boplur-Prantik Road	999	323	0.32	A
8.	Mahidapur Road	1856	792	0.42	A
9.	Nanur-Chanidas Road	1642	987	0.6	B
10.	Bolpur-Kolkata Road	1714	818	0.47	A
11.	Santiniketan Road	1428	1133	0.79	C
12.	NH2B Extension	1571	1050	0.67	B
13.	SriniketanSantiniketan Road	1285	1293	1.006	E

Source: Primary Survey Sep 2014

Speed - Delay

A speed-delay study has been done to evaluate the major road networks. The spatial analysis of speeds on the road network indicates that majority of the road network within the study area has an average journey speed of 16.62 km/hour. The major cause of delay on most of the stretches is the traffic congestion which is a resultant of limited road capacities, mixed traffic conditions and encroachment. Table no. 5.11 gives speed-delay on major road networks.

Table 5.11: Speed Delay of Major Road Networks - SSPA

Stretch No.	From Node	To Node	Distance (km)	Average Running Speed (km/hr)	Average Journey Speed (km/hr)	Journey Time (sec)	Delay (sec)	Cause of Delay
1	Railway Station	Ilambazar Bypass	1.92	21.9	13.1	527	213	Encroachment
2	Kothari Apartment	Pearson Hospital	2.49	23.77	18.2	492	115	Traffic
3	Jagdish Park	Kali Shayar	2.9	20.3	15.6	665	144	Traffic
4	Mark Meadows	Kothari Apartment	3.13	23.4	19.6	574	93	Traffic

Source: Primary Survey, September' 2014

The planning area needs introduction of traffic signal system at certain intersections like Chowrasta More, Tourist Lodge More, Trisulapatti more, Lalpool More, Sriniketan – Bolpur More, Jambuni Kartala More, Kashipur Bypass More, Station More, Chitra More etc. Some of these intersections are accident-prone due to lack of any kind of traffic management, including Shivtala more, Muluk More&Theism More. Some of the intersections like Chowrasta More, Chitra More, Station More, Sriniketan More, Tourist Lodge More, Kali Shaer More do have traffic post, but traffic police is hardly seen. There are various areas which have parking problems such as Chowrasta, Station Road, the stretch along Chowrasta to Santiniketan to Tourist Lodge, Netali Road, Sriniketan Road, Sriniketan Market, Rabindra Bithi Bypass Road etc.

5.2.2 Water Supply

The main source of water supply in SSPA is ground water through deep tube wells. The water supply has been facilitated through a project named **Indo-German Water Supply**

Project, carried out by Public Health Engineering Department, West Bengal; in association with Bolpur Municipality and Bolpur Sriniketan Panchayat Samiti. The share of funds for the project by German government & West Bengal government is 70% and 30% respectively. The total budget of the project is 148.97 crore. The project covers Bolpur Division in Birbhum district and Raghunathpur division in Purulia district. The total capacity of water treated and distributed under this project is 26900 cu.m. with a life time till 2021. The total no. of mouzas covered under Bolpur Sriniketan Panchayat Samiti is 157 with an area of 324.47 Sq.km. all together, out of which 13.11 Sq.km fall under Bolpur Municipality. Apart from Bolpur municipality, Ruppur GP, Kankalitala GP and Shian Muluk GP have been covered under this project.

The whole area covered under the project has been divided into two parts, Eastern part on the east side of South Eastern Railway Line and Western part on west side. It has two treatment plants of capacity 4091 cu.m. and 5454 cu.m. located on eastern and western part respectively. The planning area has a total of 14 deep tube wells; 6 connected to Eastern treatment plant, 7 connected to Western treatment plant, one connected to Surul Water Works and has 11 overhead reservoirs; 6 connected to Eastern treatment plant, 4 connected to Western treatment plant, one connected to Surul Water Works. The water supply system includes individual piped connections, community stand posts and tube wells. The total length of pipeline is approximately 150 km in urban area and 250 km in rural area. The quantity of piped water supply in urban area is 130 lpcd, semi urban area is 95 lpcd and rural area is 54 lpcd. There are 443 public stand posts in urban area and 326 community taps in rural area. The water supply through tube well is 40 lpcd, for rural area and urban area. There is a proposal of 163 km pipelines to meet the demand deficit of 3 MLD. Beside, this there are proposals to explore rain water harvesting as huge dependency on ground water would lead to fall in ground water table causing problems in future.

Source: PHE Department, Bolpur

Almost 60% population of SSPA has accessibility to piped water supply. The value is 69% for Bolpur Municipality, 66% for Surul CT and 53% for rural areas. Around 15% of SSPA population is dependent on tube wells or bore wells, 14% on hand pumps and rest avail the facility from covered or un-covered well. For Bolpur Municipality, the fraction of population dependent on tube well is 16%, hand pump is 6% and other sources are 8%. In Surul, the portion of population dependent on tube well is 14%, hand pump is 5% and other sources are 14%. For rural areas, the fraction of population dependent on tube well is 16%, hand pump is 23% and other sources are 8%. Also, around 26% of the population of SSPA has to travel long distances for availing water facility. This percentage is 35% for rural areas, which shows that the rural population doesn't have proper accessibility to water supply.

Source: Census 2011

5.2.3 Drainage

The planning area is dependent on surface drainage system which is insufficient and doesn't have proper outlet system. Due to this, all the areas of the town more or less face water logging during rainy season every year. The topography of the region, which is turtle-shaped as mentioned by Councilors of the Bolpur Municipality, is also a major problem in handling the drainage system. Around 50% of municipal area has been facing water logging problem.

In Bolpur Municipality, the existing drainage system consists of both pucca and kuchcha drains. The length of pucca drains are 82.62 km, comprising of 56% of total drain length and kuchcha drains are 63.67 km which makes up for the remaining 44%. (Source: Bolpur

Municipality). Within Bolpur Municipality only 10% households have waste water connection to closed drains, 69% to open drains and remaining 21% doesn't have drainage facility. Surul region, which has been declared a census town, also has a similar pattern of drainage system, a mix of open, pucca and kachcha drainage system. In Surul, 7% of the households are connected to closed drains, 57% to open drains and the remaining 36% doesn't have drainage system (Source: Census 2011). The existing discharge from drains leads into the fields in Shian Muluk Panchayat, Kankalitala Panchayat and in Ajoy River near Gayespur. (Source: Bolpur Municipality)

Among rural areas, including fringes of Bolpur Municipality and the areas experiencing transformation from rural to urban character like mouzas on the northern side of Municipality such as Shyambati, Taltore does have drainage system to some extent, but they are mostly open and kachcha. In rural areas, only 3% of households are connected to closed drains, 27% to open drains and remaining 70% doesn't have any drainage facility. In SSPA, the connection of household to closed drains is only 6%, to open drains is 45% and remaining 49% don't have drainage system (Source: Census 2011). The statistics shows, there is an acute need of improvement of the existing drainage system by converting existing kachcha drains into pucca drains, open drains into closed drains and provision of extra drainage system to cover the area lacking this facility.

5.2.4 Sewerage and Sanitation

The planning area as a whole lacks a proper sewerage system and waste water management & treatment facility. It doesn't have a centralized sewerage collection system. The sanitation facility in the planning area is also very poor as it is accessible to only 53% of the households and 41% amongst these households have septic tank system. The remaining 47% of households practices open defecation. The bathing facility within premises is available to only 52% of households.

The condition of Bolpur Municipality is comparatively better as 78% of households have access to sanitation facility out of which 60% are of septic tank type. The bathing facility within premises is available to only 77% of households. For Surul, the sanitation facility holds to be for 59% of households and 60% households have bathing facility within premises. The condition of rural area is worse as sanitation facility is available only to 38% of households and bathing facility within premises is available only to 36% of households.

Source: Census 2011

5.2.5 Solid Waste Management

The present state of solid waste management in SSPA is very poor. The Bolpur Municipality has solid waste management system to some extent which includes door-to-door collection and community bin collection for domestic waste as well as commercial waste. However, this facility is still not adequate enough to cater to the needs of entire municipal population and needs improvement. The existing dumping ground is located on the northern side of Nanoor Chandidas Road, which has an area of 3.33 acres at a distance of 6 km from core municipality area. There is a proposal for a new dumping ground with an area of 5.96 acre in ward no. 1 (Source: Bolpur Municipality). Also, the dumping ground needs to be developed properly and scientifically to eliminate chances of any kind of environmental hazards.

The rural area has been hardly covered under any type of solid waste management system. There is need to introduce the facility, mainly in Prantik region as various developments have already been made in this area without support of infrastructure facilities.

5.2.6 Electricity

SSPA is dependent on WBPDC and WBSEDCL for power supply. WBSEDCL supplies 18.59 MW/ day of hydroelectric power and WBPDC supplies 39.50 MW/day of thermal power. The planning area currently has three sub stations located in Paruldanga, Bolpur and Moldanga. A fourth substation has been proposed at Shivtala.

Source: WBSEDCL

The electricity connection is available to 80% of households in Bolpur Municipality; but to only 50% of households in rural areas. The remaining 50% of households are dependent on kerosene oil or some other means for lighting. In overall SSPA, 63% of households have electricity connection. The total number of street lights available in Bolpur Municipality is 3800 which covers 93% of the total area of the municipality. However amongst these only 54% are in good condition.

5.3 SOCIAL INFRASTRUCTURE

5.3.1 Education

Santiniketan has a great legacy of traditional and cultural system of education . Visva Bharati is the focus of a unique learning and education system in the planning area. However, with increase in population, it is not able to sustain the demand of the region.

The planning area consists of around 250 to 300 schools, which includes primary schools, secondary schools, Madarsa, some higher secondary schools, schools for children with special needs as well as colleges. It also has sufficient number of Shishu Siksha Kendra (SSK), integrated child development service (ICDS) centres, vocational training centres and traditional education centres for art and culture.

The planning area is well equipped with various levels of schools in both urban areas as well as rural areas. However, there is a need of improvement in the quality of infrastructure and education in these schools as revealed in primary survey. There are some private schools as well, which have maintained a high quality but it still needs to achieve the confidence of guardians and these are very expensive. In addition, the feedbacks from primary survey suggest improvement in education system as well as provision of more schools in the planning area.

The literacy rate of the planning area as per census 2011 is 80.37 much above the district (70.68), state (76.26) and country (74.04) average. The male and female literacy rate of planning area is 85.71 and 74.98 respectively. The literacy rate of Bolpur Municipality is 86.77 which is higher than the average of planning area (Source: Census 2011).

5.3.2 Health

The planning area has an average level of health facilities. It has one Sub Divisional Hospital located at Shian, a Block Primary Health centre located at Bolpur and another hospital; namely, Pearson Memorial Hospital located within Visva Bharati. There are around thirty-sub health centres including in both government and private sectors. The rural area also has approximately 100 *angadwadis*, in all the gram panchayats taken together.

The number of health centres in the planning area seems to be adequate; but all of these government health centres have limited infrastructure and needs improvement. People in the

Planning Area often has to visit Bardhaman or Kolkata in search of better health treatment. This has led to emergence of new private health centres and nursing homes. There are altogether seven such nursing homes located in the Planning Area and two eye-speciality hospitals. But these private health centres are not affordable to all classes of people which highlights the necessity to bring about improvements in government health facilities in terms of infrastructure, doctors, medicines etc.

Moreover, the distribution of health facilities in the planning area is not uniform. Some parts of the urban area are lacking in availability of primary health facilities. Similarly, some rural areas do not have access to any type of health facilities. Most of the hospitals, nursing homes and health centres are either located in municipality area or in the Shian region.

5.3.3 Other Social Infrastructure Facilities

The planning area is quite well equipped with all other social infrastructure facilities. It has one police station located within Bolpur Municipality and all the forty-four mouzas come under it. The fire station of the planning area is located within Visva Bharati limits which looks after all fire related accidents as well as other accidents needing rescue operation. There are altogether twenty-four banks in the planning area, also having attached ATM facilities. The planning area has three major post offices located at Bolpur, Sriniketan and Santiniketan. The rural area has small post offices. It has other infrastructures like cremation and burial grounds, public library, religious places, auditorium, cinema halls, community centres, clubs etc. The planning area consists of various large water bodies and some open spaces, which can be developed into organised recreational spaces. The Bolpur Municipality area needs more open spaces like children parks and playgrounds, neighbourhood parks.

5.4 TOURISM, CULTURE AND RECREATION

Santiniketan is renowned for its unique blend of serenity, natural allure, rich culture and heritage. It is a very popular destination among people of various cultures, backgrounds and nationalities. Some of the major attractions of Santiniketan are Visva Bharati and its Ashram Complex, Taladhvaj, Ghantatala, Cha Chakra; Ballavpur Wildlife sanctuary and Khoai region. The beautiful natural landscape of Khoai region with Benuria Canal flowing along and *Shanibar er- Haat* acts as an eco- cultural setup, which is a unique concept of cultural tourism and highlight of Santiniketan. The place is also famous for cultural festivals like *Poush Mela* during December, *Joydev Mela* during January, *Basanta Utsav* during March and many others. It is also home to famous "*Bauls*", the mystic minstrels of rural Bengal that constitute a unique musical tradition.

Tourism is a major economic activity of the region on which the huge population is directly or indirectly dependent. As per the government statistics for year 2007, the daily inflow of tourist is around 3500 and during major festivals like Poush Mela, Basanta Utsav etc. it goes up to 40000 (Source: www. wikipedia.org). To cater to the needs of these tourists, a huge number of hotels, lodges, home stays, resorts, guesthouses have come up in the region. Besides these, the villas in Prantik region and the guesthouses of various institutions like Visva Bharati, Rice Mill Association and P.W.D. also acts as places for stay especially during festive seasons. There are almost hundreds of such hotels, lodges, home stays, resorts and guesthouses in the planning area mostly located in Bolpur, Santiniketan, Sriniketan and Prantik region. Home-stays are becoming a prevalent feature linked to tourism in the planning region, which have emerged due to the gap in supply and demand of accommodation options especially during peak seasons. It also provides opportunity for income generation with limited investment to the owner. The increasing demand for home stays is a concern for hoteliers as it is creating competition in their domain. It is also a matter of concern for planning area as

most of these are unauthorized and creating excessive burden on the existing infrastructure of the area.

The other problems relating to tourism sector include unavailability of sufficient physical infrastructure to support various activities , increase in anti-social activities, traffic congestion during peak season, pollution, lack of well-educated tourist guides, lack of information kiosks and proper signage system etc. Further, there remain a lot of unexplored places that needs to be developed as tourist spots.

There is a need of an overall tourism management plan and a body to look after all the tourism related matters, its organisation and promotion.

5.5 ENVIRONMENT

The planning area is popular among the tourists also because of its calm and clean environment; however, the haphazard development of the planning area has emerged as a threat to its environment. The environment of SSPA has much degraded in the recent decades due to unplanned development.

The major environmental issue of the planning area includes flooding and water logging in Ajoy River Basin, water-logging in core area due to encroachment of natural drainage course, erosion of top soil, encroachment of agricultural land, loss of flora and fauna due to non – synergetic development, air pollution due to non – synergetic land uses like industry in urban core and increased traffic, over-exploitation of ground water which may lead to depletion in ground water table. The existing sanitation system of the planning area is also affecting the environment, as huge population does not have access to proper facilities. Also the discharge from septic tank is into surface water drainage which leads to pollution of discharged surface water.

The physical atmosphere of Visva Bharati has also been affected due to development happening within and around the campus, which is non – synergetic with Tagore's thoughts on environment and architecture. The existing traffic movement is also affecting the ambience of culturally significant buildings and sculptures of Visva Bharati. For protection of its cultural and natural heritage , there is a need of well devised masterplan for the Visva Bharati campus as well as need for formulation of heritage regulations and urban design guidelines for the delineated buffer zone .

6 SALIENT FEATURES OF PREVIOUS PLANS

6.1 LAND USE & DEVELOPMENT CONTROL PLAN 2001

The Land Use Planning Cell & Town Planning Stream of Urban Development (T & CP) Department, Government of West Bengal in April 1997 under the West Bengal Town and Country (Planning & Development) Act 1979, prepared the Land Use and Development Control Plan 2001. The existing status of the planning area had been presented for the year 1997 in the report and proposal for the year 2011 had been made depending on the analysis of the then existing situation. Here, a review of the proposals made for 2011 in the plan has been done to understand the development scenario of the planning area over time.

The plan identified Layek Bazaar, Dwarakanathpur, and Surul as prospective growth centres. The plan had suggested the residential density for SSPA to be less than 60 persons/ acre and it is found much below i.e. 6 persons/ acre. The industries had been proposed to be located at Mega Growth Centre and all the existing industries to be shifted gradually to this location. However the Mega Growth Centre has not been developed yet and over the time industries have come up at various other locations as well. The existing industries that were surveyed mentioned to be adopting serious pollution prevention measures but there still exists a threat to environment of the planning area as suggested by stakeholders due to unplanned development of the industries.

There were proposals for a truck parking facility at Mega Growth Centre, a third bridge over third Railway line, shifting of the existing Mela Ground, development of old temples in Surul region etc. However, no remarkable work had been carried out in this regard. Though the Durgapur Rd - Illambazaar Rd Bypass & AmarKutir Road has been constructed as per proposal, it needs upgrading and maintenance. There were other roads like Bolpur-Sriniketan Road, Sriniketan-Santiniketan Road, Bolpur-Santiniketan Road, Bolpur-Prantik Road, part of NH 2B/ SH 13, Nanoor-Chandidas Road, Bolpur-Palitpur Road that has been mentioned in plan for upgrading and maintenance; however, some of these roads still need attention. Other roads like Bolpur-Suri, Illambazaar-Suri Bypass, Bolpur-Nanoor, Bolpur-Amadpur, and Bolpur-Palitpur were suggested for widening but step needs to be taken for this as well. The widening of Lal-Pool Bridge has also been pending since then.

A mini bus service or para transit service and proper signage system for tourists still needs to be introduced as suggested in proposal. The planning area needs a proper tourism management system as proposed in the plan. In addition, Laha bandh was suggested to be developed as recreation spot with boating facilities. It could be so developed provided the original character of the water body is maintained, as it is a destination for migratory birds.

The plan has suggested for development of physical infrastructure in the mouzas north of Bolpur Municipality i.e. Shyambati, Goalpara, Bayradihi, Madhusudanpur and Taltore. The area has experienced development of various housing projects but infrastructure still needs to be developed properly. Under Basic Minimum Services Program, development of roads in various rural mouzas was suggested and some of the mouzas have been covered under this program as well; but there is a need to extend the development work in all the mouzas. Also, the issue of conversion of cultivable land in this region like Simantapalli, Prantik, Taltore, and Goalpara has been raised and provision of certain controls and regulations had been suggested but not much initiative has been taken which lead to the conflicts happening in the near future.

A need for organised market was felt to reduce pressure on Bolpur Municipal market and some locations like Surul, Shyambati, Nichupatti, Prantik, Shian & Layek Bazaar were identified for this purpose. Moreover, Bolpur Municipal Market area needs infrastructure

development, but it still exists in same state and new organised market places needs to be developed. The Jambuni Bus Terminal stands in same condition with minimal improvement in its infrastructure. The municipality area still lacks open spaces, parks and playgrounds as mentioned by the plan and not much has been done in this regard.

6.2 PERSPECTIVE PLAN 2005 – 2025

The Perspective Plan 2025 was prepared by West Bengal Consultancy Organization Limited, Kolkata (An ISO 9001:2000 Organisation) in 2003 with a vision of transformation and growth of SSPA into an environmentally healthy, economically sustainable, functionally sound and aesthetically pleasant urban centre, which will offer an equitable access to employment, education, health and other essential requirements of productive and decent urban life to all individuals. The perspective plan has presented a very detailed study of existing scenario of planning area for the year 2003 and all the aspects have been discussed in detail. Further, the plan also gives norms and standards as per UDPFI guidelines to guide the development in the planning area.

The SSPA has been estimated to have a dominant agrarian character as it is now, by the end of plan period. The projected population for the year 2011 is around the actual population as per census 2011 and the projected population for 2025 has been taken as 2,56,476. The urban population has been estimated to have a comparatively larger share than rural population; with a corresponding higher population density in urban area. The service sector has been identified as a major sector having employment generation potential. The other sector included agriculture and craft & cottage industry.

The major concerns identified for planning area includes; the need to shift the existing Mela ground, lack of parking area, unorganized nature of the handicraft market, road side encroachment leading to traffic problems, lack of tourism related facilities, need of promotion of "Rural Tourism", neighbourhood park & playground, water logging after heavy rain, inadequacy of physical infrastructure within planning area etc.

The development potential of SSPA has been determined based on the socio-economic and physical character of the region. As the region is predominantly agriculture based, the development of agricultural infrastructure like irrigation system, multiple cropping with high yield varieties of seeds, adoption of best agricultural practices relevant to the agronomic zone would boost the overall economy of the area. The tourism sector is another major economic sector of the region and a well-developed tourism management plan for the region considering the regional tourist circuit like Tarapith and Bakreswar would further improve the economic scenario of the region. Rural tourism, eco tourism can also be developed in the region. The SSPA is rich in cultural heritage and building heritage and proper conservation and preservation of these would further contribute to tourism sector. A huge population of the region, especially the tribes are dependent on handicraft industries which has huge potential if properly developed and promoted with adequate market facilities, marketing and branding of the products, skill improvement, innovation in designs etc.

The plan gives some development recommendations, which include; creation of open spaces by shifting of the Mega Growth Centre, appropriate use of fallow land by bringing them under social forestry, development of well-defined urban neighbourhoods, suitable infrastructure development to support potential growth etc. A Multi-nodal strategy has been proposed to reduce existing and future transport problems and create well-defined and identifiable activity areas. The proposed major nodes include commercial, tourism, educational & cultural node, institutional and industrial nodes. An aspect-wise detailed proposal like; permitted landuse, permitted activities, infrastructure provisions etc have been given for all these nodes. The

proposed land use classification for the year 2025 as per the said plan has been given in Table 6.1.

Table 6.1: Proposed Land Use – Perspective Plan 2025

Land Use Type	Total
Gross Residential Areas	21.17
Commercial	0.71
Industrial	5.05
Public & Semi-public	4.99
Parks & Play Grounds	0.64
Transport	3.52
Forest	3.74
Water Bodies	8.84
Agriculture	51.34
Total	100.00

Source: Perspective Plan 2025 – SSPA

A strategy for development of rice cluster at Mega Growth Centre has also been proposed, as there is a major agglomeration of paddy-based industries of the district within Bolpur Police Station area.

The plan has also identified some of the major environmental issues of the planning area like floods in flood prone area, water logging due to blockage of natural drainage course, erosion of topsoil, silting up of drainage canals & rivers, conversion of fertile agricultural land due to urban expansion in the fringes, loss of flora & fauna species diversity due to non-synergic development practices, encroachment of organized open spaces in the urban core, non-synergic land use in the urban core and fringe areas; like industries, threat to ambience and built environment of Visva-Bharati. Mitigation measures has been accordingly suggested for these issues like creation of balance between built and natural environment, preservation of the existing natural drainage course by prohibiting construction on it, improvement of the internal drainage system, preservation and rejuvenation of water bodies, strengthening and streamlining of the solid waste disposal, implementing development control regulations for topographical features like forests & water bodies, encouraging activities like Paryawaran Vahini etc.

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7 STAGES OF PLAN PREPARATION AND IMPLEMENTATION

The Revised LUDCP for SSPA aims to induce new development in the area through land use zoning and control regulations. The aim is to achieve outcomes that are positive for the people, the economy and the environment. This plan will help in development of this area as an attractive place to live, work and make investments.

The stages of plan preparation has been designed to ensure that the development and use of land is in the public interest, that it optimizes the area's economic, environmental and social benefits and overcome its drawbacks.

7.1 STAGES OF PLAN PREPARATION

The stages involved in preparation of this plan mainly include spatial data collection, socioeconomic survey, survey of the existing land use, analysis of the data collected, followed by discussion with the officials of the Sriniketan Santiniketan Development Authority, stakeholders meetings and preparation of maps.

Stage 1: The planning process began with the surveying of the present land use condition in the planning area. The consultants conducted the survey of the existing land use, which was then mapped on GIS software. The previously prepared existing land use data was mapped and LISS III March 2014 satellite images were used to update the land use. It was then collated with cadastral revenue sheets on GIS platform.

For effective data management and complex planning decisions, GIS platform was used all through the processes. GIS is a powerful tool for creating, managing, analyzing, and using geospatial data. It, thus, provided the consultant with improved operations, effective time management, and effective decision-making opportunities.

Stage 2: The 'Surveyed Land Use Data', the geo-referenced satellite images, mouza maps were digitised in GIS. Other information regarding the location of SSSDA acquired land, location of existing industries, and extent of land under Visva-Bharati University, extent of land under Railways, ownership of land parcels and other major information were then obtained from the SSSDA and DLLRO (District Land & Land Reforms Officer).

Stage 3: The data collected in the Stage 1 and Stage 2 was then transferred on to the GIS platform. It was further verified and necessary corrections were made. This database is created up to plot level detail, such that one can easily find the information related to existing and proposed land use, of any particular plot. Ownership of any such plot can also be directly identified from the database.

The final 'Existing Land Use Map', after its acceptance, formed the basis for preparation of the revised LUDCP 2025. At the same time, many interactive sessions were conducted with local authorities, public and other stakeholders.

Stage 4: The data obtained in Stage 1, 2 and 3 aided in a preliminary analysis of the strengths, weaknesses, opportunities and threats of the Planning Area. All these efforts incorporated into the 'Status Report' submitted to SSSDA in May 2015.

Stage 5: Simultaneously Socio-economic survey was conducted by a private Consultancy firm, and the gathered survey data was handed over to the consultant for its analysis, the

outcome of which has been submitted to SSDA as the 'Socio Economic Survey Report 2015' on 9th Jan 2015.

Stage 6: The Sriniketan Santiniketan Planning Area has a long history of plan preparations by various organizations. The salient features of previous planning efforts have been highlighted in chapter 8. Each of these plans was studied and their proposals were taken into consideration during the preparation of revised LUDCP-2025 for SSPA.

Stage 7: To explore the potential and suitability for new development, the distribution of the existing land use was analysed. In this analysis, the existing land use pattern, location of major facilities and their impact were identified. Chapter 5 discusses the present land use pattern. It played a key role in allocation of different land uses in the planning area as the nature and scale of existing land use affects the adjoining land uses.

Stage 8: Population and future demand for facilities were projected for Sriniketan Santiniketan Planning Area. The calculated population was then suitably allocated to the various mouzas and the municipal area.

Stage 9: Keeping in mind the image of Sriniketan Santiniketan as one of the educational and tourism hub of the state, a 'Broad Land Use Plan', 'Delineated Khoai Map' and a draft report of 'Revised Land Use and Development Control Plan-2025' were prepared and presented on 27th Dec 2015. This plan included the detailed land use distribution, zoning, and development control regulations, which were elaborately discussed with the officials of SSDA and other stakeholders. During the meeting, several suggestions and feedbacks from concerned authorities outlined the need for further modifications of the prepared documents.

Stage 10: Based on the feedback received till 20 May 2016, necessary modifications were incorporated in the draft of LUDCP. After that a final report of 'Revised Land Use and Development Control Plan-2025' was prepared and submitted to SSDA.

7.2 GIS BASED DATA COLLECTION

For plan preparation, it is necessary to assess the existing situation and future projection. This assessment requires a lot of data. GIS is a very efficient tool to collect, manage and process the data. Data collection has two components: data capture (direct data from field) and data transfer (input of data from other systems).

Two main types of data capture are

- collection from primary sources, that are collected directly from field specifically for use in a GIS project.
- collection from secondary sources which are digital and analog datasets that were originally captured for other purposes and need to be converted into a suitable digital format for use in a GIS project.

The process of data collection is a combination of allied tasks such as data capture, automation, conversion, transfer, translation, and digitization.

7.2.1 Outline of the GIS database creation

- a) Primary land use, socio-economic and geographic data capture
- b) Secondary land use, socio-economic and geographic data capture

- c) Obtaining data from external sources (data transfer)
- d) Transferring spatial and statistical data in GIS
- e) Capturing and inputting attribute data
- f) Data management and analysis

7.2.2 Source of Information/ Map/ Data

Table 7.1 outlines the data that was collected from different sources.

Table 7.1: Source of data

Features	Source
Plot boundary, Mouza boundary	Village Map, Mouza Map from SSDA
Ownership Data	Land Records from DLLRO
Sriniketan-Santiniketan Planning Area	SSDA Information/ Map
Land Use	Maps prepared through SSDA , Satellite Image and Field Survey
Major Location, POI (Point of Interest)	GPS Survey
Image	Satellite Image bought from LISS III
Other	SSDA and Local Authority / Department

7.3 PLAN IMPLEMENTATION

The plan will finally be accepted and notified by the State Government under West Bengal Town and Country (Planning and Development) Act 1979, prior to which people's participation will be asked for in the form of objections and suggestions. The hearing procedure will be conducted by SSDA towards this end.

The plan has also been supplemented with zoning and development control regulation. Thus, the revised LUDCP will primarily adopt these regulations once approved by the state government.

All development shall have to incorporate the guidelines mentioned in this report. Applications for permissions shall be accordingly reviewed and scrutinized by the Sriniketan Santiniketan Development Authority and/or Bolpur Municipality or the Gram Panchayats. However, the Development Authority, in addition to enforcement of the plan, shall also fulfil the infrastructure demand and the need for economically weaker section.

Some budgetary estimation has to be prepared and priority for the development has to be finalised. It must also be kept in mind to follow the phase wise development and mobilize resources from the users and prospective financial institutions.

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8 DELINEATION OF KHOAI AREA

8.1 INTRODUCTION

Khoai is a special geomorphic region of Birbhum district, built up by lateritic soilscape. It is very distinct in the central Bolpur–Sriniketan, south eastern Illambazar, , western Suri-I eastern Dubrajpur and southern-eastern MD bazar blocks. In this area the soil is highly weathered, leached and enriched with oxides of iron and aluminium. As a result the landscape of Khoai area is affected by high soil erosion specially rills and gully erosion. This phenomenon is mainly observed in sub-basins of the Kopai, Bakreswar, Kuskarani, Dwaraka and other few very small sub-basins of the Ajay & the Mayurakshi Rivers. The susceptibility to rill and gully erosion of these landscapes is related to mean annual rainfall, drainage basin morphometric magnitude, soil erodibility. Inherent characteristics of lateritic landscape coupled with human intervention are further responsible for varying degree of rill and gully erosion risk.

In Ballabhpur Mouza, around 60% of lateritic exposure falls under degraded land classified as degraded agriculture land, highly deformed rill & gully erosion induced forest bad land, scrubland, degraded reserve forest, rill & sheet erosion induced barren terrain with less relief deformity and some portion as badland with settlement. Shyambati Mouza, however has undergone notable anthropogenic degradation due to radical changes in land use on lateritic exposure (18% of lateritic soil cover). 70% of this mouza is still showing degrading landscape ecology due to inherent poor chemical and physical status of erodible laterites and is further enhanced by urban sprawling. Highly deformed badland topography in Shyambati mouza has been mostly converted into residential area by obliterating old ephemeral drainage network, adversely modifying degraded soil profile.

In this situation it is necessary to recognize their spatial distribution, degradation status and management at watershed level, so that it can be restored from the already degraded lateritic terrain thus preventing their further degradation.

8.2 ECOLOGY OF SRINIKETAN-SANTINIKETAN PLANNING AREA

8.2.1 Geomorphology

Study area is situated on eastern part of Chota Nagpur Plateau, forms a part of the lower Ganga, referred to as the self of lateritic alluvium locally known as Rahr Bengal. The area with mean annual temperature 26°C and mean annual rainfall 1462.73mm is characterized by sub humid tropical/monsoon climate. The said area is composed of the following geological formations:

1. Recent Alluvium
2. New Alluvium
3. Older Alluvium
4. Literate (Pliocene- Pleistocene),

Alluvial plain in the south and east part of the study area and erosion plain with a few mounds in the west constitute its major physiography.

The average elevation of the planning area varies between 39 m to 67 m. Most of the rill and gully affected lateritic exposures are profound in high altitudinal zone. Altitudes higher than 50m are only confined to the western part of study area having significant lateritic exposures. The Ajay, Kopai Rivers and their tributaries drain the area with general slope from west to south-east.

8.2.2 Lithology

It is the area where Rajmahal Trap and Gondwana deposits merge into the broad alluvial plains of the Gangetic delta. This transition creates many formations in this area. Study area is mostly covered by older alluvium & laterite whereas in the southern part fluvialite sediments of recent age occur along the western course of Ajoy River. The Late rite appears to have developed mainly on Precambrian Granites, Rajmahal Basalt and the Gondwanas. A number of valley cuts are present on the Lateritic uplands. These were filled up by the sediments of the next younger unit i.e. the Older Deltaic Plain. These exposures are small and scattered in nature and mostly subjected to rill erosion along with small or insignificant gullies in the remaining part of the study area. Rills and gullies are prominent in the western, north-western and parts of northern. In the south-eastern part, older alluvium gradually merges into the wider spread of recent alluvium. This alluvial fill contains a number of aquifer zones. In planning area, the lithology changes abruptly & important granular zones occur in between 250 and 450 metres below land surface (Source: Geological Report of Geological Survey of India, Kolkata) having a cumulative thickness of around 100 to 110 metres. In these areas, ground water occurs under water table conditions in shallow aquifers & under confined conditions in the deeper aquifers. The depth of water table here varies from 3 to 7 metres below land surface.

8.2.3 Drainage

The study area is facing vital problem of soil erosion. In this case, it is necessary to know the hydrological and morphometric parameters like natural drainage, drainage pattern,

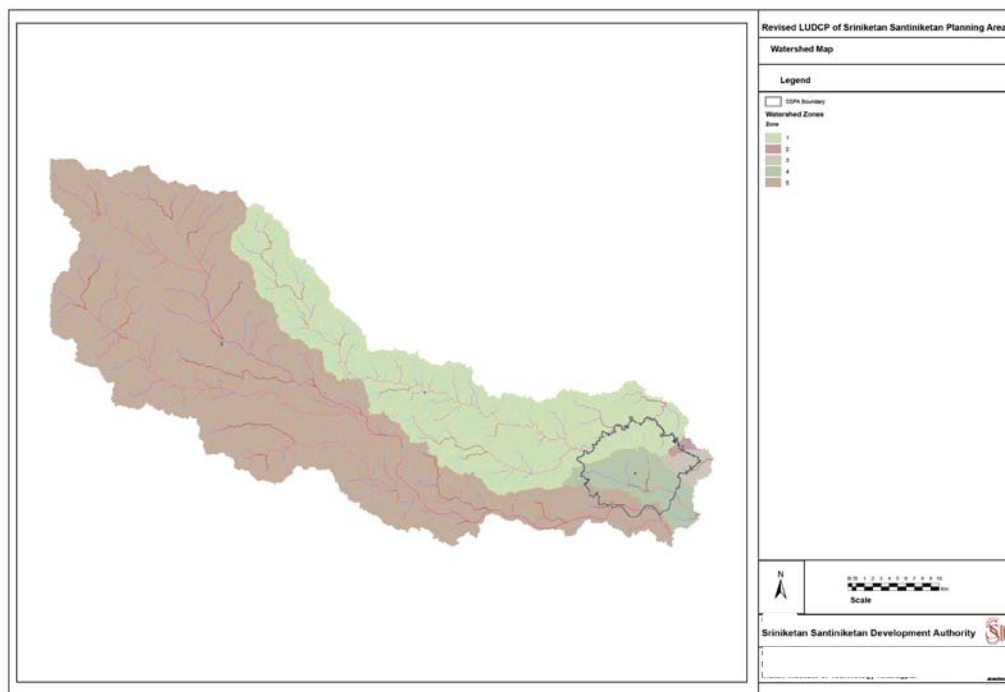


Figure 8.1: Major Watersheds of SSPA

drainage density, drainage frequency. For this purpose a detail morphometric analysis was done for our study area. Most of these parameters were analysed with the help of ArcGIS software, using DEM from Cartosat-3.

From the map, it can be easily seen that Bolpur – Santiniketan area is at high elevation. This area naturally drains in both, northern as well as in southern part of the study area. Two major (Ajay and Kopai River) and three minor watersheds fall in study area. Further, for detailed analysis, it focused only on the SSPA area and was divided in more micro watersheds. These micro watersheds were given the names according to the mouza under which the major part of watershed falls. Drainage density of the study area varies from 0.50 to 1.22 km/sq.km, as seen in Figure 8.1. Bolpur micro-watershed has the highest drainage density. So there are very less chances of rain water stagnation in this area because it will easily and rapidly drain out. At the same time, the high drainage density is a disruptive factor for the soil erosion. In Ruppur micro-watershed, the drainage density is around 1.088 km/sq.km, which is quite high. The soil of this area is lateritic in nature. These both factors combined make this area more vulnerable to erosion.

8.2.4 Diversity of flora and Fauna

The study area has very diverse flora and fauna. The Ballavpur Deer Park near Visva-Bharati University is very rich in diverse flora and fauna. The area was developed as a Deer Park measuring about 200 hectares forest land and was promoted to the status of Wildlife Sanctuary by the Government of West Bengal in July, 1977.

Ballavpur Wildlife Sanctuary is the best place for observing the wildlife fauna particularly, the birds of Birbhum. The terrain of undulating and eroded lateritic soil partly mixed with moorum and clay was converted into a forest by plantation during the year 1954-55. Nearly 50 years have passed, and very little improvement is noticed to add to the growth of the tree on the nutrient-poor soil. Further the practice of sweeping away all leaf litters has only compounded to the misery of the soil and the flora. There is virtually no undergrowth.

The principle trees of the Sanctuary and in study area are Akashmoni (*Acasia monilliformis*), Sal (*Shorea robusta*), Sishu (*Dalbergia sissoo*), Cashew Nut tree (*Anacardium occidentale*), Behera (*Tenninalia bellerica*), Amloki (*Emblica officinalis*), Chhatim (*Alstonia scholaris*), Ficus, Bakul (*Mimusops elengi*), Malati (*Aganosma dichotma*), Palash (*Butea monosperma*), Arjun (*Terminalia arjuna*), Sonajhuri, Eucalyptus, Mango, Bamboo etc.

Although the whole of the Sanctuary is fenced, the boundary has been destroyed at many places. However, an inner hundred acres separately wired off, holds only one species of ungulate, the Chital or spotted Deer (*Axis axis*). In the book named, "Wildlife in West Bengal" published by Government of West Bengal in 1985 reported the existence of 17 black Bucks and 71 Chittals in the park. At present, only Chital is available, while the blackbuck (*Antilope cervicapra*) did not survive there. Other animals include jackals, foxes, crabs, wild cats and a variety of water birds.

8.3 ECOLOGICALLY SENSITIVE AREA

Khoai area becomes an ecologically sensitive area because of its diverse landscape, soil cover, wildlife and historical value. This area already has many desirable ecological, cultural, historical and environmental attributes. These attributes contribute to the retention and creation of wildlife habitat, soil stability, water retention or recharge, vegetative cover and similar vital ecological functions. The micro-ecosystem of Khoai has ability to cope with environmental stresses – stresses like various human-induced developments and their impacts; future impacts due to climate change; essentially the ecological resilience. The Khoai not only have ecological importance but also it has a lot of historical, cultural and economic importance due to its relation with Nobel Laureates,

painters, artists, writers and many scholars. As a tourist attraction, it also has economic importance.

The importance of this area may be assessed by taking all available ecological and cultural attributes into account.

8.4 KHOAI - NATURAL AND CULTURAL HERITAGE

The word 'Khoai' is derived from the Sanskrit 'kshaya' (meaning depleted/degenerated/disfigured/denuded). Nobel laureate Rabindranath Tagore has used the term in many of his literary works.

Maharshi Devendranath Tagore, father of Rabindranath Tagore found solace and serenity in this barren land and purchased a land to build a house. This house was built in the early 1860s, and named Santiniketan which later denoted the entire area. A beautiful garden was laid out on all sides of the house. The top-layer of gritty dry soil was removed and filled with rich soil brought from outside and trees were planted for fruit and shade. Change in the environment had begun.

In 1901, Rabindranath started his Brahmacharya Asrama, flanked by Sal Avenue on the south and Madhavi creepers canopy covering the entrance gate. To the east was an orchard of mango trees and to the west were a few Palmyra palms, jamun, casuarina and some coconut trees. On the north-western outskirts of the old Asrama were the two ancient Chhatim trees. This was the area which held the 'Khoai' lands.

In the mid-fifties, to prevent further erosion of the Khoai, soil embankments were raised which thereby created little lakes of moderate size. The bending of the Mayurakshi River some distance on the north-west brought Santiniketan, a branch of an irrigation canal which led to the greening of Khoai and brought about significant changes in the environment. An extensive forest was later created where deer graze. This land of Khoai has been immortalized by the writings of Tagore and the paintings of Ram Kinkar Baij and Nandalal Bose.

8.5 DEGRADATION OF KHOAI

Because of ignorance, these sites usually face different problems. The consequences of these problems can directly or indirectly affect the human life and the character of the place. The general problems, causes and consequences related to these sites are discussed below.

8.5.1 Problems

Soil Loss

This is a very basic problem in the places where the soil is poorly graded, with unstable structure like laterite, sandy and gravelly soil. High soil erosion takes place because of this character of soil. In this process, upper layer of earth surface loses humus rich soil, which is essential for vegetation and agriculture. As a result, land loses its fertility and becomes barren. It directly affects the agricultural production and vegetation cover. This is the reason that soil loss prediction has been widely used as a tool to guide conservation planning.

Decreasing Erodibility

Soil erodibility is an estimate of the ability of soils to resist erosion, based on the physical characteristics of each soil. Generally, soils with faster infiltration rates, higher levels of organic matter and improved soil structure have a greater resistance to erosion. Sand, sandy loam and loam-textured soils tend to be less erodible than silt, very fine sand, and certain clay-textured soils. Tillage and cropping practices, which lower soil organic matter levels, cause poor soil structure, and as a result of being compacted, contribute to increase in soil erodibility.

The soil erosion and erodibility are highly inter-related. Erosion exposes the lower layers of soil, which have poor structure and low organic content. Therefore, it decreases the erodibility of soil. As a result, more erosion takes place.

Decreased infiltration and increased runoff can be a result of compacted subsurface soil layers. A decrease in infiltration can also be caused by a formation of a soil crust, which tends to "seal" the surface. On some sites, a soil crust might decrease the amount of soil loss from sheet or rain splash erosion. However, a corresponding increase in the amount of runoff water can contribute to greater rill erosion problems.

Change in Morphology

High degree of erosion and diverse climatic condition triggers rapid change in geomorphology. Sometimes this rapid change becomes devastating for living beings. Many natural disasters occur due to this change.

Flora and Fauna loss

The high demand for food, fiber and fuel is increasing losses of biodiversity and ecosystem services. The variety and variability of plants, animals and micro-organisms are an important aspect of biodiversity. Globally most of the natural habitats including forests, wetlands and coral reefs are in declining state. The habitat loss, including degradation and fragmentation, is the most important cause of biodiversity loss globally. Intensive human intervention like road, buildings, agriculture and mining practices on ecologically rich areas are also a major cause of biodiversity loss. Habitats, which are highly degraded or fragmented, are less likely to be able to support their full complement of species or provide the same level of ecosystem services provided by intact habitats.

8.5.2 Causes**Unstable Soil Structure**

Soil structure influences the mechanical properties of soil and determines runoff and erosion potential of natural lands. Unstable soil structure is more prone to erosion and responsible for rapid change in geomorphology. This further ruins wildlife habitat and risks ecosystems, thus resulting in the dilapidation of natural heritage.

Lack of vegetation

This is a major problem in natural conservation. Lack of vegetation has direct impacts on biodiversity loss and flow-on effects leading to habitat deterioration and degradation, which also have negative implications for biota. This is also a cause of degradation of natural and cultural heritage. The quality and importance of a natural heritage site depends on forest cover, its type and protection measures. Different human activities like deforestation, urbanization, mining, pastoralism etc. are main reason of this lack of vegetation.

Climatic Condition

Now-a-days global warming is affecting environment of the whole Earth. Increasing global temperature is causing multiple changes in climatic conditions like fast winds, unbalanced rainfall, snowfall and humidity. The change in climatic condition has adverse impact on the natural areas and ecosystems. Change in climatic condition affects ecosystems in a variety of ways. For instance, less rain could force species to migrate to in suitable environment for their survival. Climate change not only affects ecosystems and species directly, it also interacts with other human stressors such as development. Although some stressors cause only minor impacts when acting alone, their cumulative impact may lead to dramatic ecological changes. For instance, climate change may exacerbate the stress that land development places on laterite soil areas. Additionally, recently logged forested areas may become vulnerable to erosion if climate change leads to increases in heavy rainstorms.

Human Intervention

Earth's ecosystems have been significantly transformed through human actions. In the last five decades, ecosystems have changed more rapidly than at any other time in recorded human history. Some of the most significant changes have been the conversion of forests and grasslands into cropland, the diversion and storage of freshwater behind dams, change in geomorphology and hydrology by excessive mining, change in water tables by excessive groundwater extraction and degradation of natural and cultural heritage by relentless construction activities.

Human intervention not only affected ecosystems but has also affected fundamental environmental cycles, which supports many ecosystems. Human activities have modified these cycles, through increases in freshwater use, carbon dioxide emissions, and fertilizer use.

The most rapid changes are now taking place in developing countries, but developed countries experienced comparable changes in the past. However, current transformations seem to occur at a faster pace than changes prior to the industrial era.

8.5.3 Consequences**Ecological Disturbances**

Ecological disturbance is regarded as an event of intense environmental stress occurring over a relatively short period of time and causing large changes in the affected ecosystem. Ecological disturbance shapes structure of individual populations and the character of whole ecosystems.

Disturbance can result from natural causes, for example, by physical stressors such as volcanic eruptions, hurricanes, tornadoes, earthquakes, and over geological time, glacial advance, and retreat. Humans can also cause physical disturbances, for example, through construction activities. Wildfire is a type of chemical disturbance caused by the rapid combustion of much of the biomass of an ecosystem and often causing mortality of the dominant species of the community such as trees in the case of a forest fire. Wildfires can ignite naturally, usually through a lightning strike, or humans can start the blaze. Sometimes fires are set deliberately as a management activity in forestry or agriculture. Events of unusually severe pollution by toxic chemicals, nutrients, or heat may also be regarded as a type of disturbance if they are severe enough to result in substantial ecological damages. Disturbance can also be biological, as when a severe infestation of defoliating insects causes substantial mortality of trees in a forest, or of

crops in agriculture. The harvesting of forests and other ecosystems by humans is another type of biological disturbance.

Fragile environment

Most of the factors discussed above alters the microclimate of an area and makes the environment fragile, which shows unexpected sudden variation in climatic conditions.

Some ecosystems can cope with these variations whereas others more sensitive to any environmental change cannot. Many species migrate to more suitable and stable environment but species that are not able to migrate, usually diminish. The effects of small shifts in rainfall patterns or ambient temperatures can often do great harm to fragile environments and these effects can act as indicators of imminent threats elsewhere.

Change in character

Natural and cultural heritage degradation by natural and human caused stresses, forces the area to lose its character over time. There are multiple factors which define the character of a natural site such as distinctive, scenic and aesthetic features. When these features dilapidate or degrade, interest in the site is lost and becomes more prone to encroachment and further modification. In this way, only conservation of a natural heritage site is not sufficient, it should be preserved also.

Loss of Heritage importance

If the importance of each and every component of a natural heritage place is not considered then the place will lose its heritage importance. Different components of a place may make a different relative contribution to its heritage value. Loss of integrity or condition may diminish significance. In some cases it may be useful to specify the relative contribution of an item or its components.

Water Table

Groundwater is a valuable resource in the world. Where surface water, such as lakes and rivers, are scarce or inaccessible, groundwater supplies many of the hydrological needs of people everywhere. In hydrologic cycle, part of the precipitation that falls on the Earth's surface sinks through the soil and percolates (seeps) downward to become groundwater. Groundwater eventually comes back to the surface, discharging from streams, springs, lakes, or the oceans, to complete the hydrologic cycle. For the percolation process there should sufficient permeable surfaces in habitable area.

Permeability is determined by the size of pores and the degree to which they are interconnected, and hence, the ease by which water can flow through the material. Highly permeable aquifers, such as those comprised primarily of coarse sand and gravel, can supply more water than less permeable aquifers comprised of silts or clays. In this example, the pores in sand and gravel are larger than those in silt and clay, so water moves through sand and gravel more quickly. In this way the lateritic soil, sandy and gravelly soilscape is more important for aquifer recharge or in other words to maintain the ground water table.

If areas of this type are not protected, the lowering of the underground water table will take place although there exists other reasons for the water table lowering like overdrawn of water by excessive pumping, low precipitation etc.

Natural Disaster

There are natural disasters like landslide, flood and foundation failure, which occur due to soil erosion. In Khoai area, there are less chances of occurrence of first two kinds of disasters because there are not much elevation differences in the area and also comes under the micro-watershed of Kopai River, which has very less potential of flooding.

But the lateritic terrains and soilscape of Khoai area may be problem for the construction activities. Soil structure of these areas is very poor because of its inherent constraints of acidity, nutrient loss, chemical impairment, crusting, water erosion and poor water holding capacity as these are highly weathered and leached soil enriched with oxides of iron and aluminium. Soil loses its bearing capacity due to these properties and further erosion degrades it more. For this reason, it cannot support heavy building structure. Buildings may collapse because of foundation failure.

8.6 NEED FOR IDENTIFICATION OF KHOAI AREA

Natural and cultural heritage areas have social attraction because of its scenic beauty, distinctive features and cultural importance. This attraction creates an interest in people for using these places for different activities. The social attraction represented by the natural processes, more often than not, is inherently suitable for a multiplicity of human uses. Flat well-drained land is as suitable for intensive recreation as it is for commercial-industrial development. Areas of diversity and high scenic interest have a high social value for conservation as well as for passive recreation and at the same time, are highly desirable locations for residential development. These apparent conflicts can be resolved in a number of ways. Because of their scarcity and vulnerability, certain resources may represent such high value for conservation that other uses should be excluded. Multiple uses of some areas may be permitted if it is assured that intrinsic values are not compromised. Yet in other cases where two uses are equally suitable, the decision of choice vests with the society.

Therefore, it is necessary to recognize the areas of natural and cultural importance which are most vulnerable, most distinctive, highly scarce and important, so that it can be protected against different natural and human caused stresses.

8.7 KHOAI AREA DELINEATION

The first point to be made, before the delineation, is that it is not a plan. In order to make a plan, it is necessary to calculate demand for the constituent land uses; the locational and formal requirement of these; and to recognize the instruments available to society in both the public and private domain.

But even at this stage it has innovative virtues that justify examination. The first of these is that it employs a rational method: the data set may vary according to problem. The major map data should be related to geology, hydrology, soils, plant ecology, wildlife, historical places, landmarks and places for cultural celebration.

8.7.1 Methodology for the Assessment of Khoai Area

Khoai area has a high importance value as it has many attributes of ecology and culture. But there may be many other areas with high conservational values. So it is required to assess the whole study area for the conservation of ecologically and culturally significant zones. We are required to identify the entire area for its intrinsic suitability for all prospective land uses. The flowchart at Figure 8.2 shows different steps involved in the assessment of these areas.

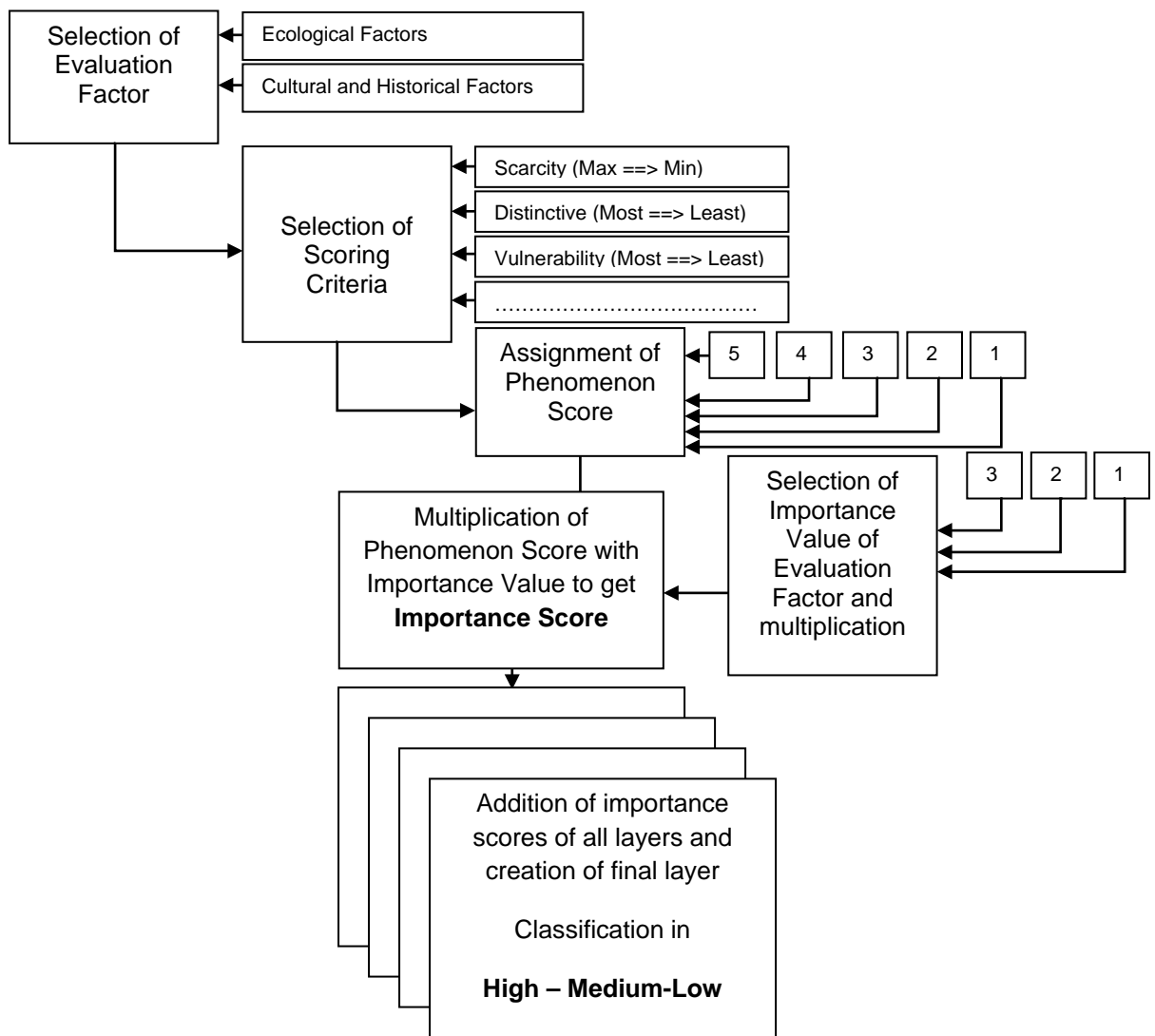


Figure 8.2: Methodology

8.7.2 Attributes and Phenomenon Score

The evaluation factor, scoring criteria, phenomenon score and importance factor are given in Table 8.1 to delineate the Khoai area and other areas of ecological and cultural importance.

Table 8.1: Attributes and Phenomenon Score for Khoai Area Delineation

Weightage Matrix in an AHP framework								
S.no.	Evaluation Factors	Scoring Criteria	Phenomena Score					Importance Value(Importance of factor)
			5	4	3	2	1	
Ecological Factors								
1	Geology							
1.1	Feature for Unique, Scientific and Educational Value	Scarcity Max ==> Min	1. Ancient Lakebeds 2. Drainage Outlet	1. Late rite Deposits 2. Limits of Laterite Patches	Natural Serpentine Trails	Natural Mound and Valley Formation	1. Clay Pit 2. Gravel Pits	3
2	Physiography							
2.1	Feature of Unique, Scientific and Educational Value	Scarcity Max ==> Min	Hummocks and Kettleholes	Natural Mound and Valley Formation	Scarps	Breaks in Serpentine Trails	Man made Physiography Formation	2
2.2	Land Feature of Scenic Values	Distinctive Most ==> Least	1. Serpentine ridge 2. Hill, Hilllocks	Undulated Surface	Escarpments	Berms, Hummocks	Undifferentiated	2

Delineation of Khoai Area	LUDCP-2025
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2.3	Water feature of scenic value	Distinctive Most ==> Least	Lake	Streams	1. Developed water body, 2. Canal	1. Pond 2. Moist Land	Seasonal Streams	2
2.4	Riparian Land of Water Features	Vulnerability Most ==> Least	Developed Water Body	Moist Land	Stream, Pond	Lake	Water Logged Area	2
2.5	Surface Drainage	Proportion of surface water to land area Most ==> Least	Marsh and Swamp	Area of Constricted Drainage	Dense Stream/Swale Network	Intermediate Stream/Swale Network	Sparse Stream/Swale Network	1
3 Hydrology								
3.1 Water based activities								
	a. Active recreation (Swimming, peddling, model-boat sailing, fishing etc)	Expanse of water Largest ==> Smallest	Water Park	Bandh, Lal bandh, Tal Pukur	Other ponds	Streams	Seasonal water features	1
	b. Passive recreation (Walking trails, jogging tracks, bird watching, watch tower etc.)	Scenic Most ==> Least	Non-urbanized Perennial Water Features	Non-urbanized Intermittent Water Features	Semi-urbanized Water Features	Urbanized Maintained Water Features	Urbanized Un-maintained Water Features	2
3.2	Watershed for Stream Quality Protection	Scenic Streams Most ==> Least	Non-urbanized Perennial Water Features	Non-urbanized Intermittent Water Features	Semi-urbanized Water Features	Urbanized Maintained Water Features	Urbanized Un-maintained water Features	2
3.3	Aquifer	Ground Water level Low ==> High	Low Water Table (5-7m)	--	High Water Table (3-5m)	--	Surface Water Body	2
3.4	Aquifer Recharge Zone	Important land cover High seepage ==> low seepage	Laterite Deposit, Sand Pit, Gravel Pit	Barren Land	Agricultural Land, Agricultural Others, Vegetation	Water Body	Settlements	2
4 Pedology								
4.1	Soil Drainage	Permeability as indicated by the height of water table Most ==> Least	Nil	Poor	Fair-Poor	Good-Fair	Excellent-Good	1
4.2	Erosion	Susceptibility Most ==> Least	Steep Slope over 10%	Any Slope on gravely-sandy to fine sandy loam	Moderate slopes (2.5%-10%) 1. Gravely Sand or silt loam 2. Gravely to stony sandy loams	Minor slope (0%-2.5%) on gravely sand or silt loams	Other soils on plane land	3
5 Vegetation								
5.1	Existing Forest	Quality Best => Poorest	Excellent	Good	Poor	Disturbed	None	2
5.2	Forest type	Scarcity Max ==> Min	1. Lowland 2. Upland Dry	Marsh	Upland	Upland Moist	Absence	2
5.3	Existing Orchards/Urban Forestry	Quality Best => Poorest	Excellent	Good	Poor	Disturbed	None	2
6 Wildlife								
6.1	Existing Habitats	Scarcity Max ==> Min	Field and Forest	1. Informal Landscape 2. Groves	Water related	1. Orchards 2. Rural/Urban Forestry	1. Agricultural Area 2. Rural/Urban Settlement	2

LUDCP-2025	Delineation of Khoai Area
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6.2	Field and Forest Species	Forest quality Best => Poorest	Excellent	Good	Poor	Disturbed	None	3
6.3	Water associated species	Environmental quality based on degree of urbanization Non-urbanized => Fully Urbanized	Non-urbanized Perennial Water Features	Non-urbanized Intermittent Water Features	Semi-urbanized Water Features	Urbanized Maintained Water Features	Urbanized Un-maintained Water Features	2
6.4	Populated Area Related Species	Presence of trees Abundant => Absent	Abundant	--	Sparse	--	Absent	1
Cultural and Historical Factors								
7	Land use							
7.1	Feature of Unique Educational and Historical Value	Importance Most ==> Least	1. Rabindranath Bhawan 2. Amartya Sen's House 3. Kamakshi Shakti Peeth	1. Visva-Bharati University, 2. Santiniketan-Sriniketan Road 3. Chhatimtala	Area with Abundance of Landmark	Area with Sparseness of Landmarks	Area with Absence of Landmarks	3
7.2	Feature of Scenic Value	Distinctive Most ==> Least	Ballavpur Wildlife Sanctuary, Deer Park, Deer Park Lake etc.	Sonajhuri, Eucalyptus and Sal Trees Grove etc.	Amar Kutir Eco Tourism Park etc.	1. Visva-Bharati University Campus 2. Architectural Landscape	Groves, Garden and Orchards	3
7.3	Existing and Potential Recreational Resources	Availability Most ==> Least	1. Existing public open spaces 2. Existing Institution	Potential Non-urbanized Recreational Areas	Potential Urbanized Recreation Area	Vacant Land Low Recreation Potential	Urbanized Area	3

8.7.3 Attribute Layers

Attribute layers for the delineation were prepared using ArcGIS software with the help of different data sources, field surveys, reconnaissance surveys and expert opinion. For better understanding the attribute layers are classified below under various categories. Appendix I shows a composition of altogether twenty-three maps compiled for the different factors under these attribute layers.

8.8 COMPOSITE SCORE (=IMPORTANCE SCORE X WEIGHTAGE OF FACTOR)

Importance score of each land parcel was calculated with help of phenomenon scores of parcels and weightage value of factor. Then individual factor-wise or layer-wise importance scores were then added to obtain the final composite score. Further, all the composite score for the Khoai area were classified into five category using Jenks natural breaks, according to hierarchy of importance in conservation. Thus a final map was generated, as shown in Map No. 8.1, indicating the zones for conservation ranging from “most important” to “not so important “on a five-point Likert scale. The Khoai area comes under the most important (for conservation) category. A detail list of plots coming under Khoai is given in Annexure II.

8.9 CONCLUSION

This method is explicit. Any other person, accepting this method and the evidence, is likely to reach the same conclusions as those demonstrated in the study. Moreover, this method allows the implementation of a important improvement in planning process—that is, the community can participate in the decision making process using their own value system.

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9 CULTURAL HERITAGE AREA

Santiniketan has a distinct cultural heritage which makes it a unique place. It is a preferred tourist destination of the popular religious-cultural tourist circuit of the region viz. Santiniketan-Bakreswar-Tarapith. This place was originally purchased by Maharshi Debendranath Tagore who named it Santiniketan. Rabindranath Tagore, here, started an experimental school called 'Brahmacharya Ashrama' where students can be educated in close liaison with nature in the style of 'Tapovana' of ancient India which later became internationally famed Visva-Bharati, a center of Indian culture and the meeting place of the East and the West. Rabindranath was a great lover of nature and planted various types of trees in and around the Ashrama to give it a green look. He also introduced several festivals to celebrate nature and its seasons, to commemorate great name, which were free from any religious narrowness.

Source: birbhum.gov.in

9.1 BUILT AND CULTURAL HERITAGE

The culture and buildings of the Santiniketan – Sriniketan associated with the periods of Rabindranath Tagore; his father Maharshi Debendarath Tagore and his son Rathindranath Tagore, are significant part of the heritage of the place. The major built heritages of the place have been enlisted in Table 9.1 which form the core of Visva Bharati. The various festivals introduced by Rabindranath Tagore to celebrate nature through its seasons signify the cultural heritage of this place. Beside, this the various initiatives taken by him have also become an important part of the cultural heritage. These entire cultural heritages have been enlisted in the table 9.2.

Table 9.1: List of structures in the core of Visva Bharati

ASHRAMA COMPLEX	
Amro Kunja	The students learn with their guru under it
Chhatimtala	It is the site of the Chhatim trees under which Maharshi meditated.
Santiniketan Griha	It was made by Maharshi which is the oldest building of Santiniketan
Upasana Griha	Maharshi as a prayer hall where worship is nondenominational also made it. It is made of beautiful stained glass.
PathaBhavana	It is the class room complex with beautiful frescoes by Nandalal Bose and his students.
Natun Bari	This simple thatched cottage was built by Rabindranath Tagore for his family in 1902. It was offered to Mahatma Gandhi's Phoenix school boys in 1915.
MrinaliniAnanda Pathsala	The nursery school named after Mrinalini Devi, the Poet's wife who died before the completion of Natun Bari.
Dehali	It was built in 1904 where Rabindranath lived for a while with his wife Mrinali Devi.
Santoshalaya	It is built after Santoshchandra Majumdar, one of the first students of the Santiniketan Vidyalaya. The walls of this house have frescoes prepared by artists of the twenties.
SinghaSadana	It was built out of a donation by Satyendra Prasanna Sinha of Raipur. The Oxford University conferred its honorary doctorate on the Poet in this building. It has a clock tower and bell that regulates the timings of daily routine for the ashrama inmates.
Purvatoran and Paschimtoran	These are two buildings on either side of Singha Sadana where classes are held.
Dwijaviram	It is a house where the Poet's eldest brother, Dwijendra Nath lived.
Dinantika	It is an octagonal two storied structure originally used as a tea-house with the staircase on the outside.
Cha Chakra	It was instituted in the name of Dinendranath Tagore by his wife, Kamaladevi. The walls of this house have colorful frescoes by Nandalal Bose.
Taladhvaj	It is a round mud hut with a thatched roof built around a taal tree (toddy palm) with part of its trunk and its huge palm leaves stretching out over the top, was

Proposed Land use Plan	LUDCP-2025
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	built for Tejeschandra Sen, a tree over which would even share his lodging with one.
Old Santiniketan Press	In 1917, the citizens of Lincoln, Nebraska had presented to the boys of Santiniketan, a letterpress treadle machine which saw the beginning of the Santiniketan Press, from where the Santiniketan Patrika, a newsletter was printed.
Chaitya	It is a small structure made of mud and coal tar in 1934 resembling a typical thatched hut of Bengal, yet it carries a Buddhist name. Planned by Nandalal Bose and Surendranath Kar, this structure has a glass paned showcase where newly created works of art were on display every few days.
Ghantatala	It resembles a gateway to a Buddhist stupa. A bronze bell hanging from the structure would, at one time, regulate the classes and other events held during the day.
Gourprangan	The open ground in front of the school building is named after Gour Gopal Ghosh, who was student and teacher of Santiniketan.
KaloBari	It is a unique structure made of mud and coal tar as a hostel for KalaBhavan students. Its walls and pillars have been decorated with relief work and is the handiwork of art students over many years. Begun by Nandalal Bose in 1934, there are examples of Ramkinkar's works on the northern walls.
Panthalasala	It was built by donation from Hirabai, widow of Liladhar Thakkar of Bombay to construct a restroom for travelers which now house a bookstore and Railway Reservation Counter.
Ratan Kuthi	It was built out of a donation by Trustees of Sir Ratan Tata to be used as a residence for scholars who stayed and worked at Santiniketan. It symbolizes the reverence to the personality of Rabindranath by the Tatas
Malancha	It was built in 1926 by Rabindranath for his youngest daughter, Mira. The genesis of the Malancha house lies in the deep sense of sorrow and guilt that Rabindranath felt at the failed marriage of his daughter. He wanted this house, along with its gardens to be a solace for the lonely woman and together, father and daughter, they planned the garden.
UTTARAYANA COMPLEX It is the enclave of Rabindranath Tagore's own houses, built over last three decades of his life (1919 - 1941). The five houses are located in the gardens of Uttarayana which were planned and laid out by the poet's son, Rathindranath, a horticulturist by training.	
Konark	A mud house originally, was the earliest dwelling that Rabindranath built for his own seclusion from activity to provide a place for his own work. Its verandah was used for poetry readings by the poet. The Mrinmoyee Patio is a beautiful cemented floor with sitting arrangements which was used for writing.
Shyamali	It was an experimental house with permanent mud roof to avoid the fire hazards associated with thatched roof. It had to be a low-cost structure to serve as a model house for villagers. The walls were heavily built to bear the weight of the mud roofs. Keeping Rabindranath's ideas in mind, Surendranath Kar prepared the architectural plan and Nandalal Bose prepared the visual perspective based on the Borobudur style. The entire outside wall was decorated with beautiful relief work by Kala Bhavana students under the guidance of Nandalal Bose. The Santhals on either side of the main door and on the eastern corner were by Ramkinkar Baiz. Gandhiji and Kasturba stayed as guests in this house.
Punascha	Punascha, meaning postscript suggests the Poet's change of mind. It was built on the eastern side of Shyamali where he created most of his paintings.
Udichi	It is the last house built for Rabindranath. He felt claustrophobic, he said, and wanted a room to be constructed on four pillars where he took poetry classes.
Udayan	It is the most imposing house in Uttarayana, which was conceived by Rathindranath. It has many suites of rooms - each on a different level which gives this house its individuality.
Guhaghar/ Chitrabhanu	It stands near the lake in the Japanese styled gardens of Uttarayana. The studio or Chitrabhanu was built for Pratima Devi at a higher level of the ground and later the space below was converted into a room to be used as a workshop for

	Rathindranath.
SRINIKETAN It is an Institute for Rural Reconstruction founded in 1922 with Leonard Elmhirst as its first Director. It also forms the core of Visva Bharati	
Surul Kuthibari	Rabindranath purchased this building in 1912 which was often used by the Poet as a retreat and for writing. It is associated with Leonard Elmhirst and Kalimohan Ghosh.
Silpa Sadan	It is a centre for village crafts
Palli Samgathan Vibhaga	It is the centre for rural reconstruction
Palli Siksha Bhavan	It is the centre for education for village children and adults
Rural Extension Centre	It conducts research in organic and innovative farming techniques and animal husbandry.
Other heritage structures of Visva Bharati	
China Bhavana	A centre for Chinese studies. Natir Puja, a dance drama of Tagore is painted on its wall under the guidance of Nandalal Bose, pioneering Indian artist.
Black House	A mud building known for its relief works done by stalwarts like Ram Kinkar and Prabhas Sen.
Kala Bhavan	The college of Fine Arts and Crafts.
Sangeet Bhavan	The College of Dance and Music
Rabindra Bhavan/ Bichitra	A memorial and Research centre for Tagore studies. This operates as a museum and something akin to a shrine to Tagore. A replica of the stolen Nobel Medal is displayed (very well guarded!!!) and a raga is played continuously.
Sculptures by Ramkinkar Baij	The landscape of Santiniketan is dotted with his larger than life figures of Santhals who were in reality part of the landscape of this place.
Murals by Benode Bihari Mukherjee	The murals on the lives of medieval saints created in Hindi Bhavana were the artist's magnum opus. In 1972, even after he lost his eyesight, he made a large ceramic mural in the Kala Bhavana campus.

Source: birbhum.gov.in, whc.unesco.org, www.worldheritagesite.org

Table 9.2: List of Cultural Heritage of SSPA

Vriksha Ropana and Hala Karshana	These are festivals of tree planting and ploughing accompanied by music, dance and chanting of Vedic Hymns to invoke nature's fertility and healing up of wounds of nature, held annually in the month of August.
Varsha Mangal	Held to celebrate the rainy season in the month of August.
Silpotshava	Held in the month of September to exhibit the handicrafts of Santiniketan-Sriniketan industries.
Pous Utsava	Held from seventh of Pous every year to commemorate the Maharshi's initiations in to Bramhmo religion and foundation day of 'Brahmacharya Ashrama'.
Basantotsava	Held in the month of March on the day of Holi. Spring is welcomed through music and dances. Teachers and students greet each other with Abirs in this festival day.
Shonibarar Haat	A weekly market organised every Saturday on Khoai for local artisans.

Source: birbhum.gov.in, whc.unesco.org

9.2 NATURAL HERITAGE

Beside the cultural and built heritage Santiniketan is also unique due to its natural heritage in the form of remnants of 'Khoai' – a name coined by the Poet himself for a special kind of undulating laterite land formation. The stream of rainwater meandering through it offers a magnificent view during monsoon. It is an important heritage of the place due to its rare landscape character and its association with Rabindranath Tagore as well as some other

eminent personalities like Ramkinkar Baij, Nandal Bose. Section 8 has elaborately addressed the identification and preservation of Khoai.

9.3 WORLD HERITAGE STATUS AND VISVA BHARATI

The core of Visva Bharati was shortlisted as Indian entry to be nominated for World Heritage Sites by Archaeological Survey of India for the year 2011, however the nomination was withdrawn due to some or the other lacking requirements. To achieve a World Heritage Site status, it is necessary to have an accurately delineated buffer zone to protect the concerned site of heritage value.

9.3.1 BUFFER ZONE

As described in Operational Guidelines on Boundary & Buffer Zone, UNESCO World Heritage Centre, the buffer zone is the immediate setting of the nominated property, important views and other areas or attributes that are functionally important as a support to the property and its protection. The objective of a buffer zone is to provide an added layer of protection to the nominated property.

The buffer zone is not a development-prohibited zone, rather a zone with regulated and controlled development. These regulations and controls are drawn considering the setting of the nominated property and to ensure proper protection of the nominated property.

While delineating the buffer zone, several aspects are to be considered such as its Size, Ecology, Economy, Legislation, Social and Institutional. In addition, the buffer zone can be of various types like Traditional Use Buffer Zones, Forest Buffer Zones, Economic Buffer Zone, Physical Buffer Zone, and Social Buffer Zone; which are developed in different situation depending upon the nominated property.

9.3.2 Buffer Zone of Visva Bharati

As per the 2nd meeting of Apex Advisory committee held on 17th of Sep' 2014 at 4:30 p.m. in chamber of Chief Secretary, Govt. of West Bengal, Nabanna, 325, Sarat Chandra Chatterjee Road, Howrah – 711102, the buffer zone and core area of Visva Bharati have been delineated (Map 9.1). While proposing future land use, buffer area and possible developments have been considered so that as to retain integrity of cultural and natural heritage of Visva Bharati .

9.4 OTHER HERITAGE STRUCTURES WITHIN SSPA

The planning area includes various other heritage structures, which are of importance. Most of these structures are either temples, mosques or used as residences and mostly owned privately. The status of preservation of these structures are more or less fair; however, some are in highly deteriorating condition due to lack of any control or regulations. These structures are of importance for the architectural styles and the time they belong to, hence they need to be preserved. The local government needs to legally notify the structures which are enlisted as heritage buildings (given in the Appendix II) and proper control and regulation needs to be enforced for their preservation. These heritage buildings have been spatially located in Map No. 9.2.

10 PROPOSED LANDUSE PLAN

10.1 PLAN PERIOD

Rapid urbanization trends in Sriniketan Santiniketan Planning Area is characterised by haphazard urban growth as well as weak enforcement of regulation concerning land development control. With the Land Use and Development Control Plan, it is expected that the Sriniketan Santiniketan Development Authority will be better equipped to manage and regulate the development in the region. However, due to the dynamics associated with the rapid growth of tourism in Sriniketan Santiniketan Planning Area, it is difficult to propose a long term Land Use and Development Control Plan. The Land use and Development Control Plan for Sriniketan Santiniketan Planning Area is proposed for the year 2025.

10.2 PLANNING DIRECTIVES

The main objective of LUDCP is to allocate land uses to ensure public welfare and better standard of living. The land use distribution is based on compatibility of uses. The development control plan manages and regulates land development and ensures that all developments conform to a pre-determined set of objectives, policies or standards. Thus the Land Use and Development Control Plan must be inclusive of the physical, environmental, economic, social and aesthetic aspects.

To prepare this plan certain planning directives were followed:

1. Land use plan shall respond to the natural surroundings, topography, geology, hydrology, ecology, etc.
2. The land use shall show location of settlements both urban and rural. It will earmark agricultural land, forestland, river basins, flood prone areas, streams and canals, water bodies.
3. The multi-cropping land parcel, as per data received from the SSPA, shall be protected. The same shall be earmarked as 'Agricultural Use Zone' along with other area which are most suited for agricultural use.
4. The riverbank shall be protected by a green belt / plantation.
5. It shall allocate land for regional infrastructures like water treatment plants, sewerage treatment plants, and solid waste treatment plant as per respective master plans. These would essentially follow the natural contours of the area.
6. Alignments of the streams and canals will be demarcated as per the drainage master plan. Other canals and drains existing within the Planning Area shall also be earmarked. The 'Government Land' along all these drains shall be marked as Green Belt.
7. Transit facilities and logistic infrastructure are to be located as per Traffic and Transportation Master Plan and as per the requirement of the new industrial, residential zone proposed in the revised LUDCP 2015.
8. Location of central business district as well as other ancillary economic activities will be earmarked
9. Green Belt will be introduced to segregate the industrial zone from the densely developed residential areas.
10. The existing industry is allowed to continue operations. Their expansion may be permitted if it is of non-polluting nature.
11. Priority aspects must be decided as per the development priorities obtained in the socio-economic survey.
12. While allocating public infrastructures, priority will be given to the land under the possession of the government and the Sriniketan Santiniketan Development Authority. Ownership of plots of land will be given importance.
13. Areas of Heritage value will be given due importance and incorporated in the plan.

14. Land use and activities in the delineated buffer zone are to be carefully prescribed so as to maintain the integrity of the sites and precincts of special and outstanding universal values .
15. Provision of public facilities and infrastructures like health, education, government, recreation, community development, will be made as per the URDPFI Guidelines.

10.3 PLANNING APPROACH

Without the knowledge of the existing situation, future proposal for land use and development control cannot be prepared. The first step in the preparation of the plan was updation of the existing land use. After that, considering socio-economic survey data, present situation was analysed. Projections were made for required infrastructure facilities and past proposals were considered for preparation of conceptual broad zoning. Then draft of revised LUDCP was prepared and submitted to SSDA for objections/ suggestions. After considering the feedback from stakeholders and concerned authorities, final report for revised LUDCP-2025 is prepared with detailed zoning regulations and development control guidelines. The detailed steps for preparation of LUDCP are shown in Figure 10.1.

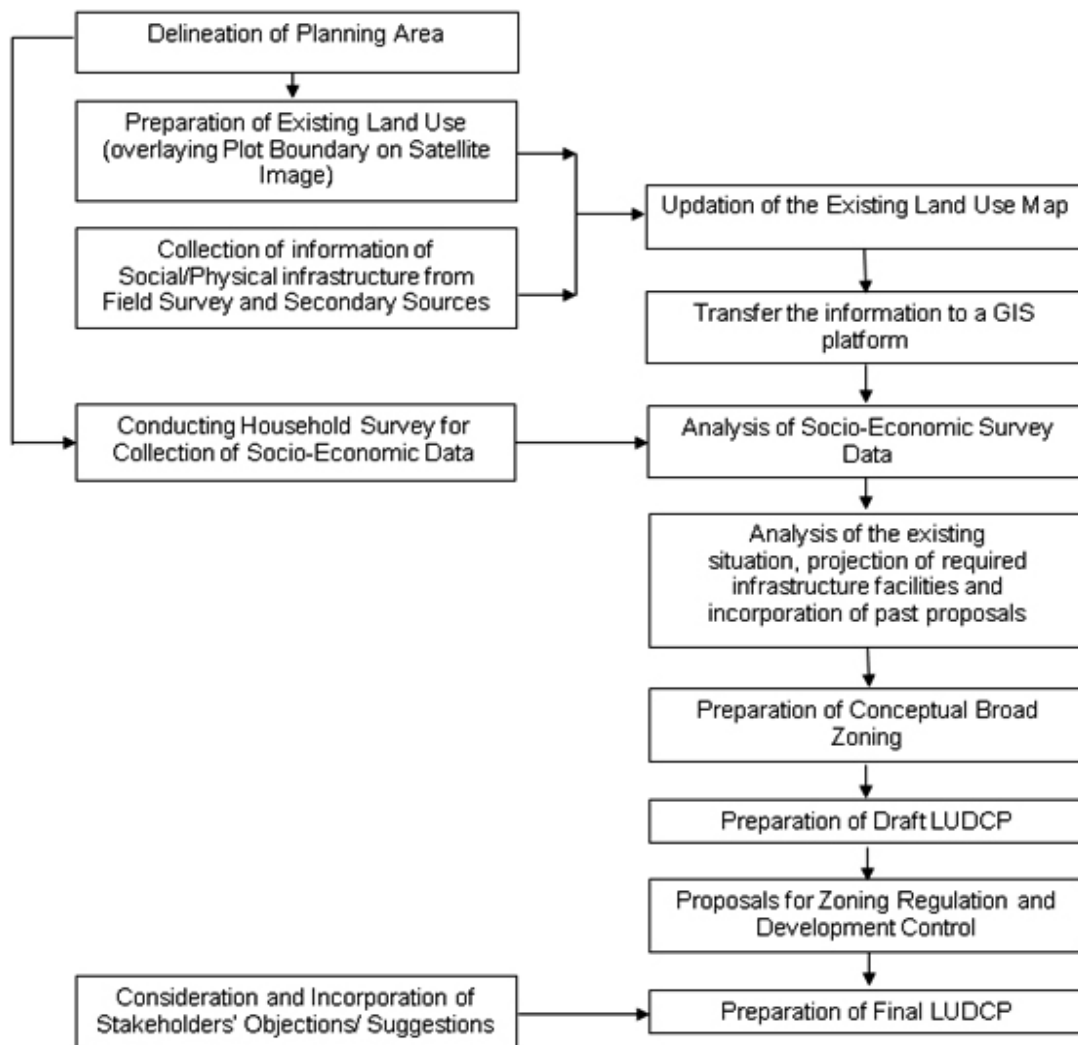


Figure 10.1: Methodology

10.4 DEMAND ASSESSMENT FOR LAND UNDER RESIDENTIAL AND ASSOCIATED ACTIVITIES

One of the prime objectives of land use zoning plan is to provide right quantum of land for various uses. Residential use consumes largest share of developed land and it will continue to do so in future for Sriniketan-Santiniketan Planning Area. On the other hand, amount of land supplied for non-residential activities often decide the quality of life in an urban area. The demand assessment of land particularly for residential activity has followed the steps listed below.

Step1: To find the quantum of land allocated for existing residential use and existing population for each planning unit;

Step 2: To find out the projected residential population of each planning units;

Step 3: To estimate the net residential density for residential areas in each planning units and considering assumed gross residential density for 2025.

Step 4: To find out the amount of land that will be required for gross residential activity in 2025 - from the projected population and assumed density;

Step 5: To find out the net amount of land required by considering the existing residential land and the land under eco-sensitive areas;

As per 2015, Sriniketan Santiniketan Planning Area has a population of 1,70,981 and projected population for the year 2025 is 2,09,850. Total increment in population according to the best-fit population growth trend is 38,869. To accommodate the same number of people within the SSPA 560 Ha of land will be required at a gross density of 70 persons per hectare, as shown in Table 10.1.

Table 10.1: Additional Area requirement.

	Pop (in2015)	Pop (in2025)	Population Increment	Assumed Gross Density	Additional Area Required for Proposal in Ha.
Rural	68995	81236	12241	70	175
Urban	101986	128615	26629	70	385
SSPA	170981	209850	38869	70	560

Land use break up for the proposal plan is calculated by calculating total land required for Sriniketan Santiniketan Planning Area in the year 2025 and then subtracting what is already in the existing. This is then proposed around the SSPA with the help of planning directives mentioned in section 10.2

In the proposed settlement pattern for Sriniketan-Santiniketan Planning Area, it has been assumed that future population will be spatially allocated in clusters. In a residential cluster, land will be needed for residential activities as well as non-residential activities, which are needed to support the residential functions. This is akin to the concept of neighbourhood where all facilities desirable at that scale is provided within the neighbourhood. In the Table 10.2, an attempt is made to estimate the residential and non-residential land required for projected population. The non-residential activities include educational facilities, health facilities, socio cultural facilities, social amenities and services, physical infrastructure provisions and land required for internal circulation. The design and space standards are adopted from URDPFI, NBC 2005 and TCPO guidelines, tailored according to specific needs of SSPA. As most of the residential clusters will be around existing population nodes, it is necessary to allocate additional land to take care of the deficit in the provision of land for non-residential activities for existing population over and above land required for future population.

To find out the proposed plan; land use breakages calculation of area required for social and physical infrastructure required to support the projected population of 2,09,850 by year 2025 was done.

Table 10.2: Additional area required for proposal plan.

Land Use	Existing Area in Sq. Km. in 2015	Total Area Required in Sq. Km. by 2025	Additional Area Required (in ha) by 2025
Residential	15.334	18.24	290
Commercial	0.316	0.466	15
Industrial/ Manufacturing	0.388	0.5	11
Transportation	3.101	4.25	115
Public Semi Public(including Visva Bharati)	5.828	6.828	100
Recreational	0.341	0.59	25
	Total area required for proposal plan		556

The final required breakup for proposed plan is calculated depending on the existing and the required land, which came to 556.6 Ha. Residential area required is calculated considering the net density of 115 persons per hectare. Commercial, Public and Semi-Public, Recreational area required comes from URDPFI norms. Agriculture and Vacant Land are to balance the change in area. Water body and special area remains same for existing land use and proposed plan breakup.

10.5 PROPOSED LAND USE

Based on the analysis and planning requirements, detailed Land Use Zoning Plan (Refer Map No. 10.1), at plot level, has been prepared for the Sriniketan Santiniketan Planning Area. Following basic guidelines were adopted in detailing out the proposed land use plan at plot level.

1. No change has been made to the existing land use falling under developed category, except in rare occasions. Most of the proposed development has been restricted to vacant land and agricultural land.
2. Location of the forest cover and surface water bodies has been duly considered while locating future land use. Care has been taken not to allocate any land use, which might threaten the vitality of these natural resources. A green buffer area is provided around the surface water bodies to stop possibility of undertaking any development around them. Tree cover areas under government land ownership other than the Ballavpur wild life sanctuary are also demarcated and are to be preserved as green cover area .
3. Location of flood prone land has been taken into serious consideration. In southern areas, which get affected by flood, has been considered as areas of 'No further development '.
4. Distribution of land owned by state government has been mapped . Large institutional zones have been proposed where significant share of land is under state government ownership. Smaller parcels of public land within settlement areas have been marked for lower order public and semi-public functions catering to the residential zone. Apart from that, significant reserve of public land has been allocated for primary sector activities i.e. social forestry etc.

5. Large parcels of agricultural land have not been disturbed. Farmland has been used for development only where scattered farming practices are observed or the land is too important from location standpoint.

6. Roads have been aligned in such a way that no developed land is required to be appropriated -particularly for major and minor arterials. As these two categories of roads have large Right-Of-Way (ROW), most of them have bypassed existing settlements. On the other hand, internal roads with less ROW, have mainly followed existing road alignments through settlements - wherever possible. Some village settlements have been marginally disturbed due to internal roads, only where there were no other available options -however, such occurrences are few.

7. Land where no development is permitted due to threat from erosion, for heritage and conservation or being close to the river front has been allocated for primary sector activities. If the land already has agriculture, forests, or other primary sector functions, no change in use is proposed.

8. Vacant land, which has not been put to any use, has been allocated for primary sector activities. They are kept as development reserve to meet the demand beyond the plan period, or they can be utilised if land is required for unforeseen activities within the plan period.

10.5.1 Proposed Land Use Categories

The proposed land use classification for the planning area has been decided considering the West Bengal Town and Country (Planning and Development) Act, 1979 and the UDPFI Guidelines. The land use categories as per the 'Surveyed Land Use' have been distributed amongst the fifteen 'Proposed Land Use' categories. However, some area does not come under the jurisdiction of the Development Authority like railway land and forest land. The area under these types of categories has been categorized separately as 'Railway' and 'Forest' in the 'Proposed Land Use'. The land use classification adopted for the Land Use and Development Control Plan of the planning area has been elaborated in Table 10.3. The detail list of activities under each land use category has been included in the Zoning Regulations given in Chapter 11.

Table 10.3: Proposed Land Use Classification

	Level I Use Zone	Proposed land use categories
1	Residential	Residential
2	Commercial	Retail Commercial and Business Wholesale/Regulated markets, Go-downs, Warehousing/Logistic Hub
3	Industrial	Industrial
4	Transportation and Communication	Roads and Transport Terminal Railway
5	Public & Semi Public	Public / Semi – public Utilities & Services
6	Recreational	Recreational
7	Forest	Forest
8	Agricultural	Agricultural Green Belt and Plantation
9	Water Bodies	Water Bodies
10	Special Area	Heritage & Conservation No Development Zone

The area earmarked within different land use zones is shown in Table 10.4 in hectares. The table also indicate the relative distribution of land under each use – zone:

Table 10.4: Proposed Land Use area break-up of SSPA

Sl. No.	Land Use	Area (in Ha)	Percentage
1	Residential	2314.97	21.48
2	Retail Commercial and Business	48.97	0.45
3	Wholesale/Regulated markets, Go-downs, Warehousing/Logistic Hub	15.12	0.14
4	Industrial	195.21	1.81
5	Roads and Transport Terminal	398.49	3.70
6	Railway	56.81	0.53
7	Public / Semi – public	508.24	4.72
8	Utilities & Services	25.04	0.23
9	Recreational	138.83	1.29
10	Agricultural	5334.78	49.51
11	Forest	40.30	0.37
12	Green Belt and Plantation	460.55	4.27
13	Water Bodies	834.95	7.75
14	Heritage & Conservation	10.44	0.10
15	No Development Zone	392.89	3.65

11 INSTRUMENTS FOR DEVELOPMENT CONTROL

In the previous sections, Land Use Zoning Plan for SSPA along with its various aspects has been presented, which will help to find out what kind of broad uses can come up in which part of the planning area. In this section, Development Control Regulations will be presented, which must be read in tandem with the Proposed Land Use (Refer Map No.10.1). These regulations will help to regulate the activities in the land use zones and intensity of development for various activities in proposed land use zones.

As per The West Bengal Town and Country (Planning and Development) Act, 1979, The Land Use and Development Control Plan may also allocate areas or zones of land for residential, commercial, industrial, agricultural, natural scenic beauty, forest, wildlife, and such other purposes as the Planning Authority or the Development Authority may think fit. Thus, the Development Authority has power of imposing zoning regulations to control activities within each zone.

Before proceeding into the development control regulations, some important aspects are discussed which will help understand the proposed regulations in better perspective. A list of definitions has been listed for better understanding. These have been adopted from the definitions used in existing West Bengal Town and Country (Planning and Development) Act, 1979, Municipal/corporation building rules in West Bengal and National Building Code.

1. "Addition to a building" means addition to the cubic content or to the floor area of a building.
2. "Area" in relation to a building, means the superficies of a horizontal section thereof made at the plinth level, inclusive of the external walls and such portion of the party-walls as belongs to the building.
3. "Alteration" means change from one occupancy to another, or a structural change, such as an addition to the area or height, or the removal of part of a building, or any change to the structure, such as, the construction of, cutting into or removal of any wall, partition, column, beam, joist, floor or other support, or a change to the fixture or equipment.
4. "Apartment" means part of a property having a direct exit to a street or a passage or to a common area leading to such street or passage which together with its undivided interest in the common areas and facilities forms an independent unit.
5. "Applicant" means owner of the land and includes authorised representative of the owner or anybody having construction right in accordance with law and shall also include the transferee.
6. "Architect" means a person who is registered as an Architect by the Council of Architecture under the Architects Act, 1972 (20 of 1972).
7. "Authority" means the Sriniketan Santiniketan Development Authority constituted under Section II of this Act may also be referred to as SSDA in this document.
8. "Balcony" means a semi open space including horizontal projection with a handrail or balustrade to serve as passage or sitting out place.
9. "Basement or cellar" means the lower storey of a building partly or wholly below the ground level or the abutting road level, whichever is higher.
10. "Building" means any structure constructed for whatsoever purpose and of whatsoever materials and every part thereof whether used for human habitation or not including foundations, plinth wall, chimney, drainage work, fixed platform, verandas, balcony, cornice or projected part of a building or anything affixed there to.
11. "Building plan" means a plan for permission for erection, or re-erection, or addition to, or alteration of, a building.
12. "Building services" or "services", in relation to a building, means lighting and ventilation, electrical installations, air-conditioning and heating, acoustics and sound insulation, installation of lifts, travelators and escalators, water supply, sewerage and

drainage, gas supply, fire fighting arrangements, solid waste management, electronic, telecommunication and telephone installations.

13. "Chajja or cornice" means a sloping, horizontal or structural, overhung usually provided over openings on external walls to provide protection from the sun and rain.
14. "Chimney" means the construction by means of which a flue is formed for the purpose of carrying the products of combustion to the open air, and includes chimney stack and flue-pipe.
15. "Covered area" means the ground area covered by building immediately above plinth level considering all the floors at all levels, but does not include the space covered by: (a) garden, boundary, well and well structure, plant nursery, water pool, swimming pool (if not covered), platform round a tree, tank, fountain or bench, (b) drainage, culvert, conduit, septic tank or soak pit, (c) compound wall and gate, and area covered by chajja.
16. "Depth", in relation to a plot, means the distance from the front to the rear line of the plot.
17. "Development" shall have the same meaning as in section 2(7) of the Act. Section 2(7) – "Development" with its grammatical variation means the carrying out of building, engineering, mining or other operations, in, on, over or under land or the making of any material change in building or land or in the use of any building or land including subdivision of any land.
18. "Drain" includes sewer, a house drain, or a drain of any other description, a tunnel, a culvert, a ditch, a channel and any other device for carrying off sullage, sewage, offensive matter, polluted water, rain water or subsoil water.
19. "Drainage" means the removal of any liquid by a system provided for the purpose
20. "Dwelling unit" means an independent housing unit with separate living, cooking and sanitary facilities.
21. "Engineer" means a person having minimum Bachelor degree in Civil Engineering or in Construction Engineering of a recognised University or Institute.
22. "Escalator" means a mechanical device to transport persons between two or more levels in an inclined direction by means of guided moving steps.
23. "Floor" means the lower surface in a storey, after the finishing of which one normally walks in a building.
24. "Floor Area Ratio" or "FAR." (being the abbreviation of the whole words "Floor Area Ratio") means the quotient obtained by dividing the total floor area of all the floors of a building by the gross area of the plot.
25. "Framed building" means a building where the dead load and superimposed load are transferred to foundation through framed members with rigid joints, which may be of R.C.C., pre-stressed concrete, steel, timber, or the like, such members at the transfer of loads being not only experienced with directional stress but also bending stress and shear stress as well
26. "Geo-technical Engineer" shall mean a person who having a minimum bachelors degree in civil or construction engineering from a recognized university, institute or an equivalent engineering qualification recognized by the Government and having not less than five years experience in soil investigation work and formulation of basis for design and construction of different types of foundation.
27. "Ground coverage" is the percentage of the largest covered area as per roof plan of building/buildings against the area of the plot including the area of the water bodies, if any, within the plot. This is expressed as a percentage:

$$\text{Ground coverage} = \frac{\text{The area of plot covered by building}}{\text{Total area of plot}} \times 100$$
28. "Ground level" means the level at a height of 15 cm above the average level of the centre line of the street or passage to which the plot abuts.

29. "Height of a building" shall mean vertical distance measured from the ground level, to the highest point of the building, in case of flat roofs and in the case of sloped roofs, the mid-point between the eaves level and the ridge.
30. "Ledge" or "Tand" means a shelf-like projection, supported in any manner except by means of vertical supports, within a room itself but not having projection wider than 0.60 metre, for being used only as storage space.
31. "Licensed Building Surveyor (LBS)" means a qualified surveyor who has been licensed under appropriate rules.
32. "Lift" means an appliance designed to transport persons or materials between two or more levels in a vertical or substantially vertical direction by means of guided car platform.
33. "Loft" means an intermediary floor between two floors or a residual space in a pitched roof above normal floor level which is constructed or adopted for storage purposes.
34. "Means of access" means a public or private street or passage open to the sky, as shown in the survey map or other records of the Municipality or Present Land Use Map and Register and includes a passage which may not be open to the sky in the case of partition of an existing building.
35. "Open space" means an area, forming an integral part of the site, at the ground level open to the sky.
36. "Parapet" means a low wall or railing built along the edge of a roof or a floor.
37. "Parking space" means an area enclosed or unenclosed, covered or open, sufficient in size to part vehicles with a driveway connecting the parking space with a street or alley and permitting ingress and egress of vehicle.
38. "Passage" implies a means of access which is not a private or public street and which provides access to not more than three plots, and includes footway and drains attached to the passage and also includes all lands up to the property line of the plots abutting the passage.
39. "Plinth" means the part of a wall or structure between the ground level and the level of the lowest floor of a building above ground level
40. "Principal occupancy" means highest occupancy among the different use of building/buildings but not less than 50 % of the total usable area.

The classification of buildings on the basis of occupancy shall include:

- (a) "Residential building" means, any building in which sleeping accommodation is provided for normal residential purpose as the principal use with cooking facility or dining facility or both; such building shall include one or two or multi-family dwellings, hostels, apartment houses and flats; in case of hostels or dormitories attached to educational institutions there may or may not be any cooking facilities
- (b) "Educational building" means, any building used for school, college, or day-care purposes involving assembly for instruction, education or recreation incidental to educational buildings
- (c) "Institutional building" means, any building or part thereof ordinarily providing sleeping accommodation for occupants and used for the purposes of medical or other treatment or care of persons suffering from physical or mental illness, disease or infirmity, care of infants, convalescents or aged persons and for penal or correctional detention in which the liberty of the inmates is restricted; such buildings shall include hospitals, clinics, dispensaries, sanatoria, custodial institutions and penal institutions like jails, prisons, mental hospitals and reformatories.
- (d) "Assembly building" means, any building or part thereof where group of people congregate or gather for amusement or recreation or for social, religious, patriotic, civil, travel, sports, and similar other purposes; such

buildings shall include theatres, motion picture houses, drive-in theatres, city halls, town halls, auditoria, exhibition halls, museums, skating rinks, gymnasium, restaurant, seating houses, hotels, boarding houses, lodging or rooming houses, guest-houses, dormitories, places of worship, dance halls, club rooms, gymkhanas, passenger stations and terminals of air, surface and other public transportation services, recreation piers, multiplex and stadia.

- (e) "Business building" means any building or part thereof used for transaction of business for keeping of accounts and records or for similar purposes; such buildings shall include offices, banks, professional establishments and court houses and libraries for the principal function of transaction of public business and keeping of books and records, and shall also include office buildings (premises) solely or principally used as an office or for office purposes.

Explanation:

- i. The expression "office purpose" shall include the purpose of administration and clerical work (including telephone and telegraph and computer operating), and
 - ii. The expression "clerical work" shall include writing, book-keeping, sorting papers, typing, filing, duplicating, punching cards or tapes, machine calculating, drawing of matter for publication, and editorial preparation of matter for publications;
 - (f) "Mercantile building" means, any building or part thereof used as shops, stores or markets for display or sale of merchandise, either wholesale or retail, or for office, storage and located in the same building; such building shall include establishments wholly or partly engaged in wholesale trade, manufacturer's wholesale outlets (including related storage facilities), warehouses and establishments engaged in truck transport (including truck transport booking agency)
 - (g) "Industrial building" means, any building or structure or part thereof in which products or materials of all kinds and properties are fabricated, assembled or processed as in assembly plants; such buildings shall include laboratories, power plants, smoke houses, refineries, gas plants, mills, dams, factories, workshops, automobile repair garages, and printing presses
 - (h) "Storage building" means, any building or part thereof used primarily for the storage or sheltering of goods, wares or merchandise as in warehouses; such building shall include cold storages, freight depots, transit sheds, store houses, public garages, hangars, truck terminals, grain elevators, barns and stables
 - (i) "Hazardous building" means, any building or part thereof used for the storage, handling, manufacture or processing of highly combustible or explosive materials or products which are liable to burn with extreme rapidity or which may produce poisonous.
41. "Mixed occupancy" shall mean those buildings in which more than two compatible occupancies are intended to be present in different proportions and none of the occupancies are intended to be exceed 50% of total floor area and which shall have mixed use rules in the matter of means of access, occupancy distribution, permissible use of open space, FAR, car parking and height of building for the purposes of these rules
42. "Row housing" means a row of houses with only front open space and rear open space and interior open space where applicable
43. "Service rooms" means rooms and covered spaces meant primarily for purposes other than human habitation such as for the purpose of using it for parking, air-

conditioning plant room or room for the other machines used for any building service or for other purposes such as space for a stand-by generator for power supply, storage space for household or other goods of non-inflammable nature, strong room or bank cellar, and dark room

44. "Set back line" means a line usually parallel with the centre line of a road or street, laid down by a competent authority beyond which nothing can be constructed towards the road
45. "Single building" means a building having single block or multiple blocks connected at any level including basement where mandatory open spaces are considered in respect of the tallest block;
46. "Site" or "building site" means the entire area covered by a building with out-houses, and includes the land at the front or in the sides of, and pertaining to, such building and the land required by rules to be left open
47. "Storey" means the portion of a building included between the surface of any floor and the surface of the floor next above it, or if there be no floor above it, then the space between any, floor and the top of roof next above it
48. "Stair cover" means a structure with a covering roof over a staircase and its landing built to enclose only the stair for the purpose of providing protection from weather and not used for human habitation
49. "Structural engineer" shall mean an engineer having a minimum bachelor degree in civil engineering or structural engineering from a recognized university or an equivalent engineering qualification recognized by the Government having at least five years experience in the field of design and construction of structure of the building of different types with at least 5 years experience in structural designs
50. "To construct a building" with its grammatical variation means:
 - i. to construct a new building, or
 - ii. to re-construct a building, or
 - iii. to convert a building or any part of a building, not being a flat or block, into a flat or block;
51. "Tenement" means an independent dwelling unit with a kitchen.
52. "Width of a street" means the whole extent of space, including the roadway over any public bridge or flyover, footway and drains attached to such street, within the boundaries of the street as specified in the survey map or other records of a Municipality or Present Land Use Map and Register.

Words and expressions used but not otherwise defined shall have the same meaning as in West Bengal Town and Country (Planning and Development) Act, 1979 and in the West Bengal Municipal (Building) Rules, 2007, as the proposed regulations have largely followed the same framework.

11.1 ZONING REGULATION

The aim of this section is to enable the implementation of the Land Use Plan by providing specific regulations regarding the allowable uses of land under the purview of this Plan. These regulations are forwarded to preserve the characteristics of the various land use zones proposed, while resolving compatibility issues of the various activities. It is expected that the zoning regulations will promote and protect public health, safety, convenience, general welfare and the natural environment of the planning area.

11.1.1 Development Control Zones

There are thirteen broad categories of land use zones adopted for the Land Use Plan and Development Control Regulations. For the purpose of clear understanding and proper implementation of development control regulations, these land use zones shall be called as

“Development Control Zones.” In Development Control Zones, all other activities which are required to support a zone are also allowed within the zone. These activities are termed as “Broad Uses” under Development Control Zones. They include residential activities, commercial activities, institutional activities, industrial/manufacturing activities, recreational activities, transport activities along with some farming and plantations. However, there is a scale upto which activities are allowed. A limit on plot area or floor area or operational unit to control the intensity and extent of such activities has been placed.

For example, retail commercial activities are permitted within residential zone, but the individual shop sizes cannot exceed 300 sqm and total floor area dedicated to commercial activities cannot exceed 500sqm in one location. Limit on shop size as well as cluster size will ensure that only small retail activities as commensurate to the scale of residential neighbourhood will be allowed.

Along similar lines, limit on institutional activities is placed by providing a limit on floor area and scale of activities. Manufacturing activities are limited both on the type of enterprise (i.e. micro and small type) and their pollution potential (i.e. EXEMPTED and GREEN Category). Recreational activities demanded for residential population at neighbourhood level is only provided. Transport related activities necessary for residential population is also allowed. Some primary sector activities i.e. farming and plantation has also been allowed with an upper limit on plot area.

The list of detailed activities/uses that will be allowed within the proposed zones has been discussed in detail. (Refer Table No.11.1)

The list contains three types of uses/activities that will be allowed to carry out in the proposed zones:

- a. **Permitted uses:** Uses/activities listed under this column/category for a specific land use zone will be allowed unconditionally under normal circumstances.
- b. **Permissible Uses:** Uses/activities listed under this column/category will be considered on an application to the Development Authority i.e. the competent authority in this case, subject to scrutiny by the Development Authority, and may or may not be permitted, with or without conditions as deemed appropriate.
- c. **Prohibited Uses:** The uses/activities, which are otherwise not allowed in a particular use zone, are termed as Prohibited activities/Uses. Development Authority shall not allow the activities listed under this category. No application or correspondence will be acceptable in this regard.

The zoning regulations elaborate the activities that are generally ‘permitted’, ‘permissible’ or ‘prohibited’ within each of the thirteen development control zones. No person shall construct, or move a building, and no person shall establish a new use of land, expand, or intensify an existing use unless it conforms to the uses provided in the development control zone. Similarly, previously mentioned activities cannot take place unless it conforms to a permit and regulations authorizing a discretionary use of land in the development control zone. All construction, alteration, reconstruction or enlargement of buildings, and all uses of buildings and land shall comply with all provisions of this chapter except as otherwise provided for nonconforming structures and uses

11.1.1.1 Development Control Zone ‘Residential’:

This comprises the areas that are primarily used for residential purposes mixed with other uses. This zone also includes the areas, which are likely to be used in future for mainly residential purposes (Refer Map No.10.1). However, all other non-residential activities, which are required to support a residential zone, are also allowed within this zone. They include commercial activities, institutional activities, manufacturing activities, recreational activities,

transport activities along with some farming and plantations. However, there is a scale upto which activities are allowed. A limit on plot area or floor area or operational unit to control the intensity and extent of such non-residential activities has been placed.

11.1.1.2 Development Control Zone 'Retail Commercial and Business'

This comprises of the areas that are used principally for commercial purpose, mixed with other uses that are permissible as per the zoning regulations indicated in this document. This zone also includes areas, which are likely to be used in future for commercial activities. (Refer Map No.10.1)

11.1.1.3 Development Control Zone 'Wholesale/Regulated markets, Go-downs, Warehousing/Logistic Hub'

This comprises of the areas that are used principally for wholesale commercial purpose mixed with other uses that are permissible as per the zoning regulations indicated in this document. This zone includes areas which are likely to be used in future for activities like Wholesale and warehouses –business, Agro Mandis, Perishable goods (Fruit/Vegetable/Fish etc) Market, Ice factory, Heavy goods markets, Loading/Un-loading bays, Logistic hubs. (Refer Map No.10.1)

11.1.1.4 Development Control Zone 'Industrial'

This zone mainly comprise of the existing and new industries, which shall preferably be non – polluting in nature. This zone has been deliberately put away from existing human habitation. Further, considering the future expansion of the urban area, a buffer of agricultural and green belt is provided surrounding the industries in such a way that the residential, commercial and institutional areas will remain away from the harmful effect of this zone. In addition, list of industries that are allowed in this zone have been provided as Annexure III along with this DCR. (Refer Map No.10.1)

11.1.1.5 Development Control Zone 'Public / Semi – public:

This zone comprises of the areas that are used principally for educational, health related and social institutions and also Govt. / semi – govt. offices. This zone has been suitably located so that the institutions can be easily accessible from different parts of the SSPA. In addition, huge parcels of land along the National Highway have been earmarked for this use. (Refer Map No.10.1)

11.1.1.6 Development Control Zone 'Utilities and Services'

This zone comprises of the utilities and services that are existing in SSPA and shall continue to do so.(Refer Map No. 10.1)

11.1.1.7 Development Control Zone 'Roads' and 'Transport Terminal':

These zone comprises of the all the transport infrastructure existing in the SSPA. This zone shall comprise of the proposed roads, bus terminal and truck terminal that will come up in the area. (Refer Map No.10.1)

11.1.1.8 Development Control Zone 'Recreational'

This zone comprises of the areas that are used principally for recreational and green open spaces and in future shall be used for recreational purposes.(Refer Map No. 10.1)

11.1.1.9 Development Control Zone 'Agriculture'

This zone comprises of the areas that are used principally for agriculture. This also includes the multi cropping area within SSPA.(Refer Map No. 10.1)

11.1.1.10 Development Control Zone 'Green Belt and Plantation'

Green buffer zone has been proposed around the industrial areas. It is also proposed around the Khoai area, river and some heritage areas. (Refer Map No.10.1)

11.1.1.11 Development Control Zone 'Water Bodies'

Comprises of all types of water bodies which includes river, canal, lakes, ponds, etc.(Refer Map No. 10.1)

11.1.1.12 Development Control Zone 'Heritage and Conservation'

This zone comprises of the heritage places of Sriniketan-Santiniketan Planning Area and Visva-Bharti. (Refer Map No.10.1)

11.1.1.13 Development Control Zone 'No Development Zone'

Khoai area along with other eco sensitive areas is declared as 'No Development Zone'. Construction activities are highly restricted in this zone. (Refer Map No. 10.1)

Detailed list of uses/activities have been listed in a tabular format in the following part of this section.

Table 11.1: Zoning Regulations for Sriniketan Santiniketan Planning Area

Residential Use Zone			
Broad Uses	Uses Permitted	Uses Permissible	Uses Prohibited
Residential	<p>Plotted housing (detached, semi-detached, row housing) Group housing, Apartments, Multi Dwelling Units Guest houses , Service apartments, Hostels, Night shelters, Boarding and lodging houses Dharmashala, Old age homes, Orphanages, Dormitories Housing for rehabilitation and economically weaker section</p> <p>Note: <i>Residential use shown over land belonging to the Government or SSDA must essentially be utilized for housing for rehabilitation and economically weaker section</i></p>	<p>Any residential development covering more than 3500 sqm of plot area</p> <p>Transient visitors' camp</p> <p>Temporary shelter for disaster affected people</p> <p>Note: <i>Minimum road width for the above establishment shall be 30m</i></p>	<p>Any other non-residential use not mentioned under permissible and permitted</p>
Commercial	<p>Retail commercial shops/departmental stores, retail shopping complexes (floor area of each shop not exceeding 300 sqm) Eateries and restaurants (without bar facilities and floor area of each not exceeding 300 sqm) Hotels (up to 3 star category) Professional consulting offices/private offices (floor area of each not exceeding 300 sqm) Banks, financial institutions and professional establishments</p> <p>Note: <i>Minimum road width for the above</i></p>	<p>Retail commercial shops, retail shopping complexes, professional consulting offices/private offices, banks, financial institutions, professional establishments (floor area of each commercial establishment exceeding 300 sqm) Restaurants with/without bar facilities (with floor area more than 300 sqm) Cinema halls and multiplexes Fuel stations, automobile repairing workshops/garages</p> <p>Note: <i>i. Minimum road width for the above commercial</i></p>	<p>Storage/warehousing/Godown (involving/not involving perishable, inflammable, explosive or other kinds of hazardous materials) Storage, segregation and sale of second hand/ junk goods/recyclables All activities not listed in 'Permitted' and 'Permissible' column</p>

	<p>commercial establishment shall be 12 mt.</p> <p>i. Commercial uses (mentioned above) should cover less than 500 sqm of floor area at one location</p> <p>ii. In case of mixed use the commercial floor area shall not exceed 10% of the total floor area of the concerned residential development or 500 sqm, whichever is less</p>	<p>establishment shall be 18 mt.</p> <p>ii. Commercial uses (mentioned above) should cover less than 500 sqm of floor area at one location</p> <p>Daily or weekly markets (not more than 100 - 150 units per location and total area not exceeding 0.2 Hectare)</p> <p>Note:</p> <p>i. Minimum road width for daily or weekly market shall be 12 mt.</p> <p>ii. In case of mixed use the commercial floor area shall not exceed 10% of the total floor area of the concerned residential development or 500 sqm, whichever is less</p>	
<p>Industrial</p>	<p>Industries listed under "EXEMPTED" category of WBPCB</p> <p>Note:</p> <p>i. Minimum abutting road width shall be 12 mt</p> <p>ii. In case of mixed use the industrial floor area shall not exceed 10% of the total floor area of the concerned residential development or 200 sqm, whichever is less</p>	<p>Industries listed under "GREEN" category of WBPCB (Small scale)</p> <p>Note:</p> <p>In case of mixed use the industrial floor area shall not exceed 10% of the total floor area of the concerned residential development or 200 sqm, whichever is less</p>	<p>Industries listed under "GREEN" category of WBPCB (Other than small scale)</p> <p>Industries listed under "ORANGE", "ORDINARY RED" and "SPECIAL RED" category of WBPCB (All scale)</p>
	<p>Note: Permission should be given subject to</p> <ul style="list-style-type: none"> • Categories of the industries will be as per Annexure III • maximum power consumption for industrial operations up to 10 HP (power required for air conditioning, lifts and computers are excluded from power consumption specified above) 		

	<ul style="list-style-type: none"> • noise generation limited to the prescriptions of the Ministry of Environment and Forest, Government of India., for residential areas • adherence to the emission standard prescribed by WBPCB • adherence to the fire safety norms laid down in the National Building Code of India and West Bengal Fire Services Act 1950 (West Bengal Act XVIII of 1950), if applicable 		
Public/Semi-Public	<p>Government/semi-government offices, post offices, police post, police stations, public distribution services (e.g. milk booths, electricity offices, telecommunication offices, postal services), public toilets Nursery crèches, kindergartens, pre-primary, primary, secondary schools, tutorial institutions, libraries and reading rooms, training institutions Health clinics, dispensaries, nursing homes and child welfare & maternity center (upto 30 beds), diagnostic centres</p> <p>Note: <i>Health facilities should not exclusively treat contagious diseases and floor area should not exceed 500 sqm at one location</i></p> <p>Multi-purpose community halls, auditoriums, assembly halls, gymnasium</p> <p>Note: <i>Design occupancy of the above assembly buildings should not exceed 300 people</i></p> <p>Places of public worship, religious buildings, welfare institutions, clubs, exhibition and art galleries</p>	<p>Higher secondary schools, integrated residential schools, , colleges Health clinics, dispensaries, diagnostic centres (with floor area exceeding 500 sqm at one location) Nursing homes and health centres (up to 100 beds and/or floor area more than 500 sqm) Pathological laboratories Rehabilitation centers</p> <p>Note: <i>Health facilities should not exclusively treat contagious diseases</i></p> <p>Multi-purpose community halls, auditoriums, assembly halls, recreational clubs, exhibition centres</p> <p>Note: <i>Design occupancy of assembly buildings above should not exceed 500 people</i></p> <p>Places of public worship, religious buildings, welfare institutions, clubs, exhibition and art galleries, gymnasium</p> <p>Note: <i>Total floor area covered by above institutional activities exceeding 300 sqm</i></p>	<p>Electric grid station, water treatment plant, Sewage treatment plant, slaughter house All activities not listed in 'Permitted' and 'Permissible' column</p>

	<p>Note: <i>Total floor area consumed by institutional activities above not exceeding 300 sqm</i> Electrical distribution facilities, telecommunication facilities/exchanges, water/sewage pumping stations, water reservoirs (overhead/underground), solid waste collection yards/transfer points and other public facilities</p>	<p>Sub-fire stations, fire stations, solid waste treatment units, solar power installations rain water harvesting installations, dhobi ghats</p>	
Transportation and Communication	<p>Roads, railway lines and station facilities, metro lines and station facilities, terminal facilities for para-transit modes, bus stand/shelter facilities, off-street parking facilities (car/two-wheeler/bicycle), transmission and communication lines, highway amenities</p>	<p>Terminal facilities for passenger (i.e. bus, mini bus) and goods vehicles (i.e. LCV, MCV up to Type 2 vehicles with maximum permissible gross weight up to 16.2 tonnes), helipads</p>	<p>All activities not listed in 'Permitted' and 'Permissible' column</p>
Recreational	<p>Parks/ tot lot, playgrounds, gardens, multi-purpose open spaces, (including incidental buildings thereon), swimming pool Note: <i>The above recreational activities shall have minimum 12m wide abutting road</i></p>	<p>Public swimming pools, golf courses, indoor stadiums, sports complexes/training facilities Note: <i>The above recreational activities shall have minimum 24m wide abutting road</i></p>	<p>All activities not listed in 'Permitted' and 'Permissible' column</p>
Agriculture	<p>Nursery, high density urban farming/vertical farming/stacked green house farming, , community garden farming, Note: <i>The above urban agricultural activities shall be confined to plot area not exceeding 1.0 Hectare</i> Urban forestry/plantation, riparian buffers</p>	<p>Urban agricultural activities (for plot area exceeding 1.0 ha), storage, processing and sale of farm produce</p>	<p>All activities not listed in 'Permitted' and 'Permissible' column</p>

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	Water bodies (ponds, lakes, canal, irrigation channel)		
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Retail Commercial and Business Use Zone			
Broad use	Uses Permitted	Uses Permissible	Uses Prohibited
Residential	<p>Plotted housing (detached, semi-detached, row housing) Group housing, service apartments, multi Dwelling Units Hostels, night shelters, dormitories, boarding and lodging houses, guest houses Housing for rehabilitation and economically weaker section</p> <p>Note: <i>The above residential activities should cover less than 5000 sqm of plot area.</i></p>	Any residential development covering more than 5000 sqm of plot area.	All activities not listed in 'Permitted' and 'Permissible' column
Commercial	<p>Retail commercial shops, departmental stores, whole sale commercial shops, retail shopping complexes/malls, whole sale commercial/trading complexes, retail 'haat' Eateries and restaurantsHotels, convention centers, banquet hallsCinemas and multiplexes Banks, financial institutions, professional establishments, commercial/private and corporate offices Daily or weekly markets, perishable goods market Fuel stations, automobile repairing workshops/garages Storage/warehousing (not involving perishable, inflammable, explosive or other kinds of hazardous materials)</p>	<p>Storage/warehousing (involving perishable, inflammable, explosive or other kinds of hazardous materials) including ancillary activities Storage, segregation and sale of second hand/ junk goods/recyclables LPG storage (up to 8000 kg storage capacity)</p>	All activities not listed in 'Permitted' and 'Permissible' column

Industrial	Industries listed under "EXEMPTED" category of WBPCB (all scale) Industries listed under "GREEN" category of WBPCB (small scale)	Industries listed under "GREEN" category of WBPCB (other than small scale) Industries listed under "ORANGE" category of WBPCB	All activities not listed in 'Permitted' and 'Permissible' column
<p>Note: Permission should be given subject to</p> <ul style="list-style-type: none"> • <i>Categories of the industries will be as per Annexure III</i> • noise generation limited to the prescriptions of the Ministry of Environment and Forest, Government of India., for commercial areas • adherence to the emission/discharge standard prescribed by WBPCB • adherence to the fire safety norms laid down in the Nation Building Code of India and West Bengal Fire Services Act 1950 (West Bengal Act XVIII of 1950), if applicable 			
Public/Semi-Public	Government/semi-government offices, post office, police stations, public distribution services (e.g. milk booths, electricity offices, telecommunication offices, postal services), public toilets Nursery crèches, kindergarten, integrated residential schools, higher secondary schools, tutorial institutions, educational institutions, colleges, libraries, technical institutions, research establishments, experimental and testing laboratories, training institutions Health clinics, dispensaries, diagnostic centres, nursing homes, child welfare & maternity centers, health centres, (up to 100 beds), rehabilitation centres Note: <i>Health facilities should not exclusively treat contagious diseases</i> Multi-purpose community halls, auditoriums, assembly halls,	Nursing homes and health centres (up to 300 beds) Note: <i>Health facilities should not exclusively treat contagious diseases</i> Places of public worship, religious buildings Electric grid station, water treatment plants, sewage treatment plants, solid waste treatment units, solar power installations, rain water harvesting installations, Dhobi ghats	All activities not listed in 'Permitted' and 'Permissible' column

	<p>gymnasium</p> <p>Note: <i>Design occupancy of assembly buildings above should not exceed 1000 people</i></p> <p>Welfare institutions, clubs, exhibition and art galleries, museums, science centres</p> <p>Fire station, electrical distribution facilities, telecommunication facilities/exchanges, water/sewage pumping stations, water reservoirs (overhead/underground), solid waste collection yards and other public facilities</p> <p>Fuel stations, automobile repairing workshops/garages</p>		
Transportation and Communication	<p>Roads, railway lines and station facilities, metro line and station facilities, terminal facilities for para-transit modes, bus stand/shelter facilities, off-street/multi level parking facilities (car/two-wheeler/bicycle), bus/truck lay-bye facilities, loading/unloading bays, transmission and communication lines</p>	<p>Terminal facilities for passenger and goods vehicles (i.e. bus, truck, trailer), logistic facilities, weighbridge facilities</p> <p>Railway yards/car shed</p>	<p>All activities not listed in 'Permitted' and 'Permissible' column</p>
Recreational	<p>Parks, playgrounds, gardens, multi-purpose open spaces, botanical garden, swimming pools, golf course, indoor stadium, sports complexes/training facilities</p> <p>Note: <i>Minimum road width for the above commercial establishment shall be 24</i></p>	<p>Outdoor stadium, organised recreational complexes, eco-park</p> <p>Note: <i>Minimum road width for the above commercial establishment shall be 30 mt</i></p>	<p>All activities not listed in 'Permitted' and 'Permissible' column</p>

	<i>mt.</i>		
Agriculture	High density urban farming/vertical farming/stacked green house farming, pisciculture, aquaculture, horticulture, floriculture, community garden farming, agroforestry Urban forestry/plantation, riparian buffers Water bodies (ponds, lakes, canal, irrigation channel, reservoir)	Urban agricultural activities (for plot area exceeding 3.0 ha), storage, processing and sale of farm produce	All activities not listed in 'Permitted' and 'Permissible' column

Wholesale/Regulated markets, Godowns, Warehousing/Logistic Use Zone

Broad Uses	Uses Permitted	Uses Permissible	Uses Prohibited
Residential	Guest houses , Service apartments, Hostels, Night shelters, Boarding and lodging houses Housing for rehabilitation and economically weaker section	Plotted housing (detached, semi-detached, row housing) Group housing, Apartments, Multi Dwelling Units Note: The above housing shall be ancillary to the warehousing/logistics facilities	All activities not listed in 'Permitted' and 'Permissible' column
Commercial	Retail commercial shops, whole sale commercial shops, whole sale commercial/trading complexes Eateries and restaurants (without bar facilities) ancillary to the warehousing/logistics facilities Banks, financial institutions, commercial offices Daily or weekly markets, perishable goods market Fuel stations, automobile repairing workshops/garages Storage/warehousing (involving/not	Retail Shopping complexes Hotels, convention centres, banquet halls LPG storage (up to 8000 kg storage capacity)	All activities not listed in 'Permitted' and 'Permissible' column

	involving perishable, inflammable, explosive or other kinds of hazardous materials) including ancillary activities Storage, segregation and sale of second hand/ junk goods/recyclables		
Industrial	Industries listed under "EXEMPTED" category of WBPCB (all scale) Industries listed under "GREEN" category of WBPCB (all scale)	Industries listed under "ORANGE" category of WBPCB	All activities not listed in 'Permitted' and 'Permissible' column
	<p>Note: Permission should be given subject to</p> <ul style="list-style-type: none"> • <i>Categories of the industries will be as per Annexure III</i> • <i>noise generation limited to the prescriptions of the Ministry of Environment and Forest, Government of India., for commercial areas</i> • <i>adherence to the emission/discharge standard prescribed by WBPCB</i> • <i>adherence to the fire safety norms laid down in the Nation Building Code of India and West Bengal Fire Services Act 1950 (West Bengal Act XVIII of 1950), if applicable</i> 		
Public/Semi-Public	Government/semi-government offices, post office, police stations, public distribution services (e.g. milk booths, electricity offices, telecommunication offices, postal services), public toilets Nursery crèches, training institutions Health clinics, dispensaries Note: Health facilities should not exclusively treat contagious diseases Fire station, electrical distribution facilities, telecommunication facilities/exchanges, water/sewage pumping stations, water reservoirs (overhead/underground), solid waste collection yards and other public facilities Fuel stations, automobile repairing	Technical institutions, research establishments, experimental and testing laboratories Rehabilitation centres, Welfare institutions Electric grid station, water treatment plants, sewage treatment plants, solid waste treatment units, solar power installations, rain water harvesting installations	All activities not listed in 'Permitted' and 'Permissible' column

	workshops/garages		
Transportation and Communication	Roads, railway lines and station facilities, metro line and station facilities, terminal facilities for para-transit modes, bus stand/shelter facilities, off-street/multi level parking facilities (car/two-wheeler/bicycle), bus/truck lay-bye facilities, loading/unloading bays, transmission and communication lines Terminal facilities for passenger and goods vehicles (i.e. bus, truck, trailer), logistic facilities, weighbridge facilities, container terminals Railway yards/car shed		All activities not listed in 'Permitted' column
Recreational	Parks, gardens, multi-purpose open spaces		All activities not listed in 'Permitted' column
Agriculture	High density urban farming/vertical farming/stacked green house farming, pisciculture, aquaculture, horticulture, floriculture, community garden farming, agro forestry Urban forestry/plantation, riparian buffers Water bodies (ponds, lakes, canal, irrigation channel, reservoir)	Urban agricultural activities (for plot area exceeding 3.0 ha), storage, processing and sale of farm produce	All activities not listed in 'Permitted' and 'Permissible' column

Industrial Use Zone

Broad Uses	Uses Permitted	Uses Permissible	Uses Prohibited
Residential	Group housing, service apartments, hostels, dormitories, boarding and lodging houses, hotels and guest houses Housing for rehabilitation and	Any residential development covering more than 3500 sqm of plot area.	All activities not listed in 'Permitted' and 'Permissible' column

	<p>economically weaker section</p> <p>Note: <i>The above residential activities shall be ancillary to the industrial activities and shall not exceed 3500 sq m</i></p>		
Commercial	<p>Retail commercial shops/departmental stores (floor area of each not exceeding 300 Sq.m)</p> <p>Eateries and restaurants (without bar facilities and total floor area of each not exceeding 300 Sq.m)</p> <p>Professional consulting offices/private offices (total floor area of each not exceeding 300 sqm)</p> <p>Banks, financial institutions and professional establishments</p> <p>Note:</p> <ul style="list-style-type: none"> <i>i. Minimum road width for the above commercial establishment shall be 12 mt.</i> <i>ii. Commercial uses (mentioned above) should cover less than 600 sqm of floor area at one location</i> <p>Fuel stations, automobile repairing workshops/garages</p> <p>Storage/warehousing (involving/not involving perishable, inflammable, explosive or other kinds of hazardous materials) including ancillary activities</p> <p>Storage, segregation and sale of second hand/ junk goods/recyclables</p>	<p>Professional consulting offices/private offices (total floor area of each exceeding 300 sqm)</p> <p>Restaurants with/without bar facilities (with floor area more than 300 sqm)</p> <p>Note: <i>Above activities shall be ancillary to the industrial activities</i></p> <p><i>Minimum road width for the above commercial establishment shall be 12 mt.</i></p> <p>LPG storage (up to 8000 kg storage capacity)</p>	<p>All activities not listed in 'Permitted' and 'Permissible' column</p>
Industrial	<p>Industries listed under "EXEMPTED" category of WBPCB (all scale)</p> <p>Industries listed under "GREEN"</p>	<p>Industries listed under "ORDINARY RED" category of WBPCB</p> <p>Industries listed under "SPECIAL RED"</p>	<p>All activities not listed in 'Permitted' and 'Permissible' column</p>

	category of WBPCB (all scale) Industries listed under "ORANGE" category of WBPCB	category of WBPCB	
	<p>Note: Permission should be given subject to</p> <ul style="list-style-type: none"> • <i>Categories of the industries will be as per Annexure III</i> • noise generation limited to the prescriptions of the Ministry of Environment and Forest, Government of India., for industrial areas • adherence to the emission/discharge standard prescribed by WBPCB • adherence to the fire safety norms laid down in the Nation Building Code of India and West Bengal Fire Services Act 1950 (West Bengal Act XVIII of 1950), if applicable 		
Public/Semi-Public	<p>Government/semi-government offices, post Office, police station, public distribution services (e.g. milk booths, electricity offices, telecommunication offices, postal services), public toilets Nursery crèches, kindergarten, pre-primary, primary schools, technical training institutions, research institutions, experimental and testing laboratories Health clinics, dispensaries, nursing homes and health centres (upto 30 beds), diagnostic centres</p> <p>Note: <i>The above health facilities should not exclusively treat contagious diseases and floor area should not exceed 300 sqm</i></p> <p>Multi-purpose community halls (design occupancy should not exceed 300 people) Fire stations, electrical distribution</p>	Solid/industrial waste(hazardous) treatment units including disposal facilities, solar power installations, alternative energy installations	All activities not listed in 'Permitted' and 'Permissible' column

	<p>facilities, telecommunication facilities/exchanges, water/sewage pumping stations, water reservoirs, solid waste collection yards and other public facilities</p> <p>Fuel refuelling stations, automobile repairing workshops/garages</p> <p>Water treatment plants, sewage treatment plants, solid/industrial waste (non-hazardous)treatment units including disposal facilities</p>		
Transportation and Communication	<p>Roads, railway lines and station facilities, metro line and station facilities, terminal facilities for para-transit modes, bus stand/shelter facilities, off-street/multi-level parking facilities (car/two-wheeler/bicycle), bus/truck lay-bye facilities, loading/unloading bays, transmission and communication lines</p> <p>Terminal facilities for passenger and goods vehicles (i.e. bus, truck, trailer), logistic facilities, weighbridge facilities, container terminals</p> <p>Railway yards/car shed</p>		All activities not listed in 'Permitted' column
Recreational	<p>Parks, playgrounds, gardens, multi-purpose open spaces</p>		
Agriculture	<p>Plantation, riparian buffers</p> <p>Water bodies (ponds, lakes, canal, irrigation channel, reservoir)</p>		

Public & Semi Public Use Zone			
Broad Uses	Uses Permitted	Uses Permissible	Uses Prohibited
Residential	<p>Group housing, Apartments, Multi Dwelling Units, Guest houses , Service apartments, Hostels, Dormitories, Night shelters, Boarding and lodging houses</p> <p>Note: <i>Residential activities should not exceed 3500 sqm of plot area and should be ancillary to the institutional activities</i> Dharmashala, Old age homes, Orphanages, Dormitories Housing for rehabilitation and economically weaker section</p>	<p>Group housing, Apartments, Multi Dwelling Units, Guest houses , Service apartments, Hostels,Dormitories, Night shelters, Boarding and lodging houses</p> <p>Including above, any residential development covering more than 3500 sqm of plot area and/or not appurtenant to the institutional activities</p>	All activities not listed in 'Permitted' and 'Permissible' column
Commercial	<p>Retail commercial shops/departmental stores (floor area not exceeding 300 sqm), Eateries and restaurants (without bar facilities) Hotels, convention centers, banquet halls Banks, financial institutions, professional establishments, commercial/private and corporate offices</p> <p>Note:</p> <ol style="list-style-type: none"> i. <i>Minimum road width for the above commercial establishment shall be 18 mt</i> ii. <i>Commercial uses (mentioned above) should cover less than</i> 	<p>Retail commercial shops/departmental stores (total floor area exceeding 300 sqm), Retail shopping complexes/malls, retail 'haat' Cinemas and multiplexes</p> <p>Note:</p> <ol style="list-style-type: none"> i. <i>Minimum road width for the above commercial establishment shall be 24 mt</i> <p>LPG storage (up to 8000 kg storage capacity) Fuel stations, automobile repairing workshops/garages</p>	

	500 sqm of floor area at one location		
Industrial	Industries listed under "EXEMPTED" category of WBPCB (all scale) Industries listed under "GREEN" category of WBPCB (all scale)	Industries listed under "ORANGE" category of WBPCB	All activities not listed in 'Permitted' and 'Permissible' column
	<p>Note: Permission should be given subject to</p> <ul style="list-style-type: none"> • Categories of the industries will be as per Annexure III • noise generation limited to the prescriptions of the Ministry of Environment and Forest, Government of India., for commercial areas • adherence to the emission/discharge standard prescribed by WBPCB • adherence to the fire safety norms laid down in the Nation Building Code of India and West Bengal Fire Services Act 1950 (West Bengal Act XVIII of 1950), if applicable 		
Public/Semi-Public	Government/semi-government offices/institutions, post offices, police station, police post, public distribution services (e.g. milk booths, electricity offices, telecommunication offices, postal services), public toilets, correctional homes, Nursery crèches, kindergarten, integrated residential schools, secondary and higher secondary schools, tutorial institutions, educational institutions, colleges, universities, libraries, technical institutions, research establishments, experimental and testing laboratories, meteorological observatories, technical institutions, research establishments, experimental and testing laboratories Health clinics, dispensaries, diagnostic centres, pathological labs, nursing	Foreign missions, embassies, consulates Health facilities exclusively treating contagious diseases Water treatment plants, sewage treatment plants, solid waste treatment units, solar power installations, rain water harvesting installing, alternative energy installations Burial grounds, crematorium LPG storage (upto 8000 kg storage capacity)	All activities not listed in 'Permitted' and 'Permissible' column

	<p>homes, child welfare & maternity center, health centres, hospitals, sanatoria, rehabilitation centres and other medical and public health institutions</p> <p>Multi-purpose community halls, auditoriums, assembly halls, cinema halls, open air theatres, gymnasium, places of congregation</p> <p>Places of public worship, religious buildings welfare institutions, clubs, cultural centres/institutions, exhibition and art galleries, museums, science centres, archives, commemorative complexes/grounds, public squares/plazas</p> <p>Fire stations, Electrical distribution facilities, electric grid station, telecommunication facilities/exchanges, water/sewage pumping stations, water reservoirs, solid waste collection yards and other public facilities</p> <p>Fuel stations, automobile repairing workshops/garages</p>		
Transportation and Communication	<p>Roads, railway lines and station facilities, metro line and station facilities, terminal facilities for para-transit modes, bus stand/shelter facilities, off-street/multi-level parking facilities (car/two-wheeler/bicycle), bus/truck lay-bye facilities, loading/unloading bays, transmission and communication lines`</p>	<p>Terminal facilities for passenger (i.e. bus, mini bus) and goods vehicles (i.e. LCV, MCV, HCV up to Type 2 vehicles with maximum permissible gross weight up to 16.2 tonnes), logistic facilities, weighbridge facilities, helipads Railway yards/car shed</p>	<p>All activities not listed in 'Permitted' and 'Permissible' column</p>

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Recreational	Parks, playgrounds, gardens, multi-purpose open spaces, swimming pools, golf course, indoor and outdoor stadium, sports complexes/training facilities, organised recreational complexes/amusement parks, eco parks, science park	Zoological and botanical gardens, waterfront developments	All activities not listed in 'Permitted' and 'Permissible' column
Agriculture	High density urban farming/vertical farming/stacked green house farming, pisciculture, aquaculture, horticulture, floriculture, community garden farming, agro-forestry Note: <i>Above urban agricultural activities should be confined to plot area not exceeding 5.0 Hectare</i> Urban forestry/plantation, riparian buffers Water bodies (ponds, lakes, canal, irrigation channel, reservoir)	Urban agricultural activities (for plot area exceeding 5.0 ha), storage, processing and sale of farm produce	All activities not listed in 'Permitted' and 'Permissible' column

Utility and Services Use Zone

Broad Uses	Uses Permitted	Uses Permissible	Uses Prohibited
Public/Semi-Public	Fire stations, Electrical distribution facilities, electric grid station, telecommunication facilities/exchanges, water/sewage pumping stations, water reservoirs, solid waste collection yards and other public facilities Water treatment plants, sewage treatment plants, solid waste treatment units, solar power installations, rain water harvesting installing, alternative energy installations Burial grounds, crematorium Fuel stations, automobile repairing workshops/garages		All activities not listed in 'Permitted' column
Transportation and Communication	Roads, railway lines, transmission and communication lines Terminal facilities for para-transit modes, bus stand/shelter facilities	Terminal facilities for goods vehicles Railway yards/car shed	All activities not listed in 'Permitted' and 'Permissible' column
Agriculture	Farming, pisciculture, aquaculture, horticulture, floriculture, agro-forestry Urban forestry/plantation, riparian buffers Water bodies (ponds, lakes, canal, irrigation channel, reservoir)		All activities not listed in 'Permitted' column

Roads Use Zone

Broad Uses	Uses Permitted	Uses Permissible	Uses Prohibited
Transportation and Communication	Roads, terminal facilities for para-transit modes, bus stand/shelter facilities, bus/truck lay-by facilities, loading/unloading bays, transmission	Terminal facilities for passenger (i.e. bus, mini bus) and goods vehicles (i.e. LCV, MCV, HCV), logistic facilities, weighbridge facilities	All activities not listed in 'Permitted' and 'Permissible' column

	and communication lines		
Agriculture	Plantation, riparian buffers Water bodies (ponds, lakes, canal, irrigation channel, reservoir)		

Transport Terminal Use Zone			
Broad Uses	Uses Permitted	Uses Permissible	Uses Prohibited
Residential		Dharmashala, dormitories, guest houses, hostels, night shelters, boarding and lodging houses	All activities not listed in 'Permissible' column
Commercial	Retail commercial shops/departmental stores (total floor area not exceeding 100 sqm) Eateries and restaurants (without bar facilities and total floor area not exceeding 100 sqm)		All activities not listed in 'Permitted' column
Public/Semi-Public	Government/semi-government offices/institutions, post offices, police post, electricity offices, telecommunication offices, public toilets		All activities not listed in 'Permitted' column
Transportation and Communication	Roads, railway lines and station facilities, metro line and station facilities, terminal facilities for para-transit modes, bus stand/shelter facilities, off-street/multi level parking facilities (car/two-wheeler/bicycle), bus/truck lay-bye facilities, loading/unloading bays, transmission and communication lines Terminal facilities for passenger (i.e. bus, mini bus) and goods vehicles, logistic facilities, weighbridge facilities,	Railway yards/car shed	All activities not listed in 'Permitted' and 'Permissible' column

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	helipads		
Agriculture	Gardens, plantation, riparian buffers Water bodies (ponds, lakes, canal, irrigation channel, reservoir)		

Recreational Use Zone			
Broad Uses	Uses Permitted	Uses Permissible	Uses Prohibited
Residential	<p>Plotted housing (detached, semi-detached, row housing)</p> <p>Group housing, Apartments, Multi Dwelling Units</p> <p>Note: <i>Residential activities should not exceed 1000 sqm of plot area and should be ancillary to the institutional activities</i></p>	<p>Dharmashala, dormitories, guest houses, hostels, night shelters, boarding and lodging houses</p> <p>Note: <i>Residential activities shall be ancillary to the recreational activities</i></p>	All activities not listed in 'Permitted' and 'Permissible' column
Commercial	<p>Retail commercial shops/departmental stores (total floor area not exceeding 100 sqm)</p> <p>Eateries and restaurants (without bar facilities and total floor area not exceeding 100 sqm)</p>		All activities not listed in 'Permitted' column
Public/Semi-Public	<p>Government/semi-government offices/institutions, post offices, police post, electricity offices, telecommunication offices, public toilets</p> <p>Meteorological observatories</p> <p>Multi-purpose community halls, auditoriums, assembly halls, open air theatres, gymnasium, places of congregation</p> <p>Places of public worship, religious buildings welfare institutions, clubs, cultural centres/institutions, exhibition and art galleries, museums, science centres, archives, commemorative complexes/grounds, public</p>	<p>Water treatment plants, sewage treatment plants, solid waste treatment units, solar power installations, rain water harvesting installing, alternative energy installations</p> <p>Fuel stations, automobile repairing workshops/garages</p>	All activities not listed in 'Permitted' and 'Permissible' column

	<p>squares/plazas Fire stations, electrical distribution facilities, electric grid station, telecommunication facilities/exchanges, water/sewage pumping stations, water reservoirs, solid waste collection yards and other public facilities</p> <p>Note: <i>The minimum road width for the above activities shall be 18 mt.</i></p>		
Transportation and Communication	Roads, railway lines and station facilities, metro line and station facilities, terminal facilities for para-transit modes, bus stand/shelter facilities, off-street/multi level parking facilities (car/two-wheeler/bicycle), bus lay-bye facilities, loading/unloading bays, transmission and communication lines	Terminal facilities for passenger (i.e. bus, mini bus), helipads	All activities not listed in 'Permitted' and 'Permissible' column
Recreational	Parks, playgrounds, gardens, multi-purpose open spaces, swimming pools, golf course, indoor and outdoor stadium, sports complexes/training facilities, organised recreational complexes/amusement parks, eco parks, science park, zoological and botanical gardens Race course, race / driving testing tracks	Waterfront developments	All activities not listed in 'Permitted' and 'Permissible' column
Agriculture	Nursery, high density urban farming/vertical farming/stacked green house farming, , community garden farming, agriculture, horticulture, pasture, pisciculture, aquaculture, agro-forestry	Urban agricultural activities (for plot area exceeding 5.0 ha), storage, processing and sale of farm produce	All activities not listed in 'Permitted' and 'Permissible' column

	<p>Note: <i>The above urban agricultural activities shall be confined to plot area not exceeding 5.0 Hectare</i> Urban forestry/plantation, riparian buffers Water bodies (ponds, lakes, canal, irrigation channel)</p>		
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Agriculture Use Zone			
Broad Uses	Uses Permitted	Uses Permissible	Uses Prohibited
Residential	<p>Farm houses, associated buildings and other uses less than 250 sqm of pinth area for the farmer's own use within the limitation of minimum plot area of 1.00 hectares and limited to G+ 1 floor.</p> <p>Dwelling for the people engaged in the farm (rural settlement)</p>	<p>Plotted housing (detached, semi detached)</p> <p>Note: <i>Plinth area for the above residential activities shall not exceed 150 sq m and height G+ 1 floor.</i></p> <p>Transient visitors camp Temporary shelter for disaster affected people</p>	All activities not listed in 'Permitted' and 'Permissible' column
	<p>Note:</p> <p>i. <i>The minimum abutting road width for the above residential activities shall be 9 m.</i></p> <p>ii. <i>The above activities shall be confined to a distance of 100 m around the 'Residential' Use Zone(in urban as well as rural areas) as shown in the Proposed land Use Map.(Refer Map No. 10.1)</i></p>		
Commercial	<p>Daily or weekly markets (not more than 300 - 400 units per location and total area not exceeding 0.4 Hectare) Storage and sale of farm products locally produced, provided the ground coverage does not exceed 15 percent and subject to a maximum of G+1 floor only</p>	<p>Retail commercial, professional consulting offices/private offices, banks, financial institutions, professional establishments</p> <p>Note:</p> <p>i. <i>Total floor area covered by the above activities shall not exceed 500 sqm</i></p> <p>ii. <i>The above activities shall be confined to a distance of 100 m around the 'Residential' Use Zone(in urban as well as rural areas) as shown in the Proposed Land Use Map. (Refer Map No. 10.1)</i></p>	All activities not listed in 'Permitted' and 'Permissible' column

Industrial	<p>Industries listed under "EXEMPTED" category of WBPCB</p> <p>Note: <i>Minimum abutting road width shall be 12 mt</i></p>	<p>Industries listed under "GREEN" category of WBPCB (Small scale)</p> <p>Note: <i>Minimum abutting road width shall be 12 mt</i></p>	<p>Industries listed under "GREEN" category of WBPCB (Other than small scale)</p> <p>Industries listed under "ORANGE", "ORDINARY RED" and "SPECIAL RED" category of WBPCB (All scale)</p>
<p>Note: Permission should be given subject to</p> <ul style="list-style-type: none"> • <i>Categories of the industries will be as per Annexure III</i> • <i>maximum power consumption for industrial operations up to 10 HP (power required for air conditioning, lifts and computers are excluded from power consumption specified above)</i> • <i>noise generation limited to the prescriptions of the Ministry of Environment and Forest, Government of India., for residential areas</i> • <i>adherence to the emission standard prescribed by WBPCB</i> • <i>adherence to the fire safety norms laid down in the Nation Building Code of India and West Bengal Fire Services Act 1950 (West Bengal Act XVIII of 1950), if applicable</i> 		<p>All activities not listed in 'Permitted' and 'Permissible' column</p>	
Public/Semi-Public	<p>Government/semi-government offices, post offices, police stations, public distribution services (e.g. milk booths, electricity offices, telecommunication offices, postal services), public toilets Training institutions Health clinics, dispensaries (not treating contagious diseases)</p> <p>Note:</p> <ol style="list-style-type: none"> <i>The minimum abutting road width for the above activities shall be 9 m.</i> <i>The height of the building shall not exceed 9m.</i> <i>The maximum ground coverage shall be 35%.</i> <i>The above activities shall be confined to a distance of 100 m</i> 	<p>Rehabilitation centres, Correction homes Multi-purpose community halls, places of public worship, religious buildings, welfare institutions Fire stations, electrical distribution facilities, telecommunication facilities/exchanges, water/sewage pumping stations, water reservoirs, solid waste collection yards and other public facilities Water treatment plants, sewage treatment plants, solid waste treatment units, solar power installations, rain water harvesting installing, alternative energy installations ,sewage farms and garbage dumping sites, solid waste landfills, power plants, dhobi ghat Fuel refuelling stations, automobile/farm</p>	

	<i>around the 'Residential' Use Zone(in urban as well as rural areas) as shown in the Proposed Land Use Map. (Refer Map No. 10.1)</i>	<p>machineries repairing workshops/garages, LPG storage (upto 8000 kg storage capacity), highway amenities viz., weigh bridges, check posts and tolls Burning and Burial grounds, Crematoria and Cemeteries</p> <p>Note: <i>Highway facilities include the activities specified in the relevant Government orders/circulars.</i></p>	
Transportation and Communication	Roads, railway lines and station facilities, terminal facilities for para-transit modes, bus stand/shelter facilities, off-street parking facilities (car/two-wheeler/bicycle), transmission and communication lines	Terminal facilities for passenger (i.e. bus, mini bus) and goods vehicles (i.e. LCV, MCV, HCV upto Type 2 vehicles with maximum permissible gross weight upto 16.2 tonnes)	All activities not listed in 'Permitted' and 'Permissible' column
Recreational	Parks/ tot lot, playgrounds, gardens, multi-purpose open spaces, gymnasium, Recreational complexes/amusement parks, eco parks, science park, zoological and botanical gardens	Swimming pool, golf course, indoor stadium, sports complexes and training facilities, water sports, race course, race / driving testing tracks	All activities not listed in 'Permitted' and 'Permissible' column
Agriculture	Vertical farming/stacked green house farming, pisciculture, aquaculture, horticulture, floriculture, community garden farming, agro-forestry Forestry/plantation, riparian buffer Dairy and cattle farms, Piggeries and poultry farms, livestock rearing Storing and drying of fertilizers Milk chilling centres, cold storage, pasteurisation plants Quarrying and removal of clay and stone up to 3.0 mts. depth	<p>Storage, processing and sale of farm produce</p> <p>Mills for grinding, hulling, etc. of cereals, pulses, food grains and oil seeds</p> <p>Note: <i>The site for above activities shall have proper access and installations shall not exceed 50 H.P.</i></p> <p>Agro processing units</p> <p>Quarrying of gravel, sand, clay or stone,</p>	All activities not listed in 'Permitted' and 'Permissible' column

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	Rice mills, sugar mills, jaggery mills Orchards, nurseries and other stable crops, grazing pastures, forest lands Marshy land, barren land and water sheet Water bodies (ponds, lakes, canal, irrigation channel)		
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Green Belt and Plantation Use Zone			
Broad Uses	Uses Permitted	Uses Permissible	Uses Prohibited
Residential	Existing authorized activities, shall be permitted to continue. Repairs or reconstruction of existing authorized structures, not exceeding existing Floor Area Ratio, existing plinth area and existing density shall be permitted Note: <i>The above activities should incorporate necessary disaster management provision</i> No new construction shall be allowed.	Dwelling units of traditional communities including tribal communities and other communities dependent on river and forest related activities	All activities not listed in 'Permitted' and 'Permissible' column
Commercial	Existing authorized activities, shall be permitted to continue. Repairs or reconstruction of existing authorized structures, not exceeding existing Floor Area Ratio, existing plinth area and existing density shall be permitted Note: <i>The above activities should incorporate necessary disaster management provision</i> No new construction shall be allowed.		All activities not listed in 'Permitted' column
Public/Semi-Public	Existing authorized activities, shall be permitted to continue. Repairs or reconstruction of existing authorized structures, not exceeding existing Floor Area Ratio, existing plinth area and existing density shall be permitted	Fire stations, Electrical distribution facilities, electric grid station, telecommunication facilities/exchanges, water/sewage pumping stations, water reservoirs, solid waste collection yards and other public facilities Water treatment plants, sewage	All activities not listed in 'Permitted' column

	<p>Note: <i>The above activities should incorporate necessary disaster management provision.</i></p> <p>No new construction shall be allowed.</p>	<p>treatment plants, solid waste treatment units, solar power installations, rain water harvesting installing, alternative energy installations Burial grounds, crematorium Fuel stations, automobile repairing workshops/garages, Dhobi Ghat</p>	
Transportation and Communication	<p>Roads, railway lines, terminal facilities for para-transit modes, bus stand/shelter facilities, transmission and communication lines Ferry ghat</p>	<p>Terminal facilities for goods vehicles (i.e. LCV, MCV, HCV upto Type 2 vehicles with maximum permissible gross weight upto 16.2 tonnes)</p>	<p>All activities not listed in 'Permitted' and 'Permissible' column</p>
Recreational	<p>Parks, playgrounds, gardens, multi-purpose open spaces (without disturbing natural setup and permanent vegetation)</p> <p>Note: <i>For the above activities, proper permission from Competent Authority will be necessary.</i></p>	<p>Waterfront developments</p>	<p>All activities not listed in 'Permitted' and 'Permissible' column</p>
Agriculture	<p>High density urban farming/vertical farming/stacked green house farming, pisciculture, aquaculture, horticulture, floriculture, community garden farming, agro-forestry Urban forestry/plantation, riparian buffer Orchards, nurseries and other stable crops, grazing pastures, Water bodies (ponds, lakes, canal, irrigation channel)</p>		

Water Bodies Use Zone			
Broad Uses	Uses Permitted	Uses Permissible	Uses Prohibited
Transportation and Communication	Roads, railway lines, metro line, transmission and communication lines	Bus/truck lay-by facilities, loading/unloading bays,	All activities not listed in 'Permitted' and 'Permissible' column
Agriculture	Plantation, riparian buffer Marshy land, barren land and water sheet Water bodies (river, ponds, lakes, canal, irrigation channel), Reservoirs	Pisciculture, Aquaculture, Soilless agriculture	All activities not listed in 'Permitted' and 'Permissible' column

Heritage and Conservation Use Zone			
	Uses Permitted	Uses Permissible	Uses Prohibited
<p>Note:</p> <ul style="list-style-type: none"> No activity shall be permitted without the approval of the Sriniketan Santiniketan Development Authority. SSDA shall permit activities only after consultation with the Competent Authority like Archaeological Survey Of India(ASI), National Monuments Authority (NMA), West Bengal Heritage Commission, Indian National Trust for Art and Cultural Heritage (INTACH), Apex Advisory Committee , Heritage Committee. No activity shall have an adverse impact on the preservation, safety, security or access of the Heritage Structure 			
		Library, Museum, Plantation and Landscaping Maintenance, repairs and renovation of the structures Note: <i>Such permission shall be granted by SSDA only after consultation with the Competent Authority</i>	All activities not mentioned in the 'Permitted' or 'Permissible' columns shall be prohibited in the Heritage and Conservation Use Zone All new constructions shall be prohibited

No Development Zone			
Broad Uses	Uses Permitted	Uses Permissible	Uses Prohibited
	<ul style="list-style-type: none"> The 'No Development Zone' shall be applicable for 'Khoai' and other eco sensitive area as shown in Proposed Land Use Map.(Refer Map No. 10.1) Existing authorized activities, shall be permitted to continue. Repairs or reconstruction of existing authorized structures, not exceeding existing Floor Area Ratio, existing plinth area and existing density, shall be permitted 		
Residential		Dwelling units of traditional tribal communities including communities under Tagore's rural reconstruction program and other communities dependent on pisciculture, agricultural and forest related activities	All activities not listed in the 'Permitted' or 'Permissible' column shall be prohibited
Commercial	Daily or weekly markets Storage and sale of farm products Note: <i>The structures for the shelter, storage and display to perform above activity should be temporary and environment friendly.</i>	Retail commercial shops/eateries (floor area of each shop not exceeding 25 sqm and not more than 10 shops at one location)	
Public/Semi-Public	Site establishments of projects relating to meteorological, geological, agricultural, forest and archaeological institutions for the purpose of field research and exploration. Weather radars, Meteorological observatories Dispensaries, Health Clinics Community toilets Disaster management provision, Public rain shelter	Facilities for water supply, drainage, sewerage	
Transportation and	Roads, Bridges, Culverts, amenities,		

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Communication	Transmission and communication lines		
Recreational	Nursery, Gardens, Parks, Play field, Multipurpose open space , Botanical garden, Natural reserve for conservation of wildlife		
Agriculture	Agriculture, Horticulture, Green house farming, Plantation, Pasture, Forestry, , Pisciculture, Aquaculture, Agro-forestry Mining of rare minerals		

11.2 LEVY OF DEVELOPMENT CHARGES

For levy, assessment and recovery of Development charges (as outlined in Chapter IX, Section 102, 103, 104, 105 and 106 of the West Bengal Town & Country Planning and Development Act, 1979):

All activities listed under 'Residential use' in each Development Control Zone (entries in the first column of the table) of the Land Use and Development Control Plan, under taken in any land, will be accounted as 'residence' for fixing the rates of development charges for the institution of use or for change of use.

All activities listed under 'Commercial use', 'Public and Semi-public use', 'Recreational use' and 'Transportation use' in each Development Control Zone (entries in the first column of the table) of the Land Use and Development Control Plan, under taken in any land, will be accounted as 'commerce' for fixing the rates of development charges for the institution of use or for change of use.

All activities listed under 'Industrial use' in each Development Control Zone (entries in the first column of the table) of the Land Use and Development Control Plan, under taken in any land, will be accounted as 'industry' for fixing the rates of development charges for the institution of use or for change of use.

All activities related to farming, forestry and animal husbandry listed under 'Agriculture' (i.e. Agriculture; High density farming/vertical farming/stacked green house farming, pisciculture/aquaculture, horticulture, floriculture, community garden farming; Orchards, nurseries, grazing pastures, wet lands, barren land and water bodies; Community forestry, plantation, agro-forestry, riparian buffer; Dairy and cattle farms, piggeries and poultry farms and any kind of animal husbandry and livestock rearing) in each Development Control Zone (entries in the first column of the table) of the Land Use and Development Control Plan, under taken in any land, will be accounted as 'agriculture' for fixing the rates of development charges for the institution of use or for change of use.

All other activities listed under 'Agriculture' (i.e. Storage, processing and sale of farm produce; quarrying and removal of clay, gravel, sand or stone up to 3 m depth; Land reclamation activities) in each Development Control Zone (entries in the first column of the table) of the Land Use and Development Control Plan, under taken in any land, will be accounted as 'commerce' for fixing the rates of development charges for the institution of use or for change of use.

No development charge shall be levied on development, or change of use, of any land vested in or under the control or possession of the Central Government, the State Government or any local authority (Section 102 of the Act).

11.3 REGULATORY FRAMEWORK FOR BUILDINGS

In the previous sections, Land Use Zoning Plan for Sriniketan Santiniketan Planning Area has been presented along with the Zoning Regulations, which will help determine to find out what kind of activities can come up at which location within the planning area. In this section, Development Control Regulations will be presented which will help regulate the intensity of development for various activities specified in proposed land use zones.

As per The West Bengal Town and Country (Planning and Development) Act, 1979, development control regulations deal with height, number of storeys and size of buildings and other structures, land and sub-division of land, the street alignments, set-back distances and such other issues as may be considered appropriate by the Authority.

It is already discussed that the previous LUDCP was notified in 1997 and terminated in 2007. During and after this LUDCP period, many new building rules came into force to regulate urban as well as rural area by a set of building rules. According to these rules, it was necessary to acquire building permission from urban local bodies, which created multiple set of regulatory framework – one needed to acquire development permission from Development Authority and another to acquire building permission from urban local bodies. Though the building regulations proposed by Land Use and Development Control Plan supersedes the municipal building rules by the power conferred by The West Bengal Town and Country (Planning and Development) Act, 1979, it would prudent to frame the development control regulations for the Revised Land Use and Development Control Plan duly considering the existing framework of building rules already in operation within urban and rural areas of the planning area.

It must be borne in mind that the development regulations recommended in Revised LUDCP are supposed to be fulfilled for obtaining development permission on a piece of land. Though the regulations suggested in Revised LUDCP supersede the municipal building rules, it should not be used as a replacement to the existing building rules. The scope of building rules is much more when it comes to regulating various aspects within the building i.e. dimensions and quality of internal spaces, specifications related to design of building components, building services, materials, workmanship and all other aspects associated with building construction and occupancy. The proposed development control regulations for Sriniketan Santiniketan Planning Area offers a broad set of rules which tends to regulate the intensity of building activity.

Rural areas in Sriniketan Santiniketan Planning Area needs specific set of building rules to control the building construction activity in much more detail than as specified by The West Bengal Panchayat (Gram Panchayat Administration) Rules, 2004.

Keeping these issues in mind, the regulatory framework for buildings was prepared. Development control regulations mentioned hereafter must be fulfilled to obtain permission for development on a piece of land. The key parameters of the development control regulations are discussed following:

11.3.1 Essential provision for Development

The essential conditions which must be met by any development for the purpose of obtaining permission are listed following:

11.3.1.1 Conformity to the Land Use Zoning Plan-

No piece of land shall be used as a site for erection, re-erection, addition to or alteration of, any building or use except in accordance with Land Use Zoning Plan for Sriniketan Santiniketan Area [Please Refer Section 10 & 11.1 of the Land Use and Development Control Plan Report].

- 11.3.1.2 No person or body shall commence any developmental work including subdivision, layout change or change of use of any land/ plot without obtaining the permission of the authority in Witting in terms of section 46 of the Act.
- 11.3.1.3 No piece of land shall be used for development activity unless the land is capable of being well-drained by means of drainage facilities leading to existing public drains or drainage channels, as found appropriate by the Development Authority.
- 11.3.1.4 Development shall not be permitted by filling up of water body, tank, pond, marshy land and low lying area which in the opinion of the Authority is useful for the locality for community service, public health and hygiene, firefighting, drainage, ecology, and recreation.
- 11.3.1.5 Development permission shall not be given in any area which is to be acquired for different schemes and project including proposed alignments for roads, drains and other schemes prepared by Sriniketan Santiniketan Development Authority.
- 11.3.1.6 Development permission shall not be given in any area where land acquisition proceedings have been initiated by the Land and Land Reforms Department of the Government of West Bengal.
- 11.3.1.7 No development shall be allowed in those plots /lands considered necessary for as
- i. Being used as public open space/park/playground or water body.
 - ii. For drainage facility of the locality.
 - iii. For retaining the existing use from environmental and ecological points of view.
- 11.3.1.8 Distance from Electric lines-
- No building, or verandah, or balcony or projection in any building shall be permitted to be erected, re-erected, added to or altered, in any case where the distance between such construction and any overhead electric lines, in accordance with the provision of the Electricity Act, 2003 (36 of 2003), is less than that specified below in Table

	Voltage lines	Vertical Clearance (in meter)	Horizontal Clearance (in meter)
(a)	Low and medium voltage lines including service lines	2.5	1.2
(b)	High voltage lines up to and including 11,000 volts.	3.7	1.2
(c)	High voltage lines above 11,000 volts and upto and including 33,000 volts.	3.7	3.0 WB -2007
(d)	For extra high .voltage lines beyond 33,000 volts.	3.7 m plus 0.3 m every additional 33,000 volts or parts thereof.	3.0 m plus 0.5 m for every additional 33,000 volts or parts thereof.

Note: These provisions are already there in The West Bengal Municipal (Building) Rules, 2007. However, no such provisions exist in The West Bengal Panchayat (Gram Panchayat Administration) Rules, 2004. As rural areas in SSPA will have substantial development activity in future, such provisions has been extended to the rural areas for general safety of the inhabitants.

11.3.1.9 For any development in plots measuring more than 5000 sq. m. in area, no objection certificate from the Director of West Bengal Fire services and West Bengal Pollution Control Board in respect of the proposed construction is required and it has to be submitted along with the application for development permission.

11.3.1.10 Developments adjacent to Major Arterials/National Highway

- i. No new development should be permitted along NH-2B or any proposed Major Arterial (with ROW 45m or higher) within urban or rural areas which takes direct access from the vehicular carriageway.
- ii. Permission to development in urban areas or rural areas along NH-2B or any proposed Major Arterial (with ROW 45 m or higher) should only be provided if access is taken from the service road and setback of 6 m is left for any building activities from ROW of NH-2B or any proposed Major Arterial (with ROW 45 m or higher).
- iii. If service road is not provided along NH-2B or any proposed Major Arterial (with ROW 45m or higher) in rural or urban areas then, development can be permitted on following conditions.
 - a) building line of 40 m from centerline of the road on either side should be constituted where no development activity will be permitted
 - b) control line of 75 m from the centerline of the road should be constituted where only business buildings, industrial and storage buildings should be allowed
 - c) no development, except highway amenities i.e. toll plaza etc., should be allowed which have plot size less than 10,000 sqm

Note: Provisions are based on recommendation from the Indian Roads Congress, Special Publication 15: Ribbon Development along Highways and its Prevention

11.3.1.11 No development shall be permitted on plot/land vested to the State of West Bengal irrespective of land being involved in any court case.

11.3.1.12 No development shall be permitted on plot/ land which is involved in court cases until the final disposal of such cases.

11.3.2 Regulation for Means of Access

11.3.2.1 Every plot shall abut a means of access which may be a public street or private street or passage.

11.3.2.2 The relationship between the width of the means of access and the maximum permissible height of the building shall be as indicated in section 11.3.4 of this Land Use and Development Control Plan.

11.3.2.3 The minimum width of means of access in respect of a new building shall be as follows:-

- i. No new building shall be allowed on a plot unless the plot abuts a street, which is not less than 10.00 meters in width at any part, or there is access to the plot from any such street by a passage, which is not less than 10.00 meters in width at any part:
Provided that:-
 - a) In case of a residential building with other occupancies, if any, of less than 10% of the total floor area of the building, the width of such street or passage shall not be less than 2.4meters at any part.
 - b) In case of residential building with education occupancy of 10% or more of the total floor area of the building, the width of

such street or passage shall not be less than 7.00 meters at any part.

- c) In case of an educational building with residential occupancy the width of such street or passage shall not less than 7.00 meters at any part.
- d) In case of an educational building with other occupancy or occupancies not being residential of less than 10% of the total covered area of the building the width of such street shall not be less than 7.00 meters at any part.
- ii. Notwithstanding anytime contained in clause 11.3.4 (iii), residential buildings up to a maximum height of 7.00 meters may be allowed on a plot abutting a means of access not less than 1.20 meters, provided such means of access is in long existence and is recorded in the settlement record and/or Municipal records accordingly.

11.3.2.4 Any building, which, in full or part, is put to assembly occupancy for the purpose of theatre, motion picture house, city hall, dance hall, skating rink, auditorium, exhibition hall or for similar other purpose, shall not be allowed on a plot located within 50.00 meters of junction of two streets, and such street shall not be less than 15.00 meters.

11.3.2.5 For plots in a scheme for Economically Weaker Section and Low Income group Housing, subject to the approval of the competent authority, approved by Competent Authority, the minimum width of means of access shall be as indicated in section 11.3.9 of this Land Use and Development Control Plan

11.3.3 Regulation for Ground Coverage

11.3.3.1 The maximum permissible ground coverage for building when a plot contains a single building will depend on the plot size and use of the building as given in the Table 11.2.

Table 11.2: Maximum Permissible Ground Coverage (Plot containing a single building)

Types of the building	Maximum permissible ground coverage	
	Residential Use Zone	In all other zones
1. Residential and educational		
a) On plot size up to 200.00 sq. meters	50%	65%
b) On plot size of 500.00 sq. meters or more	45%	50%
2. Other use group including mixed use building	40%	40%

- 11.3.3.2 For a plot of size between 201 to 500 sq. meters, the maximum permissible Ground coverage shall be calculated by direct interpolation.
- 11.3.3.3 When a plot contains more than one building, the maximum permissible ground coverage for the building shall be as stipulated in section 11.3.8 of this Land Use and Development Control Plan.
- 11.3.3.4 For mercantile building (retail) and assembly buildings on plots measuring 5000 sq. meters or more, the additional ground coverage to the extent of 15% may be allowed for car parking and building services. The additional ground coverage of 15% will be exclusively utilized for car parking, ramp, staircase, lift for upper level car parking and for building services such as Air Conditioned plant room, generator room, fire fighting equipments, not exceeding 5% out of such 15% shall be used, subject to compliance of other relevant building rules.

11.3.4 Regulation for Height of Buildings

- 11.3.4.1 Height of a building shall be the vertical distance measured from the average level of the centre line of the adjoining street or passage on which the plot abuts to the highest point of the building, whether with flat roof or sloped roof.
- 11.3.4.2 The following appurtenant structures shall not be included in the height of building:
- a) Stair cover not exceeding 2.40 meters in height;
 - b) Lift machine rooms as per as the latest edition of the National Building Code;
 - c) Roof tanks and their supports, the height of support not exceeding 1.00.
 - d) Chimneys;
 - e) Parapet walls not exceeding 1.50 meters in height;
 - f) Ventilating, air conditioning and other services equipments;
 - g) Height above mid-point between eaves level and ridge level;
 - h) Toilet at roof level up to a height of 3.00 meters subject to maximum floor area of 3.00 sq.m.;
 - i) Garden cover with permeable material not exceeding 3.00 meters in height;
 - j) Equipments for communication such as Microwave Antenna to, Tower, Dish Antenna as well as room for installing the said equipments subject to a maximum area of 20 sq.m. and further subject to permission of the same from Competent Authority.
- 11.3.4.3 The aggregate area of the structures mentioned above shall not exceed one-third of the area of the roof upon which these are erected.
- 11.3.4.4 The maximum permissible height of buildings on a plot shall be as given in the Table 11.3.

Table 11.3:Maximum Permissible Height

Width of means of access (in meters)	Maximum permissible height (in meters)
i) 2.40 to 3.50	8.00
ii) Above 3.50 to 7.00	11.00
iii) Above 7.00 to 10.00	14.50
iv) Above 10.00 to 15.00	18.00
v) Above 15.00 to 20.00	24.00
vi) Above 20.00 to 24.00	36.00
vii) Above 24.00	1.5 x (width of the means of access + required width of front open space).

Note:

- (i) Every residential building of height not more than 8.0 m on plot size not exceeding 65 sq.m in area shall have a minimum front space at ground level of 0.90m.
- (ii) For plots of size not more than 65 sq.m, minimum side open space of 0.90 meters may be allowed on each side, provided that the building height does not exceed 8.00 meters
- (iii) The minimum distance across the side open space from every new building to an existing building with a door or window opening shall be 1.80 meters;
- (iv) In the case of a building more than 24.00 meters in depth on a plot abutting any street, a passage along the entire depth of the building shall be provided and the minimum width of such passage shall be 4.0 meters.
- (v) For mixed-use buildings, the minimum front open space shall be the one applicable for that particular occupancy which gives the highest value of the minimum front open space.

11.3.5 Regulation for open spaces for Buildings**11.3.5.1 General**

- (i) Every room intended for human habitation shall abut an interior or exterior open space or an open veranda, open to such interior or exterior open space. Open spaces shall be areas forming integral parts of the plot at ground level and shall be open to the sky without any projection or overhang excepting cornices, chajjas or weather –shades of not more than 0.50 metre in width.
- (ii) Every building shall have exterior open spaces comprising front open spaces, rear open space and side open spaces. The minimum width prescribed for front open spaces, rear open space and side open spaces shall be provided along the entire front, rear and side faces of the building respectively. For this purpose, the front of the building shall be that face of the building that faces the means of access of the building and the rear of a building shall be deemed that face of the building, which is farthest from the means of access. These provisions shall also be applicable to each individual building separately when a plot contains more than one building. In case of a corner plot located at the crossing of more than one street or passage the rear of the building shall be deemed that face of the building, which is farthest from the widest of all such streets and /or passages.
- (iii) Open spaces prescribing for one side cannot be taken for another side. No building shall at any time be erected on any open space prescribed in these rules for a building and form part of the site thereof, nor shall such open space be taken into account in determining the area of any open space required under these rules for any other building.
- (iv) If the front open spaces are 3.00 meters or more, a “Gate Goomti” for security purpose may be allowed in the said open space. The covered area of such “Goomti” shall not in any case exceed 3.00 sq. meters and the height of such “Goomti” shall not exceed 3.00 meters. The covered area of the “Gate Goomti” shall not be included in the calculation of FAR and Ground Coverage. For buildings exceeding the height of 14.50 meters, such “Gate Goomti” shall not obstruct the vehicular movement from the means of access to the side and the rear open spaces.

- (v) For corner plots: In the case of any building intended to be erected at the corner of two streets, except the plan for a residential building, to be erected or re-erected on plot land of 300 square meters or less provided the height does not exceed 12.5 meters following rules will apply:
- In case of both the adjoining roads are below 3.5m width and area of land is within 200sqm., the corner of such plot shall be splayed by 1.20m x 1.20m.,
 - In case any of the adjoining roads is of 3.5m width and above, the corner of such plot shall be splayed by 2.50m x 2.50m.
 - For roads more than 10.0 meters width, the splay shall be 3.5 mx3.5 m

The land within the splayed portion shall be transferred to the local body by a deed of gift. However, area of land gifted to local body shall be considered for FAR and Ground Coverage as applicable.

11.3.5.2 Setback

The minimum open spaces with respect to height and Category of buildings shall be as given in Table 11.4, 11.5, 11.6 and 11.7 below:

Table 11.4: For Residential Use

Height of building (in metre)	Front open space (in metre)	Open space on side 1 (in metre)	Open space on side 2 (in metre)	Rear open space (in metre)
Up to 8.0	1.2	1.2	1.2	2.0
Above 8.0 up to 11.0	1.2	1.2	1.2	3.0
Above 11.0 up to 14.5	1.5	1.5	2.5	4.0
Above 14.5 up to 18.0	3.5	3.5	3.5	5.0
Above 18.0 up to 24.0	5.0	5.0	5.0	7.0
Above 24.0 up to 36.0	6.0	6.5	6.5	9.0
Above 36.0 up to 60.0	8.0	8.0	8.0	10.0
Above 60.0 up to 80.0	10.0	15% of the height of the building	15% of the height of the building	12.0
Above 80.0	12.0	15% of the height of the building	15% of the height of the building	14.0

Table 11.5: For Educational Use

Height of building	Front open space (in metre)	Open space on side 1 (in metre)	Open space on side 2 (in metre)	Rear open space (in metre)
Up to 11.0 m (land area up to 500.0 square m)	2.0	1.8	4.0	3.5
Up to 11.0 m (land area above 500.0 square m)	3.5	3.5	4.0	4.0
Above 11.0 m up to 14.5 m	3.5	4.0	4.0	5.0
Above 14.5 m up to 21.0 m	5.0	5.0	5.0	6.0
Above 21.0 m	20% of the height of the	20% of the height of the	20% of the height of the	20% of the height of the

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	building or 6.0 m, whichever is more	building or 5.0 m, whichever is more	building or 5.0 m, whichever is more	building or 8.0 m, whichever is more

Table 11.6: For Institutional, Assembly, Business Mercantile and Mixed use Building:

Height of building	Front open space (in metre)	Open space on side 1 (in metre)	Open space on side 2 (in metre)	Rear open space (in metre)
Up to 11.0 m (land area up to 500.0 square metre)	2.0	1.8	4.0	4.0
Up to 11.0 metre (land area above 500.0 square metre)	3.0	3.5	4.0	4.0
Above 11.0 metre up to 18.0 m	4.0	4.0	4.0	5.0
Above 18.0 m up to 24.0 m	5.0	5.0	5.0	9.0
Above 24.0 m up to 36.0 m	6.0	6.5	6.5	9.0
Above 36.0 m	8.0	9.0	9.0	10.0

Table 11.7: For Industrial and Storage Building:

Height of building	Front open space (in metre)	Open space on side 1 (in metre)	Open space on side 2 (in metre)	Rear open space (in metre)
Up to 11.0 metre	5.0	4.0	4.0	4.5
Above 11.0 metre up to 18.0	6.0	6.5	6.5	10.0
Above 18.0 metre	6.0 or 20% of the height of the building whichever is more	6.0 or 20% of the height of the building whichever is more	6.0 or 20% of the height of the building whichever is more	6.0 or 20% of the height of the building whichever is more

Note: For plots in a scheme for economically weaker section and low-income group, Hosing approved by SSDA the minimum space shall be as laid down in section 11.3.9 of this Land Use Development Control Plan.

11.3.5.3 Interior Open Space:

The interior open space shall be as follows:-

- a) For inner courtyard-
 - (i) In case the whole of one side or part of at least two sides of every habitable room is abutting either the front space, rear open space or side open space, it shall abut an interior open space. Interior open space at ground level shall be called courtyard.
 - (ii) Any room, which is separated only by a veranda from the interior open space, shall be deemed to abut on such interior open space for the purpose of this rule.

- (iii) The minimum dimension of any side of every interior open space (a) at ground level all sides of which are enclosed by a building or part thereof shall be 30% of the height of the building or 3.0 meters, whichever is more (b) at any other level, all sides of which are enclosed by a building or part thereof shall be 30% of the height of the building or 3.0 meters, whichever is more, measured from the said level where interior open space is formed.
- (iv) Notwithstanding anything contained in these rules, if all sides of an interior open space is enclosed by a combination of higher and lower blocks of a building, the minimum dimension of such interior open space shall be governed by the height of lower block: Provided that in no case the covered area under such lower block shall be less than 25% of the total covered area of the concerned building constituting the interior open space.
- (v) For the purpose of this rule, if any interior open space or courtyard is enclosed on three sides by a building or part thereof is meant to serve lighting and ventilation purpose to a part or whole of one side of one or more habitable rooms, the minimum width of such open space shall be 2.4 meters for building up to 14.5 meters in height, 3.5 meters for buildings above 14.5 meters up to 24.0 meters height, 5.0 meters for buildings above 24.0 meters up to 36.0 meters height, and 7.0 meters for all buildings above 36.0 meters height:

Provided that the depth of such open space shall not exceed twice its width and the same may be reduced to 1.2 m, if no habitable room, or balcony attached to the habitable room is facing the interior open space. However, in case the depth of such interior open space is less than the width, the same shall not be considered as interior open spaces but be called as Notch and the same will be permitted without any restriction.

- (vi) A ventilation shaft having no access to the same except through one door for service purposes shall not be treated as a courtyard if the area of such shaft is less than 20 sq. meters.

b) Ventilation Shaft for Kitchen or toilet-

For ventilation of bathroom or water closet or if it does not open into the front open space, rear open space or side open space or an interior open space, it shall open into a ventilation shaft which shall not be less than the specification in Table 11.8 and table 11.9 below:-

Table 11.8: Size of Ventilation Shaft

Height of building (in metre)	Minimum size of ventilation shaft (in sq. mt)	Minimum width of shaft (in meters)
Upto 11.0	2.5	1.2
Above 11.0 but less than 14.5	5.0	2.0
From 14.5 but less than 20.0	6.0	2.4
20.0 and above	9.0	3.0

Table 11.9: Combined Ventilation Shaft for Kitchen and Toilet

Height of building (in metre)	Minimum size of ventilation shaft (in sq.mt)	Minimum width of shaft (in meters)
Upto 11.0	3.0	1.5
Above 11.0 but less than 14.5	6.5	2.5
From 14.5 but less than 20.0	8.0	2.75
20.0 and above	9.0	3.0

Provided that for any building with height exceeding 20 meters, a mechanical ventilation system shall be installed in addition to the provision of minimum ventilation shaft:

Provided further that no chajja shall be allowed in any ventilation shaft:

Provided also that no ventilation shaft may be required for full air-conditioned building, or mechanically ventilated toilet, kitchen, bath and W.C.

- c) If there be building other than boundary wall on not more than three sides of a building the minimum width of such courtyard shall not be less than 20% of the height of the building or 2.50 meters, whichever is more.

11.3.5.4 Joint Open Space:

In case of multiple blocks of buildings connected with each other the open spaces between the two blocks will have to be 40% of the height of the lower block or 7.0 meters whichever is more.

Note: For plot in a scheme for Economically Weaker Section and Low Income Group Housing, the minimum front space, side open space and rear open space shall be as laid down in section 11.3.9 of this Land Use and Development Control Plan.

11.3.6 Regulation for Provision of Parking within a Plot

11.3.6.1 Minimum Parking Space:

- i. No off- street parking shall be less than –
 - a) 12.5 square meters (2.5 meters in width and 5.0 meters in length) for a motor car with a minimum head room of 2.2 meters if parked in a covered area.
 - b) 37.5 square meters (3.75 meters in width and 10 meters in length) for a truck and a bus with a minimum head room of 4.75 meters if parked in covered area.
- ii. The minimum width of circulation driveway to be provided for adequate manoeuvring of vehicles shall be 4.0 meters for cars and 5.0 meters for trucks exclusive of parking space referred to in sub-rule 11.3.6.1(i) .However a projection from a height above 5.50 meters from the ground level may be permitted keeping the mandatory open space open to sky as per this rule.
- iii. The parking lay-out plan shall be so prepared that the parking space for each vehicle becomes directly accessible from the driveway or circulation driveway or aisles. However stack car parking arrangement will be allowed in such a way that every car can be moved by shifting not more than one car. This stack car parking will be allowed only on the basement and ground floor levels.

- iv. (a) For building with different uses, the area of parking space shall be worked out on the basis of respective uses separately and parking space to be provided for the total number of vehicle thus required.
(b) In case of a plot containing more than one building, parking requirement for all buildings shall be calculated on the basis of consideration the area of respective use or uses.
- v. Notwithstanding anything contained in sub-items of 11.3.6.1(i-iv) of this rule, if the building site abuts on a street or means of access, which is less than 3.5 meters, parking space may not be insisted upon.
- vi. In calculating the areas of different occupancies in the same building or different units of same occupancy in a building, the areas of common spaces of any floor, which is included in the calculation of the Floor Area Ratio as per provision of these rules, shall be distributed proportionately amongst the different units or occupancies. However, in case of residential use, the actual floor area of the tenements shall be considered excluding the areas of the common space. The requirements of car parking spaces shall be calculate accordingly.
- vii. The open spaces within the plot may be allowed to be utilized for car parking spaces open to the sky provided that the minimum front, rear and side open spaces prescribed in section 11.3.5 of this Land Use and Development Control Plan shall be kept free of parking;
- viii. For plots in a scheme for Economically Weaker Section and Low Income Group housing approved by the Competent Authority, the parking requirement shall be indicated in section 11.3.9 of this Land Use and Development Control Plan.

11.3.6.2 Parking Space requirements for motor cars

The parking space requirements for motor cars in respect of different categories of buildings are given in the Table No 11.10:-

Table 11.10: Parking Space Requirements for Motor Cars

S. No	Occupancy	Off- Street Car Parking Spaces:
1	Residential	<p>(a) One car parking space to be provided for every 150 sqm. Of floor area up to a total floor area of 600 sqm.</p> <p>(b) One car parking space to be provided for every 140 sqm. Of floor area above a total floor area of 600 sqm up to 5000 sqm.,</p> <p>(c) One car parking space to be provided for every 130 sqm. Of floor area above a total floor area of 5000 sqm.</p> <p><i>Note :</i></p> <p><i>i. However for building or buildings having individual tenements size not exceeding 60.0 sqm. in the entire building, one car parking space to be provided for every 250 sqm of floor area;</i></p> <p><i>ii. For the purpose of calculation of number of car park nearest whole number is to be considered.</i></p>
2	Educational	<p><i>i. For all educational buildings, one car parking space and one bus parking space are to be provided for every 500 sqm of floor area</i></p>

		and part thereof (exceeding 50%). However, at least one car parking space is to be provided for every educational building.
3	Institutional	<p>For hospitals and other health care institutions-</p> <p><i>i.</i> One car parking space for every 150 sqm. of floor area is to be provided for a total floor area not exceeding 1000 sqm. However, at least one car parking space is to be provided for such institution building.</p> <p><i>ii.</i> One car parking space for every 100 sqm. of floor area is to be provided for a total floor area not exceeding 1000 sqm. (Subject to a maximum of 250 nos of car parking space).</p>
4	Assembly	<p>(a) For theatres, motion picture house, auditorium or similar other halls - one car parking space for every 75 sqm of floor area shall be required. However, at one car parking space is to be provided for such buildings even having less than 75 sqm of floor area.</p> <p>(b) For Exhibition Halls, Town Hall or City Halls or similar other halls - one car parking space for every 200 sqm of floor area shall be required. However, at one car parking space is to be provided for such halls even having less than 200 sqm of floor area.</p> <p>(c) For restaurant, eating houses, bars, clubs, gymkhana, dance halls - one car parking space for every 75 sqm of floor area and/or part thereof (exceeding 50%). However, at one car parking space is to be provided for such buildings even having less than 75 sqm.</p> <p>(d) For hotels - one car parking space for every 250 sqm of floor area and/or part thereof (exceeding 50%). However, at least two car parking spaces are to be provided for such hotel buildings. Provided that for Hotels with Banquet Hall for other facilities like Conference, Marriage Ceremony and other public gatherings one car parking space for every 50 sqm of such floor area of banquet hall be required additionally: Provided further that while calculating the area of hotel to assess the requirement of car parking, area of banquet hall will not be considered.</p> <p>(e) For boarding house and guest house - one car parking space for every 500 sqm of floor area and/or part thereof (exceeding 50%). However, at least one car parking space is to be provided for such houses. For other assembly buildings like place of worship, the Competent Authority shall determine gymnasium, sports stadium, railway or bus passenger station, airport terminal; or any other places where people congregate or gather – requirement of parking space.</p>
	Business	One car parking space for every 100 sqm of floor area and/or part thereof (exceeding 50%). However, at least one car parking space is to be provided for such building.
	Mercantile (retail)	<p>(a) For floor area up to 50 sqm.- No car parking space.</p> <p>(b) For floor area above 50 sqm.– One car parking space plus an additional car parking space for every 100 sqm. of the covered area.</p>
	Industrial, Storage and Mercantile (wholesale)	<p>(a) For floor area up to 200 sqm. - no car parking space.</p> <p>(b) For floor area above 200 sqm.– One car parking space for every 200 sqm. and one truck parking space for every 1000 sqm. Subject to a minimum of one truck parking space.</p> <p>(c) In no case the required car parking space shall exceed 50 and the required truck parking space shall exceed 50:</p>

Provided that while calculating the floor area for the purpose of car parking space required, covered areas for car parking are not to be considered.

11.3.7 Regulation for Tall Buildings (Exceeding 14.5 meters in Height)

In Sriniketan Santiniketan Planning Area, in case of any building exceeding 14.50 meters in height, permission should be taken from appropriate authority.

11.3.7.1 No building exceeding fourteen meters and a half in height shall be allowed on private or Public Street of not less than 10.00 meters in width;

11.3.7.2 Open spaces;

- i. There shall be a minimum front open space for every category of tall building at its narrowest part, as per provisions laid down in section 11.3.5.2 of this Land use Development Control Plan.
- ii. There shall be a minimum rear open space for every category of tall building along the entire width of the building forming an integral part of the site, as per provisions laid down in section 11.3.5.2 of this Land use Development Control Plan.
- iii. There shall be minimum open spaces on both sides for every category of tall building at its narrowest part, as per provisions as per provisions laid down in section 11.3.5.2 of this Land use Development Control Plan.
 - a) In case the whole of one side or part of at least two sides of every room excepting bath, water-closets and store room, is not abutting either the front open space, rear open space or side open space, it shall abut an inner courtyard whose minimum width shall be 30% of the height of the building or 3 meters, whichever is more;
 - b) for ventilating water closet in bathroom, such water closet or kitchen or any room not intended for human habitation, if not opening on to front open space, rear open space, side open space or interior open space, shall be opened up to a ventilation shaft, the size of which shall be as per provisions laid down in section 11.3.5 of the Land use Development Control Plan.

11.3.7.3 For every building exceeding fourteen meters and a half, the FAR shall be as specified in the Table 11.11 below:-

Table 11.11: Maximum permissible Floor Area Ratios

Width Means Access (meters)	of of	Residential Building		Institutional/Business Buildings etc.		Industrial
		Residential Use Zone	Other zones	Residential Use Zone	Other zones	
Above 15 to 20		2.25	2.00	1.00	2.25	1.0
Above 20 to 24		2.50	2.25	1.50	2.50	1.0
Above 24		2.75	2.50	2.00	2.75	1.5

Note: while calculating the floor area under this Section, the following shall not be included:-

- a) *Stair cover not exceeding 2.4 meters in height and staircase with landing up to the extent of the width of the stairway in each floor including ramp if there be any;*
- b) *Lift machine room as per latest edition of National Building Code. Lift landing lobby with a maximum area of six sq.m. in all floors including roof, if any;*
- c) *Roof tank and their support, the height of support not exceeding 1 metre;*
- d) *Chimneys, ventilating, air conditioning and service equipment attached to the building;*

Provided that the aggregate area of these structures mentioned at (a) to (d) above shall not exceed one-third area of the roof upon which these are erected;

- e) The actual area under covered car-parking space and area of basement used for car-parking only in accordance with the rule provided in section 11.3.6 this LUDCP subject to maximum permissible limit for one car parking space as 25 sq.m. For ground floor and 35sq.m.other than ground floor inclusive of all circulation space and ramps. However, the area actually covered by the car parking space may be allowed even if the same is more than mandatory requirement. But the covered car parking shall be within the permissible ground coverage;*
- f) Area of loft, ledge and areas of cupboards or wardrobes up to a maximum extent of 3% of total floor area but shall include the area of mezzanine floor;*
- g) Area of service floor as permitted*
- h) The areas for garden covered with permeable material, pergola, expanded or similar other material at the roof level, up to 5% of the total roof area or 10 sq.m. which is more, subject to adoption of adequate structural safety measures;*

All steel towers above 14.5 metre height should be ground based ones. Minimum access to such structure should not be less than 5 metre on any part. No such structure should be constructed on the mandatory open spaces of any existing building.

11.3.8 Regulation for Plot containing more than One Building

11.3.8.1 General

- i. Every building on a plot containing more than one building shall abut an internal road connecting the means of access of the plot. The F.A.R. shall be calculated on the basis of the width of the means of access on which the plots abuts.
- ii. The minimum width of such internal roads shall not be less than 3.50 meters, where internal road of 3.50 meters in width is not possible to be provided due to an existing building constructed prior to the enforcement of this Land use and Development Control Plan, a building of not more than 7.0 meters in height may be allowed, provided that the width of the internal road shall not be less than 1.20 meters.
- iii. The maximum permissible height of any building on a plot shall be determined by the width of the means of access on which the plot abuts according to the Table No.11.3 given in section 11.3.4 of this Land use and Development Control Plan.
- iv. The minimum width and the maximum length of all such internal roads shall be as prescribed in the Table No. 11.13 given in section 11.3.12 of this Land use and Development Control Plan.
- v. In case the buildings within a plot are not of the same occupancy, an individual building of any particular occupancy shall comply with the regulation governing such occupancy except the provisions regarding Ground Coverage and Floor Area ratio, which shall be in accordance with sub regulations.

11.3.8.2 Ground Coverage

- i. For plots measuring less than 5000 sq.meters in area, the maximum Permissible ground coverage shall be the values prescribed in section

11.3.3 of this Land use and Development Control Plan if the buildings are of same occupancy. If the buildings are not of same occupancy then the ground coverage shall be 40%.

- ii. For plots measuring 5000 sq.meters or more in area, the maximum permissible ground coverage shall be 40% for building with same occupancy and 35% for buildings with different occupancies including mixed-use occupancy.

11.3.8.3 Open Spaces

- i. Every building shall have minimum external open space as prescribed in section 11.3.5, if on these open spaces internal roads may be constructed.
- ii. Interspaces between two buildings, within a plot, shall be 40% of the average height of the buildings subject to a minimum of 4.0 meters even if the two buildings are inter connected by walkways, and other ornamental or structural elements say pergolas, radiating beams etc.

11.3.8.4 Parking:

The provision shall be the same as stipulated in section 11.3.6 of this Land use and Development Control Plan.

11.3.9 Regulation for EWS and LIG Housing Scheme

In a scheme for Economically Weaker Section and Low Income group Housing approved by Sriniketan Santiniketan Development Authority the following regulations shall be applicable, provided that the size of the plot is not more than 65.00 sq.meters in area.

- i. No building shall be allowed on a plot if the width of the means of access to the plot is less than 1.20 meters.
- ii. No building exceeding 8.00 meters in height shall be allowed on a plot if the width of means of access to the plot is less than 3.5 meters.
- iii. The maximum permissible ground coverage shall be 75% of the area of the plot;
- iv. The maximum permissible height of the building shall be 10.00 meters;
- v. The minimum front open space shall be 0.80 metre;
- vi. The minimum rear open space shall be 1.00 metre;
- vii. The maximum permissible Floor Area ratio shall be 1.75
- viii. The buildings may be of row housing type with common wall and the maximum length of the building in a row shall be 50.00 meters and after every 50.00 meters of length of such buildings in a row, there shall be on open space of not less than 2.50 meters in width for the entire depth of the building, and that such open space shall not be necessary if there is a street or passage at such location the minimum width of which is not less than 2.50 meters;
- ix. There shall be no need to provide any car parking space within the plot;
- x. The size of rooms shall be as follows:
 - a. **Habitable Room:** The area of a habitable room shall not be less than 6.00 sq.meters with a minimum width of 2.40 meters. The habitable room for this purpose would be any room to be used for human habitation other than a kitchen, both/water-closet, store/multi-purpose room;
 - b. **Kitchen :**The area of kitchen shall not be less than 3.00 sq. meters with a minimum width of 1.50 meters;
 - c. **Water closet and bathroom:**The area of an independent water closet shall not be less than 0.80 sq.metre with a minimum width of 0.85 metre. The

area of an independent bathroom shall not be less than 0.80 sq. meters with a minimum width of 0.85 metre. If water closet is combined with bathroom its floor area shall not be less than 1.50 sq.meters with a minimum width of 0.9 metre.

- xi. Minimum height of rooms: The height of all habitable and multi-purpose rooms shall not be less than 2.60 meters from the surface of the floor to the lowest point of the ceiling (bottom of the slab and/or beam). In the case of sloping roof, the average height of roof for habitable rooms shall not be less than 2.60 meters and the minimum height at caves shall be 2.10 meters. The height of kitchen, bath/water closet and corridor/passage shall not be less than 2.10 meters measured from the surface of the floor to the lowest point of the ceiling (bottom of the slab and/or beam);
- xii. Excepting the provisions of clause (i) to (xi) all other provisions of these regulations shall be applicable.

11.3.10 Provisions regarding Existing buildings

The provisions of the following regulations shall apply only in the case of an existing building not complying with the regulations of the Land Use and Development Control Plan. Existing building, for this purpose, shall mean any building which was erected before the date of coming into force of these regulations in accordance with a building plan sanctioned by an authority competent to sanction such building plan under Bengal Municipal Act 1932 (Bengal Act XV of 1932) or any other law for the time being in force.

In the case of existing building:

- i. Excepting storage or hazardous buildings, where the open spaces required have not been left, and addition in the number of stories, if otherwise permissible, may be allowed with a setback provided such building continuous with the same occupancy. If no formal setback may be necessary up to a height of eight meters for adding only one floor over an existing single storied residential building.
- ii. The extent of the set back from the property boundary shall be such as to make the addition to the building in conformity with the provisions of sections 11.3.3 and 11.3.5 of this Land Use and Development Control Plan.
- iii. If any car parking space is required to be provided under section 11.3.6 of this Land Use and Development Control Plan and no such car parking space can be provided in such existing building, the covered area allowable under the provisions of these regulations shall be reduced by the area required for such car parking space. For this calculation, the area required for one car parking space is to be taken as 20.0 sq. meters.
- iv. The height of the building shall conform to the provisions as indicated in section 11.3.4 of this Land Use and Development Control Plan and in no case the height shall exceed 14.50 meters after any addition to the number of stories;
- v. The addition to an existing building with residential occupancy shall not exceed 200.0 sqmt in covered area.
- vi. The addition to an existing building with educational occupancy shall not exceed the total covered area of the building.
- vii. The addition to an existing building with other occupancies including mixed uses but accepting storage and hazardous building shall not exceed 100.00 sq. meters in total covered area.

- viii. In case of partition of existing building common walls may be allowed as the partition line.

11.3.11 Regulation for Development of Building Site

No plot shall be used as site for erection or re-erection of any building:-

- i. If the level of the plot is lower than the level of the crown of the nearest public street , and
- ii. Unless the land is capable of being well- drained by, means of drainage facilities leading to the existing public drains or drainage channels.

11.3.12 Regulation for Sub - Division of Plots

11.3.12.1 No sub-division of any plot within the proposed zones, except 'Agricultural use zone' for the purpose of agriculture, shall be undertaken without the prior approval of the Development Authority.

11.3.12.2 General provisions

- i. A plot to be sub-divided shall be termed as "mother plot".
- ii. Sub-division shall not be allowed if the "mother plot" abuts a means of access having width of less than 7.50 meters.
- iii. Every individual plot obtained by sub-division of the "mother plot" shall abut a means of access having a width of not less than 3.50 meters.
- iv. The junctions of means of access within the "mother plot" shall be provided with splayed corners measuring not less than 2.50 meters on each side and 3.5 meters if both roads are of 10.00 meters width or more.
- v. These regulations are not applicable in a scheme for Economically Weaker Section and Low Income Group housing, subject to the approval of the competent authority.
- vi. Sub-division may be allowed on condition that the following facilities shall be provided by the owner of the "mother plot" at his own cost, as may be directed by the Local Authority:
 - a) Drainage facilities ensuring drainage of each individual plot and of the means of access and passages leading to existing public drains or drainage channels.
 - b) Streets and passages along with street lighting.
 - c) Sanitary facilities including garbage disposal facilities.
 - d) Water supply facilities.
- vii. The minimum size of plot obtained by sub- division shall not be less than 80 sqmts.
- viii. No permission to sub-division of a plot shall be granted unless a detailed layout plan or the area proposed to be sub divided is submitted before the SSDA duly integrating the site layout plan with the general use of the land in the adjoining areas. The existing street pattern as also other physical infrastructural facilities like drainage, sewerage, water supply, electric supply with location of high tension or low tension electric line with poles are also required to be shown.
- ix. Plot sub division will be guided by the width of means of access as per Table 11.12.

Table 11.12: Plot Sub Division shall be allowed on Means of Access as Follows

Means of access	Area allowed for sub- division of plot
7.5m	Above 160 sqmts to 2000 sqm.
10.0 m	Above 200 sqmts to 5000 sqm.
20.0 m	Above 500 sqmts to 15000 sqm.
30.0 m	No restriction

- x. The minimum permissible width for any given length of means of access for sub-divided plots shall be as given in the Table 11.13:

Table 11.13: Width and Length of Internal Roads

S No	Maximum length of internal roads		Minimum Width of Internal Roads
	For internal roads closed at one end	For internal roads open to street at both ends	
1.	25.00 meters	75.00 meters	3.50 meters and above but not more than 7.00 meters
2.	50.00 meters	150.00 meters	Above 7.00 meters but not more than 10.00 meters
3.	No restriction	No restriction	Above 10.00 meters

11.3.12.3 Public open spaces

Sub division of mother plot measuring more than 500 sqmts in area shall only be allowed if a portion of the total area of the mother plot is developed as public open spaces or public amenities as follows:

- i. For mother plots above 2000.0 sqmts and below 5000.0 sqmts; 7.5% of the land (excluding roads) should be reserved for the above purpose.
- ii. For a mother plot measuring more than 5,000.00 sq. meters in area and above 25000, sub-division may be allowed, provided 8% of the total area of the mother plot is developed as public open space. The width of each such open space shall not be less than 10.00 meters and each such open space shall about a street having a width of not less than 7.00 meters. The minimum area of each of such open space in one parcel shall be 400.0 sq.m. This open space shall be in addition to the land required for providing the means of access to the individual plots obtained by sub-division of the mother plot and 2% of the land should be reserved for public amenities.
- iii. Land for facilities -For a mother plot measuring more than 25000.00 sq. meters in area, apart from providing 8% of the land for public open spaces provision of 7% additional land of the total area of the plot shall be reserved for use for facilities like school, Health Centres, Market, Police Outpost with booth, Post Office, Power Sub-station, Transport Terminal, Water Treatment Plant, Sewerage Treatment Plant as well as the provision for Green cover and free gift of land for Economically Weaker Section housing and the like, such land shall about a means of access having a width of not less than 10.00 meters in addition to the land necessary for means of access and for open space

mentioned in section 11.3.5 of this Land Use and Development Control Plan.

11.3.13 For new Township Project

For development of townships of various natures covering land area beyond a certain limit, it is recommended that they follow The West Bengal Town and Country Planning (Development of Township Projects) Rules, 2008 [Refer Annexure -IV]. The site area for the township project needs to be at least 40 acres for Residential Townships, at least 30 acres for Special category Townships, and at least 100 acres for Integrated Townships.

Annexure -IV provides elaborate set of guidelines regarding accessibility to the site, land area allocation to various uses, development control guidelines i.e. allowable FAR, Ground Coverage, minimum no. of dwelling units etc, process of permission and time limit for completion of the project.

11.3.14 Rules for Environmental Provisions

Following regulations has been recommended to improve the quality of development with respect to the provision for rainwater harvesting, tree cover, wastewater recycling and solar energy. Most of them are adopted from The Kolkata Municipal Corporation Building Rules, 2009.

11.3.14.1 Roof Top rain water harvesting (RWH)

Roof Top RWH shall form a part of the building and shall have to be included in the plan either for direct use of rainwater or for ground water recharging or both, applicable in case of

- a) New building/buildings or any housing complex covering a total floor area of 6000 sqmt or more.
- b) Expansion of any building/ buildings or housing complex, to cover 6000 sqmt of total floor area pr more additionally.

11.3.14.2 Tree Cover

Provision of tree cover should be included in the plan for sites

- a) For any housing construction projects covering a total floor area of 6000 sqmt or more, the applicant should arrange for raising and maintenance of tree cover at their own cost which should be at least 15% of the land area within the premises
- b) For any other housing construction project, having lesser total floor area the tree cover should be reduced proportionately in the perspective of (i) above.
- c) The applicant shall drainage to raise and maintain the plantation at his or her own cost and submit such programme to the authority before the plan is passed for sanction.

11.3.14.3 Waste Water Recycling

Wastewater recycling system shall be incorporated in all buildings including group housing having a minimum discharge of 40,000 litres and above per day either for non-domestic purpose or for recharging of ground water.

11.3.14.4 Provision for use of solar energy

Provision for use of solar energy in the form of solar heater and/or solar photocells shall be included in building plans in case of any new building whose height is to exceed 14.5 m or expansion of any existing building if its height is to exceed 14.5 m.

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12 PROPOSED SCHEMES AND PROJECTS

12.1 TRAFFIC AND TRANSPORTATION

12.1.1 Road widening

LOS for major roads was calculated. Roads with LOSV/C Ratio (volume/capacity) greater than 0.5 were selected to be widened. Depending on the ROW available to the existing roads are to be widened. Table 12.1 shows the roads to be widened. Map 12.1 shows the same.

Table 12.1 Roads to be widened

Sl. No.	Road Name	V/C Ratio	Level of Service
1	Nanur-Chanidas Road	0.6	B
2	Santiniketan Road	0.79	C
3	SriniketanSantiniketan Road	1.006	E

12.1.2 Geometry of road

The objective was to check for geometry of road intersections and correct them. Major issues and problems identified in the traffic and transportation of Sriniketan-Santiniketan; Station More, Chowrasta, Chitra, Tourist lodge More, Bolpur Sriniketan. There is a need to change the intersection geometry, removal of encroachment, removal of parking and signalization of intersection.

12.1.3 New proposal of internal road

Proposal for internal roads connecting the existing roads and conversion of kachcha roads to pucca roads.

Future road

Introduction of new roads to create growth centres and make development possible in those areas.

Bypass (ring road)

Proposal for ring road network in and out of the city without disturbing the core of the city . Map 12.1 shows the new road proposal.

12.2 BUS TERMINAL LOCATION

The bus stop is the first point of contact between the passenger and the bus service. The spacing, location, design, and operation of bus stops significantly influence transit system performance and customer satisfaction. To reduce amount of pressure on the internal roads because of high vehicle count and heavy vehicle the location of bus stand is to be changed and has been placed near upcoming Gitbitan housing area.

12.3 RAILWAY-CROSS OVER BRIDGE

For the construction of the ring road a railway cross over bridge is proposed at road coming from Shibapur to Bolpur Palitpur road connecting west of SSPA to East of SSPA. The bridge will eventually act as the major connection between the east and west part of Sriniketan Santiniketan planning area.

12.4 WATER INTAKE POINT FOR THE CITY

For conservation of water, there is a need to use surface water for drinking purpose in the city. A water intake point is proposed near the Ajoy River. Map 12.1 shows the proposed area.

12.5 WASTE WATER LAGOON

For wastewater treatment a proposal for around is also one of the simplest and least expensive. Lagoon systems use natural and energy-efficient processes to provide low-cost wastewater treatment.

12.6 LOCATION OF LANDFILL SITE

Location of landfill site is proposed as per CPCB 2003 norms. Map 12.1 shows the proposed landfill site.

ANNEXURE

Annexure I

Administrative units in Sriniketan Santinikratn Planning Area.

Sl. No.	Block	Police Station	J.L. No.	Mouza Name	Area (Sq. Km)
1	Bolpur-Sriniketan	Bolpur	54	Benuria	4.815
2	Bolpur-Sriniketan	Bolpur	63	Ballavpur	5.838
3	Bolpur-Sriniketan	Bolpur	64	Kabimanotharapur	1.165
4	Bolpur-Sriniketan	Bolpur	65	Goalpara	1.454
5	Bolpur-Sriniketan	Bolpur	66	Bairadihi	0.709
6	Bolpur-Sriniketan	Bolpur	67	Shyambati	1.119
7	Bolpur-Sriniketan	Bolpur	68	Madhusudhanpur	0.995
8	Bolpur-Sriniketan	Bolpur	69	Taltore	3.298
9	Bolpur-Sriniketan	Bolpur	71	Adityapur	4.089
10	Bolpur-Sriniketan	Bolpur	95	Khoskadambapur	5.156
11	Bolpur-Sriniketan	Bolpur	96	Uttar Narayanpur	2.601
12	Bolpur-Sriniketan	Bolpur	97	Mokrapur	1.660
13	Bolpur-Sriniketan	Bolpur	98	Kalikapur	1.403
14	Bolpur-Sriniketan	Bolpur	99	Bolpur	7.210
15	Bolpur-Sriniketan	Bolpur	100	Bandhghora	4.323
16	Bolpur-Sriniketan	Bolpur	101	Dakshin Chandipur	0.911
17	Bolpur-Sriniketan	Bolpur	102	Sibpur	1.295
18	Bolpur-Sriniketan	Bolpur	103	Uttar Radhanagar	0.496
19	Bolpur-Sriniketan	Bolpur	104	Surul	8.133
20	Bolpur-Sriniketan	Bolpur	105	Mehidipur	4.941
21	Bolpur-Sriniketan	Bolpur	109	Raipur	1.867
22	Bolpur-Sriniketan	Bolpur	110	Chandanpur	3.774
23	Bolpur-Sriniketan	Bolpur	111	Udaipur	0.596
24	Bolpur-Sriniketan	Bolpur	112	Ramchandrapur	2.320
25	Bolpur-Sriniketan	Bolpur	113	Sapur	1.008
26	Bolpur-Sriniketan	Bolpur	114	Rasulganjpurhat	0.635
27	Bolpur-Sriniketan	Bolpur	115	Nurpur	2.016
28	Bolpur-Sriniketan	Bolpur	116	Purba Bahadurpur	0.602
29	Bolpur-Sriniketan	Bolpur	117	Rajatpur	0.656
30	Bolpur-Sriniketan	Bolpur	118	Gheropara	1.996
31	Bolpur-Sriniketan	Bolpur	119	Muhuli	2.099
32	Bolpur-Sriniketan	Bolpur	120	Dakshin Narayanpur	1.902
33	Bolpur-Sriniketan	Bolpur	121	Muluk	2.244
34	Bolpur-Sriniketan	Bolpur	122	Goyspur	1.867
35	Bolpur-Sriniketan	Bolpur	123	Layak Bazar	1.511
36	Bolpur-Sriniketan	Bolpur	124	Tatarpur	0.823
37	Bolpur-Sriniketan	Bolpur	125	Arajimuluk	0.606
38	Bolpur-Sriniketan	Bolpur	126	Gobindapur	3.921
39	Bolpur-Sriniketan	Bolpur	127	Bhatura	0.448
40	Bolpur-Sriniketan	Bolpur	128	Dwarkanathpur	3.900
41	Bolpur-Sriniketan	Bolpur	129	Shian	3.465
42	Bolpur-Sriniketan	Bolpur	130	Purba Islampur	2.071
43	Bolpur-Sriniketan	Bolpur	143	Durgapur	3.287
44	Bolpur-Sriniketan	Bolpur	144	Geet Gram	1.204
				Total	106.427

Note: The area of all administrative unites shown here is calculated from the land record provided by District Land & Land Reforms Officer. The actual geographic area of Planning Area is a little more i.e. 108.03 sq.km. This difference is because of some plots belong to railway and other bodies, which are not mentioned in land record.

Annexure II

Details of plots under Khoai.

S.No.	Plot No.	Mouza no.	Land Record Class	Land Record Area (acres)	Existing Land Use	Plot Owner	Owned Area	Owned%
Benuria								
1	4279	54	Jungle	31.89	Forests	Government	31.890	100
2	5800	54	Rasta	1.04	Minor Roads	Government	1.040	100
3	5801	54	Jungle	30.62	Forests	Government	30.620	100
Ballavpur								
4	NA	63		0.00	Forests	NA	0.000	0
5	2074	63	Danga	16.58	Forests	Government	16.580	100
6	2089	63	Danga	1.78	Water Logged Area	Government	1.780	100
7	2148	63	Khal	3.37	River/ Streams/ Canal	Government	3.370	100
8	2149	63	Canalpar	2.83	Vacant Land abutting Water Bodies	Government	2.830	100
9	2150	63	Danga	5.23	Forests	Government	5.230	100
10	2151	63	Danga	0.72	Forests	Trust	0.720	100
11	2152	63	Danga	2.20	Forests	Private	2.200	100
12	2173	63	Khal	7.88	Water Logged Area	Government	7.880	100
13	2174	63	Kandar	1.08	Lake / Tank / Pond	Trust	1.080	100
14	2175	63	Danga	9.91	Forests	Private	9.910	100
15	2176	63	Danga	1.33	Forests	Private	1.330	100
16	2186	63	Khal	0.83	Forests	Government	0.830	100
17	2187	63	Khal	0.32	Vacant Land abutting Water Bodies	Government	0.320	100
18	2188	63	Canalpar	0.10	River/ Streams/ Canal	Government	0.100	100
19	2190	63	Danga	0.10	Forests	Government	0.100	100
20	2191	63	Danga	2.74	Forests	Government	2.740	100
21	3107	63	Shali	0.24	Barren Land	Private	0.240	100
22	3108	63	Shali	2.11	Barren Land	Private	2.110	100
23	3401	63	Danga	10.91	Public Open Spaces	Major Trust	6.478	59
24	3402	63	Kandar	2.21	Orchard/ Plantation	Government	2.210	100
25	3403	63	Jungle	5.41	Orchard/ Plantation	Government	5.410	100
26	3404	63	Rasta	3.90	Major Roads	Government	3.900	100
27	3435	63	Danga	0.42	Forests	Government	0.420	100
28	3437	63	Dahar	0.80	Minor Roads	Government	0.800	100
29	3451	63	Dahar	0.48	Minor Roads	Government	0.480	100
30	3465	63	Bhiti	0.72	Barren Land	Trust	0.720	100
31	3466	63	Path	0.13	Minor Roads	Government	0.130	100
32	3467	63	Shuna	3.16	Orchard/ Plantation	Private	3.160	100
33	3468	63	Shuna	0.66	Barren Land	Private	0.660	100
34	3469	63	Pukur	0.33	Lake / Tank / Pond	Private	0.330	100
35	3521	63	Shuna	12.35	Forests	Government	12.350	100
36	3522	63	Danga	7.27	Forests	Government	7.270	100
37	3523	63	Jungle	7.00	Forests	Government	7.000	100
38	3524	63	Jungle	2.92	Orchard/ Plantation	Government	2.920	100
39	3525	63	Shali	0.32	Barren Land	Private	0.320	100
40	3535	63	Talikhola	45.18	Barren Land	Government	45.180	100
41	3538	63	Khal	6.48	River/ Streams/ Canal	Government	6.480	100
42	3539	63	Khal	13.88	Lake / Tank / Pond	Government	13.880	100
43	3540	63	Jungle	16.32	Forests	Government	16.320	100
44	3541	63	Jungle	23.52	Orchard/ Plantation	Government	23.520	100
45	3554	63	Danga	0.09	Forests	Government	0.090	100
46	3559	63	Dahar	0.28	Minor Roads	Government	0.280	100

S.No.	Plot No.	Mouza no.	Land Record Class	Land Record Area (acres)	Existing Land Use	Plot Owner	Owned Area	Owned%
47	3561	63	Shuna	1.35	Barren Land	Trust	1.350	100
48	3563	63	Jungle	9.45	Orchard/ Plantation	Government	9.450	100
49	3564	63	Dahar	0.18	Minor Roads	Government	0.180	100
50	3565	63	Bhiti	0.13	Public Open Spaces	Trust	0.130	100
51	3566	63	Dahar	0.20	Minor Roads	Government	0.200	100
52	3567	63	Bastu	0.16	Public Open Spaces	Trust	0.160	100
53	3568	63	Bagan	0.56	Public Open Spaces	Government	0.560	100
54	3569	63	Bastu	0.16	Public Open Spaces	Trust	0.160	100
55	3570	63	Doba	2.00	Public Open Spaces	Government	2.000	100
56	3571	63	Path	1.14	Major Roads	Government	1.140	100
57	3572	63	Danga	4.68	Orchard/ Plantation	Trust	4.680	100
58	3573	63	Jungle	12.72	Orchard/ Plantation	Government	12.720	100
59	3574	63	Talikhola	0.48	Orchard/ Plantation	Government	0.480	100
60	3577	63	Jungle	0.68	Orchard/ Plantation	Government	0.680	100
61	3578	63	Jungle	0.60	Orchard/ Plantation	Government	0.600	100
62	3579	63	Danga	0.61	Forests	Government	0.610	100
63	3580	63	Kandar	0.98	Forests	Government	0.980	100
64	3581	63	Jungle	2.32	Forests	Government	2.320	100
65	3582	63	Kandar	0.70	Forests	Government	0.700	100
66	3583	63	Dahar	0.06	Major Roads	Government	0.060	100
67	3584	63	Dahar	0.02	Minor Roads	Government	0.020	100
68	3587	63	Danga	0.23	Forests	Private	0.230	100
69	3588	63	Jungle	2.56	Orchard/ Plantation	Government	2.560	100
70	3634	63	Danga	3.42	Forests	Trust	3.420	100
71	3635	63	Danga	19.36	Water Logged Area	Government	19.360	100
72	3637	63	Jala	30.62	Lake / Tank / Pond	Government	30.620	100
73	3638	63	Danga	15.44	Water Logged Area	Government	15.440	100
74	3640	63	Danga	4.06	Forests	Government	4.060	100
75	3641	63	Danga	4.53	Forests	Government	4.530	100
76	3642	63	Jala	16.57	Forests	Government	16.570	100
77	3644	63	Danga	45.40	Forests	Government	45.400	100
78	3658	63	Jungle	71.32	Forests	Government	71.320	100
79	3659	63	Kandar	1.14	Forests	Trust	1.140	100
80	3660	63	Danga	0.09	Forests	Trust	0.090	100
81	3661	63	Shuna	0.32	Forests	Private	0.320	100
82	3662	63	Shuna	0.09	Forests	Private	0.090	100
83	3663	63	Shuna	0.05	Forests	Private	0.050	100
84	3664	63	Danga	1.34	Forests	Trust	1.340	100
85	3665	63	Danga	1.29	Forests	Trust	1.290	100
86	3666	63	Shuna	0.38	Forests	Private	0.380	100
87	3667	63	Shuna	0.06	Forests	Private	0.060	100
88	3668	63	Dahar	2.06	Minor Roads	Trust	2.060	100
89	3673	63	Shuna	0.22	Forests	Private	0.220	100
90	3674	63	Danga	0.24	Forests	Private	0.240	100
91	3780	63	Danga	8.78	Forests	Government	8.780	100
92	3781	63	Danga	4.22	Forests	Government	4.220	100
93	3782	63	Danga	28.12	Forests	Major Private	27.948	99
94	3783	63	Danga	3.44	Forests	Private	3.440	100
95	3784	63	Danga	2.94	Forests	Government	2.940	100
96	3794	63	Danga	0.55	Orchard/ Plantation	Government	0.550	100

S.No.	Plot No.	Mouza no.	Land Record Class	Land Record Area (acres)	Existing Land Use	Plot Owner	Owned Area	Owned%
Kabimohanpur								
97	859	64	Danga	1.71	Heritage & Conservation Area	Major Government	1.410	82
98	860	64	Kandar	0.42	Heritage & Conservation Area	Government	0.420	100
99	862	64	Gopath	0.80	Heritage & Conservation Area	Government	0.800	100
100	897	64	Danga	0.34	Agricultural Land	Government	0.340	100
101	1042	64	Danga	19.83	Heritage & Conservation Area	Government	19.830	100
102	1043	64	Danga	15.08	Forests	Government	15.080	100
103	1044	64	Canalpar	4.10	Vacant Land abutting Water Bodies	Government	4.100	100
104	1045	64	Khal	3.12	River/ Streams/ Canal	Government	3.120	100
105	1046	64	Canalpar	0.96	Vacant Land abutting Water Bodies	Government	0.960	100
Goalpara								
106	890	65	Jungle	51.80	Forests	Government	51.800	100
107	891	65	Jungle	50.07	Heritage & Conservation Area	Government	50.070	100
108	892	65	Jala	32.65	Lake / Tank / Pond	Government	32.650	100
109	902	65	Khal	4.50	Vacant Land abutting Water Bodies	Government	4.500	100
110	903	65	Khal	5.45	River/ Streams/ Canal	Government	5.450	100
111	904	65	Canalpar	5.20	Vacant Land abutting Water Bodies	Government	5.200	100
Surul								
112	1	104	Jungle	50.00	Forests	Government	50.000	100
113	2	104	Danga	7.20	Forests	Government	7.200	100
114	89	104	Jungle	14.11	Forests	Government	14.110	100
115	90	104	Dahar	0.68	Minor Roads	Government	0.680	100
116	92	104	Jungle	8.84	Forests	Government	8.840	100
117	93	104	Shali	9.57	Forests	Government	9.570	100
118	1801	104	Dahar	1.38	Minor Roads	Government	1.380	100
119	1803	104	Rasta	0.20	Forests	Government	0.200	100
120	2605	104	Jungle	3.34	Forests	Government	3.340	100
121	2606	104	Jungle	3.80	Forests	Government	3.800	100
122	2607	104	Jungle	6.12	Forests	Government	6.120	100
123	5548	104	Jala	11.90	Forests	Government	11.900	100
124	5551	104	Jungle	13.30	Forests	Government	13.300	100
125	5552	104	Jungle	1.10	Forests	Government	1.100	100
126	5553	104	Jungle	24.62	Forests	Government	24.620	100
127	5554	104	Jungle	24.82	Forests	Government	24.820	100

Annexure III

This section provides the categorisation of Industries as adopted in the Revised Land Use and Development Control Plan for Sriniketan-Santiniketan Planning Area. Categorisation of Industries is based on Annexure-I of the Annual Report, West Bengal Pollution Control Board (WBPCB), Page 133-141. Selected portion of the source document (i.e. Annexure-I of the Annual Report, WBPCB) has been represented here for easy and quick reference.

The classification of Special Red and Ordinary Red categories have been made only for administrative convenience and power of processing of 'Consent for Establishment' and 'Consent for Operation' are given to different authorities.

The lists of Special Red, Ordinary Red, Orange, Green and Exempted categories of industries are not exhaustive and these are subject to modifications under environmental consideration.

The industry which does not fall under any of the above classes, decision with regard to their classification will be taken by a Committee at Head Office level comprising of Chief Scientist and Senior Environmental Engineers of the Board.

The validity of 'Consent for Operation' of different groups of industries will be as follows:

Green - maximum 5 years

Orange - maximum 3 years

Special & Ordinary Red (except grossly polluting industries)- maximum 2 years

Grossly polluting industries - maximum 1 year

List of Industries under “SPECIAL RED” Category of the West Bengal Pollution Control Board

(Source:<http://web.wbpcb.gov.in/html/annualreps/ar0506/annexures.pdf>, as accessed on 15/02/2016)

1. Acid lead batteries including lead plate casting (more than ten batteries per day)
2. All mining activities including queries
3. Aluminium smelter
4. Asbestos and asbestos-based industries
5. Basic drug & pharmaceutical (excluding formulation)
6. Calcium carbide manufacturing
7. Cast iron foundry
8. Cement (excluding simple grinding)
9. Chemical, petrochemical and electrochemical, manufacture (including distillation) of mineral acids such as Sulphuric acid, Nitric acid, Hydrochloric acid, Phosphoric acid etc. and their salts, manufacture of alum.
10. Chlorates, perchlorates and peroxides
11. Chlorine, fluorine, bromine, iodine and their compounds
13. Coke making, coal liquefaction, coal tar distillation, processing of coal tar distillate or fuel gas making, coke briquetting (excluding sun-drying)
14. Copper smelter
15. Dichromate and chromates & basic chrome sulphate
16. Distillery including fermentation industry (including manufacture of yeast & beer)
17. Dyes and dye-intermediates
18. Electroplating operations
19. Explosives including detonators, fuses etc. & their storage

20. Ferrous & non-ferrous metal extraction (different furnaces & smelting), refining, casting, forging (with coal fired boilers), alloy making etc.
21. Fertilizer (basic) (excluding granulation & formulation only)
22. Glass and ceramics (excluding tile manufacturing)
23. Hazardous waste/bio-medical waste disposal facilities
24. Hydrocyanic acid and its derivatives
25. Incineration plants
26. Industry or process involving metal treatment or process such as pickling, surface coating (excluding spray, manual brush, paint baking, paint stripping), heat treatment (only cyaniding), phosphating, galvanising, anodising etc.
27. Integrated textile mills (processing involving scouring, bleaching, dyeing, printing or any effluent/emission generating process) and dyeing of other fabrics
28. Iron and steel (involving processing from ore / scrap / integrated steel plants) including coke plants and steel products involving use of any of the equipment such as blast furnaces, open hearth furnace, induction furnace or arc furnace etc.
29. Isolated storage of hazardous chemicals (as per schedule of the Manufacture, Storage & Import of Hazardous Chemicals Rules, 1989), etc.
30. Lead smelting, refining and manufacture of its oxides
31. Non-alcoholic beverages (soft drinks) and only bottling of alcoholic products (capital investment on plant & machinery > 1 crore)
32. Oil refinery (Mineral oil or petro-refineries)
33. Paints and varnishes (excluding units with only blending & mixing)
34. Pesticides (including formulation)
35. Petrochemicals (manufacture of and not merely use of as raw material)
36. Phenolic products
37. Phosphorous and its compounds
38. Pigments and intermediates
39. Power plants (including hydel power, thermal power, nuclear power etc.) (excluding diesel generator sets and captive power plant)
40. Power plant (captive)
41. Processes involving chlorinated hydrocarbons
42. Printing or etching of glass sheet using hydrofluoric acid (large scale)
43. Pulp & paper (excluding paper manufacturing by hydropulping and excluding manufacture of straw board, gray board & duplex board)
44. PVC granules from PVC waste
45. Radioactive elements
46. Rolling mill (hot) (coal-fired)
47. Rubber chemicals
48. Ship breaking activity
49. Slaughter houses and meat processing units
50. Sugar
51. Synthetic & natural fiber including rayon, tyre cord, polyester filament yarn & raw woollen, raw silk, cellophane paper, cellulose nitrate
52. Synthetic resins
53. Synthetic rubber
54. Tanneries
55. Vegetable oils & edible oils including solvent extracted oils, hydrogenated oils

List of Industries under “ORDINARY RED” Category of the West Bengal Pollution Control Board

1. Acid slurry (sulphonation)
2. Bitumen processing and products
3. Bone mill
4. Composite woollen mill including dewaxing of raw wool and raw silk
5. Ceramic colour manufacturing (Using boiler)
6. Dairy and dairy products (integrated project, capital investment on plant & machinery > Rs. 1 crore)
7. Dry coal processing/mineral processing industries like ore sintering, pelletization, grinding and pulverisation etc.
8. Earthen potteries & tile manufacturing (involving kiln)
9. Electric lamp (bulb) manufacturing (large scale)
10. Fibre glass and glass wool production
11. Food & food processing including fruits & vegetable processing (with capital investment on plant & machinery > Rs. 1 crore)
12. Glue (excluding glue from starch), gelatine and synthetic adhesives
13. Gold and silver smithy (purification with acid, smelting operation and sulfuric acid polishing operation) (using more than 1 litre of sulphuric acid / nitric acid per month)
14. Health care establishment
15. Handicrafts works like terracotta work
16. Industrial carbon including electrodes and graphite blocks, activated carbon, carbon black
17. Industrial or inorganic gases (excluding medical oxygen)
18. Jute processing with dyeing
19. Lime manufacturing
20. Lubricating oils, greases or petroleum based products (excluding blending at normal temperature)
21. Magnesium sulphate
22. Manufacturing & reprocessing of PVC granules and manufacturing of reprocessed PVC products
23. Manufacturing of silica gel with furnace
24. Manufacturing of toothpowder, toothpaste, talcum powder and other cosmetic items (large & medium scale)
25. Manufacturing of pasted veneers using boiler and thermal fluid heater
26. Manufacturing of umbrella (including manufacturing of metallic handle and sticks)
27. Manufacturing of optical lenses (using furnace other than electric furnace)
28. Photographic films and chemicals
29. Plyboard manufacturing (including veneer & laminate) with coal or waste wood fired boiler / thermal fluid heater (with captive resin manufacturing plant)
30. Processing of animal hoofs, horns and other body parts
31. Reclamation of rubber, manufacture of rubber solution containing mineral naphtha & rubber wastes, rubber based adhesives
32. Refractories
33. Rubber goods industry (with boiler)
34. Shellac processing
35. Spice grinding (> 20 HP motor)
36. Stone crushing
37. Straw board, gray board, duplex board and paper manufacturing by hydropulping
38. Surgical and medical products involving prophylactics and latex
39. Synthetic detergent (excluding formulation) and soap (with steam boiling)
40. Tyres and tubes vulcanization/hot retreading (using coal fired boiler)/moulding
41. Wood charcoal manufacturing and processing

List of Industries under “ORANGE” Category of the West Bengal Pollution Control Board

1. Almirah manufacturing (not permitted in municipal areas of West Bengal)
2. Aluminium and copper extraction from scrap using oil-fired furnace
3. Automobile servicing, repairing and painting (excluding only fuel dispensing)
4. Ayurvedic and homeopathic medicine (with boiler)
5. Bakery & confectionery [(a) with production capacity < 10 tpd with coal & wood fired oven and (b) all units with production capacity 10 tpd]
6. Bleaching of fabrics, yarn
7. Brickfields (excluding fly ash brick manufacturing using lime process)
8. Cashew nut processing
9. Cement grinding (excluding coal fired drier)
10. Chilling plant, cold storage and ice making
11. Chira mill
12. Coffee seed processing
13. Coke briquetting (sun drying)
14. Cotton spinning and weaving (medium and large scale)
15. Dry cell battery (excluding manufacturing of electrodes)
16. Engineering and fabrication units
17. Fire works manufacturing and storage
18. Fish feed and poultry feed
19. Fish processing and packaging (excluding chilling of fish)
20. Foam manufacturing
21. Food & food processing including fruits & vegetable processing (capital investment on plant & machinery > Rs.10 lakhs but < Rs. 1 crore)
22. Forging of ferrous & non-ferrous metal (using oil or gas fired boilers)
23. Gravure printing
24. Grill manufacturing (not permitted in municipal areas of West Bengal)
25. Glass, ceramic, earthen potteries and tile manufacturing using oil or gas fired kiln
26. Hardware manufacturing for computer and other information technology instruments
27. Heat treatment using oil fired furnace (excluding cyaniding)
28. Hotels & restaurants (capital investment on land, building, plant & machinery > 30 lakhs)
29. Housing complexes with more than 100 flats or more than 60000 sq. ft. super built up area
30. Husking mill
31. Ice cream
32. Infrastructure development project with capital investment more than Rs. 5 crores
33. Jute processing without dyeing
34. Manufacture of mirror from sheet glass
35. Organic nutrients (excluding simple mixing)
36. Paint blending & mixing (ball mill)
37. Pharmaceutical formulation (capital investment plant & machinery. Rs. 10 lacs)
38. Plyboard manufacturing (including veneer & laminate) with oil fired boiler/ thermic fluid heater (without resin plant)
39. Poultry, hatchery, piggery (capital investment on land, building, plant & machinery Rs. 10 lacs)
40. Power press
41. Pulverisation of bamboo and scrap wood
42. Printing ink manufacturing
43. Printing or etching of glass sheet using hydrofluoric acid (small scale)
44. Puffed rice (muri) (using husk or coal fired chullah or vatti)
45. Reprocessing of waste plastic (excluding PVC)

46. Rice mill & rice hullers
47. Rolling mill (oil or gas fired) and cold rolling mill
48. Saw mill
49. Silk screen printing
50. Spray painting, paint baking, paint stripping
51. Storage of hides and processing of tallow
52. Synthetic detergents formulation (capital investment on plant & machinery. Rs. 5 lacs)
53. Tea processing
54. Tobacco products including cigarettes and tobacco processing
55. Tyres and tubes vulcanization/hot retreading (using oil or gas fired boiler)
56. Wire drawing (cold process) and bailing straps
57. Wire netting

List of industries under “GREEN” category of the West Bengal pollution control board

1. Acid lead battery (up to ten batteries per day excluding lead plate casting)
2. Aluminium utensils from aluminium circles
3. Assembly of air coolers/conditioners, repairing and servicing
4. Assembly of bicycles, baby carriage and other small non-motorised vehicles
5. Automobile fuel outlet (only dispensing)
6. Ayurvedic and homeopathic medicine (without boiler)
7. Bakery & Confectionery (with production capacity < 10tpd with oil, gas or electrical oven)
8. Block making for printing without foundry (excluding wooden block making)
9. Brass & bell metal utensils manufacturing from circle (without re-rolling facility)
10. Candy
11. Cardboard or corrugated box and paper products (excluding paper or pulp manufacturing and without using boiler)
12. Carpet weaving
13. Cement products like pipe, pillar, jafri, well ring etc. (should be done under closed covered shed to control cement dust spreading)
14. Ceramic colour manufacturing (not using boiler and waste water recycling process)
15. Chilling plant and ice making without use of ammonia
16. Coated electrode manufacturing
17. Colour/black & white studio
18. Compact disc, computer floppy & cassette manufacturing
19. Cotton and woolen hosiery making
20. Cotton spinning & weaving (small-scale)
21. Cutting, sizing and polishing of marble stones
22. Decoration of ceramic cups & plates by electric furnace
23. Dairy and dairy products (small scale) (capital investment on plant & machinery < Rs. 1 crore)
24. Dal mills
25. Diesel generator sets (15 KVA and above) for residential buildings, commercial buildings and healthcare organisation
26. Diesel pump repairing and servicing
27. Distilled water
28. Electric lamp (bulb) manufacturing (small-scale)
29. Electrical & electronic goods manufacturing
30. Electronic equipment assembling
31. Fertiliser (granulation and formulation only)
32. Flour mills (dry process)
33. Fly ash bricks manufacturing (lime process)

34. Food & food processing including fruits & vegetable processing (capital investment on plant & machinery < Rs.10 lakhs)
35. Fountain pen manufacturing
36. Glue from starch
37. Glass, ceramic, earthen potteries and tile manufacturing using electrical kiln or not involving kiln
38. Glass putty and sealant
39. Groundnut decorticating (dry)
40. Gold and silver smithy (purification with acid, smelting operation and sulfuric acid polishing operation) (using less than or equal to 1 litre of sulphuric acid / nitric acid per month)
41. Handloom weaving (without dyeing and bleaching operation)
42. Hotel & restaurants (capital investment land, building, plant & machinery < Rs.30 lakhs) and boarding & lodging house
43. Insulation and other coated papers (excluding paper or pulp manufacturing) manufacturing
44. Jobbing and machining
45. Laboratory-wares
46. Leather cutting and stitching (more than ten machines and using motor)
47. Leather footwear and leather products (excluding tanning and hide processing) (except cottage scale)
48. Lubricating oils, greases or petroleum based products (only blending at normal temperature)
49. Manufacturing of ferrous and non-ferrous metal product without using heat treatment (not generating any effluent or emission)
50. Manufacturing of pasted veneers without using boiler or thermic fluid heater or by sundrying
51. Manufacturing of metal caps and containers
52. Manufacturing of shoe brush and wire brush
53. Manufacturing of toothpowder, toothpaste, talcum powder and other cosmetic items (small scale)
54. Manufacturing of optical lenses (using electrical furnace)
55. Medical oxygen
56. Manufacturing of silica gel (without furnace)
57. Mineralised water
58. Manufacturing of coir items from coconut husk
59. Non-alcoholic beverages (soft drinks) and only bottling of alcoholic products (capital investment on plant & machinery < Rs. 1 crore)
60. Oil mill ghani & extraction (no hydrogenation/refining)
61. Organic and inorganic nutrients (by simple mixing)
62. Paints and varnishes (mixing and blending) (without ball mill)
63. Paper pins and U-clips
64. Pharmaceutical formulation (capital investment on plant & machinery < Rs.10 lakhs)
65. Phenyl manufacturing
66. Polythene & plastic processed products manufacturing (excluding manufacturing & reprocessing of PVC granules and manufacturing of reprocessed PVC products and reprocessing of waste plastic)
67. Poultry, hatchery, piggery (capital investment on land, building, plant & machinery < Rs. 10 lacs)
68. Power looms (without dyeing and bleaching)
69. Printing press
70. Puffed rice (muri) (not using boiler)
71. Rope (cotton & plastic)

72. Rubber goods industry (without boiler)
73. Scientific and mathematical instruments manufacturing
74. Soap manufacturing (without steam boiling)
75. Spice grinding (< 20 HP motor)
76. Steel furniture without spray painting
77. Steeping and processing of grains
78. Supari (Betelnut) grinding
79. Surgical and medical products not involving effluent/emission generating processes
80. Sweet shop
81. Synthetic detergent formulation (capital investment on plant & machinery < Rs. 5 lakhs)
82. Tea garden only
83. Teflon based products
84. Thermocol manufacturing
85. Thermometer making
86. Toys (only electronic & mechanical) manufacturing
87. Transformer repairing/manufacturing (should not be allowed in congested areas)
88. Tyres and tubes retreading (without boiler)
89. Veneer, laminate (without boiler and thermal fluid heater)
90. Washing of used sand by hydraulic discharge
91. Washing, chilling of fish and packaging only
92. Water softening and demineralised plants

List of industries under “EXEMPTED” category of the West Bengal Pollution Control Board

1. Agarbati
2. Assembly of domestic electrical appliances, servicing & repairing
3. Atta chakkis (wheat grinding)
4. Auto emission testing centre
5. Ball pen refill
6. Bamboo and cane products (only dry operation)
7. Biogas plant
8. Black smithy (should not be allowed in congested areas)
9. Book binding
10. Cable TV network
11. Candles manufacturing
12. Carpentry and wooden furniture making (excluding saw mill)
13. Coir manufacturing
14. Cyber café
15. Diesel generator sets (< 15 KVA) sets for residential buildings, commercial buildings and health care organization
16. Gold and silver smithy (excluding purification/ polishing with any acid and smelting operation)
17. Handicraft products like terracotta, conchshell, coconutshell, dokra, cane and bamboo products, baluchari saree, stone carving, wood carving, batik, sola work etc.
18. Handloom weaving (without dyeing & bleaching)
19. Handmade paper
20. Hardware assembling for IT industries
21. Housing complex with 100 flats or less and 60000 sq. ft. super built up area or less
22. Infrastructure development project with capital investment Rs. 5 crores or less
23. Leather cutting and stitching (not more than or equal to ten machines and without using motor)

24. Leather footwear & leather products (excluding tanning & hide processing) (cottage scale only)
25. Manual brass painting
26. Manufacture of steel trunks & suitcases
27. Mushroom plantation and spawn
28. Manufacturing of umbrella (only assembling)
29. Musical instrument manufacturing
30. Optical frames
31. Optical lens manufacturing (without furnace)
32. Photo framing
33. Radio assembling servicing & repairing work
34. Repairing & servicing of bicycles, baby carriage and other non-motorised vehicles
35. Repairing & servicing of electronic equipment
36. Shoelace manufacturing
37. Soap (handmade)
38. Soft toys, wooden toys manufacturing
39. Software development for information & technology industry
40. Sports goods manufacturing
41. Tank calibration centre
42. Tailoring & garment stitching/garment & apparel manufacturing
43. Tea packaging
44. Weigh bridge (not manufacturing)
45. Wooden block making for printing
46. Xerox & photocopying
47. Zari embroidery work

Annexure IV

Registered No. WB/SC-247

No. WB(Part-I)/2008/SAR-365



Extraordinary
Published by Authority

KARTIKA 9]

FRIDAY, OCTOBER 31, 2008

[SAKA 1930

PART I—Orders and Notifications by the Governor of West Bengal, the High Court, Government Treasury, etc.

GOVERNMENT OF WEST BENGAL

Urban Development Department

'NAGARAYAN',

DF-8, Sector-I, Bidhannagar, Kolkata - 700 064.

NOTIFICATION

No. 2255-T&CP/C-2/1C-3/2005(II)

Kolkata, the 27th October, 2008.

In exercise of the power conferred by section 138 of the West Bengal Town and Country (Planning and Development) Act, 1979, the Governor is pleased hereby to make the following rules :-

Rules**1. Short title & commencement :-**

- (1) These rules may be called the West Bengal Town & Country Planning (Development of Township Projects) Rules, 2008.
- (2) They shall come into force on the date of publication in the Official Gazette.

2. Definitions :-

In these rules, unless the context otherwise requires,

- a) "the Act" means the West Bengal Town & Country (Planning & Development) Act, 1979 (West Bengal Act XIII of 1979);
- b) "Additional Open Space" means the areas to be provided in the form of greenery, water bodies etc. to be used as a buffer between zones or used to ensure the desired physical environment;
- c) "Applicant" means owner of the land within the planning area and includes authorised representative of the owner or any body having the right to develop the said land in accordance with law and shall also include the transferee;

- d) "Basic urban infrastructure amenities" includes infrastructure to provide the basic utilities and services like roads and transport system including parking facilities, street lighting, street furniture; power supply and distribution system; telecommunication system; necessary system and facilities for potable water supply, drainage, sewerage and sanitation system; solid waste including bio-medical and e-waste management system; organised open space including landscaping, plantation, urban forestry, rainwater harvesting and other relevant urban services;
- e) "Basic urban infrastructure facilities" includes commercial facility, medical facility, educational facility, recreational facility and other infrastructural facilities like post office, fire fighting station, police station/ outpost and other relevant facilities;

Explanation - For the purpose of this clause,-

- i) 'commercial facility' shall include premises provided for convenient shops to cater the needs of the township dwellers, market of perishable goods and other establishments or institutions or centres in such activities or such services as compatibly carried out or rendered in the residential area or zone;
- ii) 'medical facility' shall include premises provided for in-patient treatment and out-patient health care unit, dispensary or pharmacy or medical stores and physician's chambers, pathological examination and other diagnostic centres, blood bank, shops of medical equipments & instruments and other alike;
- iii) 'educational facility' shall include the premises for pre-preliminary level school to institutions for higher or specialised learning;
- iv) 'recreational facility' shall include premises for outdoor and indoor games and sports, socio-cultural and religious activities;
- f) "Clause" means the clause under the section of the Act;
- g) "Net Project Area" means the Project Area minus the area to be provided for accommodating basic urban infrastructure amenities, basic urban infrastructure facilities and additional open space;
- h) "Project Area" means the total area of the contiguous parcel of land, covering at least forty (40) hectare of land in case of a residential township, thirty (30) hectare of land in case of any special category of township and one hundred (100) hectare of land in case of an integrated township;
- i) "Section" means the section of the Act;
- j) "Town Planner" means a person with requisite qualification, recognised by the Institute of Town Planners, India with Bachelor Degree in Civil Engineering or Architecture or Planning or equivalent.

3. Accessibility :-

- (1) The site of proposed township project shall have an access with a road not less than thirty (30) metres land width (Right of Way), if not abutting an existing road of at least Sub-Arterial category of Road as recommended in Urban Development Plans Formulation and Implementation (UDPFI) guidelines. The land required to develop this access road shall not be included in the project area.
- (2) No internal road within the Project Area shall be of land width less than ten (10) metres.

4. Allocation of Land Area :-

The area to be provided for basic urban infrastructure amenities, basic urban infrastructure facilities and additional open space within the township project shall not be less than the following limit:-

Type of Township	Area for Basic Urban Infrastructure Amenities	Area for Basic Urban Infrastructure Facilities	Additional Open Space
Residential	35% of Project Area	10% of Project Area	nil
Institutional	35 % of Project Area	10% of Project Area	nil
Industrial	35% of Project Area	10% of Project Area	10% of Project Area
Other Special Category	35% of Project Area	10% of Project Area	nil
Integrated	35% of Project Area	10% of Project Area	5% of Project Area

Note :

- (i) In Special Category of township like Information Technology or Information Technology Enabled Services or Health or Sports or alike township, principal use shall be covering at least two-third of the Net Project Area but not exceeding three-fourth of the Net Project Area and at least one-fourth of the Net Project Area shall be used for residential purpose.
- (ii) In Integrated Township at least one-third of the Net Project Area shall be used for residential purpose and at least half of the Net Project Area shall be used for other special purposes like Institutional, Industrial, Commercial Complexes and alike.
- (iii) There shall be provision for economic weaker section and low income group category housing in the township as per the stipulation made by the State Government in this regard.
- (iv) Principal uses shall also include necessary allied activities exclusively associated with the basic purpose like hostel accommodation, staff quarters; specific outdoor and indoor play areas like football ground, gymnasiums etc. and recreational facilities like auditoriums and open air theatres for exclusive use of the institute or industry.
- (v) Adequate provision for residential accommodation for service-population should be considered.

5. Development Control Regulations :-

Development Control Regulations for a Township Project shall conform to the Land Use and Development Control Plan (LUDCP) of the concerned area. The area where no Floor Area Ratio (FAR) in Land Use and Development Control Plan (LUDCP) has been prescribed, the FAR shall not exceed 2.50. The ground coverage shall not exceed 35% of the project area. The area where no LUDCP exists, the Development Control Regulations for Township Project of West Bengal shall be followed.

6. Number of Dwelling Units:-

Every Township shall have at least two hundred (200) dwelling units per hectare of the Net Project Area.

7. Application for Permission for Development of 'Township' Project:-

- 1) Subject to the provision of this rule, the applicant shall apply for permission for development of township project to the concerned Planning and Development Authority in the Form appended to this rule.
- 2) The following particulars and documents shall be submitted along with the application :-
 - a) Detailed Project Report/Master Plan of the Township Project;
 - b) Schedule of Plots within the Project Area;
 - c) Drawings in Quadruplicate -
 - i) An index map on a scale not smaller than 1:10000;
 - ii) Site plan of the Project Area with peripheral dimension showing the surrounding area and the existing access or accesses to the Project Area on a scale not smaller than 1:4000;

- iii) Layout plan of the Project Area on a scale not smaller than 1:1000 showing the use specific location of area to be provided for basic urban infrastructure amenities, basic urban infrastructure facilities and additional open space including the schedule of areas of the proposed uses, clearly delineating the different use-zones as far as possible by means of colour, letters and explanatory notes or in some other convenient manner illustrated in the plan;
- iv) Off site infrastructure;
- v) Development phasing with project completion schedule;
- vi) Public Transport Linkage Plan;
- vii) Details of proposed land showing the contours;
- viii) Rehabilitation & Resettlement Plan, if required;
- ix) A detailed plan of all proposed development work showing the plan, section and elevation on a scale not smaller than 1:100;
- x) Environmental Impact Assessment report;
- d) No objection certificate from relevant agencies and appropriate authorities or authorised persons like West Bengal Fire Services, West Bengal Pollution Control Board, Structural Engineer, Geo-Technical Engineer etc;
- e) An extract of record of rights or property register card or any other relevant document showing ownership of land proposed to be specified;
- f) The Authority may also call from the applicant in writing any further information that may be required for the purpose of considering the application;
- g) The Site Plan and Layout plan shall be prepared by a Town Planner and the detailed plan of all proposed development works shall be prepared by a registered Architect or Civil Engineer.
- 3) The Planning or Development Authority may also allow the applicant to submit a proposal for development of a township project with pertinent drawings and documents for provisional permission even prior to application in prescribed format. After scrutiny of the said drawing and documents, the concerned Authority, if satisfied in principle with the proposal, may issue an interim permission valid for a period not exceeding one (1) year, provided the applicant pays at the rate of Rs 5000.00 (Rupees five thousand) per hectare of the Project Area as processing charge.

8. Time-limit for completion of Township Project:-

The Applicant shall complete the development work in at least one-third of the project area to make it operational within a span of five (5) years from the date of receipt of formal permission from the concerned Authority.

By order of the Governor,

P. K. PRADHAN,
Principal Secretary to the Government of West Bengal.

Application Form

(See Rule 7)

[Application for permission for carrying out any "Township Project" under section 46 of the West Bengal Town and Country (Planning and Development) Act, 1979]

From :

Name :

Address

.....

To

ThePlanning Authority/Development Authority.

Sir,

I intend to develop a "Township" project covering hectare of land under the jurisdiction of Municipal Corporation/ Municipality/ Gram Panchayat covering Mouza or Mouzas with JL No.(s) accessible from or abutting the existing road named under Police Station, in accordance with the provisions of section 46 of the West Bengal Town and Country (Planning and Development) Act, 1979 and rule 7 of the West Bengal Town & Country Planning (Development of Township) Rules, 2008.

Following Documents and Drawings in quadruplicate are submitted herewith for consideration of the proposal:

- i)
- ii)
- iii)
- iv)

I request that the proposed development may be approved and that permission may be accorded to carry out the Township Project.

Signature of the Town Planner

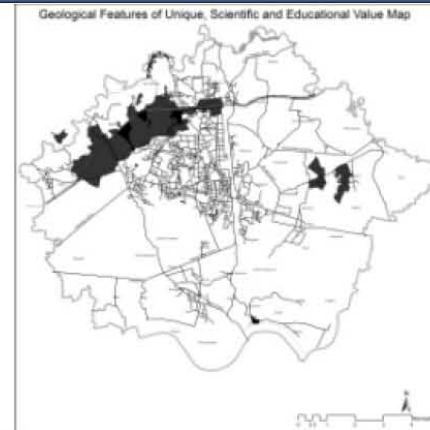
Signature of the Applicant.

APPENDIX

APPENDIX I

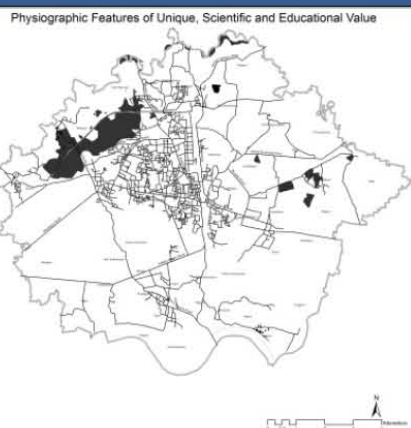
Maps corresponding to seven different Attribute layers are prepared according to phenomena scores which are represented on a five point Likert-scale. The first six attributes of Geology, Physiography, Hydrology, Pedology, Vegetation and Wildlife fall under the category of “Ecological Factor” whilst the seventh attribute, “Landuse” falls under “Cultural and Historical Factor”. The criterion of scoring varies amongst different evaluation factors as listed in Table 8.1.

G E O L O G Y

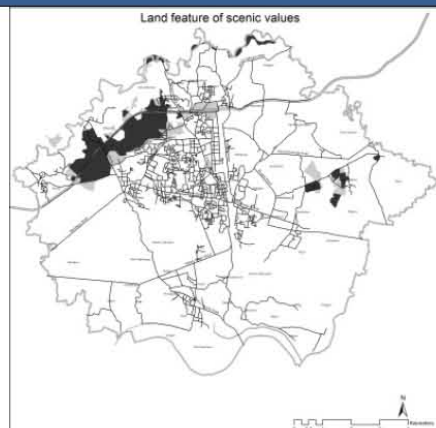


Factor 1.1

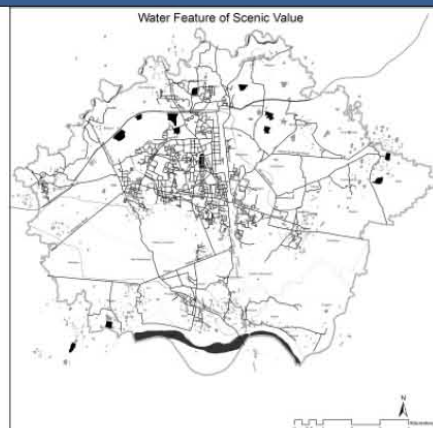
P H Y S I O G R A P H Y



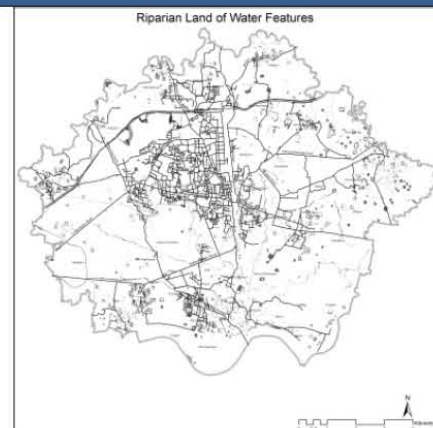
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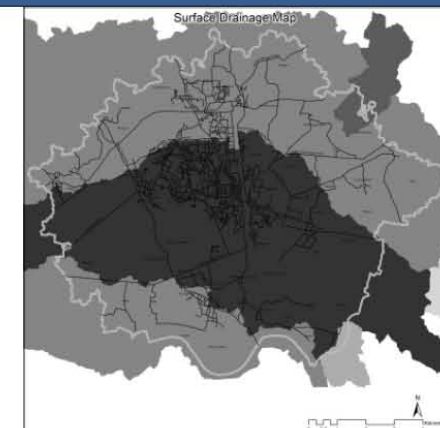
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Factor 2.3

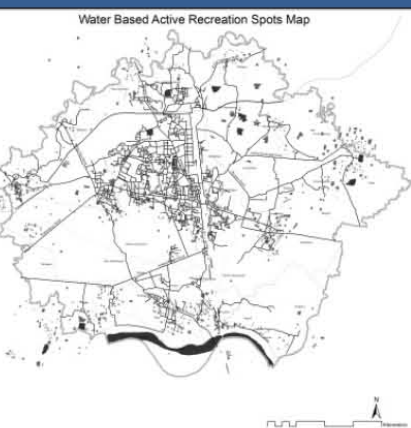


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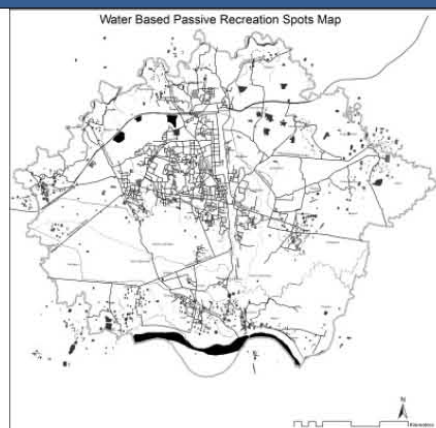


Factor 2.5

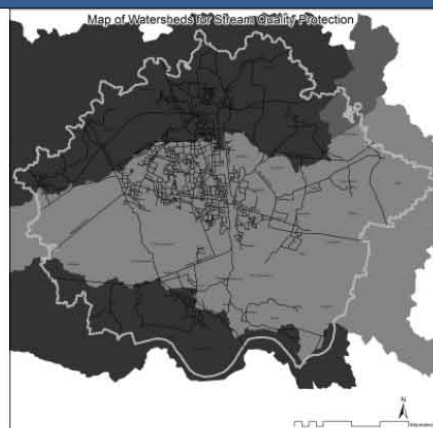
H Y D R O L O G Y



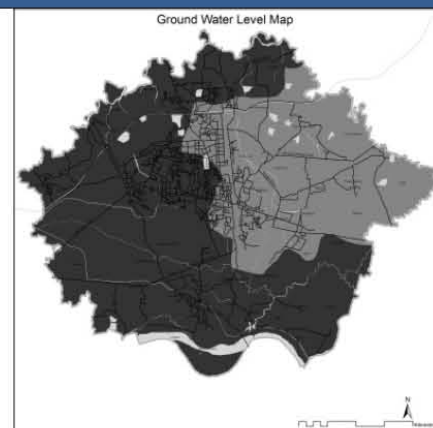
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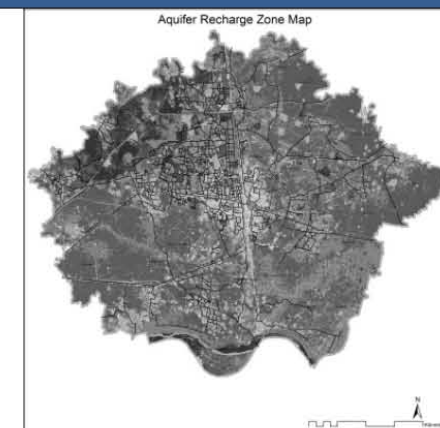
Factor 3.1b



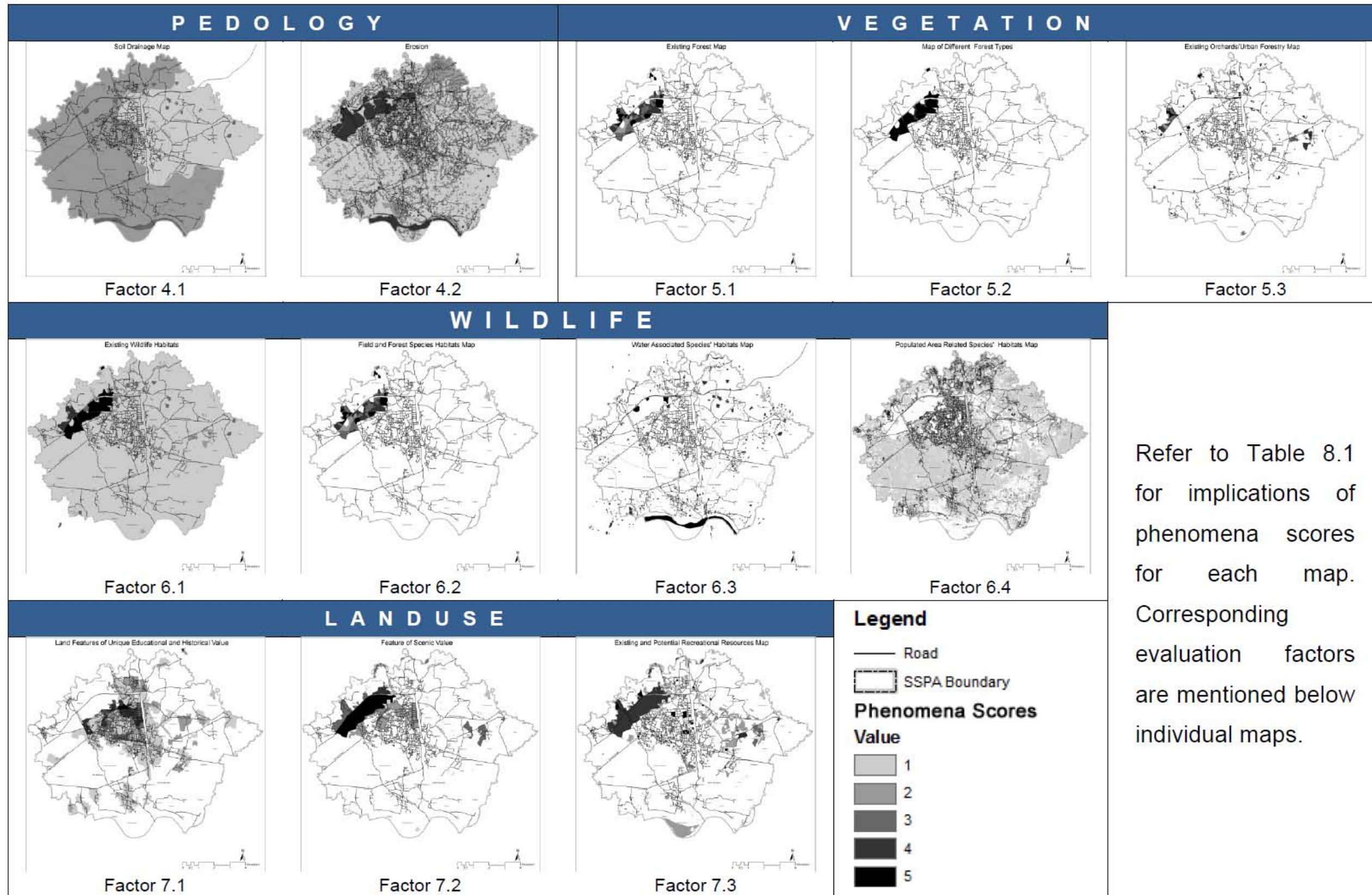
Factor 3.2




Factor 3.3






Factor 3.4



APPENDIX II


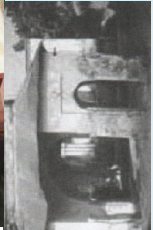

List of other heritage buildings within SSPA....Continued										
Sl. No.	Name	Image	Functions	Location	Ownership	Status	State of Preservation	Date	Classification	Materials
1	Kalisayar Kali Temple		Religious	Sriniketan	Private	Unprotected	Good	Late 19th Century	Built	Brick & Cement Plastering
2	Barabari		Residential	Surul	Private	Unprotected	Serious deterioration	AD 1730	Built	Brick & Surki
3	Barabari Durga Mandir		Religious	Surul	Private	Unprotected	Fair	AD 1960	Built	Brick & Cement Mortar
4	Indu Bhawan		Residential	Surul	Private	Unprotected	Fair	AD 1960	Built	Brick & Cement Mortar




List of other heritage buildings within SSPA....Continued										
Sl. No.	Name	Image	Functions	Location	Ownership	Status	State of Preservation	Date	Classification	Materials
5	Laxmi - Janardan Pancharatna Mandir		Religious	Surul	Private	Unprotected	Fair	AD 1805	Built	Brick & Mortar
6	Jora Shiva Mandir		Religious	Surul	Private	Unprotected	Fair	AD 1805	Built	Brick & Mortar
7	Suroteswar Temple		Religious	Suroteswar	Public ¹	Unprotected	Fair	AD 1108 ²	Built	Brick, Mortar & Cement Plastering
1 - Committee comprising of members from four surrounding villages viz. Raipur, Mirzapur, Supur, Rajatpur										
2 - Repaired in AD 1934										

List of other heritage buildings within SSPA.....Continued										
Sl. No.	Name	Image	Functions	Location	Ownership	Status	State of Preservation	Date	Classification	Materials
8	Visvesvara Shiva Temple		Religious	Supur village	Private	Unprotected	Deteriorating	AD 1717	Built	Brick, Mortar & Lime Plastering
9	Shiva Temple		Religious	Supur village	Private	Protected ³	Fair	AD 1717	Built	Brick, Mortar & Lime Plastering
10	Raipur Durga Mandir		Religious	Raipur village	Private	Unprotected	Not satisfactory	First Decade of 19th Century	Built	Brick, Mortar & Cement Plastering
11	Rajbari		Residential	Raipur village	Private	Unprotected	Serious deterioration	AD 1772	Built	Brick, Mortar & Cement Plastering

3 - Protected by Dept. of Archaeology, West Bengal

List of other heritage buildings within SSPA....Continued										
No.	Name	Image	Functions	Location	Ownership	Status	State of Preservation	Date	Classification	Materials
12	Narayan Mandir		Religious	Raipur village	Private	Unprotected	Not satisfactory	AD 1812-13	Built	Brick, Mortar & Cement Plastering
13	Shiva Temple		Religious	Mirzapur	Private	Unprotected	Serious deterioration	AD 1750	Built	Brick, Mortar & Lime Plastering
14	Shiva Mandir		Religious	Mulluk village	Private	Unprotected	Fair	AD 1750	Built	Brick, Mortar & Cement Plastering
15	Shri Shri Ramkanai Mandir		Religious	Mulluk village	Private	Unprotected	Good	AD 1750	Built	Brick, Mortar, Cement Plastering & Mosaic Finishing

List of other heritage buildings within SSPA.....Continued										
Sl. No.	Name	Image	Functions	Location	Ownership	Status	State of Preservation	Date	Classification	Materials
16	Rudreshwar Shiva Temple		Religious	Adityapur village	Private	Unprotected	Good	AD 1739	Built	Brick, Mortar & Lime Plastering
17	Kalachand Temple		Religious	Kankutia	Private	Unprotected	Signs of deterioration	AD 1500	Built	Brick, Mortar & Lime Plastering
18	Kali Temple		Religious	Kankalitola village	Public (Trust)	Unprotected	Good	Undefined	Built	Brick & Cement Plastering

List of other heritage buildings within SSPA....Continued										
Sl. No.	Name	Image	Functions	Location	Ownership	Status	State of Preservation	Date	Classification	Materials
19	Shiva and Narayan Temple		Religious	Adityapur village	Private	Unprotected	Fair	AD 1739	Built	Brick, Mortar & Cement Plastering
20	Shiva Temple		Religious	Shian village	Private	Unprotected	Fair	Late 17th Century	Built	Brick, Mortar & Lime Plastering
21	Pirbaba Makdhum Saheb		Religious	Shian village	Public	Unprotected	Good	AD 1220	Built	Brick & Lime Plastering

Source: Monuments Around Santiniketan (INTACH Santiniketan Chapter), Shubhi Publication, Gurgaon, India.