পঞ্জীভুক্ত নম্বৰ - ৭৬৮ /৯৭ Registered No.-768/97

অসম ৰাজপত্ৰ

সত্যমেব জয়তে

THE ASSAM GAZETTE

অসাধাৰণ

EXTRAORDINARY

প্ৰাপ্ত কৰ্ত্তৃত্বৰ দ্বাৰা প্ৰকাশিত

PUBLISHED BY THE AUTHORITY

নং 267 দিশপুৰ, মঙ্গলবাৰ, 6 মে', 2025, 16 ব'হাগ, 1947 (শক)

No. 267 Dispur, Tuesday, 6th May, 2025, 16th Vaisakha 1947 (S. E.)

GOVERNMENT OF ASSAM

ORDERS BY THE GOVERNOR

DEPARTMENT OF HOUSING & URBAN AFFAIRS

NOTIFICATION

The 18th November, 2024

DoHUA EcF No. 393727/171.- In exercise of the powers conferred by the Sub- Section (2) and (3) of Section 10 of the Assam Town and Country Planning Act, 1959 (as amended) read with Rule 6 of the Assam Town & Country Planning (Publication of Master Plan and Zoning Regulation) Rules, 1962, the Governor of Assam is pleased to publish the following notice regarding the publication of the Final Master Plan for Lumding.

Notice for publication of the Final Master Plan for Lumding

1. It is notified that the Final Master Plan for Lumding is prepared by the Directorate of Town & Country Planning, Government of Assam and adopted by the State Government under sub section (2) and (3) of Section 10 of the Assam Town & Country Planning Act, 1959 (as amended) read with Section 6 of the Assam Town and Country Planning (Amendment) Rule, 1962 for the area described in the schedule below, is hereby published.
2. The Final Master Plan for Lumding with all relevant papers and maps may be inspected free of cost during the office hours at the office of Director, Town & Country Planning, Dispur, Guwahati-6, the Deputy Director, Town & Country Planning, Dist Office –Nagaon, the Circle Office , Lanka Revenue Circle, Lanka, office of the Chairman, Lumding Municipal Board, Lumding. Copies of the Final Master Plan for Lumding are available at the office of the Deputy Director, Town & Country Planning, Dist Office – Nagaon for sale on payment.

SCHEDULE

A. Situation and area:

District : Hojai

Sub- division : Hojai

State : Assam.

Lumding Master Plan Area : 19.68 Sq. Km.

Lumding Municipal Board Area : 4.53 Sq. Km.

Railway Colony Area : 3.16 Sq. Km.

Apart from the Lumding Municipal Board and Lumding Railway Colony Area, Lumding Master Plan area covers 7 (Seven) Nos. of nearby villages. The Towns & Villages included in the Final Master Plan for Lumding with Mouzas/ Revenue Circle etc. are as follows: -

Sl. No.	Mouza	Revenue Circle	Area	G.P. /MB	C.D. Block
Part-I	Lumding	Lanka Revenue Circle	**URBAN**		
			Lumding Municipal Board& Railway Colony	Municipal Board	
			RURAL		
Part-II			1. Mora Basti	Pub Lumding	Lumding
			2. Jarang Disha	Pachim Laumding	Lumding
			3. Dakhin Lumding	Dakhin Lumding	Lumding
			4. Pub Lumding	Pub Lumding	Lumding
			5. Kangar gaon	Dakhin Lumding	Lumding
			6. Sadhu Khuti	Pachim Lumding	Lumding
			7. Hati Khuli	Pachim Lumding	Lumding

B. Description of boundaries:

NORTH : Garo-Basti
SOUTH : Krishna-Basti
EAST : Christian Basti-Taralanngso
WEST : Shastri Gaon

KAVITHA PADMANABHAN,
Commissioner & Secretary to the Government of Assam,
Department of Housing & Urban Affairs.

CHAPTER - 1
INTRODUCTION TO MASTER PLAN AREA

Lumding is a part of Central Assam District of Hojai. Lumding is located about 45 Kms on the North of District Headquarter Sankardev Nagar. It is located 206 Kms east of the State Capital, Dispur, Assam, 98 Kms towards South of Nagaon Town and 54 Kms from IIojai Town. Lumding is mainly a Railway Township.

Lumding is connected by NH 27 four-lane, which starts at Porbandar, Gujarat ends at Silchar (6 hrs. journey) via Lumding. Guwahati (2.5 hrs. journey) connected near Borghat Roundabout which is 5 km apart from Nagaon Sadar. State Highway 329 connects Lumding to Diphu (District Headquarter of Karbi Ang Long East) up to Manja.

Lumding railway division is famous for being the biggest divisional headquarters of the Northeast Frontier Railway and the biggest junction in the North-Eastern part of the country. The town is also the gateway to the visually enchanting Lumding-Badarpur hill-tract between Lumding and Badarpur. The track has been included as a UNESCO World Heritage Site.

Initially, Lumding Town Committee was formed on 03/05/1985 and by election the Town Committee was upgraded to Municipal Board w.e.f. 01/06/1995 under the Chairmanship of Lumding Municipal Board.

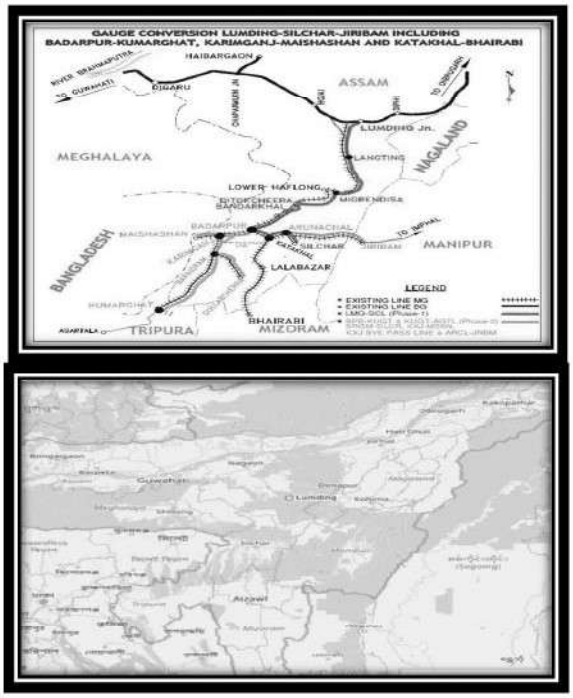
The demarcation of the planning area of Lumding has been made considering the present growth of the town , the physical feature of the surrounding areas, communication network, different type of developmental works already come up in nearby villages and potential for future development of the region. The town has been growing towards Lumding – Haflong-Maibong Road, in NH-27.

As of 2011 Census of India, Lumding Municipal Board Area has a population of 31,347 of which male population is 15,909 and female population is 15,435 while Lumding Railway Colony has a population of 22,658 over a household of 5425 household.

It was observed that Lumding town area has been growing haphazardly and this has created enormous problems to the habitant of the town. In this context, "Final Master Plan Lumding 2045 is prepared to guide the physical development of the town with some surrounding villages in future. This plan is prepared, basically a land use plan considering all the urban development aspects, with forecasting all the service up to 2045. By and large, this Master plan has been prepared as per the provision of URBAN DEVELOPMENT PLANS, FORMULATION AND IMPLEMENTATION, GUIDELINES, 1996 prepared by the INSTITUTE OF TOWN PLANNERS, INDIA NEW DELHI under the assistance of the Ministry of Urban Affairs and Employment, Govt. of India, New Delhi and Circular issued by U.D.D (T &CP Wing) ,Govt. of Assam time to time. Uniform Zoning Regulations are considered as it is already approved for all the towns of Assam including Lumding Town by the Govt. of Assam.

1.1 LOCATION:

Lumding is a town in Hojai District of Assam, It is located at **Latitude** 25.7516" N and **Longitude** 93.1729" E. It serves as a trade and commerce hub for nearby areas such as Diphu, Maibong, Haflong and Mahur. It is connected to other cities/states such as Guwahati by NH 27.



Location of Lumding Town

1.2 BRIEF HISTORICAL DEVELOPMENT OF LUMDING:

The word 'Lumding' owes its roots to a couple of Dimasa words 'Lama' and 'Ding' connoting 'straight pathway'. The word Lumding is also believed to be from karbi words 'loom' means the 'water from cloud' and 'ding' meaning 'scarcity or Nil'. There's another Railway station adjacent to it with the same root word "Lama" (Path), it is Lama sakhong (Valley of the small pathways) which is just a few kilometres away from Lumding.

Over the years Lumding has developed into township. The railway township had always enjoyed scant rainfall during the rainy season every year, although the trend has significantly altered over the past few decades. Also Lumding was used as a radar station during World War II by British.

Lumding Junction is an important railway junction and railway division in the Northeast Frontier Railway as it connects Tripura to Assam. It used to have both metre gauge and broad gauge. The BG line is of Guwahati–Lumding–Dibrugarh Town and the MG line was

the Lumding–Sabroom section. Now BG line is made from Silchar/Sabroom via Lumding to Kolkata as new constructions. MG lines are now completely replaced with BG.

1.3 CLIMATE:

Hills of Lumding puts it to a notable altitude from the sea level, but summers here can burn you up to 34 °C and the winters can be as chilling as 11 °C with fog and mist intervening in the early hours of the day. Monsoon is a notable season here, with rainfall around 915.44 mm at an average. But its hills and altitude prevents any flooding in the region during heavy monsoon.

Climate here is favorable for vegetation and agriculture of tropical fruits and vegetables. Fruits like coconuts, pineapple, jack-fruit, papaya, banana are grown here. Cucumber, potatoes, cabbages and other green vegetables are common agricultural vegetables here.

The climate of the Hojai district as well as Lumding town is characterized by a highly humid atmosphere all through the year. The monsoon starts from the month of May and continues up to August. The winter is cool and starts from November and continues up to February. Generally weather is dry. The maximum and minimum temperature varies from 34 Degree C (Max.) 11 Degree C (Min). The maximum rain occurs between July to September and average annual rainfall of Lumding is 915.44 MM.

Table 1: Climatic condition of Lanka

SL.No.	Parameter	Description
1.	Temperature	34 Degree C (Max) 11 Degree C (Min)
2.	Extreme months	May in Summer and December in Winter
3.	Coldest month of the Year	December
4	Humidity	91 % (Max)
5	Rainfall	915.44 MM (Annually)
6	Monsoon Period	24 rainy Days
7.	Winter Season	November to February

1.4 TOPOGRAPHY:

The topography within 2 miles of Lumding Railway Colony contains only modest variations in elevation, with a maximum elevation change of 404 feet and an average elevation above sea level of 481 feet. Within 10 miles contains only modest variations in elevation (1,480 feet).

The Town is growing mainly towards Nagaon National Highway-27. Harulongpher Shitalabari, traditional temple of Honda bengali community, attracts more people during the festival when people offer their prayer.

1.5 CITY INFLUENCE AND ITS CHARACTERISTICS INCLUDING SETTLEMENT PATTERN, RURAL-URBAN SCENARIO, HISTORY OF THE PHYSICAL GROWTH AND EXPANSION OF LUMDING TOWN:

Rural-Urban fringe is an important concept in settlement geography. The rural-urban fringe is the boundary zone outside the urban area proper where rural and urban land uses intermix. It is the area where the city meets the countryside. It is an area of transition from agricultural and other rural land uses to urban use. Located well within the urban sphere of influence the fringe is characterized by a wide variety of land use including dormitory settlements housing middle-income commuters who work in the central urban area. Over time the characteristics of the fringe change from largely rural to largely urban. Suburbanization takes place at the municipal boundary of rural-urban fringe.

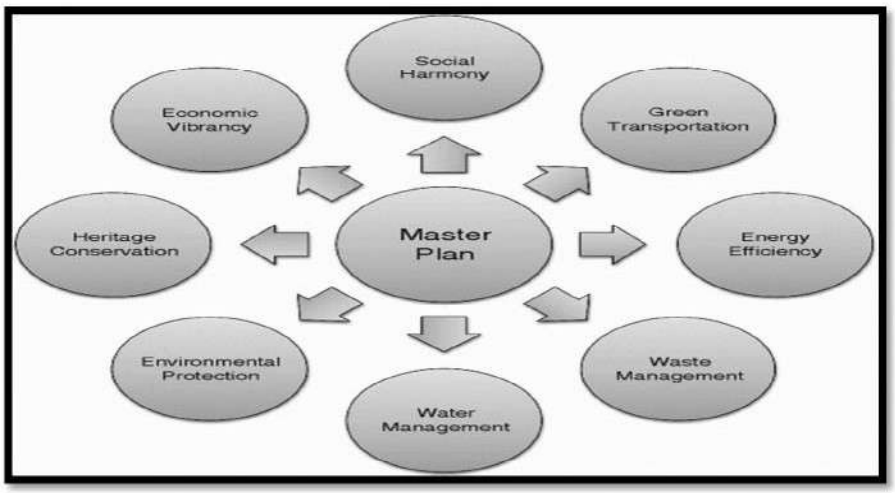
Lumding is the biggest and most important railway junction of the North-eastern Frontier Railway commonly known as NFR. It is also the biggest railway division of NFR as well as the best Railway Township. Like all the other places of North-East,

Lumding is a place of multi-Ethnicity. Most of the people are multi-lingual, although majority of the people are migrated Bengali, the main spoken languages are Bengali, Assamese, Hindi & English besides Nepali, Karbi and Nagamese. It's a small railway township, always bustling with new vigor. The economy is based on the service sector and the main contributors are railway employees residing in the several tiny colonies. The main hindrance to the development is the lack of industry, which in turn increases the magnitude of un-employment. But, it is trying hard to cope up with the pace of rapid modernization of visual media.

Lumding a Railway township having nearly 50,000 populations consists mainly Bengali Hindu migrants from erstwhile East Pakistan who crosses border during the 1971 Indo-Pak war that ultimately led to the creation of Bangladesh. There are substantial Assamese population followed by Nepali, Karbi, and Dimasa Populations. It was one of the townships founded by British Raj during the colonial rule in Assam. It is a strategically important place as it is sandwiched between the sensitive two parts of the Karbi-Anglong District. Lumding was one of the places where substantial British presence was there to protect their interests in opium cultivation in Assam, its transportation to Ghazipur for refinement and further processing which were finally exported to China through this route once famous as "LEDO ROAD" or Stillwell Road.

1.6 CONCEPT OF MASTER PLAN:

A master plan is a dynamic long-term planning document that provides a conceptual layout to guide future growth and development. Master planning is about making the connection between buildings, social settings, and their surrounding environments. A master plan includes analysis, recommendations, and proposals for a site's population, economy, housing, transportation, community facilities, and land use. It is based on public input, surveys, planning initiatives, existing development, physical characteristics, and social and economic conditions.



1.7. MASTER PLANNING CAN ASSUME SOME OR ALL OF THESE ROLES:

Develop a phasing and implementation schedule and identify priorities for action:

- Act as a framework for regeneration and attract private sector investment.
- Conceptualize and shape the three-dimensional urban environment.
- Define public, semiprivate, and private spaces and public amenities.
- Determine the mix of uses and their physical relationship.
- Engage the local community and act as builder of consensus.

As city regeneration initiatives are generally long-term propositions, it is important to consider the master plan as a dynamic document that can be altered based on changing project conditions over time

Master plans can have an important role in determining the shape of the urban environment. If not well conceived, they can lead to problems in the future. All of these issues could have been addressed well in advance as part of the master plan.

The proposals for development should be environmentally sustainable. Master Plan is based on inclusive planning. It considers all sections of people in society in development proposals and focuses on affordability. Master plan gives restrictions on ecologically sensitive areas, on heritage sites and traditional built up areas and gives special norms for these places. Master Plan leads to a balanced growth of the city. It prevents concentration of a particular activity at

one place and takes into account efficient distribution of facilities, infrastructure, networks and housing and follows neighborhood concept of development.

1.8 NEED OF A MASTER PLAN FOR LUMDING TOWN:

A master plan or a development plan or a town plan may be defined as a general plan for the future layout of a city showing both the existing and proposed Land use plan. A master plan is prepared either for improvement of an old city or for a new town to be developed on a virgin soil. A master plan is a blueprint for the future. It is a comprehensive document, long-range in its view; that is intended to guide development in the township for the next 20 to 25 years.

It helps in restricting the haphazard and unplanned growth, arranges the pattern of a town in such a way so as to satisfy the present requirements without introduction of future improvements by the coming generations. It also aims at intelligent and economic spending of the public funds for achieving welfare of the inhabitants in respect of amenity, convenience and health.

On the other hand Master Plan also serves as a guide to the planning body for making any recommendations for public improvement. It removes the defects of uncoordinated physical growth of the various components of a town due to the fact that it considers the entire city area or town as planning and development entity.

To check the haphazard and unplanned growth of the town which have come up due to over-crowding of population such as acute shortage of houses, traffic congestion, inadequate open spaces and insufficiency in public amenities etc, to incorporate the unforeseen development and arranges the pattern of township have led to the thinking of Preparation of GIS based Master Plan for Lumding town.

1.9 LUMDING AS A URBAN LOCAL BODY:

Lumding Municipal Board: - Lumding Town Committee was formed in the year 1985, and then it was upgraded to Lumding Municipal Board in 01/06/1995 and awarded to Lumding Town by the Government of Assam to establish a Municipal Board for providing the basic infrastructure facilities to the inhabitants of the town. The Town Committee was established and run-in accordance with the provisions laid down in the Assam Municipal Act of 1956. Lumding town comes under the Administration of Lumding Municipal Board with 13 Nos. of wards in the town.

Total area of Lumding Municipal Board is 4.53 sq. km and Railway Colony area is 3.26 comprising Lumding Urban Area which is 7.69 Sq. Km. The 70% area of Lumding town is Railway land with total road length of 72 Km. Lumding Municipal Board consists of the

Chairman, Vice-Chairman and wards commissioners who are elected representatives of the 13 nos. of wards. The Chairman is the head of the Administration and presides over the meetings of the board. The Executive Officer oversees and administers the plan and execution of the day-to-day activities of the board. Lumding Municipal Board is basically entrusted with the maintenance of roads and drainage system, streets lights, public health facilities and medical, water supply to the inhabitants in the Municipal boundaries in collaboration with PHE Department.

Lumding Municipal Board also maintains recreational parks, libraries, community halls and municipal markets. Lumding Municipality Boards has various sources of revenue collection and also receive annual grants from the Government. It levies taxes on holdings, rickshaws, carts, cycles, stalls, open spaces, markets and receives taxes on houses, land, water and sanitation. Railway department is also provided basic services in colony area.

Office of the Lumding Municipal Board

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CHAPTER - 2
DEMOGRAPHY

The scientific or more specifically statistical study of population, its size, density, distribution and growth are known as demography. The study of population and its relating characteristics are the basic factor for long range planning works in a town or a city. The study of change in the population and its distribution and composition are also enabling to force the growth of the urban area. The important demographic aspects like housing facilities, urban infrastructure development both for present and future should be thoroughly studied during the preparation of any development plan.

An analysis of demographic features like growth of population, its distribution & composition etc. is absolutely necessary to assess the various civic needs like housing facilities, urban infrastructure and other basic services and the amenities. These important aspects of demography both present and future have been thoroughly studied at the time of preparation of Lumding Master Plan.

2.1 Lumding Municipal Areas Population, Religion, Caste, Working Data Hojai, District, Assam - Census 2011

Lumding is a Municipal Board city situated in Lanka circle of Hojai district. The Lumding city is divided into 13 wards for which elections are held every 5 years. As per the Population Census 2011, there are total 6779 families residing in the Lumding city. The total population of Lumding is 31,347 out of which 15,909 are males and 15,438 are females thus the Average Sex Ratio of Lumding is 970.

The population of Children of age 0-6 years in Lumding city is 2547 which is 8% of the total population. There are 1281 male children and 1266 female children between the age 0-6 years. Thus as per the Census 2011 the Child Sex Ratio of Lumding is 988 which is greater than Average Sex Ratio 962 of the state of Assam.

As per the Census 2011, the literacy rate of Lumding is 91.9%. Thus Lumding has higher literacy rate compared to 72.4% of Hojai district and 72.19% of the state of Assam. The male literacy rate is 91.2% and the female literacy rate is 82.28% in Lumding

Lumding Municipal Board has total administration over 6779 houses to which it supplies basic amenities such as water and sewerage. It is also authorize to build roads within Municipal Board limits and impose taxes on properties coming under its jurisdiction.

2.2 Lumding Municipal Board

As per the Population Census 2011 data, following are some quick facts about Lumding Municipal Board.

Table 2- Some Demographic Data of Lumding Municipal Area

	Total	Male	Female
Children	2547	1281	1266
Literacy	91.92 %	94.45 %	89.31%
SC	1706 (19%)	899	807
ST	147 (0.46)	80	67
Illiterate	4874	2093	2781

Source: Census of India

2.3 Caste-wise Population – Lumding Municipal Areas

Schedule Caste (SC) constitutes 19.52% while Schedule Tribe (ST) was 0.46% of total population in Lumding.

Table 3- Caste-wise population of Lumding Municipal Board area

	Total	Male	Female
Scheduled Caste	6116	3241	2875
Scheduled Tribe	144	80	64

Source: Census of India

2.4 Religion-wise Population – Lumding Municipal Areas

As per the Census 2011, the total Hindu population in Lumding is 30479 which are 97.23% of the total population. Also the total Muslim population in Lumding is 455 which is 1.15 % of the total population. Below is religion-wise population of Lumding as per Census 2011.

Table 4- Religion-wise population of Lumding Municipal Area

Religion	Total		Male	Female
Hindu	30,479	97 %	15,462	15,017
Muslim	455	1.45 %	245	210
Christian	127	0.41 %	65	62
Sikh	81	0.26 %	42	39
Buddhist	123	0.39 %	56	67
Jain	62	0.20%	31	31
Other Religion	0	0%	0	0
No Religion Specified	20	0.06 %	8	12

Source: Census of India

2.5 Sex Ratio – Lumding Municipal Areas

The Sex Ratio of Lumding is 970. Thus per every 1000 men there were 970 females in Lumding. Also, as per Census 2011, the Child Sex Ration was 988 which is greater than Average Sex Ratio 962 of the state of Assam.

2.6 Lumding Municipal Areas Wards Wise Population

A ward is a local authority area, typically used for electoral purposes. Lumding is further divided into 13 wards where elections are held every 5 years.

Table-5 Ward-wise population of Lumding Municipal Board Area

SL No	Ward	Population	Literacy	Sex Ratio	Area
1	Ward No 1	3802	84.03 %	983	
2	Ward No 2	2938	88.97 %	970	
3	Ward No 3	4058	82.16 %	988	
4	Ward No 4	2574	82.94 %	919	
5	Ward No 5	2880	85.10%	1008	
6	Ward No 6	776	90.46%	1000	
7	Ward No 7	1646	80.86%	978	
8	Ward No 8	2189	87.03%	958	
9	Ward No 9	1202	87.02%	1007	
10	Ward No 10	1598	85.79%	1010	
11	Ward No 11	2777	81.74%	958	
12	Ward No 12	797	83.90%	10811	
13	Ward No 13	4110	83.25%	910	
		31,347	**91.9 %**	**970**	
	Railway Colony (CT)	**22,658**	**90.0%**	**967**	
	URBAN POPULATION	**54,005**	**91.3 %**	**969**	

Source: Census of India

2.7 GROWTH OF POPULATION:

To better understand the trend of growth of population within Lumding Master Plan Area, population had been calculated from the year 1951 Census. The population of Lumding town as per 1951is 15,278 and it has increased to 25,263 in 2001 and 31,347 in 2011 as per census of India. The population of Lumding Master Plan area shows a steady growth. Following table shows the growth of population of Lumding Town as well as the rural area.

Table 6-Trend of Population Growth in Lumding Master Plan Area from 1951 to 2011

Year	Lumding MB Popn	Growth Rate	Lumding MP Population excluding Lumding MB Population	Growth Rate	Lumding MP Population Total	Growth Rate	
1951	15278	---	925	---	16203	---	
1961	23186	51.76	2302	148.86	25488	57.30	
1971	29253	26.17	4717	104.91	33970	33.28	
1991	46129	57.69	8229	74.45	54358	60.02	**20 Years growth rate**
2001	50570	9.63	16414	99.47	66984	23.23	
2011	54005	6.79	17694	7.80	71699	7.04	

Source: Census of India and T&CP Nagaon Survey Team Compilation

2.8 POPULATION CHARACTERISTICS:

Table 7- Existing Population of Lumding Master Plan Area as per 2011 census

Sl. No.	Master Plan Area 2045	Population (2011)	P.C (%)
	URBAN		
1	Lumding Municipal Area (13 wards)	31, 347	75.32
	Lumding Railway Colony (CT)	22, 658	
	RURAL	**54,005**	
2.	7 Villages	17, 694	24.68
	URBAN + RURAL	**71,699**	

Source: Census of India

The total population of Lumding Master Plan area as per 2011 census is 71,699 out of which 36,372 male and 35,026 female i. e. 75.32% within municipality area covering 13 Nos. of wards, Railway Colony area and rural area population. Village area population covers only 24.68 % of the Master Plan Area which is 17,694 persons.

Table 8: Village Wise Population and occupied residential houses of Lumding M.P. Area as per Census, 2011

Sl. No.	Name of the Village	Area in Sq. Km	Total House holds	Total Population of Village	Total Male Population of Village	Total Female Population of Village	Total Scheduled Castes Population of Village	Total Scheduled Tribes Population of Village
1	Lumding MB	**4.53**	6779	31347	15909	15438	1706	147
	Lumding Railway Colony (CT)	**3.16**	5425	22658	11517	11141	4269	766
	URBAN AREA	**7.69**	**12204**	**54005**	**27426**	**26579**	**5975**	**913**
1	Mora Basti	**1.36**	299	1458	594	563	565	0
2	Sadhukhuti	**1.03**	178	941	494	447	83	9
3	Hati Khali	**1.12**	50	216	110	106	66	0
4	Jarang Disha	**3.03**	972	4706	2416	2290	66	8
5	Dakhin Lumding	**1.80**	151	827	424	403	57	0
6	Kangargaon	**1.53**	934	4824	2495	2329	1512	32
7	Pub Lumding	**2.12**	885	4722	2413	2309	976	98
	RURAL	**11.99**	**3469**	**17694**	**8946**	**8447**	**3325**	**147**
	URBAN + RURAL	**19.68**	**15673**	**71699**	**36372**	**35026**	**9300**	**1060**

Source census of India

2.9 DENSITY OF POPULATION:

The number of population and the size of development of the town or city implies the density of population. Generally, the pressure of population from rural to urban area increases in search of better jobs, educational facilities, source of income, trade and commerce etc. The density of population of Hojai District as per 2001 was 512 persons per sq. km. and it has increased to 640 persons per sq. km in 2011 census.

The density of population of Lumding MB as per 2011 census was 6919 persons per sq.km and Railway Colony Area is 7170 person per Sq. Km. Overall density of Lumding Urban Area is 7022. Lumding Master Plan population density is 3643 while village area density is only 1475 persons per sq km.

Table 9: - Population Density of Lumding Master Plan Area

Sl. No.	Master Plan Area 2045	Population (2011)	Density persons per Sq. Km
	URBAN		
1	Lumding Municipal Area (13 wards)	31, 347	6919
	Lumding Railway Colony (CT)	22, 658	7170
		54,005	**7022**
2.	**7 Villages (RURAL)**	17, 694	1475
	URBAN + RURAL	**71,699**	**3643**

2.10 SEX-RATIO

The sex-ratio of Lumding Municipal Board is around 970 compared to 958 which is average of Assam state. Thus, per every 1000 male there way 970 female in Lumding M.B Area. Also, there are 963 female per 1000 male in the Lumding Master Plan area. While in village Area sex ratio is 944 female per male.

Also as per census, 2011 the child sex ratio of Lumding MB was 988 which is greater than average sex ratio 962 of the state of Assam

2.11 THE LITERACY RATE

The literacy rate of Lumding Town is 77.63% out of which 81.58% males are literate and 73.49% females are literate. There are 19.52% Scheduled Caste (SC) and 0.46% Scheduled Tribe (ST) of total population in Lumding Town.

2.12 SIZE OF THE HOUSEHOLD:

The 2011 Census shown that more than half of the household in the region were medium sized with an average member of 4.6 of Lumding M.B and Village Area is 5.1. According to census 2011 the medium sized households (4-5) is predominant because of the increasing trends towards nuclear households and rapid urbanization are at higher rate, there will be considerable pressure on housing in coming future. The overall household size of Lumding Master Plan Area is 4.5. Total Household size of Lumding Urban Area is 4.4

2.13 POPULATION PROJECTION

Population projections are attempts to show how the human population living today will change in the future. These projections are an important input to forecasts of the population's impact on this planet and humanity's future well- being. Models of population growth take trends in human development, and apply projections into the future. These models use trend-based-assumptions about how populations will respond to economic, social and technological forces to understand how they will affect fertility and mortality, and thus population growth. Population projection is a scientific/mathematical attempt to peep into the future population scenario, conditioned by making certain assumptions using data to the past available at the point of time.

It is mandatory for Government policy makers and planners to determine the future demand for basic human needs such as food, water, education, health, energy, and other services and to forecast future demography characteristics.

The population projection of Lumding Master Plan area, separately for Municipal area and rural area has been done by utilizing the maximum possible accuracy. Mainly Geometric progression method has been used to determine the future projected population of Lumding Master Plan Area.

Geometric Progression Method: - Geometric mean increase is used to find out the future increment in population. Since this method gives higher values and hence should be applied for a new industrial town at the beginning of development for only few decades. The Population projection of Lumding Master Plan area has been done calculating the population from 1951 to 2011.

Table 10- Lumding Master Plan Population as per 2011 Census

Sl. No.	Name of the Village/MB Area	Total Households	Total Population of Village	Total Male Population of Village	Total Female Population of Village	Total Scheduled Castes Population of Village	Total Scheduled Tribes Population of Village
1	Lumding Railway Colony CT	5425	22658	11517	11141	4269	766
2	Lumding MB	6779	31347	15909	15438	1706	147
LUMDING URBAN		**12204**	**54005**	**27426**	**26579**	**5975**	**913**
1	Mora Basti	299	1458	594	563	565	0
2	Sadhukhuti	178	941	494	447	83	9
3	Hati Khali	50	216	110	106	66	0
4	Jarang Disha	972	4706	2416	2290	66	8
5	Dakhin Lumding	151	827	424	403	57	0
6	Kangargaon	934	4824	2495	2329	1512	32
7	Pub Lumding	885	4722	2413	2309	976	98
LUMDING RURAL		**3469**	**17694**	**8946**	**8447**	**3325**	**147**
LUMDING URBAN + RURAL		**15673**	**71699**	**36372**	**35026**	**9300**	**1060**

Source- Census of India

Table 11- Lumding Master Plan Population as per 2001 Census

Sl. No.	Name of the Village/MB Area	Total Households	Total Population of Village	Total Male Population of Village	Total Female Population of Village	Total Scheduled Castes Population of Village	Total Scheduled Tribes Population of Village
1	Lumding Railway Colony CT	5520	25367	13234	12113	3259	489
2	Lumding MB	4885	25203	13085	12145	1355	62
TOTAL URBAN		**10405**	**50570**	**26319**	**24258**	**4614**	**551**
1	Mora Basti	180	1055	613	442	66	0
2	Sadhukhuti	73	441	287	154	74	0
3	Hati Khali	589	3173	2062	1111	569	48
4	Jarang Disha	997	5391	3235	2156	299	35
5	Dakhin Luimding	59	300	165	135	27	0
6	Pub Lumding	622	3390	2034	1356	785	6
7	Kangar Gaon	463	2664	1731	933	**367**	**0**
LUMDING URBAN		**2983**	**16414**	**10127**	**6287**	**2187**	**89**
LUMDING URBAN + RURAL		**13388**	**66984**	**36446**	**30545**	**6801**	**640**

Source- Census of India

Table 12- Lumding Master Plan Population as per 1991 Census

Sl. No.	Name of the Village/MB Area	Total Households	Total Population of Village	Total Male Population of Village	Total Female Population of Village	Total Scheduled Castes Population of Village	Total Scheduled Tribes Population of Village
1	Lumding TC	1623	9015	4730	4285	576	59
2	Lumding Rly Colony CT	7198	37114	19661	17453	2438	327
LUMDING URBAN		**8821**	**46129**	**24391**	**21738**	**3014**	**386**
1	Mora Basti	22	167	98	69	40	0
2	Sadhukhuti	41	280	148	132	0	0
3	Hatikhali	413	2301	1259	1042	720	0
4	Jarang Disha	622	3520	1888	1630	74	
5	Dakhin Lumding	77	465	258	207	0	0
6	Pub Lumding	1680	868	812	12	6	0
7	Kangar Gaon	102	628	322	306	0	0
LUMDING RURAL		**2957**	**8229**	**4785**	**3398**	**840**	**0**
LUMDING URBAN + RURAL		**11778**	**54358**	**29176**	**25136**	**3854**	**386**

Source- Census of India

Table 13- Lumding Master Plan Population as per 1971 Census

Sl. No.	Name of the Village/MB Area	Total Households	Total Population of Village	Total Male Population of Village	Total Female Population of Village	Total Scheduled Castes Population of Village	Total Scheduled Tribes Population of Village
1	Lumding Town	5459	29253	15739	13,460	519	58
LUMDING URBAN		5459	29253	15739	13,460	519	58
1	Mora Basti	60	297	159	138	0	
2	Sadhukhuti	37	184	113	71	0	0
3	Hatikhali	171	851	453	398	133	0
4	Jarang Disha	37	185	108	77	0	0
5	Dakhin Lumding	70	334	192	142	0	0
6	Pub Lumding	307	2017	1073	944	0	0
7	Kangar Gaon	170	849	485	364	0	0
LUMDING RURAL		852	4717	2583	2134	133	0
LUMDING RURAL + URBAN		6311	33970	18322	15594	652	58

Source- Census of India

Table 14- Lumding Master Plan Population as per 1961 Census

Sl. No.	Name of the Village/MB Area	Total Households	Total Population of Village	Total Male Population of Village	Total Female Population of Village	Total Scheduled Castes Population of Village	Total Scheduled Tribes Population of Village
1	Lumding Town (new colony)	4410	23186	12935	10251	1519	14
LUMDING URBAN		4410	23186	12935	10251	1519	14
1	Mora Basti	60	258	154	104	0	0
2	Sadhukhuti No.2						
3	Hati Khali	37	157	85	72	0	0
4	Jarang Disha	60	258	154	104	0	0
5	Dakhin Lumding	35	140	79	70	0	0
6	Kangar Gaon	23	86	55	31	0	0
7	Pub Lumding	219	1136	628	508	0	4

8	Uttar Lumding	119	267	357	270	0	0
LUMDING RURAL		553	2302	1512	1159	0	4
LUMDING URBAN + RURAL		4963	25488	14447	11410	1519	18

Source- Census of India

Table 15- Lumding Master Plan Population as per 1951 Census

Sl. No.	Name of the Village/MB Area	Total Households	Total Population of Village	Total Male Population of Village	Total Female Population of Village	Total Scheduled Castes Population of Village	Total Scheduled Tribes Population of Village
1	Lumding Town	1916	15278	8614	6664	---	---
LUMDING URBAN		1916	15278	8614	6664	---	---
1	Mora Basti					---	---
2	Sadhukhuti					---	---
3	Hati Khali	21	109	50	59	---	---
4	Jarang Disha	32	157	36		---	---
5	Dakhin Lumding					---	---
6	Kangar Gaon	11	59	38	21	---	---
7	Pub Lumding	66	327	190	137	---	---
8	Uttar Lumding	55	273	161	112	---	---
LUMDING RURAL		185	925	475	329	---	---
LUMDING URBAN + RURAL		2101	16203	9089	6993	---	---

Table-16- Study of Decadal Growth Rate in Lumding MP Area & Assumption of Projected Growth Rate

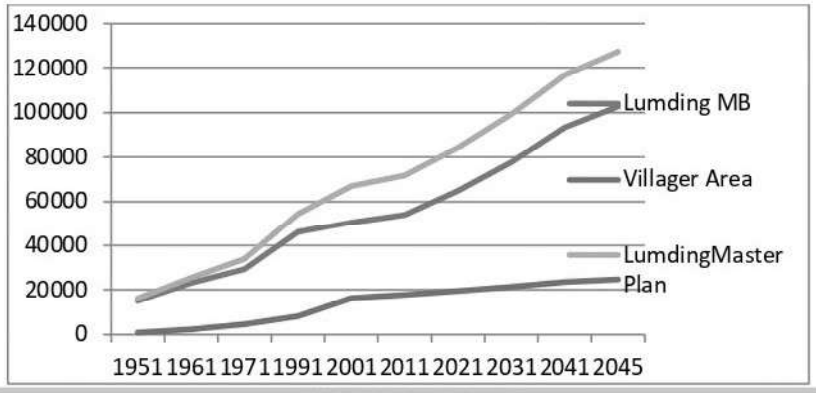
STUDY OF GROWTH RATE	MB area	Village Area
	51.76	148.86
	26.17	104.91
	57.69	74.45
	9.63	99.47
	6.79	7.80
TOTAL **SIX** DECADES GROWTH RATE	**152.04**	**435.49**
AVERAGE GROWTH RATE	25.34	72.58
Say	**20.00**	**10.00**

Table 17- Population projection by Geometric Progression of Lumding Master Plan Area from 1951-2025

Year	Lumding Urban Population	Growth Rate	Lumding MP Population excluding Lumding MB Population	Growth Rate	Lumding MP Total Population	Growth Rate	
1951	15278	---	925	---	16203	---	
1961	23186	51.76	2302	148.86	25488	57.30	
1971	29253	26.17	4717	104.91	33970	33.28	
1991	46129	57.69	8229	74.45	54358	60.02	**20 Years growth rate**
2001	50570	9.63	16414	99.47	66984	23.23	
2011	54005	6.79	17694	7.80	71699	7.04	
2021	64806	20.00	19463	10.00	84269	17.53	
2031	77767	20.00	21410	10.00	99177	17.69	
2041	93321	20.00	23551	10.00	116871	17.84	
2045	**102653**	**10.00**	**24728**	**5.00**	**127381**	**8.99**	**5 years growth rate**

Table-18 Projected Population of Lumding Master Plan Area from 2021-2045

Method	2001	2011	2021	2031	2041	2045
Geometric Progression Method	66984	71699	84269	99177	1,16871	1,27.381 (P)



CHAPTER - 3
ECONOMIC BASE AND EMPLOYMENT

The economic base deals with how a community earns its living. It consists of that proportion of employment and income generated in a local community that determines the overall level of production. The growth, decline or stagnation of the local community rests upon the basic economic activity, which goes beyond local needs.

There are several measures of economic activity, but employment and income are the most commonly used in actual case studies. Information about employment and income values are the easiest to find at the county level.

Employment comprises all persons of working age who during a specified brief period, such as one week or one day, were in the following categories of paid employment (whether at work or with a job but not at work); or self-employment (whether at work or with an enterprise but not at work).

The working- age population is the population above the legal working age, but for statistical purposes it comprises all persons above a specified minimum age threshold for which an inquiry on economic activity is made.

The classification by economic activity refers to the main activity of the establishment in which a person worked during the reference period. The branch of economic activity of a person does not depend on the specific duties or functions of the person's job, but on the characteristics of the economic.

3.1 FORMAL SECTOR EMPLOYMENT:

Formal sectors represent all jobs with specific working hours and regular wages and the worker's job is assured. The workers are employed by the government, state or private sector enterprises. It is a licensed organization and is liable to pay taxes. It includes large-scale operations such as banks and other corporations.

From the raw data and T&CP, Nagaon survey team report it is found that out of the total working population in Lumding Town area only about 36 % populations are engaged in the formal sector of employment.

3.2 INFORMAL SECTOR EMPLOYMENT:

Employees are considered to have informal jobs if their employment relationship is, in law or in practice, not subject to national labour legislation, income taxation, social protection or entitlement to certain employment benefits (advance notice of dismissal, severance pay, paid annual or sick leave, etc.). The underpinning reasons may be the non-declaration of the jobs or the employees; casual jobs or jobs of a short duration; jobs with hours of work or wages below a specified threshold (e.g. for social security contributions); or lack of application of law and regulation in practice.

In the case of own-account workers and employers, the informal employment status of the job is determined by the informal sector nature of the enterprise. Employers (with hired workers) and own-account worker (without hired workers) are considered to be informal when their economic units belong to the informal sector. All contributing family workers are classified as having informal employment, irrespective of whether they work in formal or informal sector enterprises.

Table 19 - Formal and Informal sector employment in Urban Area

Sl. No.	Categories	Railway Colony Area	Lumding M.B Area	Lumding Urban Area	P.C
1	Working population	7853	10,715	18,604	33.82
2	Non-working population	14,805	20,596	35,401	65.55
3	Formal sector employment	3157	3748	6905	37.82
4	Informal sector employment	4696	6664	11,360	62.19

Source-Census of India

From the table, it is seen that out of the total working population in Lumding Urban Area is 18,265, about 37.82 % populations in Lumding town area are engaged in formal and 62.19 % populations are engaged in informal sector of employment.

3.3 OCCUPATIONAL PATTERN:

According to Census of India, worker is defined as person who does business, job, service, and cultivator and labour activity. The capacity of an urban area to provide variety of jobs, absorb its working population in various sectors of economy is an indicator of the economic viability

of the urban area. The participation rate also gives us an idea of the share of gainfully employed persons against the dependent and non-working population. Generally the participation rate in the urban area is high compared to the rural area.

Occupation pattern is different of the peoples of Lumding Master Plan Area. The rural peoples are mainly based upon the primary sector activities like agricultural and allied activities such as Horticulture, Forestry, Fishery, Animal Husbandry (dairy, poultry, and goat), and Floriculture etc.

On the other hand urban livelihoods are based upon secondary and tertiary activities like manufacturing and services etc.

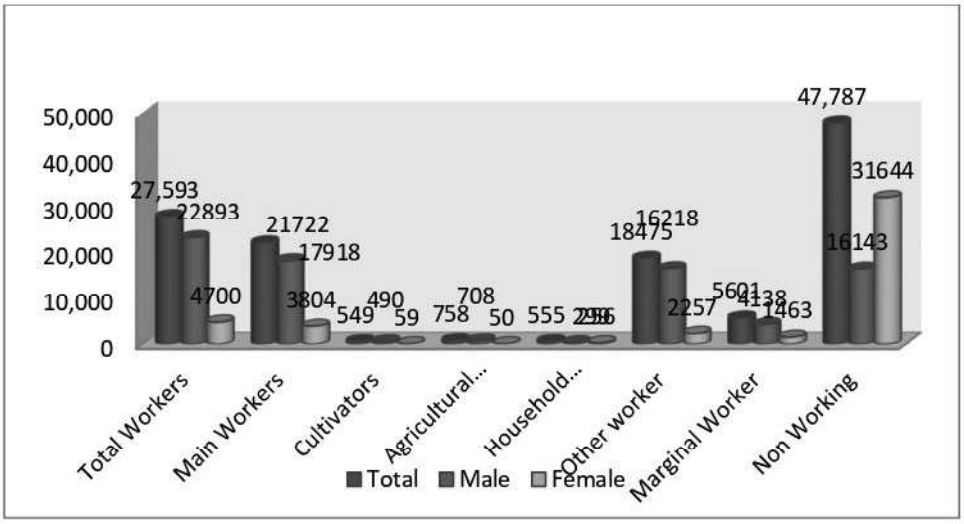
Total working population of Lumding M.B Area is 10751 which are either main or marginal workers. Total workers in the Urban area are 18, 604 out of which 15770 are male and 2834 are female. Total main workers are 15,752 out of which male main workers are 13,819 and female main workers are 1933 in Lumding Urban Area. Total marginal workers of Lumding Urban Area is 2852 where male is 1951 and female is 901.

Table 20- Below table depicts the Gender-wise working population of Lumding Master Plan Area (As per 2011 Census)

Sl. No.	Categories	Railway Colony Area			Lumding M.B Area			Lumding Urban Area			Village Area (Rural)			Lumding Master Plan Area (Urban + Rural)		
		T	M	F	T	M	F	T	M	F	T	M	F	T	M	F
1	Total Workers	7853	6466	1387	10,715	9304	1447	18,604	15770	2834	8989	7123	1866	27593	22893	4700
2	Main Workers	6578	5656	922	9174	8163	1011	15752	13789	1963	5970	4129	1841	21722	17918	3804
3	Cultivators	15	10	5	142	137	5	157	147	10	392	343	49	549	490	59
4	Agricultural Labourer	82	74	8	73	56	17	155	130	25	603	578	25	758	708	50
5	Household Industries	80	55	25	312	153	159	392	208	184	163	91	72	555	299	256
6	Other workers	6401	5517	884	10493	9364	1129	16,894	14923	1971	1581	1295	286	18475	16218	2257
7	Marginal workers	1275	810	465	1577	1141	436	2852	1951	901	2749	2187	562	5601	4138	1463
8	Non-Working Population	14805	5051	9754	20596	6605	13991	35401	11656	23745	12386	4487	7899	47787	16143	31644

Source-Census of India

Bar-Diagram showing the Occupational Structure of Lumding Master Plan Area



3.4 WORKFORCE DISTRIBUTION

Workforce population distribution according to sectors is as mentioned below:-

Table: -21 Workforce distribution by type of workers: -

Name of Area	Population, 2011	Total worker	Main worker	%	Marginal Worker	%	Non-Worker	%
Lumding Urban Area	54005	18604	15752	29.16	2852	5.28	35,401	65.55
Rural Area (7Villages)	17694	8989	5970	33.74	2749	15.53	12,386	70.00
Lumding Master Plan Area	71, 699	27593	21722	30.39	5601	7.81	47,787	66.64

(Source-Census of India)

The details of the share of main, marginal, and non-working population of the Lumding master Plan area is furnished above. This table reveals that 29.16 % of the total population is main workers, very merge 5.28 % falls under marginal workers and nearly 65.55 % of population is non-workers in Lumding Master Plan Area. The Higher share of non-working population indicates that lack of employment opportunities/infrastructure is prevailing in the system. The Highest percentage of main workers to the total population is Village Area than Lumding Urban Area. These phenomenon highlights that there is a shift from rural to urban Area. Further marginal worker is highest in the rural area which is 15.53 due to unavailability of Jobs leads peoples to work for some period of times.

Bar-Diagram showing the distribution of works by type of workers

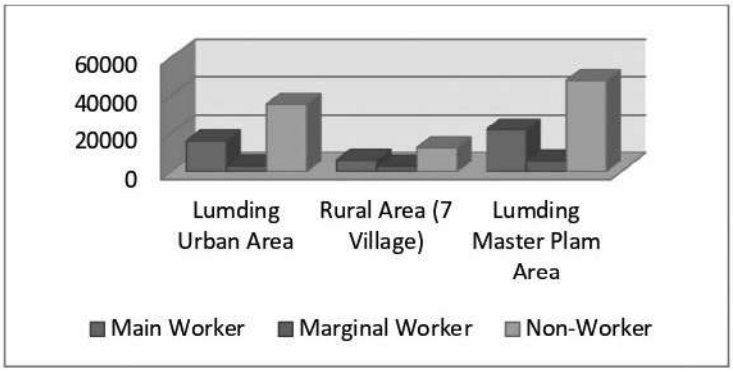
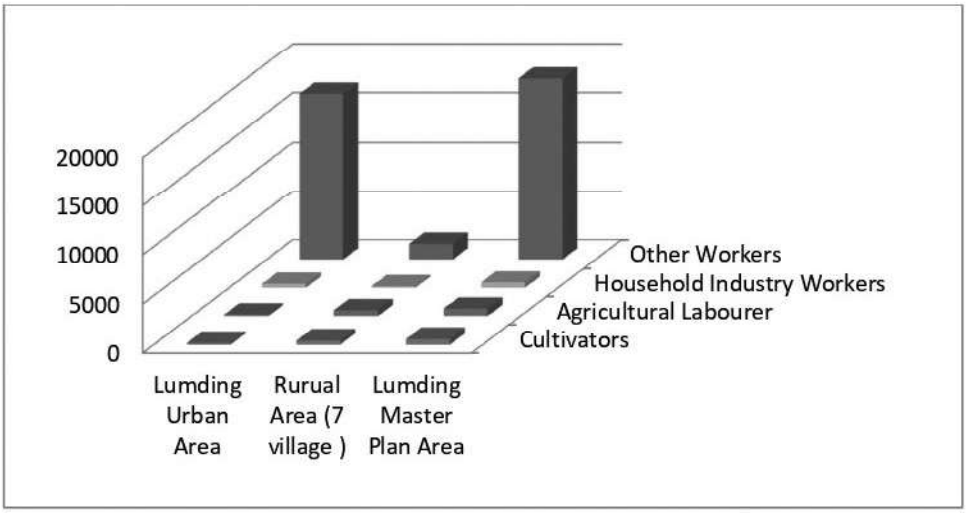


Table:-22 Workforce distribution by sectors of economy:-

Particulars	Total Workers	Primary Sector		Secondary sector	Tertiary Sector	%		
		Cultivators	Agricultural Labourer	Household Industry Workers	Others workers	Primary sector	Secondary Sector	Tertiary Sector
Lumding Urban Area	18,604	157	155	392	16894	1.67	2.10	90.80
Rural Area (7 villages	8989	392	603	163	1581	11.06	1.81	17.58
Lumding Master Plan	27593	549	758	555	18475	4.73	2.00	66.95

(Source-Census of India)

Bar-Diagram showing the distribution of works by type of workers



The details of workforce distribution by sectors of economy are described in the above table reveals that out of the total working population of Lumding Planning Area, 4.73 % work in the primary sector, 2.00 in the secondary sector and almost 66.95 % in tertiary sector.

This composition clearly indicates most population of Lumding urban area depends on Tertiary sector 90.80 % for their livelihood followed by secondary sector which 2.10 % and only 1.67 % of the population of Lumding Urban area engaged in primary sector for their livelihood.

Table:-23 Workforce Participation Rate of Lumding Master Plan Area, 2045

Year	Lumding Urban Area			Lumding Master Plan Area excluding the Urban Area			Total Master Plan Area		
	Total Population	Total Workers	Work Participation Rate	Total Population	Total Workers	Work Participation Rate	Total Population	Total Workers	Work Participation Rate
1991	46129	11,804	25.58%	8229	2698	32.78%	54,358	5112	9.40 %
2001	50570	14,477	28.62%	16,414	4264	25.97%	66,984	10,386	15.50%
2011	54005	18,604	34.44 %	17694	8989	50.80%	71699	27,593	38.48%

Source-Census of India & T&C.P, Nagaon, Compilation

In 2011, the work-participation rate is 38.48 % in Lumding Master Plan Area compared to 15.50 % in 2001. More job opportunities to be created by improving of the overall economy and the consequent emergence of more and newer demands for goods and services.

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CHAPTER - 4
HOUSING AND SHELTER

Housing is one of the most important life components giving shelter, safety and warmth, as well as providing a place to rest. Housing or quality of life is more dependent on some elements of housing areas such as disposition of various working areas, layouts development of land, provision of roads, water supply system, sewerage, drainage and provision of basic amenities like shops, schools, parks and play grounds etc. The urban form and character emerges from the quality of housing areas and inter relationship of housing areas with work centre and other non- residential areas.

Housing is a major element of people's material living standards. It is essential to meet basic needs, such as for shelter from weather conditions, and to offer a sense of personal security, privacy and personal space. Good housing conditions are also essential for people's health and affect childhood development.

The urban housing is mainly restricted to within the Municipal boundaries. The residential areas outside the municipal areas are rural housing. Normally the rate of housing spread of town should range between 6-7 hectare per 1000 persons and the rate of housing spread within the Master Plan Area is around 22 Hectare per 1000 persons.

Table 24-: Ward wise population distribution and Nos. of households of Lumding Urban Area (as per 2011 census)

Ward No	Area in Sq. Km	Population	No. of Household	Household size
Ward No1	0.76	3802	906	4.1
Ward No 2	0.32	2938	584	5.0
Ward No 3	0.71	4058	888	4.5
Ward No-4	0.10	2574	538	4.7
Ward No5	0.19	2880	703	4.0
Ward No 6	0.10	776	174	4.4
Ward No-7	0.10	1646	357	4.6
Ward No-8	0.19	2189	441	4.9
Ward No-9	0.21	1202	236	5.0
Ward No-10	0.14	1598	344	4.6
Ward No-11	1.23	2777	551	5.0
Ward No-12	0.03	797	172	4.6
Ward No-13	0.25	4110	885	4.6
	4.53	**31, 347**	**6779**	**4.6**
Railway Colony	**3.16**	**22,658**	**5425**	**4.1**
Lumding Urban Area	**7.69**	**54005**	**12204**	**4.4**

Source-Census of India

Table 25: Village Wise Population and occupied residential houses of Lumding M.P. Area (as per Census, 2011)

SL No	Village	Area in Sq. Km	Population	Household	Household size
1	Mora Basti	1.36	1458	299	4.8
2	Sadhu Khuti	1.03	941	178	5.2
3	Hati Khuli	1.12	216	50	4.3
4	Jarang Disha	3.03	4706	972	4.8
5	Dakhin Lumding	1.80	827	151	5.4
6	Kangargaon	1.53	4824	934	5.1
7	Pub-Lumding	2.12	4722	885	5.3
RURAL		**11.99**	**17,694**	**3469**	**5.1**

URBAN	**7.69**	**54,005**	**12,204**	**4.42**
UURAL + URBAN	**19.68**	**71699**	**15,673**	**4.5**

Source: Census of India, 2011

4.1 HOUSING CONDITION:

Housing is a major element of people's material living standards. It is essential to meet basic needs, such as for shelter from weather conditions, and to offer a sense of personal security, privacy and personal space. Good housing conditions are also essential for people's health and affect childhood development.

Housing condition includes the study of housing base on type of structure i.e., permanent/ semi-permanent, physical infrastructure, mass space relationship, condition of the material use for walls and floors etc. It is important to be studied because it indicates the efficiency and sustainability of the housing stocks, whether the houses are liveable or not. Based on the above said parameters, the condition of houses has been segregated and the analysis is done as good, liveable and dilapidated houses of Lumding Municipal Area comparing with Hojai District.

Table No 26: Housing condition (as per 2011 census)

Residence (%)				
Area	Total	Good	Livable	Dilapidated
Assam	62,72,151	33%	56%	11%
Hojai District	1,30,577	34.8%	57.4%	7.9%
Lumding M.B	4731	52.1%	46.3%	1.6%

Source: Census of India, 2011 and T&CP, Nagaon Compilation

4.2 CONSTRUCTION MATERIAL OF HOUSE:

The survey carried out by Town and Country Planning, Nagaon in 2020-21 and as per Census of India, 2011, it is found that the overall housing condition in the Lumding Master Plan area is quite satisfactory but the distance between nearest settlement neighbourhood is very less. The settlement pattern is very compact. Thought the percentage of Good Housing Condition is high (52.1%) but the liveable condition household is needed to be upgrade in the Lumding Municipal Area. The percentage of R.C.C structure is only confined in the Town area, specially the Market stores, Banks, Hotels along the major roads of the town and also some residential Buildings in the town area. Housing condition in the village areas were basically Livable and semi pucca type.

The following table shows the condition of existing housing stocks of Lumding Municipal Area

Table 27: Materials used for roof

Area Name	Total Number of HHs	Grass/ Thatch/ Wood/ Mud	Plastic Poly -	Handmade Tiles	Machine made Tiles	Burnt Brick	Stone/ Slate	G.I./ Metal/ Asbestos/ sheets	Concrete	Any other Material
State	62,72,151	18.60%	2.10%	0.70%	0.3%	0.1%	0.80%	74.20%	2.90%	0.2 %
Hojai District	1,30,577	24.1 %	0.2 %	0.3%	0.1%	0.1%	1.6%	70.4%	3%	0.2%
LMB	4731	3.2 %	0.1%	0.1%	0%	0.4%	2.5 %	87.5%	6.1%	0.2%

Source: Census of India, 2011

Table 28: Materials used for walls

Area Name	Grass/ Thatch/ Bamboo etc.	Plastic/ Polythene	Mud/ Unburnt Brick	Wood	Stone not packed with	Stone packed with mortar	G.I./Metal/ Asbestos sheets38	Burnt Brick	Concrete	Any other Material
State	66.40%	0.60%	3.60%	1.60%	0.70%	1.40%	1.10%	21.20%	2.90%	0.50%
Hojai District	65.8%	0.5%	5.1%	2.3%	1.5%	4%	0.2%	17.4%	2.7%	0.6%
LMB	48.3%	0.6%	1.3%	0.7%	2.4%	4.2%	0.2%	33.1%	7.5%	1.6%

Source: Census of India, 2011

Table 29: Materials used for floor

Area Name	Mud	Wood/ Bamboo	Burnt Brick	Stone	Cement	Mosaic/ Floor Tiles	Any other material
State	78.60%	2.10	1.20	0.40	16.60	1.00	0.10
Hojai District	83%	0%	1%	0%	15%	0%	0%
LBB	37.3%	1.1%	2.4%	0.3%	58.6%	0.4%	0%

Source: Census of India, 2011

4.3 AVAILABILITY OF BATHROOM AND LATRINE

As per 2011 Census about 97.7% of households have sanitary latrine and Bathroom and 89% of the households have other type of latrine in the Lumding Master Plan Area.

4.4 HOUSING STOCK AND FUTURE REQUIREMENT:

The housing requirement is more in the urban area than that in the rural areas. Almost all people in rural area have got their own house. The total housing stock and future requirement of houses up to 2045 in the Lumding Master Plan Area were calculated based on the city/ town level data on the houseless population and pavement dwellers, the houseless population is derived from the data published as part of Census of India, 2011.

The total requirement of dwelling unit in the planning area as per the planning norms is as follows:-

Housing Requirement for future Population of Lumding Urban Area till 2045:

102653-54005 =48648

Assuming family size of 5 persons, new houses will be required 48648/5
= **9729** Nos.

Housing Requirement for future Population of Rural Area till 2045:

24728-17694=7034

Assuming family size of 5 persons, new houses will be required 7034/5=
1406 Nos.

Housing Requirement for future Population of Lumding Master Plan Area till 2045

127381-71699 = 55682

Assuming family size of 5 persons, new houses will be required 55682/5 =
11136 Nos.

Table 30: Total housing stock and future requirement of houses:

Sl. No	Area	Total no. of housing stock as per 2011	Housing requirement up to 2045
1	Lumding Urban Area	12204	9729
2	Village Area	3460	1406
	Master Plan Area	**15673**	**11136**

Source-Census of India &T&CP Compilation

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CHAPTER - 5
TRANSPORTATION

An effective transport system offers social, economic, political and cultural advantages like accessibility to markets, infusion of investors, distribution of resources, etc that result in an indirect impact on the growth and development of a country. It can be measured in terms of added value and employment .A mode of transport is a solution that makes use of a particular type of vehicle, infrastructure, and operation.

Transportation plays a major role in the daily life of human beings. It is necessary for things to be moved around and as transportation systems have developed over time, the speed and efficiency of these systems have improved drastically.

The importance of transportation is showcased in how individuals, businesses, and governments rely on it to access resources. A society cannot function optimally if it does not have measures in place to facilitate transport. From movement to work to travel around the world, being able to arrive at various places or deliver different items on time is vital for overall productivity and sustainable development.

In consideration of healthy growth, economic prosperity and improved living standards of a town or a city, a high- quality transportation network is essential. In addition, transportation and land use are to be integrated to achieve reduction in trip length, increase in public transports usage etc.

5.1 TRANSPORTATION NETWORK:

5.1.1 Regional Connectivity of Lumding:

Lumding is well connected to Assam major cities like Hojai, Nagaon, Guwahati, Shilchar, Diphu, Haflong through PWD roads to State highways via National highways which further connects to rest part of Assam in particular and India as a whole.

5.2 NETWORK OF ROAD:

Roads are part of urban and rural infrastructure. These roads are required for both intra-city and intercity movement and render much higher level of service compared to Regional Roads, State Highways and National Highways. Quality of life is depends on efficient and effective road system, of course, with the support of other infrastructural services such as water supply, sewerage, drainage, electricity, telephones etc. in order to perform social, economic & cultural activities.' Urban transportation network is required to facilitate movement of people and goods and therefore efficient network is necessary for their efficient movement. Importance of Urban roads is increasing on account of the fact that urban areas are increasing in their size and number.

5.3 INTERCITY CONNECTIVITY (From Lumding):

Lumding has the intercity connectivity by road as well as by rail. The table below shows to various modes of transportation and its connectivity with the nearest towns/cities like Hojai, Nagaon, Guwahati, Shilchar, Diphu, Haflong, Hamren, Chaparmukh Jn etc.

Table-31: Modes of transportation and its connectivity with the nearest cities/ towns

Urban centers from Lumding	Distance (KM)	Time (hrs.)	
		By Road	By Rail
Nagaon	98.4 km	2hr 3 min	3 hr 9min
Silchar	269 km	8 hr 59min	7 hr 50 min
Dibrugarh	346 km	8 hr 32 min	8 hr 5 min
Hojai	53.6 km	1 hr 9 min	48 min
Haflong	166 km	4 hr 47 min	-
Guwahati	215 km	4 hr 17 min	3 hr 35 min

Diphu	39 km	1 hr	53 min
Hamren	100 km	2 hr 57 min	-

Table-32: Road Length (in Km) of Lumding M. B. Area

Name of MB	Total Length	SURFACED						UNSURFACED			
		WBM	Black Top	Cement Concrete	Brick Soiling	Paver Block	Total	Gravelling	Kutcha (Motorable)	Kutcha (Non-Motorable	Total
Lumding MB	55.874	0.300	8.472	6.919	9.607	11.488	36.786	0.801	8.149	10.138	19.088

Source-Lumding M.B

Table-33: Road connectivity and Distance:

Sl. No.	Road type	Connectivity	Distance
1	National Highway-27	Lumding to Nagaon via Doboka	98.4 km
2	State Highway-329	Lumding to Diphu	39 km
3	National Highway-27	Lumding to Hojai	53.6 km
4	National Highway-27	Lumding to Haflong via Maibang	117 km
5	National Highway-27	Lumding to Sankardev Nagar via Lanka	47.4 km

5.4 OVERVIEW OF CRITICAL ROADS:

The identification of critical road links is greatly important to the management and control of the transportation system. Existing works fail to fully consider the influence of the distribution of traffic flow and its dynamic characteristics on critical road link identification.

The study of critical roads mainly depends upon several factors like traffic conditions, road geometry characteristics, environmental factors etc. Field traffic surveys were carried out to capture the classified volume count for major arterial, sub-arterial and collector roads spread across Lumding Town. Based on the field survey data and traffic volume survey conducted by the T&CP, Nagaon at some major points were ascertained during peak hours.

The critical roads in Lumding town as well as the Lumding Master Plan Area is identified the PWD road Lumding to Diphu, Lumding to Haflong, are urgently need to decongest and future plan for widening and improvement to ensure free flow of traffic movement in Lumding Master Plan Area.

5.5 ANALYSIS OF TRAFFIC NODES:

Table 34- The major traffic nodes in Lumding town are identified which are detailed as

Area	Location of point	Description
	(i)Lumding Tiniali point	This is a commercial place consist of some shops, daily vegetable market and entry to Lumding Circle Office towards south, and daily market towards southwest.

Lumding Town Area	(ii) Lumding / Eta bhata Chariali	It is also a business centre consist of variety of major shops, Pubic gathering Place entry to Lumding Municipal Board, Post Office, Police Station etc. also
	(iii) Lumding Kalibari point	It is a fully busiest daily Market area, also way to Haflong, Umrangso and connected to Shillong Road.
	(iv)Lumding Town Food market Chariali point	It is an important traffic intersection and transfer point and consist of commercial and business activities. It is a place of traffic congestion with NH-27 Road and entry to Lumding Town, A Bricks factory and a some residential areas.

5.5.1 BUS TERMINUS:

Public and Private Bus stands are most temporarily located at some busy road sides of Lumding town which causes the traffic congestion and traffic hindrance.

Table 35- The bus stands located at different places of the town and their characteristics are as given below

Terminal Centre	Location	Observation
A. Inter-City	**Bus Station**	
1. Passenger	i) Lumding-BUS Stop	Located Lumding Kalibari Road. Parking space is not sufficient. Waiting shed, toilet facilities should be extended. Passenger's guest house facilities should be provided.
	ii) Lumding – Bot / Peepal Tree Auto Stand, Near Modern Games Club	Very congested. Parking space is very narrow. Waiting shed and toilet facilities are nil. Immediately this bus station should be shifted.

5.5.2 Railway:

Lumding railway division is one of the five railway divisions under Northeast Frontier Railway zone of Indian Railways. This railway division was formed on 1 May 1969 and its head quarter is located at Lumding in the Hojai district state of Assam in India. It is the 2nd biggest railway station of Lumding railway division, after Guwahati.

Lumding is connected by Indian Railways network. There are several trains plying from Guwahati and many other states of India via Lumding Railway Station and passes through Lumding to Lumding, Assam. The North - East Frontier Railway Broad gauge Line from lower Assam to Upper Assam connects Lumding to the rest of the other places. Hojai Railway Station, Lumding Railway Junction and Chaparmukh Railway junction is the nearest junction of Lumding Railway station. At present, electrification network with dual track of whole

North-East Frontier Railway is under progress under Ministry of Indian Railways, Govt. of India.

Lumding Railway Station

5.6 TRAFFIC VOLUME SURVEY

The traffic volume survey in around the particular town or the city is urgently required to find out the possible solutions and improvement suggestions for the problem identified. The objective covered in it includes identifying hourly distribution of vehicles and peak hour identification of the level of service and compare model composition on different hierarchy of roads etc.

The traffic volume survey conducted by the T&CP, Nagaon only at some main points and it is restricted only to peak hour survey from 9-00 a.m to 11.00 a.m to identify better and efficient traffic operation plan. The following table shows the traffic volume of the 4 (four) main points within Lumding Master Plan Area.

Table-36: Traffic Volume Survey within Lumding Master Plan Area

	Name of the survey point	Time:9:00 A.M to 11:00 A.M							
		In coming				Out going			
		Fast moving		Slow moving		Fast moving		Slow moving	
1	Lumding / Eta bhata Chariali	Vehicle	Number	Vehicle	Number	Vehicle	Number	Vehicle	Number
		Bus/M. bus-	25	Bi-cycle-	138	Bus/M bus-	44	Bi-Cycle-	128
		Trucks-	46	E. Rickshaw	37	Trucks	54	E. Rikshaw	29
		Scooter/ M. Cycle-	132	Thela	7	Scooter/ M. Cycle	66	Thela	9
		Car	20			Car	43		
		Tata Sumu/ Magic	15			Tata Sumu/ Magic	27		
		Tempo/Auto-	40			Tempo/Auto	42		
		Total	**278**	**Total**	**182**	**Total**	**276**	**Total**	**166**

2	Lumding Kalibari point	Time:9:00 A.M to 11:00 A.M							
		In coming				Out going			
		Fast moving		Slow moving		Fast moving		Slow moving	
		Vehicle	Number	Vehicle	Number	Vehicle	Number	Vehicle	Number
		Bus/M. bus-	46	Bi-cycle-	176	Bus/M bus-	55	Bi-Cycle-	157
		Trucks	33	E Rickshaw	25	Trucks	60	E Rickshaw	19
		Scooter/ M. Cycle-	73	Thela	5	Scooter/ M. Cycle-	178	Thela	10
		Car-	106			Car	157		
		Tata Sumu/ Magic	24			Tata Sumu/ Magic	48		
		Tempo/Auto-	42			Tempo/Auto-	45		
		Total	**324**	**Total**	**206**	**Total**	**543**	**Total**	**186**

3	Lumding Food market Chariali	Time:9:00 A.M to 11:00 A.M							
		In coming				Out going			
		Fast moving		Slow moving		Fast moving		Slow moving	
		Vehicle	**Number**	**Vehicle**	**Number**	**Vehicle**	**Number**	**Vehicle**	**Number**
		Winger/M.bus -	5	Bi-cycle-	126	Winger/M bus-	15	Bi-Cycle-	115
		Trucks-	17	E. Rickshaw	18	Trucks	12	E. Rickshaw	26
		Scooter/ M. Cycle-	45	Thela -	12	Scooter/ M. Cycle-	46	Thela	16
		Car	54			Car	117		
		Tata Sumu/ Magic	11			Tata Sumu/ Magic	15		
		Tempo/Auto-	28			Tempo/Auto	16		
		Total	**160**	**Total**	**156**	**Total**	**221**	**Total**	**157**
4	Lumding Tiniali point	Time:9:00 A.M to 11:00 A.M							
		In coming				Out going			
		Fast moving		Slow moving		Fast moving		Slow moving	
		Vehicle	Number	Vehicle	Number	Vehicle	Number	Vehicle	Number
		Winger/M. bus	28	Bi-cycle-	138	Winger/M bus-	12	Bi-Cycle -	97
		Trucks	07	E. Rickshaw	24	Trucks -	14	E. Rickshaw -	27
		Scooter/ M. Cycle-	128	Thela-	16	Scooter/ M. Cycle-	109	Thela -	10
		Car	27			Car	58		
		Tata Sumu/ Magic	51			Tata Sumu/ Magic	33		
		Tempo/Auto-	37			Tempo/Auto-	25		
		Total	**278**	**Total**	**178**	**Total**	**251**	**Total**	**134**

Source-Survey Conducted by Town and Country Planning, Nagaon

5.7 PARKING:

Vehicle parking is a major problem in urban areas. With rapid growth of the urban area, the parking generation rate goes on increasing very quickly which creates major problems of parking in most of the urban areas. In the recent years, with the rapid development of economy and exorbitant increase in the motor-vehicles, parking problems in urban area have become increasingly prominent.

On street parking is found all over Lumding Town, parking usually spills over to other use areas like road carriageway and footpaths, open spaces. In turn they affect safety and environmental quality. Parking characteristics within the town vary by areas, by land use activities and by time period. In residential areas it is by time period.

At present there is no Municipal identified parking area designated for public and private parking within Lumding town as well as Planning Area. As per parking survey conducted by the Town and Country Planning, Nagaon it is observed that on street parking is found all over Lumding town. On- Street parking is observed to be high on Lumding Lanka Road towards North-East and North and Hatikhuli Area.

5.8 MAJOR ACCIDENT PRONE AREA:

As per records available from the Lumding Municipal Board and field verification it is found that there are frequent accidents are being happened in Lumding Town due to non-traffic signal points and uncontrolled speed of the vehicles. Major accident prone areas of Lumding town are mentioned as below -

1. Near Lumding Railway School.
2. Lumding Eta Bhata Chariali.

5.9 TRANSPORTATION ISSUES AND REQUIREMENTS:

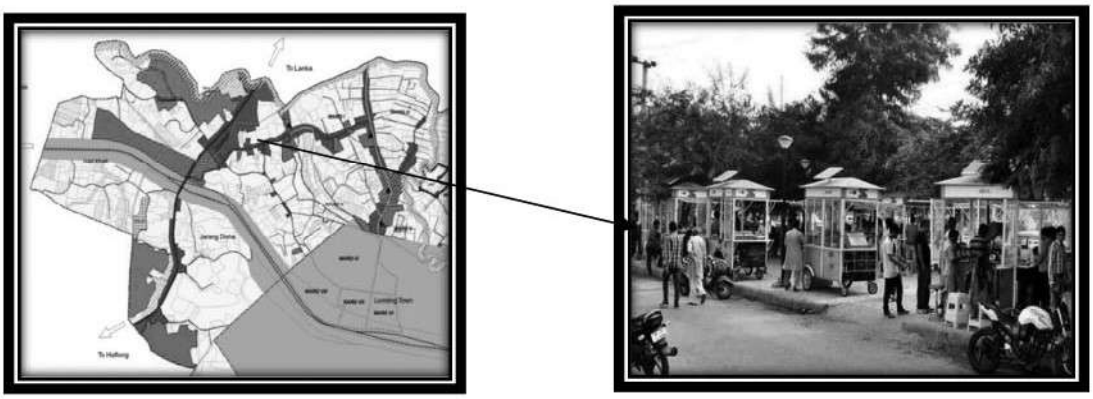
5.9.1 ILLEGAL VENDING ZONE:

- One of the major issues is of illegal vending on walking shoulders on the main streets.
- Due to illegal vending sometimes the actual accessible patch of road decrease to half lane only.
- If proper spaces are being allocated to street vendors in every zone the issue can be eliminated.
- Due to illegal possession of shoulders the pedestrian come down to road for their local trip and sometime proves unsafe on congested area.
- Narrow road network with restricted capacity, particularly due to the illegal vending, resulting in congestion and loss of productivity.

• The problematic areas include intersection Lumding Near fruit market Bazar.

The photographs below depict the current scenario of the illegal vending zones which restricted the capacity of road resulting lead to congestion.

Therefore, to reduce traffic congesting in Lumding town one organized vending zone has been is proposed at Shadhukuti Area.



Proposed Vending Site at Shadhu Khuti Area, Lumding

5.9.2 TRAFFIC CONGESTION:

• Traffic congestion is quite common in Lumding Town and it takes a lot of time to commute for the commuters.

• At many places geometry of the town is very less as they have not followed any norms and standards for the road pattern as well as for other related things like road cross sections and railway level crossing etc.

• Observed encroachments on the footpath by vendors, which acutely rise the traffic congestion between include intersection Lumding Link Road, Lumding Fruit market Area, Lumding Railway Station Area have this illegal vending and parking on both sides of the road and the resultant traffic need to resolve.

The highlighted light pink dots on map within town area shows the frequent congested road patches.

5.10 ROAD ENCROACHMENTS:

- Many factors can be listed out for such happenings, but few observations are mentioned below, which are
- Unauthorized parking of vehicle on pavement only.
- Many spots with exposed electric poles on pavement sides which leads to make space dead and potential for parking wheels.
- The town suffers from parking problems due to encroachment by vendors on road and off-street parking. As a result, the road width decreases and there is no space remaining to pass the vehicles or to give space to other vehicles.
- There is no designated space for parking in whole town,
- There are encroachment issues in areas namely both sides of Lumding Diphu Road to Lumding NH-27 Link Road, Near Lumding Railway station Area.
- Due to lack of space, it is difficult for vehicles to pass on.
- Also, Proper facilities are needed for loading, uplifting, and downloading.
- Encroachment on both sides of the road decreases the effective width which may cause road accidents and disturbs the smooth flow of traffic.

5.11 TRAFFIC SIGNAL POINTS:

There are no organized traffic signal points in Lumding town. Various junctions without traffic signals are there in the town area like- Lumding NH Kalibari point, Norleny par point, Lumding Fruit market point and Crossing Gate point, resulting in unnecessary traffic jams and more requirement of traffic brigade occurs.

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CHAPTER - 6
INFRASTRUCTURE, PUBLIC UTILITIES & SERVICES

The development pressure on towns and cities is increasing with the rising urban population and growth of urban areas. The development of cities in itself is dependent upon the public infrastructure services. The creation of urban infrastructure is expensive and time consuming. Therefore it requires the Government to play a major role in making lumpy investments.

A country's economic and social development is directly dependent on a country's infrastructure. Many developed countries make a lot of progress because of the enormous growth of economic and social infrastructures. A good infrastructure makes the work process easier, resulting in a positive and high productivity.

Urban infrastructure development is the foundation of every city and remains the key to ensuring basic services like water, sanitation, drainage, energy, and transport. With proper and planned urban infrastructure development, residents can enjoy better living conditions & live healthier lifestyles while benefiting from enhanced environmental sustainability.

Social Infrastructure is a subset of the infrastructure sector and typically includes assets that accommodate social services like Health, Education, Housing, Civic and utilities, Transports etc.

6.1 SOCIALINFRASTRUCTURE:

Social infrastructure plays and important role to provide quality of life to the residents of the city. The effectiveness of social infrastructure in achieving the objective of city development plan would depend upon its capacity to contribute to improvement in the quality of life, enhanced self-dependency and city's sustainability. The level of social infrastructure shall aim the creation of liveable city through reducing the sense of alienation among the residents with less dependence on other settlements for basic infrastructure.

Social infrastructure refers to the facilities and mechanisms that ensure education, health care, community development, and social security, recreational and social welfare. The development cannot be looked at in isolation without considering the basic needs of the people, and a significant level of investment is needed in this sector. Usually this development referred to as the commitment towards realizing the vision of the city.

6.1.1 EDUCATION

Education is an important factor influencing the quality of life of the people and future development of an area. It empowers them with skills and knowledge and helps them to better lead their life and access best of the employment opportunities available in the market. This is turn will impact the work force participation rate and economy of the area. There are many government and private schools, colleges in Lumding town. The existing scenario of Primary, Middle school and Higher secondary school and Govt. and private Colleges in Lumding area is shown in the table given below:

Table 36: Educational Facilities available in Lumding Master Plan Area

Sl. No.	Category of Educational Institutions	Total Number of Institutions within Lumding Master Plan Area	Enrolment	Teachers
1	Lower Primary Schools	37	2207	124
2	Middle School	8	1382	56
3	High School	15	2987	140
4	Higher Secondary School	6	975	83
5	i) Lumding College	1	369	-
	2) P.V.M. Women Junior Colleges	1	214	9

Source: Inspector of Schools, Elementary and Higher education

Lumding College

6.1.2 HEALTH:

Health facilities are places that provide health care. They include hospitals, clinics, outpatient care centres, and specialized care centres, such as birthing centres and psychiatric care centres. Health facilities are very poor in Lumding town Area compared with the village Area. It is not sufficient to meet the needs of the demand of the peoples. There is no Private Nursing Home and Maternity Centre in the town. As per data available following table shows the medical facilities within Lumding Master Plan Area.

Table 37: Medical facilities within Lumding Master Plan area

Sl. No.	Lumding Planning Area	Health Centers	No. of Beds
1.	Lumding M. B. Area	1. FRU, Lumding	30
		2. Lumding Railway Hospital.	141
		3. Sub Centre Khangar gaon	Nil

Source: Lumding M.B. and T&CP survey

6.1.3 WATER SUPLLY:

Water supply system in Lumding town is processing by Urban Water supply scheme. Piped water is supplied to a section of the people of the town area and rest of the population depends upon individual source of water like ponds, ring wells and tube wells. The underground water reserve of the town is in a satisfactory condition hence it is felt that there will not be shortage of water for distribution in the town. Besides this, Diyung river is passes near the town from which water can be trapped for distribution if required in future for the projected population.

Table 38: - Ground water by it source in Lumding Municipal Area

SL.No	Source of Water	Household	Population	Percentage
1	Tape	700	2456	7.4
2	Well (Covered/Uncovered)	459	987	2.9
3	Hand Pump	5126	25915	85
4	Tube Well/Borale	293	1289	4.4
5	Tank/Pond	1	12	Nil
6	River/Canal	1	5	Nil
7	Other source	199	783	1.5
	Total	6779	31, 347	100%

Source-Census of India

6.1.4 POLICE STATIONS:

Lumding Master plan Area is controlled by Lumding police station which is located in the heart of the Lumding town.

6.2 TRADE AND COMMERCE:

In case of commercial activities Lumding Town has been growing like other towns of Hojai District. As per data available from the Lumding Municipal Board the total No. of retail shops in the Town Area is 620 units and 44 No. of wholesale units.

Table 39: Data regarding Trade and Commerce within Lumding Municipal Area:

Sl. No	Type of business Units	Nos. of business Units	
		Wholesale	Retail sale
1	Grocery	6	246
2	Cloth	-	68
3	Medicine	31	22
4	Cycle shop	-	6
5	Hardware(cement dealer)	3	37
6	Electrical shop	2	53
7	Radio & T.V	-	23
8	Fruit shops	-	8
9	Jeweler	-	48
10	Hardware	-	48
11	Rice	2	2
12	Motor tyre dealer	-	2
13	Fertilizer	-	14
14	Optical shop	-	6
15	Timbers	-	5
16	Book stall	-	4
17	Scooter & Motor cycle dealer	-	5
18	Restaurant	-	16
19	Sweet Shop	-	07

Source: Lumding Municipal Board

There is a 1 (One) daily market within Lumding Planning Area.

Table-40: Following table depicts the markets within Lumding Master Plan Area.

SL.No.	Markets within Lumding Mater Plan Area	Name of market
1	Lumding Town Area	1. Lumding Crossing Gate Market.
2	Village Area	-
3	Weekly market	-

Source: T&CP, Nagaon Survey and Lumding Municipal Board

6.2.1 CREMATION /BURIAL GROUND:

In Lumding MB Area total 02 Nos. of cremation grounds and only 02 (one) burial ground as shown in the below table-41

Sl. No.	Ward No.	Number of Cremation Ground	Number of Burial Ground
1	Ward No. 1	-	-
2	Ward No. 2	-	-
3	Ward No. 3	1	1
4	Ward No. 4	1	-
5	Ward No. 5	-	1
6	Ward No. 6	-	-
7	Ward No. 7	-	-
8	Ward No. 8	-	-
9	Ward No. 9	-	-
10	Ward No. 10	-	-
11	Ward No. 11	-	-
12	Ward No.12	-	-
13	Ward No.13	-	-

Source: - Lumding Municipal Board

The existing cremation and burial grounds should be developed with the basic facilities like roads, waiting shed, water supply, electricity and drainage etc.

6.2.3 POST OFFICE:

There is 1(One) post office within Lumding Master Plan area, one is within Lumding Municipal Board Area. Which are not sufficient to meet the need of the demand of the people of Lumding Master Plan Area.

6.2.4 FIRE STATION:

The entire Master Plan area of Lumding is covered by one Fire Station and it is situated in Lumding town area to take care of fire hazards. Therefore, Alternative solutions of use of smaller fire hydrants for very narrow roads, Market Area, Highly populated Area etc. for fire safety.

Strategies for Fire Hydrant Installation Point

 Hydrants must be located within three feet of the edge of a fire lane and cannot be located in areas where it may be visually or operationally obstructed (behind fences, walls, in bushes, behind parking spaces, etc.). Clearance shall be provided to a distance no less than three feet from the perimeter of the hydrant.

The hydrant outlets must face the fire lane. In areas where the outlets cannot face the fire lane (e.g., the hydrant is located on a landscape peninsula or island in a parking lot; the hydrant has three outlets, etc.), the 4" outlet(s) shall take precedence

The hydrant shall be located at least 40-feet from the building it serves. Where it is impractical to locate the hydrant 40-feet from adjacent structures, additional hydrants may be provided, or the hydrant may be located closer if nearby walls do not contain openings and the hydrant is not in a location where it may be rendered inoperable due to damage from collapsed walls, debris, or excessive heat.

the concerned agencies shall take approval from Fire Department for fire fighting measures while laying the services for an area.

Proposals for Fire Hydrant in Lumding Master Plan Area

A **fire hydrant**, **fireplug**, or **fire cock** (archaic) is a connection point by which fire fighters can tap into a water supply. It is a component of active fire protection. Underground fire hydrants have been used in Europe and Asia since at least the 18th century. Above-ground pillar-type hydrants are a 19th-century invention.

Fire Hydrant Location point: - For fire safety measures in LMPA some Fire Hydrant installation point has proposed in the Lumding Master Plan area on the basis of feasibility which is shown in the Zoning Map of Lumding Master Plan Area

6.2.5 BANKS/FINANCIAL INSTITUTIONS:

Lumding Planning area is served by 9 (Nine) nos. of Banks and the banks located within the planning area are shown in the table below:

Table-42: Banking Institutions in Lumding Town Area:

Sl. No.	Name of Banks	No. of banks
1	Punjab national bank	1
2	State bank of India	1
3	Allahabad bank	1
4	Canara bank	1
5	ICICI bank	1
6	Bandhan bank	1
7	Assam Gramin Bikash	1
8	Axis bank	1
9	North east small bank	1

Source: Lumding Municipal Board

6.3 RECREATIONAL FACILITIES:

Recreational facilities play an important role in providing venues for physical activity in urban areas. The facilities are incredibly important for a healthy, vibrant community, and for citizens reaping the benefits of having a health community. Following table depicts the available of recreational facilities in the Lumding Municipal Area as well as the Planning Area.

Table-43: Recreational facilities within Lumding Master Plan Area:

Sl. No.	Recreational facilities	Nos. along with Name and Location
1	Parks	-
2	Playground	(a) Swahid Field. (b) National H S School Field.
3	Library	Azad Hind Library
4	Cremation Ground	Lanka Road Tiniali

Source: Lumding Municipal Board

6.3.1 DRAINAGE SYSTEM:

The existing drainage facilities are not sufficient in Lumding town Area. Most of the new residential areas have grown without having drainage facilities. As per data received from the Lumding Municipal Board, the total drain length of Lumding M.B. Area is 34.584 Km. and out of the total length, 18.314 Km. is R.C.C and 16.27 Km. is Kacha drain. Below table shows the length of drains.

Table-44: Drain Length of Lumding Town Area

Sl. No.	Total drain length	Length in Km.	
		R.C.C.	Kachha
1	34.584 km	18.314	16.27

Source: Lumding M.B

Existing Drain condition Lumding Town Area

6.3.2 SEWERAGE SYSTEM:

At present there is no sewerage system in Lumding town as well as in the planning area. The mode of disposal is through the septic tanks with soak pits arrangement. Most of the families day to day washables dirty water and the bathroom water is disposes in own soak pits. Some of the families washable water discharge is into the open municipal drains. Almost all the holdings in the town have individual septic tank. There are no dry latrines.

As per the survey done, present wastewater generation by Lumding town is approximately 13757.14 KLD but there is no STP provision done for sewerage generated by town.

Table-45: Sewerage Generation Calculation for the projected population of 2045

SL.No.	Area	Population	Water Consumption MLD	Sewerage Generation MLD	Nos. of STP proposed	Existing Treatment Capacity	Gaps in MLD
1	Lumding Master Plan Area	1,27, 381 (P)	17196.43	13757.14	1	Nil	13757.14

(Source-T&C.P & LMB compilation)

Estimation of Wastewater Generation

The total water requirement for the Master Plan Area is 22.18 MLD (by the year 2045) for projected population of 127381. As per CHPEEO guideline, 80% of total water demand is considered as the sewerage flow; therefore, around 17.74 MLD water is expected to go in sewerage lines. As time passes, the area is expected to grow and along with high water demand, there will be larger wastewater discharge; hence, the project area required systematic sewerage system so the wastewater will not be discharged in the natural drains, which will help in reducing the flood problem.

There should be underground sewerage connection to each household and from where the discharged wastewater should go to sewerage treatment plant before discharging it into the natural drains. While planning for the proposed sewerage system, consideration should be given to the natural drainage pattern. The sewerage system should be planned in such a way that there will be minimum pumping involved in collection and conveyance of sewage. New Sewerage Treatment Plant (STP) sites should be identified depending on considerations such as the quantum of environmentally suitable land, and availability of government land, capital and O&M cost of different options. While the underground sewerage is been planned and implement, the authority needs to make sure that each household in the region has a septic tank installed and is being managed and is fully functioned. Water from commercial and industrial activities wastewater is being treated before discharging in the river.

Issues

Absence of sewerage system: there is absolute absence of sewerage system in Lumding planning area resulting in discharge of un-treated waste water in drains and Harlongpher River

Mixing of storm water and sewage: In absence of sewerage and improper drainage system, in many parts of planning area, there is discharge of sewage into storm water drains and other water bodies.

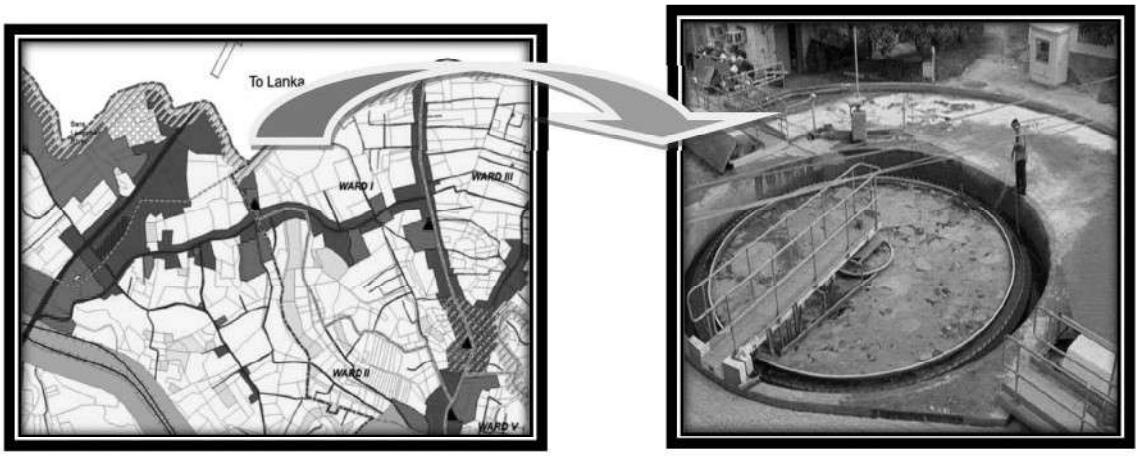
Maintenance of Septic Tank: As per the present practice, the septic tanks are the only mode of disposal of sewage in Lumding planning area, which are not frequently cleaned by the Lumding Municipal Board.

In a modern society, proper management of wastewater is a necessity, not an option. A wide range of communicable diseases can be spread through elements of the environment by human and animal waste products, if not disposed properly. The development of effective water and wastewater treatment methods has virtually eliminated major water borne epidemics in developed countries.

Developing countries like ours, where treated water is not available to a majority of the population, still experience epidemics like cholera and typhoid. It is also to be mentioned that as per the report of the Planning Commission for the Tenth Five Year Plan, which emphasizes that all cities, towns and industrial areas should compulsorily have sewage treatment plants and are to be implemented in a time bound manner. Advanced waste water treatment process is currently being so developed that it will produce palatable water from domestic wastewater.

Recommendations

For treatment of waste water generated from the planning area, a decentralized wastewater treatment system would be more appropriate. The centralized sewage treatment system appears inappropriate as it may end up with very huge sizes of sewers and various issues of conveyance in handling this huge quantity of wastewater. The treatment plants and sewers are to be so aligned as to reduce the number of crossings with railway tracks and National Highways of the area. The proximities of natural drains for treated effluent disposal, minimum obstructions for laying sewers, and the possibilities of acquiring land for sewage treatment plants (STPs) turns important in orienting and locating the plants. The possibilities of re-use of treated wastewater effluent for irrigation, gardening etc. should be looked into. The construction of treatment plants could be carried out in a phased manner on a modular/zonal basis in the planning area consistent with the future development/demand.



Proposed STP site of Lumding Master Plan Area at Ward No-1

6.4 SOLID-WASTE MANAGEMENT:

The management of municipal solid waste is one of the main functions of all Urban Local Bodies (ULBs) in the country. All ULBs are required to meticulously plan, implement and monitor all systems of urban service delivery especially that of municipal solid waste. With limited financial resources, technical capacities and land availability, urban local bodies are constantly striving to meet this challenge.

As per data received from Lumding Municipality Board total waste generated per day in Lumding town is approximately 2 metric tons and collects about 1 tons (50%) from various source like households, commercial establishments , hotel, marketplace, drain cleaning and street sweeping, construction waste etc.

Presently, following table depicts the nos. of vehicles and other equipment's used for solid waste management system by the Lumding Municipality Board.

Table-46: Vehicles and other equipment's are used for solid waste management system.

Sl. No.	ITEM	NUMBER
1	Tempo van	1
2	Tripper	3
3	Mini JCB	1
4	Water tank	1
5	JCB (Big)	1
6	Safai Kormosari	31

Source: Lumding M. B

QUANTITY OF WASTE GENERATED

The quantity of MSW generated depends on numerous factors such as population, food habits, standard of living, degree of commercial activities and seasons. The increasing urbanization and changing lifestyles have increased the waste generation rate of Indian cities.

Criteria for assessing waste generation

- Projected populations for the design period
- Existing per-capita waste
- Annual rate of increase of per capita waste generation

SOLID WASTE DEMAND PROJECTION

Based on the CPHEEO standards, following assumption were considered while estimating the volume of the solid waste and required area for the landfill site for the proposed urban population for the horizon year 2045:

- It is assumed, that MSW will be collected by responsible authorities at regular basis
- Characteristic of the collected MSW in the region will be the in consistent with the characteristics mentioned in CPHEEO manual.
- Per Capita Solid Waste Generation-270 Grams per Capita per Day

Table-47: Solid waste Generation Calculation for the projected population of 2045

SL.No.	Particulars	Demand for 2045
1.	Projected Population	1,27, 381 (P)
2.	Solid waste Generation (in Urbanation area @ 270 gm./cap/day)	24.39 MT

Source- (T&C.P Compilation)

ISSUES IN PRESENT SYSTEM

Lack of Disposal Site

Presently, there is no engineered landfill, and Municipal Solid Waste is dumped in open area, which can lead to ground water and soil pollution, vector naissance etc.

Lack of Primary Collection System

Solid waste is discharged by establishment into open plots, open drains etc. these un-organized disposal methods have resulted in the accumulation of solid waste on roadsides, vacant plots, and storm water drains. This has resulted in a number of hygiene related problems such as breeding of flies/ mosquitoes and stray animals.

Un-hygienically Solid Waste Transportation

Municipal Solid Waste is transported primarily in open vehicles i.e. trucks, tippers and cycle rickshaw. It is also observed that these modes of transportations are overloaded with MSW, resulting in the littering of roads during transportation. The loading and unloading of waste are carried out manually, and Safai Karmacharis involved in these activities do not use any safety measures.

In-sufficient collection and disposal of construction waste

The construction and demolition waste generated by residents is transported in tractor trolleys and disposed at either secondary collection points or open/low-lying areas in the town vicinity.

Handling of MSW with Slaughter Waste

Waste from the slaughters houses is disposed in open dumping sites, although there are provisions for separately disposing slaughter house waste in Nagaon town / planning area.

Disposed of Bio-medical waste without any treatment

Presently, there is no treatment facility available for bio-medical waste in Lumding and Medical waste is disposed off along with general MSW

Lack of primary Collection points

Unattended waste lying in open areas is common phenomena in the entire town because of non-availability of required numbers of bins in the planning area

Multiple Handling of Wastes

The waste is handled multiple times leading to potential health hazards for the workers as all types of wastes contains hospital waste, human waste etc. are disposed in the same containers.

Lack of Awareness

There is absolute lack of awareness among people w.r.t. handling and management of waste.

PROPOSED STRATEGIES

Decentralized solid waste treatment system:

The developmental pattern of all the areas, especially Lumding, demands the implementation of an integrated solid waste treatment system. It is felt that only a decentralized MSW Management System could help solve the seemingly intricate problem of solid waste treatment in this area in an economically viable, socially desirable and environmentally sound manner.

Public Participation:

General environmental awareness and information on health risks due to improper solid waste management are important factors which need to be continuously communicated to all sectors of the population. Building awareness among public and community about the need for a better solid waste management system is as essential as management. Public awareness and attitudes to waste can affect the people's willingness to cooperate and participate in adequate waste management practices. If people keep on throwing waste on the streets indiscriminately, the local body alone cannot keep the city clean in spite of their best efforts .Thus, it is very important to make people understand that the treatment and management of solid waste is a collective responsibility of the local authority and the community. Municipalities or local governments through participatory programs should convey this message to the people.

Collection Enhancement facilities:

- Old dustbins are to be replaced with different types of covered dustbins, which reduces the time of pickup and improves the process of primary collection of wastes.
- Sweepers may be provided with handcarts and detachable containers and be allotted a fixed area or number of houses for door to door collection. They should also be provided with safety gears and proper uniforms.
- It can be made compulsory for the management of societies/complexes to keep covered bins in which waste is to be stored at acceptable locations, to be picked up by the municipal staff.
- The local body may collect waste from community bins by using container handcarts or tricycles whichever may be convenient, for transferring the wastes to the waste storage sites by employing municipality sweepers.
- The collection service can be provided on a full-cost recovery basis using contractor services on a day to-day basis from individual houses.
- The collection service can be provided on a full-cost recovery basis using contractor services on a day to-day basis from individual shops also. The service of rag pickers and part-time sweepers can also be used in agreement with the shop owners.
- Sweeping of all public roads, streets, and lanes, by-lanes where there is habitation or commercial activities on either side of the street should be done daily. A list of such streets and roads together with their length and width should be prepared. The local body, keeping in view the norms of work prescribed should work out a program for their daily cleaning. However, roads and streets where there is no habitation around and do not require daily cleaning may be put in a separate group.

Provision of Solid waste Storage:

One of the immediate measures to revamp the existing collection services structure would involve provision of covered community waste bins at proper distances for the people to deposit domestic waste. This is the first step that will ensure that people do not throw their garbage on the roads and hence do not create open dump sites. This will enable the sanitation workers to transfer waste to the transportation vehicle quickly and efficiently with minimum health risk which will also help to maintain the aesthetics of the surroundings. The Municipal solid waste (Management and Handling) Rules 2000 of the Government of India have prescribed the compliance criteria for waste storage depots as under:

- Storage facilities shall be created and established by taking into account quantities of waste generation in a given area and the population densities. A storage facility shall be so placed that it is accessible to users.
- Storage facilities to be set up by municipal authorities or any other agencies shall be so designed that waste stored are not exposed to open atmosphere and shall be aesthetically acceptable and user friendly.

- Storage facilities or "bins" shall have "easy to operate" design for handling, transfer and transportation of waste. Bins for storage of biodegradable waste shall be painted green, those of recyclable waste shall be painted white and those of other wastes shall be painted black.
- Manual handling of waste shall be prohibited. If unavoidable due to constraints, manual handling shall be carried out under proper precaution with due care for safety of workers. So, the storage and handling of SW are extremely important, and hence the steps to be taken by the Municipal authorities for storage of solid wastes are detailed in table below:-

Table:-48

SL. No	Generation Source	Action proposed
1	Residential	• Not to throw any waste in neighbourhoods, on streets, open space, and vacant lands, in drains or water bodies. • Keep food waste/ biodegradable waste in a non-corrosive bin type-D1 • Keep hazardous waste separately • Keep dry/recycle waste in bin type-D2
2	Multi-storied Building, Commercial complexes, private societies	• 1 to 4 as above. • Provide separate bin type-B large enough to hold wastes generated both biodegradable and recycle. • Direct member of the association/society to deposits waste in bins provided. Sanitary inspectors should vigil the area and fine should be imposed for not following the actions.
3	Slums	• 1 to 4 as above • Use bin type-c
4	Shops, offices, institutions	• 1 to as above • Store the waste in bin type-D1, D2
5	Hotels and restaurant	• 1 to 4 as above • They should arrange their own bins and dispose waste in nearby municipal bins.
6	Vegetables, fruit markets, meat, fish markets, and street vendors	• Keep small baskets with them and transfer waste to large bin type-A • Shops keepers not to dispose of the waste in front of their waste or shops or open space. • Deposit waste as and when generated into bin type-a • Fines should be imposed for not following the action.
7	Marriage Halls, Community Halls	• 1 to 4 as above • Provide a large bin type-B
8	Garden Waste	• Compost the waste in garden itself, if possible.

		• Store wastes in large bags or bins and transfers it to community bins.

Segregation:

These compositional characteristics of the solid waste underline the need for proper segregation before treatment. Proper segregation of waste into different components and their separate collection can definitely lead to remarkable changes in the entire system.

The segregation of the waste would be a long drawn exercise as it involves attitudinal changes in people and will have to be done with careful planning, in a phased manner. The general public is to be first sensitized towards the whole concept and educated about the need and advantages of doing the segregation. Segregation of waste at the source itself is extremely important as municipal solid waste, which is otherwise environmentally benign on getting mixed with hazardous waste like paints, dyes, batteries, and human excreta turns hazardous. The recyclables like paper and plastic etc. become unsuitable for recycling as these get soiled by the organic matter.

Although, it would be more fruitful to sort and place different kinds of recyclables in separate receptacles, the waste could be segregated into at least two categories of biodegradable and non-biodegradable initially. The recyclables obtained through segregation could be straightway transported to recycling units which in turn would pay certain amount to the corporations, thereby adding to their income. This would help in formalizing the existing informal set up of recycling units, and this formalization in turn could lead to multi-advantages. The biodegradable matter could be disposed off either by aerobic composting, anaerobic digestion or sanitary land filling. Depending upon land availability and financial resources, either of these disposal methods could be adopted. Though simple land filling is the traditionally practiced system of solid waste management in the planning area, aerobic composting by wind-row method will be an appropriate option. All the non-biodegradable waste which is non-recyclable, non-reusable shall be dumped into sanitary land fill. Biodegradable waste shall be subjected to composting. Area required for composting shall include the area for storage of unprocessed material, processing facilities for composting operation and storage for green compost.

The area required for windrow composting with 15 days composting period with moisture content between 55-60% for aerobic composting, the first turning shall be done at the 4th day and thereafter every third day shall be 1.5 acres to 2 acres per 50 MT per day waste.

Reuse and Recycling:

The concepts of reuse and recycling can well be applied in solid waste management as solid waste is basically a heterogeneous mixture. In typical Indian municipal solid wastes, there is a small percentage of recyclable material and more of compostable and inert materials like ash and road dust. There is a very large informal sector of rag pickers, who can collect recyclable wastes (paper, plastic, metal, glass, rubber, etc.) from the streets, bins and disposal sites for

their livelihood. Thus, the rag pickers can be effectively used for the collection of reusable materials especially because the use of non-recyclable packaging materials like PET bottles for soft drinks, mineral wastes, and soft -foam products and metalized plastic film coated food packing materials are on the rise. During recycling, many of these release toxic gases and ozone depleting products. So it is advisable to educate people to replace these items with eco-friendly packaging materials. The desirable home sorting mechanisms includes dry recyclable materials (e.g. glass, paper, plastic, cans etc.), kitchen and garden wastes, bulky wastes, hazardous wastes, construction and demolition wastes. Sorting can also be done just prior to waste processing or land filling.

Energy from Solid Waste:

Electricity can be produced by burning MSW as a fuel. MSW power plants, also called waste-to-energy (WTE) plants, are designed to dispose of MSW and to produce electricity as a by-product of the incinerator operation. Mass Burn is the most common waste-to-energy technology, in which MSW is combusted directly in much the same way as fossil fuels are used in other direct combustion technologies. Burning MSW converts water to steam to drive a turbine connected to an electricity generator. Burning MSW can generate energy while reducing the volume of waste by up to 90 percent, an environmental benefit. However, this burning MSW in WTE plants produces comparatively high carbon dioxide emissions, a contributor to global climate change. The net climate change impact of these emissions is lessened because a major component of trash is wood, paper and food wastes that would decompose if not burned. If left to decompose in a solid waste landfill, the material produces methane, a potent greenhouse gas. The concept of producing energy from MSW derives significance as it is given high priority by the Ministry of Non-Conventional Energy Sources (MNES), Government of India.

Treatment options:

The biodegradable portion of the waste is considerably high. So, aerobic composting of SW after proper segregation will be more appropriate. In selected locations especially in rural areas, Vermi-Composting can also be recommended. The manure obtained by these methods can be sold to the local public as fertilizer. Though costly, sanitary land filling can also be practiced at selected urban locations where the recovery from the waste will be very high, serving minimum ecological damage. It appears that the aerobic composting by Windrow method may be a desirable option for the management of the solid waste. The possibilities of generating energy from SW could be looked into on an experimental basis.

Biomedical wastes and its management:

Biomedical waste has been a growing concern because of the awareness in public regarding HIV, AIDS and Hepatitis B and exposure to discarded needles, syringes and other medical waste from municipal garbage bins and disposal sites.

The management of biomedical waste turns important as it has serious bearing on the quality of human life. This becomes more significant especially in the context of the recent trend of establishing multispecialty hospitals in urban centres. Biomedical waste can be regarded as any waste generated during the diagnosis, treatment or immunization of human beings or animals or produced due to activities of biological research, human anatomical waste, animal waste, microbiology and biotechnology waste, waste sharps, discarded medicines and cytotoxic drugs, solid wastes, liquid waste, incineration ash, chemical waste, etc. Medical wastes contain pathological waste (such as human tissues such as limbs, organs, fetuses, blood and other body fluids), infectious waste (soiled surgical dressing, swab material in contact with persons or animals suffering from infectious diseases, waste from isolation wards, cultures or stocks of infectious agents from laboratory, dialysis equipment, apparatus and disposable gowns, aprons, gloves, towels, etc.), sharps (any item that can cut or puncture such as needles, scalpels, blades, saws, nails, broken glass, etc.), pharmaceutical waste (drugs, vaccines, cytotoxic drugs and chemicals returned from wards, outdated drugs, etc.), chemical waste (any discarded solid, liquid or gaseous chemicals from laboratories, cleaning and disinfection) etc.

Implementation of Bio-medical Wastes (Management and Handling) Rules, 1998

The Ministry of Environment and Forests issued the Bio-medical Wastes (Management and Handling) Rules, 1998 which were amended subsequently. These rules provide for segregation, packaging, transportation, storage, treatment and disposal of wastes generated by hospitals, clinics and laboratories. Bio-medical wastes (BMW) have been classified into various categories and the treatment and disposal options for each of the categories are specified. The treatment and disposal should be in compliance with the standards prescribed in Schedule V, which stipulates standards for incinerators (operating and emission standards), for waste autoclaving, for liquid waste, of microwaving and for deep burial. A schedule for implementation of BMW rules has been laid down in Schedule VI. Imposing segregated practices within hospitals to separate biological and chemical hazardous wastes that will result in a clean solid waste stream, which can be recycled easily. An Advisory Committee is to advise the prescribed authority on the implementation of these Bio-

Processing and disposal of solid waste

Medical wastes (Management and Handling) Rules.

The solid waste can be processed by composting, vermi-composting, anaerobic digestion, sanitary land filling, incineration or any other biological processing for stabilization of wastes. Since it contains a high amount of biodegradable portion, composting may be a cost-effective option for processing. The process of microbial composting or vermi-composting may be adopted with least mechanization to keep the cost low, and to market the compost as fertilizers to adjoining villages. So the concerned municipalities are duty bound to earmark required acres of land to meet the requirement of solid waste treatment. The areas of existing dumping yards

can also be developed. The rejects from these plants and domestic hazardous wastes may be carefully landfilled. The bio-medical wastes may be disposed off as per the Bio-Medical Waste Management and Handling Rules as described above.

A decentralized treatment system will be more feasible option for solid waste treatment. In combination with primary waste collection, composting improves the precarious waste situation in the communities, and residents become less dependent on the poor municipal waste collection service. Decentralized composting can be operated by an appropriate technology and implemented at reduced investment and operating costs. Manual composting in small, decentralized plants is more easily integrated in the prevailing level of development in India and the socio-economic background, as it requires labour-intensive processes. It will create employment opportunities and a source of income to the underprivileged people in the rural Nagaon. Decentralized composting allows reuse of organic waste where it is generated, thereby reducing waste quantities to be transported as well as transport costs. This may drastically reduce the overall cost of

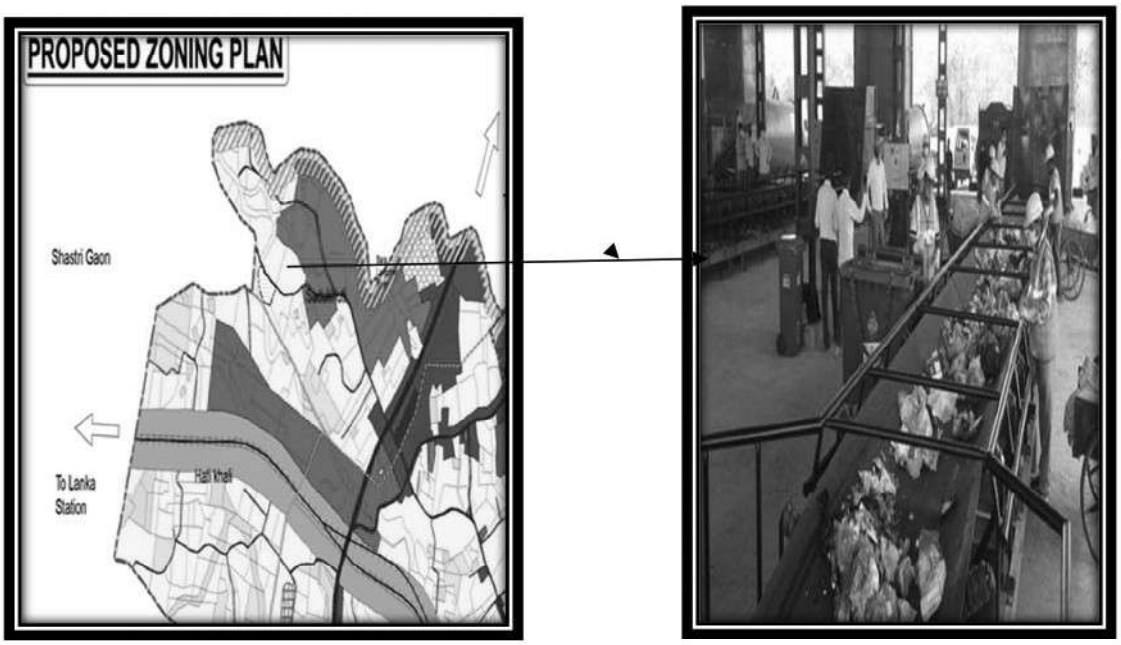
Proposals for Solid Waste Treatment

municipal solid waste treatment.

The solid waste generation expected in Lumding Planning Area by 2045 is very high, providing compost treatment facilities for this huge quantum of wastes, though essential, may not be practically possible in a single phase. So, it is necessary to propose economically feasible and, technically viable solutions which can be implemented in a phased manner. The densely populated urban areas of LMPA are to be given first priority in providing the composting facilities for solid waste treatment. The area required for solid waste

Disposal of Hazardous Waste

treatment and disposal facilities will be 8 hectares. The Notification from the Government of India, Ministry of Environment dated 20th July 1998, which deals with the collection of Bio-Medical Wastes entrusts the liability of its disposal with the waste producer itself. Thus the management of bio-medical waste is not the responsibility of Municipalities. But, however, they can assist in the management of biomedical wastes on a full cost recovery basis without sharing any legal responsibilities. It is advisable to have bio-medical facility for the entire Lumding Planning Area. The bio-medical wastes collected from spots can be stored in selective transfer stations and can be transported to this central treatment facility at village Sadhu Khuti eastern side of planning area. If so desired, the authorities can formulate an action plan for implementing this plant through some competent agencies and can suitably charge for the treatment and disposal of bio-medical wastes. The solid waste dumping sites closest to industrial sites will be a more appropriate option.



Proposed Solid Waste Management site at Sadhu Khuti

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CHAPTER - 7
ENVIRONMENT & CITY BEAUTIFICATION PLAN

7.1 DESCRIPTION OF ECO FRIENDLY AREAS LIKE WATER BODIES; BEELS; FORESTS; AND HERITAGE AREAS

Eco-Friendly areas

Eco is an abbreviation for ecology, the system of relationships between living things, and with their environment. Friendly implies beneficial, or at least not harmful. It should follow that the term eco-friendly, when added to services or products, indicates **positive, or at least not harmful, effects on living things.**

Thus, Eco-friendly literally means earth-friendly or not harmful to the environment. This term most commonly refers to products that contribute to green living or practices that help conserve resources like water and energy. Eco-friendly products also prevent contributions to air, water and land pollution.

Process for making a town eco-friendly were-

- COMMUNITY GARDEN,
- GREEN YOUR BUILDING,
- SMART ENERGY POLICIES,
- ENCOURAGE BICYCLING AMONG CITIZENS
- REDUCE, REUSE AND RECYCLE,
- URBAN FORESTRY, EFFICIENT PUBLIC TRANSPORT, QUALITY PUBLIC SPACES etc.

7.2 RIVERS AND WETLANDS OF LUMDING MASTER PLAN AREA

Topography of Lumding is a mixture of town, village and city. On the path to Upper Assam, Lumding enjoys a hilly, subterranean landscape with dense reserve forests bounding it from all sides. Lumding area ranges from the very low rolling hills approaching the alluvial flats of the Baralangfer and the Dhansiri peneplain to the north and north-east respectively, to the fairly high precipitous hills of the Naga Ranges on the southeast. As far as observed there does not appear to be any structural control over the topography. Drainage is secured for the most part by an irregular network of incised streams which have kept their pre-uplift courses. In the west and northwest sections of the region, the gently rolling hills suggest plateau topography with incised streams. On the west the Lumding area is drained by the Doyang River, on the east and the Baralangfer Rivers, and in the center by the Lumding River.

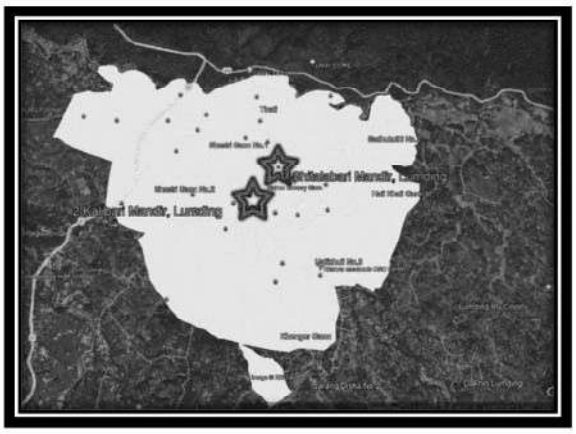
7.2.1 Lumding River: - Lumding River is the only River flows through the Lumding Master Plan Area and a good example of the larger stream types within the region. Starting in the higher hills along the eastern border of the area, it has rapidly cut its way to a stage approaching base level, and for the latter half of its total length pursues very meandering courses. One phase of its life history well illustrated is in the system of river terrace, forested that are frequently seen at various elevation above the present stream banks, indicating a past period of revived energy that has again lost much of its inceptional power.

As the Lumding region lies in rain-shadow region because of its unique geographical location surrounded by hills from hills from all sides. Therefore, the Rainfall is very less throughout the year. However, the region sports small rivers, streams, rivulets through its hilly terrain and are beautiful to watch during the rainy seasons which dry up during winter. These rivers form a major part for the agricultural practices in Lumding and nearby villages to it.

Bara Langpher River, Lumding

7.3 Historical Place at Local Level:-

7.3.1 Harulongpher Shitala Bari:- Goddess Shitala came in the dream of one of the founder who was suffering from Small Pox and desired to be worshipped at Lumding, next morning he explained his dream among his close friends and all decided to start Shitala Puja in Lumding. It was 1958, the first shitala Maa worship took placed in an open ground now a Primary School function from that site. With own contribution and subscription from the community the puja was solemnised without much fanfare but with religious fervor.



Location of Shitalabari Mandir and Kalibari Mandir

Shitala Maa is worshiped by many, she is an incarnation of Supreme Goddess Durga, she cures poxes, sores, ghouls, pustules and diseases. Lumding Sitlabari is a famous temple known to all, in and around Lumding town. During March end to starting April, there is an 8 days festival celebrated by many people. During the eight days a fair is organized wherein every household goods are sold and good food court, restaurant and chat house with especial Bengali dishes are available. Thousands of devotees across the region who have faith join this puja. There were many miracles experienced by the devotees.

Herlongpher Shitalabari Mandir

7.3.2 Lumding Kalibari Mandir: - Kalibari Mandir is at the centre of the Lumding town is famous and old Kali Temple. It can be described as the cultural centre of the people of the town. Durga Puja of Kalibari is always the best. People of every age used to make a visit to the temple wearing new clothes during Puja. Dhak/ Dhol during evening prayer are very special to the devotees. Lightning of Candles during the time of Dewali and Kali Puja at the temple premises is awesome.

Lumding Kalibari Mandir

PROPOSED STRATEGIES

Heritage sites Management and organizational structure

There is a need to setup a Heritage Committee for Lumding Planning Area. The concerned Development authorities/municipalities as well as local stakeholders, NGO, s have significant role to play in successful implementation of strategies proposed for Lumding Areas. Formulations of special regulations to control or mediate development within the available

heritage areas are a prerequisite for effective implementation of the proposed recommendations. Special regulations for all development within heritage areas, including new construction, demolition or modification to existing buildings around historic structures or within historic precincts must be formulated by the concerned authority with the advice of Heritage Committee. Detailed plans must be prepared by respective Municipalities. It is necessary to prepare an inventory of build, cultural and natural heritage resources of the special areas. The inventory must include both protected and unprotected resources. The cost for most of the new developments in special heritage areas in already covered in budget allocation for "Tourism, Recreation and Culture' and hence not included in this table. Estimates for projects those are specific for preservation of heritage resources are only included. River Front Development is treated as a separate item of budgetary allocation.

The relevant policy guidelines and management of culture and natural heritage can rejuvenate and revitalize the Lumding region and support the existing cultural identity. It can also promote tourism, boost local economy and contribute a great sense of pride amongst the residents and became a touchstone for future development.

Strategies for Development of Recreational Areas

Recreation is any physical or psychological revitalization through the voluntary pursuit of leisure time. It is an activity which is relaxing to people and provide diversions from their normal routine. Generally there are four types of Recreational activities:

Revitalization: Restoration and enhancement of mental and physical health.

- Play:-relaxation and exercise
- Adventure: - Excitement and challenge
- Education: organized and incidental
- Indoor Facilities consist of library, clubs, cinema hall, auditorium, multiplex, art and craft centre, shopping mall, food courts, cyber, gymnasium etc.
- Outdoor recreation facilities consist of gardens, parks, playground, golf courses, zoo, and botanical garden, race course, stadium, exhibition ground, water sports complex, green ways etc.

Proposal for augmentation and development of Recreational Facilities

- Development of green belts, plantation, parks, ghats, plazas, Beautification of Ponds abreast the urban set up and invite nature harsh environment through myriad ways.
- Amusement parks to be developed along with horticulture, pisciculture, herbal arks, etc.
- Development of eco-tourism with provision of water theme parks, weekend resorts, clubs, etc. at planning area level.

Proposed strategies to boost tourism

As a service industry, tourism has numerous tangibla and intangible elements. Major tangible elements include transportation, accommodation, and other components of a hospitality

industry. Most intangible elements relate to the purpose or motivation for becoming a tourist, such as rest, relaxation, the opportunity to meet new people and experience other cultures, or simply to do something different or have an adventure. Tourism is vital for every place, due to the income generated by the consumption of goods and services by tourist, the taxes levied on business in the tourism industry, and the opportunity for employment and economic advancement by working in the industry. For these reasons government and private agencies sometimes promote a specific region as tourist destination, and support the development of advancement by working in the industry. For these reasons government and some private agencies sometimes promote a specific region as tourist destination, and support the development of a tourism industry in that area. The contemporary phenomenon of mass tourism may result in overdevelopment; however alternative forms of tourism such as ecotourism seek to avoid such outcomes by pursuing tourism in a sustainable way.

Although there is no any important Tourist Place within Lumding Master Plan Area, however there were some tourist places which attract tourist at local and Regional Level which is located at a few Km from the Lumding Town. **Among them were, Marat longri wildlife sanctuaries (22.7 Km), Haflong as Hill Station (166 Km), Panimur Waterfall, (73.2 Km), Nambor Wildlife Sanctuary (133.3 Km).** Lumding is the only town nearest to this beautiful tourist places therefore the importance of the town is significant. For accommodation and night stay after sightseeing this tourist places, Lumding is perhaps the best choice and therefore Lumding have the potential to growth as hospitality industry in future. Hotels, Restaurant, Guest House, etc to be construct with all infrastructures facilities to attract the tourist for boast up tourist industry. Moreover, there are also beautiful picnic spot on the hilly tracts and on bank of the river Lumding.

Morat Longri Wildlife Sanctuary famous for Wild Asiatic Elephant

Panimur Water Fall at Dima Hasao District

7.4 City Beautification Plan/Proposals

Roadside plantation

Roadside plantation acts as a buffer between the people and government- owned forests, and it will help to reduce the extensive indiscriminate destruction of forests. Roadside tree planting can make significant improvements to the quality of roads and the environment and can protect

key natural resources, especially in ASAL regions where vegetation is essential in binding the soil with organic matter that aids in enhanced infiltration and water retention in the soil.

Planting trees along the road sides, highways and pathway is known as avenue plantation. Avenue plantation is generally practiced for the aesthetic value, Beautification, shade purpose, control of soil erosion and for its economic use of timber, flowers & fruits. Best trees for roadside plantation are Neem, Krishna Chura, Radha Chura, Sonaru etc. Trees also give us fresh air as they produce oxygen. Trees are planted along the roadside as they provide shade to the travellers during summers.

Table-49: Below table shows the Proposal of Roadside tree Plantation alongside the major Road of Lumding Town Area.

SL. No	Name of the Road	Length (approx.)
1	Eta Bhatta Charilali to Tini-Ali	2.01 km (Both side)
2	Tini- Ali to Diphu Bridge Road	0.750 km (Both side)

Source: - Lumding Municipal Board

Requirements and strategies:-

(a) One Kind of Flowering Trees on Both Sides
(b) Two Kinds of Flowering Trees Blooming at one Time on both Sides of Road
(c) 3. Two Kinds of Flowering Trees Blooming at Different Time on both Sides of the Roads
(d) 4. Shady Trees Only on both Sides of Roads.
(e) The trees should be planted at least 12 m apart from the center of the carriageway.
(f) If the road is constructed on the embankment, the trees should be planted as possible as high on the sides of the embankment.

Urban agriculture, urban farming, or urban gardening is the practice of cultivating, processing, and distributing food in or around areas. Urban agriculture is also the term used for animal husbandry, aquaculture, urban beekeeping, and horticulture. These activities occur in peri-urban areas as well. Peri-urban agriculture may have different characteristics.

Urban agriculture can reflect varying levels of economic and social development. It may be a social movement for sustainable communities, where organic growers, "foodies", and "locavores" form social networks founded on a shared ethos of nature and community holism. These networks can evolve when receiving formal institutional support, becoming integrated into local town planning as a "transition town" movement for sustainable urban development. For others, food security, nutrition, and income generation are key motivations for the practice. In both scenarios, more direct access to fresh vegetables, fruits, and meat products through urban agriculture can improve food security and food safety.

Types of Urban Farming

(a) Backyard Gardens. This is the growing of food on home property. ...
(b) Tactical Gardens. This involves using the limited space available to practice agriculture without having to incur hefty expenses.
(c) Street landscaping.
(d) Forest gardening.
(e) Greenhouses.
(f) Rooftop gardens.
(g) Green walls
(h) Vertical farms.

Strategies

(a) Allotment gardens: An allotment garden is a plot or parcel of urban or suburban land made available for individual, non-commercial gardening or food growing and recreation.
(b) Community gardens: Community gardens are an emerging form of urban farming.
(c) Inventory of your town land (and rooftops)
(d) Partnerships and Cultivate market access

Urban forestry is the care and management of single trees and tree populations in urban settings for the purpose of improving the urban environment. Urban forestry involves both planning and management, including the programming of care and maintenance operations of the urban forest. Urban forestry advocates the role of trees as a critical part of the urban infrastructure. Urban foresters plant and maintain trees, support appropriate tree and forest preservation, conduct research and promote the many benefits trees provide. Urban forestry is practiced by municipal and commercial arborists, municipal and utility foresters, environmental policymakers, city planners, consultants, educators, researchers and community activists. The urban forestry comprises all green elements under urban influence such as, Street trees and road plantations, Public green areas, such as parks, gardens, cemeteries, Semi-private space, such as green space in residential areas and in industrial or specially designated parks.

Strategies

(a) Increase tree planting in neighbor hoods with low urban forest cover.
(b) Increase Street and park tree diversity.
(c) Plant trees to support green infrastructure and reduce climate change
(d) Enhance biodiversity through tree planting.
(e) Update inventory and data management for public trees.
(f) Manage public trees for public safety and support tree health.
(g) Work together with local people and the urban NGO related to forestry.

(h) Raise awareness of the importance of the urban forest.
(i) Support volunteers, NGOs, schools, and neighborhood groups in urban forest stewardship.

7.5 Public Rain Water Harvesting Scheme

Rainwater harvesting (RWH) is the collection and storage of rain, rather than allowing it to run off. Rainwater is collected from a roof-like surface and redirected to a tank, cistern, deep pit (well, shaft, or borehole), aquifer, or a reservoir with percolation, so that it seeps down and restores the ground water.

Harvesting rainwater allows the collection of large amounts of water and mitigates the effects of drought. Most rooftops provide the necessary platform for collecting water. Rainwater is mostly free from harmful chemicals, which makes it suitable for irrigation purposes. There are two ways of harvesting rainwater, namely; surface runoff harvesting and rooftop rainwater harvesting.

There are two major techniques of rainwater harvesting.

1. **Surface runoff harvesting:** - In this method, rainwater flows away as surface runoff and can be stored for future use. Surface water can be stored by diverting the flow of small creeks and streams into reservoirs on the surface or underground. It can provide water for farming, for cattle and also for general domestic use. Surface runoff harvesting is most suitable in urban areas.
   Rooftop rainwater/storm runoff can be harvested in urban areas through:
   • Recharge Pit
   • Recharge Trench
   • Tube well
   • Recharge Well

2. **Groundwater recharge**
   Groundwater recharge is a hydrologic process where water moves downward from surface water to groundwater. Recharge is the primary method through which water enters an aquifer. The aquifer also serves as a distribution system. The surplus rainwater can then be used to recharge groundwater aquifer through artificial recharge techniques.
   Rainwater in rural areas can be harvested through:
   • Gully Plug
   • Contour Bund
   • Dugwell Recharge
   • Percolation Tank
   • Check Dam/Cement Plug/Nala Bund
   • Recharge Shaft

Although rainwater harvesting measure is deemed to be a desirable concept since the last

few years, it is rarely being implemented in rural India. Different regions of the country practiced a variety of rainwater harvesting and artificial recharge methods. Some ancient rainwater harvesting methods which includes Madakas, Ahar Pynes, Surangas, Taankas, etc.

Water Harvesting Schemes in india

Steps taken by the Central Government to control water depletion and promote rain water harvesting / conservation are:

1. Government of India launched Jal Shakti Abhiyan (JSA) in 2019, a time bound campaign with a mission mode approach intended to improve water availability including ground water conditions in the water stressed blocks in India. Ministry of Jal Shakti visited water stressed districts and to work in close collaboration with district level officials to undertake suitable interventions. In addition, 'Jal Shakti Abhiyan – Catch the Rain' campaign has been launched by Hon'ble Prime Minister of India on 22 March 2021.

2. National Water Policy (2012) has been formulated by Department of Water Resources, RD & GR, inter-alia advocates rainwater harvesting and conservation of water and highlights the need for augmenting the availability of water through direct use of rainfall. It also inter-alia, advocates conservation of river, river bodies and infrastructure should be undertaken in a scientifically planned manner through community participation. Further, encroachment and diversion of water bodies and drainage channels must not be allowed and wherever, it has taken place, it should be restored to the extent feasible and maintained properly.

3. In compliance to the decision taken by the Committee of Secretaries, an 'Inter Ministerial Committee' under the Chairmanship of Secretary (WR, RD & GR) has been constituted to take forward the subject of 'Push on Water Conservation Related Activities for Optimum Utilization of Monsoon Rainfall'.

4. Ministry has circulated a Model Bill to all the States/UTs to enable them to enact suitable ground water legislation for regulation of its development, which also includes provision of rain water harvesting.

5. Master Plan for Artificial Recharge to Groundwater- 2020 has been prepared by CGWB in consultation with States/UTs which is a macro level plan indicating various structures for the different terrain conditions of the country including estimated cost. The Master Plan envisages construction of about 1.42 crore Rain water harvesting and artificial recharge structures in the Country to harness 185 Billion Cubic Metre (BCM) of monsoon rainfall.

6. CGWB has taken up Aquifer Mapping and Management Programme during XII Plan, under the scheme of Ground Water Management and Regulation. The Aquifer Mapping is aimed to delineate aquifer disposition and their characterization for preparation of aquifer/ area

specific ground water management plans with community participation. The management plans are shared with the respective State governments for taking appropriate measures / implementation.

7. Best practices of water conservation by various entities including private persons, NGOs, PSUs etc have been compiled and put on the web site of the Ministry for the benefit of general public. An interactive link on best practices has also been created for receiving inputs from public, which, after necessary evaluation/validation are put on the website for the benefit of the public.

8. Department of Water Resources, RD& GR has instituted National Water awards to incentivize good practices in water conservation and ground water recharge.

9. Mass awareness programmes (Trainings, Seminars, Workshops, Exhibitions, Trade Fares and Painting Competitions etc.) are conducted from time to time each year under the information, Education & Communication (IEC) Scheme of DoWR, RD & GR in various parts of the Country to promote rain water harvesting and artificial recharge to ground water.

10. The Ministry of Rural Development in consultation and agreement with the Department of Water Resources, RD & GR and the Ministry of Agriculture & Farmers' Welfare has developed an actionable framework for Natural Resources Management (NRM), titled 'Mission Water Conservation" to ensure gainful utilization of funds. The Framework strives to ensure synergies in Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), erstwhile integrated Watershed Management Programme (IWMP) now PMKSYW atershed Development Component and Command Area Development & Water Management (CADWM), given their common objectives. Types of common works undertaken under these programmes/ schemes are water conservation and management, water harvesting, soil and moisture conservation, groundwater recharge, flood protection, land development, Command Area Development & Watershed Management.

11. Central Government supports construction of water harvesting and conservation works primarily through Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and Pradhan Mantri Krishi Sinchayee Yojana – Watershed Development Component (PMKSY-WDC).

12. Atal Bhujal Yojana (ABHY), a Rs.6000 crore scheme with World Bank funding, for sustainable management of ground water with community participation is being taken up in the identified over-exploited and water stressed areas fall in the States of Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Uttar Pradesh. This scheme is expected to contribute significantly towards water and food security of the participating states.

Strategies at Local Level

At local level, Urban Local Body/Municipal Board in compliance with Rain water Harvesting should strictly follow the Government Guidelines, Circulars, Manual, model circulated time to time. In different Structural construction, Planning, Drawing, there should be the provision of

Rain water harvesting system. In this regards, authority related to the permission of construction of Houses, Building, Structure should follow the rules, Byelaws of Building rules. Regarding rain water harvesting in the Lumding Planning Area, Lumding Municipal Board should strictly follow the Building Rules-2014 Govt. of Assam in issuing Building construction permission and also to create Public awareness among people of the locality in rain water harvesting techniques.

7.6 Development of parks and recreational spaces with Identification and demarcation of Open Space for sports, Cultural function, fairs etc in Lumding Planning Area:-

Due to rapid growth of population, the present recreational facilities are not sufficient to fulfill the needs of the people of the Lumding Town. In Lumding Town there is no any organized park for the Children as well senior citizens.

Table 50- Proposal for Construction of Playground Infrastructure and Parks & other recreational Facilities in Lumding Planning Area:-

SL. No	Name of the Open space/ site	Proposal
1	Hati Khuli Area	Parks, Auditorium, Development of Play Ground Infrastructures.
2	Suitable Plot of Land within Lumding Municipal Board	Construction of Open theater with all modern facilities.
3	Suitable Plot of land Within Municipal Area	Proposal of construction of 4 Nos. of Modern Parks within the Lumding Municipal Board.
4	Suitable Plot of land	Proposal for construction of 1 Children Parks and 1 Community centre at each Revenue village of the Lumding Planning Area.
5	Suitable plot of land on the Bank of River Lumding	Proposal for River Front Development Project and construction of eco-tourism Parks at River Lumding.
6	Suitable Plot of Land with LMB Area	Proposal for construction of Guest House
7	Kalibari point, Fruit market chariali, Crossing Gate at Harlongpher point.	Proposal for construction of Automatic traffic signal
8	Highway to Lumding Point.	Proposal for construction of Entrance Gate

Source: -Lumding Municipal Board

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CHAPTER - 8
LAND USE PLAN

8.1 EXISTING LAND USE OF LUMDING MASTER PLAN AREA:

The study of land use holds a very significant place where a particular settlement can be recognized as a town depends on its functional structure. The functional activity can be regarded as the main regions for the growth of urban center. The main purpose of land use study is to provide framework for the development of a particular area. It gives us an idea about the proportion of various types of land. Land use gives an accurate picture of an urban area which is having great significance for future planning. The main purpose of land use classification is to provide framework for the development of a particular area. The need for studying the land use aspect is elaborated as follows: To know the arrangement of various parts of town put to different uses such as residential, commercial, industrial etc.

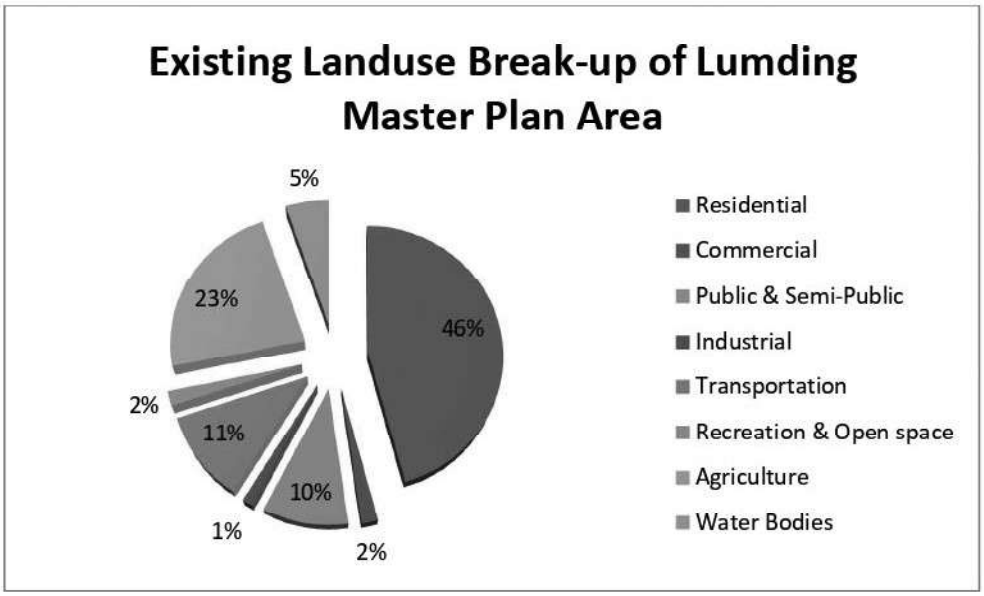
The Existing Land Use pattern of Lumding Master Plan Area was updated based on ground reality on the scientific base map prepared with the help of Satellite Image and Revenue records like village level cadastral sheets, Field Measurement Book sheets and Town Survey Sheets. The Lumding Planning Area is administratively divided into two entities, Urban and Rural. Urban area comprises of Lumding Municipal Board area of 4.53 Sq. Km and Railway Colony Area 3.16 which is Lumding Urban Area is 7.69 and Rural area of 11.99 Sq. Km including 7 Villages. This chapter presents the existing land use analysis, 2045 for the planning area.

As a part of the preparation of GIS Based Master Plan- 2045, the study of the existing Land use pattern of Lumding Master Plan area was carried out by a survey conducted by T&CP, District Office, Nagaon in order to formulate future policies so that a balanced approach can be made in allocating the future land uses. The existing land-use in Lumding Master plan area has been grouped into the following 8 (Eight) categories.

Table 51: Existing Land use of Lumding Master Plan Area

Sl. No.	Land Use	Area (Sq. Km)	% of Total Developed Area	% of Total Area
1	Residential	9.01	63.77	45.78
2	Commercial	0.38	2.69	1.93
3	Public & Semi public	1.97	13.94	10.01
4	Industrial	0.24	1.70	1.22
5	Transportation	2.18	15.43	11.08
6	Parks & Playground / Recreation	0.35	2.48	1.78
	Total Developed Land	**14.13**	**100.00**	**71.80**
7	Agriculture	4.50		22.87
8	Water Bodies	1.05		5.34
	Total Master Plan Area	**19.68**		**100.00**

Source-Consultancy & compilation by T&CP, Nagaon



(Existing Land-use of LMPA)

The detailed land use analysis of the Lumding Master Plan Area-2045, gives the picture of the shape of the Urban and Rural land for various activities. From the above table it is seen that out of the total land, Agriculture land use which occupies 4.50 Sq. Km. (22.87 %) of the total planning area, residential land use is spread over 9.01 Sq. Km. (45.78 %).Out of the undeveloped land area, about 1.05 Sq. km (5.34%) occupies by water bodies covered by Harlongpher, some ponds and wetlands etc.. It is also observed that about 2.18 Sq. Km (11.08 %) areas occupies by Transportation including Roads and Railway. Public and semi-public occupies 1.97 Sq.km. (10.01%) for various Physical and social infrastructure like Educational institutes, Government Offices, Hospitals, District and Special jails, Circuit House, Govt. Residential Buildings etc. Km. 0.28 sq.km (1.93%) occupies by commercial use.

It is also seen that about 0.24 Sq. Km (1.22 %) of land occupies by industrial use. From the table it is seen that there is huge scope of future development of the planning area .The rural area has concentration of good amount of Agricultural land, open space and water bodies and urban area also has large amount of vacant land and open spaces. Thus the Planning area has a good scope of development of existing residential buildings and construction of new residential buildings or redevelopment in conformity with the heritage importance and special regulations for the Planning Period up to 2045.

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CHAPTER - 9
PROPOSED LAND USE PLAN

On the basis of planning policies, techniques, principles and projections, various recommendations and proposals for the future growth of Lumding Master Plan Area have been formulated. As such recommendation and proposals have been translated into land use plan to give them spatial dimension. The land use shown in the map indicates the functional relationship between various urban activities visualized up to 2045 and aims at to provide the most economics use of urban land.

The land requirement for various urban activities have also been proposed on the basis of projected population of 1,27,389 by 2045.The distribution of land into various broad categories of land use have been made keeping in view the minimum desirable standards of development and functional linkages between them. The following table shows the land proposed for various major uses.

9.1 PROPOSED LAND USE IN LUMDING MASTER PLANAREA:

The Proposed Land use in Lumding Master Plan Area for 2045, considering all the above analysis can be summarized as below:

Table 52: Proposed Land Use classifications for different uses of Lumding Master Plan, 2045

Sl. No.	Land Use	Area (Sq. Km)	% of Total Developed Area	% of Total Area
1	Residential	10.42	57.95	52.95
2	Commercial	0.67	3.73	3.40
3	Public & Semi public	2.16	12.01	10.98
4	Industrial	0.45	2.50	2.29
5	Composite Use	0.09	0.50	0.46
6	Transportation	2.25	12.51	11.43
7	Parks & Playground / Recreation	1.94	10.79	9.86
	Total Developed Land	**17.98**	**100.00**	**91.36**
8	Agriculture	0.65		3.30
9	Water Bodies	1.05		5.34
	Total Master Plan Area	**19.68**		**100.00**

Source-Consultancy & compilation by T&CP, Nagaon

9.2 PROPOSED RESIDENTIAL USE:

To accommodate the projected population of about 1, 27,381 an area of about 10.42 sq. km. is earmarked for residential use in Lumding Master Plan Area which is 57.95 % of the Developed Area .

The area under Lumding Master Plan 2 (Two) Town Planning Scheme (TPS) project is proposed at Mora-Basti, and Jarang Disha and 1 (One) Local Area Project (LAP) at Ward No-9. Affordable Housing is also proposed along the TPS site at M.

Town Planning Schemes (TPS): -

The basic concept of Town Planning Schemes is pooling together all the land under different ownerships and redistributing it in a properly reconstituted form after deducting the land required for open spaces, social infrastructures, services, housing for the economically weaker section, and road network. A town planning scheme of the local government made under the Town Planning and Development Act 1928.

Conceptually, town planning scheme is a joint land development project undertaken by the owners. Planning authority steps in as an agent on behalf of owners provides for smooth vesting of lands to planning authorities for public purposes.

The basic concept of the TP Scheme is to pool together all the land (typically ranging from 100 to 200 hectares) under different ownerships and redistribute it in a properly reconstituted form after carving out the required land for open spaces, social infrastructure, services, housing for the economically weaker section etc.

Principles of Town Planning Schemes:

The basic principles of Town Planning Schemes are summarized as mentioned below:

• Lands pooled and reconstituted according to some equitable formula.
• Loss of land because of reservation
• Dispossession kept at bare minimum
• Reconstituted plots: buildable
• Increments, incremental contribution – maximum 50%
• Cost of Scheme: minimum as far as possible
• Urban land should itself resource the cost of development
• Town planning scheme has been provided with an in-built mechanism for arbitration.
• Conceptually, town planning scheme is a joint land development project undertaken by the owners.
• Planning authority steps in as an agent on behalf of owners.
• Provides for smooth vesting of lands to planning authorities for public purposes.
• General opposition to acquisition from owners is not existent, therefore, rightly called as 'land acquisition without tears.'
• For implementation of D. P. proposals

Tentative time-frame for Town Planning Schemes (TPS):

- Making and publishing draft scheme from date of intention declaration 9 months
- Extension that may be granted 3 months Submission of scheme after publish 3 months
- Sanction of Draft Scheme by the State Government 3 months
- Appointment of T. P. O. ½ month Making of Preliminary & final scheme 12 months

- Extension that may be granted 6 months
- Sanction of Preliminary / Final scheme 2/3 months
- Scheme to come into force 1 month
- Approximate time for finalization of a TPS 50 months
-

Procedure to prepare a Town Planning Schemes (TPS):

- A TPS (u/s 40(2)) may be made on land which is,
- In the course of development
- Likely to be used as residential, commercial or industrial or building
- Already built upon
- After identifying area for TPS, the authority through board resolution is required to take CTP's consultation u/s 41(1) and declare its intention to make a scheme
- Within nine months, the authority is required to prepare and publish the scheme in official gazette
- After considering the suggestion / objections received within a month of publication, draft scheme is sent to the Government for sanction u/s 48(1)

Appropriate authority can make one or more TPS for the respective development area. TPS may be made in respect of any land which is in the course of development, likely to be used for building purposes and already built upon.

The Public Planning Authorities/ Development Agencies acquire large area of land under the Land Acquisition Act of 1894 or by agreement. Then a Master Plan of the area is prepared, laying out the roads, plots for social amenities, and plots for sale. Roads and infrastructure are then built, using government funds or loans. Serviced plots are then sold for urban uses at market rate, which are most often much higher than the rate at which land is acquired. Under the provision of Town & Country Planning and Urban Development Act the Town Planning Schemes (TPS) has been proposed at 2 (Two) locations in the Lumding Master Plan, 2045 in consultation with Lumding M.B.

1. **TPS I with Affordable Housing at Mora Basti**
2. **TPS II at Jarang Disha**
3. **LAP (Local Area Project) at Ward No-11**

Proposed TPS and LAP site at Lumding MP Area

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LOCAL AREA PLAN (LAP):

Local area planning is a process of planning that is concerned with resolving local level problems and issues. Its priorities include overall welfare of the people and development of the local area. Maintenance of social services and amenities, promotion in the quality and quantity of local products and services and keeping surroundings and local environment clean and green are some of its continuous concerns. In terms of size, it is the smallest planning unit with reference to people and places. A planning which is carried out through people's participation turns out to be a dream of real situation reflecting continuous growth and development in the local area.

The function of a local area plan is to take a detailed look at a specific area, particularly areas which require urban renewal or where large scale development is expected, identifying and analyzing the various issues of relevance, before establishing and setting out principles for the future development of the area.

Local area plans are intended to provide more detailed planning policies for areas that are expected to experience significant development and change, through proper public participation and democratic oversight. Under the provision of Town & Country Planning and Urban Development Act the Local Area Plan has been proposed discussing with the Lumding M.B at 1 (One) suitable locations in the Lumding Master Plan, 2045.

9.3 PROPOSED COMMERCIAL LANDUSE:

With the rapid population growth in Lumding the existing commercial area concentrated along the major roads of the town area will not be sufficient to meet the need of future projected population.

Therefore, an additional area of about **0.09 sq. km (0.50 %)** is proposed for commercial purposes in the Lumding Master Plan area.

9.4 PROPOSED INDUSTRIAL LANDUSE:

There are good prospects for setting up of forest and agricultural based small and medium industries in Lumding Master Plan area. There are also good scopes for setting up of services and light consumer goods producing industries like agriculture implements, readymade garments, soap making, brick making, backery, plastic goods, power loom etc. In addition to the existing industrial area, an area of about **0.45 sq. km (2.50 % of the Developed Area)** of land has been earmarked for setting up of medium and light industries in the Lumding Master Plan Area.

9.5 PROPOSED PUBLIC AND SEMI-PUBLIC USE:

In the Lumding Master Plan area land proposed for public and semi-public use is 2.16 Sq. Km (12.01%) which is required for proposed as public and semi-public use. The public and semipublic uses have been proposed on Govt. land of Lumding Master Plan Area.

9.6 PROPOSED CIRCULATION PLAN:

The land is proposed under transportation will be **2.25 sq.km**.(12.51%) of Lumding Master Plan -2045.The proposals for improvement and widening of roads within Lumding Master Plan Area. All the major junction points should be developed in a planned manner. Modern traffic signaling system is to be proposed within the Lumding Master Plan Area.

9.6.1 HIERARCHY OF ROAD PROPOSED WITH WIDTH:

1) Arterial Road: - 50 to 80 metre width

2) Sub Arterial Road: - 30 to 50 metre width

3) Collector/Distributor Road: - 12 to 30 metre width

4) Local Road:-6.6 to 15 metre width

9.6.2 FIXATION OF ROAD LEVEL OF LUMDING MASTER PLAN AREA

Road levels to be defined at the Local Area Plan level to ensure integrated road levels with drainage system and slope. No roads to have two different road levels without a proper median or a separator. Repeated excavation of roads damaging the underground utilities and disturbed road levels

While planning, planners face the problems associated with road levels, lying of new pipelines, parking in residential areas, decongestion, fire safety issues, requirement of road widening and lose of heritage façade, provision of land for social infrastructure and sometimes re-planning underground infrastructure.

Table 53:- Proposed Road Level (RL) of the major Roads of the Lumding Master Plan Area shown in the below:

SL No.	Name of the Road	Road Level at Different points (in metre)	Remarks
1	Lanka Road	154, 156	Shown in the Circulation Map
2	Julan Pool Road	151, 155	-do-
3	Lumding Highway Road	148, 154	-do-
4	Mora Basti Road	164	-do-

Source-Circulation Map Lumding Master Plan

9.7 PROPOSED RECREATIONAL FACILITY:

Existing parks and playgrounds are not available within the Lumding Master Plan area to meet the demand of the people and the condition of the existing parks and playgrounds are deplorable condition which are urgently need to be improved. Thus, an area of 1.94 sq.km (10.79 %) has been proposed for recreational facilities (park and playground) for Lumding Master Plan 2045.

9.9 PROPOSED NO CONSTRUCTION ZONE OR BUFFER ZONE

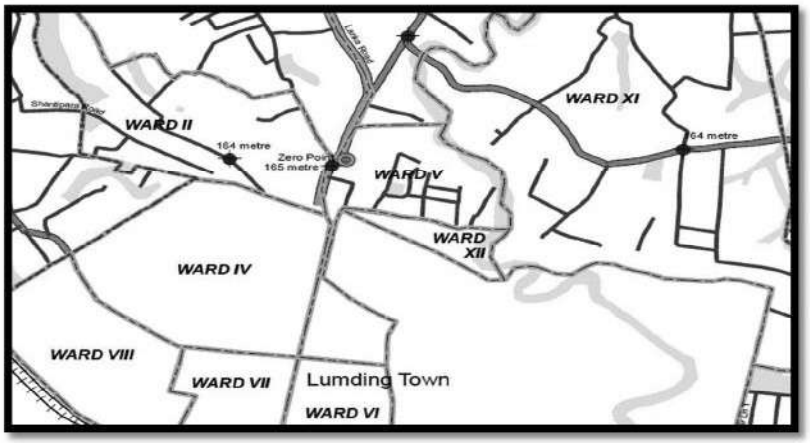
To regulate the construction near water bodies and to conserve rivers and canals, buffer zones around them have been proposed in the Lumding Master Plan Area, and the same has been denoted in the proposed Nature Conservation Map. It indicates the buffer areas prescribed for the conservation of water bodies in the town. This area proposal is made based on the buffer distance fixed for each water body. As the primary objective for the zone is conservation, planned green space development can also be attained in this area. Buffer areas have been proposed along the River Harlongpher, and water bodies mainly wetland area, ponds, etc. of the Lumding Master Plan Area.

Buffer width of 15 metres has been proposed along the water bodies inside Municipal Area and 50 metres along the water bodies outside the Municipal Area. A Nature Conservation map has been prepared showing No construction zone or Buffer Zone of Lumding Master Plan Area.

9.10 ZERO POINT OF LUMDING MASTER PLAN AREA

Free Stationing is a method of determining a location of one unknown point in Relation to known point. There is a zero point of reference called a total station. Zero point is the first starting point from where we can measure distance from one point to another unknown point.

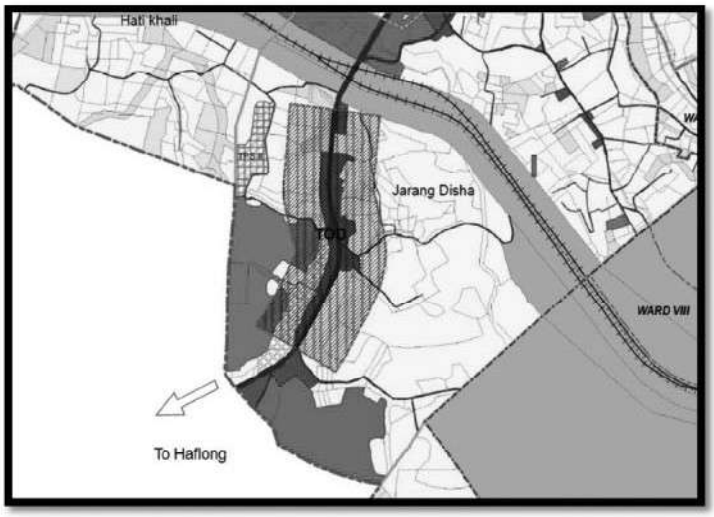
In case of preparing Contour Map of Lumding Master Plan area, the zero point or the starting point has been selected as the "Lumding Tiniali".



Zero point: Lumding Tiniali

TRANSIT ORIENTED DEVELOPMENT ZONE (TOD):

In order to ensure optimum utilization of scare land resources and to provide opportunities for restructuring through Mixed land-use along the Mass Transit corridors, Transit Oriented Development will be allowed. TOD Zones will be the area in immediate vicinity of the mass transit Corridor i.e within a walking distance and also well integrated with bi-cycle, feeder and transit networks. In case of Lumding Master Plan TOD proposed along-side the Lumding-Silchar Road from Fakharuddin Ahmed Road to Railway Crossing with a Buffer of 200 metre.



TOD (Transit Oriented Development) Area at Lumding Master Plan Area

9.11 INFRASTRUCTURE PROPOSALS:

The availability of existing social / physical facilities and their services of Lumding Master Plan area have been studied. The existing deficits and future requirements are calculated as below:-

Education, Health, Socio-cultural facilities and Communication

To accomplish the social and economic upliftment of the society is not possible without the modern and up to date educational system capable of eradicating illiteracy and ignorance and providing skilled and trained up man power required by changing economic condition.

The educational, Health, Socio-Cultural and Communication facilities requirement for Lumding Master Plan area up to the year 2045 has been estimated considering a higher standard as mentioned in the table below:-

Table-54: Norms for requirement of Social Infrastructures

Sl. No	Type of Educational Institute	Norms	Existing Numbers	Deficit	Requirement
EDUCATION					
1	Primary school	1 in 2500 population	38	12	12
2	Middle school	1 in 5000 population	15	10	10
3	High school	1 in 7500 population	7	9	9
4	Higher Secondary school	1 in 90,000 population	1	1	1
5	General college	1 in 1,25,000 population	1	1	1
Health					
6	Intermediate Hospital	1 in 1,00,000 population	1	1	1
7	Nursing Home, Maternity home	1 in 45,000 population	1	2	2
8	Sub-Dispensary	1 in 15,000 population	7	1	1
Socio-Cultural Facilities:					
9	Community Room	1 in 5000 population	2	23	23
10	Community Hall/ Library	1 in 15,000 population	1	7	7
11	Music Dance & Drama etc.	1 in 1,00,000 population	-	2	2
Communication					
12	Post Office	1 for 15,000 population	1	7	7
13	Police Station	1 for 90,000 population	1	1	1
14	Fire Station	1 for 2,00,000 population	1	-	-

Source-T&CP compilation

Road and Drain Proposal:-

Within Lumding Master Plan Area total 77 Nos. Roads were proposed for future improvement and widening and 71 Nos. of Drain are proposed for future construction.

Table-55 Proposal for Construction/Improvement and widening of Road & Drain

Construction/Improvement and widening of Road		
Sl. No.	**Name of Road**	**Length in km (appx.)**
1	Hanuman Mandir Road	(200-250 M)
2	Shyma Prasad Mukherjee opposite colony	(80-100 M)
3	Durga Mandir Side Road	(80-100 M)
4	Saraswati Path	(150-200 M)
5	Durga Mandir opposite colony	(80-100 M)
6	Saraswati Mandir opposite colony	(100-150 M)
7	Bholenath Path	(100-150 M)

8	Udolachal Path	(200-250 M)
9	Saradamoni Path	(200-250 M)
10	Chakraborty Sir Path	(80-100 M)
11	Gobinda Pally	(150-200 M)
12	Soroth Pally	(250-300 M)
13	Soroth Pally opposite Lane	(50-80 M)
14	Soroth Pally 2	(300-350 M)
15	Shriram Path	(100-150 M)
16	Jhulanpool Nadi Road	(100 M)
17	Loknath Mandir Road	(400-500 M)
18	Ghosh Patty Road	(300-400 M)
19	Ganga Path 1 No.Lane	(80-100 M)
20	Ganga Path 2 No.Lane	(100-150 M)
21	Shivnath Lane	(300-400 M)
22	Ganesh Path Road	(250-300 M)
23	Rajib Path 1 No.Lane	(50 M)
24	Tapasiddhi Lane	(150-200 M)
25	Jhulanpool to Khudiram Pally	(400-500 M)
26	Basudeb Lane	(150-200 M)
27	Sibu Nag Road	(80-100 M)
28	Besides Aju Bardhan Road	(80-100 M)
29	Besides Talukdar Shop	(100-130 M)
30	Mona Shop to Sarbari Madam House	(100-150 M)
31	Ramkrishna Path 1	(50-70 M)
32	Anhoy Bhowa to Shivbari Path	(200-250 M)
33	Sreemaa Sonomi Path Bye-Lane 1	(100 M)
34	Horpiada Lane	(200.20 M)
35	Brahma Kumari Road	(500 M)
36	Aseb Galli	(300 M)
37	Anup Sarkar House to Habul Das House	(200 M)
38	Assamese School Galli	(150 M)
39	Ananda Pally main road	(1100M)
40	Bhowmick house to S.Chakraborty house	(100 M)
41	Bijoy Mazumdar house to Mr. Bora house	(150 M)
42	Atta Ram Road	(400 M)
43	Mistry Patty	(1500 M)
44	Thanna Road	(400 M)
45	Station Road	(800 M)
46	Pumpa Studio to Jyoti Hall	(250 M)
47	Krishna Nagar Road	(400 M)
48	Radha cinema Hall to Station Road	(450 M)
49	Natun Bazar Road	(250 M)
50	Madhya Bazar Road	(300 M)
51	Kali Mandir to Upen Das house Sub-Road	(200 M)
52	Kartik Mallick house to Binod Mishra house	(450 M)
53	Haru Sur house to ELH School Sub-Road	(150 M)
54	Bharti Sangha club to Somajbari Mandir Road	(300 M)
55	Nipen Dutta house to Suman Dey house Somaj Bari Sub-Road	(200 M)
56	Chakraborty House to Samir house	(93 M)
57	Harlonphar L.P. School to M.E. School	(90 M)
58	Ram Thakur Nagar Kali Mandir till Chandmari transformer Road	
59	Manasa Mandir to connecting Main Road	
60	Shiv Mandir to Mantu Sill Road	
61	Jogadish House to Kali Mandir Road link	
62	Church Road main to Tapan Choudhury house Road	
63	Ananda Marg School	(250 M)
64	Bablu Chakraborty house to Ram Thakur Nagar Bridge	(200 M)
65	Nasu Malakar to Sitlabari	(115 M)
66	Atta Ram Road	(400 M)
67	Mistry Patty	(1500 M)
68	Thanna Road	(400 M)
69	Station Road	(800 M)
70	Pumpa Studio to Jyoti Hall	(250 M)
71	Krishna Nagar Road	(400 M)

72	Radha cinema Hall to Station Road	(450 M)
73	Natun Bazar Road	(250 M)
74	Madhya Bazar Road	(300 M)
75	Kali Mandir to Upen Das house Sub-Road	(200 M)
76	Kartik Mallick house to Binod Mishra house	(450 M)
77	Haru Sur house to ELH School Sub-Road	(150 M)

Construction/Improvement of Main Drain and Sub Drain		
Sl.no.	**Name of Drain (main- drain and sub- drain)**	**Length in mt. (appx)**
1	Hanuman Mandir to Jhulonpool roadside of the road drain	(2000M)
2	Shyma Prasad Mukherjee statue to Jhulonpool river left side of road drain	
3	Shyma Prasad Mukherjee statue upto river right side of road drain	(1500 M)
4	Jhulonpool to Lanka road through Gaya Path left and right side of road drain	(1500 M)
5	Ashish Roy house to Main Road	(100 M)
6	Rohit Bose house to Soni Mandir	(150 M)
7	Near Bapan Bhowmick house	(150 M)
8	Paresh Mandal house to Paltu Banerjee house	(50 M)
9	Near Harlonphar river at Kamakhya Colony	(50 M)
10	Jagadish Bhattacharjee house towards Santunu Ghosh house	(95 M)
11	Dinesh Mandal house to Bakuli Das house	(200 M)
12	Bedi wine shop to Ram Thakur Athithi sala	(260 M)
13	Mistry Patty	(1500M)
14	Mazsid Road	(600 M)
15	Thanna Road Drain	(800 M)
16	Sahid field to Thanna Road	(400 M)
17	Hanuman Mandir Drain	(200M)
18	Shyma Prasad Mukherjee opposite colony Drain	(100 M)
19	Saraswati Path Drain	(100-150 M)
20	Durga Mandir opposite colony	(50-80 M)
21	Saraswati Mandir opposite colony	(100-150 M)
22	Bholenath Path Drain	(100-150 M)
23	Saradamoni Path	(200-250 M)
24	Chakraborty Sir Path	(80-100 M)
25	Gobinda Pally Drain	(200-250 M)
26	Soroth Pally	(250-300 M)
27	Soroth Pally 2	(300-350 M)
28	Soroth Pally	(250-300 M)
29	Shriram Path	(100M)
30	Soroth Pally 2	(300-350 M)
31	Shriram Path	(100-150 M)
32	Loknath Mandir Drain	(300 M)
33	Shivnath Lane Drain	(300-400 M)
34	Shivbari Path Drain	(300-400 M)
35	Ma Kali Path Drain	(300-400 M)
36	Jhulanpool to Khudiram Pally	(300-400 M)
37	Basudeb Lane	(150-200 M)
38	Aju Bardhan Side Road	(80-100 M)
39	Mona Shop to Sarbari Madam House	(100-150 M)
40	Ganesh Path Drain	(200-250 M)
41	Ganga Path 1	(80-100 M)
42	Ganga Path 2	(100-150 M)
43	Udayachal Path	(150-200 M)
44	Sreemaa Sonomi Path	(500 M)
45	Ramkrishna Path Drain	(500 M)
46	Jhulanpool Main Drain	(300M)
47	Siva Nag Drain	(100M)
48	ASEB Drain	(300M)
49	Ananda Pally Drain	(1500 M)

50	Dulal Biswas house towards Horulongphar river at Sankar Pally	(600 M)
51	Bardhan house to Nitai Dey house at Bajarongwal Path Drain	(900 M)
52	Paresh Mandal house towards house of Paltu Banerjee	(50 M)
53	Sitla Maa Temple towards Kamakhya Temple	(85 M)
54	Kali Bari Pukur Par towards house of P.Dutta	(50 M)
55	From Bishnu Bandha to Gautam Banik	(120M)
56	Atma Ram Road sub-drain	(800 M)
57	Back of Shree Maa Bhavan sub-drain	(300 M)
58	Krishna Nagar road main drain	(800 M)
59	Radha cinema hall road to station road main drain	(900 M)
60	Netaji Road main drain	(1250 M)
61	West Market Road main drain	(1400 M)
62	Natun Bazar Road main drain	(450 M)
63	Jamuna Path sub-drain	(400 M)
64	Netaji Road Bye-Lane sub-drain	(500 M)
65	Dry Fish market road sub-drain	(400 M)
66	Kali Mandir to Upen Das house road drain	(200 M)
67	Munni house to Binod Misra house road drain	(450 M)
68	Adarsha School to Raju Bardhan road drain	(225 M)
69	Amar Chand house to river main drain	(300 M)
70	Uttam Chakraborty house to river main drain	(150 M)
71	Runu Malakar to Joy Bhattacharjee drain	(100 M)

9.12 PROPOSALS FOR WATER SUPPLY:

Proposed PWSS

(1) Pipe Water Supply Scheme -1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17

(2) Pipe Water Supply Scheme-7 Revenue Village

Table:-56

Description	2021	2031	2041	2045
Total Population of Lumding Master Plan Area	84269	99177	116871	127,389
Projected Water Demand (MLD)				
Total Water Demand @ 135 LPCD	11.37 MLD	13.39 MLD	15.78 MLD	17.20 MLD
15 % O & M loss	1.70	2.00	2.37	2.58
Sub Total	13.07	15.38	18.15	19.78
2% Fire Fighting	0.26	0.30	0.36	0.39
Total Water Demand	13.33MLD	15.69 MLD	18.51MLD	20.17 MLD
Grand Total Water Demand (Say)				
Add 10% extra (Say for defense area, Floating population, Tourism, Service population etc.)	1.33	1.57	1.85	2.01
Overhead Population Water Demand	14.66	17.26	20.36	22.18

Source-T&CP, Nagaon Compilation

Minimum domestic water supply per capita per day will be 135 liters. There overhead water demand is 22.18 MLD for Lumding Master Plan Area up-to, 2045.Thus, additional water

supply schemes or up-gradation of existing water supply schemes will be required for Lumding Master Plan Area-2045.

9.13 SECTOR -WISE INVESTMENT PROPOSAL:

Table 57-The sector wise requirement of implementation of various projects of Lumding Master Plan Area is detailed as table below:

SL. NO.	Location	Project Name
Neighborhood Centre		
1.	Jarang Disha	Neighbourhood Centre
2.	Mora Basti	Neighbourhood Centre
3.	Dakhin Lumding	Neighbourhood Centre
4.	Kangar Gaon	Neighbourhood Centre
5.	Sadhukhuti No-1	Neighbourhood Centre
6.	Hati Khuli	Neighbourhood Centre
7.	Pub Lumding	Neighbourhood Centre
8.	Pachim Lumding Panchayat, Sadhu Khuti 1	Old age Home
Solid Waste management		
1.	Sadhu Khuti No-1 (Dumping Yard)	A. Construction of Material Recovery Facility (Dry). Composting Machine
		B. Development of solid waste Engineering Landfill site of 4 Bigha 0 katha 0 lessa of land at Dag no-2 Sadhukhuti Village.
Drainage System		
1	Lumding Municipal Area/Lumding Planning Area	A. Preparation of Master Plan and DPR for Drainage System. B. Construction and Improvement of Existing Storm Water Drains. C. Cleaning and Maintenance of existing Drains. D. Recycling and Process of storm drain water. E. Barlongpher River, Deep Boring (Ground water Table) Ward No-2&3 (due to river erosion) river front development project.
Water Bodies		
1	Lumding Planning Area	Improvement/Beautification of kali bari, Sitla maa temple at Nadirpar, Dangri Baba Mandir at Pachim Lumding near APDF camp, Ram Thakur mandir (Bonoutshav near chanmari, Ram Krishna mission at DTS colony, shiv Temple at pathar pani Dhakin lumding, Budha Mandir at Butha colony as tourism spot
Traffic and Transportation		
1	Sadhu Khuti No-1 Near NH 27 (4 LANE)	Construction of Bus Terminus
2	Jarang Disha near NH-27 (4 Lane)	Construction of Truck Terminus
3	Lumding Municipal Area / Lumding Planning Area	Construction of Auto and Bike Parking space
4	Lumding Municipal Area / Lumding Planning Area	Construction of Traffic Signal Point/Post (auto) at various junction points where traffic gathering in high with C.C camera.
5	Lumding Planning Area	Proposal for Construction of 2 (two) Alternate road linking Lumding Town. One from 2nd APTF (Hati Khuli No.1 & 2 Connecting) through Fakaruddin L.P school via Madhab Dev. M.E school connecting to Railway Bridge Road. 2nd Alternate road is from Diphu Road through Murabasti L.P school via Chandmari Road, Lumding
Recreational Facility		
1	Lumding Planning Area	Construction of Parks and Playgrounds

2	Lumding Planning Area	Construction of Parks and Playgrounds
3	Lumding Planning Area	Construction of Swimming Pool
		Construction of Indoor Stadium.
4.	Lumding Planning Area	Construction of Auditorium & Library.
5.	Lumding Municipal Area / Lumding Planning Area	Construction of Sports Association Library.
6.	Lumding Municipal Area / Lumding Planning Area	Construction of Sports Association Office.
	Infrastructure's Proposal	
1	Lumding Planning area	Construction of Engineering College. (NIT/IIT/Assam Engineering Colege) Construction of Polytechnic College. Construction of I.T.I Construction of B.Ed College. Construction of D.LEd College. Construction of Law College. Construction of I.T. Park. Construction of Fashion & Design Institute. Construction of electric power Distribution Sub-station. Construction of Road Side Flower Garden. Construction of Medical Research Lab. Construction of Veterinary Hospital.
2.	Lumding Municipal Area / Lumding Planning Area	Installing of High Resolution C.C.T.V Camera.
		Requirement of any kind of State Govt. important main Office.
3	Atma Ram Road under Lumding Municipal Board	Construction of Three storied Lumding M. B(ULB) main office.
4	Lumding Municipal Area	Construction of Clock Tower at Lumding Tinialti Point
5	Lumding Planning Area	Construction of Entry Gate at Diphu-Lumding Junction Point, Mura Basti near NH-36, Itabhata Chariali, Junction Point at NH-27 and Fakaruddin Ahmed Road.
6	Lumding Planning Area	Proposal for Construction of Modern Guest House, Waiting shed alongside major road stoppages and installation of solar light in the streets of Lumding Town.
7	Lumding Planning Area	Proposal for construction of Infrastructure Development alongside the River Barlongpher to reduce Bank erosion.
	Industrial Area	
29.	Hatikhuli Area	Development of industrial Area

	Fly Over/Under ground Bridge	
1	East Lumding (Railway Crossing)	Construction of Fly Over / under Ground Bridge.
2	Near B.M.B High School(Railway crossing)	Construction of Fly Over.
3	Over Harlongpher River connecting NH-36 (Mura-Basti)	Construction of RCC bridge
4	Itabhata Chariali	Proposal for Construction of Fly Over at Itabhata Chariali
	ROAD BRIDGE	
1	Jhulan Pool Road to Chanmari Road	Construction of Road Bridge (Rising the bridge height)
	RELIGIOUS	**SPOTS**
1	Lumding Planning Area	Improvement of Kali Mandir at Kali Bari, Sitla Maa Temple at Nadirpar, Dangri Baba Mandir at Ram Thakur Mandir ( )

Source: -Lumding Municipal Board

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CHAPTER - 01
DISASTER PLAN

Disaster is an undesired calamities event that seriously disrupts the functioning of a community or society and causes human, material and economic or environment losses that exceed the community's or society's ability to cope using its own resources. Disasters are usually caused by nature but in some cases, it can be caused by human actions as well. Disaster can be broadly classified into water and climate related geology related and accidental related. Assam has been traditionally vulnerable to natural disasters on account of its unique geo-climatic conditions. Flood, drought, cyclones, earth quakes and landslides have been recurrent phenomena.

At national level, the ministry of Home affairs is the nodal Ministry for all matters concerning disaster management and at state level State Disaster Response force under Ministry of Home, Govt. of Assam is the responsible agency to tackle any disasters within the State.

Lumding is one of the important town of Hojai district which is only 53.6 Km from Hojai Town and important railway township of Assam.

1.1 Mitigation Plan:

Any disaster management plan or emergency management plan consists of four phases, namely: Mitigation, Preparedness, Response and Recovery. The Mitigation component in an emergency management plan is aimed at reducing the risk, impact, effects of a disaster. Hence careful planning eliminate the phase is important to reduce or eliminate the long-term risk to human life, property from natural and manmade calamities. It's important to have mitigation plans led by local community, working together to identify, plan for in the event of a disaster and reduce vulnerabilities and promote long term personal and community resilience and sustainability. Mitigation Plans can concentrate on both pre-disaster and post disaster efforts to reduce the impact of the disaster.

Pres-disaster Mitigation should focus on projects and interventions to address natural and man-made disaster to reduce risk to the population and property. This is mainly achieved by strengthening the resilience of National/state infrastructure. Post- disaster Mitigation efforts are primarily designed to reduce future damage in an affected area and decrease the loss of life and property and life due to the incidents following the disaster. The essential steps of hazard mitigation are:

(1) Hazards identification
(2) Vulnerability Analysis
(3) Defining a Hazard Mitigation Strategy.
(4) Implementation of Hazard Mitigation Activities and projects

As Lumding region falls in a rain shadow zone , the entire region experiences less rainfall and prevails dry and Drought like condition, hence the disaster vulnerable area mitigation plan

mainly focuses on flood, drought related eventualities and Train accident and Man animal conflict generally and how can it be mitigated and have better preparedness. It is important to note that disaster management is an integrated task involving various government departments of region and the plan should focus on prevention, preparedness, mitigation, response, and measures.

Flood

Normally, Lumding region is not affected by Flood. However, due incessant heavy rainfall in the hilly areas consequences flowing down of Rainwater from the hills of Dima Hasao district caused sudden flash floods at Lumding. The Lumding River and Harlongfar River was flowing above the danger level, while areas like Padagani, Dakhin Lumding, Nabin Pally, Chandmari, Sankar Pally and Julanpul in Lumding were inundated. Therefore, the Lumding region is sensitive to sudden flash flood. As per report, flood in 2019, swirling flood water have even forced the railway authority to control train services due to settlement of tracks in the lumding-Badarpur hill section.

Table-58 Vulnerable Road to Flood

Name of the Road	Total length in K.M	Population to be affected
Lumding-Dimapur Road	73.00 Km	8314

Source-DDMP, Hojai

An inundated Area in Lumding during rainy days

Drought:-

The southern part of Nagaon district in central Assam valley and adjoining parts of Karbi Anglong form a rain-shadow zone where annual rainfall is as low as 800-1200 mm. Water scarcity is a potential constraint for the people living in these areas. Absence of effective irrigation systems or water harvesting practices adds to the vulnerability of the people. Lumding, located centrally in this zone shows a decline in rainfall at a rate of 2.15 mm per year. As a result water crisis might aggravate in this region in the coming years.

Table-59 Drought Affected Areas of Hojai District

SL. No	Disastrous	Year of Occurrence	Area affected	Name of the localities
1.	Drought	2009	Hojai District	All the circles of the District

Sources:-Assam Disaster Management Authority.

Earth Quake:-

Lumding has not experience any major earthquake yet except few mild tremors occasionally. But the entire region is very much vulnerable to earth quake due to its weak geography and fragile geomorphology being is in the most dangerous seismic zone i.e zone-VI. The difficult terrain and arduous communication has made hazardous to earthquake. The whole region is sitting on the bed of fragile sandstone and sedimentary rocks hence fragile. The soil is very much unstable here and hence needs special attraction to the structures and construction.

Landslide: - Though the entire region has no past history of landslide it is vulnerable to landslide due to its weak soil structures.

Table 60- Seasonal Hazard Analysis

Hazards	January	Feb.	March	April	May	June	July	August	Sept	Oct	Nov.	Dec.
Cyclone	X	X	X	X	X	X	X	X	X	X	X	X
Flood					←	—	—	→				
Drought					←	—	—	→				
Earthquake	←	—	—	—	—	—	—	—	—	—	→	
Fire		←	→									
Lightening				←	—	—	→					
Epidemic	←	—	—	—	—	—	—	—	—	—	→	

Source: - Department of Disaster Management, Hojai

Table 61- TableV ulnerability (Risk and Hazards Analysis

Types of Hazards	Potential	Vulnerability	Vulnerable areas
Cyclone	Nil	-	-
Flood	Loss of crops, Human lives and animals and properties damage	Communication facility, Agriculture & Horticulture, Private infrastructure Houses, Irrigation sources, Electrical installations, Drinking water sources, Educational institution, and livestock	Surrounding Areas of the Lumding region
Drought	Drought human life and pets	Loss of Human lives & pets	Entire Lumding circle
Earthquake	Human lives & Structures both public & Pvt.	Loss of Human lives & structures both public & pvt.	Entire Lumding Circle
Fire	Lives and property	Loss of Human lives & structures both public & pvt.	Entire Lumding Circle
Epidemic	Human lives & Pets	Loss of Human lives and pets	Entire Lumding Circle
Lightening	Human lives	Loss of Human lives	Entire Lumding Circle

Source:-District Disaster Management Plan, DDMA, Nagaon

1.2 Prevention:

As part of the said natural disasters the following measures can be adopted by concerned govt. departments to avoid and minimize the impacts of natural disasters.

= The public work department should monitor the major water bodies like river, streams lakes for constant flow of water, rising level and identify potential areas along the water bodies which need additional embankment or revetments, and these works should be implemented on priority before the onset of the season.

= Power and communication should carry out through inspection of power lines, communication lines for defects and rectify them. Trees and branches which may damage power and communication lies should the trimmed or removed.

=Health department should ensure the primary and community health centers are equipped with medicines and medical staff. Preventive vaccines for epidemics should be stocked in adequate quantity. Chlorination of drinking water should be ensured to avoid the outbreak of epidemics in the event of cyclones and floods.

= The department of disaster management is the nodal agency in the Hojai region and has already handled several flood and cyclone situation in the region. From this experience, it should be able to identify the low lying and vulnerable areas and the population of such places

must be warned to be alert and to be ready to safer areas or to the relief camps in case of warning disaster.

= The department of civil supplies & consumer affairs should decide for creation of buffer stock of food grains by making required withdrawal from the food corporation of India. Also, adequate quantities of kerosene and diesel should be procured and made available through the fair price shops.

=Department of Agriculture should take steps to publicize precautionary measures to be taken to save the standing crops in the vulnerable areas. Farmers should be encouraged to have platforms in their fields to stock the crops. De-silting of the public and private irrigation cannels should be ensured for quick drainage of paddy fields.

=Fisheries Department shall alert all the people residing on river bank villages and hamlets about the impending natural calamities and advice the fisherman not to venture into sea till normalcy is restored.

=Department of School education shall keep all schools ready for accommodating the evacuees and keep the central kitchens to function around the clock with in charge of the centers. NCC and NSS students shall also be grouped to send them for relief works.

=Department of Animal Husbandry should store fodder, cattle feed, and poultry food etc. and also carries out the inoculation of animals against epidemics. The Key village units should harbor stray cattle with shelters.

=Transport Department should keep ready the list of sufficient numbers of earthmoving vehicles, transportation vehicles such as trucks, tractors, tippers, proclaims, mini buses etc. Further, all the listed vehicle allocated in connection with calamity has to be kept in roadworthy condition for using them in emergency.

=Local Urban Bodies/Municipal Board shall make rearrangement for availability of Generators and pump sets at short notice. For areas with water logging and artificial flood local bodies should clear the L & U type drained which normally clog due to plastic materials and silt.

=Police department shall set up a Search & Rescue Team which shall contain at least 20 police personal for each jurisdiction of the superintendent of police.

=Similarly, the fire services department shall set up search & Rescue Team consisting of at least 6 members of each fire station.

1.3 Mitigation and Preparedness:

Pre-disaster planning consists of activities such as disaster mitigation and disaster preparedness. Disaster mitigation focuses on the hazard that causes the disaster and tries to eliminate or drastically reduce its effects. The best example of mitigation is the construction of embankments and construction of proper drainage system in flood prone areas to avoid floods. The other example includes retrofitting of weak buildings to make them earthquake resistant. And preparedness focuses on plans to respond to a disaster threat or occurrence.

It takes into account estimation of emergency needs and identifies the resources to meet the needs.

The first objective of the preparedness is to reduce the disaster impact through appropriate actions and improve the capacity of those who are likely to be improving the capacity of those

who are likely to be affected most. The second is to ensure that ongoing development continues to improve the capacities and capabilities of the system to strengthen preparedness efforts at community level. Finally, it guides reconstruction so as to ensure reduction in vulnerability. The best example of preparedness activities are the development of community awareness and sanitization system through community education and administrative preparedness by way of stockpiling of supplies, developing emergency plans for rescue and relief. For successful mitigation plan it is necessary to identify short- medium-long term mitigation measures risks and damages.

The following steps can be taken te reduce the risk in the unfortunate event of the said natural disasters.

=Restore communication networks
=The task force in association with reach and rescue teams of police and fire should thoroughly search the affected area for survivors and injured.
=In case of heavy flooding and inundation, vehicular access may be restricted and hence suitable rafts/boats should used to rescue and evacuate the people affected by the floods
–Water logging in low lying residential areas should be pumped out and the pump out water could be let out through the nearest natural drain or canal. Also fire engines can be deployed to pump out water from affected areas during emergencies.
=Any breach in rivers, streams or natural drains should be protected with adequate sand bags or creation of temporary embankments to avoid further damage to property and human life
=In case of heavy storms, power supply to areas which are in the primary path of the storm can be disconnected to avoid hazards due to breakage of power lines. Provisions should be made to provide generations for temporary power supply to storm affected areas.
=Relief camps should be opened in appropriate location where a large number of people are affected.

Table-62: Mitigation

Type of Sector	Sub-sector	Mitigation Measures	Responsible Dept.	Time frame
Infrastructure Development	Road	Repair, Restoration of vulnerable points on roads before unset of monsoon	PWD/DRDA	During Normal time and immediately
	Embankments	Repair of vulnerable points in river/canal embankment during free flood period	Water Resources/Irrigation	During Normal time and immediately`
	Bridge	Repair, restoration of vulnerable points on bridge before onset of flood	PWD, NH	During Normal time
	Communication	Ensure maintenance and proper functioning of electronic communication system	BSNL	Round the year
	Drinking water	Replacement of tube well/pipe water	PHE/ Health Deppt.	During Normal time and immediately`
	Power	Immediate response for repair of electric line and supply	PWD, ASEB	Round the year
Health	Vaccination	Adequate stock piling of vaccines should be ensured	CMO, DVO, NGO,s	During Normal time and immediately`

	Training	Training Programe of common people should be programmed for Health care, sanitation and first aid from village level to district	CMO, DVO, NGO,s	During Normal period
Livelihood	Awareness	Creating awareness among general public during normal time to insured human life	Leading NGO,s	During Normal time
	Agriculture	Altemant cropping pattern/flood resistance crops/crops insurance etc	Dy. Director Agriculture	During normal time and immediately after disaster.
Planning and Response	Relief/Rehabilitation	Regular updation of departmental contingency plan, Community awareness and involvement of NGO,s Regular conduct of mock drill	Line Departments	During Normal time

1.4 Response Plan:

Response measures are those taken immediately prior to and following disaster impact. It is important to have clear organizational chart structures with established line of authority within the Government mechanism to handle the response plan in case of natural calamities. Response plans include formation of functional teams and providing plans for the transportation, evacuation, search and rescue and rehabilitation. Survey and assessment part should be the part of response activity. Coordinated IEC activities should be initiated well in advance

=Mock Drill should carry out twice a year.
=Make separate plan of operation and list of required materials, tools, machineries for each kind of disaster.
=Train the rescue team with equipment.
=Train the panchayat leaders, Municipal leaders, Volunteers etc.
=Approach to NDMA and SDMA for any kind of assistance.
=Incident Command Officer shall organize regular coordination meeting with all DM committee members, Head of Offices, Public leaders, NGOs and Senior citizen in consultation with the chairman
=The RRTs (Medical & Police) will be alerted by the incident Command Officer.

1.5 Aim of Disaster Response:

= To ensure the survival of the maximum possible number of victims, keeping them in the best possible Health in the circumstances.
= To re-established self-sufficiency and essential services as quickly as possible for all population group.
=To repair or replace damaged infrastructure and regenerate viable economic activities.
=In situation of civil conflict the aim is to protect and assist the civilian population.
=In case involving population displacement the aim is to find durable solutions as quickly as possible.

1.6 Relief:

During the disaster

=Disseminate the warning of disaster from DDR & IC to all concerned destination in single attempt by using mass sms, announcement through radio, social media, print media and ask the people who are likely to be affected, to take shelter in safer places.
=Immediate deploy the forces to clear the route of search & rescue and also to clear the traffic from the route of rescue
=Command to the forces, NGOs. SHG,s & volunteers to rush immediately to the affected area for search and rescue with all pre listed tools, equipment for disaster.

1.7 City Disaster Management Plan:

The points mentioned above should be part of a city or region level disaster management Plan. The Disaster Management Act, 2005 has brought a change from response & relief oriented approach. This has encouraged many cities to formulate a city disaster management plan, the same should be worked for Lumding MPA as well to enable it to be better prepared in case of natural disasters in the future. As part of Master Plan 2045 the authority feels there is a need for a CDMP for the Planning area covering the following general principles-

=Risk & Hazard Assessment
=Planning
=Organization
=Resource Utilization
=Need for Specialist
=Training

Generally, the CDMP prepared for the planning area should include sectoral plans covering the following aspects of disaster & emergency management: -

=Overall Preparedness
=Emergency Response
=Prevention
=Mitigation
=Recovery
=Reconstruction
=Capacity Building Plans

END

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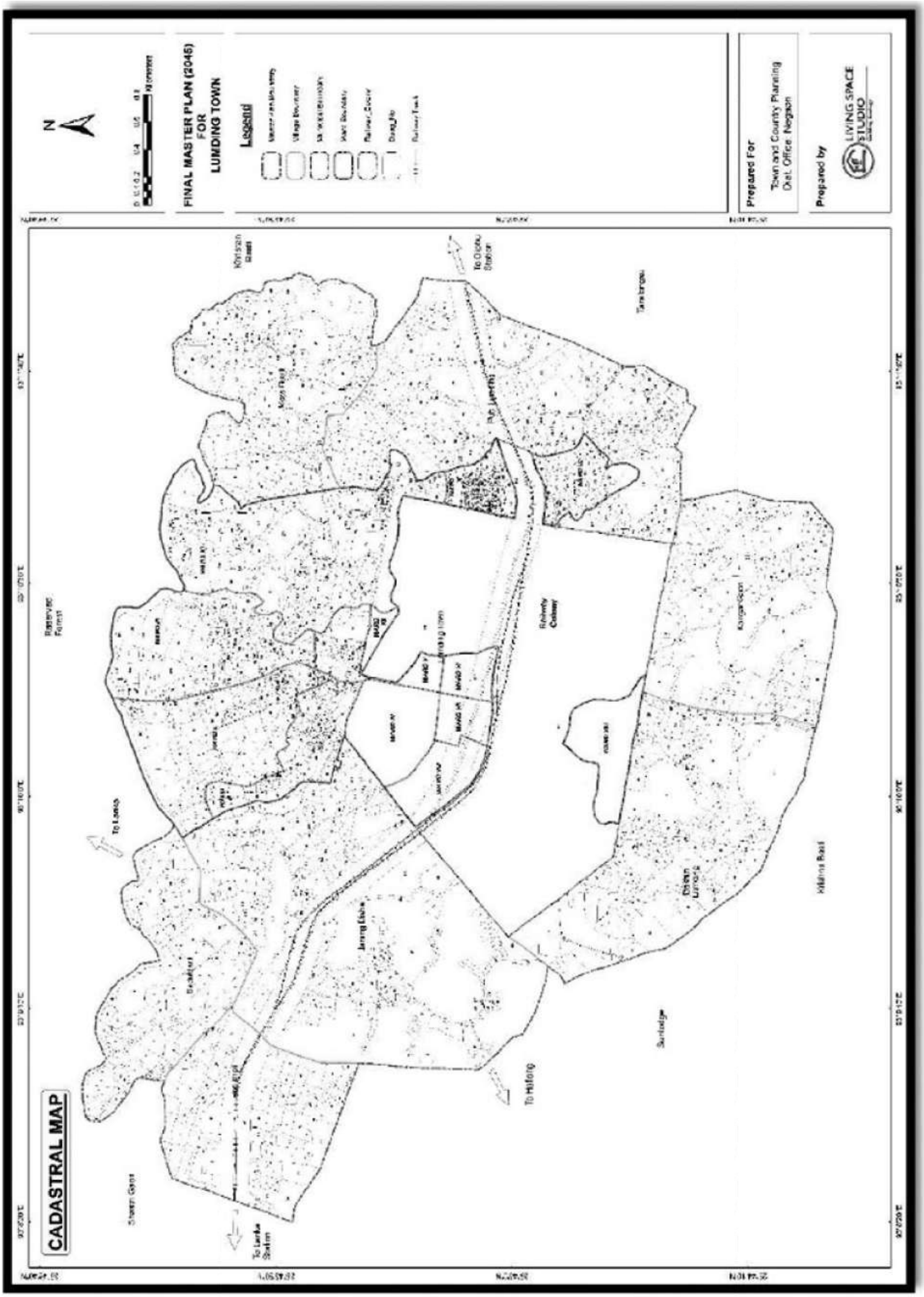
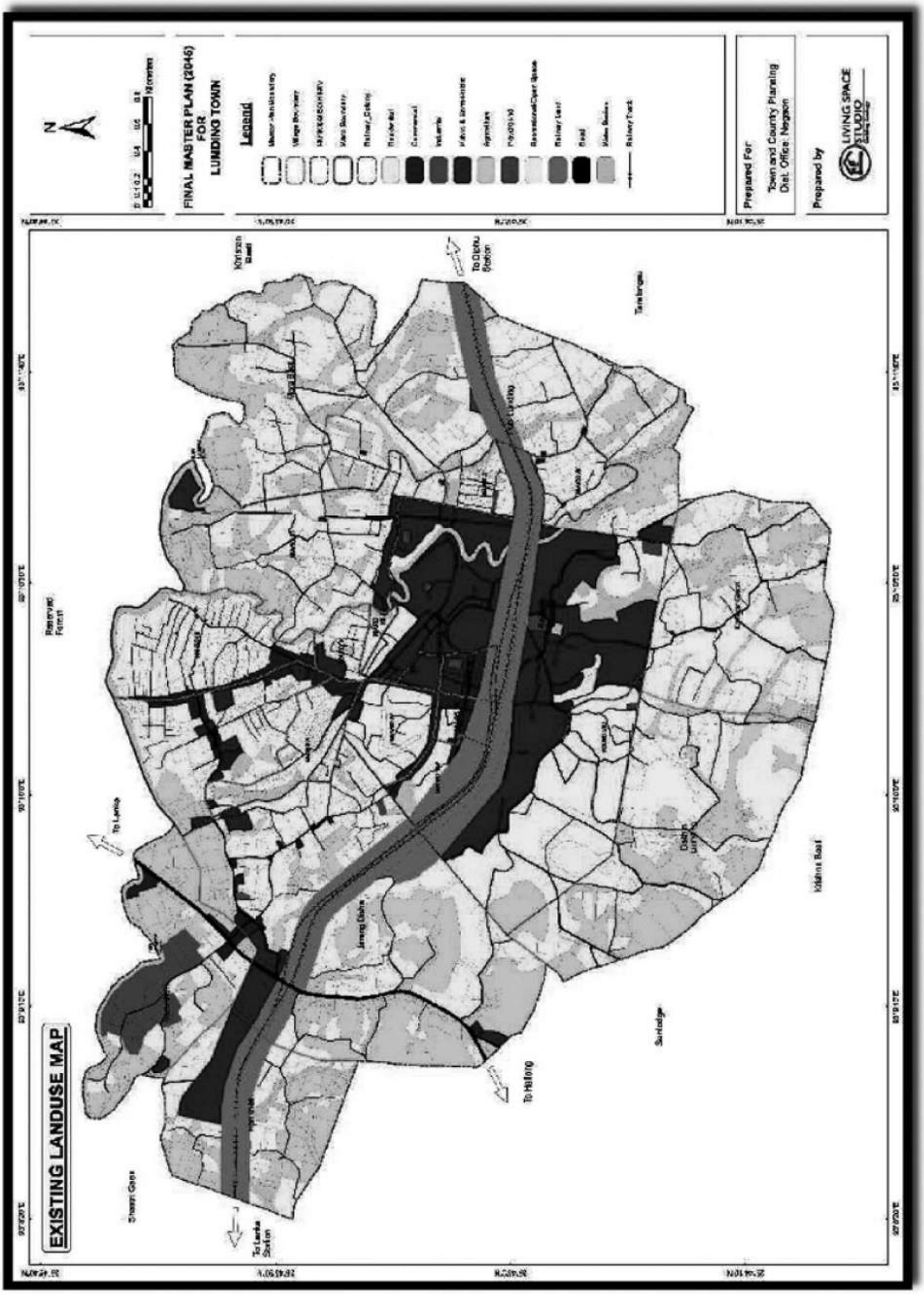

CADASTRAL MAP
FINAL MASTER PLAN (2045)
FOR
LUMDING TOWN
Legend
Prepared For
Town and Country Planning
Dist. Office: Nagaon
Prepared by
LIVING SPACE STUDIO
Railway Colony
To Lanka Station
To Haflong


EXISTING LANDUSE MAP
FINAL MASTER PLAN (2046)
FOR
LUMDING TOWN
Legend
Prepared For
Town and Country Planning
Dist. Office: Nagaon
Prepared by
LIVING SPACE STUDIO
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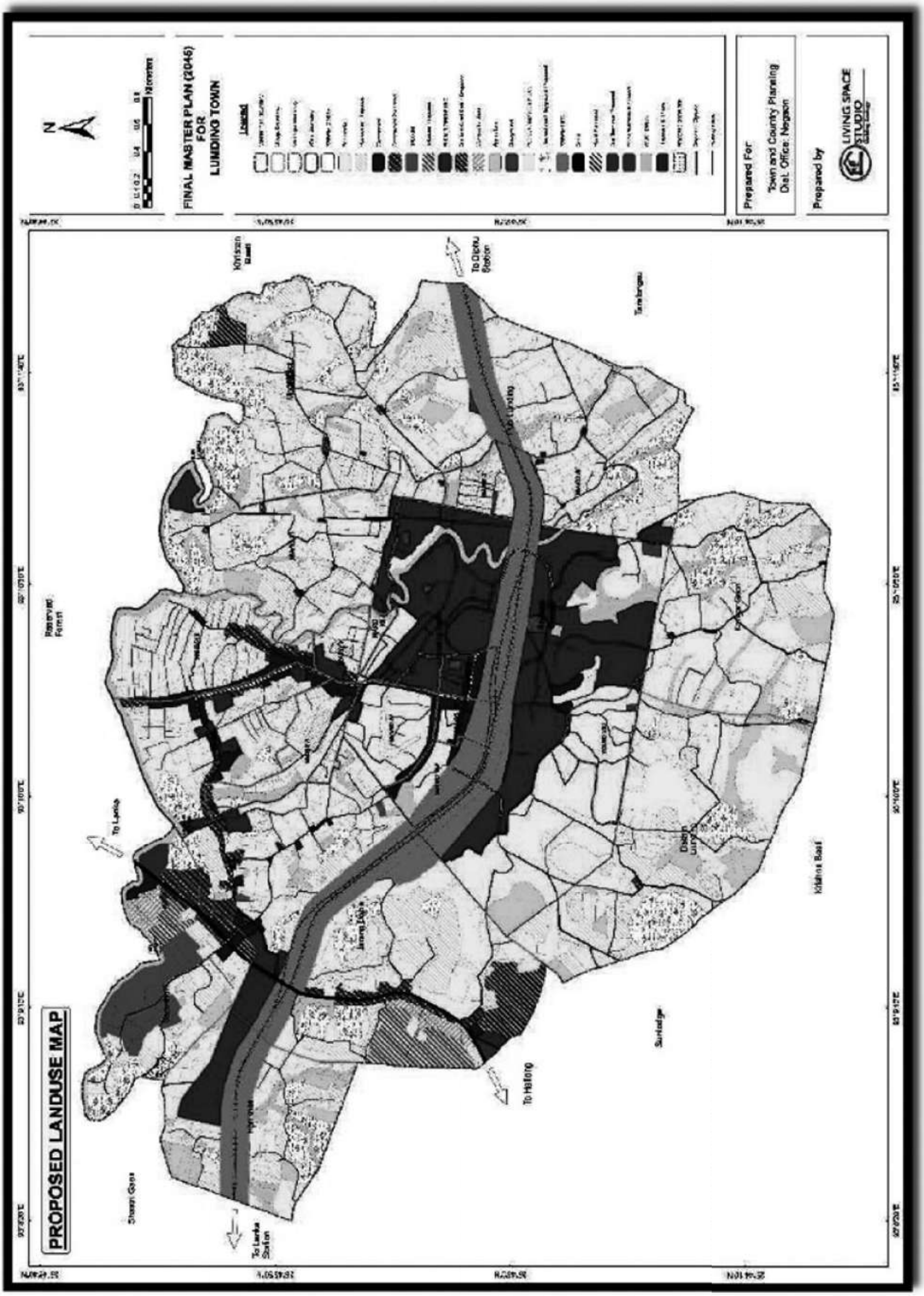
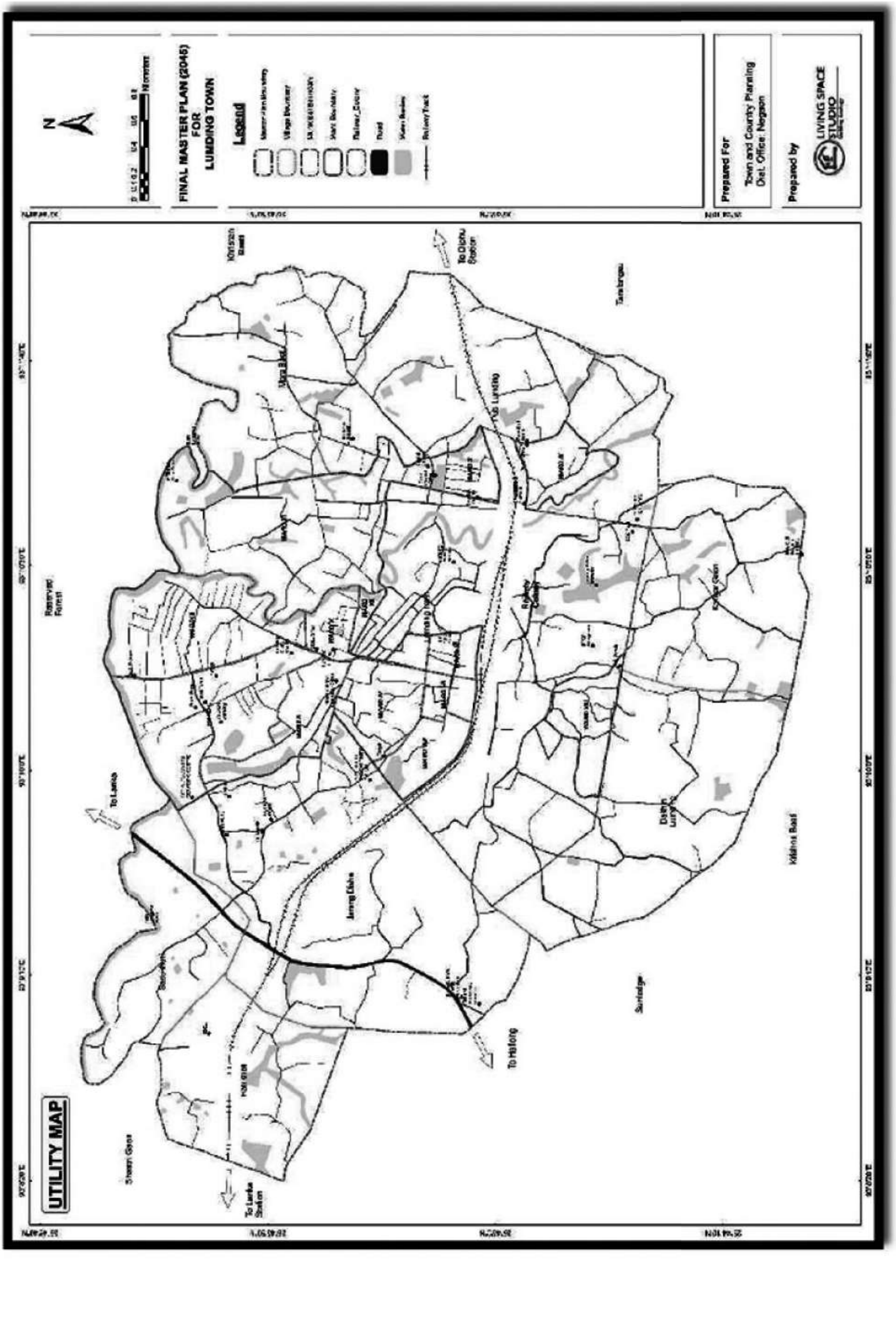
To Lanka Station
To Haflong
To Diphu Station
Reserved Forest


PROPOSED LANDUSE MAP
FINAL MASTER PLAN (2045)
FOR
LUMDING TOWN
Legend
Prepared For
Town and Country Planning
Dist. Office: Nagaon
Prepared by
LIVING SPACE
STUDIO
To Lanka
To Haflong
To Diphu
Station
To Lanka
Station
Reserved
Forest
Krishna Basti


UTILITY MAP
FINAL MASTER PLAN (2045)
FOR
LUMDING TOWN
Legend
Prepared For
Town and Country Planning
Dist. Office: Nagaon
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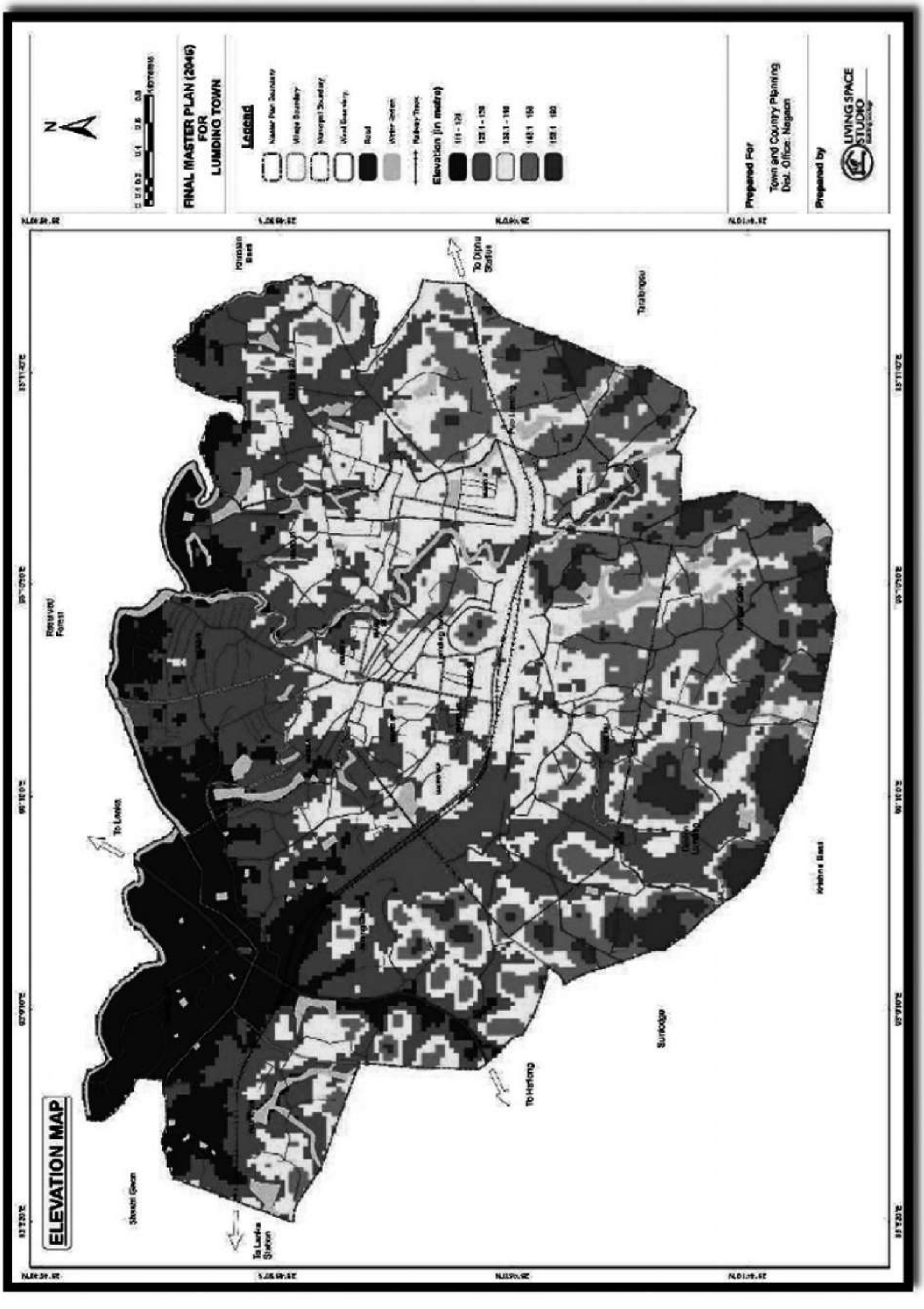
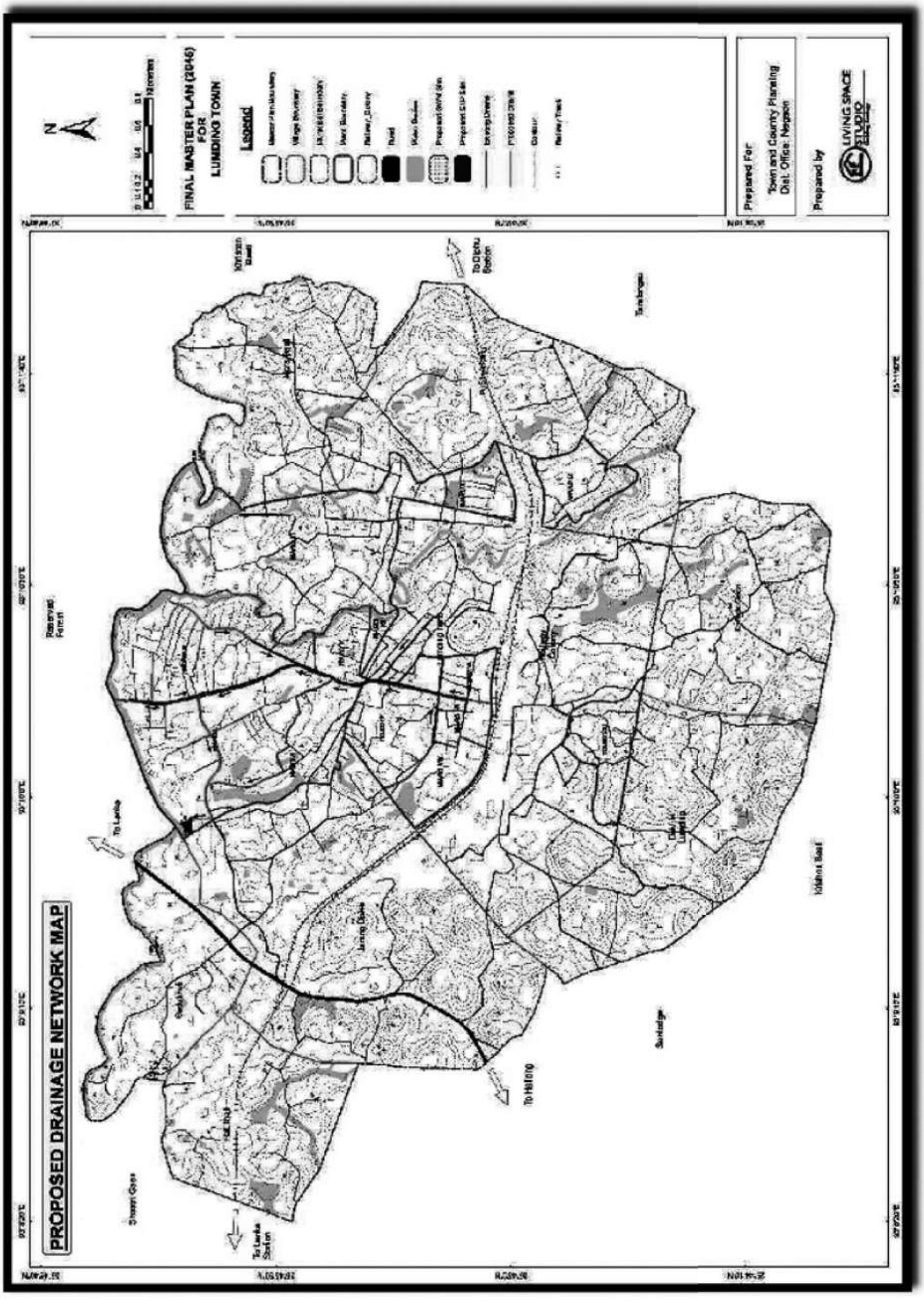
LIVING SPACE
STUDIO
Reserved Forest
To Lanka
To Hatlong
To Lanka Station
To Diphu Station
Dakhin Lumding
Railway Colony


ELEVATION MAP
FINAL MASTER PLAN (2045)
FOR
LUMDING TOWN
Legend
Road
Elevation (in metre)
Prepared For
Town and Country Planning
Dist. Office: Nagaon
Prepared by
LIVING SPACE
STUDIO
Reserved Forest
To Lanka
To Haflong
To Lanka Station
To Diphu Station


PROPOSED DRAINAGE NETWORK MAP
FINAL MASTER PLAN (2046) FOR LUMDING TOWN
Legend
Prepared For
Town and Country Planning Dist. Office: Nagaon
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To Lanka
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To Diphu Station
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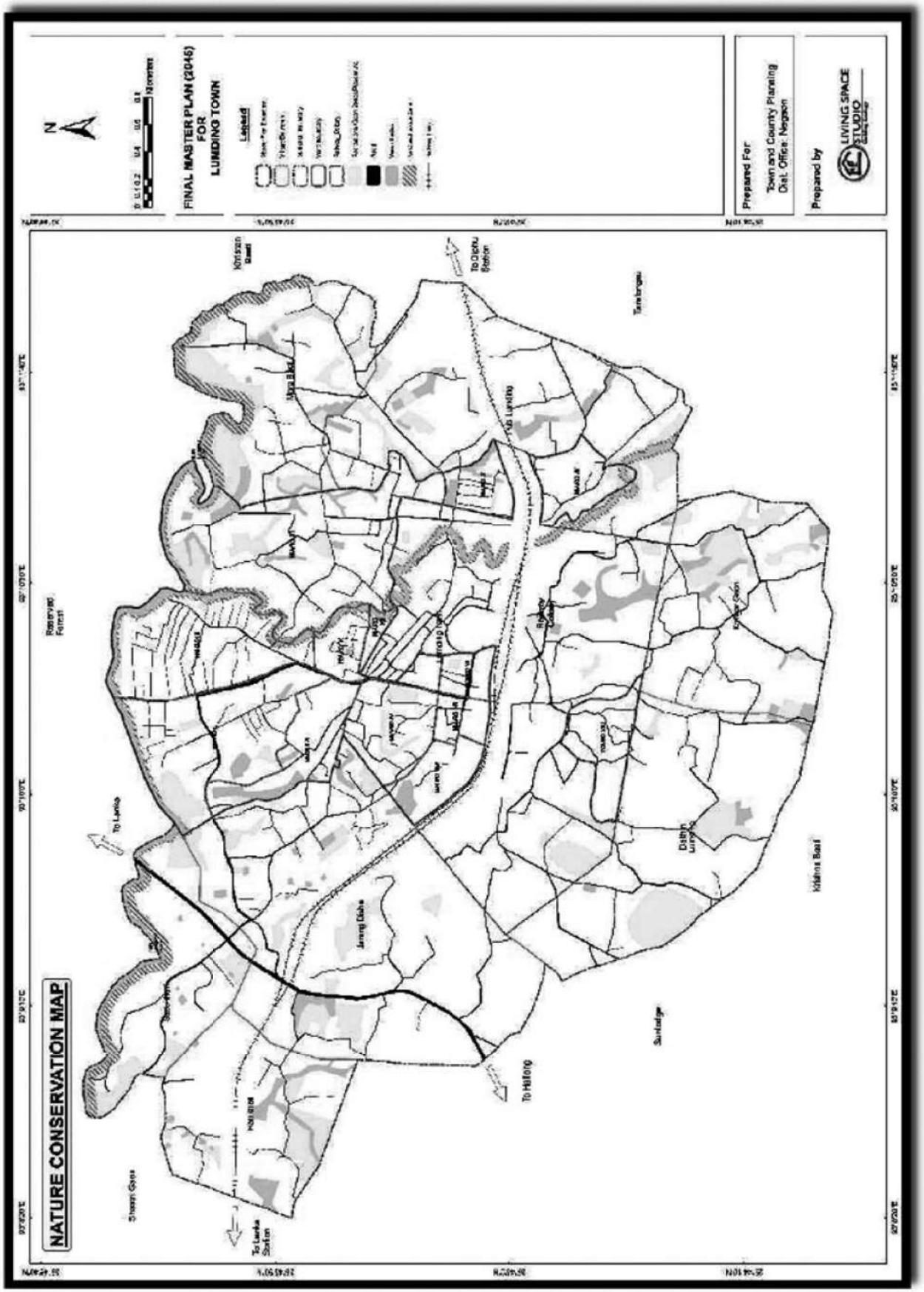
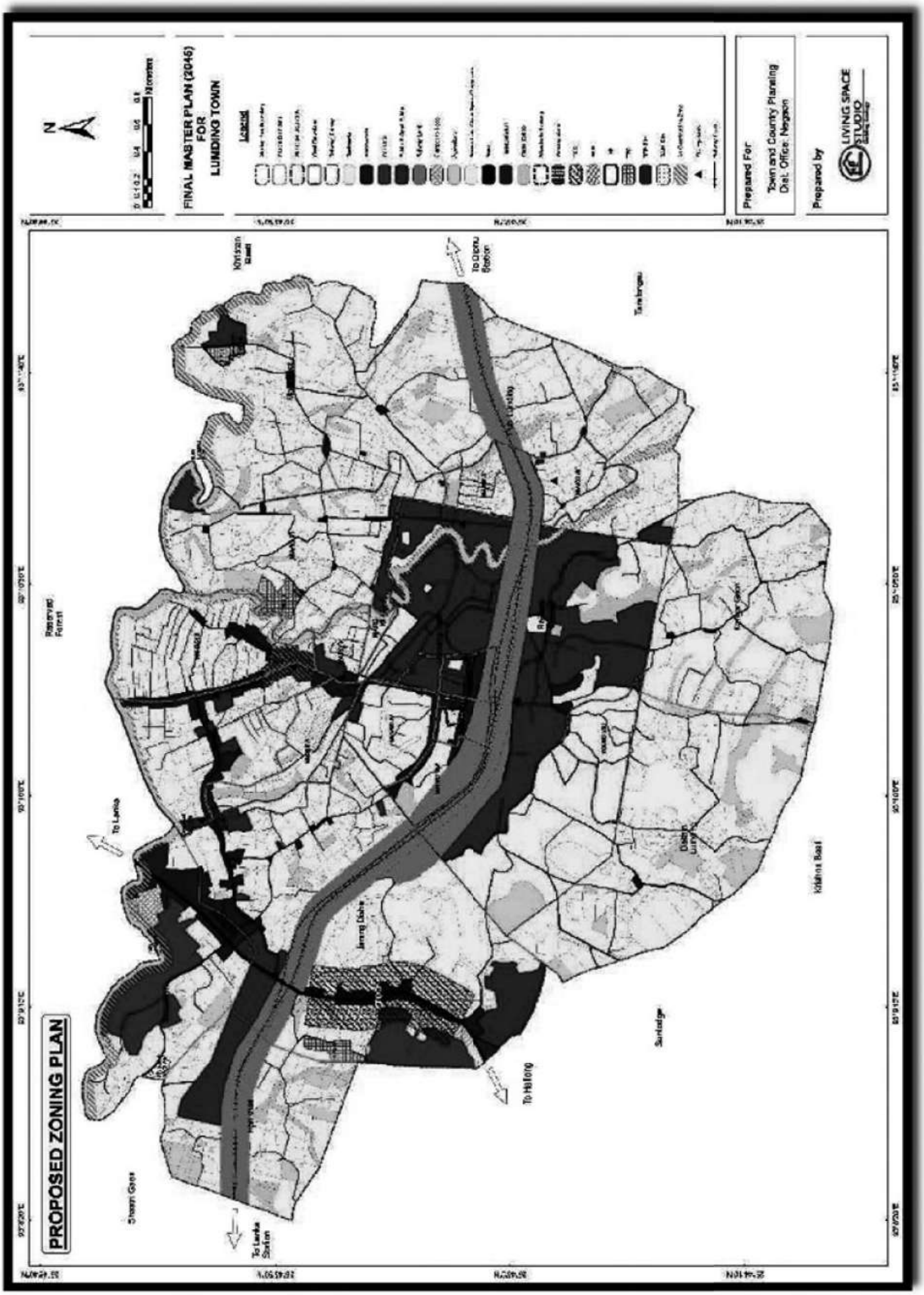
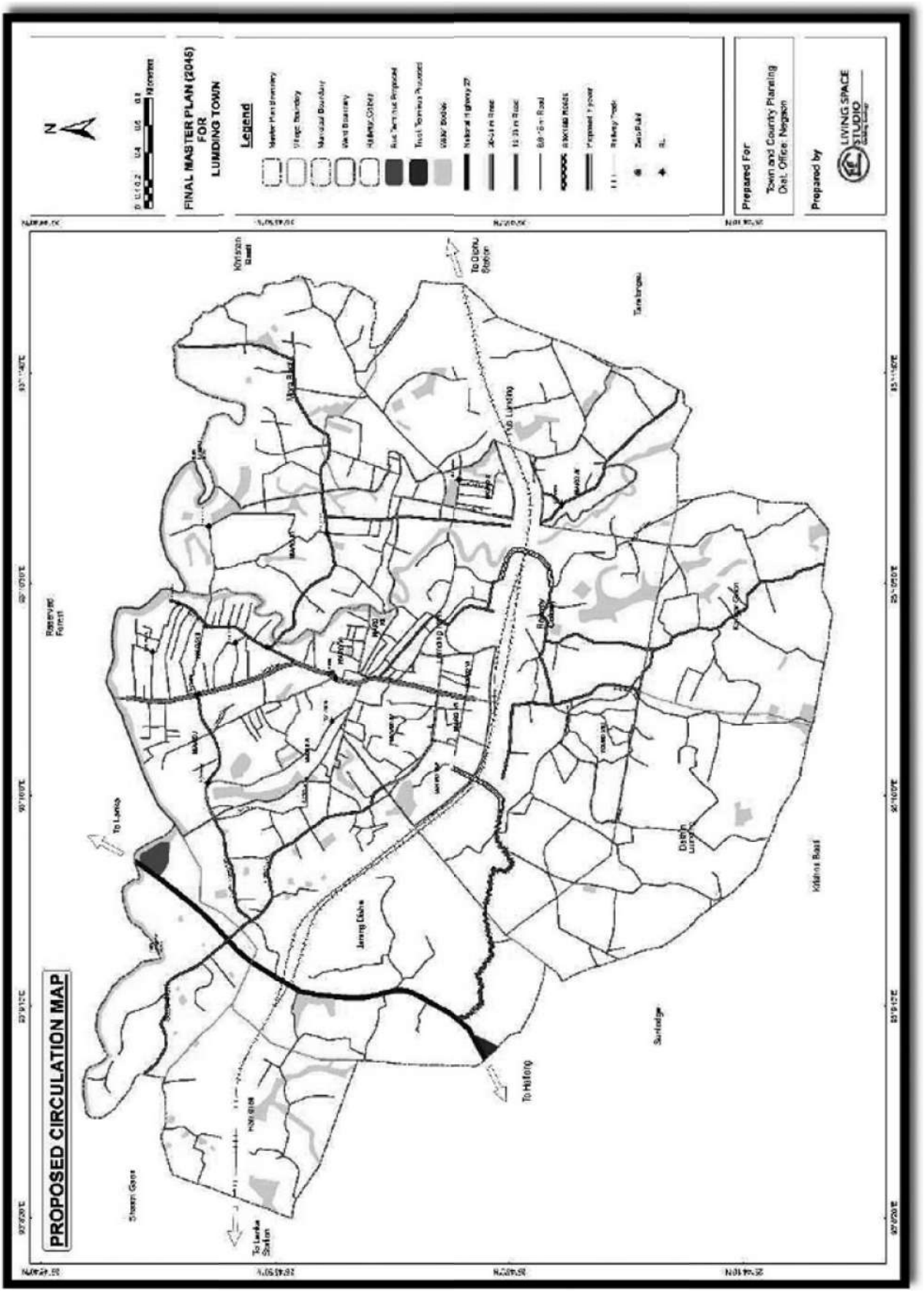

FINAL MASTER PLAN (2045)
FOR
LUMDING TOWN
Legend
Prepared For
Town and Country Planning
Dist. Office: Nagaon
Prepared by
LIVING SPACE
STUDIO
NATURE CONSERVATION MAP
To Lanka
To Lanka Station
To Diphu Station
To Haflong
Reserved Forest
Kolong River
Kopili River


PROPOSED ZONING PLAN
FINAL MASTER PLAN (2045) FOR LUMDING TOWN
Legend
Prepared For
Town and Country Planning Dist. Office: Nagaon
Prepared by
LIVING SPACE STUDIO
To Lanka
To Haflong
Reserved Forest



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