



# THE ASSAM GAZETTE

অসাধাৰণ

EXTRAORDINARY

প্ৰাপ্ত কৰ্তৃত্বৰ দ্বাৰা প্ৰকাশিত

PUBLISHED BY THE AUTHORITY

নং 603 দিশপুৰ, শনিবাৰ, 30 ডিচেম্বৰ 2023, 9 পূহ, 1945 (শক)  
No. 603 Dispur, Saturday, 30th December, 2023, 9th Pausa, 1945 (S. E.)

GOVERNMENT OF ASSAM  
ORDERS BY THE GOVERNOR  
DEPARTMENT OF HOUSING AND URBAN AFFAIRS

## NOTIFICATION

The 28th September, 2023

**Ecf No. 309661/2023/182.-** In cancellation of earlier Notification ecf No.309661/2023/181, dated 15th June, 2023 and in exercise of the powers conferred by the Section 14 and Section 10 of the Assam Town & Country Planning Act,1959 (as amended) read with 2 (a) of Rule 3 of the Assam Town and 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 Revised Master plan for Nalbari.

### NOTICE FOR PUBLICATION OF FINAL REVISED MASTER PLAN FOR NALBARI

1. It is notified that the Final Revised Master plan for Nalbari prepared under Section 14 of the Assam Town and Country Planning Act,1959 (as amended) by the Directorate of Town & Country Planning, Assam and adopted by the State Government for the area as described in the schedule below is hereby published.
2. The Final Revised Master Plan with all relevant papers and maps may be inspected free of Cost during the office hours at the Office of the Director, Town & Country Planning, Assam, Dispur, Guwahati-6, the Deputy Director, Town & Country Planning, District Office- Nalbari, office of the Deputy Commissioner, Nalbari Office of the Chairman, Nalbari Development Authority, Office of the Chairman, Nalbari Municipal Board & Nalbari, Ghagrapar, Samata and Banbhag Circle Office, Copy of the Draft Master Plan is available in the office of the Deputy Director, Town & Country Planning, District Office-Nalbari for sale on payment.

**SCHEDULE****A. LOCATION AND AREA**

DISTRICT	:	NALBARI
SUB-DIVISION	:	NALBARI
POLICE STATION	:	NALBARI
STATE	:	ASSAM
APPROXIMATE MASTER PLAN AREA	:	121.37 Sq. Km.
APPROXIMATE MUNICIPAL AREA	:	13.54 Sq. Km.

**B. REVENUE AREA INCLUDED IN THE FINAL REVISED NALBARI MASTER PLAN**

1. Nalbari Municipal Area
2. Other Revenue Area

**Mouza****Villages**

Bahjani	:	(1) Amayapur, (2) Alengidal (3) Arara (4) Bar Agra (5) Bhodra (6) Dakshin Bezra (7) Janigog (8) Modan Mohan Sokoa (9) Mugkuchi (10) Nandagaon (11) Tilana
Batagila	:	(12) Barsarkuchi (13) Bhuyarkuchi (14) Dhekhiabari (15) Goremara (16) Haripur (17) Katla Barkuchi (18) Khudrakatla Borkuchi (19) Moiradonga (20) Namati (21) Sariahtoli (22) Batahgila (23) Pitanipara (24) Balikuria (25) Bardhantoli (26) Barkura
Dharmapur	:	(27) Boushiapara (28) Balakuchi (29) Balilecha (30) Bhutakhatara (31) Borchenikuchi (32) Borkhanajan (33) Digheli (34) Jajiabari (35) Japarkuchi (36) Joy Mongla (37) Kendukuchi (38) Khatahkuchi (39) Khatkatra (40) Khudra Chenikuchi (41) Khudrapipolia (42) Khudrasankara (43) Kordaitola (44) Majdia
Khata	:	(45) Nalbari Gaon (46) Paikarkuchi (47) Poila (48) Porakuchi (49) Sahpur (50) Sandha (51) Sandha Kairara (52) Tantrasankara (53) Terechia (54) Balikuria Kharjara
Natun Dehar	:	(55) Borkhetria Banekuchi (56) Kashimpur (57) Niz Banekuchi
Pokowa	:	(58) Panigaon (59) Pokowa (60) Sandheli
Pub Banbhag	:	(61) Baghmara (62) Bilpar (63) Dolua (64) Gatiyan (65) Guakuchi (66) Katuriya (67) Koiyakuchi (68) Katakiya (69) Majarbari (70) Paisara

**C. DESCRIPTION OF BOUNDARIES**

North	:	Nagaon, Bor Agra, Dhantola, Khudrakatara, Jamtola, Dehokotora, Nankarbhoyah, Dihjari, Ghongarkuchi, Ponorkaunia, Sothamou
South	:	Nijkhagta, Chiling, 1 No Nimua Latima, Niz Borihoha, Chenikuchi, Bhanukuchi, Balikuchi, Namdanga, Dhaniagog, 2 No. Sonkuriha, Budrakuchi, Nizbahjani, Bor Ajara, Chandakuchi, Bongaon
East	:	River Chiang, Kekhat, Narikuchi, Bormunikona, Dhandhama, Paroa, Pajipor, 1 No. Sankuriha
West	:	Bornagarbanekuchi, Rajakhat, Phulguri, Bongaon, Tanmua, Kendukuchi, Barnaddi, Chandakuchi

**KAVITHA PADMANABHAN,**

Commissioner & Secretary to the Government of Assam,  
Department of Housing and Urban Affairs,  
Dispur, Guwahati-6.

**1.****INTRODUCTION TO MASTER PLAN AREA****1.1 INTRODUCTION AND SALIENT FEATURE OF THE TOWN**

Nalbari, a trade and commerce-cum-service town, located on the northern part the then un-divided Kamrup district in the state of Assam, came into as an urban centre with the setting up of its first Town Committee in March, 1938 and was raised to the status of the Municipality in 1953. Since its initial days, the town has witnessed rapid urbanization. As an urban centre, the pattern of development was linear along the N.T. Road.

Nalbari has been declared as a sub divisional Head Quarter since 1st of August 1967. The Nalbari Sub-divisional was raised to the status of a District on 14th August, 1985 with its Head Quarter at Nalbari Town. As per Census 2011, Nalbari District have 464 no. of Villages, 65 no. of Gaon Panchayat, 7 no. of Community Development Block, 7 no of Anchalik Panchayat and 1 no. of zila parishad.

**1.1.1 Location**

The town is located at about 71 kms. north-west of Guwahati, the largest Class I City of the entire North-East Region, along the N.H. 27 East West Corridor. Barpeta, the Head Quarter town of the Barpeta District, lies at a distance of about 70 kms. west of Nalbari. Its cardinal points are 26.445°N 91.440°E. The altitude of the town is about 53 meters.

**1.1.2 Regional settings**

Nalbari is well connected by roads as well as by railways. The N.H. 27 which pass through Nalbari connects it with Guwahati and other important urban and rural centre of the District as well as of the state. Nalbari also serves as an important railway station of N.F. Railway. The Broad-Gauge routes of N.F. Railway pass through Nalbari connecting the town with different parts of the state and the country.

**1.1.3 Brief history of the town**

'Nalbari' means a place of reeds. The name was founded by the British Railway Engineers sometimes in A.D. 1890-91. Former name of this place was -Satra, Govindapur, Khata etc. This region was a part of ancient Kampitha, Pagarjotic, Pragjyotisha, Kamarupa, Kangoor, Rumi, Vaisali etc. The history of Nalbari is connected with king Jarashandha and Lord Krishna such as Haribhanga. Nalbari region was under the Ashuras, Danavas, Varmanas, Salastambhas, Palas, Bhuyans, Koch, Tai-Ahoms, Mughals etc. The famous earlier villages are: Khata, Bahjani, Baska, Dhamdhama, Barbhag, Sonkuriha, Tihu, Janigog etc. Religious shrines are: Sri Sri Sri Bilveswar Maharudra, Balilecha mandir, Jaypal mandir etc. In early time, famous Sages like Vasistha, Atri, Kanva passed through this land to Guwahati. The Pandavas and Kauravas also came down to Kamarupa during Duryyodhana's marriage through this route only. This region was once the hub of the activities of Haradatta and Biradatta: the revolutionary Heroes in the last days of the Tai-Ahoms. The story of Kumedan Bangal and Padma Kumari, daughter of Haradatta still echoes in this area. Nalbari is known as 'Navadivipa' of Assam. There are good numbers of Sanskrit Toals in Nalbari.

In the recent years, Nalbari has developed as an agro-based commercial town. The cane and bamboo industry, the Japi clay and pottery industry has its own worldwide distinctive identity. The town has its importance as an administrative centre also. In 2011 Census it has been classified as a Class III town. The Nalbari Municipal area coverage was approximately 3.95 sq. kms. with a population of 23,183 in 2001 which increased to about 27,839 in 2011. Henceforth, the town has seen expansion with the area under the jurisdiction of Nalbari Municipality increasing to 13.54 sq. km. The number of wards has increased from 12 to 17 and its present population is approximately 75,724.

## 1.2 PHYSICAL ENVIRONMENTAL CONDITION

The entire area of the Nalbari District is situated on the plains of the Brahmaputra Valley. The tributaries of the Brahmaputra, Nona, Buradia, Pagaldia, Borolia and Tihu which have originated from the foothills of the Himalayan Range, are wild in nature and have made enormous contribution towards the agrarian economy of the district.

### 1.2.1 *Climate & Rainfall*

Nalbari has a sub-tropical climate with semi – dry hot summer and cold winter. Summers are hot and humid with an average temperature of 29 °C. During summer, generally from May to August, heavy rainfall occurs for which the district experiences flood. The District experiences annual (average) rainfall and humidity @ 1500 mm and @ 80 % respectively. Winters extend from the month of October to February, and are cold and generally dry, with an average temperature of 16°C.

### 1.2.2 *Physiography*

Nalbari town occupies its position on flat alluvial plain land. River Pagaldia, a north bank tributary of the river Brahmaputra, passes through the eastern side of the town. During the monsoon, the town and the surrounding rural areas are heavily affected by floods, causing havoc to population and crops of the area. The general gradient is towards the river Brahmaputra in the south. The area on the bank of the river has very low elevation and is inundated during flood.



Figure 1-1: Pagladiya River

### 1.2.3 Soil Condition

The soil condition of the Town is a heterogeneous one. The soil of the northern part of the Town is clayey and loamy; the middle part is loamy and sandy; and the southern part is composed of sandy soil.

## 1.3 HISTORICAL BACKGROUND

### 1.3.1 History and Culture

Nalbari region was a part of ancient Koshakaranbhumi, Dharmaranya, Kusaranya, Natakachal, Parvatadesa, Kumaridesa, Pagar-jo-tic, Pragjyotisha, Kamarupa, Lauhityadesa, Rumi, Kangur, Vaisalilong, Mung-Dun-Chun-Kham and Swarnapitha and so on. The area was once a meeting or living place of Austroloids, Mongoloids and Aryans. The present culture and traditions of the entire people of this area appear as a composite culture, a sequence to the Assamese culture. In fact, Nalbari has a rich heritage of folk culture such as puppetry, Ojapali, Dhuliya, Ayati Nam, Biya Nam etc. Also, "Mahoho" and "Bhatheli" has its own Nalbaria cultural lineage. The Raas Mahotsav of Nalbari that begins every year on the full Moon night of the Kartika/November is known for its grandeur of being one of the greatest festivals in the entire region and major occasion for attraction of tourists of the entire world. While Sabha Mohotsovs in different corners of the district attracts tourists in the special seasons, the age old temples and satras of the district keep attracting tourists round the year.

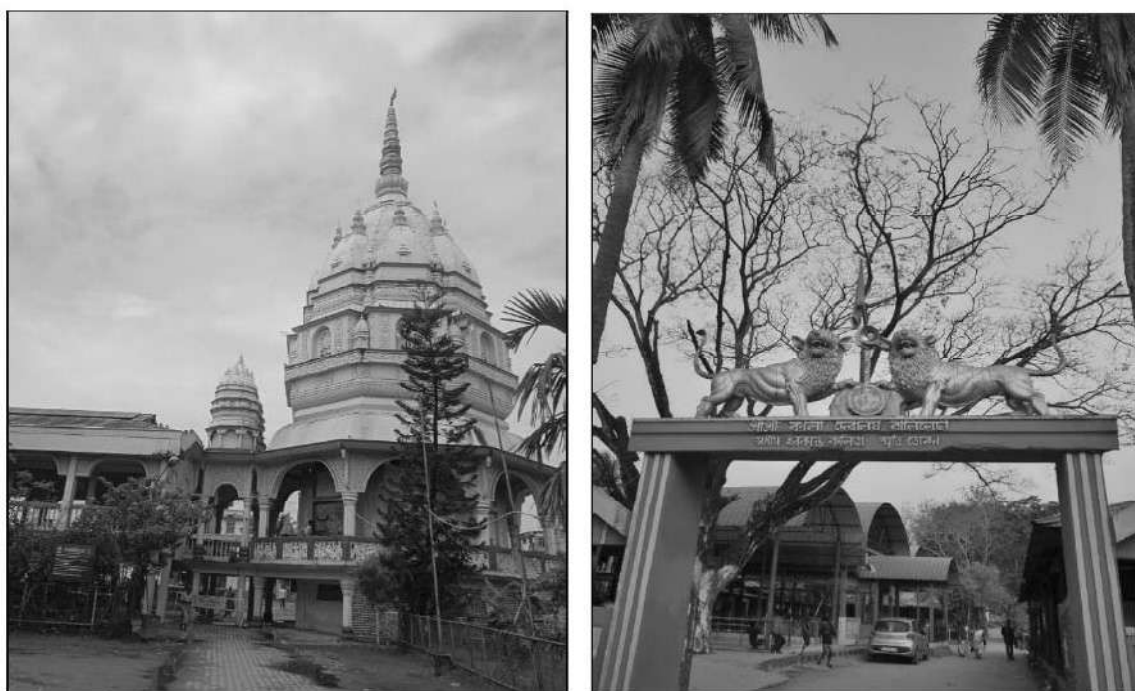


Figure 1-2: Left: Hari Mandir, Nalbari. Right: Balilesa Mandir, Nalbari.

Nalbari is well known for its rustic charm and ancient temples making it enthralling for tourists especially during religious festivals. It is a meeting ground of three cults of Sanatan Hindu Religion namely Vaisnabe, Shakta and Shiva. Large number of Satras and Temples related to the above cults are in existence in the town and the neighbouring areas. Records of some of these Satras

and Temples speak about the contribution of Ahom Kings in spreading Hindu Religion in the area. Nalbari continues to be the centre for art and culture from the time immemorial.

#### **1.4 MASTER PLAN: DEFINITION & FORMULATION**

Most of the urban settlements, especially smaller urban settlements, are characterized by haphazard and unplanned growth, non-conforming land uses, mushrooming unauthorized colonies, and land conversion from agriculture to urban resulting in environmental degradation and poor quality of life.

Master Plan/Development Plan is the major tool for urban land management, providing detailed land-use allocation for the sustainable development of city/town. Most master/development plans are made for 20-25 year periods, in phases of five years for periodic review and revision. A master plan is prepared either for improvement of an old city or for a new town to be developed on a virgin soil.

The purpose of the master plan is to set down as clearly and practically as possible the best and most appropriate future development of the town. For physical planning to be successful, it must develop a consensus on sound principles while balancing the visionary with the realistic. Formulation of master plans start with base map preparation, existing land use surveys and collection of socio-economic data necessary for reviewing the existing situation and proposing the future land use plan. With the advances in remote sensing and geographic information system, the plan making process can be expedited with integration of both spatial and attribute data, which enables detailed assessment of spatial growth of towns/cities, land use status, physical infrastructure facilities, etc. in anticipation of the projected population growth.

#### **1.5 NEED OF THE MASTER PLAN**

##### ***Rationale:***

Nalbari, like most town of its size, has its potential and opportunities offset by issues of unsustainable urban form, degradation of built environment, mismatch between land use and transportation leading to unsustainable mobility patterns, proliferation of unplanned development, differential access to civic services across space and class, and a growth pattern that is in disharmony with the natural environment.

The 2041 planning framework endeavours to address these issues in a holistic manner, build on Nalbari's inherent strengths and harness opportunities to realise the real potential of the city.

A master plan is a blueprint for the future. It will help:

- To control the development of various industries in a systematic way.
- To define public, semiprivate, and private spaces and public amenities
- To discourage the growth of town in an unplanned and unscientific way.
- To give a perspective picture of a fully developed town.
- To limit to a certain extent the unprecedented flow of rural population to the urban area.
- To offset the evils 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.

## 1.6 PROJECT OBJECTIVE & ITS VISION

The broad objective of this project is to prepare a Master Plan Report for Nalbari Town 2041. Report is the final output of the research.

The vision of this Master Plan is to “**Foster a Sustainable, Liveable and Vibrant Clean & Green Nalbari**”

Vision being a cherished dream, to achieve this vision it is necessary to break it into a number of goals and subsequently to objectives.

- Identifying existing gaps in physical and social infrastructure & to bridge those gaps
- By proper policy planning and strict adherence of the land use zoning and building byelaws.
- By submerging the planning with combing funds from the state as well as the centrally sponsored schemes
- Ensuring systematic, balanced & integrated development.
- Prioritizing Environmental Sustainability
- Facilitating Economic Development
- Enhancing Heritage, Culture & Public Life
- Improving Housing and Social Infrastructure
- Developing Resilient Physical infrastructure

## 1.7 SCOPE OF WORK

The proposed study will cover areas of Nalbari MP Area as defined and notified under the Act. The scope of work for revision of Nalbari Master Plan will cover the following.

- To identify the gaps/ incongruities between the actual land use and existing Master Plan proposals
- To identify the systematic and methodological deficiencies in implementation and preparation of Master Plan
- To prepare the Revised Draft Master Plan for Nalbari MP Area.

# 2.

## PROFILE OF THE MASTER PLAN AREA

### 2.1 INTRODUCTION

Nalbari town is the headquarters of Nalbari District. The Town MB area is about 13.54 sq. km of total area. As per the Census of 2011, there are 12 wards within the Municipal Board area. However, in 2020 the wards in Nalbari town have been extended to 17.

The district is bounded by Baksa in the north and Barpeta district in the west. The southern and eastern side of the district is bounded by Kamrup district. The entire area of the District is situated at the plains of the Brahmaputra Valley.

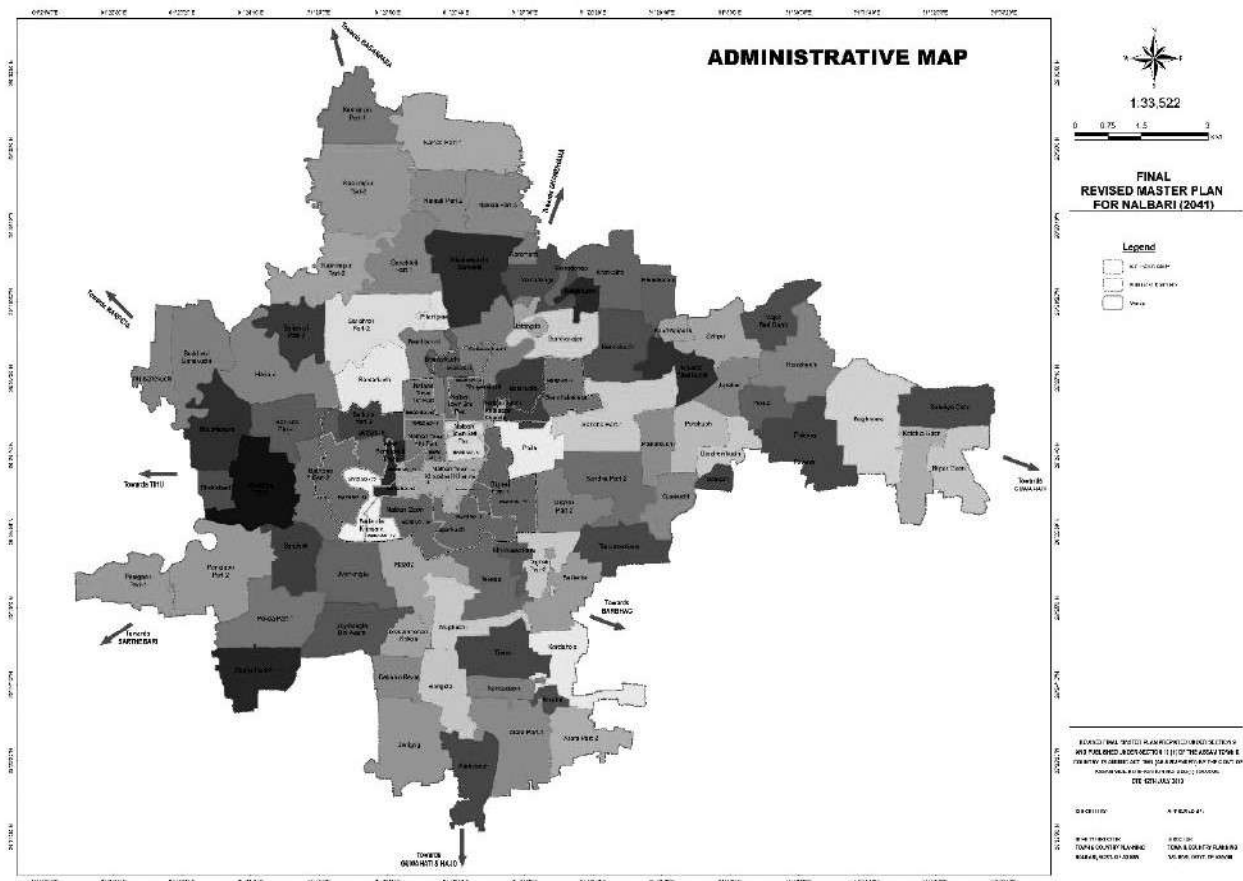


Figure 2-1: Political Map of Revised Nalbari Master Plan Area

#### 2.1.1 Demographic Profile

##### 2.1.1.1 Area and Population

Nalbari is a highly preferred city in terms of employment, higher education and residence. The population of Nalbari has grown at a high rate for the past decades. In addition to the original residents of the town, many families established base in Nalbari and many others migrated here for government jobs and other opportunities over time. In 2021, the tentative population of Nalbari



Municipal Board Area is 75724. The erstwhile 12 wards of the town had a population of 27,839 as per 2011 Census, of which 14,425 were males and 13,414 were females. The total master plan area population is 140667 (Table 2-1).

**Table 2-1: Growth of Population in Nalbari (1991 - 2011)**

YEAR	NALBARI MUNICIPAL AREA (12 Wards)		NALBARI MASTER PLAN AREA (Excluding the Municipal area)		TOTAL MASTER PLAN AREA	
	Population	% Variation	Population	% Variation	Population	% Variation
1991	19183	-	83675	-	102858	-
2001	23183	20.85%	101284	21.04%	124467	21.01%
2011	27839	20.08%	112828	11.40%	140667	13.02%

Source: Compiled from Census of India.

**Table 2-2: Growth of Population in extended Nalbari town: 17 wards (1991-2001)**

Year	NALBARI MUNICIPAL AREA (17 WARDS)	
	Population	% Variation
1991	39005	-
2001	49148	26.00%
2011	61882	25.91%

Source: Tentative figures worked out from the Census data

In the earlier Master Plan-1999, total villages included were 21 nos. + Nalbari Municipal area, whereas in the Revised Master Plan for 2041, the no. of villages goes up to 70 nos. + Nalbari Municipal area, resulting in bigger area compared to the old Master Plan 2000.

**Table 2-3: Population and Area Distribution**

Category	Master Plan Area	Municipality Area
Area (HA)	12137	1354
Total Population	140667 (Census 2011)	61882 (estimated from Census 2011)
Number of Wards	-	17
Density (ppha)	11.59	45.70

Source: Compiled from census of India, 2011 and Nalbari Municipal Board

#### 2.1.1.2 Population Distribution and Growth Trends

As per Census 2011, the total numbers of wards in the town are 12. In terms of population distribution amongst the wards, population share is highest in Ward 4 i.e. 3811 and lowest in ward 6 i.e. 696. Table 2-4 presents the ward wise total population in 2011.

**Table 2-4: Ward Wise Population, Nalbari Town, 2011**

Ward No	Name of Ward	No of HHs	Population
1	Ward 1	317	1483
2	Ward 2	827	3752
3	Ward 3	398	1806
4	Ward 4	850	3811
5	Ward 5	392	2100
6	Ward 6	125	696
7	Ward 7	608	2666
8	Ward 8	277	1351
9	Ward 9	595	2776
10	Ward 10	580	2584
11	Ward 11	771	3321
12	Ward 12	347	1493
13	Ward 13		
14	Ward 14		
15	Ward 15		
16	Ward 16		
17	Ward 17		
<b>Total</b>		<b>6087+</b>	<b>27839+</b>

Source: District Census Handbook, Census of India, 2011

The population distribution of the 70 villages in the revised master plan area as per the Census, 2011 is as follows-

**Table 2-5: Nalbari Master Plan Area (Excluding Nalbari Municipality Area), 2011**

SI_No	Village	No. of Households	No. of Population
1	Amhyapur	272	1463
2	Arara	571	2823
3	Baghmara	508	2204
4	Balikoria Part-1	1421	6359
5	Balikuria Kharjara	758	3361

6	Balilecha	374	1773
7	Bardhantoli	145	742
8	Barkura Part-1	791	3516
9	Barsarkuchi	488	2330
10	Batahgila	23	103
11	Bhodra	98	510
12	Bhutkatra	26	137
13	Bhuyanarkuchi	234	999
14	Bilpar Gaon	246	1214
15	Bolakuchi	94	493
16	Borchenikuchi	82	434
17	Borkhanajan	109	552
18	Borkhetri Banekuchi	342	1595
19	Boushiapara	193	920
20	Dakshin Bezra	148	745
21	Dhekiabari	44	191
22	Digheli Part-1	1114	5285
23	Dolua	202	1022
24	Elengidal	407	1901
25	Gatiyan	29	122
26	Goremara	111	484
27	Guakuchi	135	614
28	Haripur	369	1796
29	Jajjabari	158	826
30	Janigog	747	3795
31	Japarkuchi	1003	4626
32	Joymongla	386	1956
33	Joymongla bar agra	257	1341
34	Kashimpur Part-1	974	4996
35	Katahkuchi	63	302

36	Katuriya Gaon	152	791
37	Kendukuchi	164	720
38	Khatkatra	142	699
39	Khudra Chenikuchi	173	873
40	Khudrakotola Borkuchi	455	2159
41	Khudrapipolia	68	343
42	Khudrasankara	72	365
43	Koiyakuchi	307	1683
44	Kordaitola	277	1419
45	Kotlabarkuchi	316	1538
46	Kotokia Gaon	157	726
47	Major Bari Gaon	130	604
48	Mazdia	446	2049
49	Modanmohan Soko	150	683
50	Moiradonga	115	564
51	Mugkuchi	518	2423
52	Nalbari Gaon	579	2369
53	Namati Part-1	736	3807
54	Nandagaon	107	483
55	Nij Banekuchi	65	360
56	Paikarkuchi	224	1077
57	Panigaon Part-1	729	3427
58	Pitanipara	103	479
59	Poila	447	2104
60	Poisara	357	1767
61	Pokoa Part-1	642	3086
62	Porakuchi	216	1150
63	Sahpur	279	1351
64	Sandha Part-1	723	3428
65	Sandhakairara	140	690

66	Sandheli	220	1086
67	Sariahtoli Part-1	756	3830
68	Tantrasankara	150	749
69	Teresia	189	960
70	Tilana	277	1456
<b>Total</b>		<b>23503</b>	<b>112828</b>

Source: District Census Handbook, Census of India, 2011

In 2020, with the extension of wards to 17, the following villages has come under the jurisdiction of Nalbari Municipality:

**Table 2-6 Villages under Nalbari MB**

Sl. No	Village	Area Included
1	Balikoria	Part
2	Balikoria Kharjara	Full
3	Barkura	Part
4	Bhuyarkuchi	Part
5	Digheli	Part
6	Japarkuchi	Full
7	Katabari Khanda	Full
8	Kotlabarkuchi	Part
9	Nalbari Gaon	Full
10	Nalbari Town	Full
11	New Borsilakuti Town	Full
12	Sandhakairara	Full

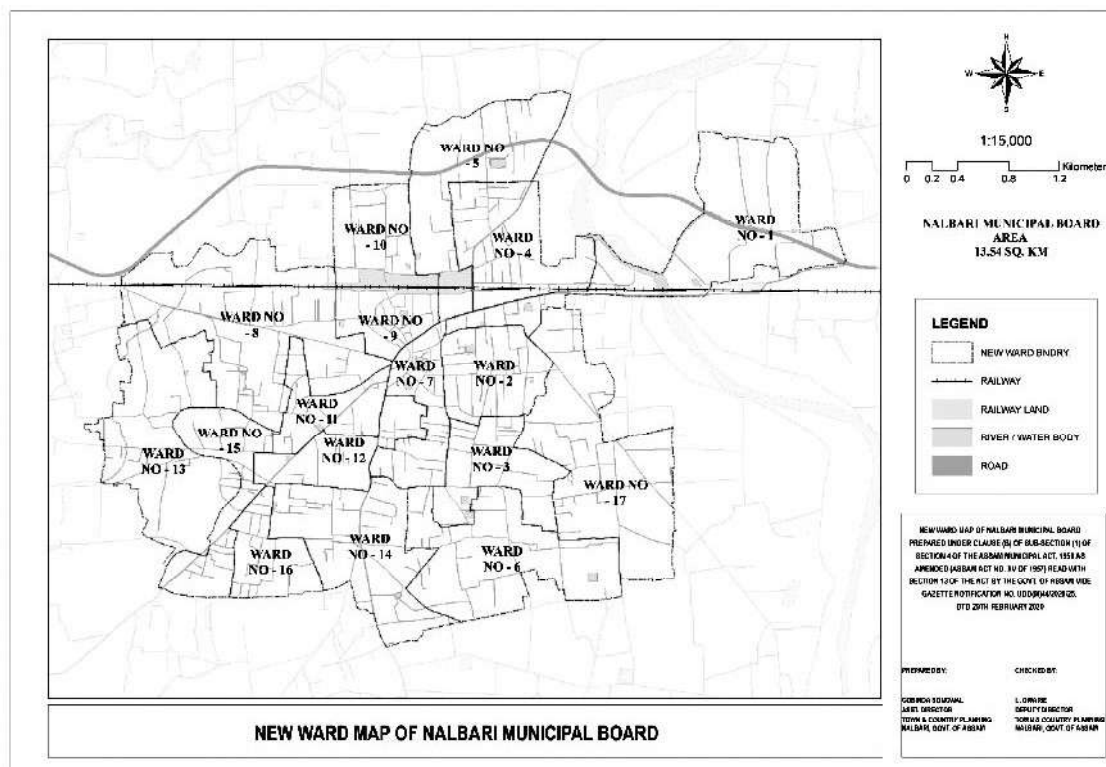


Figure 2-2 Ward Boundary Map of Nalbari Municipal Board

### 2.1.1.3 Sex Ratio

The sex-ratio of Nalbari Municipality, according to 2011 census shows a substantial improvement from 1991 census. The Nalbari MP Area has also similarly demonstrated improvement.

Table 2-7: Sex Ratio of Nalbari Town & Master Plan Area

Year	Sex Ratio		
	In Nalbari Municipal Area	In Nalbari Master Plan area (Excluding Nalbari Municipal Area)	Total Master Plan Area (Average)
1991	859	921	909
2001	913	935	931
2011	930	947	944

Source: District Census Handbook, Census of India (91,01,11)

### 2.1.1.4 Child population:

As per 2011 Census, out of the total population of the Master Plan Area (140667), 11396 are children belonging to the age group 0-6 years, which accounts for 8.10% of the total population.

**Table 2-8: Child Population of Nalbari Master Plan Area, 2011**

Age Group	Area	Male Population	Female Population	Total
0-6	Master Plan Area (Excluding Municipality)	4485	4267	8752
	Municipality (12 wards)	1334	1310	2644
<b>Total Population</b>		<b>5819</b>	<b>5577</b>	<b>11396</b>

Source: District Census Handbook, Census of India 2011

Population of Children with age of 0-6 is 2644 which is 9.50 % of total population of Nalbari (MB). Moreover Child Sex Ratio in Nalbari is around 982 compared to Assam state average of 962.

#### 2.1.1.5 Age-Sex Composition

The Table below shows the age-sex composition of Nalbari MP Area. The increasing population calls for efficient and modern social and physical infrastructure to ensure that the inhabitants live comfortably and fares better in Ease of Living indices. Also, the working age population group of Nalbari MP Area is expanding. To efficiently utilize the demographic dividends that the expanding working age population group is presenting, it is essential to empower them through investments in sectors like health and education.

**Table 2-9: Age-Sex Composition of Nalbari Master Plan Area, 2011**

Age Group	Nalbari Municipal Area (12 wards)			Nalbari Master Plan area Excluding Municipal Area		
	Male Population	Female Population	Total Population	Male Population	Female Population	Total Population
0-6	1334	1310	2644	4485	4267	8752
7-60+	13091	12104	25195	53463	50613	104076
<b>Total</b>	<b>14425</b>	<b>13414</b>	<b>27839</b>	<b>57978</b>	<b>54880</b>	<b>112828</b>

Source: District Census Handbook, Census of India 2011

#### 2.1.1.6 Literacy

As per 2011 census, out of the total population in municipality area (27839), 22719 persons are declared literate (of which 12176 are Male & 10543 are female)

**Table 2-10: Literacy rate of Nalbari Town, 2011**

Area	Male Literate	Female Literate	Total
Master Plan Area (Excluding Municipality)	35732	29786	65518
Municipality (12 wards)	12176	10543	22719
<b>Total Literacy</b>	<b>47908</b>	<b>40329</b>	<b>88237</b>

Source: District Census Handbook, Census of India 2011

The Effective Literacy rate of Nalbari Town is 90.17% wherein the Male literacy rate is 93.01% and the female literacy rate is 87.10%. There is a significant gap between the male and female literacy rate which should be addressed urgently to ensure a holistic socio-economic development of the town.

In the total master plan area, the literacy rate is 68.26%. Here, the male literacy rate is 71.98% while the female literacy rate is 64.30%.

#### 2.1.1.7 Population of SCs & STs:

As per 2011 census, the Scheduled Castes and Scheduled Tribe population of the Nalbari Master Plan Area was 7186 and 2408 respectively, constituting 5.1% and 1.71%.

**Table 2-11: SC-ST Population, Nalbari Town, 2011**

Area	SC Population		ST Population		Total
	Male	Female	Male	Female	
Master Plan Area (Excluding Municipality)	2244	2146	1103	1095	6588
Municipality (12 wards)	1382	1414	110	100	3006
<b>Total</b>	<b>3626</b>	<b>3560</b>	<b>1213</b>	<b>1195</b>	
<b>Total Population of SC/ST</b>	<b>7186</b>		<b>2408</b>		<b>9594</b>

Source: District Census Handbook, Census of India 2011

## 2.2 MIGRATION POPULATION

Urbanization refers to the movement of population to reside in urban areas, and the resultant increase in population from rural areas. It is the movement of people from villages to towns, effect of which is tremendous upon the migrants and their families and upon their fellowmen in the villages. The shift of population causes towns and cities to grow. It provides opportunities and challenges to urban centres. Migrants offer their skills at reasonable cost, driving the growth of these centres. Challenges appear in the sector of housing as they often fail to find decent accommodation. Urbanization leads to concentration of non-agricultural occupations and land uses around a single nucleus or multiple nuclei.

In Nalbari town, the migrant population is mainly the working-class population. This population comes to town to seek employment in various sectors such as transportation, hospitality, etc. Some of the migrated population are also employed in the formal sector like administrative offices and educational institutions. During the non-agricultural season, a few agricultural workers also migrate to the town in search of menial work.

Currently, there is no data available for migrant population of Nalbari town and surrounding villages.

## 2.3 URBAN HOUSING

Traditionally, the people have been living in individual houses made up of bamboo and wood due to easy availability of the raw materials. However, due to increase in population and space constraint there has been unrestricted growth of RCC buildings and multi-storeyed structures. Many of these buildings are not earthquake resistant.

### 2.3.1 Household Size

The average household size of the Nalbari Master Plan area is 4.75 as per 2011 census (Table 2-12).



**Table 2-12: Population and Household Size of Nalbari Master Plan Area – 1991, 2001 & 2011**

Town/ State/ Country	1991			2001			2011		
	Total Population	Number of Households	Household Size	Total Population	Number of Households	Household Size	Total Population	Number of Households	Household Size
Nalbari Master Plan Area	1,02,858	16,651	6.18	1,24,467	22,265	5.59	1,40,667	29,590	4.75
Assam Urban Population	24,87,795	-	-	34,39,240	-	-	43,98,542	-	-
India Urban Population	21,32,83,817	3,99,37,922	5.3	28,61,19,689	5,58,32,570	5.12	37,71,05,760	7,88,65,937	4.78

Source: Compiled from Housing and Household Tables, Census of India, 1991 & 2001,\* Provisional Population Totals 2011

Nalbari Municipal Board has administration over houses within the municipality boundary to which it supplies basic amenities like water and sewerage. It is also authorized to build roads within Municipal Board limits and impose taxes on properties coming under its jurisdiction.

## 2.4 POPULATION PROJECTION

Population is the most important factor which is directly related to the various needs of the area. The prime objective of any Master Plan is to assess the present situation and project the future population for plan period, and accordingly calculate the requirements of both physical and social infrastructure in order to cater to the needs of such population. Therefore, population projection is the basic requirement for the projection of other needs of the area. From all these projections the developmental plan of an area should be prepared which can fulfill the different needs of the people living therein.

To arrive at a conclusive projection figure, three methods of population projections have been used for the city as well as the whole MP Area. The methods used for projecting population are:

- i. Arithmetic Progression Method.
- ii. Geometric Progression Method.
- iii. Incremental Increase Method.

Based on the past population growth trends– low, medium and high – population estimate for Nalbari Master Plan Area for the year 2041 have been worked out assuming different growth rate for Municipal Area and Master Plan Area, keeping in view the past growth trend.

The following table shows the population of coming few decades with growth rate and projected population for 2041 –

**Table 2-13: Population growth projection for Nalbari Town (12 wards)- 2041**

Method	2021	2031	2041
Arithmetic Progression method	32167	36495	40823
Geometric Progression method	33538	40403	48673
Incremental Increase method	34791	44367	56567
<b>Average</b>	<b>33499</b>	<b>40422</b>	<b>48688</b>

Source: Calculations based on AM, GM & Incr. Incr Method

**Table 2-14: Population growth projection for Nalbari Town including the extended wards (17 wards)- 2041**

Method	2021	2031	2041
Arithmetic Progression Method	73321	84760	96199
Geometric Progression Method	77940	98166	123640
Incremental Increase Method	75912	92533	111745
<b>Average</b>	<b>75724</b>	<b>91820</b>	<b>111528</b>

Source: Calculations based on AM, GM & Incr. Incr Method

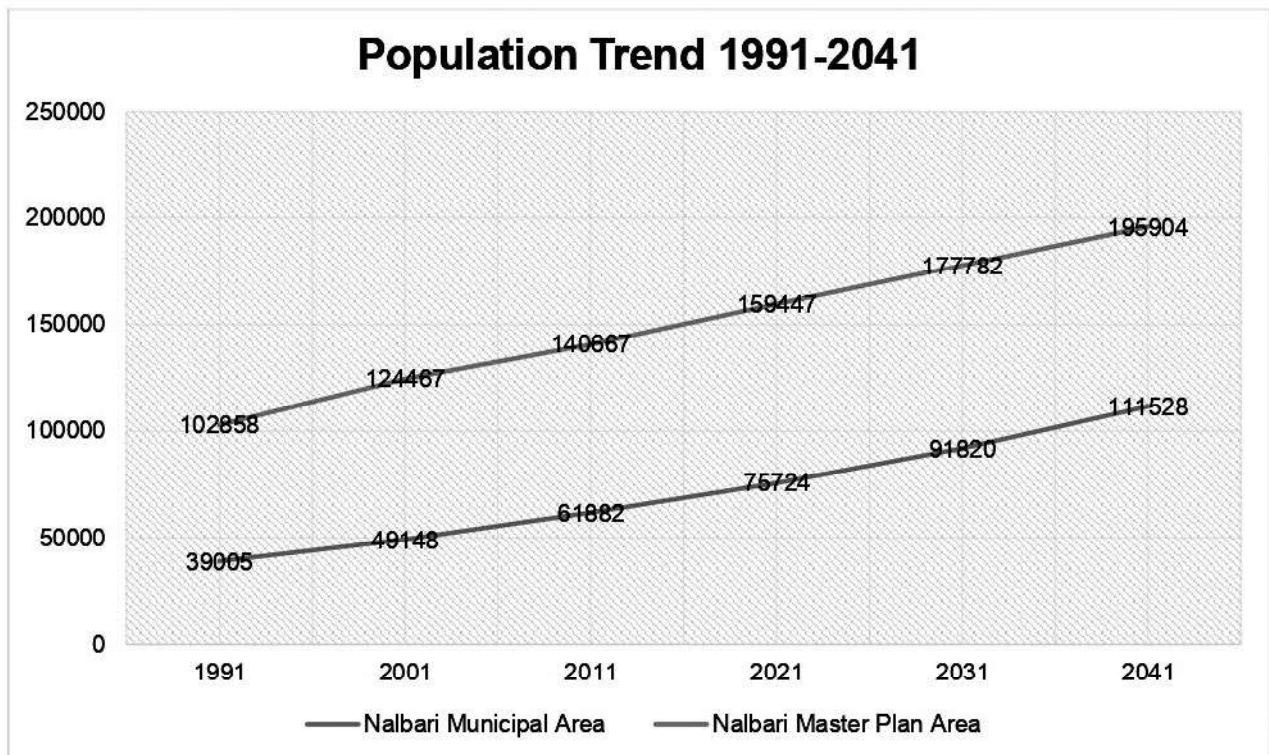
In the table 2-14, it can be seen that Nalbari town is projected to grow to 75724 in 2021, 91820 in 2031 and 111528 in 2041. The comparison of different methods reveal that Geometric Progression Method shows the highest population projection followed by Incremental Increase Method and Arithmetic Progression Method.

**Table 2-15: Population growth projection for Nalbari Master Plan- 2041**

Method	2021	2031	2041
Arithmetic Progression method	159571	178474	197378
Geometric Progression method	164609	192625	225410
Incremental Increase method	154162	162247	164924
<b>Average</b>	<b>159447</b>	<b>177782</b>	<b>195904</b>

Source: Calculations based on AM, GM & Incr. Incr Method

The above table shows that for the plan period 2041, Geometric Progression method projects the highest population size of 225410 followed by Arithmetic Progression Method i.e., 197378 and Incremental Increase method i.e., 164924.



The average of all the methods applied for population projection for horizon year 2041 has more relevance to the Master Plan area and shall provide realistic estimates with greater accuracy. Hence, the population estimates derived by taking average of all the three methods has been considered for the Nalbari Master Plan Area. By following this process the population of the Nalbari Master Plan Area shall be 1.59 lakhs, 1.77 lakhs and 1.95 lakhs for the year 2021, 2031 and 2041 respectively.

# 3.

## **ECONOMIC BASE AND EMPLOYMENT**

### **3.1 INTRODUCTION**

Nalbari town has so far developed mainly as an administrative and service center and as such the economy of this urban center like many of the administrative towns shows a preponderance of service sectors over other sectors of employment. To sustain the service population, activities like trade and commerce, transportation, etc. have been developed. In the past very little efforts have been made for the diversification and intensification of economic activities. There are no major manufacturing centres. Service sector has emerged as the major source of employment.

The city economic profile has been worked out based on an analysis of the census 2011 data.

### **3.2 WORK FORCE PARTICIPATION RATE AND NON-WORKERS**

As per Census of India, workers are classified as Main Workers, Marginal Workers and Non Workers depending upon their duration of work months. Another classification has been done on the basis of nature of work performed; cultivators, agricultural labourers, household industry labourers and other workers etc.

#### **3.2.1 Working Population**

The work participation rate in the Master Plan Area as per Census 2011 is 34.79% compared to 29.27% in 2001. This indicates expansion of the working age population group as well as creation of new work opportunities due to improvement of the economic condition of the MP Area..

**Table 3-1: Working Population, Nalbari, 2011**

Year	Nalbari Municipal Area (12 wards) (A)			Nalbari Master Plan Area (Excluding Municipal Area) (B)			Total Master Plan Area (A)+(B)		
	Total Popul ation	Total Work ers	Workers Participat ion Rate	Total Populat ion	Total Work ers	Worker s Particip ation Rate	Total Popula tion	Total Worker s	Partici pation Rate
1991	19183	5303	27.64%	83675	20047	23.96%	102858	25350	24.65%
2001	23183	7002	30.20%	101284	29427	29.05%	124467	36429	29.27%
2011	27839	9601	34.49%	112828	39339	34.87%	140667	48940	34.79%

Source: District Census Handbook, Census of India (91, 01, 11)

### 3.2.2 Non-Working Population

The Non-working participation rate of 2011 is 65.21% compared to 70.73% in 2001. The following table shows Non-Working population of Nalbari Master Plan Area.

**Table 3-2: Non-Working population of Nalbari Master Plan Area**

Year	Nalbari Municipal Area (12 wards) (A)			Nalbari Master Plan Area (Excluding Municipal Area) (B)			Total Master Plan Area (A)+(B)		
	Total Population	Total Non-Workers	Non-Workers Participation Rate	Total Population	Total Non-Workers	Non-Workers Participation Rate	Total Population	Total Non-Workers	Non-Workers Participation Rate
2001	23183	16181	69.80%	101284	71857	70.95%	124467	88038	70.73%
2011	27839	18238	65.51%	112828	73489	65.13%	140667	91727	65.21%

Source: District Census Handbook, Census of India (01, 11)

### 3.3 OCCUPATIONAL STRUCTURE:

The working population of Nalbari Master Plan area is engaged more in other types of work like trade and commerce, financial services, educational services, public services, etc. The table 3-3 shows the distribution of workers in four categories of economic activity i.e. Cultivators, Agriculture Labourers, Household Industry workers, other workers.

Municipality area contributes 19.62% of total workforce, whereas Master Plan Area (Excluding Municipality) contributes remaining 80.38% of total workforce in Nalbari Master Plan Area.

**Table 3-3: Occupational Structure of Nalbari Master Plan Area**

Sl. No.	Category	Municipality (12 wards)	Percentage (%)	Male	Female	Master Plan Area (Excluding Municipality)	Percentage (%)	Male	Female
1	Main Workers	8922		7506	1416	29247		25607	3640
i	Main Cultivators	37	0.41	29	08	3498	11.96	3297	201
ii	Main Agriculture Labourers	26	0.29	22	04	1811	6.19	1591	220
iii	Main Household Main Industry workers	111	1.25	88	23	1444	4.94	1069	375

iv	Other workers	8748	98.05	7367	1381	22494	76.91	19650	2844
<b>2</b>	<b>Marginal Workers</b>	<b>679</b>		<b>394</b>	<b>285</b>	<b>10092</b>		<b>6289</b>	<b>3803</b>
I	Marginal Cultivators	18	2.65	6	12	563	5.58	444	119
ii	Marginal Agriculture Labourers	8	1.18	6	2	1140	11.30	805	335
iii	Marginal Household Industry workers	19	2.80	13	6	1421	14.08	566	855
iv	Marginal Other workers	634	93.37	369	265	6968	69.04	4474	2494
<b>Total Workers (Main + Marginal)</b>		<b>9601</b>		<b>7900</b>	<b>1701</b>	<b>39339</b>		<b>31896</b>	<b>7443</b>

Source: District Census Handbook, Census of India 2011

### 3.4 INFORMAL SECTOR

Nalbari informal sector activities are scattered in the town. These activities will be swollen beyond manageable limits with the induced growth in future. Hence, for these, proper provision for space should be considered. These informal sector units have located themselves strategically near work centres, commercial areas, outside the boundaries of schools, colleges and hospitals, transport nodes and near large housing clusters and have created numerous problems in the efficient functioning of the town including traffic bottlenecks.



Figure 3-1: Roadside Vegetable Vendors at Nagara Chowk, Nalbari

The informal sector must be made an integral component of the city planning and development process in order to rationalise the city's growth and development. Options for creating more affordable commercial areas in terms of day markets need to be explored in order to enable the informal sector to contribute to the economic growth of the city.

### 3.4.1 Vending Zone

Keeping in mind that street vendors are indispensable part of any city, four vending zones have been identified in Nalbari town. These zones have been demarcated in the Zoning Map for reference and are as follows:

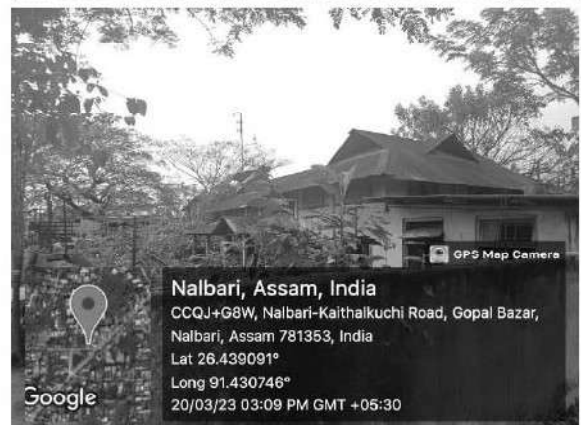
#### 1. Haatkhola Bazar, Nalbari



#### 2. Near Old Water Resource Office, Gopal Bazar



#### 3. Near Old PWD Quarters, Nalbari-Kaithalkuchi Road



#### 4. Dainik Gadhuli Bazar, Near Vishal Mega Mart, Nalbari



### **3.5 MAJOR WORK AREAS- TRADE AND COMMERCE**

Nalbari town, over the years has been a fast growing trade & commerce centre. The business activities of the town have not developed for a particular trade, in a particular area but it is spread widely along main thoroughfares. Commercial activities in the town serve an area of about 20 Km. radius. As per data provided by the Municipal Board of Nalbari there are large numbers of shops of all type in the town.

#### **3.5.1 Wholesale Trade:**

The wholesale trade in the town is mixed with the retail trade. There are altogether 45 Nos. of wholesale commercial establishment which are scattered all over the city especially along the N.T Road, out of which food grain wholesale trade is of predominant nature. The area coming under wholesale trade is quite nominal. Since there is space constraint in the town, it is feasible to shift further wholesale activities in the outskirts, predominantly along the NH 27 where composite zone has been proposed.

#### **3.5.2 Retail Trade:**

There are altogether 1988 nos. of retail commercial establishment at Nalbari Town. The retail activities are mostly concentrated on both sides of N.T. Road, P.N.C. Road, Barama Road Palla Road, etc. The shopping activities are mainly concentrated in the heart of the town. Retail trade centre have developed haphazardly along the roads with the result that Truck Parking, Loading / unloading activities are taking place along the road, creating problem to traffic flow.

#### **3.5.3 Market/Shopping Centre:**

As per data provided by the Municipal Board of Nalbari, there are largely 5 numbers of Municipal Market existing in the Town & they are Bamboo Market, Hatkhola, behind B.S.N.L Office; Cattle Market, near Samshan Bhumi; Daily Market, Hatkhola; Sabji Market, Hatkhola; Fish Market, Hatkhola.

Though there are 3 Nos. of shopping centres Viz. Choudhury Market, Barua Market and Bohagi Bazar Market at Nalbari town. These are not up to standard.

### **3.6 INDUSTRIAL DEVELOPMENT**

Nalbari district is industrially very backward. There is no heavy industry. Small industries like Handloom are found mainly in rural areas, especially in tribal areas. Sericulture is also an important subsidiary occupation of the tribals. There are some weaving centers in the Master Plan Area. Nalbari is famous for cane and bamboo products. These products are sold all over the state as well as outside the state.

At present, the city has 80 small-scale industries with an average of 6-7 employee involvement. These are mostly bakeries, automobile workshops, printing press, radio repairs and furniture making, etc.

#### **3.6.1 Industrial Estates**

Industrial estates have been set up in Nalbari by Department of Industries under State Govt. Policy to facilitate industrial development in areas with potential for industrialization.



**Table 3-4: Number of Registered IE units under the Commissionerate of Industries and Commerce, Assam 2018-19:**

Name of Industrial Estate	Total Area (in Sq. Mtr.)	Total No. of Sheds Constructed	No. of Sheds Allotted	Open Area Allotted (in Sq. M)	No. of Units Functioning
Nalbari	48776	25	21	13951	10

Source: Statistical Handbook Assam 2019

**Table 3-5: Number of Registered MSME units under the Commissionerate of Industries and Commerce, Assam 2018-19:**

Micro	Small	Medium	Total
53	3	0	53

Source: Statistical Handbook Assam 2019

Industrial units of the planning area are manufacturing of steel and wooden furnitures, rice milling, bakery products, tailoring, readymade garments, embroidery, handloom, spice grinding, repairing of 4 wheelers and 2 wheelers, DTP works, cement concrete products.

### 3.7 TOURISM

Tourism in Assam is based on wildlife, natural beauty, unique flora & fauna, holy shrines, lush green tea gardens, turbulent rivers, vibrant and colourful cultural festivals.

Nalbari Master Plan area has a beautiful landscape which presents immense potential to emerge as a major tourist destination of Assam. Some of the places of tourist interests here are: Kohua (Eco tourism); Pagladia (Eco tourism); Hari Mandir, Nalbari especially during Raas Mahotsava; Balilesha Kali Devalaya, Nalbari. There are also many temples in the Master Plan Area for which it is well-known. The temples that are found here ranges from newly constructed ones to ancient monuments.

There are about 7 Nos. of hotels, guest houses and Lodges in Nalbari with about 70 nos. of room available

**Table 3-6: Tourist Trend in Nalbari**

April 2020- March 2021	Domestic	International
	350	Nil

Source: Tourist Information Office, Nalbari

### 3.8 THRUST AREA OF MASTER PLAN IN ECONOMIC BASE & EMPLOYMENT:

Nalbari has to fully realize its niche role and potential as an economic hub in the domain of health, education and rural tourism sector. Industrial growth will be emphasized under stringent environmental norms. Cleaner production and innovation economies have to be promoted by providing a variety of flexible and shared spaces to entrepreneurs in addition to opportunities and good working conditions. Besides the sectors such as specialty health, education and tourism, MICE, modern logistics and specialized trade also need to be promoted.

# 4.

## HOUSING AND SHELTER

### 4.1 HOUSING SCENARIO

Nalbari has witnessed alarming urbanisation in the recent years. The Nalbari Master Plan Area has witnessed a decadal population growth rate of 13.02% as per Census 2011. This calls for construction of more houses. Defined narrowly, housing is just a unit of accommodation to protect its occupants from forces of nature, but defined more broadly, it also covers basic ancillary amenities like proper drainage, sanitation, power supply, water supply, health care, etc. to lead a dignified life.

In the recent years, horizontal and vertical growth of Nalbari is taking place. Congestion and overcrowding is being seen. Open spaces are shrinking and agricultural lands are being converted for residential, commercial, and transportation purposes. Urbanisation in Nalbari has imposed tremendous pressure on natural resources, particularly the groundwater level.

While most of the houses in Nalbari are self-built, a few central and state government schemes are also in place to facilitate house construction. Private builders haven't entered the housing scenario yet.

#### 4.1.1 Types of Housing

Basically, there are three different types of houses found in Nalbari:

- **Kutcha House:** A house having mud floor, bamboo wall plastered with mud and thatch roof.
- **Assam Type (Semi Pucca):** A house having brick wall, cement concrete flooring, CGI/AC sheet roofing.
- **Pucca House:** A house having cement concrete flooring, brick wall and RCC slab roofing.

Besides, the houses being built are often rented out. The following Table depicts the number of households living in owned or rented accommodation.

**Table 4-1: Housing Typology of Nalbari MP Area**

Area Name	Ownership Status		
	Owned	Rented	Any Others
Nalbari Municipal Area ( 12 wards)	3941	1915	231
Nalbari Master Plan Area (excluding the municipal area)	22092	1209	202
<b>Total Master Plan Area</b>	<b>26033</b>	<b>3124</b>	<b>433</b>

Source: District Census Handbook, Census of India 2011

As is evident from the **Table 4-1**, 1915 households in Nalbari Municipal Area stay in rented accommodation. This is around 31.46% of the total households. This implies a huge influx of people from other areas especially the rural areas to Nalbari town in search of better economic activities. While this has cast a pressure on the natural resources, it has also led to a new source of income to the people renting their houses and an increased demand for construction workers and construction materials, thereby generating a greater income flow.

## 4.2 HOUSING SUPPLY MECHANISM:

Majority of the houses in Nalbari are self-built but there are government schemes in place to meet the current demand and to provide affordable housing to economically weaker sections and low income groups.

### 4.2.1 *Schemes currently in operation in Nalbari are:*

- i. **Integrated Housing & Slum Development Programme (IHSDP):** This scheme was launched in December 2005. The objective is to provide an integrated approach to ameliorate the conditions of slum dwellers who do not possess adequate shelter and basic facilities, to strive for slum less cities with healthy living and good environment and to enhance public and private investments in housing and infrastructure development in urban areas.
- ii. **Prime Minister Awas Yojana (Urban) [PMAY (U)]:** This scheme launched in 2005 aims to provide housing for all in the urban areas by 2022. The mission seeks to address the housing requirement of urban poor including slum dwellers through the following programme verticals:
  - Slum rehabilitation of slum dwellers with participation of private developers using land as a resource.
  - Affordable housing through credit linked subsidy.
  - Affordable housing in partnership with public and private sector.
  - Subsidy for beneficiary led individual house construction/enhancement.
- iii. **Individuals Household Latrine (IHHL) under Swachh Bharat Mission (SBM):** IHHL under SBM aims to eliminate open defecation in the country. Here applicants can approach the local authorities in their area to get central assistance for construction of toilets. They can also complete the process online through an official portal of the central government. Conversion of old toilets can also be applied for.
- iv. **National Urban Livelihood Mission (NULM):** Launched in 2013, NULM focuses on organizing urban poor in their strong grassroots level institutions, creating opportunities for skill development leading to market based employment and helping them set up self-employment venture by ensuring easy access to credit. In addition, the mission is aimed at providing shelters equipped with essential services to the urban homeless in a phased manner and also to address livelihood concerns of the urban street vendors.

## 4.3 NALBARI HOUSING STATUS

### 4.3.1 *Housing Condition:*

The condition of households (HHs) can be categorised as good, livable, and dilapidated. Housing condition indicates the physical state of the house or dwelling unit

- Those houses which do not require any repairs and are in good condition may be considered as 'Good'.
- Those houses which require minor repairs may be considered as 'Livable'.
- Those houses which are showing signs of decay or those breaking down and require major repairs or those houses decayed or ruined and are far from being in conditions that can be restored or repaired may be considered as 'Dilapidated'.

The following table provides information on the condition of housing stock in Nalbari:

**Table 4-2: Overall Housing Condition of Nalbari MP Area**

Condition of Census Households as	Percentage of Households		
	Nalbari Municipal Area (12 wards)	Nalbari Master Plan Area (excluding MB area)	Total Master Plan Area
Good	3275	9603	12878
Livable	2644	12507	15151
Dilapidated	168	1393	1561
<b>Total</b>	<b>6087</b>	<b>23503</b>	<b>29590</b>

Source: District Census Handbook, Census of India 2011

From the **table 4-2**, it can be seen that 12878 and 15151 households in Nalbari Master Plan area live in good and livable condition of houses respectively. Here 5.28% or 1561 households live in dilapidated houses. In the Municipal area 168 households live in dilapidated houses. Government schemes are in place to provide assistance for upgradation of these houses.

**Table 4-3: HHs Condition as Residence of Nalbari MP Area**

Condition of Census Households as Residence	Percentage of HHs		
	Nalbari Municipal Area (12 wards)	Nalbari Master Plan Area (excluding MB area)	Total Master Plan Area
Good	3083	9504	12587
Livable	2572	12351	14923
Dilapidated	165	1383	1548

Source: District Census Handbook, Census of India 2011

**Table 4-4: HHs Condition as Residence-cum-other Use of Nalbari MP Area**

Condition of Census Households as Residence	Percentage of HHs		
	Nalbari Municipal Area (12 wards)	Nalbari Master Plan Area (excluding MB area)	Total Master Plan Area
Good	190	98	288
Livable	75	155	230
Dilapidated	2	12	14

Source: District Census Handbook, Census of India 2011

#### 4.3.2 Type of structure:

The structure of households can be classified as follows:

- **Permanent:** Houses with wall and roof made of permanent materials. Walls can be made of G.I, stone packed with mortar, Stone not packed with mortar, metal, asbestos sheets, burnt bricks, stones or concrete. Roof can be made of hand-made tiles, machine made tiles, G.I, Metal, asbestos sheets, brick, stone or concrete.
- **Temporary:** Houses with wall and roof made of temporary materials. Wall and roof can be made of grass, thatch, bamboo, plastic, polythene, mud or wood.

- **Semi-Permanent:** Either wall or roof is made of permanent material or the other is made of temporary material.
- **Serviceable:** Wall is made of mud, unburnt brick or wood.
- **Non-serviceable:** Wall is made of grass, thatch, plastic or polythene.

The following table depicts data on the type of structure of households in Nalbari:

**Table 4-5: Housing Structure of Nalbari MP Area**

Type of structure		Percentage of Households		
		Nalbari Municipal Area (12 wards)	Master Plan Area (excluding MB area)	Total Master Plan Area
Permanent		4261	9871	14132
Semi-permanent		1783	13202	14985
Total Temporary	Serviceable	9	15	24
	Non-serviceable	28	404	432
Unclassifiable		6	11	17
<b>Total</b>		<b>6087</b>	<b>23503</b>	<b>29590</b>

Source: District Census Handbook, Census of India 2011

Most of the people in Nalbari Municipal area live in permanent structures constituting of 70% while in the MP area excluding the municipal area, 13202 households or 56.17% live in semi-permanent structure.

#### 4.3.3 Type of Material

The following table depicts data on the type of predominant material of roof occupied by households in Nalbari.

**Table 4-6: Housing roofing Material of Nalbari MP Area**

Material	Percentage of HHs		
	Nalbari Municipal Area (12 wards)	Nalbari Master Plan Area (excluding MB area)	Total Master Plan Area
Grass/Thatch/Bamboo/ Wood/Mud etc.	17	205	222
Plastic/ Polythene	29	243	272
Handmade Tiles	9	30	39
Machine made Tiles	1	1	2
Burnt Brick	76	28	104
Stone/ Slate	21	50	71
G.I./Metal/Asbestos sheets	5399	22833	28232
Concrete	532	111	643
Any other material	3	2	5
<b>Total</b>	<b>6078</b>	<b>23503</b>	<b>29590</b>

Source: District Census Handbook, Census of India 2011

Majority of the people in Nalbari MP Area used G.I./Metal/Asbestos sheets in their roofing constituting approximately 95%.

#### 4.3.4 Availability of Kitchen:

The following table depicts the availability of kitchen in Nalbari households:

**Table 4-7: Availability of Kitchen in Nalbari MP Area**

Kitchen Facility		Percentage of households		
		Nalbari Municipal Area ( 12 wards)	Master Plan Area (excluding MB area)	Total Master Plan Area
Cooking inside house	Has Kitchen	5240	20972	26212
	Does not have kitchen	520	559	1079
Cooking outside house	Has kitchen	270	1384	1654
	Does not have kitchen	33	560	593
No Cooking		24	28	52
<b>Total</b>		<b>6087</b>	<b>23503</b>	<b>29590</b>

Source: District Census Handbook, Census of India 2011

1079 households in the Nalbari MP Area cooks inside their house but doesn't have separate kitchen. This may pose serious health problems in case of poor ventilation.

#### 4.3.5 Availability of Latrine:

The following table depicts the availability of latrine facility in Nalbari households:

**Table 4-8: Availability of Latrine in Nalbari MP Area**

Latrine Facility			Percentage of households			
			Nalbari Municipal Area (12 wards)	Master Plan Area (excluding MB area)	Total Master Plan Area	
Percentage of households having latrine	Flush/pour flush latrine	Piped sewer system	889	2267	3156	
		Septic tank	2562	3448	6010	
		Other system	152	1531	1683	
	Pit latrine	With slab/ventilated improved pit	1622	4119	5741	
		Without slab/open slab	527	5874	6401	
	Night soil disposed into open drain		17	125	142	
	Service latrine	Night soil removed by human	0	52	52	
		Night soil serviced by animal	0	148	148	
	<b>Households not having latrine</b>			<b>318</b>	<b>5939</b>	<b>6257</b>
	<b>Total</b>			<b>6087</b>	<b>23503</b>	<b>29590</b>

Source: District Census Handbook, Census of India 2011

It is to be noted that under the IHHL category of Swachh Bharat Mission, latrines have been constructed across households in the Nalbari district. The outdated and dysfunctional toilets have also been upgraded. Consequently, in August 2017, the entire Nalbari district was declared Open-Defecation Free (ODF).

#### 4.3.6 Availability of Bathroom:

The following table depicts the availability of Bathroom in Nalbari households:

**Table 4-9: Availability of Bathroom in Nalbari MP Area**

Bathroom facility		Percentage of Households		
		Nalbari Municipal Area (12 wards)	Master Plan Area (excluding MB area)	Total Master Plan Area
Yes	Bathroom	4572	10138	14710
	Enclosure without roof	832	5182	6014
No		683	8183	8866
<b>Total</b>		<b>6087</b>	<b>23503</b>	<b>29590</b>

Source: District Census Handbook, Census of India 2011

8866 households or around 30% of the households in the Nalbari MP Area do not have bathrooms, which raises issues of safety and hygiene.

#### 4.3.7 Availability of Drainage:

The following table depicts the availability of drainage facilities in Nalbari Households.

**Table 4-10: Availability of drainage in Nalbari MP Area**

Waste water outlet connected to-	Percentage of households		
	Nalbari Municipal Area (12 wards)	Master Plan Area (excluding MB area)	Total Master Plan Area
Closed Drainage	854	373	1227
Open Drainage	1980	2777	4757
No Drainage	3253	20353	23606
<b>Total</b>	<b>6087</b>	<b>23503</b>	<b>29590</b>

Source: District Census Handbook, Census of India 2011

The drainage system in Nalbari is very poor. 3253 or 53.4% of the households in the Nalbari municipal area do not have proper drainage facility. In the Nalbari MP area, approximately 80% of the households do not drainage facility. This negatively impacts the health, sanitation and aesthetics of the MP area.

#### 4.4 SLUMS-SQUATTERS AND INFORMAL HOUSING SHARE

The following table depicts the informal housing share in Nalbari town as per Census 2011:

**Table 4-11: Informal Housing in Nalbari MB Area**

Year	Name of the town having slum	Total Urban population	Slum Population	Slum HHs	Percentage of slum population to total population
2001	Nalbari MB	23183	10000	2000	43.14
2011	Nalbari MB	27839	5360	1175	19.25

Source: District Census Handbook, Census of India (01, 11)

The table 4.11 depicts the Proportion of slum population in towns. In the district only one slum in Nalbari (MB) is seen with slum population of 5360. The percentage of slum population to total population as seen in the table is 19.25 percent.

## 4.5 HOUSING SITUATION

### 4.5.1 Household Family size

The following table shows the no. of person per house in Nalbari MP area

**Table 4-12: Family household size in Nalbari MP Area**

Year	Number of Residential Houses	Total Population	Number of Persons per Houses
2011	29590	140667	4.7
	(23503+6087)	(112828+27839)	

Source: District Census Handbook, Census of India (01, 11)

### 4.5.2 Housing Shortage

Housing shortage in Nalbari Master Plan Area considering census 2011 housing data has been taken into consideration.

**Table 4-13: Factors taken into considerations for Housing Shortage**

Sl. No	Factors	Description	Remarks
1	Obsolescence factor	As decided by ninth plan working group committee of GoI, dwelling units aged 80 years or more are treated as obsolete. Percentage of households living in the dwelling units having age 40-80 years are in bad condition and percentage of households living in all structures aged 80+ years, irrespective of condition of structure, taken together as obsolescence factor and considered as housing requirement.	<b>1379 HHs</b> [4.66 % of total no. of HHs in Master plan area are in dilapidated condition (refer in Table 4-2)]
2	Temporary housing	All temporary houses should be considered as housing requirements as per recommendations. According to census data both Temporary houses and unclassifiable houses should be taken into consideration to arrive at the total number of temporary housing	<b>379 HHs</b> [(1.22% +0.06%) of total no. of HHs in Master plan area lived in temporary structure. (refer in Table 4-5)]



3	Houses with predominantly katcha or semi pucca roof material	Houses with Katcha and Semi Pucca roof in the cities are considered to be contributing towards the actual housing stock	<b>698 HHs</b> [2.36% of total no. of HHs are made up of temporary roofing in Master plan area (refer in Table 4-6)]
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Source: Assam Urban Affordable Housing & Habitat Policy  
Analysis by DD Dist. office, Nalbari

Therefore the total housing shortage for Nalbari Town is calculated as follows:

**Table 4-14: Computation of Current Housing Shortage in Nalbari**

Parameter	Number of Housing Units
1. Obsolescence factor	1379
2. Temporary housing	379
3. Houses with predominantly katcha or semi pucca roof material	698
<b>Total Housing Shortage</b>	<b>2456</b>
<b>Total HHs in Nalbari MP area (as per 2011 census)</b>	<b>29590</b>
<b>Housing Shortage in percent (Housing Shortage / No. of Urban HHs)</b>	<b>8.30%</b>

Source: Calculated Values

Based on the above table 4-14, in 2011 the housing shortage works out to be around 2456.

#### 4.5.3 Housing Need assessment

The numbers of dwelling units are available in comparison to the total population reveals that there is congestion both in the town as well as in surrounding village within Master Plan Area. So there will be a demand of additional houses in the MP area in future.

The projected housing requirement in Nalbari Master Plan area in 2041 is as under:

**Table 4-15: Future Housing Shortage in Nalbari MP Area in a decade**

Year	Projected Population	Incremental Population in a decade	No. of persons per households	No. of HHs needed	No. of HHs Available	Housing Demand	Shortage in 2011	Total Deficit
2021	159447	18780	4.7	33925	29590 (Census 2011)	4335	2456 (Table: 4-14)	6791
2031	177782	18335	4.7	37826	-	8236	-	15027
2041	195904	18122	4.7	41682	-	12092	-	27119

Source: Calculated Values

It is seen from Table 4-15 that Nalbari MB/Development Authority needs to provide for about 27119 new housing units to be distributed in the existing and new developments in the next 20 years.

Also, it is enunciated to provide 20% allocation of dwelling units in the flatted group housing projects for Economically Weaker Section (EWS) and Low Income Group (LIG) preferably at cross-subsidized rates.

**4.6 IDENTIFICATION OF SUITABLE GOVT. /ULB LAND FOR AFFORDABLE HOUSING**

There are government land parcels in and around the Nalbari town. Most of these lands are underutilized and prone to encroachment. Rental housing complexes can be developed to accommodate migrant workers and prevent the sprouting of slums and squatters. Private investments in government lands can be explored. Different models of PPP can be adopted to make use of these underutilized lands and move closer to the target of achieving Housing For All by 2022. Private real estate developers should be invited to partner with the government to build affordable residential projects. This will ensure efficiency and faster delivery of houses.

**5.****TRANSPORTATION****5.1 INTRODUCTION**

Transport is the backbone of economy and social structure of any region. If urban centres have been recognized as engines of economic growth, Traffic and Transportation has rightly been termed as wheels of such engines. Road and Rail network plays a vital role in the urban planning and traffic & transportation has been considered as a function of land use planning. Transport network is considered as the life line of the city and if any bottleneck or obstruction arises, it will pose a severe threat to day to day life of the city people. The good road and rail network is the symbol of the sound development of any city and the study of transportation helps in understanding the existing situation, potentials, weaknesses etc. and helps to draft out strategies and projects for the future development.

In Nalbari, the movement of goods and passenger traffic mainly takes place by roads and railways. Within the town, different type of land uses has been connected by roads. There are 1,48,994 no. of vehicles (all types) registered in Nalbari Dist. (*Statistical Hand Book Assam 2019*)

The road network has been studied in terms of classification of roads, length of roads, cross section of roads (divided and undivided carriageways), area under major existing roads and major road intersections. Available data regarding rail network has also been studied.

**5.2 ROAD NETWORKS OF NALBARI**

Nalbari is well served by roads connecting it to various cities of other districts as well as within the district. One National Highway i.e. (N.H.-27) passes through the northern part of the town. The N.H 27 facilitates inter-district and inter-state transport mobility. It connects Nalbari with Guwahati and other urban centers of the State.

This Highway has Right of Way varying from 24m to 30m. Besides this the town is connected by roads with Dhamdhama towards north and with Barpeta via Chamata (Palla Road). Moreover, there is another road which connects it with Guwahati via Hajo towards south. The importance of this road has been increasing as a huge no. of private buses coming to and going from Nalbari passes through it.

5 major railway crossing at the entrance to the Nalbari Town Area are Barkura Chowk, Durga Mandir Railway Crossing, Crossing near Railway Station, Hari Mandir Railway Crossing, Sandha Railway Crossing.

**Table 5-1: Classification of Principal Main Roads of Nalbari town**

Sl. No.	Name of the Road	Coverage of Road	Road width in Metre
1	P.N.C Road	From Ambedkar Chowk to Bata Chowk	12.0
2	L.N.B Road	From N.T Road (Jain Mandir to Basanti Bhawan)	11.3
3	College Road	From P.N.C Road at Kalpana Studio to College Chowk via Basanti Bhawan	9.0

4	N.T Road	From Boro Masjid Chowk to Narayan Mahajan Gudhuli Bazar	13.7
5	Barama Road	From Boro Masjid to Barkura	12.2
6	Hajo Road	From Boro Masjid Chowk to Sankardev Academi	13.7
7	Palla Road	From Circle Office to Chilarai Path	12.2
8	Dhamdhama Road	From Ganesh Mandir to Hari Mandir	23.0
9	N.H 27	From Ganesh Mandir Chowk to Barkura	26.2
10	Barua Road	From P.N.C Road via L.M Barua to Nagara Chowk	6.1

**Table 5-2: Classification of Main Roads in Nalbari town**

Sl. No.	Name of Road	Coverage of Roads	Road width in Metre
1	Sankardev Path	From Old Alternative Road via Hajo Road to Palla Road near Gurdon	7.0
2	Circuit House Road	From Gurdon to N.T Road near Old D.T.O Office	9.1
3	Madhab Mandir Road	From Forest Road via Madhab Mandir to Pub-Nalbari Block Office Road	7.0
4	Kamarkuchi Road	From Deviram Pathsala H.S School Near N.T Road to APDCL, Paila	9.4
5	Nalbari Old Station Road	From Jain Mandir to Old Railway Station	8.5
6	Sani Road	From N.T Road to Nagara Chowk	7.6
7	Nalbari Hatkhola Road	From P.N.C Road to L.N.B Road (near Apex Bank Nalbari)	6.1
8	Batiram Road	From Palla Road to Khat Road	6.4
9	Forest Office Road	From S.R Jain School to Gandhi Park	7.0
10	Malikuchi Road	From Deviram High School to College Chowk	7.0
11	Bhakatpara Road	From Nagara Chowk to Deviram High School	9.8
12	Nalbari Hajo Alternative Road	From Hajo Road to Palla Road	7.0
13	Sonpur Main Road	From N.T Road to Railway Station	7.6
14	Jyotinagar Road	From Barama Road to Nalbari Civil Hospital	12.2
15	Hajo Alternative Road	From Jilikoni Chowk to Eye Hospital	9.1

### 5.2.1 Circulation Pattern

The road system is very much irregular in Nalbari M. P Area. The concept of road hierarchy is almost missing. The category of roads can be defined only as P.W.D., local body and village road etc.

### 5.2.2 Traffic Volume at Major Location

Traffic volume surveys was conducted along the major transport routes and at the major intersection. This was carried out in order to generate idea about the traffic volume along the major routes and at the major intersections, the peak hour timing and the peak hour traffic and also the total day and the peak hour traffic composition.

**Table 5-3: Traffic Volume Survey 2019 (Sep), Nalbari Town,  
Morning Peak Hours (8 A.M to 11 A.M) - Incoming**

SL. NO	LOCATION	M- CYCLE/SCOOTER	CAR	BICYCLE	E-RICKSHAW	RICKSHAW	AUTO/TEMPO	MINI-BUS/ TRAVELLER/ WINGER	TRUCK	BUS	THELA	TRACTOR	MINI-TRUCK, APE, PICK-UP	TOTAL
1	CHOWK BAZAR	1236	290	433	240	44	205	23	7	1	13	7	31	<b>2530</b>
2	NT ROAD	857	71	412	126	28	90	2	3	3	19	2	53	<b>1666</b>
3	DIGHELI BLOCK CHOWK	269	28	242	35	14	22	0	0	0	3	1	19	<b>633</b>
4	PALLA ROAD	800	337	374	231	72	232	22	5	13	7	9	39	<b>2141</b>
5	BARAMA ROAD	1098	264	509	233	25	170	19	4	3	9	4	61	<b>2399</b>
6	DHAMDHAM A ROAD	541	60	652	128	19	135	21	6	12	9	0	10	<b>1593</b>
<b>TOTAL</b>		<b>4801</b>	<b>1050</b>	<b>2622</b>	<b>993</b>	<b>202</b>	<b>854</b>	<b>87</b>	<b>25</b>	<b>32</b>	<b>60</b>	<b>23</b>	<b>213</b>	

Source: Survey Conducted By Town & Country Planning Assam, Dist Office: Nalbari

In the morning time, it has been observed that a highest no. of 2530 vehicles entered Chowk Bazar area with highest no of 1236 Motor cycle/Scooter in it.

**Table 5-4: Traffic Volume Survey 2019 (Sep), Nalbari Town,  
Morning Peak Hours (8 A.M to 11 A.M) - Outgoing**

Sl. No	LOCATION	M-Cycle/ scooter	CAR	BICYCLE	E-RICKSHAW	RICKSHAW	AUTO/TEMPO	MINI-BUS/ TRAVELLER/ WINGER	TRUCK	BUS	THELA	TRACTOR	MINI-TRUCK, APE, PICK-UP	Total
1	CHOWK BAZAR	560	192	210	256	23	176	33	1	6	3	4	20	1484
2	NT ROAD	402	72	201	42	9	33	2	1	1	10	1	23	797
3	DIGHELI BLOCK CHOWK	117	12	60	21	3	10	0	0	0	0	1	2	226
4	PALLA ROAD	568	204	245	216	44	146	21	3	9	6	3	22	1487
5	BARAMA ROAD	820	229	226	236	12	121	12	14	7	7	2	36	1722
6	DHAMDHAM A ROAD	255	21	133	100	6	50	12	0	6	10	2	7	602
<b>TOTAL</b>		<b>2162</b>	<b>538</b>	<b>865</b>	<b>615</b>	<b>74</b>	<b>360</b>	<b>47</b>	<b>18</b>	<b>23</b>	<b>33</b>	<b>9</b>	<b>90</b>	

Source: Survey Conducted By Town & Country Planning Assam, Dist Office: Nalbari

In the morning hours, Barama Road witnessed the maximum outgoing traffic, i.e. 1722 vehicles. Also, M-Cycle/Scooter is the dominant mode of transportation.

**Table 5-5: Traffic Volume Survey 2019 (Sep), Nalbari Town,  
Evening Peak Hours (3 P.M to 6 P.M) - Incoming**

Sl. No	LOCATION	M-Cycle/ scooter	CAR	BICYCLE	E-RICKSHAW	RICKSHAW	AUTO/TEMPO	MINI-BUS/ TRAVELLER/ WINGER	TRUCK	BUS	THELA	TRACTOR	MINI-TRUCK, APE, PICK-UP	TOTAL
1	CHOWK BAZAR	1184	200	229	212	39	128	27	5	14	7	0	48	2093
2	NT ROAD	620	70	199	96	18	51	51	0	0	3	1	51	1160
3	DIGHELI BLOCK CHOWK	191	11	138	29	4	12	2	2	0	2	1	22	414
4	PALLA ROAD	1179	214	318	227	30	148	17	1	8	6	1	44	2193
5	BARAMA ROAD	825	210	215	249	23	85	20	3	18	8	3	35	1694
6	DHAMDHAMA ROAD	384	30	212	129	8	39	14	3	12	2	1	16	850
<b>TOTAL</b>		<b>4383</b>	<b>735</b>	<b>1311</b>	<b>942</b>	<b>122</b>	<b>463</b>	<b>131</b>	<b>14</b>	<b>52</b>	<b>28</b>	<b>7</b>	<b>216</b>	

Source: Survey Conducted By Town & Country Planning Assam, Dist Office: Nalbari

In the evening time, Palla Road witnessed the maximum incoming traffic, i.e. 2193.

**Table 5-6: Traffic Volume Survey 2019 (Sep), Nalbari Town,  
Evening Peak Hours (3 P.M to 6 P.M) - Outgoing**

Sl. No	LOCATION	M-Cycle/ scooter	CAR	BICYCLE	E-RICKSHAW	RICKSHAW	AUTO/TEMPO	MINI-BUS/ TRAVELLER/ WINGER	Truck	BUS	THELA	TRACTOR	MINI-TRUCK, APE, PICK-UP	TOTAL
1	CHOWK BAZAR	1180	245	373	274	24	134	42	4	5	45	1	40	<b>2367</b>
2	NT ROAD	623	83	220	72	11	61	1	2	0	4	0	43	<b>1120</b>
3	DIGHELI BLOCK CHOWK	218	10	143	30	5	20	1	2	0	7	1	18	<b>455</b>
4	PALLA ROAD	1345	259	302	187	47	195	19	1	15	15	2	66	<b>2453</b>
5	BARAMA ROAD	842	251	291	227	35	99	7	9	4	5	2	32	<b>1804</b>
6	DHAMDHAM A ROAD	419	28	319	122	13	55	9	4	10	15	2	19	<b>1015</b>
<b>TOTAL</b>		<b>4627</b>	<b>876</b>	<b>1648</b>	<b>912</b>	<b>135</b>	<b>564</b>	<b>79</b>	<b>22</b>	<b>34</b>	<b>91</b>	<b>8</b>	<b>218</b>	

Source: Survey Conducted By Town & Country Planning Assam, Dist Office: Nalbari

In the evening, Palla Road witnessed the maximum outgoing traffic i.e. 2453

### 5.3 OVERVIEW OF CRITICAL ROADS AND THEIR IMPROVEMENT

The road junctions namely Bata Chowk, Boro Masjid Chowk and junction of Hajo Road and P.N.C. Road in front of Police Station are critical in Nalbari town. The junctions are defective and instead of facilitating the movement of traffic, they serve as obstacles. The road junction on Dhamdhama Road with National Highway at the entrance to the town is not as per specification.

The railway lines passes through the town and hence there are quite a no. of level crossing. The railway station has an over bridge for the pedestrian traffic only. The most critical level crossing are on the Dhamdhama road near Hari Mandir and on the Barama Road at Barkura Chowk. As almost all the traffic except the traffic coming via Hajo enter the town passing through these crossings, traffic bottlenecks are created at these points during the closure of the gate.

The existing roads are proposed to be upgraded in terms of ROW, capacity and other geometrics. The new roads need to be planned and designed for a higher level of service from their entry into Nalbari to their meeting with the peripheral Ring Road and other roads. Within the core area, the roads will lose their characteristics and are to be developed as all-purpose roads.

#### **5.4 BUS TERMINALS, BUS STOPS, INFRASTRUCTURE ISSUES**

In Nalbari, there are two bus terminals viz. private and A.S.T.C. located near each other in the central part of the town. There are no truck terminals and other parking space in the town. The private bus stand occupies an area less than one hectare and is not adequate to accommodate the huge no. of buses.

Commercial development have been taking place in and around the bus-stand which has created problem in its functioning. The Hajo bound buses and the Dhamdhama bound buses have to stand along the road-side which create traffic bottleneck during peak-hour.

#### **5.5 FREIGHT ZONES AND LOGISTICS**

As Nalbari is favourably located in proximity to the state capital, a provision of efficient goods transportation facility is important to promote trade and commerce, and in turn the economy of the town. Since the town has an agro based economy with horticulture produces, there is lot of goods movement between the towns and surrounding villages/region, which can also be anticipated in the future.

Proposed extension of the freight complex and proposed industrial area will also generate goods traffic not only seasonally but throughout the year. Hence, to provide a permanent and formal parking space, a Truck Terminal has been proposed near the industrial zone.

The truck terminus will have major components like packaging, office complex, restaurant, accommodation, parking and other ancillary facilities. It has to be developed in phases to avoid the creation of surplus infrastructure. Truck Terminal will be designed for the idle parking of trucks and carriers/containers. Keeping all these aspects in mind the proposed truck terminal/ logistic hub may be strategically located on outer ring road.

##### **5.5.1 *Movement of Goods Modes***

The movement of goods modes on the road network needs to be rationalized. Goods modes can be grouped into three types as under:

- **Small sized vehicles like pickups:**

Small size vehicles like 'Pick ups' perform an essential distribution function. In space occupancy and manoeuvrability they are similar to cars. Their movement on all road sections, at all times of day may be permitted. As part of traffic management plans, separate parking areas for 'Pick ups' may be identified.

- **Medium sized vehicles like LCVs**

Medium size vehicles like LCVs are important to move goods to and from industries, warehouses and other major activities. They affect overall level of service of traffic. Since, relocation of wholesale trade and a composite zone is proposed along the NH 27, a parking for these vehicles is proposed at the urban periphery.

- **Large size vehicles like 2/3 Axle Trucks, Truck Trailer & MAVs**

Large sized goods vehicles consume high proportion of road capacity, impede traffic flows, causes accidents, adversely affect environment and consume large extent of land for parking. As these vehicles are bringing in/taking out traffic from/to other parts of the country, these



vehicles need to be received at the urban periphery and facilitated in terms of planned terminals. Major truck terminals and/or idle parking are proposed.

## **5.6 FOOTPATHS AND BICYCLE TRACKS**

As no standard footpaths and bicycle tracks are easily visible in the Town, people are often seen walking on the road, slowing the movement of traffic. Also Roadside encroachment by the informal Sector on the footpath creates haphazard environment and obstruct smooth movement of Traffic.

### **5.6.1 *Pedestrian Facilities***

Walking is a predominant mode in the city. The transport system plan promotes and facilitates walking. The main strategies and measures proposed as part of the plan are as under:

- Provision of side-walks on primary arterials, sub-arterials and collectors on both sides of the road and on at least one side on local roads;
- Cross pedestrian facilities to be provided as per the warrants recommended by Indian Roads Congress;
- Side- walks on all the major roads;
- Improvement measures in terms of pedestrian controlled facilities at intersections, grade separators and widening of side- walks in the Central Area and along major corridors.
- Pedestrians should remain at ground level with comfortable and safe access and minimum detours from the most direct path, unless there is no other alternative.
- In-depth study will be made to declare many roads in market and office places as pedestrian roads.
- Local pedestrian and cyclist routes on the street will be preferred to rear and side yard pathways.
- A continuous unobstructed footpath on each side of all streets with ROW wider than 12m. Minimum width of footpath should be 1.8 m (with clear height 2.4 m.) in addition to space for trees/greenery/vending spaces and surface utilities. Width of footpath shall be determined based on pedestrian volume and have to be wider than 1.8 m wherever required.
- Natural Surveillance or “eyes on the street” should be enabled on all roads by removing setbacks and boundary walls and building to the edge of the street, wherever permitted as per norms. This would allow people from inside to look out on to the pavement, thus discouraging harassment of women on footpaths, bus-stops and public spaces.

## **5.7 PARKING: ON-STREET AND OFF-STREET**

There is no adequate on- street, off-street provision of parking in the Town. The Town has high inadequacy of organized parking space for the motorized vehicle. The cars are parked on the main road of the town creating congestion. The roads are already overburdened with traffic and encroachment.

### **5.7.1 *Parking Policy:***

Every vehicle trip ends in a demand for parking of the vehicle at its trip end. The parking of vehicles needs extensive and exclusive land area. Otherwise parking would spill over to other use areas like road carriageway and footpaths, open spaces. In turn they affect safety and environmental quality.

The escalating demand and varied needs of parking in Nalbari can only be met and organized in the framework of a comprehensive Parking Policy. Parking policy needs to move from 'non-restrictive' to 'restrictive' policy. 'Restrictive' policy includes shifting from banning of parking to restricted provision, regulation and pricing of parking spaces. However, the recommended parking policy for the town should have the following salient features as per the Urban National Transport Policy (NUTP)-2006:

- Preferential allocation of parking space(s) for public transport vehicles and non-motorized modes of transport;
- Levy of graded scale of parking fee representing truly the value of the land occupied;
- Development of efficient accessibility to parking lots;
- Encourage to go in for electronic metering for better realization of parking fee;
- Development of underground parking in green areas (considering the social acceptance of the people);
- Encouraging people to use public transport to reach city centre(s);
- Development of parking lots on PPP format for reducing burden on public funds
- Restricted and high- priced public parking to discourage unnecessary private transport;
- Very low- priced public parking for bicycles and e-bikes to encourage bicycles and e-bikes.
- Schemes will be made for central municipal area to provide 1 Equivalent Car Space (ECS) per 100 sq.m. of covered area, with mandatory 5% of the parking area earmarked for bicycles, and wheelchairs.
- At least 10% of the parking area shall be equipped with charging points for Electric vehicles.
- Prohibit street parking or enforce high parking fines for private vehicles on public streets and Spaces ( other than parking areas) , in order to encourage use of other modes.

The Master Plan asserts that a comprehensive parking policy for the area shall be prepared separately taking into account all aspects including existing and potential parking demand, institutional measures and implementation mechanism.

## **5.8 AREAS WITH MAJOR CONGESTION AND PARKING ISSUES**

It has been observed from traffic Survey that the area of Barkura Chowk, Hari Mandir Chowk, Jain High School Chowk, Jilikoni Chowk, Kalpana Studio Chowk, Masjid Chowk, Nagar Chowk, Thana Chowk have been facing major congestion and parking issues specially during peak hours.

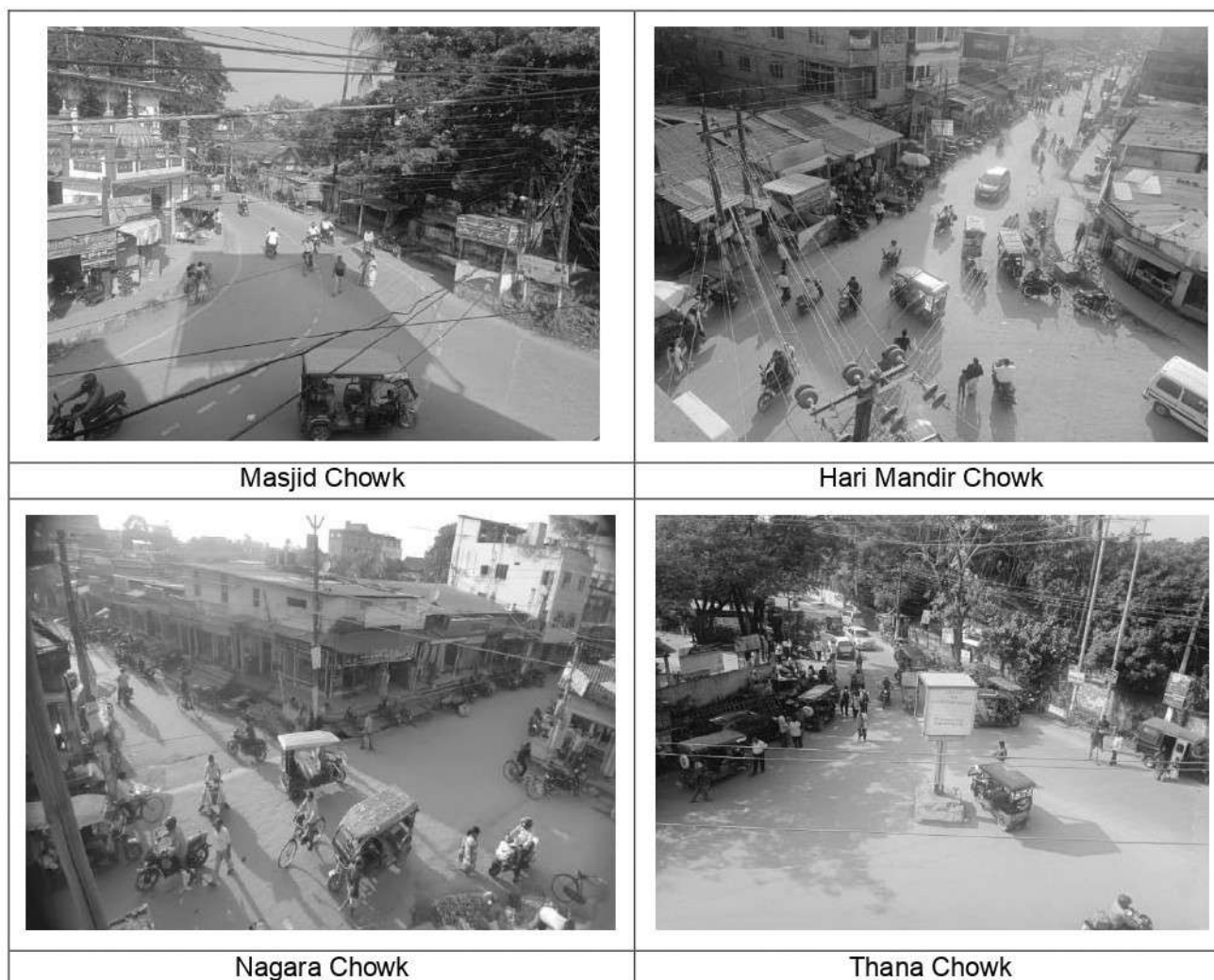


Figure 5-1: Photos of major Chowk in Nalbari Town

## 5.9 IMPROVEMENT OF ROTARY AND JUNCTIONS

The transport system plan includes improvement of Rotary and Junctions geometrics including provision of acceleration/deceleration lanes, traffic signs, lighting etc. and provision of appropriate traffic control systems. In all only one intersection is recommended for grade separation during the plan period. However, 13 junctions are identified for improvement. It is recommended that all the major intersections, especially those on the arterial and sub-arterials be signalized and in the next level of improvement be linked and integrated and brought under a central Area Traffic Control scheme (ATCs). Grade Separators/Flyovers may be built based on traffic intensity, site conditions and environmental impact assessment (EIA).

Table 5-7 Major Intersections

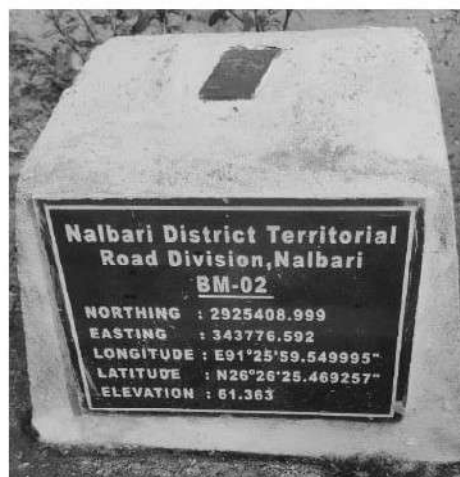
Sl. No	Major Intersections
i.	Chowk Bazar
ii.	Ambedkar Chowk in front of Police Station
iii.	NT Road ( from Masjid Chowk to Bharatia Cinema hall )
iv.	Gurdon High School
v.	Gopal Bazar near Tinkonia Pond
vi.	PNC Road (From Bata Chowk upto Police Station )

vii.	Charminar Chowk
viii.	College Chowk
ix.	Jain School Chowk
x.	Nagara Chowk (Baruah Road)
xi.	Satra MV School Chowk
xii.	In front of Premoda Hotel
xiii.	Barkura Chowk

### 5.10 DEMARCATION OF ZERO POINT

Permanent Bench Marks have been collected from the PWRD Nalbari. They are as follows:

BM	Northing	Easting	Longitude	Latitude	Elevation
BM1	2925415.373	343774.478	91°25'59.47089"E	26°26'25.675533"N	61.534
BM2	2925408.999	343776.592	91°25'59.549995"E	26°26'25.469257"N	61.363



The ZERO POINT of BM 1 and BM 2 have accordingly been demarcated in the Office Campus of PWRD Nalbari which will be duly taken into consideration to level control construction of roads, drains and plinth height of houses.

### 5.11 STREET LIGHTNING AND PROPOSED IMPROVEMENT PLAN

Power supply in the Nalbari town is pitiable. The infrastructure like LT poles, conductors and transmission lines seem to be decades old. A threat to life and property lures always in the old areas of Nalbari town in particular. The power supply in the town is erratic and a frequent curtailment is common. There is a tremendous demand for street lighting in Nalbari.

The Town street lighting in Nalbari has to be designed, operated or maintained very efficiently. It is proposed to have Energy efficient street lighting in the Town and the Continuity of street lighting for carriageway and pavements for safety purpose. The distance between poles should not be more than 30 meters.

## **5.12 SIGNAGE AVILABILITY AND REQUIREMENTS**

### **5.12.1 Lane Markings and Signage**

Inadequate lane marking has been observed throughout the town. Traffic signals, signs and pavement markings are used for traffic control so that-

- All on-street parking spaces are clearly defined by lane markings.
- Adequate and appropriate signage are installed at all places on the street network to identify 'parking' and 'no parking' areas.
- Off-street parking places are clearly identified by signs and distinguishing marks.

## **5.13 MAJOR PROPOSALS TO BE ON MAP INDICATING WIDTH OF ROAD AND RESERVATION OF LAND FOR THE PROPOSED ROAD OR WIDENING OF EXISITNG ROAD.**

The Revised Nalbari MP-2041 recommends development of a hierarchy based arterial road network system comprising primary arterial, sub-arterial and collector roads. The main functional roads recommended are:

Based on the recommendation of the Advisory Committee, Comprehensive Mobility Plan (CMP) and subsequent DPRs may be prepared for up gradation of transport sector.

### **5.13.1 Proposed Transport Development Strategy**

To improve the overall mobility in the region, the following policy imperative need to be taken by the authorities:

- i. Provision of efficient, reliable and accessible mass transportation system.
- ii. Integration of various mode of transport by way of evolving an integrated multimodal transport system.
- iii. Improvement in traffic management through short-term, medium and long-term interventions.
- iv. Encouraging public transport and non-motorized modes of traffic.
- v. Provision of environment friendly transport systems within the region.
- vi. Removal of traffic conflicts by way of grade segregation, provision of missing links, closure of avoidable junctions/cuts etc.
- vii. Development of regional corridors for Bye-Passing the regional traffic. Creating important transport nodes along the regional corridors for hassle free movement intercity traffic.
- viii. Development of adequate parking facilities across city and removal of Road-side encroachments.
- ix. Removal of traffic bottlenecks as a short-term measure.
- x. Encourage bicycles and E-bikes.

### **5.13.2 Proposed Transportation Network of Master Plan area**

The proposed land use under this category is 8.35 sq km which is about 11.16% of the total developed Area.

### 5.13.3 Proposed Traffic Circulation Plan for City Core

Areas along the NT Road Road, PNC Road, Hajo Road and Barama Road within the Nalbari Municipal Board area are important commercial areas and they witness high degree of traffic congestion mainly because of parking spill-over on main commercial arterials. In order to make this area more accessible and reduce inconvenience caused by parking, a traffic circulation plan has been prepared which includes various traffic system management schemes such as one way streets, pedestrian trail, pedestrian only streets, no parking Roads, provision of automatic multilevel parking and multi-purpose vehicle stand.

- **One way Streets:** Owing to large scale built up areas in Nalbari Town, widening of Roads is not possible at all places. Therefore, Road capacity can be enhanced by adopting low cost traffic circulation measures i.e. one way street.
- **PNC Road Area:** It is proposed to enforce one way traffic movement for all modes on Roads near PNC Road Area.

### 5.13.4 Proposed Widening and Functional Hierarchy of Roads

There are five main radial Roads entering Nalbari from different directions viz Guwahati Hajo Nalbari Road, Barpeta Nalbari Road, Barama Nalbari Road Connecting NH 27, Dhamdhama Road Connecting NH 27 and Nalbari Main Road Connecting NH 27 bringing the entire regional traffic to the heart of the city.

Most of the radials suffer from congestion because of over utilization of their limited ROW ranging from 8m to 24m. In addition, the limited carriageway, inefficiency of the junctions and their incapability to handle the volumes of traffic further reduces the capacity of the Road systems

Accordingly, it was found necessary that some critical junctions and a few important Roads will require improvements to cater to projected Road traffic up to the year 2041. Some of the critical junctions where normal signaling cannot effectively manage the traffic volumes, grade separators (Flyover/Underpass) are proposed. The following are the intersections requiring grade separators in Nalbari Town:

**Table 5-8: Construction of New Bridges and Widening of Existing Bridges**

Sl. No	Location	Type
1	Barkura Railway Crossing	Rail Over Bridge
2	Hari Mandir Crossing	Rail Over Bridge
3	Sonpur Crossing	Rail Over Bridge
4	Durga Mandir Railway Crossing, Near Batahghila	Rail Over Bridge
5	Sandha Railway Crossing	Rail Over Bridge
6	Goghrapar Railway Crossing	Rail Over Bridge

**Nota Bene:** The streetscape in all future construction will incorporate features that are aesthetically pleasing and must have shade trees along the street.

# 6.

## **INFRASTRUCTURE, PUBLIC UTILITIES & SERVICES**

### **6.1 PHYSICAL INFRASTRUCTURE**

The urban service profile refers to the current state of infrastructure and utility systems in the city. It indicates the adequacy or inadequacy of infrastructure services in terms of coverage, quantity, and quality, and attempts to identify the factors responsible for inadequate development of infrastructure services. It measures the gap between demand and supply of different infrastructure services, and examines the factors that explain the gap.

#### **6.1.1 Water supply**

The Public Health Engineering Department, Government of Assam had taken up a scheme to supply potable water to the residents of Nalbari in the year 1983. At present only a few families are getting the supply water and rests are depending on own sources like tube well, ring well, tank etc. The maintenance and other works of the water supply scheme was handed to Nalbari Municipal Board soon after its completion. The source of the supplied water is ground water. The ground water at Nalbari contains large amount of iron and the treatment done by the P.H.E. Department is not up to standard.

##### **6.1.1.1 Present Water Supply Status**

Main source of water is Hand pump. Assam Urban Water Supply and Sewerage Board also provides drinking water in the town but due to technical problems, the supply is not very steady. At present, the capacity of the water supply scheme for Nalbari town under AUWSSB is 3.9 MLD.

Presently only 30% of the Nalbari town area is covered under piped water supply. The present requirement of water (@ 135 lpcd) for a tentative population size of 75724 would be about 10.2 MLD. The actual supply of water is below the installed capacity. The treatment and storage of potable water is done through overhead tanks located near Gandhi Park, Balilesha Road; Mallapara; and Goru Bazar, Dol Gobindapur.

##### **6.1.1.2 Per capita water supply:**

Around 80% of the population of Nalbari receives water at the rate of 90 lpcd which is 45 lpcd and 60 lpcd less as compared to desired service level benchmark of 135 lpcd of MoUD and 150lpcd requirement of URDPFI guidelines respectively.

**Table 6-1 Main Source of Drinking Water in Municipality**

Area	Tap water from treated source	Tap water from untreated source	Covered well	Un-covered well	Hand pump	Tube well/ Bore hole	Spr ing	River/ Canal	Tank/ Pond/ Lake	Other sources	Total
Municipality	29.03	0.79	0.18	0.18	65.45	3.39	0.03	0.03	0.04	0.86	100%
Outside Municipal Boundary (inside MP Area)	2.23	0.36	0.46	0.21	95.19	0.43	0.01	0.23	0.14	0.74	100%

Source: District Census Handbook, Census of India 2011

#### 6.1.1.3 Water Demand Estimation for Resident in Nalbari MP Area

As per the water supply demand calculation, the existing water supply demand is 27.5 MLD, whereas the demand will increase to 30.8 MLD by 2031 and 34.1 MLD in 2041.

**Table 6-26 Water Demand Estimation for Resident in Nalbari MP Area**

Description	2021	2031	2041
Total Population of Nalbari Master Plan Area	159447	177782	195904
Projected Water Demand (MLD)			
Total Water Demand @ 135 LPCD	21.5	24	26.4
15 % O & M loss	3.2	3.6	4
Sub Total	24.7	27.6	30.4
2% Fire Fighting	0.5	0.55	0.61
Total Water Demand	25.2	28.15	31.01
Grand Total Water Demand (Say)	<b>25</b>	<b>28</b>	<b>31</b>
Add 10% extra (Say for defense area, Floating population, Tourism, Service population etc.)	2.5	2.8	3.1
<b>Overhead Population Water Demand</b>	<b>27.5</b>	<b>30.8</b>	<b>34.1</b>

Note: Cities provided with piped water supply where sewerage system is existing / contemplated- 135 lpcd (URDPFI Guidelines)

To sum up, the total water demand **by 2041** in the Revised Nalbari Master Plan-2041 is estimated at around **34.1 MLD**.

#### 6.1.2 Drainage System

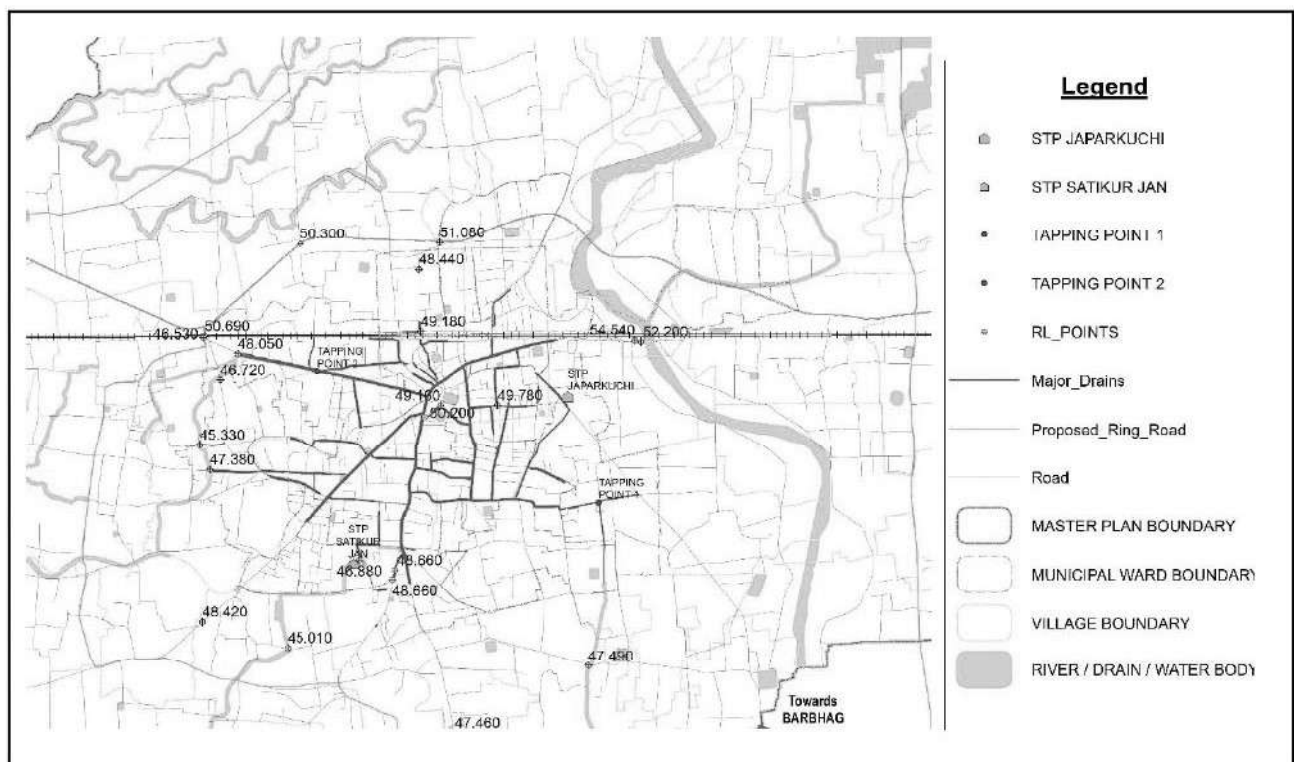
At present, there is no such scientific and well defined storm drainage system at Nalbari town, worth the name; only a few kutchra unlined road-side drains are there to drain out the surface rain water as well as the storm waste to the nearby low lying areas. Most of the drains remain soaked throughout the year. Consequently water logging is a common issue in the vicinity. With the increase of population and built-up areas, the natural low-lying areas and natural water courses have also been filled up. Of course the silting problem is also a vital factor.



The existing drainage network of Nalbari town is mostly earthen in nature and is in need of improvement. Main market area and some residential areas have RCC drains but due to lack of the total network, these drains get clogged due to blockage in the earthen drains. The town does not have a sewerage system and most of the treatment is through septic tank. Effluent from the septic tanks is directly discharged into roadside drains.

The Action Plan shall be chalked out for the extension, augmentation and rehabilitation of existing drainage system in a comprehensive manner. Keeping the geo-climatic factors in view, it would be more feasible to develop a segregated drainage system under the Revised Nalbari Master Plan-2041 to avoid seasonal load on the sewerage system as proposed above. To benefit from GOI schemes, the concerned department shall get a DPR prepared immediately after the approval of this Master Plan so that the projects/schemes identified in the DPR are funded under the CSS.

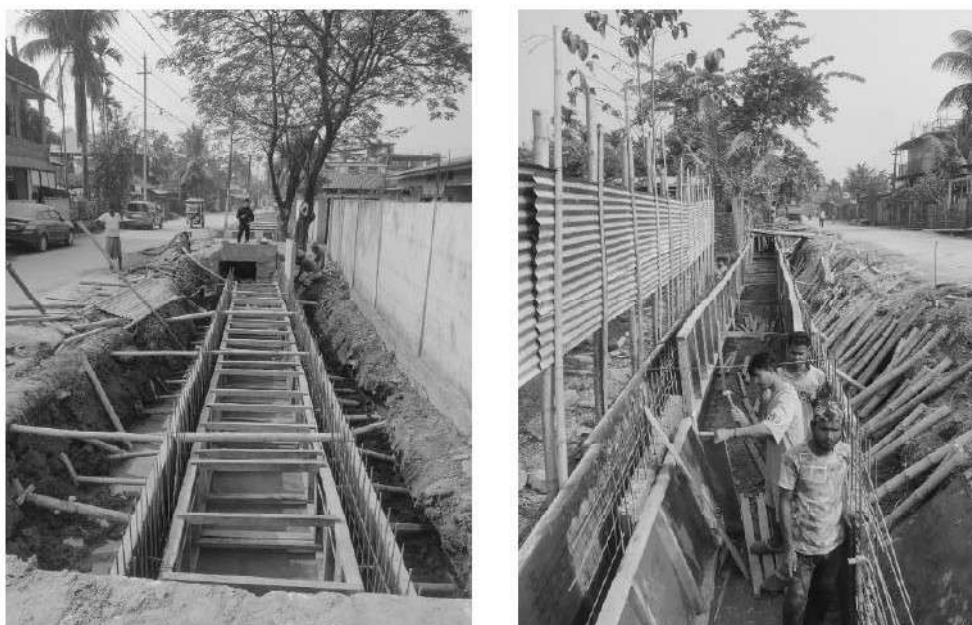
In this Master Plan 82 km of scientifically planned, RCC drain has been proposed with a width of 5 feet. Currently, the PWRD Nalbari has been undertaking pucca drain construction in Nalbari town under the 'State Owned Priority Development Scheme'. As per the SOPD scheme, construction work is going on for drain length of 22 km.



**Figure 6-1: Drainage Map under Nalbari Municipality Area**

The RL points indicating the slope of the land is given below. The authorities entrusted with the responsibility for building an efficient drainage network in Nalbari should take this into consideration to level control the construction of drains.

SI No	Road_Level	Type	SI No	Road_Level	Type
1	50.690	DRAIN BED	13	46.880	DRAIN BED
2	50.300	ON NH B.C	14	45.010	DRAIN BED
3	51.080	ON NH B.C	15	49.160	DRAIN BED
4	50.200	DRAIN BED	16	48.660	DRAIN BED
5	47.460	DRAIN BED	17	48.660	DRAIN BED
6	48.420	DRAIN BED	18	46.530	DRAIN BED
7	52.200	DRAIN BED	19	49.180	DRAIN BED
8	54.540	DRAIN BED	20	48.440	DRAIN BED
9	48.050	DRAIN BED	21	49.780	DRAIN BED
10	46.720	DRAIN BED	22	47.490	DRAIN BED
11	45.330	DRAIN BED	23	47.460	DRAIN BED
12	47.380	DRAIN BED			



**Figure 6-2: Construction of drains in Nalbari town under SODP Scheme**

### **6.1.3 Sanitation**

Under “Swachh Bharat Mission – Gramin (SBM – G)”, 69,580 nos. of sanitary toilet have been constructed in the District based on “Base Line Survey- 2012 (BLS – 2012)”. The district has consequently been recognized as “Open Defecation Free (ODF)” District on 15th August, 2017, for which special recognition has been conferred to PHED Nalbari by the Hon’ble Chief Minister of Assam.

For conversion of dysfunctional toilets, 9466 nos. of toilet have been sanctioned by Government under “Swachh Bharat Kosh (SBK)” and constructions of these toilets are now going on full swing.

2502 nos. of Toilets are sanctioned against the eligible beneficiaries of “Left Over Base Line Survey – 2012 (LoB – 2012)” and construction of these toilets are now going on. 26 nos. of “Community Sanitary Complex (CSC)” have so far been constructed.

#### **6.1.4 Sewerage Network**

Presently the Nalbari MB does not have any integrated sewerage system. There are generally septic tanks in the municipal boundary. The effluent is released untreated into the nearby drains and low-lying areas. Similar is the case of industrial wastewater. In case of septic tanks, the soak pits are becoming non-functional in many areas because of high sub-soil water table within a short span of time. The encroachments on existing natural drainage system, which is the main reason for the blockage, should be stopped.

There should be a separate DPR for the Sewerage network for the town and the sewerage flow has been calculated assuming 80% of the total water demand with 5% of this as infiltration.

It is strongly recommended that PHED and city drainage divisions shall prepare a DPR for the entire area of Revised Nalbari Master Plan-2041 after the approval of the Master Plan. In this Master Plan, 2 Sewage Treatment Plant has been proposed at Japarkuchi and at Satirkur Jan.

#### **6.1.5 Solid Waste Management**

Presently the sources of solid waste generation are (i) Residential areas including slum habitations (ii) Fruit and vegetable market (iii) Hotels and restaurants (iv) Hospitals (v) Drains desilting (vi) Commercial & Industrial wastes.

The production of solid waste is considered as an important function of the socioeconomic profile of the population and activities in urban area. According to URDPFI Guidelines, the generating of waste varies from about over a quarter kilogram in small town to about half a kilogram per capita in large and metro cities.

Nalbari which falls in the category of medium town, the waste generation will be  $\frac{1}{4}$  of kilograms per capita per day. This implies that total waste generation in Nalbari master plan area by 2041 would be around 49 Metric Tons per day

As there are insufficient garbage dumping points in the Nalbari Municipal Area, the garbage collected by Municipality are dumped in low lying areas within the town which creates nuisance and health problems. However, a 7.5 Bigha land at Bardhantoli has been identified for sanitary landfill site. Also, a proposal has been sent to the government for de-reservation of VGR land (30 Bigha) at Sagarkuchi village which is outside the Revised Nalbari Master Plan Area for sound management of solid waste generated in Nalbari.

It is recommended that the municipal authority looks for proper landfill sites and then in collaboration with the town and country planning dept., a suitable sustainable plan is further prepared to serve the present and the future needs of the area.

#### **.Creating 'Minimum Waste Localities' (MWLs)**

- Localities (residential areas, housing societies, colonies, apartments, markets, etc.) where all the wet MSW is managed within their boundaries through eco-friendly solutions such as composting, bio-methanation etc. shall be called MWLs.
- The dry recyclable MSW generated in MWLs shall be sent to Material Recovery Facilities (MRF) or processing plants located within or in close proximity to the locality. All non-municipal waste i.e. e-waste (electric, electronics, battery waste), biomedical waste, hazardous waste and construction and demolition (C&D) waste etc., shall be sent to government authorised processing centres. Only inert waste, if any, shall be permitted to be disposed at centralised landfill facilities.

- All new development coming up within Land Pooling, Regeneration Schemes or Green Development Areas shall be developed as MWLs.
- **Nalbari Municipal Board** shall facilitate the transition of existing localities under their jurisdiction to MWLs by involving RWAs, MTAs and local informal waste pickers and transporters etc.

### 6.1.6 *Electric sub-station and major transformers*

The power requirement of the town for Domestic consumption is about 52.1% of the total power supply against 35.0% for commercial consumption and 12.9% for industrial consumption. Nalbari town has an electrical sub-station of 10- MVA capacity.

**Table 6-3 Electric sub-station and major transformers**

Electricity-Domestic Connection (Numbers)	Electricity-Industrial Connection (Numbers)	Electricity-Commercial Connection (Numbers)	Electricity-Road Lighting Connection (Numbers)	Electricity-Others Connection (Numbers)
5630	90	1100	900	512

Source: District Census Handbook, Census of India 2011

For the plan period of 2041, the Master Plan Area would require about 146 MW power supply for domestic purposes @ 3-4 kw per household.

## 6.2 SOCIAL INFRASTRUCTURE

Compared to other towns of Assam, Nalbari town has a high concentration of community facilities and services viz. educational, health, cultural and recreational facilities which cater not only to the local demand but also the demand of the entire Nalbari district. Availability of social facilities is a key for quality urban living. Social infrastructure involves much more than the provision of core public services such as schools and hospitals. It includes provision and delivery of facilities and services necessary for a community to develop facilities pertaining to Health, Education, Sports facilities, Socio-cultural activities, Recreation, etc.

### 6.2.1 *Education*

In Nalbari there are about 78 number of educational institutions ranging from Primary School to College level with student population of about 19,383.



**Figure 6-3: Left: Nalbari College. Right: MNC Girls' College, Nalbari**

The Master Plan envisages the establishment of integrated schools in new areas rather than opting for various levels of educational institutional facilities separately. Similarly, crèches and pre-nursery schools are permissible in the residential use as a part of the Mixed use Policy. In all educational institutions, proper provision for differently abled children shall be made. Also after merger and amalgamation of schools, the areas left vacant in the master plan area may be used for recreational land-use and purposes aimed at welfare of children.

### 6.2.2 Health

Health facilities are very important for the well-being of people. A number of hospitals and dispensaries have been added both in the Government and private sector to extend medical facilities and in order to preserve and promote the health standard of people in the town. The age expectancy has reached the level of 65-70 years. With the increase of population, influx of migration from Valley and development of posh localities in the city, many private medical institutions have come up. There is one level Government hospital and a privately operated maternity hospital besides five private nursing homes.



Figure 6-4: Clockwise from top: United Hospital, Nalbari; Civil Hospital Nalbari; Medinova Hospital Nalbari

Table 6-4 Numbers of Health Institutions in Nalbari District

Type of Health Institution	Numbers
Civil Hospital	1
Block Public Health Centre	4
Mini Public Health Centre	34
Community Health Centre	7
State Dispensaries	5
Subsidiary Health Centre	4
Health Sub Centre	121
Anganwadi Centre	1510
Model Hospital	2

Source: Nalbari.gov.in website

During last couple of years, the health sector in the district has seen tremendous progress. It was the advent of the Dist. Health Society, (NRHM) Nalbari in 2005 that set the ball of progress rolling. The improvement was seen in all sections of health department in terms of infrastructure, manpower, service delivery, awareness and so on and so forth.

### **6.2.3 Recreational Facilities:**

At present, there are a few facilities such as playgrounds, Parks, Sports clubs, library etc. within the Nalbari city limits. As the city is expanding the need for recreational facility would be in high demand so more number of such services shall be made available which can serve well within the city limits. Looking at the expansion of the city, the locations for new recreational facilities shall be rationally located within the city limit as per the URDPFI standards.

Plans will be made to provide recreation services for individuals and to engage in purposeful endeavors that provide physical, social and psychological benefits. All vacated /abandoned public buildings and premises ( for instance, school compound vacated after amalgamation) will be transformed to public Recreation/ Community centre which will contribute specifically to our community image and a sense of social well-being, health and wellness, inclusivity, social equity, positive youth development, healthy aging, education, economic vitality, and community safety. By providing a comprehensive program of activities adjusted to meet the physical, cognitive and psychological needs of all residents, these centers will strive to ensure that all communities have accessible, safe, functional, and engaging recreational facilities and amenities. Also, to ensure that existing playgrounds and open spaces are protected and not converted to other land-uses, they are hereby declared as 'No-Construction Zone'. Solely the activities that can upgrade the recreational and sports infrastructure around these will be permitted.

#### **6.2.3.1 Parks:**

There are five nos. of parks in Nalbari, namely, - Gandhi Park, Guruji Adya Sarma Park, Bhupen Hazarika Shishu Udhyan, Padum Pukhuri Park and P.N.C. Municipal Park. However, these are not organized and can hardly be regarded as parks. Gandhi Park at Kumarkuchi road which occupies an area of about 7 Bighas of land has a scope to be developed as a full-fledged park with a fishery for angling and children playground.



**Figure 6-5: Padum Pukhuri Park, Nalbari**



**Figure 6-6: Bhupen Hazarika Shishu Udhyan, Nalbari**

In future, Active Parks that include formal athletic venues and play areas will be developed along with Passive Parks that are undisturbed, natural settings that support conservation and the ecosystem.

#### **6.2.3.2 Play Ground:**



**Figure 6-7: Gurdon Field, Nalbari**

The public field which is near old Gurdon School may be regarded as the only public field and open space. This public field serves both as playground and as area for public gathering. There is no organized play ground in Nalbari town. The playgrounds which belong to the educational institutions namely Gurdon H.S. School, Nalbari College and Deviram Pathsala H.S. School are not up to standard. It is therefore proposed to set up a proper playground in the town with standard amenities which can be used to accommodate people in a hassle-free way

during social, cultural and political gatherings.

### **6.2.4 Communication Services and other Facilities**

#### **6.2.4.1 Police Station**

Presently, there is 1 Police Stations, 1 police reserve & 1 District jail in Nalbari. A no. of Provision of police out posts needs to be incorporated at each of the villages added under the main police station for a regulated and crime free area. According to URDPFI guidelines, one Police Station shall be there for serving 90,000 populations.

#### **6.2.4.2 Fire Service**

Fire Services are needed for protecting people from fire hazards, building collapses, and other unforeseen emergencies. There is only one Fire Protection Service for the entire Nalbari Master

Plan Area and it is located at Palla Road. Now that the planning area has increased, a need for further 2 fire sub-station within the planning area needs to be accommodated.

Preparation of Fire Hazard Response Mitigation Plan (FHRMP) need to be carried out by concerned Dept. Also, to ensure prompt action during fire accidents and explosions, it is recommended that existing and proposed Urban Water Supply Schemes incorporate the provision of fire hydrants in market places. This Master Plan has identified a few locations as mentioned below and as demarcated in the Zoning Map to the install fire hydrants so that fire-fighters can swiftly tap into water utility's water supply. Further strategic locations may be identified after due consultation with the office of Town & Country Planning.

- Near Masjid Chowk, NT Road
- Near Swahid Mukanda Kakati Bus Stand, Dhamdhama Road
- Near Debiram Pathsala Higher Secondary School, Bhakatpara Road
- Near Nalbari College
- Near Gurdon HS School, Palla Road
- Near Sankardev Academy, Nalbari-Hajo-Guwahati Road
- Near Fire & Emergency Services, Barpeta-Nalbari Road

#### 6.2.4.3 *Postal Services*

The town has a 1 Head post office. Nalbari Dak Ghar offers all the postal services like delivery of mails & parcels, money transfer, banking, insurance and retail services. It also provides other services including passport applications, P.O. Box distribution, and other delivery services in Nalbari. Few Courier services has come up recently in the town and trending at a large pace. There are other 2 Nos. of Sub-Office in Nalbari Town viz. Khatabari & Bidyapur.

According to URDPFI guidelines, one post office is to be provided for 5,000 populations.

#### 6.2.4.4 *Bank*

Nalbari town has branches of most of the nationalized banks, private sector banks, and regional rural banks. To cater to the financial needs of the people, small finance banks have also opened their branches. To meet the needs of customers at rural areas, the banks have launched several customer service points and business corresponds.

#### 6.2.4.5 *Telecommunication*

Nalbari also boasts of an excellent mobile phone, WLL and broadband internet connectivity provided by a number of national telecom giants.

#### 6.2.4.6 *Distributive facilities*

Distributive Facilities include Milk Distribution, LPG Storage and Distribution and Petrol Pumps.

**Table 6-5 Planning Norms and Standards for Distributive Facilities**

Sl. No.	Category	Planning Norms and Standards
i.	Milk Booth/Milk and Fruit and Vegetable Booth	One per 5,000 population (in residential developments)



ii.	LPG Godown including Booking Office.	1 LPG Godowns to serve 40,000-50,000 populations
iii.	Petrol Pumps	As per URDPFI Guidelines

#### 6.2.4.7 *Cremation and Burial Grounds*

There are several cremation grounds in the Nalbari Master Plan Area. In Nalbari town, the cremation grounds are in Dol Gobindapur and Japarkuchi. There are 4 burial ground in the town, located namely at Forest Road, Malikuchi; Islamia Maidan, Khatabari; Mallapara; and Dol Gobindapur;

**Table 6-6 Norms for Cremation/ Burial Ground as per URDPFI Guidelines**

Sl. No	Category	Population Served per unit	Min. Land Area requirement
i.	Electric Crematorium	1 for large size towns	2.00 Ha
ii.	Cremation Ground	5 lakh	2.50 Ha
iii.	Burial Ground	5 lakh	4.00 Ha

#### 6.2.4.8 *Cinema and Theatres:*

There is no Cinema Hall in Nalbari. The only Theatre Hall called Nalbari Natya Mandir is located at the heart of the town and has been modernized and upgraded with modern amenities.

### **6.3 PROVISION FOR PHYSICALLY CHALLENGED PERSONS IN THE PUBLIC BUILDINGS:**

#### **6.3.1 *Scope***

These bye-laws are applicable to public buildings and exclude domestic buildings. Buildings which shall provide access to ambulant and non-ambulant physically challenged persons are listed below. Distinction is made for buildings to be designed for the use of large wheel chairs and small wheel chair.

#### **6.3.2 *Buildings to be designed for Ambulant Physically Challenged People (Besides Hospitals)***

Higher Secondary School, Conference Hall, Dance Halls, Youth centres, Youth clubs, Sports centres, Sports pavilion, Boat club houses, Ice/roller skating rinks, Swimming pools, Police stations, Law courts, Court houses, Sports stadiums, Theatres, Concert halls, Cinemas, Auditoriums, Small offices (the maximum plinth area 1400 sq.mt.), Snack bars, Cafes and Banqueting rooms (for capacity above 50 dinners).

#### **Note:**

- In sport stadiums provisions shall be made for non-ambulant spectators (small wheel chair) @ 1:1000 up to 10,000 spectators and additional 1:2000 for spectators above 10,000.
- In Theatres, Concert halls, Cinemas and Auditorium provisions shall be made for non-ambulant spectators (small wheel chairs) @ 1/250 up to 1000 spectators and additional 1/500 for spectators above 1000.

### **6.3.3 Buildings to be designed for Non-Ambulant Physically Challenged People**

Schools for physically challenged persons, cremation grounds, public/semi-public buildings, Botanical gardens, Religious buildings, Old people clubs, Village halls, Day centres, Junior training centres, post offices, Banks, Dispensaries, Railway stations, Shops, Super markets, and Departmental stores.

#### **Note:**

- Large wheel chair criteria shall be applicable on ground floors of the following buildings:
- Post offices, Banks, Dispensaries, Railway station, Shops, Super markets and Departmental stores.

### **6.3.4 Building to be designed for Non-Ambulant Physically Challenged Persons (using small wheel chairs)**

Public lavatories in Tourist spots, Club motels, Professional and Scientific institutions, Museum, Art galleries, Public libraries, Laboratories, Universities, College for further Education, Teachers Training Colleges, Technical College, Exhibition halls, Dentist surgeries, Administrative department of the Hospitals, Service stations, Car parking, Building airports terminals, Bus terminals, Factories employing handicapped for sedentary works, large offices (with plinth area above 400 sq.mt.), Tax offices, Passport offices, Pension offices, Labour offices, Cafes, Banqueting rooms and Snack bars (for capacity above 100 dinners).

### **6.3.5 Building Requirements**

The following building requirements are to be provided for buildings mentioned above:-

#### **6.3.5.1 Site Planning:**

- Access path from plot entry and surface parking for building to building entrance shall be minimum of 1800 mm wide having regular surface without any steps.
- The parking of vehicles of disable people @ two equivalent car spaces (ECS) shall be provided near entrance of 30 mt. from building entrance.

#### **6.3.5.2 Approach to Plinth Level:**

- Ramp shall be provided to enter the building; minimum width of ramp shall be 1800 mm with maximum gradient of 1:12 length of ramp shall not exceed 9.0 mt. having 90 mm high hand rail on both sides extending 300 mt. on both sides of ramps. Minimum gap from the adjacent wall to the handrail shall be 50 mm.
- Entrance landing shall be provided adjacent to ramp with the minimum dimension 1800 x 2000 mm.
- Minimum clear opening for the entrance door shall be 1000 mm. Threshold shall not be raised more than 12 mm.
- For stepped approach size of tread shall not be less than 275 mm and maximum riser shall be 150 mm.

**6.3.5.3 Stairways:**

- Height of the riser shall not be more than 150 mm and width of the tread not less than 275 mm, nosing if provided shall not extend beyond 25 mm. Maximum number of risers on a flight shall be limited to 12.

**6.3.5.4 Lifts:**

- Whenever lift is required as per bye-laws, provision of at least one lift will be made for non-ambulant disabled (using small wheel chairs with the following dimensions of lift).
- Clear internal depth : 1090 mt.
- Clear internal width : 1750 mt.
- Entrance door width : 910 mt.
- A handrail not less 600 mm long at 1000 mm above floor level shall be fixed adjacent to the control panel.

**6.3.5.5 Toilets:**

- One special W.C. in a set of toilet shall be provided for the use of physically challenged persons. No additional provision of W.C. is to be made for physically challenged persons.
- Size of the W.C. shall depend on the category of physically challenged persons for whom it has been provided.
- All doors in W.Cs shall open outside.
- The type of W.C. shall be European with seat height as 500 mm.
- Handrails, where provided shall have min 25 mm diameter.

**6.3.5.6 Provision of W.Cs in building without lift:**

- Provision of special W.C. shall be made on all floors for buildings designed for ambulant physically challenged persons.
- For buildings designed for non-ambulant physically challenged persons special W.C. shall be provided at Ground floor. Size of W.C. shall depend on the type of wheel chair used by the disabled.

**6.3.5.7 Provision of W.Cs in building with lift:**

- Provision of special W.C. shall be made on all floors. Size will depend on the category of physically challenged persons for whom it has been provided.

**6.3.5.8 Toilet Details:**

- For Toilets Designed for Ambulant Physically Challenged Persons:
- The minimum size of W.C. shall be 1075 x 1650 mm with a minimum size of 1450 mm for entry door 900 mm. Long handrail on the side closer to W.C. width between the handrails shall be 90 mm and height of handrails shall be from floor level.
- Minimum size of the clear door opening shall be 780 mm.

- For Toilets Designed for Non-Ambulant Physically Challenged People (using Small Wheel Chair):
  - The minimum size of W.C. shall be 1350 x 1500 mm with a minimum depth of 1500 mm for entry door. 900 mm long handrail on the side closer to W.C. shall be fixed towards one side to the opposite adjacent wall. The centerline of W.C. adjacent wall shall be 400 mm and minimum 950 mm from the other wall.
  - Minimum size of the clear door opening shall be 780 mm.
- For Toilets Designed for Non-Ambulant Physically Challenged Persons (using Large Wheel Chair):
  - The minimum size of W.C. shall be 1500 x 1750 mm with a minimum depth of 1750 mm for entry door. 90 mm long handrail on the side wall closer to W.C. shall be provided. To provide movement space for wheel chair, W.C. seat shall be fixed towards one side of the opposite wall. The centre line of the W.C. from the adjacent wall shall be 400 mm and a minimum of 1100 mm from the other wall.
  - Minimum size of the clear door opening shall be 860 mm.

# 7.

## **ENVIRONMENT AND CITY BEAUTIFICATION PLAN**

### **7.1 INTRODUCTION**

Although Nalbari town has few farm lands, open grounds, and eco sensitive area like river banks and embankments, very little area has been developed for recreational purposes like parks and playgrounds. Based on existing land use survey, presently only about 10 ha area is under recreational land-use.

For the purpose of creating a sustainable environment, the Revised Master Plan proposes preservation of natural endowment elements. In view of the projections made in this master plan, Nalbari Town would require more infrastructure, amenities and other facilities at special scale which would generate enormous pressure on its environment. In this chapter, a set of proposals and recommendations grouped by various issues to address; air quality, water quality, noise level, visual quality, etc., have been laid down.

For the purpose of creating a sustainable environment, the Revised Master Plan proposes preservation of natural endowment elements. Conservation of heritage sites shall include buildings, artefacts, structures, areas and precincts of historic, aesthetic, architectural, cultural or environmentally significant nature (heritage buildings and heritage precincts), natural feature areas of environmental significance or sites of scenic beauty.

### **7.2 PLAN/MEASURES FOR PROTECTION AND CONSERVATION OF ENVIRONMENTALLY-FRIENDLY ZONES**

The various initiatives taken up by the GoI and GoA towards biodiversity conservation and improvement are mentioned below:

#### **7.2.1 *Issues pertaining to urban environment in Nalbari***

Urban environmental problems are threat to present & future human well-being resulting from human induced damage to the physical environment, originating in or borne in urban areas. It includes:

1. Localized environmental health problems such as inadequate household water and sanitation and indoor air pollution.
2. City-regional environmental problems such as ambient air pollution, inadequate waste management, and pollution of rivers, lakes and coastal areas.
3. Extra-urban impacts of urban activities such as ecological disruption and resource depletion in a city's hinterland and emission of acid precursors and greenhouse gases.
4. Regional and global environmental burdens that arise from activities outside a city's boundaries but which will affect people living in the city.

Some issues pertaining to urban environment in Nalbari are-

- Nalbari Revised Master Plan Area has an Industrial Estate under District Industries and Commerce Centre (DICC). All the industries placed within the industrial estate have taken measures to control air pollution. Since Nalbari is rapidly growing in terms of Real Estate and road network, dust from building materials is one of the major Air polluting factor.
- The major cause for pollution of land and water in Nalbari is the lack of an underground sewerage system, and an efficient solid waste collection and management system. In the absence of these, the natural streams and drains are the recipients of wastes leading to degraded quality of life in most of the localities within Master Plan Area.
- The levels of noise have been constantly increasing due to the increase in the vehicles on the road and other Incompatible land uses, for example party plots located in residential areas, malls or market places.
- Due to the hard and reflective surfaces in urbanized area, heat effect can be seen.

### 7.2.2 STRATEGIES FOR IMPROVEMENT OF URBAN ENVIRONMENT

Based on the identified issues strategies have been formulated to improve urban environ quality of the city. Table 7-1 identifies the strategies to be taken and the likely projects as part of these strategies to improve environmental health of the city.

**Table 7-1: Strategies and projects to improve environmental health of the city**

Sl. No	Sector	Issues	Strategies for environment improvement	Projects
1	Air	Degraded air quality	Afforestation programmes and urban forestry	Infrastructure development in the northern portion of the master plan area to decongest the existing areas
		Congestion within the city		
		Poor traffic management	Promotion of Electric Vehicles	Tree plantation along roads and intersection
		Increased SPM levels		Alternative road alignments to decongest roads
		Widening/up gradation of roads		
				Setting up EV charging points
2	Water	Degraded water quality	Promotion of rain water harvesting	Afforestation programs along nallahs
			Restoration of catchment areas of natural water bodies and nallahs	
		Contamination of piped water with sewerage	Upgrading /improving infrastructure	Incorporation of rain water harvesting in building bylaws Replacement of water pipelines

Sl. No	Sector	Issues	Strategies for environment improvement	Projects
		UFW	Measures to check UFW losses	Consumer and bulk water metering to be installed
3	<b>Sewerage and sanitation</b>	No sewer network	Upgrading /repairing sewerage infrastructure of the city	Provision of sewerage infrastructure of city
		Lack of sanitation facilities in Town area		Development of sanitation facilities especially in the poor income areas
4	<b>Drainage</b>	Vulnerability to landslides and erosion	Protection measures to improve the situation	Construction of landslip protection measures
				Provision of sewerage systems and improvement of waste collection systems
				Afforestation measures and buffer plantations
				Drainage improvement works
5	<b>SWM</b>	Indiscriminate dumping of garbage	Upgrade SWM infrastructure and facilities	Sanitary landfill sites for city
		Land Pollution by leachate		Purchase of waste collection trucks and dustbins
		Spread of vector, diseases		Public awareness and education campaigns
				Build transfer stations
				Compost plant
6	<b>Green cover and Open spaces</b>	Loss of green cover and open spaces	Undertake plantation programs to Increase green cover of city	Plan for green belts and spaces in master plan
		Absence of recreation spaces		Development of parks and open spaces
				Urban forestry and plantation schemes for city
				Remove encroachments from open spaces in walled city
7	<b>Urban Poverty</b>	Katcha Houses and poor sanitation conditions	Improve housing and infrastructure conditions in all Katcha houses	Physical infrastructure upgradation programs
		Environmental degradation due to poor living conditions		Community toilets in areas
				Low cost housing

### **7.3 CITY BEAUTIFICATION PLAN/PROPOSALS**

#### **7.3.1 *Roadside plantation***

One of the best example of planned tree plantation along city roads in India is New Delhi. It is an exemplary model of architectural, structural and aesthetic excellence. Some of the remarkable features that can be attributed to its artistry are:

- Use of structurally large trees with very tall, straight trunks that form excellent sprawling crowns.
- The use of indigenous species that are hardy, sturdy and durable that makes them easy to grow and maintain. They are able to withstand the extreme environmental pollution from toxic automobile exhausts that usually threaten delicate trees.
- Evergreen varieties of trees used which lends to year-round green effect and protection from severe weather conditions.
- The entire expanse of open space between the concrete buildings and roads covered, creating a soothing visual effect.
- Avenues planted with single kind of trees that offers a glorious collective impact. The consistency, homogeneity of structure, texture and pattern it creates has helped bind the entire city together.
- Planting trees close to the verges, has helped separate vehicular and pedestrian traffic.
- All flowering species of trees that are structurally small, short-lived and difficult to grow and maintain have deliberately not been used for roadside plantation. Instead these have been exclusively planted in parks and various open spaces where they grow well and provide colour and beauty to the city.

#### **Benefits of road side planting**

- Reduced soil erosion: holds soils in place
- Remove dust and other pollutants from the air, protecting crops and road-side communities  
Wind break
- Flood control: slow and absorb road run-off
- Carbon dioxide sequestration
- Provide important pollinator habitat (honey production)
- Provide shade and keep the road cool for road users
- Beautification

#### **7.3.2 *Urban Agriculture and Urban Forestry***

##### **7.3.2.1 *Urban Agriculture***

Urban agriculture can be described as the growing of plants and the rearing of animals primarily for food and other domestic use within a city or a town and its environs. It also involves activities such as the production, processing, marketing, and delivery of farming products. Urban agriculture consists of a number of production systems. They vary from domestic production and household level processing to large scale agriculture. This is usually done within the city peripherals.



Types of Urban Agriculture	<ul style="list-style-type: none"> <li>• Backyard Gardens</li> <li>• Tactical Gardens</li> <li>• Street landscaping</li> <li>• Forest gardening</li> <li>• Greenhouses</li> <li>• Rooftop gardens</li> <li>• Green walls</li> <li>• Vertical farms</li> <li>• Animal husbandry</li> <li>• Urban beekeeping</li> <li>• Aquaponics</li> </ul>
Benefits of Urban Agriculture	<ul style="list-style-type: none"> <li>• Food Security</li> <li>• Healthy community participation</li> <li>• Offsets urban heat island effect</li> <li>• Decreases storm water runoff</li> <li>• Boost the local economy</li> </ul>

#### 7.3.2.2 *Urban Forestry*

Urban forestry or *Nagar Van* (Urban Forests) can be defined as the raising and management of trees in and around urban areas. Urban forestry is the art, science and technology of managing trees and forest resources in and around urban community ecosystems for sociological, economic and aesthetic benefits that trees provide for society.

Urban forests will work as lungs of the cities and will primarily be on the forest land in the City or any other vacant land offered by local urban local bodies.

#### 7.3.3 *Public Rain Water Harvesting Scheme*

Depending upon climatic conditions, topography, hydrogeology of the area, suitable structure for rain water harvesting and artificial recharge of ground water is required. Roof top rainwater harvesting needs to be adopted in urban areas as well as in the subordinate village areas and proper scientific intervention for development of groundwater is required in water scarce areas

The artificial recharge of ground water aims at augmentation of ground water reservoir by modifying the natural movement of surface water utilizing suitable civil construction techniques. Artificial recharging facilitate to enhance the sustainable yield in areas where over-development has depleted the Aquifer. Conservation and storage of excess surface water for future requirements and improving the quality of existing ground water through dilution, removing bacteriological and other impurities from sewage and waste water ensures that water is suitable for re-use. To facilitate ground water recharging it is essential to identify availability of non-committed surplus monsoon run off in space and time.

Rain Water harvesting by way of storage of rainwater in all new buildings existing on plots of 1000 sq. mtr. and above, and all group housing shall be mandatory. The plans submitted to the local authority shall indicate the system of storm water drainage along with points of collection of rain water in surface reservoirs or in recharge wells.

### **7.3.4 *Development of parks and recreational spaces***

#### **Riverfront Development and Conservation of Water bodies**

The polluted stretch of Pagladia River is approximately 4 KM in length with an area of 16 sq.km in town area, which is covering the major part of the length and breadth of the town, are proposed to be developed as the leisure valleys of Nalbari. It is proposed that all sources of pollution along these nallahs are to be removed. The nallahs are proposed to be developed as the channels carrying clean water in order to improve the quality of ground water in the town. In addition, the walkways are proposed to be planned along these nallahs besides undertaking landscaping. Further, the nallahs could also be used for draining the rainwater of the town in order to minimize the problem of water logging in the city. The development of nallahs is to be taken up in the shape of a project for the area to be kept as green. Further, it is proposed that the ponds in the Master Plan area are rejuvenated and maintained so that these sites can witness public engagement and add to the aesthetic appeal of its surrounding.

### **7.3.5 *Identification and demarcation of multi-purpose open spaces for sports, cultural functions, fairs, circus, etc.***

A location is earmarked in the Nalbari Municipal Board area at Ward no 2 in the Office campus of Department of Forest for urban forestry programme and recreational land-use. Upgradation of existing open fields and Playgrounds located at Gurdon School ground, Nalbari College Ground and Medical Ground at Ward no 4, is proposed under various Govt. Schemes.

### **7.3.6 *Beautification of major transit zones (major junctions, Bus depot, Railway Station, market zones, etc)***

#### **Off-street Parking Facility**

Owing to road congestion and traffic jams in the town, a multi-storeyed car facility is proposed in the campus of PWD Inspection Bungalow. Parking facilities may also be developed in the lands left vacant due to amalgamation of schools and shifting of District Administrative Centre to Bardhantali. The site for parking facilities may be chosen such that they can be conveniently accessed by the public, minimizing distance between demand points and the facility.

### **7.3.7 *Road signage and street furniture***

Street furniture including benches in areas of high pedestrian traffic and/or areas of interest is very important and the design must take into consideration the local context in terms of weather resistance and material selection.

### 7.3.8 Industrial Area Management

In the industrial/residential areas, land should be identified for plantation/green belt development and for each of the developmental/industrial schemes, sufficient plantation may be undertaken in all the available spaces. The plant species should be selected in consultation with the Forest Department. Such areas should not be compounded later on for expansion of industries.

- The industries should preferably be permitted in industrial areas
- Establishment of industries outside the industrial area should be as per the initial environment examination (IEE) permitted in case it is not feasible to locate them within the premises of industrial area
- Suitable site for solid waste dumping should be identified for each of the industrial area
- The provision of combined effluent treatment facilities should form part of infrastructure provided to the industries.
- The rainwater harvesting measures by the industrial units should be encouraged.

### 7.3.9 Buffer Zones

For preservation of the streams within the local area, following buffer belts have been proposed as 'No-Construction Zones'. However, following uses are permitted within the buffer zones:

- i. Public Utilities like STP, OHT, Electric sub-station, Water Pumping Stations, Utility Network;
- ii. Roads, Pathways, Cycle tracks;
- iii. Surface Parking;
- iv. Parks and jogging tracks;
- v. Open to sky jetties for boating, platforms for fishing; and
- vi. All such uses which do not involve construction of permanent structures on temporary basis.

#### 7.3.9.1 No Construction Zones:

The banks of Pagladiya River and all major water bodies is delineated as 'No Construction Zone' for protection of the fragile environment and prevention of residential encroachment. This zone will extend 15 metres in Municipal Board areas and 50 metres in rural areas from the banks of natural water bodies. No permanent construction will be permitted in the No-Construction Zone. In case, other land-uses such as 'industrial' is in vicinity or extending into this zone, their activities will be regulated and no physical alteration of the land will be permitted. The No-Construction Zone will be a sustainable zone to protect sensitive landscapes from negative external pressures.

**Table 7-2 Regulating activities in the Flood Plain Zone/Buffer Zones**

Sl. No	Action points	Responsible authority
i.	Plantation in the flood plain zone/Buffer Zones	Forest Department
ii.	Checking Encroachment	Local administration
iii.	Demarcation of the flood plain zone/Buffer Zones	Water Resource Department
iv.	Prohibition of disposal of all kinds of wastes	District Administration



**8.****LANDUSE PLAN****8.1 EXISTING LANDUSE**

The present Nalbari Municipal area is 13.54 sq. km against the proposed Nalbari Master Plan area of 121.37 sq. km comprising of 70 (Seventy) adjoining villages. Low-lying/Marshy Land are present in few pockets across the proposed Master Plan area. Due to lack of land-use control and illegal constructions, these lands have been developing for residential as well as other purposes, which has been a reason for natural drainage to get affected.

**8.2 LANDUSE PATTERN**

Land use survey was conducted for the Revised Nalbari Master Plan area by Town & Country Planning office, Nalbari.

**Table 8-1 Existing Land-use Classification**

Sl. No	Land-Use	Area in sq. km	% To Developed Area	% To Total Area
1	Residential	54.40	87.64	44.82
2	Commercial	0.33	0.53	0.27
3	Industrial	0.24	0.39	0.20
4	Public & Semi-Public	1.40	2.25	1.15
5	Transportation	5.03	8.12	4.15
6	Recreational	0.10	0.18	0.09
7	Railways	0.55	0.89	0.45
	<b>Total developed area</b>	<b>62.05</b>		<b>51.15</b>
8	Open Spaces	1.54		1.29
9	Water Bodies	2.50		2.03
10	Agricultural	55.28		45.55
	<b>Total Area</b>	<b>121.37</b>		<b>100</b>

Source : Primary Landuse Survey

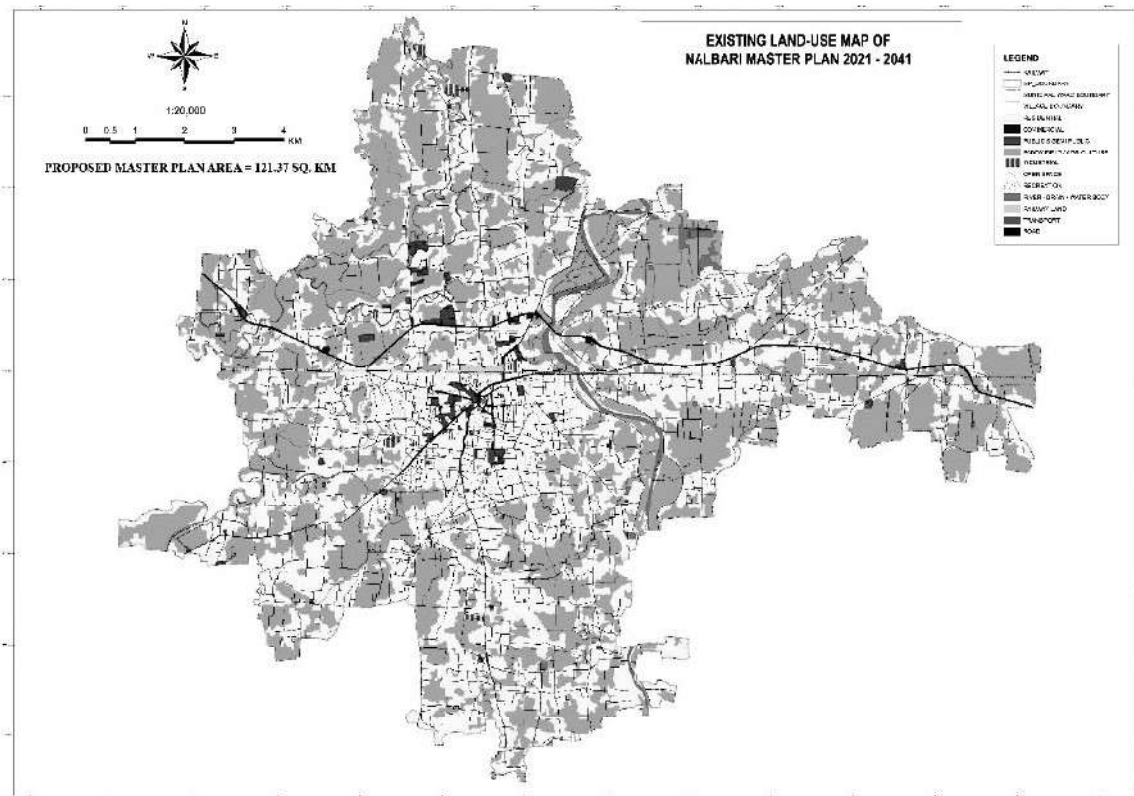
It is seen from the above table that 54.40 sq. km of land comprises of Residential land-use, which is 87.64% of the total developed area. Commercial and Industrial area covers 0.53% and 0.39% of the total developed area respectively. This indicates that Nalbari is lagging behind in terms of industrial activities despite being well connected and very close to Guwahati, the biggest commercial centre and market of the north-eastern part of the country.

The existing commercial areas are concentrated along the N.T. Road running south of the railway line and across the junction of the roads leading to Barpeta and Guwahati. This has created congestion in the central area and hindrances in the way of free flow of traffic.

Recreational land-use is 0.18% of the total developed area which is way below the recommended percentage of 10-12% in the URDPFI Guidelines, 2014. Public and semi-public land

use is 2.25% which is again below the prescribed URDPFI limit of 6-8% of the total developed area. This points towards a possible inconvenience of the public in seamless access to public services.

Transportation and railways comprises 8.12% and 0.89% of the land-use in total developed area respectively. Agricultural land-use is 55.28 sq. km which accounts for 45.55% of the total Master Plan area. Agriculture occupies almost half of the total Nalbari Master Plan land area and shows the heavy reliance of the people here on agriculture.



**Figure 8-1 Existing Land-use Map of Nalbari Revised Master Plan**

### 8.3 LAND-USE INTERACTIONS

The survey conducted by Town and Country Planning, District Office Nalbari in the year 2017 reveals that the planning area has mixed land-use especially within the Municipal area. This has created inefficient and non-conforming land-use and loss of inter-relationship between various land-use. It is observed that quite a no. of land-use does not have functional relationship with the surrounding area. A few of them cause nuisance in the area where they exist at present. Relocation of such incompatible land-use to suitable site is, therefore desirable.

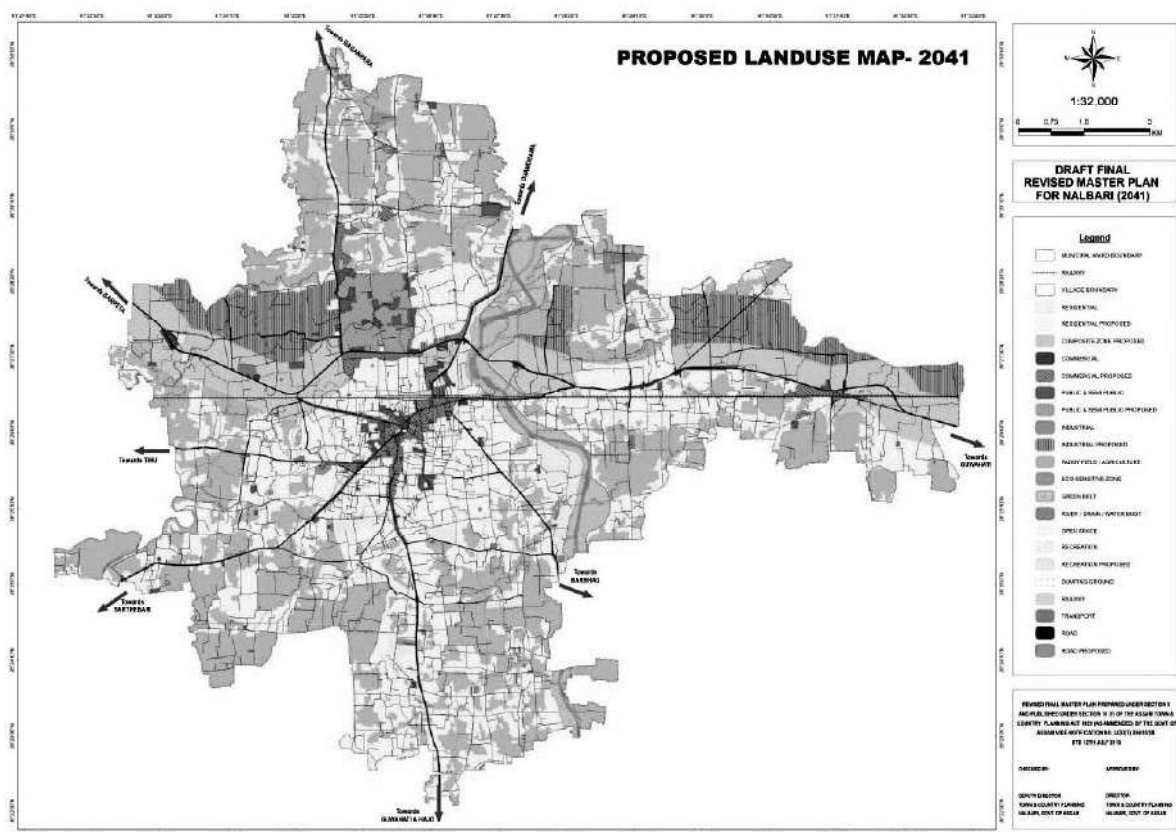
### 8.4 PROPOSED LAND USE PLAN

All areas under the Revised Nalbari Master Plan have been designated as one of the 7 land use-zones, which are residential, commercial, industrial, public- and semi-public, recreational, transportation and industrial.

The over-all land use break-up for the new proposed Planning Area measuring 12136.97 hectares. is as follows:

**Table 8-2 Proposed Land-Use Classification**

Sl. No.	Land use	Area in sq km	% To Developed Area	% To Total Area
1	Residential	36.72	49.07	30.25
2	Commercial	2.72	3.64	2.24
3	Composite Use	7.91	10.57	6.52
4	Industrial	7.68	10.26	6.33
5	Public & Semi-Public	3.29	4.40	2.71
6	Transportation	8.35	11.16	6.88
7	Recreational	8.16	10.90	6.72
	<b>Total developed area</b>	<b>74.83</b>	<b>100.00</b>	<b>61.65</b>
8	Water Bodies	2.50		2.03
9	Agricultural	40.08		33.03
10	Green Belt	3.96		3.29
	<b>Total Area</b>	<b>121.37</b>		<b>100.00</b>

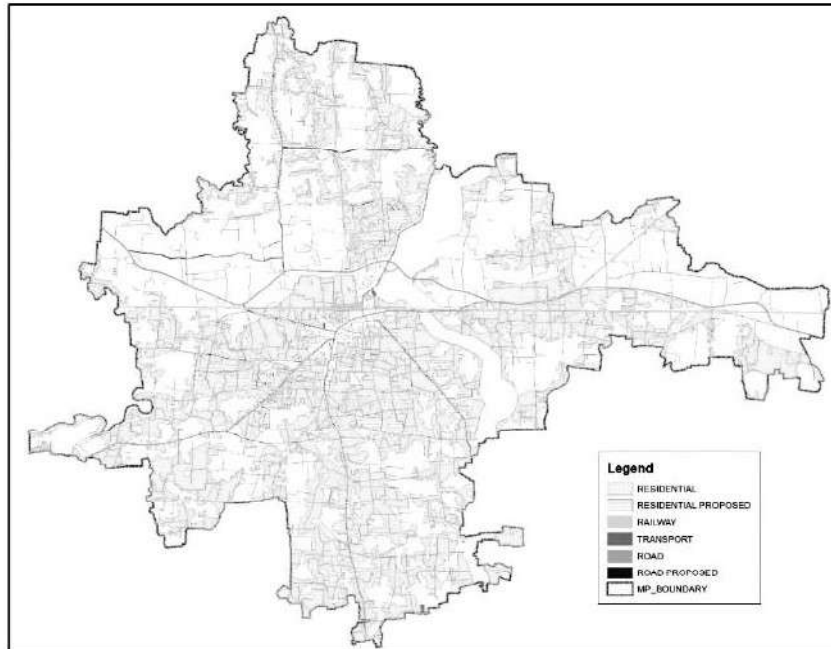


**Figure 8-2: Proposed Land-Use Map of Nalbari Revised Master Plan Area**

• **Residential Area:**

The residential areas are proposed to be developed as self-contained units with provisions of all community facilities and services, and work places within reasonable distances duly served by

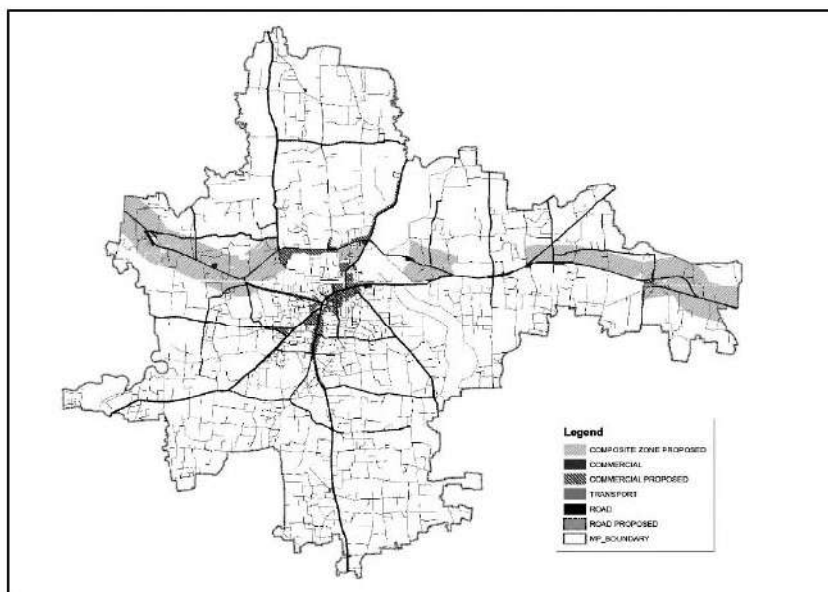
efficient circulation system. In order to accommodate the future population, an area of about 36.72 sq. km, or 49.07% of the total developed area has been earmarked for residential use. Further, a composite zone of 7.91 sq km or 10.57% of the total developed area proposed along the NH 27 may also be used for residential purposes. Considering the size of population in Nalbari town, it is to have high density housing and vertical expansion.



**Figure 8-3 Proposed Residential Land-Use in Nalbari Revised Master Plan Area**

- **Commercial Area**

2.72 sq. km which is 3.64% of the total developed area has been earmarked for commercial use. A composite zone of 7.91 sq km along the National Highway will also be used to for commercial purposes. Besides the composite zone, commercial activities is to be developed along the Hajo road and NT Road. A lot of unregulated businesses have also sprung up in the Master Plan area which will be accommodated to ensure public convenience and a sanitary environment to conduct their vocation.



**Figure 8-4 Proposed Commercial & Composite Land-Uses in Nalbari Revised Master Plan Area**

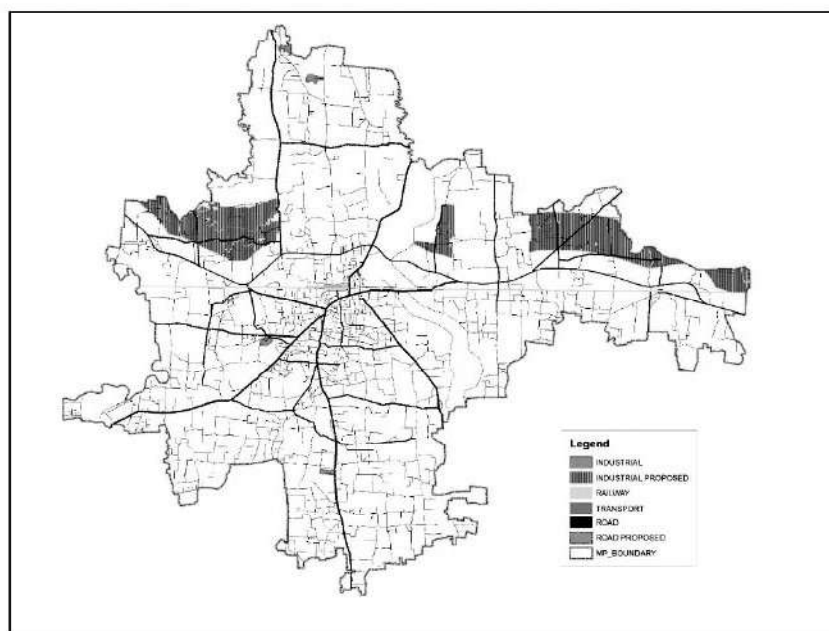


- **Composite Area:**

A composite zone of 7.91 sq. km have been earmarked which is 10.57% of the total developed area. In the composite zone, the occupation of the land will be allocated as per prospective uses such as residential, commercial or light industries. The idea is to encourage human interaction and promote flexibility and more authentic neighbourhood. Composite zoning will enable compatible locations to attract the much needed economic development projects, ensuring harmonious development of the area with adjacent properties. In this Master Plan, the composite zone has been fixed along the NH 27. In the eastern part of this zone, social and physical infrastructure is proposed to be set up, mainly to accommodate the needs that will arise once the Nalbari Medical College and Hospital becomes operational in the Ghograpar region. Hospitality sector and transportation is proposed to be developed in this zone. The medical college is approximately 11 km from the Nalbari town and Ghograpar is fast evolving into an urban center. Besides catering to the residential and commercial demand of the land, the composite zone can also be used for setting up light industries like bamboo, food processing, and handicraft.

- **Industrial Area**

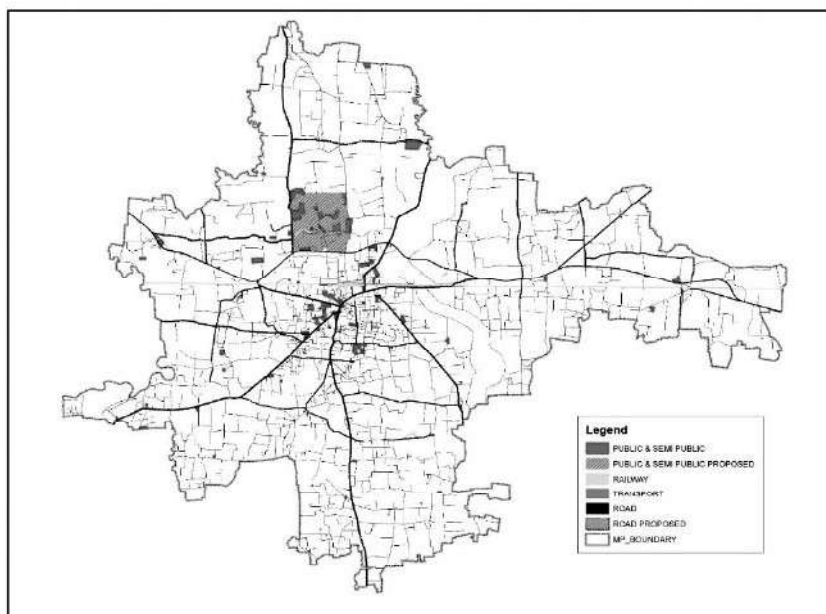
7.68 sq. km of the land which is 10.26% of total developed area is earmarked for industrial land-use. This is around the range of 7-9% as laid by URDPFI. Nalbari Master Plan area is favourably located, with advantages of a good transportation network and proximity to market. To utilize this, a declaration has also been made by the Government of Assam vide Notification No. RLA192/2017/30 dated 18<sup>th</sup> January, 2018, that the area within 1 km beyond 500 meters on either side of the NH 27 from Jalukbari in Kamrup (metro) district to Tihu in Nalbari district shall be "Industrial Zone", excluding the tribal belts, notified forests, and wetlands. This has been taken into consideration in the proposed land-use of Nalbari Master Plan. The area towards north of NH 27 has been proposed to be developed as industrial zone.



**Figure 8-5 Proposed Industrial Land-Use Map, Nalbari Revised Master Plan Area**

- **Public and Semi-Public Area**

For public and semi-public land-use is 3.29 sq. km or 4.40% of the total developed land has been earmarked. Considering the congestion in the current facilities providing public services, an area to the north of NH 27, near the SP Office, Nalbari has been demarcated for setting up public and semi-public infrastructure.



**Figure 8-6 Proposed Public and Semi-Public Area Map, Nalbari Revised Master Plan Area**

- **Recreational Area**

8.16 sq. km or 10.90% of the total developed area has been proposed for recreational land-use. Public parks and immersion ghats will be developed and modernized to elevate public comfort and provide ease of access to them. Riverfront development of the Pagladiya river has also been proposed. Recreational areas have been proposed to be set up in the east of Dhamdhama Bus stand and in the north-east of the Balileisa temple.

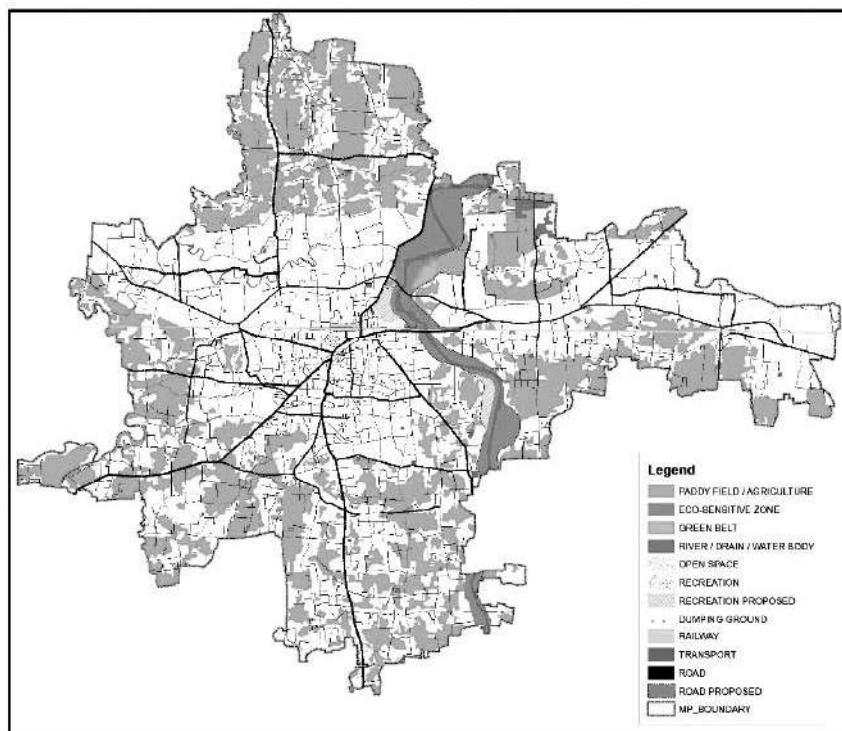
- **Agricultural Area**

For agricultural land-use, 40.08 sq. km or 33.03% of the total Master Plan area has been proposed. It has been found that large tracts of agricultural lands are lying fallow. Economic growth is usually accompanied by shift of agricultural land to other land-uses. Also with increasing demand for land and the lucrative prices it gets offered in the market, agricultural lands are fast getting converted into residential and commercial land-uses. Hence, the dip from 45.55% of the existing total Master Plan Area to 33.03% in the land-use proposal.

- **Green Belt**

3.96 sq. km of land has been proposed to be developed as green belt. Green belts have been proposed in the fringes to arrest unrestricted and haphazard development and to provide people

with opportunities of recreation. Also with proposals for industries, a green belt is integral for ensuring a good air quality.



**Figure 8-7 Proposed Agriculture, Green Belt, Recreational Land-Uses in Nalbari Revised Master Plan Area**

- **Transportation(Roads)**

8.35 sq. km or 11.16% of total developed land has been earmarked for transportation. Truck terminals are proposed to be developed along the NH 27 to cater to the needs of the “industrial zone” that is being deliberated. In this Master Plan, a truck terminus has been proposed near Barkura at NH 27. Further, a road length of 623 km has been proposed with a proper road hierarchy in place.



**Figure 8-8 Proposed transportation Land-use in Nalbari Revised Master Plan Area**

## 8.5 PROPOSED CIRCULATION PLAN :

Efficient functioning of an urban centre depends mainly on its transportation network. Economics, Social & Cultural life of the town is very much determined by the circulation pattern and transportation management.

In preparing the circulation plan for Nalbari, emphasis has been laid on the following points.

- Optimum use of existing transportation network through improvement of traffic operations and controls.
- Improvement of existing road network through widening, realignment and extension.
- Improvement of existing road junctions and railway level crossings.
- Provision of adequate parking facilities.
- Development of new road and other transport facilities to provide effective linkages within the town and the region.

The entire road system of Nalbari has been proposed to be classified into the following main categories. The road length under these categories are-

**Figure 8-9: Proposed road length and road width under Nalbari Master Plan**

SI. NO.	TYPE OF ROAD	PROPOSED WIDTH (IN METERS)	PROPOSED LENGTH (IN KILOMETERS)
1	Arterial Road	28	33
2	Sub Arterial Road	18	74
3	Collector Road	12	49
4	Local Road	8.5	448.5
5	National Highway	90	18.5
	Total		623

- **ARTERIAL ROAD** : An arterial road is primarily meant for through traffic usually on a continuous route. Major inter-urban travel between town centres and outlying residential areas or between major sub-urban centres is served by this road. Parking, loading and un-loading activities are restricted this type of road.

In the Nalbari Master Plan Area, the roads leading from the town to Barpeta via Chamata to Guwahati and to Dhamdhama are proposed to be upgraded to arterial roads. 24 kms of Arterial ring Roads from Barkura Chowk to Sandheli Chowk, Sandheli Chowk to Bala Mugkuchi Chowk, Bala Mugkuchi Chowk to Balilecha Mandir and Balilecha Mandir to Banbhag-Paikarkuchi road have been proposed for the purpose of quick and easy access from residential landuses to Industrial and composite uses.

- **SUB ARTERIAL ROAD** : It provides lower level of mobility than arterial roads. Parking, loading and un-loading are restricted and regulated on this type of road. Proposed width for this category of the road is 18.0 metres.

In the Master Plan Area, the proposed sub arterial road form a semi-circular pattern running from the N.T. Road towards south of the Master Plan Area. Another road running towards Digheli village to south of the Master Plan Area is also proposed to be upgraded to a sub-arterial road. Another road running towards Kashimpur via NH 27 covering Sariyahtali

village in the northern part of the Master Plan Area is proposed to be upgraded to sub-arterial road.

- **HIGHWAY:** Flyover in NH27 at Ghograpar Chowk.
- **UNDERPASS:** Underpass in NH 27 at Ganesh Mandir Chowk and near S.P Office.
- **TRUCK TERMUS:** Near Barkura at NH 27
- **COLLECTOR ROAD :** The function of this road is to collect and distribute traffic from the local streets to the arterial and sub-arterial roads. The road within the residential, commercial areas etc. are proposed to be developed into collector road, the minimum width of this type of road is proposed to be 12.0 metres.
- **LOCAL ROADS :** These roads are primarily intended to provide access to abutting lands and do not carry large volume of traffic. For this type of road the minimum width is 8.5 metres is proposed.

## 8.6 EXISTING AND PROPOSED LAND-USE: A COMPARATIVE ANALYSIS

Sl. No.	Land-Use	Existing Land-Use		Proposed Land Use		Difference	
		in sq. km	in percentage	in sq. km	in percentage	in sq. km	in percentage
1	Residential	54.4	44.82%	36.72	30.25%	-17.68	-15%
2	Commercial	0.33	0.27%	2.72	2.24%	2.39	2%
3	Composite Use	0	0.00%	7.91	6.52%	7.91	7%
4	Industrial	0.24	0.20%	7.68	6.33%	7.44	6%
5	Public & Semi-Public	1.4	1.15%	3.29	2.71%	1.89	2%
6	Transportation	5.58	4.60%	8.35	6.88%	2.77	2%
7	Recreational	1.64	1.35%	8.16	6.72%	6.52	5%
8	Water Bodies	2.5	2.06%	2.5	2.06%	0	0%
9	Agricultural	55.28	45.55%	40.08	33.02%	-15.2	-13%
10	Green Belt	0	0.00%	3.96	3.26%	3.96	3%
	<b>Total</b>	<b>121.37</b>	<b>100</b>	<b>121.37</b>	<b>100</b>	<b>0</b>	<b>0</b>

### 8.7 DEMARCATION OF TRANSIT ORIENTED DEVELOPMENT (TOD) ZONE, CENTRAL BUSSINESS DISTRICT (CBD), TOWN PLANNING SCHEME (TPS) AND LOCAL AREA PLAN (LAP)

- **TRANSIT ORIENTED DEVELOPMENT:** TOD is proposed to be developed in the composite zone along the NH 27. NH 27 has assumed significance in the Nalbari Master Plan area and is heavily used by private vehicles and public transports since it provides easy mobility to Guwahati Metropolitan city as well as other important towns in lower Assam like Barpeta Road, Bongaigaon, etc. Developing an efficient infrastructure for public transportation should be prioritized here to reduce carbon footprint and economize travelling cost. Keeping in mind, the expansion of Guwahati Metropolitan City, a TOD in this Zone will be an environmentally sound and cost effective link between it and the peripheral areas of Nalbari district.

A TOD zone is also proposed to be developed in the CBD area of Nalbari Master Plan. Bicycle lanes and Pedestrian infrastructure are to be developed between the key demand points so as to provide ease of access to this points without having to use private vehicles. The idea here is to curb undue traffic congestion and air and noise pollution.

- **CENTRAL BUSSINESS DISTRICT:** CBD is proposed in the main market area along NT Road. This area contains the principal commercial streets and these are to be developed as focal points of efficient transportation network. TOD in CBD will enhance its attractive as a commercial/business hub and will earn a tag as a 'City Centre' in the right sense. Adequate physical infrastructure and utilities are to be developed to ensure smooth accessibility and healthy environment so that it gives way to a bustling social scene.
- **TOWN PLANNING SCHEME:** TPS is proposed to be implemented in the following Greenfield areas in the periphery of Nalbari town (Refer to Zoning Map)-
  - TPS 1: Teresia Revenue Village
  - TPS 2: Balikoria Revenue Village, Near DICC
  - TPS 3: Sandheli Revenue Village
  - TPS 4: Baghmara Village, near Ghograpar

Under TPS, planning will be done at local level for planned urbanization in the future. Land owners will derive immense benefits as they will receive developed plots within organized layout along with urban services like roads, drainage, etc.

- **LOCAL AREA PLAN:** LAP focuses on redevelopment of existing Brownfield areas through revitalization of urban areas by careful examination and planning. It is a micro-planning tool of urban development wherein the existing built-up environment is redeveloped by enhancing various infrastructure such as public space and area under roads. In this Master Plan, 2 areas have been demarcated to be rejuvenated through development at micro level under LAP. (Refer Zoning Map)
  - LAP 1: Sandha Kairara, Ward No. 1
  - LAP 2: Digheli Part 1, Ward No. 17



# 9.

## **PROPOSED PROJECTS BRIEF AND TENTATIVE FUNDING SOURCE**

### **9.1 INTRODUCTION**

Nalbari Town is capable enough of generating economic momentum in sustained manner. As a growing town, benefits of its urban vivacity needs to be effectuated so that cumulative benefits are not only reaped by its residents but transcend the boundaries of wider spectrum of interspersed urban settlement.

For achieving this, future urban planning decisions need to be based on the judicious disposition of activities along with greater planning expediency to align its role for prosperity and planned urban development. The planning decisions of the Revised Master Plan are consciously aimed at sustained and planned city development. It is also a fact that Nalbari Town has shown economic and demographic momentum. In order to generate positive urban development, the Master Plan would focus on conscious decisions to provide impetus and support to anticipated urbanization.

### **9.2 BASED ON EXISTING CONDITIONS AND PROJECTED REQUIREMENTS OF THE PLANNING AREA, IDENTIFY PRIORITY SECTORS AND PROJECTS**

The Guiding Principles for preparation of Revised Nalbari Master Plan 2041 are derived from planning experiences and challenges confronted in the town which include as following:

- Environmentally and Ecological Suitable Development
- Local Economic Development
- Sustainable and Integrated Transport System
- Inclusive and Collaborative Integrated Urban Development
- Mixed-use Development Policy

#### **9.2.1 *Environmental and Ecological Suitable Development***

The topography and drainage system of this region presents a unique challenge towards attaining the perfect balance between resource conservation and utilization. The incorporation of effective environment conservation and sustainability features will be an important aspect in the preparation of this Master Plan. Environment conservation is a major issue that needs to be tackled while planning the development of any area. Efficient measures towards conserving the natural surroundings will be adopted, since the balance between natural and man- made surroundings significantly enhances the quality of life of residents.

Protecting the irrigated and fertile land as well as forest area and development in the less fertile area, will be the aspect of the planning proposal. An appropriate balance between built and un-built areas is proposed to be established so as to provide a good quality of life to the people inhabiting the area.



### **9.2.2 Local Economic Development**

Nalbari is an important transit place in its region. Therefore, locational advantage of Nalbari from economic and tourism point of view needs to be viewed as important economic ingredient. To re-jig its economy, local economic indicators need to be identified and objectively assessed for taking policy decisions. To improve the economic development in the region, promotion of the economic sectors has to be carried out for diversification and strengthening of economic base of the city. Job-oriented land-uses have to be propagated in the master plan so that present level of unemployment in the region is drastically brought down. The Nalbari town shall have to be made economically vibrant with greater opportunities of jobs for its youth.

### **9.2.3 Sustainable and Integrated Transport System**

Nalbari district has one of the highest vehicle growth in the state and the city is transforming very fast in its physical and socio-economic dimensions. Traffic congestion, parking, insufficient Road widths, decreasing Level of Service (LoS) of most of the town roads, inefficient public transport, etc. are some of the problems of urban transport and transport network in Nalbari town. Apart from this, like other cities there is complete disconnect between land-use and transport network. Keeping this in view, attempt has to be made to connect the two in scientific manner to make the land-use plan more functional.

### **9.2.4 Inclusive and Collaborative Integrated Urban Development**

The Revised Nalbari Master Plan Area is spread over 70 villages. The countryside is viewed as a potential area of urbanization for Nalbari town in next two to three decades. Being close to the state capital and having good connectivity via road network and railway, the region presents a tremendous scope of growth. Having sound access to raw-materials and skilled and semi-skilled manpower, Nalbari can be elevated to a manufacturing hub. The basic planning principle is to create a sustainable blend of rural-urban continuum. The growth is proposed to be inclusive of all income groups integrating sectoral vision for holistic development of the region.

### **9.2.5 Mixed-use Development Policy**

#### **9.2.5.1 Concept**

Any building(s) having a combination of more than one use at a specific point of time is said to have 'mixed use'. For example, a building having one use in the ground floor and other use(s) in the upper floor(s) is said to have mixed use. The mixed use shall not be misconstrued with the mixed use of a plot or a parcel of land. It is a vertical land use change of a building across its floors rather than a change over space laterally. Mixed use is always a combination of main use and the uses which are incidental to the main use. While the main use is defined as the Primary use, the incidental use is construed as Secondary use. It is an important planning tool to accommodate the unforeseen land use changes resulting because of competitive market forces in city centres and along important streets. Mixed use has also become inevitable because of limited scope for horizontal expansion as well as scarcity of land in such areas. For example, commercialisation along main arterials within the residential areas is an illustration of land use conversion resulting because of such factors. The main requisite underlined for the mixed use model is the compatibility of the uses in terms of their type and intensity. In no case, the uses defined as obnoxious or hazardous in this master plan under land use regulations shall be permitted under mixed use category. The secondary use has to be essentially subsidiary or conforming in nature like convenient shopping, primary health and education facilities and basic public services and

amenities having manageable impact on the surrounding land use. However, this trend has to be regulated and restricted as prescribed in this Master Plan for numerous benefits and as such, has been for purposes of this Master Plan defined objectively to avoid its misuse while issuing building permissions. For purposes of this Master Plan, mixed use is defined where:

In case of mixed use distribution, the secondary use shall be restricted to one floor only (preferably the ground floor) which is more susceptible to land use changes. While issuing the mixed use permits, care should be taken to consider the Secondary use as ancillary use to the main use in size and scale within the structure.

#### **9.2.5.2 Composite Mixed Landuse Model**

As a policy measure, the proposed land use is viewed as a Composite Use broadly segregated and integrated across sectoral uses. As an inherent flexibility in the Proposed Landuse Plan, it is proposed to calibrate and to integrate the proposed land use to the hierarchy of road network in a horizontal mix, however, essentially segregating the hazardous and obnoxious uses. The policy is applicable to those uses which have been made permissible in a particular landuse.

In this Master Plan, a Composite Mixed Landuse Model is envisaged along the designated roads based on their proposed RoW. It is envisaged that the roads having proposed RoW laid down under DCRs, a horizontal mix of landuses under Composite Mixed Landuse Model is proposed which shall be regulated by the respective space standards and building regulations of each use.

### **9.3 FUND REQUIREMENT FOR EACH SECTOR/PROJECT IDENTIFIED UNDER THE SECTORS**

No fiscal plan has been worked out at this stage. The final Master Plan would provide a basis for preparation of five yearly development programmes and yearly fiscal plans for implementation.

### **9.4 IDENTIFY LAND SITE FOR PROPOSALS: IN CASE OF GOVERNMENT LAND, INVENTORY OF MUNICIPAL LAND, STATE GOVT./ GOVT. AGENCY OWNED LAND, ETC. AND PLAN FOR ACQUIRING/LEASING THE SAME**

The revised Master Plan proposes Negotiated Land Acquisition in place of compulsory land acquisition as an innovation in land acquisition procedures for speedy urban development in consultation with various Govt. Depts.

**Concept of land pooling:** As per the survey conducted by Town and Country Planning, Nalbari, it was observed that few areas in the villages included in the MP are not deficient of housing but are cases of non-development, which is primarily due to lack of awareness and education. The people are staying in houses made of locally available materials. The source of livelihood for these families is agriculture and menial informal sector works. The main need of the hour is to impart awareness among these masses that where they are residing is not sustainable and that it poses a threat to their lives. There is an urgent need to upgrade these houses. They have the tenure ship but their economic status make it hard for them to upgrade.

**9.5 INDICATIVE SOURCES OF FUND: SPECIFIC CENTRAL SCHEME FUNDS (10%, NLCPR, AMRUT, INFRASTRUCTURE DEV FUND, ETC) ASSAM FINANCE COMMISSION FUNDS, CM'S SPECIAL PACKAGE, PUBLIC PRIVATE PARTICIPATION, LOAN FROM (EXTERNALLY AIDED PROJECT (JICA-WORLD BANK-ADB), ETC.**

Availability of adequate funds is an important determinant for successful implementation of the plan proposals. While conventional pattern of project financing is being in transition, the private investments and public private partnership modes of infrastructure development assumes greater significance. This apart, the programmes of the National Government provides greater opportunities for improving the status of infrastructure and service delivery. Hence, it is the responsibility of every development agency concerned to take initiatives to draw maximum funding for the plan implementation.

**9.5.1 *National Programmes and Funding agencies available for the resources in urban area.***

Integrated development of Small and Medium town Programme, is a programme of national importance, which has identified the sectors and projects eligible for assistance, which include:

- i. Water Supply (including de-salination plants) and sanitation
- ii. Sewerage and Solid Waste Management
- iii. Construction and improvement of drains/storm water drains
- iv. Construction/Up-gradation of roads, highways/expressways
- v. Parking lots/spaces on Public Private Partnership basis
- vi. Development of heritage areas
- vii. Prevention & rehabilitation of soil erosion/landslides only in case of Special Category States where such problems are common and
- viii. Preservation of water bodies.

**10.****DISASTER PLAN****10.1 INTRODUCTION**

The District Disaster Management Plan is an effective plan which envisages several measures that can be taken in the event of any kind of disaster. The State Policy recognizes that hazards are inevitable but these need not convert into disasters. This Policy is based on the twin principles of minimizing human suffering during disasters and reduction of financial losses through integration of disaster risk reduction activities into development planning.

Owing to a unique geographical and geo-climatic setting, the State of Assam has witnessed a number of disasters, ranging from incidents of fires to destructive floods and catastrophic earthquakes. The State has witnessed many natural and manmade disasters especially in the 19th and early 20th century. In the wake of recurring disasters, the State has always paid heavily in terms of loss of life and property. Like other parts of the State, Nalbari Town is a multi-hazard prone area. Multi Hazards which are confronted in the city are detailed in table below-

**Table 10-1 Multi Hazards Areas Covered**

Sl.No	Hazard	Areas Covered
I.	Floods	Nalbari is one of the flood prone districts of Assam. There are several nos. of rivers and tributaries in Nalbari which originates from Bhutan hills. They are Pagladia, Baralia, Nona, Ghagra, Mora Chowalkhoa, Mora Pagladia, Tihu and Kaldia etc. They flows through the heart of the district and merges in the river Brahmaputra.
II.	Earthquakes	The tectonics of the Assam region is dominated by convergence of the India, Burma and Eurasian plates and is categorized as Seismic Zone- V which would need special measures to mitigate, minimize and safeguard the life, property and infrastructure which makes structural safety important.
III.	Landslides	Areas along major Riverbank
IV.	Drought	Most of the paddy growing areas depend upon the rainfall. The monsoon commences around the middle of April/May. For timely agricultural operation, a few showers of pre-monsoon rain is absolutely necessary. Regular rainfall till the middle of October can ensure a good harvest. But, if the rainfall at any circumstances will not happen then this will lead to improper agricultural operation and growth of crop and finally the drought will occur. So drought is caused due to failure of rains in season. The areas under drought need recharging and retention of water table for both urban and agrarian activities.
V.	Wind storm	Occasional wind storms is destroying crops, horticulture and houses in Nalbari & it is prone to high speed winds causing extensive damages to urban infrastructure and urban forestry.

VI.	Hailstorms	Although hailstorms rarely involve loss of lives, their economic impact can be severe. The damage appears to be a function of the intensity and duration of storms and the size of the hailstones, which these produce. The damage itself is often produced not only by the impact of falling hailstones, but also by the high winds and torrential rains that is part of the hailstorm.
VII.	Fires	In Assam due to peculiar housing patterns maximum fire accident cases takes place. These houses are of generally mud-built walls with thatched roofs made out of timber, bamboo and straw. They spring up in clusters. In summer fire accident becomes frequent; it destroys houses and properties and causes serious distress to the afflicted people. In Assam, the Harijans, Adibasis and other economically backward group who live in congested localities are the targeted victims of the Fire Accident. However, incidents of fires are recorded in the congested parts of the city and urban poor areas.
VIII.	Human induced disasters	All parts of the Nalbari Town vulnerable to man-made disasters due to competing urban uses, high cost of land and limited land resource.

District Disaster Management Authority should get area-specific hazard, vulnerability and risk maps prepared using GIS database for mitigation and emergency management. The plans so developed shall be operational, regularly reviewed and updated. This will help in the vulnerability assessment of the Nalbari after proper zonation. Specific measures like micro-zonation of Revised Nalbari Master Plan 2041 based on disasters and integrating it with the land use planning and zoning regulations, retrofitting of infrastructure and buildings, disaster-safe construction technology and strengthening the capacities of communities shall be promoted in a time-bound manner. The construction work and other activities that that may lead to situations eventually resulting in disasters shall be monitored regularly in vulnerable areas like water-bodies, hill slopes.

Hazards like earthquakes and cyclones do not kill people but inadequately designed and badly constructed buildings do. Ensuring safe construction of new buildings and retrofitting of selected lifeline buildings is a critical step to be taken towards earthquake mitigation. The Building construction, material and design specifications as laid down in the National Building Code-2005 shall have to be a mandatory requirement for important and high rise buildings. In case of areas having moderate to high vulnerability of flash floods and landslides, the buffer zones envisaged in this Master Plan need to be implemented while permitting any development in such areas.

## **10.2 SAFETY AGAINST NATURAL DISASTERS**

### **10.2.1 Earthquakes**

The application for seeking building permit shall be accompanied with a request from the Architect/Structural Engineer certifying that the proposed structure has been designed keeping in view the safety measures against earthquakes as indicated in the following Bureau of Indian Standards (B.I.S).

#### **Bureau of Indian Standards (B.I.S).**

- a. IS: 13935: 1993  
Repair and Seismic Strengthening of building guidelines
- b. IS: 1893 (part i): 2002  
Criteria for Earth quake Resistant Design of structure
- c. IS: 4326 1993 (2002-04)  
Earthquake Resistant Design and Construction of building – Code of practice
- d. IS: 13920: 1993  
Ductile Detailing of Reinforced Concrete structures subjected to seismic Forces – Codes of Practice
- e. IS: 13827: 1993  
Improving Earthquake Resistant of Earthen Building – Guidelines
- f. IS: 13828: 1993  
Improving Earthquake Resistance of low strength Masonry Building Guidelines

### **10.2.2 Fire Protection and Fire Requirements**

This part covers the requirements of the fire protection for the multi-storied buildings (high rise buildings) and the buildings which are of 15 mtr. and above in height and low occupancies of categories such as Assembly, Institutional, and Educational more than two storeyed and built-up area exceeds 1000 sq.mt. Business where plot area exceeds 500 sq. mt., Mercantile where aggregate covered area exceeds 750 sq.mt., Hotel, Hospital, Nursing Homes, Underground complexes, Industrial storage, Meeting/Banquet halls Hazards Occupancies.

**Fire protection requirements:** Buildings shall be planned, designed and constructed to ensure fire safety and this shall be done in accordance with Part IV Fire protection of National Building Code of India. The building schemes as such also be cleared by the District Officer of the Fire and Emergency Services Department before issuance of building permit.

## **10.3 STANDARD OPERATIONAL PROCEDURE (SOP) ON DISASTER: PRE-DISASTER, DURING AND POST DISASTER**

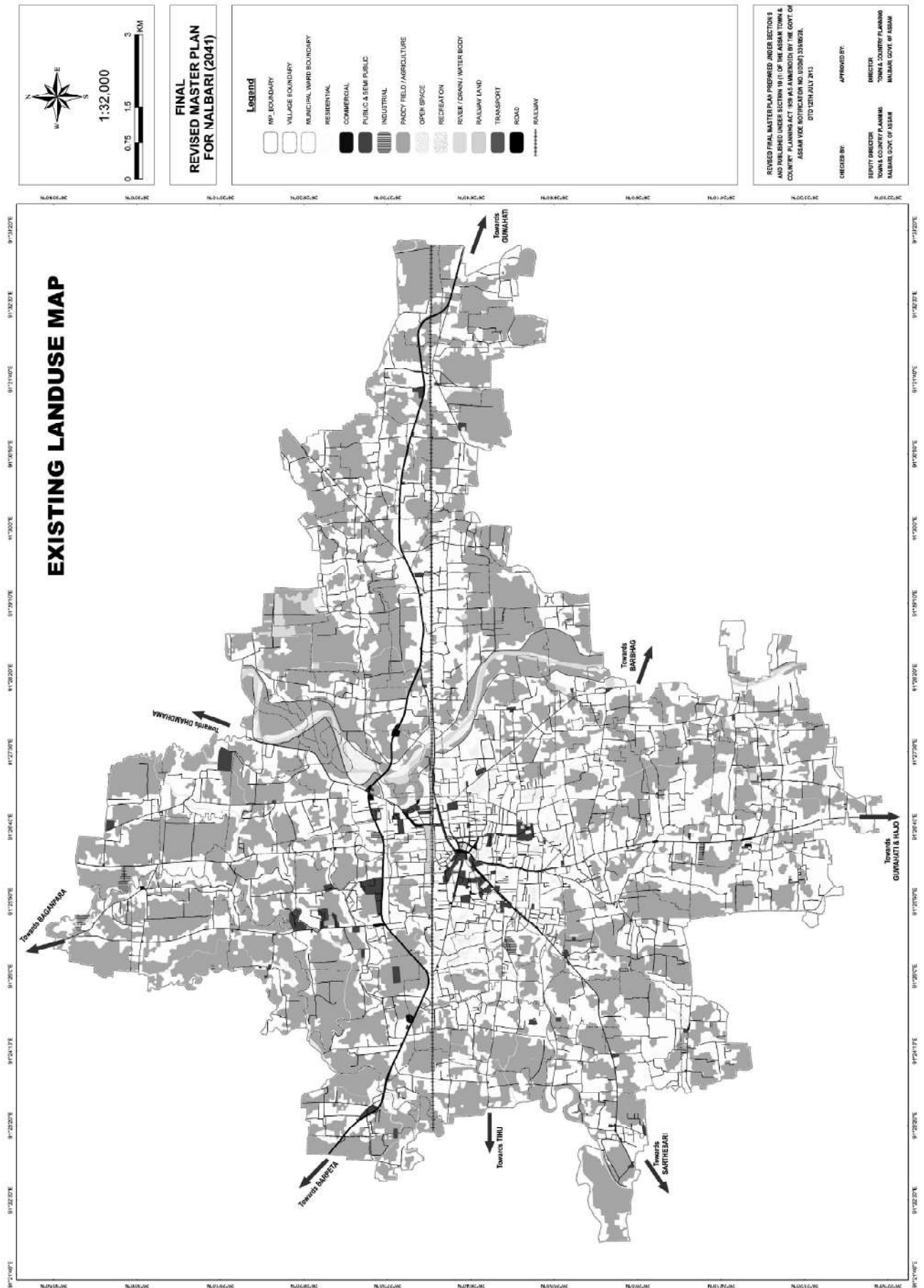
The District Disaster Management Plan-2014 (DDMP) updated by District Disaster Management Authority is an effective plan which envisages several measures that can be taken in the event of any kind of disaster within its territorial limits.

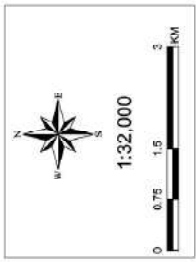
The plan deals with Risk Assessment and Vulnerability Analysis, Identification of disaster prone areas, Response structures, Inventory of Resources, Standard Operating Procedures, Directory of Institutions and key Individuals. The plan is prepared to help the District Administration focus quickly on the essentials and crucial aspects of both preparedness and response.

The Master Plan proposes that the facilities like hospitals, fire services, police, schools, water supply, bridges, flyovers and underpasses, electricity, grid stations are critical in nature for post – disaster management. To ensure functioning of critical facilities, buildings occupying such facilities and falling in Seismic Zone- V shall be retrofitted. District Disaster Management Authority- Nalbari, shall develop a clear cut retrofitting strategy at its own level for this purpose. Safety audit of all existing important public and assembly buildings shall be done within one year.

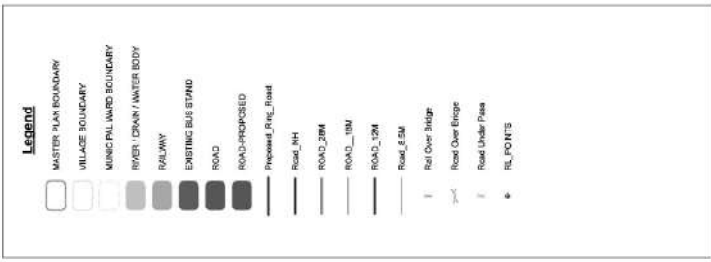








**FINAL  
REVISED MASTER PLAN  
FOR NALBARI (2041)**



REVISED FINAL MASTER PLAN PREPARED UNDER SECTION 1 AND PUBLISHED UNDER SECTION 10(1) OF THE ASSAM TOWNS & COUNTRY PLANNING ACT 1956 AS AMENDED BY THE GOVT. OF ASSAM VIDE NOTIFICATION NO. 100/01/2023K. DTD 12TH JULY 2023.

CHECKED BY: \_\_\_\_\_ APPROVED BY: \_\_\_\_\_  
 REPORT PREPARED BY: \_\_\_\_\_ DIRECTOR: \_\_\_\_\_  
 TOWNS & COUNTRY PLANNING: \_\_\_\_\_ TOWNS & COUNTRY PLANNING  
 NALBARI CITY OF ASSAM NALBARI CITY OF ASSAM

**CIRCULATION MAP- 2041**

