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

অসম ৰাজপত্ৰ

THE ASSAM GAZETTE

অসাধাৰণ

EXTRAORDINARY

প্ৰাপ্ত কৰ্ত্তৃত্বৰ দ্বাৰা প্ৰকাশিত

PUBLISHED BY THE AUTHORITY

নং 456 দিশপুৰ, মঙ্গলবাৰ, 8 অক্টোবৰ 2024, 16 আহিন, 1946 (শক)

No. 456 Dispur, Tuesday, 8th October, 2024, 16th Asvina 1946 (S. E.)

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

NOTIFICATION

The 11th July, 2024

DoHUA EcF No. 450508/2024/45.– 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 & Country Planning (Publication of Master Plan and the Zoning Regulations) Rules 1962, the Governor of Assam is pleased to publish the following notice regarding the publication of the Final Revised Master Plan for Dibrugarh.

Notice for publication of the Final Revised Master Plan for Dibrugarh

1. It is notified that the Final Revised Master Plan for Dibrugarh prepared under section 14 of the Assam Town & 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 here by 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 Director, Town & Country Planning, Dispur, Guwahati-6, Deputy Director, Town & Country Planning, Dist Office – Dibrugarh, office of the Chairman, Dibrugarh Development Authority, office of the Chairman, Dibrugarh Municipal Board & Dibrugarh(East & West) & Moran Revenue Circle Office. Copy of the Final Revised Master Plan is available in the office of the Deputy Director, Town & Country Planning, Dist Office – Dibrugarh for sale on payment.

REVENUE AREAS INCLUDED IN FINAL REVISED MASTER PLAN FOR DIBRUGARH

Sl. No.	Town /OG/CT/Village Name	Mouza	Block	Revenue Circle
1	Dibrugarh Municipal Area	Dibrugarh		Dibrugarh East
2	Mohpuwalimora Gohain Gaon (OG)	Jamirah		Dibrugarh West
3	Tekela Chiring Gaon (OG)	Dibrugarh		Dibrugarh East
4	Niz-Mancotta (CT)	Mancotta Khanikar		Dibrugarh West
5	Borbari AMC Area (CT)	Dibrugarh		Dibrugarh East
6	Borbari 12/144 Orr	Dibrugarh	Lahoal	Dibrugarh East
7	Borsaikia Gaon	Dibrugarh	Lahoal	Dibrugarh East
8	Japara Gaon	Dibrugarh	Barbarua	Dibrugarh East
9	Rajabheta 135 F.S.	Dibrugarh	Barbarua	Dibrugarh East
10	Sagunibari Gaon	Dibrugarh	Lahoal	Dibrugarh East
11	Boiragimoth Kachari Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
12	Chiring Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
13	Dhekeri Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
14	Hatimora Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
15	Komar Gaon	Jamirah	Barbarua	Dibrugarh West
16	Mancotta T.E. 1/159 Rra(A)	Mancotta Khanikar	Barbarua	Dibrugarh West
17	Suta Bogpara 10/ 165(B)	Mancotta Khanikar	Barbarua	Dibrugarh West
18	Tepor Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
19	123/244 No. NLR Grant	Lahowal	Lahoal	Dibrugarh East
20	Agni Pather Gaon	Lahowal	Lahoal	Dibrugarh East
21	Athabari Gaon	Lahowal	Lahoal	Dibrugarh East
22	Bakul T.E. 6 No. LCR	Mancotta Khanikar	Lahoal	Dibrugarh East
23	Bakulbari 26/ 147 ORR	Lahowal	Lahoal	Dibrugarh East
24	Bakulmaj Gaon	Lahowal	Lahoal	Dibrugarh East
25	Bashbari Gaon	Lahowal	Lahoal	Dibrugarh East
26	Bebejia Gaon	Lahowal	Lahoal	Dibrugarh East
27	Behia Chetia Gaon	Dibrugarh	Barbarua	Dibrugarh East
28	Bhimpara	Modarkhat	Lahoal	Dibrugarh East

29	Bongal Gaon	Dibrugarh	Lahoal	Dibrugarh East
30	Chaulkhowa Grant Gaon	Dibrugarh	Lahoal	Dibrugarh East
31	Chenglijan	Modarkhat	Lahoal	Dibrugarh East
32	Dangar Pothar No. 1	Modarkhat	Lahoal	Dibrugarh East
33	Dangar Pothar No.2	Modarkhat	Lahoal	Dibrugarh East
34	Dibrual Changmai	Jamirah	Lahoal	Dibrugarh East
35	Filnuguri Grant 4/152	Lahowal	Lahoal	Dibrugarh East
36	Garuchur Gaon	Lahowal	Lahoal	Dibrugarh East
37	Ghagrajan	Modarkhat	Lahoal	Dibrugarh East
38	Habi Chuk	Modarkhat	Lahoal	Dibrugarh East
39	Harabari Grant 115 F/S	Lahowal	Lahoal	Dibrugarh East
40	Harabari Konwar Gaon	Lahowal	Lahoal	Dibrugarh East
41	Hiloidhari Chandoi Gaon	Lahowal	Lahoal	Dibrugarh East
42	Japisajia Gaon	Lahowal	Lahoal	Dibrugarh East
43	Jilliguri Gaon	Modarkhat	Lahoal	Dibrugarh East
44	Jokai T.E. Co. 29/143 Orr	Mancotta Khanikar	Lahoal	Dibrugarh East
45	Kandulibari Grant 4	Lahowal	Lahoal	Dibrugarh East
46	Lahoal 19/150 Orr (27 No.LC)	Lahowal	Lahoal	Dibrugarh East
47	Lahoal Patra	Lahowal	Lahoal	Dibrugarh East
48	Lahoal T.E. 27/148 Orr	Lahowal	Lahoal	Dibrugarh East
49	Maijan Grant Gaon	Dibrugarh	Lahoal	Dibrugarh East
50	Meleingal Gaon	Modarkhat	Lahoal	Dibrugarh East
51	Miripathar 16 No. FS	Lahowal	Lahoal	Dibrugarh East
52	Miripathar Gaon	Lahowal	Lahoal	Dibrugarh East

53	Mohanbari 31/160 Orr	Lahowal	Lahoal	Dibrugarh East
54	Mohanbari Hindu Gaon	Lahowal	Lahoal	Dibrugarh East
55	Nagaghuli 16/177 Orr	Lahowal	Lahoal	Dibrugarh East
56	Na-Gaon	Modarkhat	Lahoal	Dibrugarh East
57	Niz Moidomia	Lahowal	Lahoal	Dibrugarh East
58	Niz- Lahoal	Lahowal	Lahoal	Dibrugarh East
59	Nunpuria	Mancotta Khanikar	Lahoal	Dibrugarh East
60	Phutahula	Modarkhat	Lahoal	Dibrugarh East
61	Rajgarh No.2	Modarkhat	Lahoal	Dibrugarh East
62	Romai Gaon	Modarkhat	Lahoal	Dibrugarh East
63	Rongliting No.2	Modarkhat	Lahoal	Dibrugarh East
64	Rongpuria	Modarkhat	Lahoal	Dibrugarh East
65	Sagalikata	Modarkhat	Lahoal	Dibrugarh East
66	Tamulbari T.E.	Modarkhat	Lahoal	Dibrugarh East
67	Tamulbari T.E. 40/43 Nlr	Modarkhat	Lahoal	Dibrugarh East
68	Tamulbari T.E. 43/46 Nlr	Modarkhat	Lahoal	Dibrugarh East
69	Tamulbari T.E. 90/93 Nlr	Modarkhat	Lahoal	Dibrugarh East
70	Timona Gaon	Mancotta Khanikar	Lahoal	Dibrugarh East
71	Titadimaru Gaon	Lahowal	Lahoal	Dibrugarh East
72	53 No. FC Grant	Laruwa	Barbarua	Dibrugarh West
73	Bagibill Gaon	Jamirah	Barbarua	Dibrugarh West
74	Behaiting T.E.	Jamirah	Barbarua	Dibrugarh West
75	Bhogamur Gaon	Laruwa	Barbarua	Dibrugarh West
76	Bhorburi Nogaon No. 1	Mancotta Khanikar	Barbarua	Dibrugarh West

77	Bhorburi Nogaon No.2	Mancotta Khanikar	Barbarua	Dibrugarh West
78	Bhorburi Nogaon No.3	Mancotta Khanikar	Barbarua	Dibrugarh West
79	Binoigutia Gaon	Laruwa	Barbarua	Dibrugarh West
80	Bogpara Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
81	Bolai Gaon	Laruwa	Barbarua	Dibrugarh West
82	Bolai Nogaon	Laruwa	Barbarua	Dibrugarh West
83	Bolai T.E. (A) No.45 Grant	Mancotta Khanikar	Barbarua	Dibrugarh West
84	Bolai T.E. (B) No.45 Grant	Mancotta Khanikar	Barbarua	Dibrugarh West
85	Bolai T.E. 42/ 137 Rr Grant	Mancotta Khanikar	Barbarua	Dibrugarh West
86	Bolaibari Gaon	Laruwa	Barbarua	Dibrugarh West
87	Bor Bogpara T.E. 8/ 185 Orr Grant	Mancotta Khanikar	Barbarua	Dibrugarh West
88	Bor Temtow Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
89	Borahajer Konwar Gaon	Jamirah	Barbarua	Dibrugarh West
90	Borbarua T.E. 13/76 Orr Grant	Jamirah	Barbarua	Dibrugarh West
91	Borbill Gaon No.2	Jamirah	Barbanta	Dibrugarh West
92	Borpather Kakoti Gaon	Jamirah	Barbarua	Dibrugarh West
93	Borpather Konwar Gaon	Jamirah	Barbarua	Dibrugarh West
94	Burisuti Koiborta Gaon	Laruwa	Barbarua	Dibrugarh West
95	Chamoguri Kachari Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
96	Chamuguri Bongali Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
97	Changamari Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
98	Changamari Habi	Jamirah	Barbarua	Dibrugarh West

99	Changamari Tekela Gaon	Jamirah	Barbarua	Dibrugarh West
100	Changmai Garia Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
101	Changmai Gohain Gaon	Jamirah	Barbarua	Dibrugarh West
102	Dainijan Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
103	Deori Gaon	Laruwa	Barbarua	Dibrugarh West
104	Dewanbari Bagisha	Laruwa	Barbarua	Dibrugarh West
105	Dewanbari Bagisha 24/ 149 Nlr Grant	Laruwa	Barbarua	Dibrugarh West
106	Dewanbari Gaon	Laruwa	Barbarua	Dibrugarh West
107	Dhariatoli Gaon	Mancotta Khanikar	Lahoal	Dibrugarh West
108	Dibruwal Dihingia Gaon	Jamirah	Barbarua	Dibrugarh West
109	Digali Dalani Gaon	Laruwa	Barbarua	Dibrugarh West
110	Dighala Gaon	Jamirah	Barbarua	Dibrugarh West
111	Dihing Kaibarta Gaon	Laruwa	Barbarua	Dibrugarh West
112	Dulia Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
113	Dulia Nahorani Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
114	Gabharujan Gaon	Laruwa	Barbarua	Dibrugarh West
115	Garudharia Charaihabi Gaon	Jamirah	Barbarua	Dibrugarh West
116	Gharbondi Chuk Jarua Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
117	Ghetira Pathar Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West

118	Ghoramora Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
119	Ghoronia T.E. 81, 184, 91/94 No. Nlr	Mancotta Khanikar	Barbarua	Dibrugarh West
120	Hanchara Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
121	Hanchara Pathar Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
122	Handique Chuk Gaon	Jamirah	Barbarua	Dibrugarh West
123	Hapekhati Gaon	Laruwa	Barbarua	Dibrugarh West
124	Harok Pathar Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
125	Hiloibam Gaon	Laruwa	Barbarua	Dibrugarh West
124	Jagalani Grant No. 43 FS	Jamirah	Barbarua	Dibrugarh West
127	Japara Gaon	Jamirah	Barbarua	Dibrugarh West
128	Jokai T.E. No. 1 L.C.R.	Mancotta Khanikar	Barbarua	Dibrugarh West
129	Kachari Gaon	Jamira	Barbarua	Dibrugarh West
130	Kachomari Deori Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
131	Kachomari Hatigar Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
132	Kalatomoni Gaon	Laruwa	Barbarua	Dibrugarh West
133	Kamakhya Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
134	Kapowtepor Gaon	Laruwa	Barbarua	Dibrugarh West
135	Kath Gaon	Mancotta Khanikar	Lahoal	Dibrugarh West
136	Kawoimari Gaon	Laruwa	Barbarua	Dibrugarh West
137	Khanikar T.E. 2 L.C.R. Grant	Mancotta Khanikar	Barbarua	Dibrugarh West
138	Khanikar T.E. 32/31 N.L.R. Grant	Mancotta Khanikar	Barbarua	Dibrugarh West

139	Koliani Nogaon	Mancotta Khanikar	Barbarua	Dibrugarh West
140	Konwar Handique Gaon	Jamirah	Barbarua	Dibrugarh West
141	Konwar Kheroni Gaon	Laruwa	Barbarua	Dibrugarh West
142	Kotoha Bangali Gaon	Laruwa	Barbarua	Dibrugarh West
143	Kotoha Gaon	Laruwa	Barbarua	Dibrugarh West
144	Kuchia Khana Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
145	Lakai Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
146	Laruajan Gaon	Laruwa	Barbarua	Dibrugarh West
147	Lengapathar Gaon	Laruwa	Barbarua	Dibrugarh West
148	Lepetkatta 60 No. FS 71 No. Nlr	Mancotta Khanikar	Barbarua	Dibrugarh West
149	Lepetkatta Bagisha	Mancotta Khanikar	Barbarua	Dibrugarh West
150	Lepetkatta Bangali Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
151	Lepetkatta Bangla Block	Mancotta Khanikar	Barbarua	Dibrugarh West
152	Lepetkatta Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
153	Lepetkatta Kachari Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
154	Mahmari Pather	Jamirah	Barbarua	Dibrugarh West
155	Maju Temtow Bagisha	Mancotta Khanikar	Barbarua	Dibrugarh West
156	Mankata T.E. 1 / 159 Rr(B) Grant	Mancotta Khanikar	Barbarua	Dibrugarh West
157	Matak Gaon	Laruwa	Barbarua	Dibrugarh West
158	Medela Grant No.3	Laruwa	Barbarua	Dibrugarh West
159	Metekani Gaon	Laruwa	Barbarua	Dibrugarh West
160	Mohmari Gaon No. 1	Mancotta Khanikar	Barbarua	Dibrugarh West

161	Mohmari Gaon No.2	Mancotta Khanikar	Barbarua	Dibrugarh West
162	Nagakhelia Gaon	Jamirah	Barbarua	Dibrugarh West
163	Nibuk Gaon	Laruwa	Barbarua	Dibrugarh West
164	NijKhanikar Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
165	No. 1 Garudharia Gaon	Jamirah	Barbarua	Dibrugarh West
166	No-Hazar Konwar Gaon	Jamirah	Barbarua	Dibrugarh West
167	Nowjan Gaon No.1	Laruwa	Barbarua	Dibrugarh West
168	Nowjan Gaon No.2	Laruwa	Barbarua	Dibrugarh West
169	Nowjan Salmari NC	Laruwa	Barbarua	Dibrugarh West
170	Palonia Gaon	Mancotta Khanikar	Lahoal	Dibrugarh West
171	Panitola Konwar Gaon	Mancotta Khanikar	Barbarua	Dibrugarh West
172	Patra Gaon	Jamirah	Barbarua	Dibrugarh West
173	Rawomari Gaon	Jamirah	Barbarua	Dibrugarh West
174	Sessa T.E. 14/ 153 Orr Grant	Mancotta Khanikar	Barbarua	Dibrugarh West
175	Sessakuch Gaon No. 1	Laruwa	Barbarua	Dibrugarh West
176	Sessakuch Gaon No.2	Laruwa	Barbarua	Dibrugarh West
177	Shahjan Gaon No. 1	Laruwa	Barbarua	Dibrugarh West
178	Shahjan Gaon No.2	Laruwa	Barbarua	Dibrugarh West
179	Subachuk Gaon	Laruwa	Barbarua	Dibrugarh West
180	Suta Bogpar T.E. 10/ 165 O.R.(A) Grant	Mancotta Khanikar	Barbarua	Dibrugarh West
181	Tepar Pather Gaon	Laruwa	Barbarua	Dibrugarh West

182	Thangal Gaon	Laruwa	Barbaruah	Dibrugarh West
183	Tinchukia Gaon	Laruwa	Barbaruah	Dibrugarh West
184	Tingkhong Gaon	Jamirah	Barbaruah	Dibrugarh West
185	Wallkhabi Gaon No.1	Laruwa	Barbaruah	Dibrugarh West
186	Wallkhabi Gaon No.2	Laruwa	Barbaruah	Dibrugarh West
187	Kollalowa Habi	Mancotta Khanikar	Khowang	Moran
188	Muwamori Gaon No.2	Mancotta Khanikar	Khowang	Moran

DESCRIPTION OF BOUNDARIES :

North : River Brahmaputra, Maijan Jan, Greenwood T.E.

South : River Burhi Dihing, Gamon Bridge.

East : Lahowal , Dikom, Tamulbari T.E.

West : Madhupur Village, Chawlkhuwa NC village & Jogoloni Grant gaon, Kutuha Nagaon , Baligaon.

PABITRA RAM KHAUND,
Secretary to the Government of Assam,
Department of Housing and Urban Affairs,
Dispur, Guwahati-6

1 INTRODUCTION TO MASTER PLAN AREA

1.1 REGIONAL SETTING

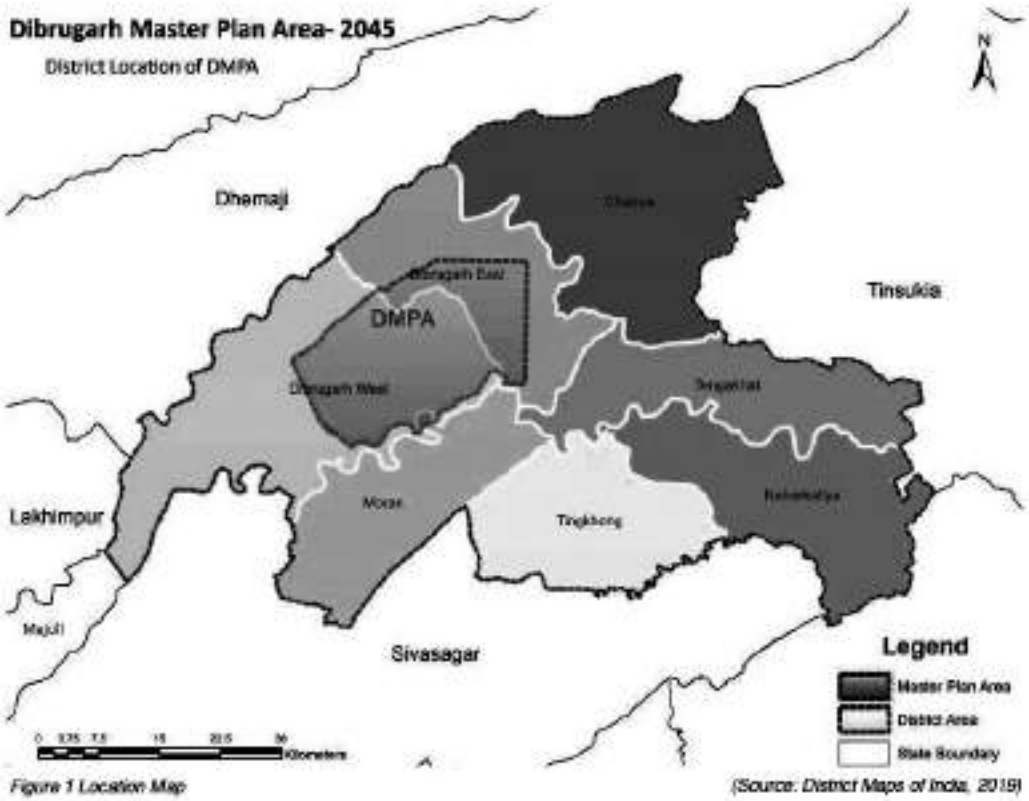


Figure 1 Location Map

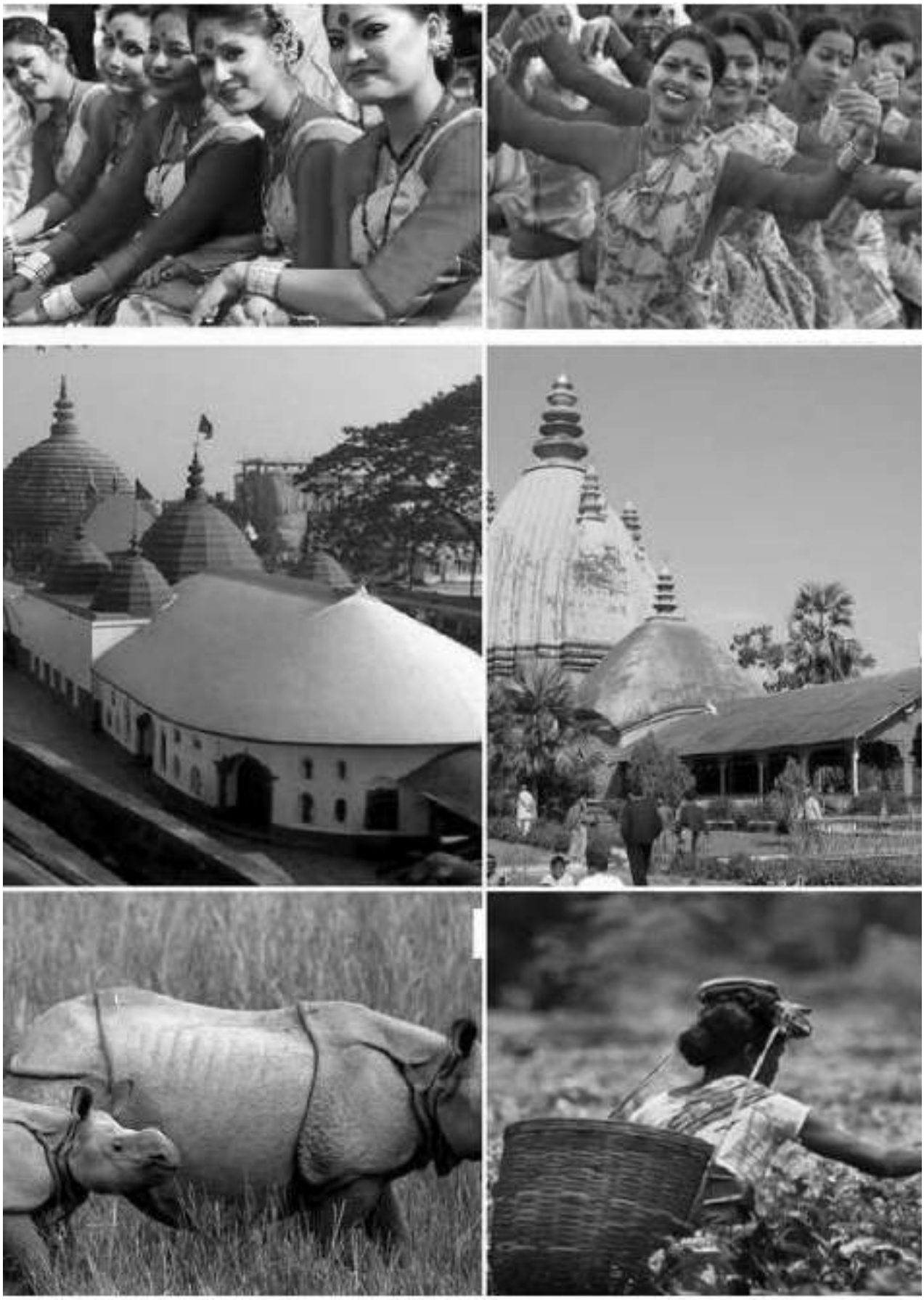
(Source: District Maps of India, 2019)

1.1.1 ASSAM – AS A STATE

Assam is the second largest state among the seven sister states of North-Eastern Region of India. The other six states are (i) Arunachal Pradesh, (ii) Manipur (iii) Meghalaya, (iv) Mizoram, (v) Nagaland and (vi) Tripura. With a geographical area of about 78, 438 sq. kms, Assam accounts for one-third of the area of the North-Eastern region and 2.4 percent of the area of the country. The State has varied landforms, diverse flora and fauna and unique cultural traditions. Assam has a generally humid climate with a pleasant and long winter and brief summer. Temperatures vary from 18° C to 35° C in summer and from 7° C to 26° C in winter. Rainfall is heavy during the monsoon season from June to September and the average heavy rainfall is around 27 cm. (Source: India Meteorological Department)

The best tourist season is October to April covering both winter and spring. The economy of Assam is largely dependent on the rivers Brahmaputra and Barak along with their tributaries. The river Brahmaputra, which is the largest river in India, flows through the entire length of the State. Both the rivers, while nourishing the state and aids its economic development, also cause much havoc during monsoons. The hills running east to west divide Assam into two distinct valleys – Brahmaputra and Barak Valleys. The Barail Mountain ranges as well as Rengma and Kambi hills lie between the valleys.

Assam is a State of breath-taking scenic beauty. Its rolling hills, dense forests, green valleys, large waterways and rich biodiversity make Assam one of the splendid tourist destinations in the world. The State is also having unique art and culture, fairs and festivals, temples and monuments and handicrafts and handlooms. Forests cover almost one-fourth of the geographical area of the state. These forests, apart from being the home of a variety of animal and plant species and active biospheres, also provide excellent opportunities for nature tourism, wildlife and bird watching, jungle safaris and trekking. Assam has the rare distinction of possessing world natural heritage sites and beautiful national parks, tiger reserves and wildlife sanctuaries. There are five national parks and eleven wildlife sanctuaries in the state. Assam is a natural conglomeration of various ethnic tribes and groups, each having a distinct language, culture, songs, dances, and festivals. Rangoli Bihu festival, tea tourism festival, Brahmaputra beach festival, etc. Are being organized in the state as tourism events.



1.1.2 DIBRUGARH DISTRICT

The Dibrugarh district is located at the eastern part of Assam and north eastern corner of Upper Brahmaputra Valley extends from 27°05'38" N to 27°42'30" N latitude and 94°33'46" E to 95°29'8" E longitude, covering an area of 3381 sq km. Dibrugarh name is formed from the combination of two words "Dibru" and "Garh", which together means the fort (garh) on the bank of river Dibru. The Ahom's had constructed a Garh (Fort) in the mouth of river Dibaru to prevent the soldiers of Chutia king and it was known as a Dibrumukhar Garh. Dibrugarh and adjoining areas offer its tourists a unique blend of tourist attractions ranging from the ecstasies of the tea estates and their heritage to wildlife and culture, also touching the heart of someone with a religious fervour, like Jagannath Temple, Jokai Botanical Garden cum Germplasm Centre.

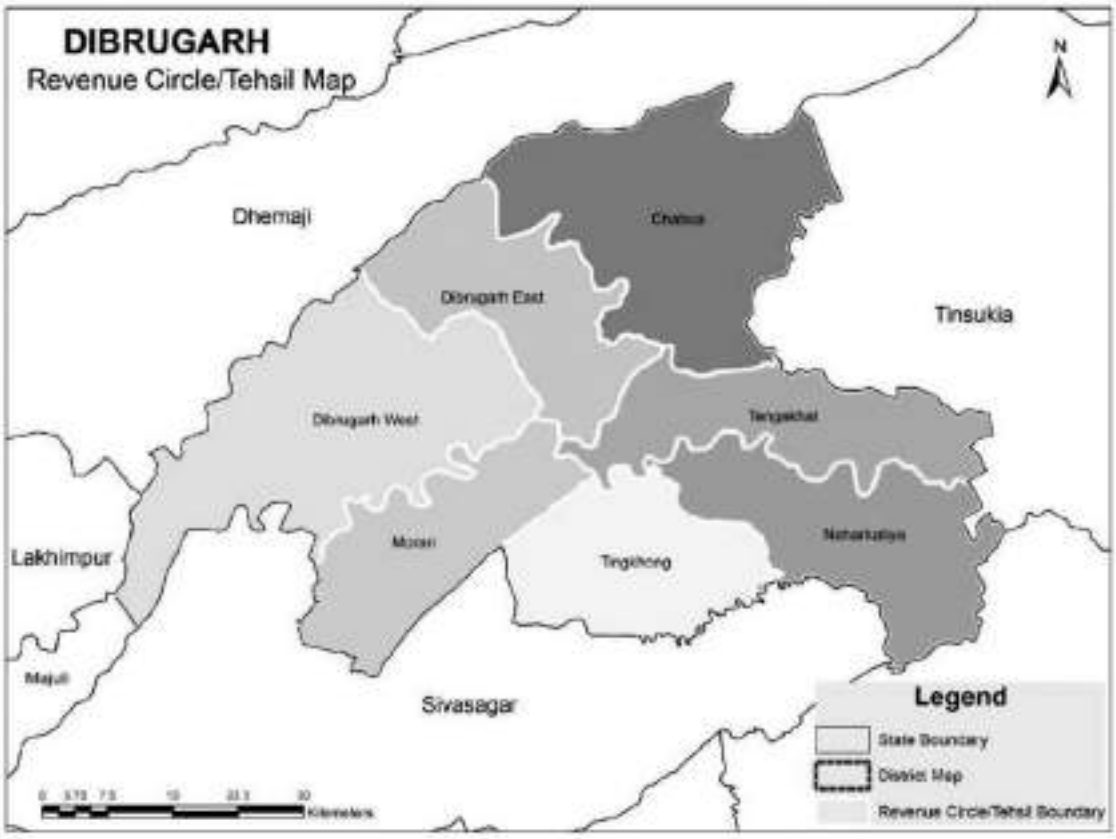


Figure 2 Dibrugarh District Map Showing Tehsils

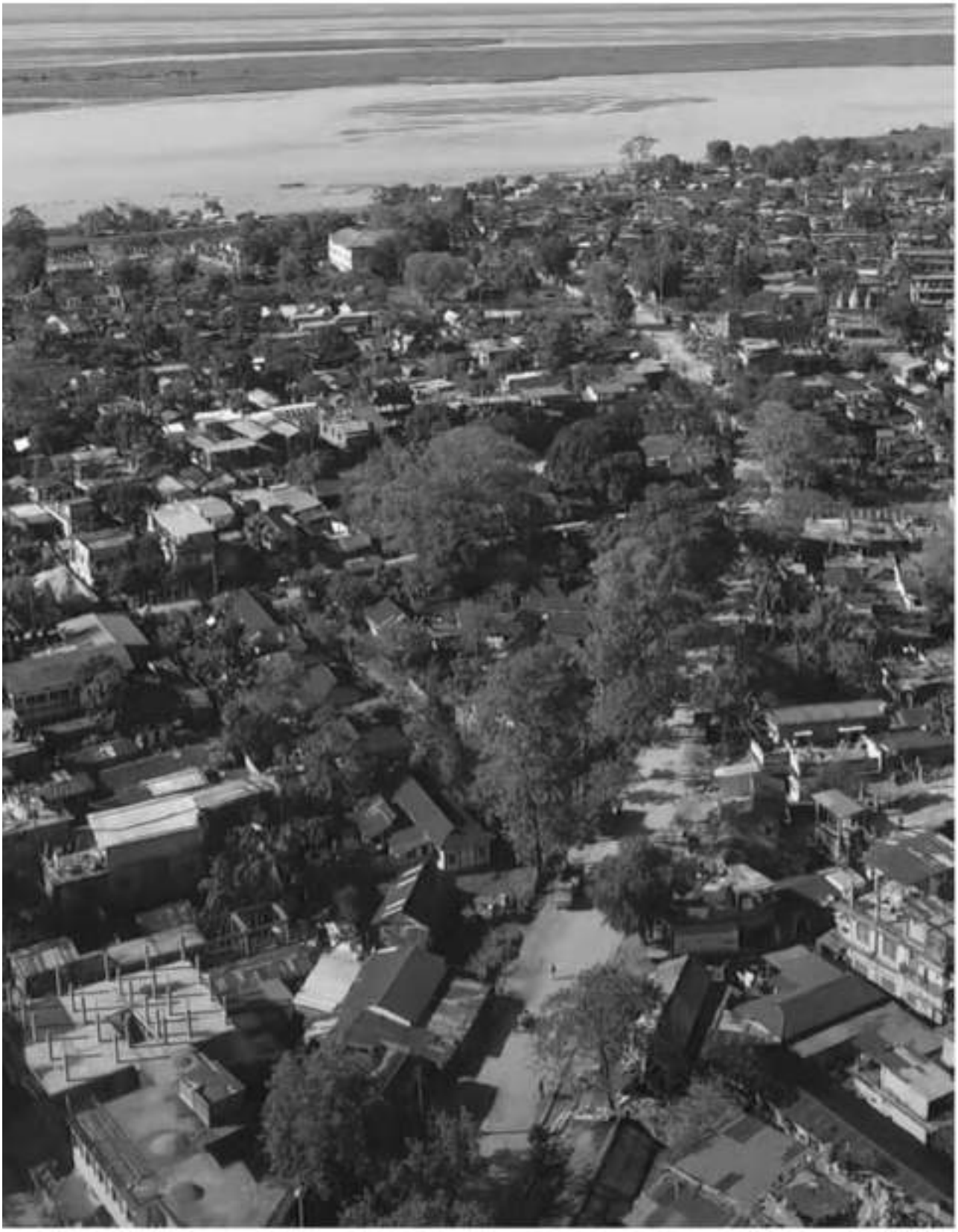
The area stretches from the North Bank of the mighty Brahmaputra, which flows a length of 95km through the northern margin of the district, to the Patkai foothills on the South. The Burhi Dihing, a major tributary of the Brahmaputra with its network of tributaries and wetlands flows through the district from east to west. Till the great earthquake of 1950, the north easternmost corner was drained by the Dibru River. The Dibru was a main tributary of the Brahmaputra the confluence of it being at about 18km east of Dibrugarh City. By raising the bed of the Brahmaputra, the earthquake caused severe erosion on its south bank and as a result the Dibru river got merged with its master stream in Rahmaria mouza.

The District was created on October 2nd, 1971 through bifurcation of district of Lakhimpur. It has boundaries as follows,

North: Dhemaji District and part of Lakhimpur District

South: Sivasagar District and Arunachal Pradesh

East: Tinsukia District, **West:** Part of Majuli, Lakhimpur and Sivasagar District



1.1.3 DIBRUGARH TOWN

Dibrugarh, is a city and is the headquarters of the Dibrugarh district in the state of Assam in India. Well known as the Tea City of India, Dibrugarh is a major city in eastern India in line with Guwahati and Bhubaneswar and is the emerging communication and industrial hub of North East India. Dibrugarh is also known as "Ti Phao" in Ahom Buranji, meaning Place of the Heaven. It has the boundaries as in North: Brahmaputra river, South: Tengakhat Town and Moran Town, East: Chabua Town, West: Dihingmukh Reserve Forest. It is the headquarters of the Dibrugarh district in the state of Assam in India and considered to be a major city in eastern India in line with Guwahati and is the emerging communication and industrial hub of North East India. Dibrugarh is also one of the two main cities in the state of Assam to receive urban development aid from the Asian Development Bank and is the nerve centre of industry, communication and healthcare of the upper Assam region. Dibrugarh is located 439 km (273 miles) east of Guwahati, the largest city of the Indian state of Assam. Dibrugarh is well connected to the rest of India by rail, road and air transport and thus serves as a gateway to eastern Assam and also parts of Arunachal Pradesh. Moreover, there has also been a consistent demand, particularly from the industrial sectors, for starting international flights from Dibrugarh to Bangkok and Singapore. Mega projects like Brahmaputra Cracker and Polymer Limited, India's longest rail cum road bridge Bogibeel bridge and other upcoming modern urban infrastructure are transforming Dibrugarh into a vibrant city. Of late, the city of Dibrugarh is emerging as a popular destination for business and leisure trips for tourists from India and abroad and the 9th edition of the North East Business Summit was held in the city with the theme 'Building bridges with South East Asia', where representatives from South East Asian nations and business leaders of the country pledged to contribute substantially for the socio-economic growth of the North East. Dibrugarh is also a centre of education and research and the Indian Space Research Organisation (ISRO) organized the 18th National Space Science Symposium in the city in January–February, 2014. The city Master Plan area of Dibrugarh is 66.14 sq. kilometres and population is 186,214.

It lies between North Latitudes 27° 06′ 00″ and 27° 58′ 18″ and East longitudes 94° 39′ 00″ and 95° 30′ 00″. The Dibrugarh Municipality Board covers an area of 15.5 sq. km. Total 22 municipal wards are constituted to service the entire Dibrugarh town area.

Dibrugarh is considered as an economic hub of North East region of India. Dibrugarh is at the centre of economic activities dominated by the following industries: (a) Oil and natural gas (b) Tea production (c) Tourism (d) Power generation (e) Fertilizer (f) Cottage industry

Burhidihing, a tributary of Brahmaputra, divides the district from east-to-west. Burhidihing flows through Naharkatia and Khowang, and at a later stage in its course, Burhidihing acts as a divider between Dibrugarh and Sivasagar districts. The region is flat with a gradual slope from the East Arunachal hills to the west. The soil of the district is mostly fertile, alluvial soil.

It is the gateway to the three tea-producing districts of Tinsukia, Dibrugarh, and Sivasagar. These three areas account for approximately 50% of India's Assam tea crop, and this gives Dibrugarh its rightly earned sobriquet as the "Tea City of India". Oil and timber are the other two big industries in and around Dibrugarh.

In 1950, the Medog earthquake, measuring over 8.6 on the Richter Scale, changed the course of the Brahmaputra River, and this caused the destruction of more than three-quarters of the town. It has since then been rebuilt, though the River is a constant reminder to the people who live in its shadow, of its turbulence and all-encompassing journey to the sea.

1.1.4 CONNECTIVITY

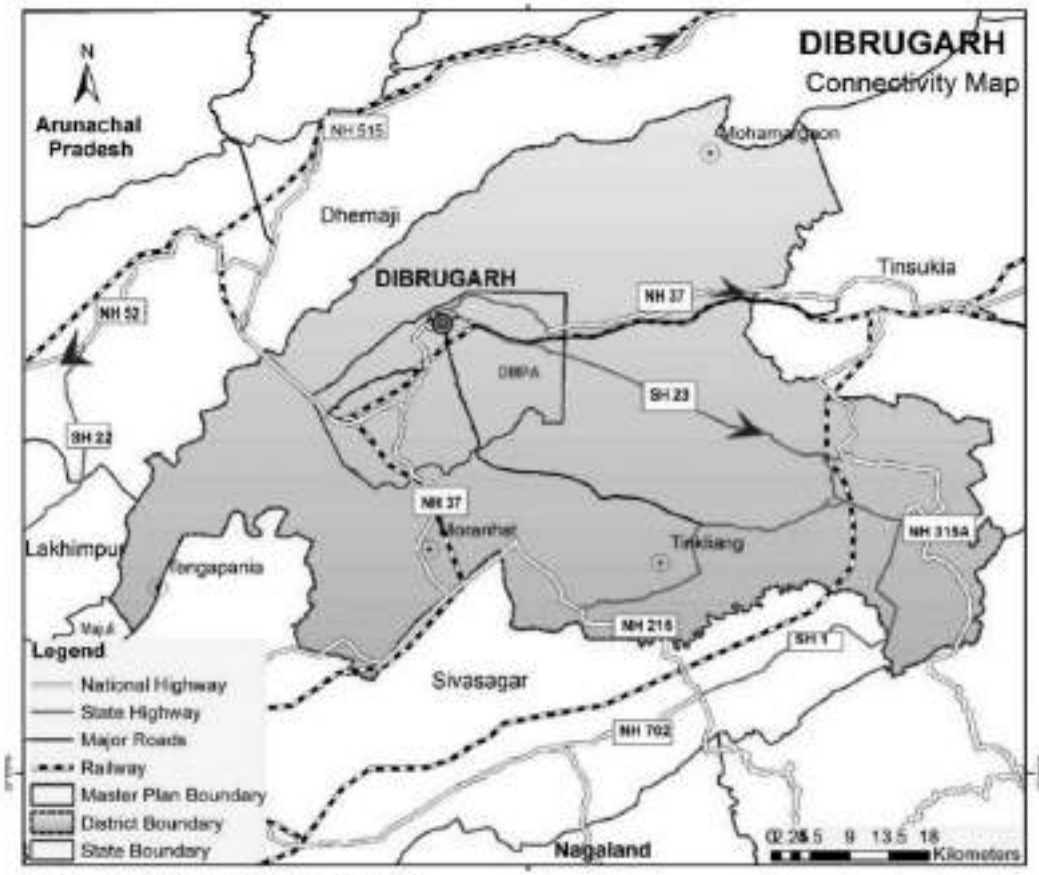


Figure 3 Dibrugarh Connectivity map with other regions

1.1.4.1 by Air

Mohanbari Airport is located at a distance of about 16 km from Dibrugarh town, which serves the Upper Assam districts of Dibrugarh, Tinsukia, Sivasagar and Arunachal Pradesh and is linked with Guwahati, Kolkata, and Delhi. Airlines operating from the airport are AirIndia, IndiGo and SpiceJet. IndiGo Airlines connects Dibrugarh daily with Delhi via Kolkata and another non-stop to Delhi while in return via Guwahati. Commercial operation of aerobridges has also started in this airport. The Air force field at Chabua (Nadua) is at about 25 km from Dibrugarh town.

1.1.4.2 by Road

Dibrugarh is well connected to North Eastern major cities like Guwahati (438 kms), Jorhat (140 kms), Tinsukia (50 kms), Sibsagar (80 kms), Majuli (160kms) through National Highways - NH 37, NH 52B , Dibrugarh Bypass (NH) and State Highway 23.

1.1.4.3 Rail

Dibrugarh has two railway stations - the historic Dibrugarh Town station (DBRT), which is the first railway station in the entire North-East India and the newly built Dibrugarh station (DBRG). It is the important easternmost railway stations connected to some of the important cities like Bengaluru, Chennai, Kolkata, Delhi, Kanyakumari etc. through the railway network. Also, it is the only non-capital city in India to have the Rajdhani Express originating from and terminating in its daily.

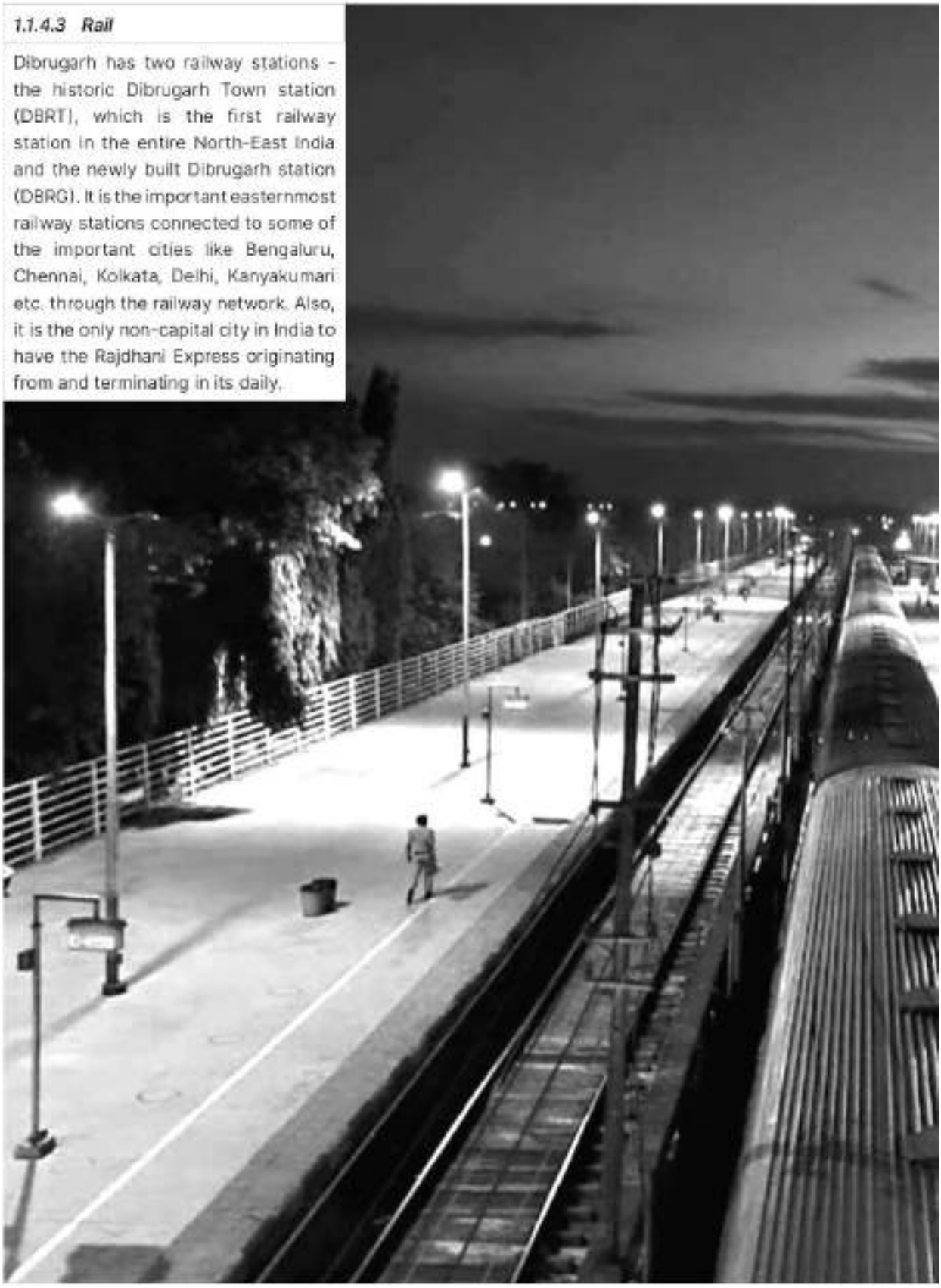


Figure 4 Bogibeel combine road and rail bridge on Brahmaputra river

Newly constructed Bogibeel bridge is a combined road and rail bridge over the Brahmaputra River in the northeastern Indian state of Assam between Dhemaji district and Dibrugarh district. Bridge will enable the military to speedily dispatch forces to neighbouring Arunachal, which borders China. This has cut the rail journey between Dibrugarh and Arunachal by 750 km.The bridge can bear the weight of India's heaviest battle tanks and also allow fighter jets to land.

1.1.4.4 by Waterway

Dibrugarh also possesses a developed waterway transportation system along and across the Brahmaputra River, known as the National Waterway 2 which extends from Bangladesh Border to Sadiya. Majuli is connected through both roadways and waterways.

1.2 CONSTITUENTS OF PLANNING AREA

Dibrugarh as a district having total area of 3381 sq.km. where total population count is 13,26,335. The delineated GIS based Dibrugarh Master Plan area is a part of Dibrugarh District.

Table 1 Administrative Divisions of Dibrugarh District

Sl.No	Administrative Division of Dibrugarh District	Type Number
1	Sub-Divisions	1
2	Revenue Circle	7
3	Legislative Assembly Constituencies	7
4	No. of Development Block	7
5	No. of Municipal Boards	W4
6	No. of Census Towns	5
7	No. of Gram Panchayat	93
8	No. of Villages	1362
9	No. of Inhabited Villages	1306
10	No. of Forest Villages	27
11	National Highways Passing through the district	N.H.- 37,52 B & SH 23

(Source: Dibrugarh District Portal)

In the lower-house of the Indian Parliament, Dibrugarh is one constituency and represented by one elected Member of the Parliament. The Towns of the District are Dibrugarh, Chabua, Naharkatia, Duliajan and Namrup. Revenue Circles: Dibrugarh East, Dibrugarh West, Chabua, Tengakhat, Naharkatia, Tingkhong and Moran. There are seven Legislative Assembly constituencies in this district: Moran, Dibrugarh, Lahowal, Duliajan, Tingkhong, Naharkatia, and Chabua. Chabua is in the Lakhimpur Lok Sabha constituency, whilst the other six are in the Dibrugarh.

1.2.1 AREA INCLUSION IN DIBRUGARH MPA

The GIS Based Master Plan area consist villages of **3 revenue circles** namely Dibrugarh East, Dibrugarh West and Moran. It consists villages of **3 Blocks** namely Lahoal, Barbarua and Khowang. The Dibrugarh town includes **22 Wards, 2 Out Growths and 2 Census Towns** which are coming under Dibrugarh East revenue circle. Hence, the total Master Plan area covers these Dibrugarh MB area, **2 Census Towns, 2 Out Growths, 13 Semi urbanize villages, 53 villages from Dibrugarh East, 115 villages** from **Dibrugarh West** and **2 villages from Moran.** The delineated area has **4 boundaries.** River Brahmaputra on **North,** river Burhi Dihing on **South,** Dikom/Chabua on **East** and Modhupur Reserve Forest on **West.**

Table 2 Municipal Board/ Out-Growth/ Census Town and Revenue Circle

Sl.No	Name of ULB/ Out Growth/ Census Town	Revenue Circle
1	Dibrugarh Municipal Board	Dibrugarh East
2	Mohpuwalimora Gohain Gaon (OG)	Dibrugarh West
3	Tekela Chiring Gaon (OG)	Dibrugarh East
4	Niz-Mancotta (CT)	Dibrugarh West
5	Barabari AMC Area (CT)	Dibrugarh East

(Source: Compiled by Consultant)

1.2.2 MUNICIPAL WARDS

Table 3 Municipal Ward Area year wise

Ward No.	Area (Sq.Km.)		
	1991	2001	2011
1	1.03	1.03	1.03
2	1.63	1.63	1.63
3	1.41	1.41	1.41
4	1.44	1.44	1.44
5	1.82	1.82	1.82
6	1.03	1.03	1.03
7	0.64	0.64	0.64
8	0.49	0.49	0.49
9	0.42	0.42	0.42
10	0.18	0.18	0.18
11	0.13	0.13	0.13
12	0.29	0.29	0.29
13	0.24	0.24	0.24
14	0.4	0.4	0.4
15	0.48	0.48	0.48
16	0.57	0.57	0.57
17	0.29	0.29	0.29
18	0.73	0.73	0.73
19	0.46	0.46	0.46
20	0.24	0.24	0.24
21	0.54	0.54	0.54
22	1.04	1.04	1.04
Total	**15.50**	**15.50**	**15.50**

(Source: Compiled by Consultant)

1.2.3 VILLAGES UNDER DIBRUGARH MPA

Table 4 Semi-Urbanized villages and its Revenue Circle

Semi-Urbanised Villages			
Sl. No.	**Village Name**	**Revenue Circle**	**Block**
1	Borbari 12/144 Orr	Dibrugarh East	Lahoal
2	Borsalkia Gaon	Dibrugarh East	Lahoal
3	Japara Gaon	Dibrugarh East	Barbarua
4	Rajabheta 135 F.S.	Dibrugarh East	Barbarua
5	Sagunibari Gaon	Dibrugarh East	Lahoal
6	Boiragimoth Kachari Gaon	Dibrugarh West	Barbarua
7	Chiring Gaon	Dibrugarh West	Barbarua
8	Dhekeri Gaon	Dibrugarh West	Barbarua
9	Hatimora Gaon	Dibrugarh West	Barbarua
10	Komar Gaon	Dibrugarh West	Barbarua
11	Mancotta T.E. 1/159 Rra(A)	Dibrugarh West	Barbarua
12	Suta Bogpara 10/165(B)	Dibrugarh West	Barbarua
13	Tepor Gaon	Dibrugarh West	Barbarua

Table 5 Villages of East Revenue Circle

Villages of Dibrugarh East Revenue Circle

Sl. No.	Village Name	Area (sq. km.)	Sl. No.	Village Name	Area (sq. km.)
1	123/244 No. NLR Grant	1.1	28	Lahoal 19/150 Orr (27 No.LC)	2.4
2	Agni Pather Gaon	2.12	29	Lahoal Patra	2.21
3	Athabari Gaon	2.56	30	Lahoal T.E. 27/148 Orr	5.63
4	Bakul T.E. 6 No. LCR	1.12	31	Meijen Grant Gaon	1.47
5	Bakulbari 26/147 ORR	0.81	32	Meleingal Gaon	1.63
6	Bakulmaj Gaon	3.1	33	Miripathar 16 No. FS	1.05
7	Bashbari Gaon	2.32	34	Miripathar Gaon	1.88
8	Bebejia Gaon	2.21	35	Mohanbari 31/160 Orr	1.89
9	Behia Chotia Gaon	0.84	36	Mohanbari Hindu Gaon	1.24
10	Bhimpara	0.86	37	Nagaghuli 16/177 Orr	2.18
11	Bongal Gaon	1.39	38	Na-Gaon	1.51
12	Chaulkhowa Grant Gaon	3.11	39	Niz Moldomia	2.21
13	Chenglijan	1.52	40	Niz-Lahoal	3.29
14	Dangar Pothar No.1	1.69	41	Nunpuria	2.85
15	Dangar Pothar No.2	0.33	42	Phutahula	2.62
16	Dibrual Changmai	0.97	43	Rajgarh No.2	0.5
17	Filnuguri Grant 4/152	1.8	44	Romai Gaon	1.1
18	Garuchur Gaon	0.25	45	Rongliting No.2	0.46
19	Ghagrajan	1.16	46	Rongpuria	0.52
20	HabiChuk	0.24	47	Sagalikata	1.5
21	Harabari Grant 115 F/S	0.91	48	Tamulbari T.E.	0.81
22	Harabari Konwar Gaon	1.93	49	Tamulbari T.E. 40/43 Nlr	1.13
23	Hiloidhari Chandoi Gaon	2.92	50	Tamulbari T.E. 43/46 Nlr	0.71
24	Japi sajia Gaon	1.68	51	Tamulbari T.E. 90/93 Nlr	1.01
25	Jilliguri Gaon	1.9	52	Timona Gaon	2.07
26	Jokai T.E. Co. 29/143 Orr	1.9	53	Titadimaru Gaon	2.87
27	Kandulibari Grant 4	2.29		**TOTAL AREA**	**89.37**

(Source: Compiled by Consultant)

Table 6 Villages of West Revenue Circle

Villages of Dibrugarh West Revenue Circle

Sl. No.	Village Name	Area (sq.km.)	Sl. No.	Village Name	Area (sq.km.)
1	53 No. FC Grant	0.41	59	Kachomari Deori Gaon	1.07
2	Bagibil Gaon	2.62	60	Kachomari Hatigar Gaon	0.58
3	Behaiting T.E.	2.21	61	Kalatomoni Gaon	3.53
4	Bhogamur Gaon	2.54	62	Kamakhya Gaon	2.85
5	Bhorburi Nogaon No.1	4.6	63	Kapowtepor Gaon	2.83
6	Bhorburi Nogaon No.2	1.5	64	Kath Gaon	2.29
7	Bhorburi Nogaon No.3	1.99	65	Kawoimari Gaon	0.34
8	Binoigutia Gaon	4.87	66	Khanikar T.E. 2 L.C.R. Grant	2.73

9	Bogpara Gaon	2.43	67	Khanikar T.E. 32/31 N.L.R. Grant	1.25
10	Bolai Gaon	2.75	68	Kollani Nogaon	1.48
11	Bolai Nogaon	1.04	69	Konwar Handique Gaon	2.14
12	Bolai T.E. (A) No.45 Grant	4.13	70	Konwar Kheroni Gaon	0.59
13	Bolai T.E. (B) No.45 Grant	3.37	71	Kotoha Bangali Gaon	2.04
14	Bolai T.E. 42/137 Rr Grant	1.02	72	Kotoha Gaon	2.15
15	Bolaibari Gaon	1.66	73	Kuchia Khana Gaon	2.13
16	Bor Bogpara T.E. 8/185 Orr Grant	2.63	74	Lakai Gaon	2.91
17	Bor Temtow Gaon	1.6	75	Laruajan Gaon	1.23
18	Borahajer Konwar Gaon	1.84	76	Lengapathar Gaon	1.15
19	Borbarua T.E. 13/76 Orr Grant	2.01	77	Lepetkatta 60 No. FS 71 No. Nlr	0.73
20	Borbil Gaon No.2	1.13	78	Lepetkatta Bagisha	0.63
21	Borpather Kakoti Gaon	2.6	79	Lepetkatta Bangali Gaon	2.67
22	Borpather Konwar Gaon	3.49	80	Lepetkatta Bangla Block	0.54
23	Bunsuti Koiborta Gaon	0.35	81	Lepetkatta Gaon	2.91
24	Chamoguri Kachari Gaon	1.55	82	Lepetkatta Kachari Gaon	3.28
25	Chamuguri Bongali Gaon	1.14	83	Mahmari Pather	1.68
26	Changamari Gaon	1.8	84	Maju Temtow Bagisha	2.2
27	Changamari Habi	2.33	85	Mankata T.E. 1/159 Rr(B) Grant	2.83
28	Changamari Tekela Gaon	2.19	86	Matak Gaon	1.79
29	Changmai Garia Gaon	2.45	87	Medela Grant No.3	4.31
30	Changmai Gohain Gaon	2.04	88	Metekani Gaon	0.93
31	Dainijan Gaon	1.77	89	Mohmari Gaon No.1	2.33
32	Deori Gaon	3.5	90	Mohmari Gaon No.2	0.89
33	Dewanbari Bagisha	1.43	91	Nagakhelia Gaon	1.64
34	Dewanbari Bagisha 24/149 Nlr Grant	1.09	92	Nibuk Gaon	1.72
35	Dewanbari Gaon	0.73	93	Nij Khanikar Gaon	1.67
36	Dheriatoli Gaon	0.48	94	No.1 Garudharia Gaon	0.64
37	Dibruwai Dihingia Gaon	2.26	95	No-hazar Konwar Gaon	1.86
38	Digali Delani Gaon	3.52	96	Nowjan Gaon No.1	2.14
39	Dighala Gaon	2.64	97	Nowjan Gaon No.2	0.43
40	Dihing Kaiberta Gaon	0.21	98	Nowjan Salmari NC	0.81
41	Dulia Gaon	1.87	99	Palonia Gaon	0.79
42	Dulia Mahorani Gaon	1.29	100	Panitola Konwar Gaon	1.85
43	Gabharujan Gaon	1.3	101	Patra Gaon	1.99
44	Garudharia Charaihabi Gaon	0.92	102	Rawomari Gaon	2.79
45	Gharbondi Chuk Jarua Gaon	2.31	103	Sessa T.E. 14/153 Orr Grant	4.41
46	Ghetira Pathar Gaon	1.15	104	Sessakuch Gaon No.1	0.4
47	Ghoramora Gaon	1.52	105	Sessakuch Gaon No.2	0.26
48	Ghoronia T.E. 81, 184, 91/94 No. Nlr	2.4	106	Shahjan Gaon No.1	0.61
49	Hanchara Gaon	0.57	107	Shahjan Gaon No.2	1.16
50	Hanchara Pathar Gaon	0.81	108	Subechuk Gaon	2
51	Handique Chuk Gaon	1.91	109	Suta Bogpar T.E. 10/165 O.R.(A) Grant	2.31

52	Hapekhati Gaon	1.88	110	Tepar Pather Gaon	2.24
53	Harok Pathar Gaon	0.78	111	Thangal Gaon	2.96
54	Hilolbam Gaon	0.17	112	Tinchukia Gaon	2.98
55	Jagalani Grant No. 43 FS	4.98	113	Tingkhong Gaon	3.08
56	Japara Gaon	1.83	114	Walkhabi Gaon No.1	1.76
57	Jokai T.E. No.1 L.C.R.	8.17	115	Walkhabi Gaon No.2	2.89
58	Kachari Gaon	1.97	TOTAL AREA		226.14

(Source: Compiled by Consultant)

Table 7 Moran Revenue Circle

Moran Revenue Circle		
Sl.No.	Name of Village	Area (sq.km.)
1	Kollaloya Habi	0.07
2	Muwamora Gaon No.2	4.83
TOTAL AREA		4.89

1.2.4 EXISTING MASTER PLAN AREA INCLUSION

Table 8 Existing Master Plan Area

Sl.No.	Description	Area (sq.km)
1	Existing Municipal Boerd Area	15.50
2	Existing Outgrowth / Census Town Area	8.53
3	Existing Rural Area	47.8
Existing Dibrugarh Master Plan Area		71.83

(Source: NUSI Report of Dibrugarh and Existing Master Plan)

1.2.5 NEW GIS BASED MASTER PLAN AREA - 2045

Table 9 New GIS Based Master Plan Area for 2045

Sl. No.	New GIS based Dibrugarh Master Plan Area	Area (Sq.km)
1	Dibrugarh Municipal Boerd (22 Wards)	15.50
2	2 Outgrowths & 2 Census Towns	8.53
3	13 Semi-Urbanised Villages -Dibrugarh East & West Revenue Circle	23.42
4	53 Villages from Dibrugarh East Revenue Circle	89.37
5	115 Villages from Dibrugarh West Revenue Circle	226.21
6	2 Villages from Moran Revenue Circle	4.89
7	Reserved Forest (Jokai & Dihingmukh part)	23.08
TOTAL GIS Based Master Plan Area		391.00

(Source: Compiled by Consultant)

Table 10 Important Landmarks and its distance from Town

Sl.No.	Description	Name	Dist. (km.)
1	State Headquarters	Dispur, Guwahati	443 km
2	District Headquarters	Dibrugarh	Within DMPA
4	Nearest City (having 1 lakh & above Population)	Tinsukia	48 km
5	Nearest Railway station	DBRT	Within DMB
		DBRG	Within DMPA
6	Nearest Airport / Air strip	Mohanbari	16 km

(Source: NUSI Report of Dibrugarh)

Table 11 Nearness / Distance of Major River / Canal / Coastline from Town

Sl.No.	River / Drain Name	Distance (km) from the Town
1	The River Brahmaputra	Northern border of the town
2	The River Buridihing	22.35 km through AT Road
3	The River Sessa	9.03 km through Mancotta Road,18.65 km through AT Road
4	Dibrugarh Town Protection Drain (DTP)	Within the town
5	Rajabheta Drain / Jan	4.13 km
6	2nd Main Drain	Within the town

(Source: NUSI Report of Dibrugarh GIS based Master Plan of Dibrugarh)

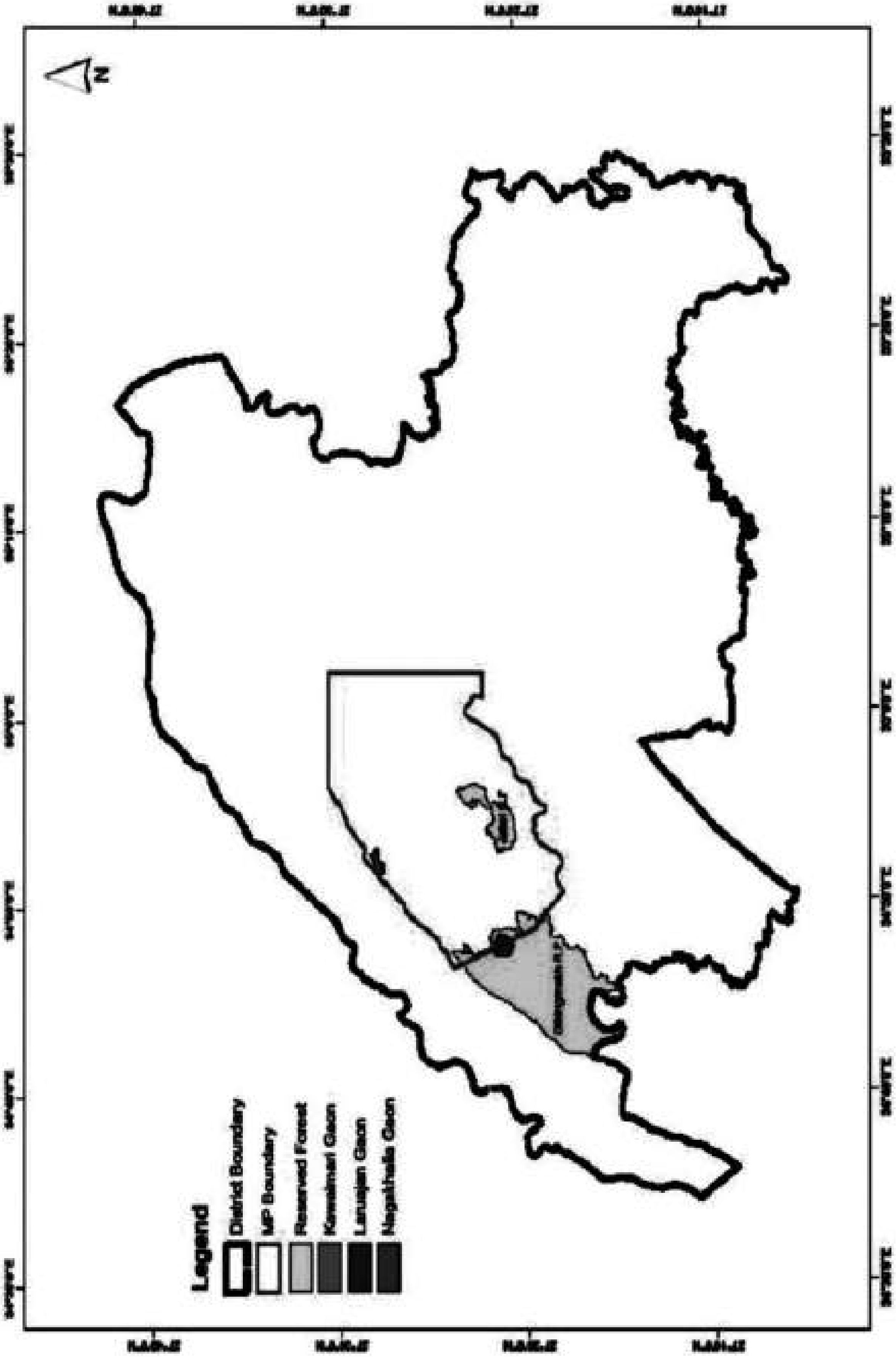


Figure 5 Dibrugarh Master Plan Area for Year 2045

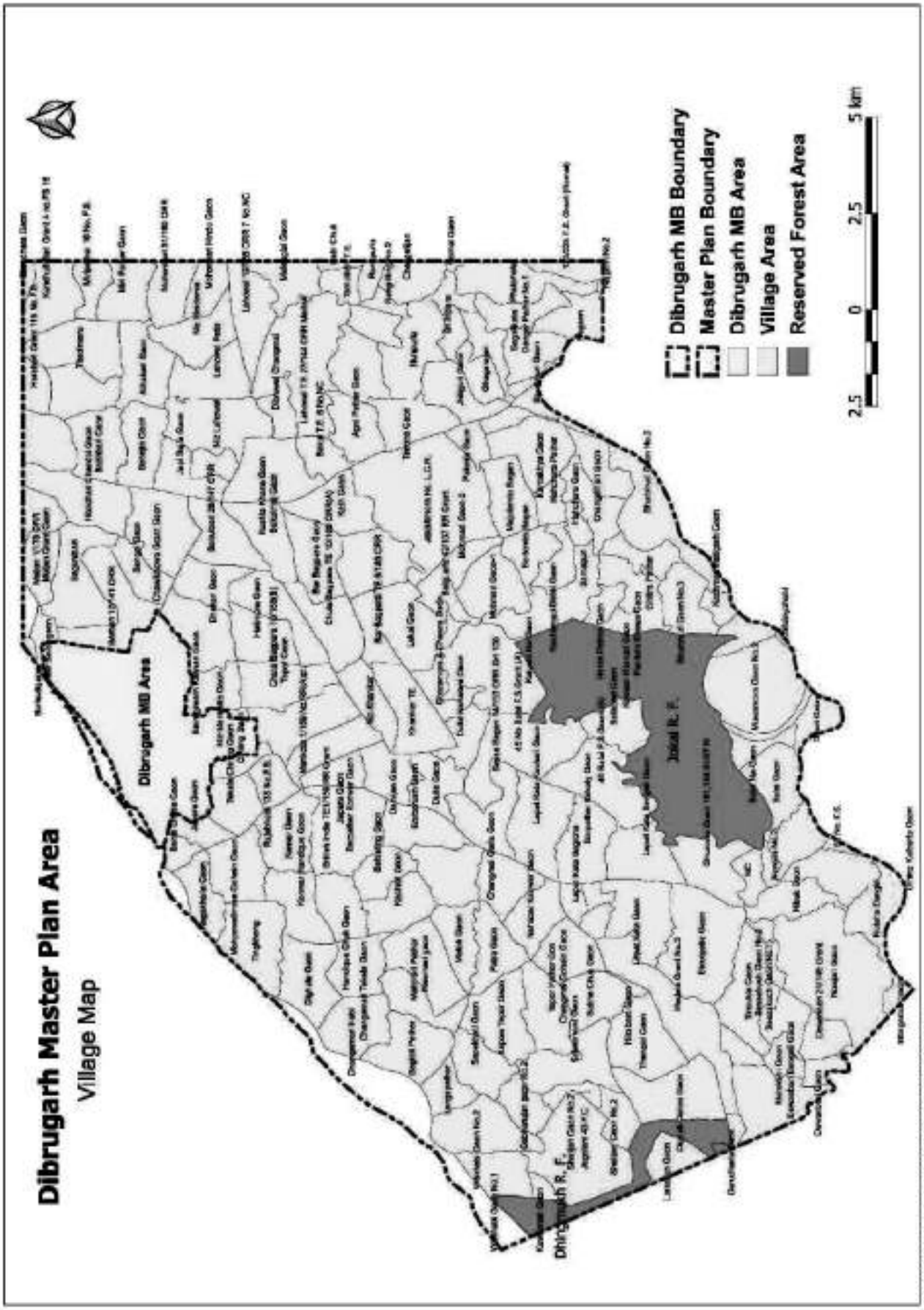


Figure 6 Villages under Dibrugarh Master Plan Area

1.3 HISTORY OF THE TOWN

In modern India, urbanization was greatly facilitated by the British government. The East India Company selected sites which had both commercial and strategic importance. Since in the beginning their trade was mainly sea-borne and water transport was main means of conveyance everywhere in the world, they choes those sites which were close to sea. The indigenous government allowed them to have their settlement in the unhabitated and slum areas near the sea.

In Assam, the East India Company looked for sites which should serve both their commercial and strategic purpose. During the days of Ahoms, Rangpur and Garhgaon which were their capitals were more important then Guwahati, the headquarter of Barphukon. In upper Assam, The British gave more importance to Dibrugarh than to the Ahom Capitals at Rangpur or Garhgaon. This was due t the reason that Dibrugarh being located near the confluence of the Brahmaputra and Dihing river, commanded a great strategic importance, at a time when the British were yet to be free from Burmese attacks and inroads of the turbulent hill tribes of the frontier.

Dibrugarh Camp - Assam Valley Light Horse Cavalry

The name Dibrugarh is a compound of two words 'Dibru' and 'Garh' (fort). The Dibru is the name of a stream which used to flow to the south of the present town of Dibrugarh. When the British established a military base at Dibrugarh they had also constructed a fort on the bank of the river Dibaru. It is said that thenceforth, the place which was earlier called simply 'Dibaru' came to known as 'Dibrugarh'.

The greatest interest of British in Assam was the commerce centering round it. As early as 1823 the British discovered tea in the modern Sadiya region. It was at Chabua, 20miles to the east of Dibrugarh that the British made their first experiment with tea cultivation with indigenous plants. Till 1826, Dibrugarh was under the Burmese rule. It came under the British rule after the Burman treaty was ratified. Known to be the industrial and commercial hub of Upper Assam, the city was proclaimed as the centre of administrative activity by the Britishers when they arrived here in the year 1826. Very soon oil and coal were discovered in areas near to the Dibrugarh Town. Oil was discovered at Digboi in 1882 and Coal was found at Ledo and Margherita in 1876. All these greatly enhanced the importance of Dibrugarh as a centre of industrial, commercial and administrative activities.

In the year 1882, first train rolled down the tracks from streamer ghat at Dibrugarh and connected to Margherita by railways. Dibrugarh was made the District headquarter in 1840 in place of Lakhimpur which was located in an interior area. Under Bengal Act 1876, a Municipality was set up in 1873. In 1872, it had a population of only 3870 persons.

Dibrugarh built up its intellectual foundation and played an important role in the Country's struggle for freedom. Intellectuals in Dibrugarh played a leading role in arousing the spirit of nationalism in the province of Assam. Journalism which had a significant contribution to this event, was greatly patronized by the intellectuals of Dibrugarh. The first news weekly of the province, The Times of Assam was published from Dibrugarh in 1895. [1]

The first Girl's School of Assam was established here in 1901. The first Medical Institution in the North-East, the Berry White Medical School was established here in 1901 and the second university in the State come to be established in 1965.

Originally being a hub of tea export, a marketplace sprang up in Purana Bazar area (old market). In 1907, the new market was developed as the Purana Bazar area and the Dibru River has been submerged by mighty Brahmaputra. Within a span of 110 years, the population rises from 11,227 (1901) to 1,54,296 (2011, Dibrugarh urban agglomeration).

[1] Baruah, Dipali Urban History of India: A Case Study, Mittal Publications,1994, ISBN 8170995388, 9788170995388

1.3.1 BRIEF HISTORY OF DEVELOPMENT OF TOWN

The chronicles of the development of town is classified into four, namely, ancient Dibrugarh, Pre-independence, During partition and Post-independence is given below in the tabular form:

Table 12 Chronical history of development of town

Year	Details
Ahom Empire (600 years)	• In **1228,** invasion of Ahoms. They were advanced in agriculture and farming, therefore at the very beginning, they searched a land for agriculture and moved place to place in the eastern part of the Brahmaputra valley. • Introduced the wet-rice cultivation system in Assam. • Established reclamation of land using dykes, embankments and irrigation systems. • The first coins were introduced. • Revenue system was adopted by the Ahom from Koch (present Guwahati) and Mughals. • Diminishing: Moamaria rebellion in **1769-99** and the Burmese invasion in **1824-26** periods.
Pre-independence	• In **1826,** the British troops drove the Burmese and led to the annexation of Assam. • The Britishers selected Dibrugarh as an administrative and commercial center of Upper Assam. • Dibrugarh town was established with the construction of a large fort in the banks of the Dibru River, which acted as a trading site for traders coming by boats, thus leading to the establishment of a market known as the Purana bazaar, later eroded away in a massive flood. After that the new market was established in 1907. • In **1842,** it was the headquarters of Lakhimpur district and served as a primary military base and a transit camp for the evacuees of Burma during the World War II. • In **1870,** the District Judiciary Court was constructed. • Under Bengal Act **1872,** a Municipality was set up in **1873.** • The growing number of tea gardens opened up a number of linking roads to facilitate the transport of tea to the river-port at Dibrugarh. • In **1882,** the first train rolled down the tracks in Dibrugarh.
During partition	• Migration of tea garden, mining and other labour force, also number of skilled and semi-skilled workers, with the inflow of civil and army officers, upcountry traders and merchants had given a heterogeneous population structure.
Post-independence	• The oil industry helped in significant economic development of the region and also rapid urbanization of the area. • In **1947,** Assam Medical College got established. • Dibrugarh to have introduced city bus service in **1956.** • The Dibrugarh University got set up in **1965.** • District & Sessions Judge was appointed in Dibrugarh in **1967.** • In **1971,** Lakhimpur district got bifurcated into Dibrugarh and Lakhimpur districts. Dibrugarh district got further bifurcated into Dibrugarh and Tinsukia districts.

1.4 CLIMATE

1.4.1 TEMPERATURE

The area experiences subtropical monsoon climate with mild winter, warm and humid summer. Rainfall decreases from south to north and east to west in the area. The average temperature of 27.9°C and average relative humidity of 95%. The temperature generally decreases from south to north. The average annual temperature in Dibrugarh is 23.9°C. Located on the bank of the Brahmaputra, the Dibrugarh city experiences mild climate with low temperature. Based on the climatic characteristics such as distribution of temperature, rainfall, rainy days, humidity, presence of fogs and thunderstorms, the climate of the area may be classified into four seasons viz. (a) winter, (b) pre-monsoon, (c) monsoon and (d) retreating monsoon. The winter constitutes the months of December, January and February. Fair weather prevails during this time occasionally associated with fogs and haze. December and January are the driest months and January is the coldest. The minimum temperature during this season ranges between 10°C and 12°C and the maximum between 27°C and 29°C. From March the land surface gets steadily heated and the temperature starts rising. Strong convection develops due to the local depressions formed especially in the afternoon. The norwesters locally called Bordoichilla appears during the period. Maximum temperature ranges between 28°C and 32°C. With the onset of monsoon in early June, widespread low clouds and high humidity together maintain almost uniform temperature over the area. The maximum temperature ranges between 33°C and 37°C.This season is, in fact, a transitional phase between the dry cool winter and the warm moist monsoon.

Table 13 Month wise Min and Max Temperature

Month	Min	Max.	Month	Min.	Max.
January	12	24	July	25	32
February	15	27	August	25	32
March	18	30	September	25	34
April	21	32	October	21	30
May	23	31	November	16	30
June	24	33	December	13	28

(Source: India Meteorological Department)

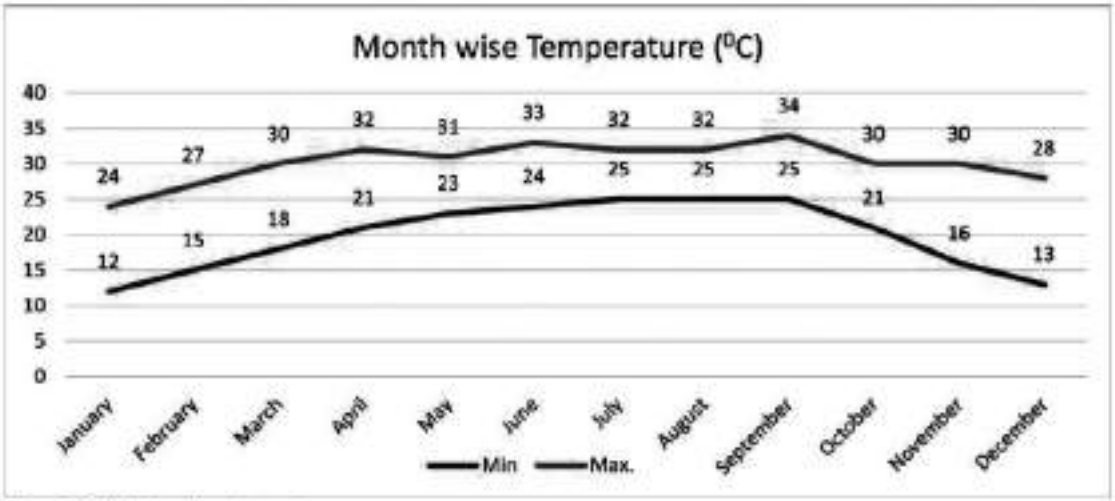


Figure 7 Monthly min and max temperature

1.4.2 RAIN FALL

The average rainfall in the Dibrugarh is 2618 mm with average relative humidity of 95%. The average annual rainfall of the Dibrugarh in the north is 2760 mm with a total number of 193 rainy days. Rainfall records show a decreasing trend towards east and west of Dibrugarh city. The average rainfall is 26 cm. The months of March, April and May constitute the pre-monsoon season. The norwesters locally called Bordoichilla appears during the period. Rainfall ranges between 59 cm and 160 cm. With the onset of monsoon in early June, heavy rainfall occurs. Widespread low clouds and high humidity together maintain almost uniform temperature over the area. The average annual rainfall during the period is 300 cm. The occurrence of thunderstorms is the most conspicuous characteristics of the monsoon weather. This is the season of dominant agricultural operation. The monsoon withdraws from the area in the last week of September or first week of October. The cool north-easterly winds originating over the lofty mountains of the Arunachal Himalayas brings the temperature down. The orographic low is replaced by high pressure and a flat pressure gradient occurs. Rainfall decreases abruptly and the sky becomes progressively clear. Sunny days prevail till the end of November. Month wise normal maximum and minimum temperature is given in Table 14.

Table 14 Monthly and Annually Rainfall data

Year	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Annual
2006	1.6	158.3	64.5	319.6	285.2	307.2	458.6	270.6	291.5	57.2	26.1	14.2	2254.6
2007	2.3	56.2	17.7	330.3	162	431.5	631.8	258	367.7	98.1	13.8	8.2	2377.6
2008	35.7	17.4	180.1	190.3	254.4	487.4	517.9	441.8	229	82.3	6.8	5.4	2448.5
2009	20.2	34	36.3	196.9	153.4	359.8	416.6	530.9	268.4	134.9	24.1	7.6	2183.1
2010	1.3	9.8	143.1	436.7	334.5	333.7	447.2	397.3	398	90.4	35.4	6.5	2633.9
Rainfall	**1.3**	**7.9**	**143.1**	**457.3**	**304.9**	**333.7**	**447.2**	**410.1**	**385.2**	**90.4**	**30.4**	**6.5**	**2618**

(Source: India Meteorological Department)

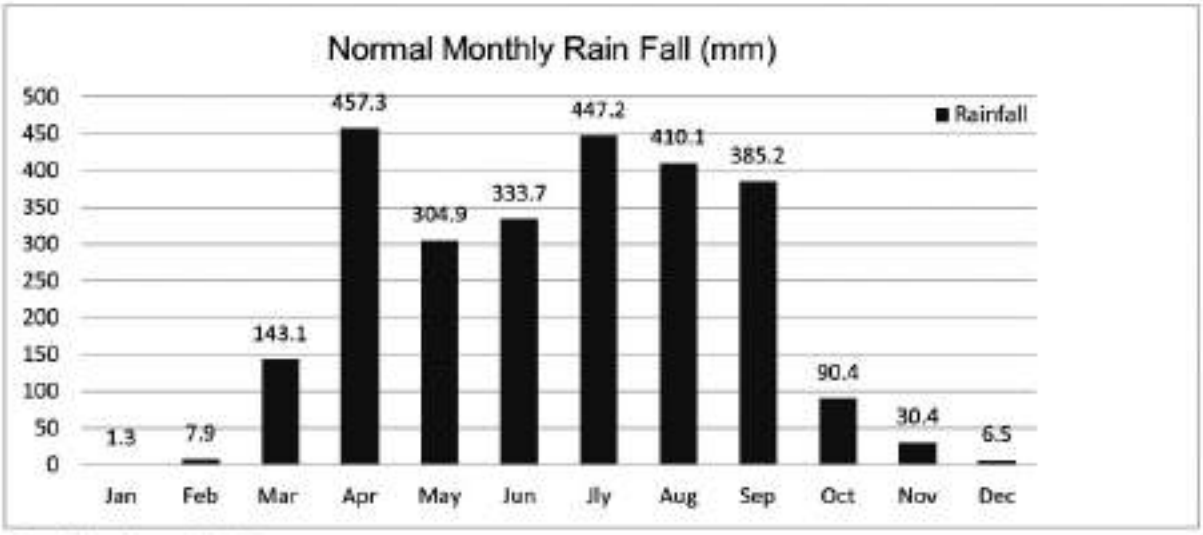


Figure 8 Monthly normal rainfall

1.5 PHYSIOGRAPHY

1.5.1 TOPOGRAPHY

Dibrugarh has been established by extensive plain formed by the Brahmaputra River and its major tributary namely Burhi Dihing and is situated in the north eastern corner of the Upper Brahmaputra valley with an elevation ranging between 99 to 474 meters. Physiographically, the master plan area is a plain area with occasional highlands, flood plain, beels, swamps and foothills of the Barail Range. Burhi-Dihing, a tributary of Brahmaputra, divides the district from east-to-west. Burhi-Dihing flows through Naharkatia and Khowang, and at a later stage in its course, Burhi-Dihing acts as a divider between Dibrugarh and Sibsagar districts. The region is flat with a gradual lope from the East Arunachal hills to the west. The soil of the district is mostly fertile, alluvial soil.

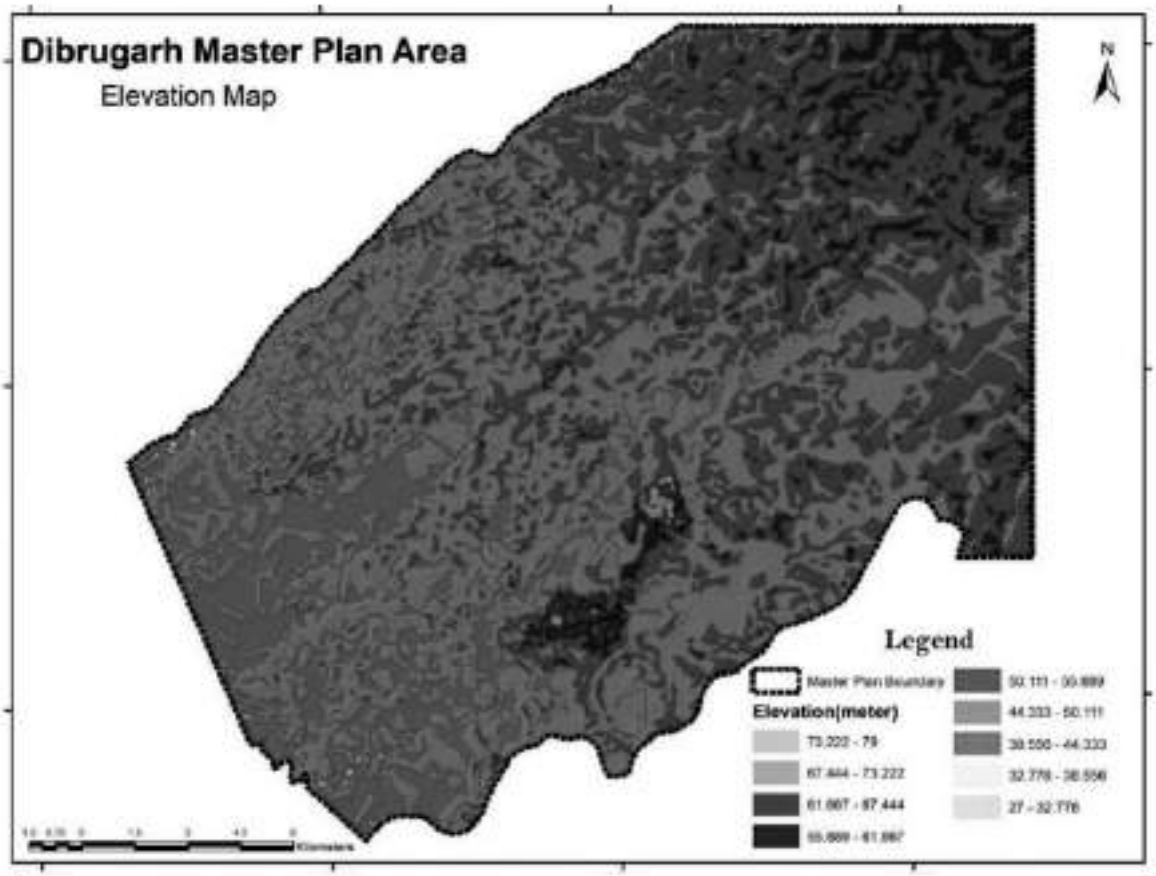


Figure 9 Dibrugarh MPA Digital Elevation Map

The northern boundary of the MPA is bounded by river Brahmaputra which is fairly wide with average width of 10 km. The general gradient of the district is from south-east to north-west. The height decreases gradually from this corner to the mouth of the Burhi Dihing River where the altitude is 55 m. However, the northern belt of the area has a gentle slope from east to west. The altitude of the eastern part is 79 m, while it is 44 m in the western part. Average elevation of the MPA is 40 m and mean east-west slope is 152 cm per km. Because of the relatively high slope and large volume of water, the Brahmaputra flows with a high velocity causing significant bank erosion in the area.

The Digital Elevation Model (DEM) of the district is given in Fig. 9 above.

Table 15 Area Coverage of classified elevated zone

Sl.No.	Elevation(m)	Area (sq.km.)
1	0-27	8.70
2	27-32	16.89
3	32-38	60.64
4	38-44	86.58
5	44-50	73.82
6	50-55	90.93
7	55-61	44.74
8	61-67	13.94
9	67-73	02.89
10	73-79	0.85

1.5.2 SLOP AND ASPECT

Around 25% of the MPA area is plain i.e. slope varies between 0-1% interspaced with slope of 1-3%. In the southern part towards river Burhi Dihing steeper slopes are prevalent where the slope is as high >28 degree. Maximum degree of slope falls in the bracket of >28 degree, which covers 0.1 sq.km of MPA area and the average slop value of 4 to 6 degree as per digital slope model. Maximum master plan area land cover (i.e 35%), falls under the slop category of 2-3 degree which covers 137.95 sq.km land of Dibrugarh MPA.

Table 16 Area coverage of classified slope and aspect zone

Slop				Aspect			
Sl. No.	Slop %(degree)	Area (sq.km.)	% of MPA	Sl. No.	Direction	Area (sq.km.)	% of MPA
1	0-1	96.58	25	1	Flat	59.53	15
2	1-2	47.78	12	2	N	28.74	7
3	2-3	137.95	35	3	NE	41.18	11
4	3-4	41.58	11	4	E	37.81	10
5	4-6	44.75	11	5	SE	46.46	12
6	6-9	11.93	3	6	S	39.23	10
7	9-13	9.61	3	7	SW	42.91	11
8	13-28	1.02	0	8	W	39.29	10
9	>28	0.10	0	9	NW	46.74	12
Total		**391.33**	**100**	**Total**		**391.33**	**100**

The aspect direction is distributed almost uniformly all across the MPA. Maximum aspect direction falls under flat area that is 59.53 sq.km. i.e.15% of MPA and minimum aspect direction is in North side which is of 28.74 sq.km. i.e. 7% of MPA. The distribution of various slope types and aspect direction of the district is given in Table 16.

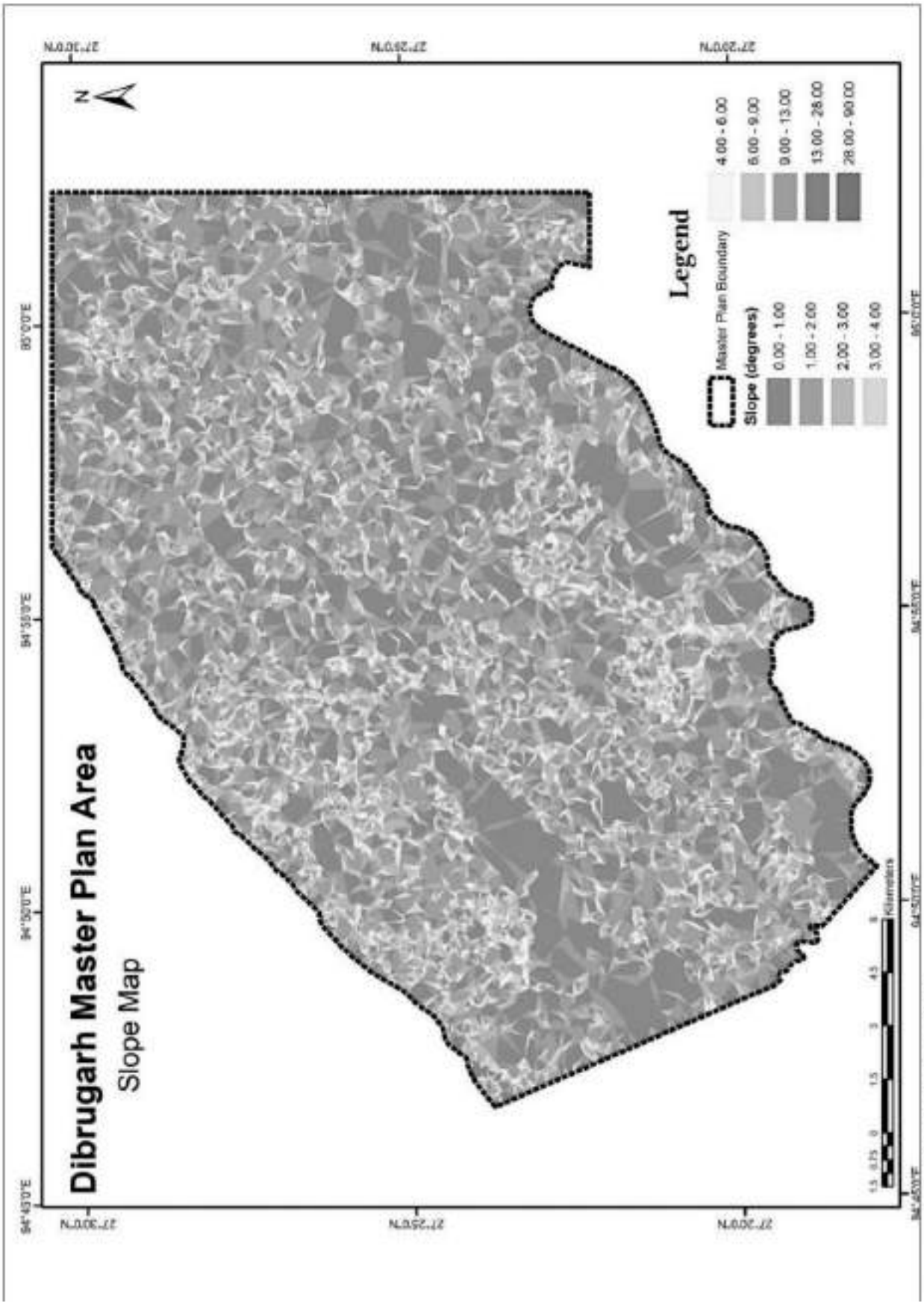


Figure 10 Slope Map of Dibrugarh MPA

1.5.3 DRAINAGE

On the northern margin of the town lies the river Brahmaputra with braided water course drains the whole area. The Dibru is a main tributary of the Brahmaputra the confluence of it being at about 18 km east of Dibrugarh city. Maijan stream, a tributary of the former Dibru has become a tributary to the Brahmaputra.

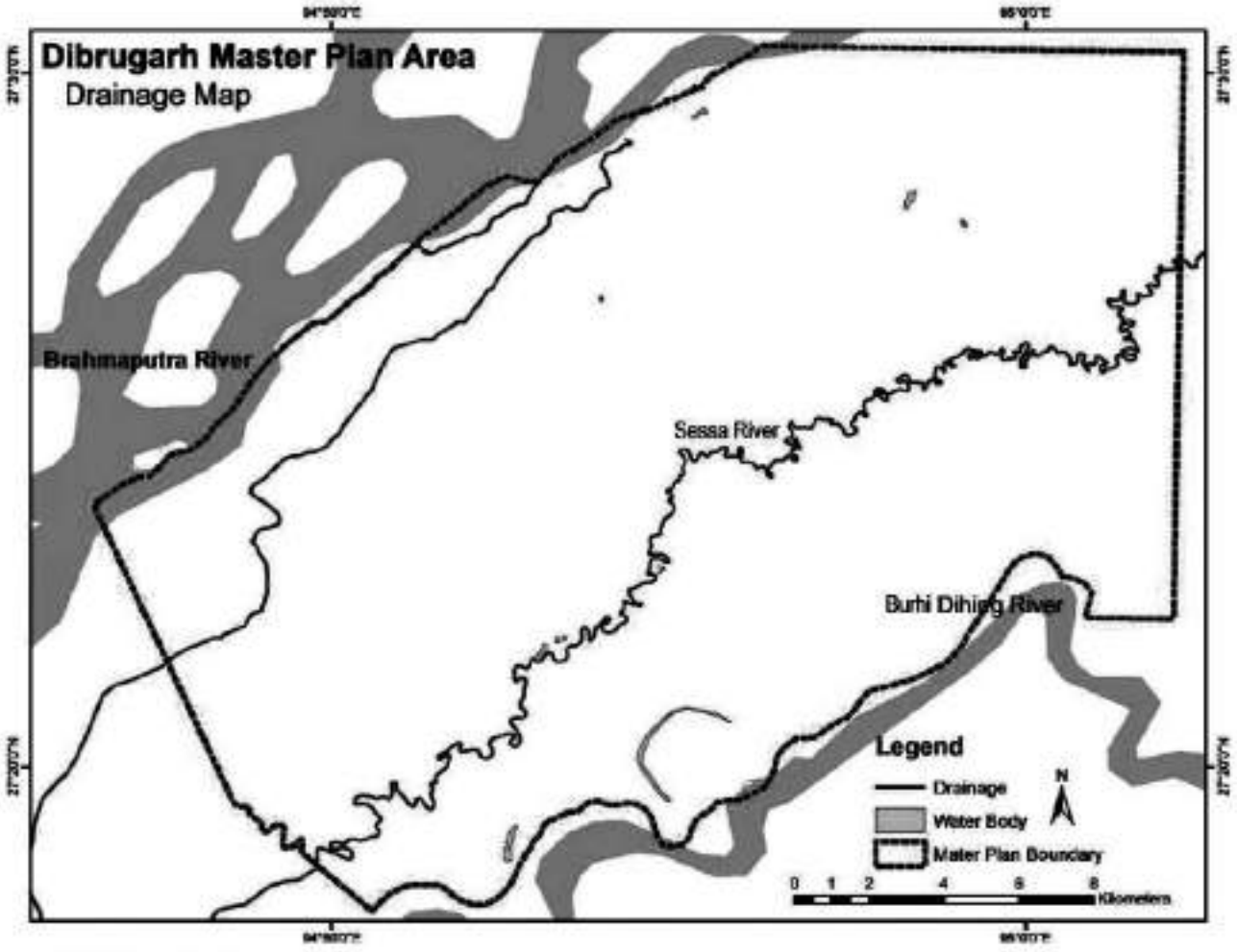


Figure 11 Drainage Map of Dibrugarh MPA

The river Burhi Dihing flows from almost east to west direction across the area. It has many tributaries viz. Tingrai, Tipling, Telpani, Deherang and Sessa in the north bank and Tipam and Disam in the south bank. In addition to the tributaries of the Burhi Dihing, there are three other tributaries of the Disang river namely Gela Disam, Tiolo and Demow flowing mainly from the Tingkhong mouza. Burhi Dihing flows for 90 km through the Patkai hills before it comes down to the foot hill zone. Thereafter it flows in a south-west direction for 20 km before meeting the Khaikhe and Meganton.

1.5.4 SOIL CONDITION

The soils of the area are basically the products of the fluvial processes of the Brahmaputra and its tributaries and composed of sand and clay in varying proportion. The high grounds of this zone composed mostly of lateritic soils and are covered by tea gardens and dense forests. The plains are composed of alluvium which may be classified as new and old. The new alluvium varies mostly from clayey to sandy loam in texture and is slightly acidic in reaction, deficient in phosphoric acid, nitrogen and humus, but rich in lime and potash. The old alluvium on the other hand occurs in the upper and middle parts of the valleys in the form of terrace deposits. These deposits contain alternating beds of pebbles, gravel or boulder with loose sand and clays. In certain parts, both the old and new alluvium are so combined that it is difficult to distinguish them.

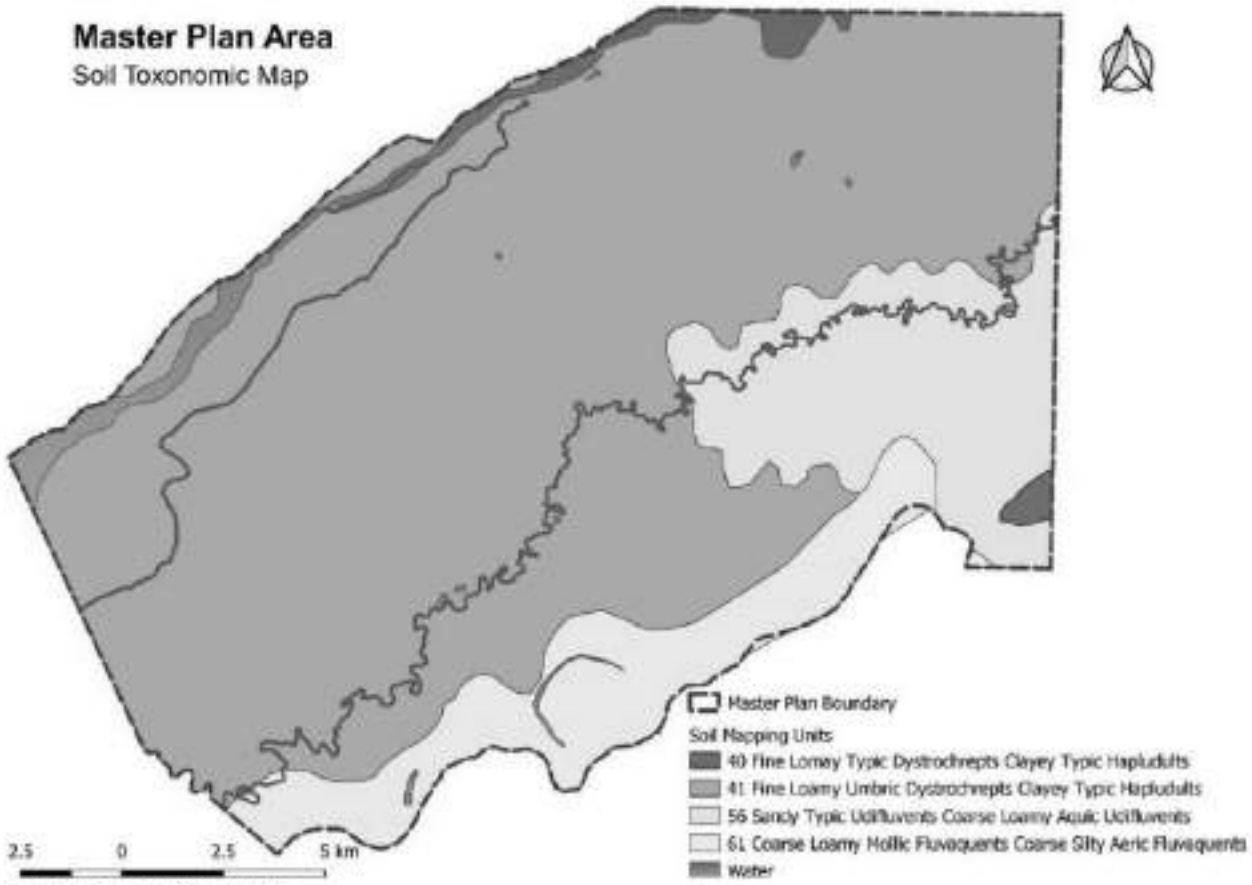


Figure 12 Soil map of Dibrugarh MPA

The old alluvium has relatively high percentage of acid and soluble magnesium accompanied by calcium in general, its hydrochloric acid soluble material contents are lower and the percentage of MgO is higher. The pH value ranges between 4.2 and 5.5 with very low quantity of exchangeable calcium which varies from 0.1 to 5.0 mg per 100 gm of soil. The new alluvium is less acidic as compared to the old alluvium. Its pH value varies from 5.5 to 9.0. These soils are rich in PO4, K and Ca (6 to 21mg per 100 gms of soil), but its nitrogen content is somewhat low, being 0.1 percent.

The riverbanks bear texturally three types of soil i.e. sandy loam, coarse loam and clayey loam. These favour cultivation of winter rice, mustard, pea, vegetables, etc. Of the total riverbank area, 82.0% is arable, 7.0% is non arable land and 11.0% is not available for cultivation. As per the soil taxonomy classification of NBSS and LUP the soils are classified as association and grouped under 9 soil mapping units. The description of different mapping units along with percent area covered is given ahead

Table 17 Soil type and their area coverage in Dibrugarh MP area

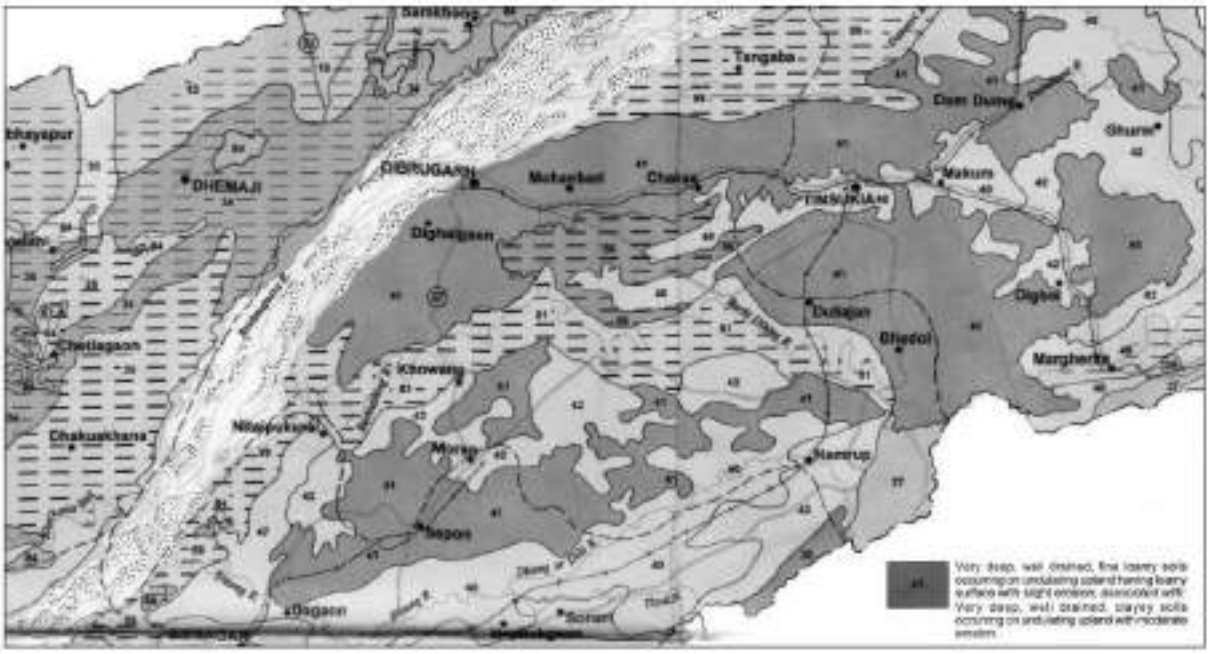
Sl. No	Soil Classification	Area (Sq.Km)	% of Area
1	41 Fine Loamy Umbric Dystrochrepts Clayey Typic Hapludults	217	55.50
2	56 Sandy Typic Udifluvents Coarse Loamy Aquic Udifluvents	95	24.29
3	61 Coarse Loamy Mollic Fluvaquents Coarse Silty Aeric Fluvaquents	45	11.51
4	Water	33	8.44
5	40 Fine Lomay Typic Dystrochrepts Clayey Typic Hapludults	1	0.39
	Total	**391**	**100**

Soil mapping unit 40 (Fine Loamy Typic Dystrochrepts and Clayey Typic Hapludults): Very deep, well drained, fine loamy soils occurring on gently sloping to undulating upland having loamy surface with moderate erosion, associated with very deep, well drained, clayey soils occurring on undulating plain with slight erosion.

Soil mapping unit 41 (Fine Loamy Umbric Dystrochrepts and Clayey Typic Hapludults): Very deep, Well drained, fine loamy soils occurring in undulating uplands having loamy surface with slight erosion, associated with very deep well drained clayey soils occurring on undulating upland with moderate erosion.

Soil mapping unit 56 (Sandy Typic Udifluvents and Coase Loamy Aquic Udifluvents): Deep well drained, sandy soils occurring on level to nearly level active flood plain having loamy surface with moderate erosion and severe flooding associated with very deep well drained coarse loamy soils with severe erosion and severe flooding.

Soil mapping unit 61 (Coarse Loamy Mollic Fluvaquents and Coarse Silty Aeric Fluvaquents): Moderately deep,moderately well drained coarse loamy soils occurring in level to nearly level active flood plain and on stable river islands having sandy surface with ground water table below 1 m of the surface and very severe flooding associated with deep imperfectly drained coarse silty soils occurring on nearly level active flood plain with moderate erosion and very severe flooding



1.5.5 GEOMORPHOLOGY

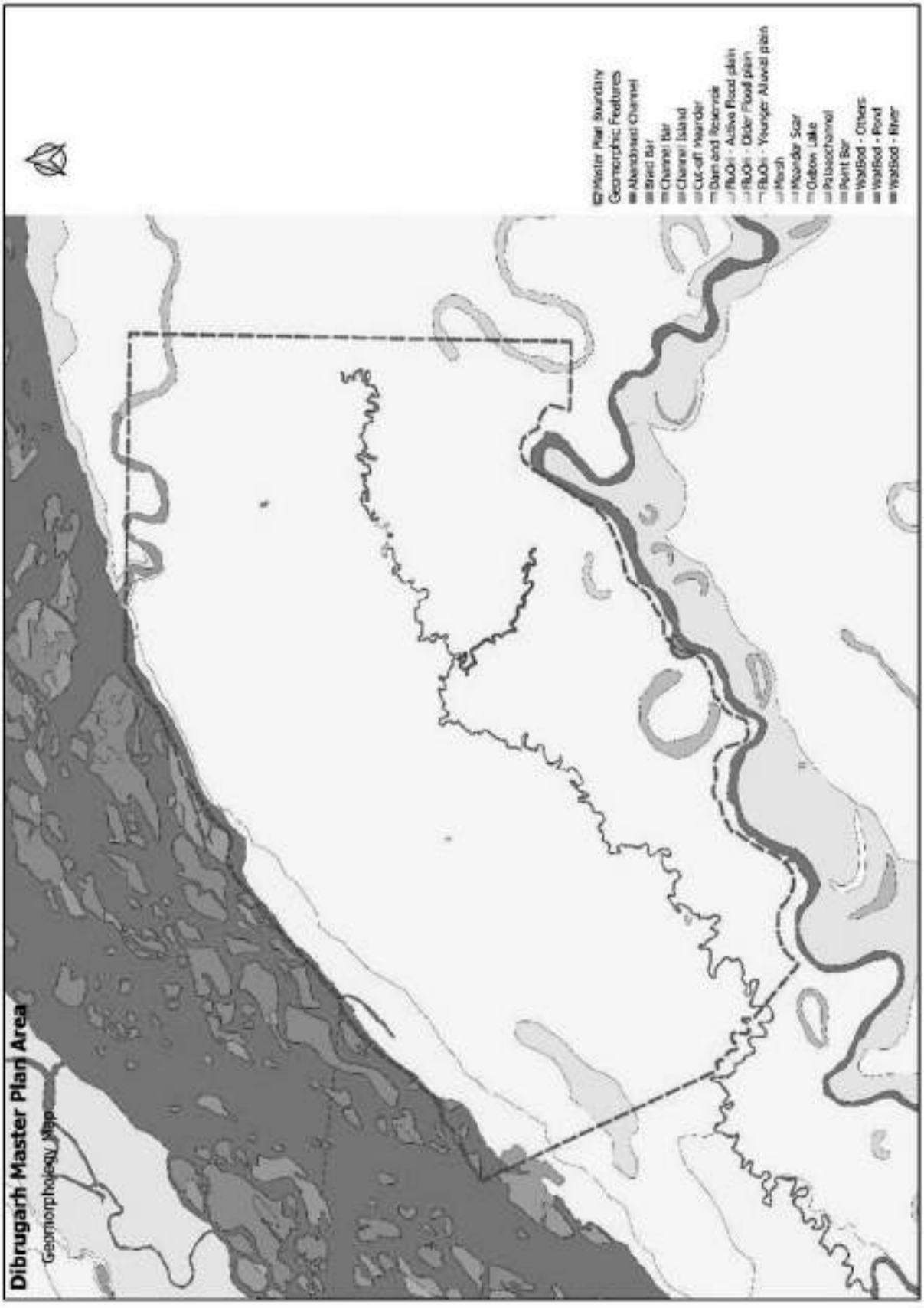


Figure 1.3 Geomorphology map of Dibrugarh MP area

1.6 CITY INFLUENCE & ITS CHARACTERISTICS

1.6.1 SETTLEMENT PATTERN AND EXPANSION OF TOWN

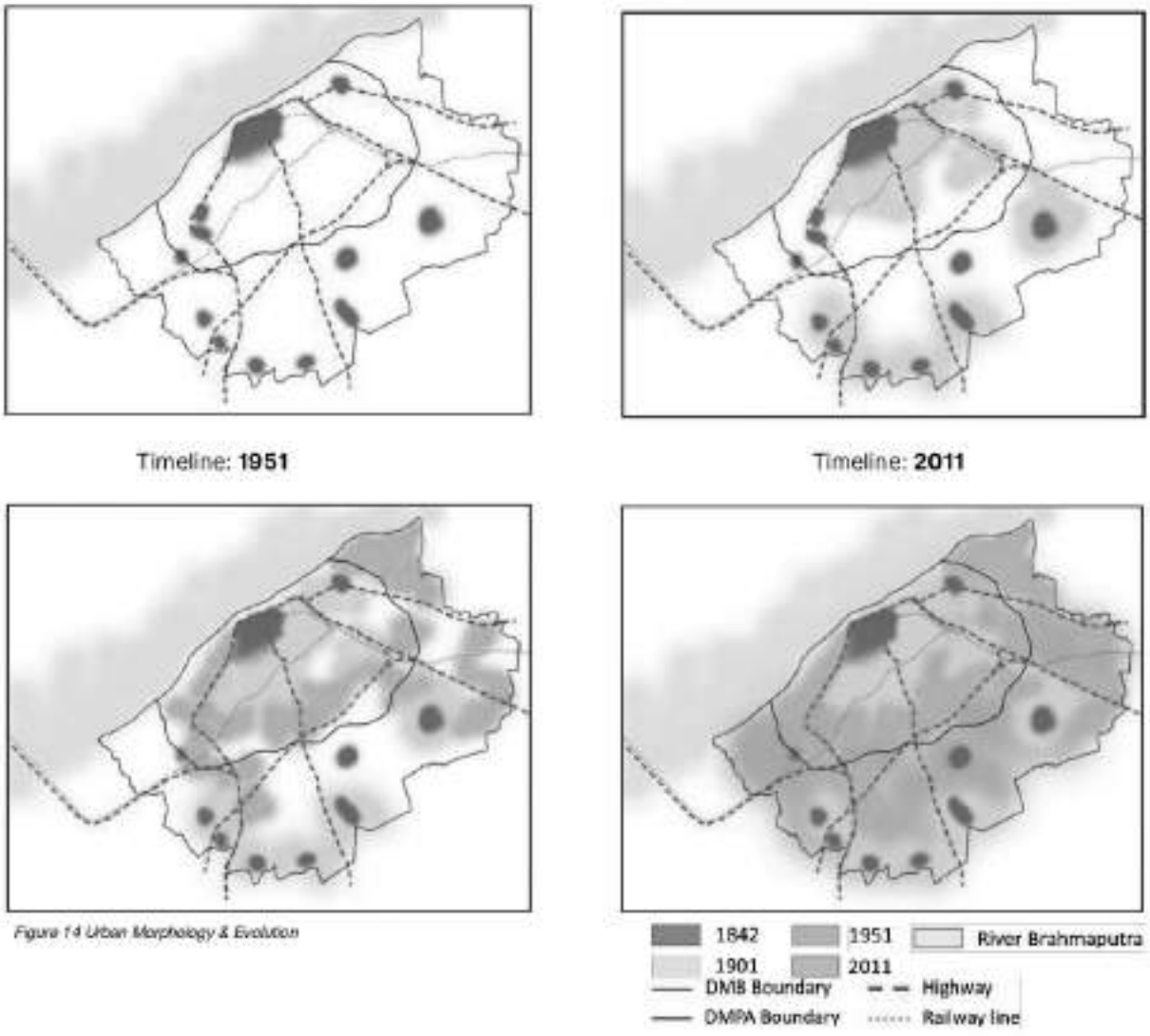


Figure 14 Urban Morphology & Evolution

Table 18 History of the physical growth and expansion of Dibrugarh town

Year	City Population	Description
1842	5,000 (approx.)	The areas like Graham bazaar, Naliapooli, Amolapatty, Purana bazaar where settlements got developed. It was the headquarters of Lakhimpur district and served as a primary military base and a transit camp for the evacuees of Burma during the World War II. The District Judiciary Court was constructed
1901	14,000 (approx.)	New market area got developed after Purana bazaar got eroded away. Due to tea plantations, oil industry and railways, the area got developed.
1951	37,991	Dibrugarh to have introduced city bus service. Assam Medical collage established Industries got started during this period. Urban area expanded in a very irregular manner.
2011	1,54,296	Engineering and commerce colleges were established. Being an economic and institutional hub, the city expansion was developed; with the opening of airport and new railway station.

1.7 NEED FOR THE MASTER PLAN

A town/city and its surrounding areas are composed of land, buildings, people, utilities and transportation and communication facilities, drainage, markets etc. A Master Plan is a statutory instrument for controlling, directing and promoting the sound and rational development or redevelopment of an urban area and its adjoin areas within a view to achieving maximum economic, social and aesthetic benefits.

The Master plan is a long-term perspective plan intended to guide the growth and development of a city or a region. It is a document that describes, in narrative and with maps, an overall development concept including both present uses as well as future land development plans. The Master plan provides allocation of land in view of the space requirements coming up in future years. It also sets out strategies and measures to be adopted for the facilitation of commercial, industrial, residential, tourism-related, recreational and other investments and provide for the development of urban infrastructure of the desired standards for improved quality of life.

The Master Plan consists of co-ordinated plans of major streets, transportation facilities, parks, recreation facilities, educational facilities, health facilities, tourist facilities, public utilities, physical infrastructure, commercial and industrial areas – all arranged in such a way which would function most efficiently and economically and also enhance the aesthetic beauty not only of the urban area but also the village area at the same time. It is also an important tool for guiding and regulating the future growth of the town.

The Master Plan provides vision, direction and a defined achievable future for the Town by establishing specific goals and strategies for land use; community appearance and design; housing and neighbourhoods; jobs and economic vitality; transportation; public services and facilities; natural resource protection; open space and recreation; history, arts and culture; and regional coordination. It is also the basis for taking day to day decisions on land use conversion that follow an optimistic and hopeful long-term vision.

A Master Plan is needed for the proper physical development of a city. It is needed to guide how we may use space and manage competing demands of space in future thereby ensuring a better Guwahati for tomorrow. It may be noted that it was agreed in a Workshop held at the National Level in 1995 sponsored by the Ministry of Urban Development, Government of India that the alternative to a Master Plan is a "better Master Plan."

The preparation of Master Plan is a continuous process and needs revision/ modification from time to time to incorporate the unforeseen development, technical innovations etc. The first Master Plan of Dibrugarh was prepared long back in the year 1977 and revised it in the year 2007 and will be valid up to the year 2021. As such it is necessary to revise the Dibrugarh Master Plan by adopting new GIS based technology under the scheme of AMRUT (Atal Mission for Rejuvenation and Urban Transformation) to provide better guidelines for the balanced development of the existing area as well as incorporated new areas in the Master Plan.

2 DEMOGRAPHY

2.1 DEMOGRAPHIC CHARACTERISTICS

2.1.1 TOTAL POPULATION

Demography deals with the study of human population with respect to size, composition, spatial distribution and changes in population that occur over time etc. Magnitude of population gives an overall dimension of the physical environment and gives a basic information for the assessment of space requirement for various categories of land use within a region. Population assessment can be used to assist in determining the space required for facilities for all segments of the population. It also forms the basis of physical & social infrastructure designs. Thus, demographic analysis has major repercussions on housing market, physical infrastructure, social infrastructure and transportation.

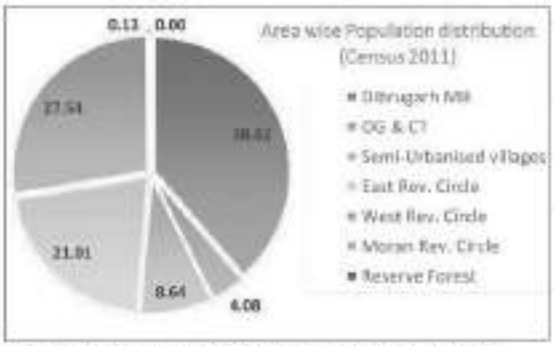


Figure 15 Population distribution of Dibrugarh Planning Area, 2011

Table 19 Existing population of Masterplan Area 2011

Sl. No.	Existing Master Plan Area	Population (2011)	Percent
1	Dibrugarh Municipal Board (22 Wards)	1,39,565	38.62%
2	2 (Two) OG & 2 (Two) CT	14,731	04.08%
3	13 Semi-Urbanised villages from Dibrugarh East & West Rev. Circle	31,207	08.64%
4	53 villages from Dibrugarh East Rev. Circle	75,921	21.01%
5	115 villages from Dibrugarh West Rev. Circle	99,518	27.54%
6	2 villages from Moran Rev. Circle	455	00.13%
	TOTAL Population	**3,61,397**	**100%**

The total existing population of Dibrugarh Planning Area is 3,61,397, out of which population of MB Area is 1,39,565 that comes to 38.62% of the total population. Rural areas including Semi-Urban villages and the villages of East, West and Moran area contribute to 2,07,101 of about 57.31%. Out Growths and Census Towns contain population of 14,731, which is about 4.08% of the total planning area population.

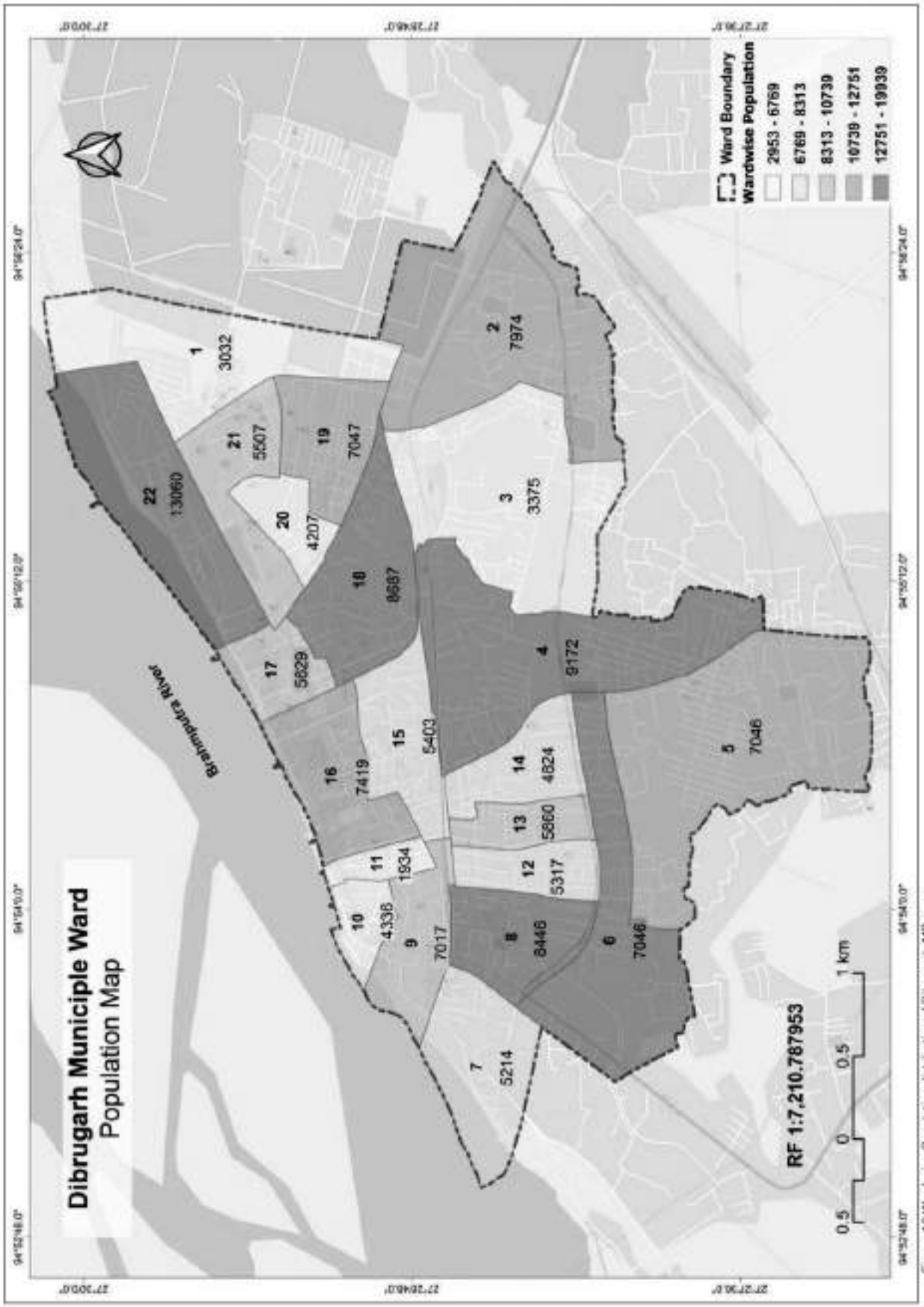


Figure 16 Ward wise Population distribution of Dibrugarh MB area

2.1.2 MALE/FEMALE POPULATION

Table 20 Ward wise Population for Municipal area

Ward No.	Population			Ward No.	Population		
	Male	Female	Total		Male	Female	Total
1	1531	1501	**3032**	12	2820	2551	**5371**
2	4055	3919	**7974**	13	3013	2847	**5860**
3	1647	1728	**3375**	14	2452	2372	**4824**
4	4507	4665	**9172**	15	2721	2682	**5403**
5	3418	3628	**7046**	16	4488	2931	**7419**
6	4575	4430	**9005**	17	2915	2714	**5629**
7	2624	2590	**5214**	18	4438	4249	**8687**
8	4350	4096	**8446**	19	3588	3459	**7047**
9	3809	3208	**7017**	20	2096	2111	**4207**
10	2421	1915	**4336**	21	2818	2689	**5507**
11	1046	888	**1934**	22	7052	6008	**13060**
TOTAL					72384	67181	139565

(Source: Census of India)

2.1.3 POPULATION GROWTH RATE

Table 21 Population Increase and Decadal Growth Rate

	1951	1961	1971	1981	1991	2001	2011
Total Population	37991	58480	80348	**No census for Assam**	120127	133571	145488
Decadal Growth Rate	63.82%	53.93%	37.38%	-	49.51 % (for two decades)	11.19%	8.96%

(Source: Census of India)

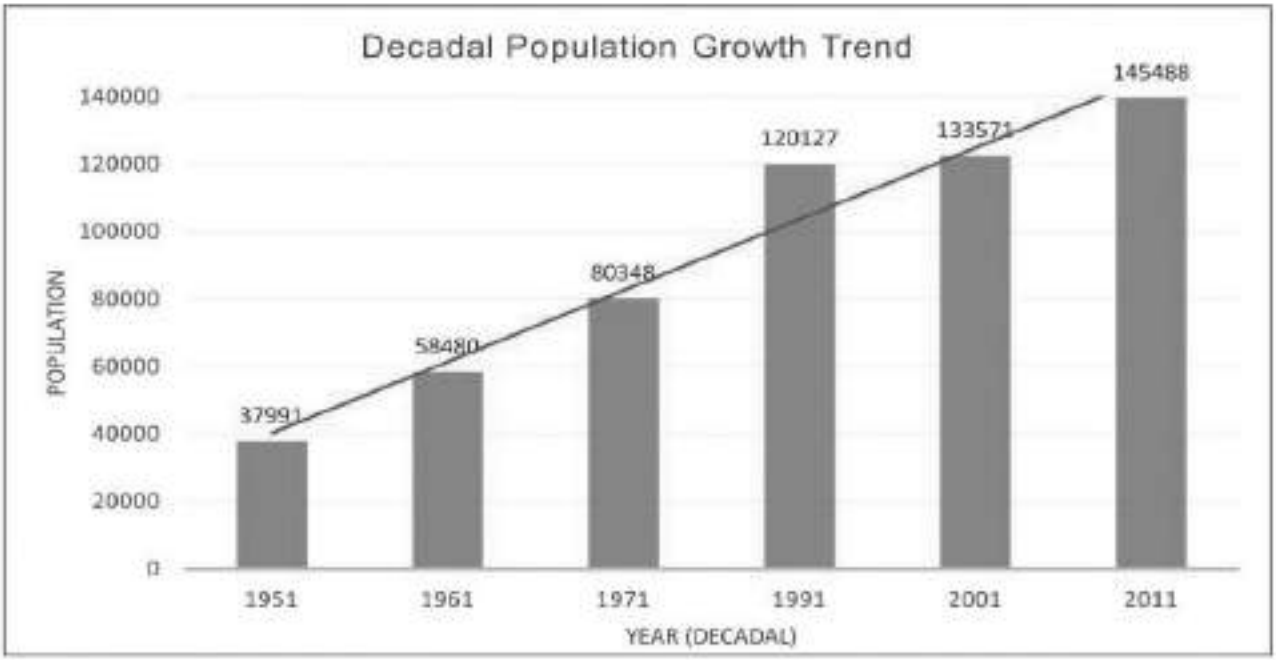


Figure 17 Population growth trend of last six decades

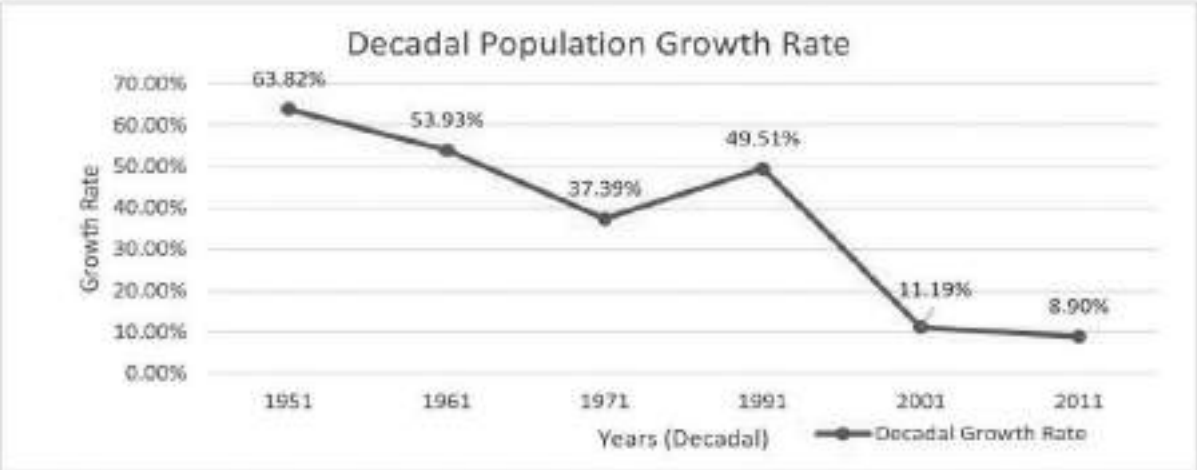


Figure 18 Population growth rate of last six decades *(Source: Census of India, 2011)*

The table 21 represents the increase in numbers of total population of Dibrugarh Municipal Board area & relative population growth rate trend of past six decades. The table clearly reveals that the Dibrugarh MB area witnessed a high growth rate of almost 64 percent in the period 1941-51. During the period 1951-61 Dibrugarh Municipal Board area recorded a decadal growth rate of 53.93%. However, the Census population count was not carried out in Assam in year 1981 for the Decade 1971-81, the growth rate was considered as 49.51% of two decades for 1971-91 thereafter sudden low growth scenario was observed throughout the Dibrugarh MB region for year 2001. After this drop-in growth rate, the Dibrugarh MB area observed stabilization in 2001-11 period with a moderate increase in population up to 145488 with decadal growth rate of 8.90%. This is attributed to the fact that Dibrugarh is attracting a lot of population in the working sector due to top priority given by the administration along with improvements in social security in the systems.

2.1.3.1 Comparative Growth Rate of Master Plan area with State and District

Table 22 Comparison of Growth Rate

Particular	Growth rate %	
	2001	2011
Assam	18.92	17.62
Dibrugarh district	13.62	11.92
Dibrugarh Municipal Board Area	11.19	8.90
Dibrugarh Master Plan Area	13.81	18.11

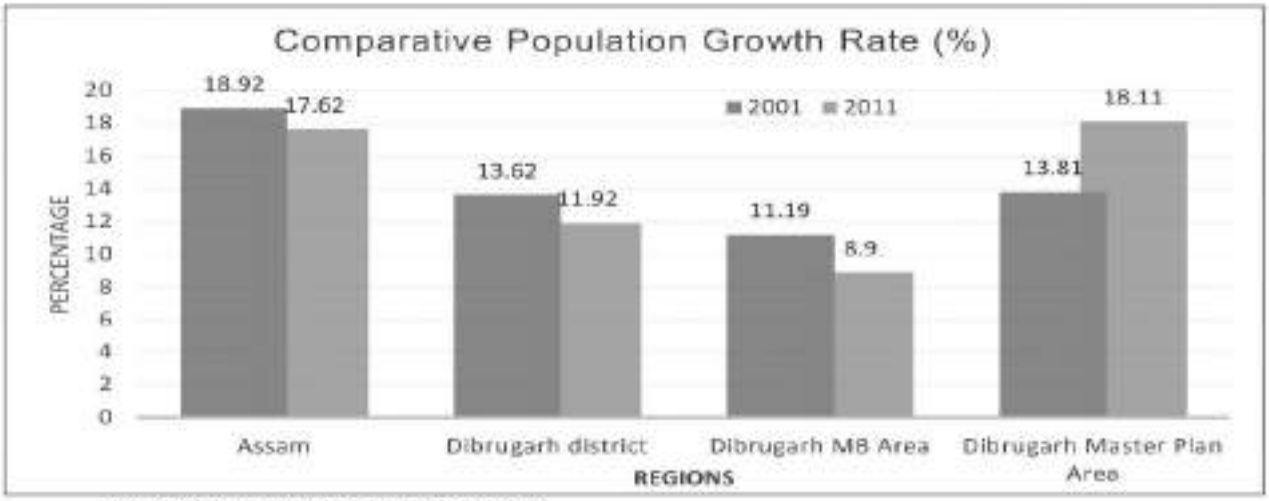


Figure 19 Comparative Growth rate of Dibrugarh District

2.1.3.2 Decadal growth rate of Master Plan area

Table 23 Decadal Growth Rate of Master Plan area

Decadal year	Population	Growth Rate
1991	2,68,842	-
2001	3,05,974	13.81
2011	3,61,397	18.11

(Source: Census of India 1991, 2001, 2011)

2.1.4 POPULATION DENSITY

The Dibrugarh Master Plan area comprises of total area of 391 sq.km with a total population of 3.61 Lakhs.

The table 24 indicates that the overall population density of the Dibrugarh Master Plan area is 982 ppu (Persons Per Unit) in 2011. Here, 1 sq.km. of area is considered as single Unit for population density. The highest density is in Municipal Board area which is around 8964 ppu and minimum density is in 2 villages from Moran revenue circle which is around 93 ppu. It is observed from the table that the average density of Dibrugarh Master Plan area as of 2011 is 982 persons per unit excluding Reserve Forest area.

The 13 semi-urbanised villages from Dib. East and West area has population density of 1332 person per unit, whereas rural area (considering 168 villages of Dibrugarh East-West Circle and 2 villages of Moran revenue circle) has a population density of 549 person per unit only.

Table 24 Population Density for different regions of Master Plan area

Sl. No.	Particulars	Area (sq. km)	Population	Population Density (person/sq.km.)
1	Dibrugarh Municipal Board (22 Wards)	15.57	139565	8964
2	2 (Two) OG & 2(Two) CT	8.53	14731	1728
3	13 Semi-Urbanised villages from Dibrugarh East & West Rev. Circle	23.42	31207	1332
4	53 villages from Dibrugarh East Rev. Circle	89.37	75921	850
5	115 villages from Dibrugarh West Rev. Circle	226.14	99519	440
6	2 villages from Moran Rev. Circle	4.89	455	93
7	Reserved Forest (R.F.)	23.08	-	-
Total for GIS base Dibrugarh Master Plan		**391**	**361397**	**982 (exc. R.F.)**

(Source: Census of India, 2011 and Consultant Compilation)

From table 25 of Dibrugarh Ward wise population density data, it is found that Ward no.10 is the densest comprising 30971 persons per unit and Ward no.1 is the least with 3369 person per unit.

Table 25 Dibrugarh MB area Ward wise population density

Ward No.	Population Density			Ward No.	Population Density		
	Area (sq.km)	Population	Density (person/ sq.km)		Area (sq. km)	Population	Density (person/ sq.km.)
1	0.9	3032	3369	12	0.36	5371	14919
2	1.64	7974	4862	13	0.26	5860	22538
3	1.18	3375	2860	14	0.35	4824	13783
4	1.29	9172	7110	15	0.63	5403	8576
5	1.61	7046	4376	16	0.61	7419	12162
6	1.32	9005	6822	17	0.38	5629	14813
7	0.63	5214	8276	18	0.88	8687	9872
8	0.46	8446	18361	19	0.46	7047	15320
9	0.44	7017	15948	20	0.27	4207	15581
10	0.14	4336	30971	21	0.45	5507	12238
11	0.15	1934	12893	22	1.09	13060	11982

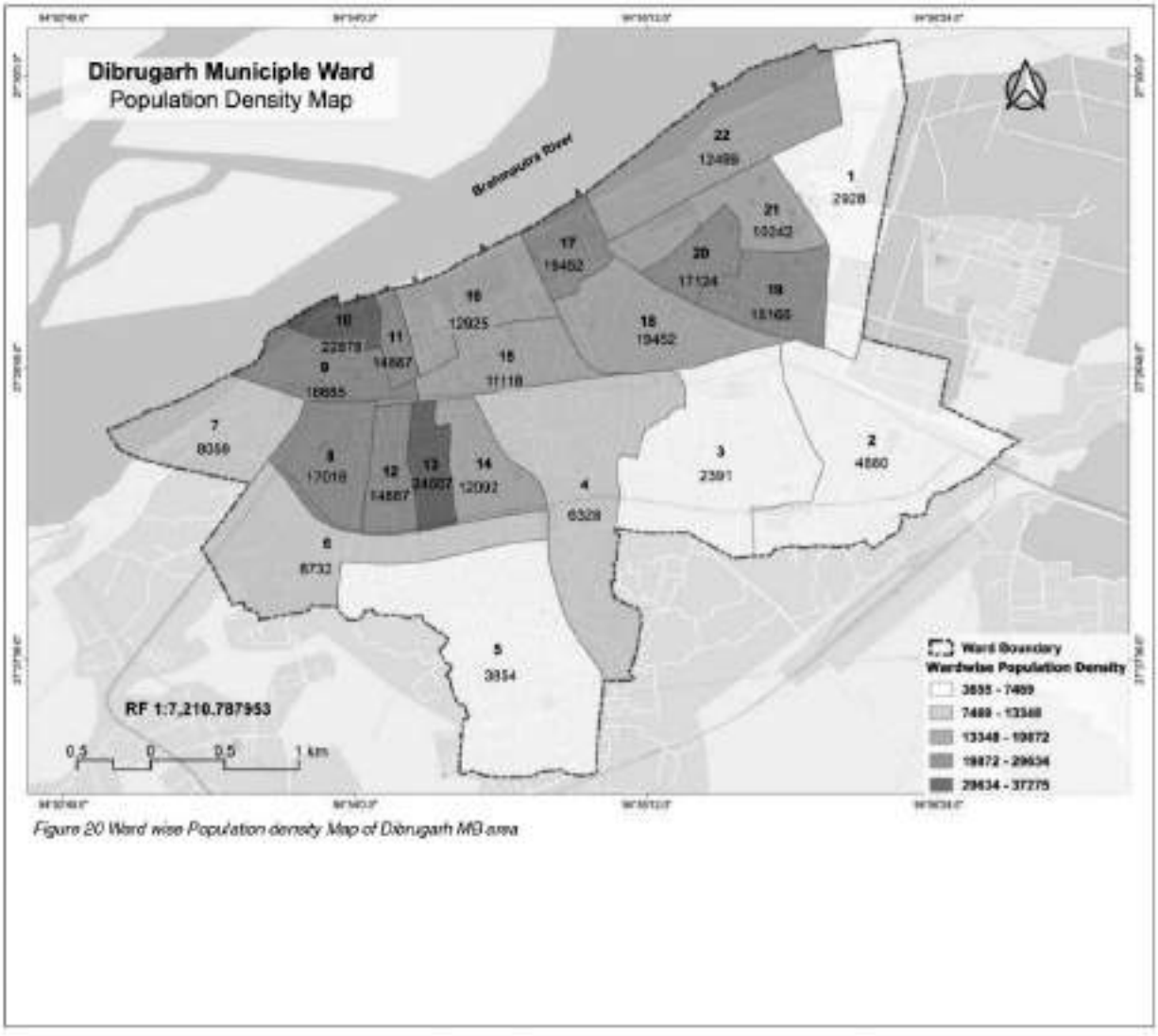
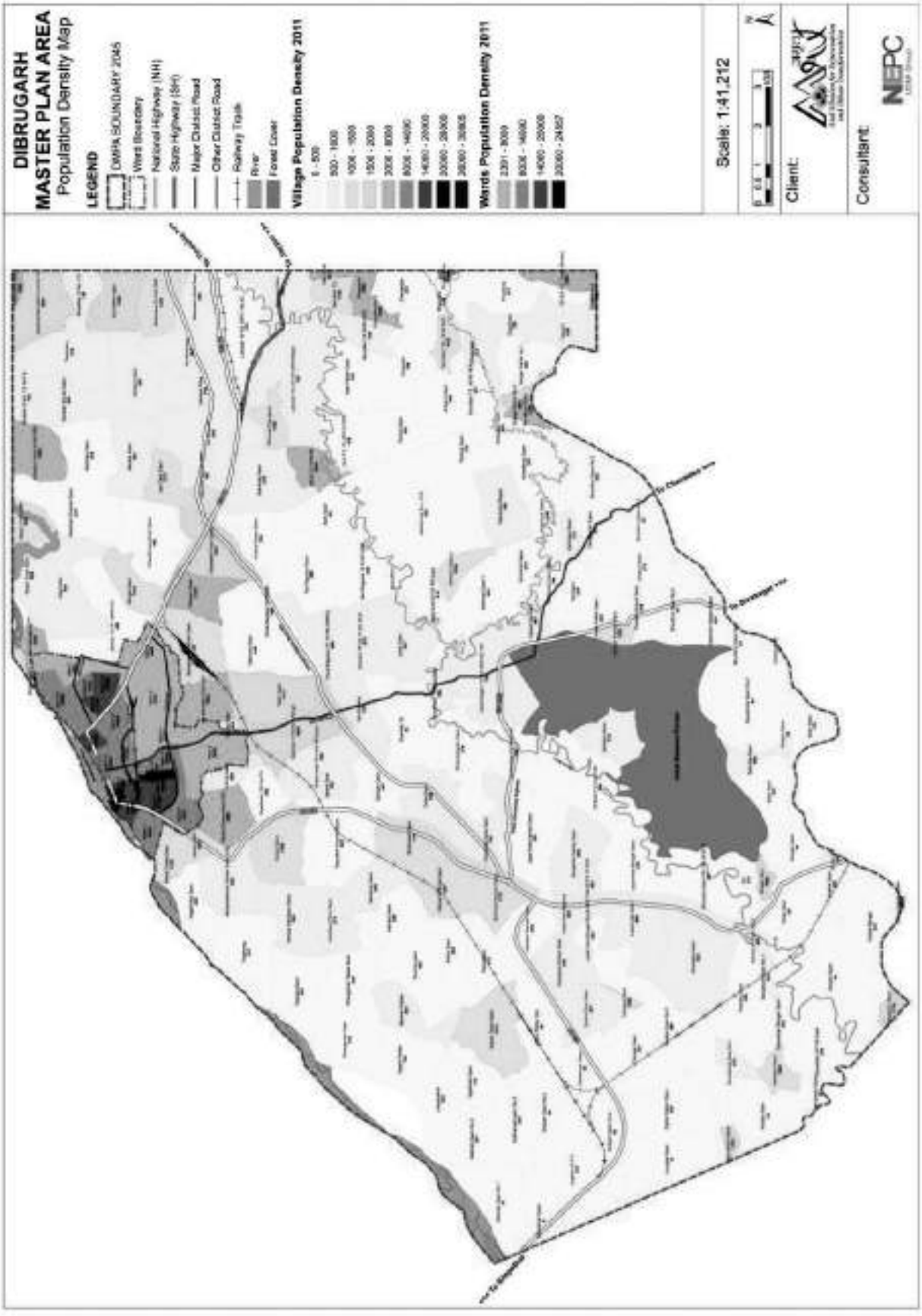
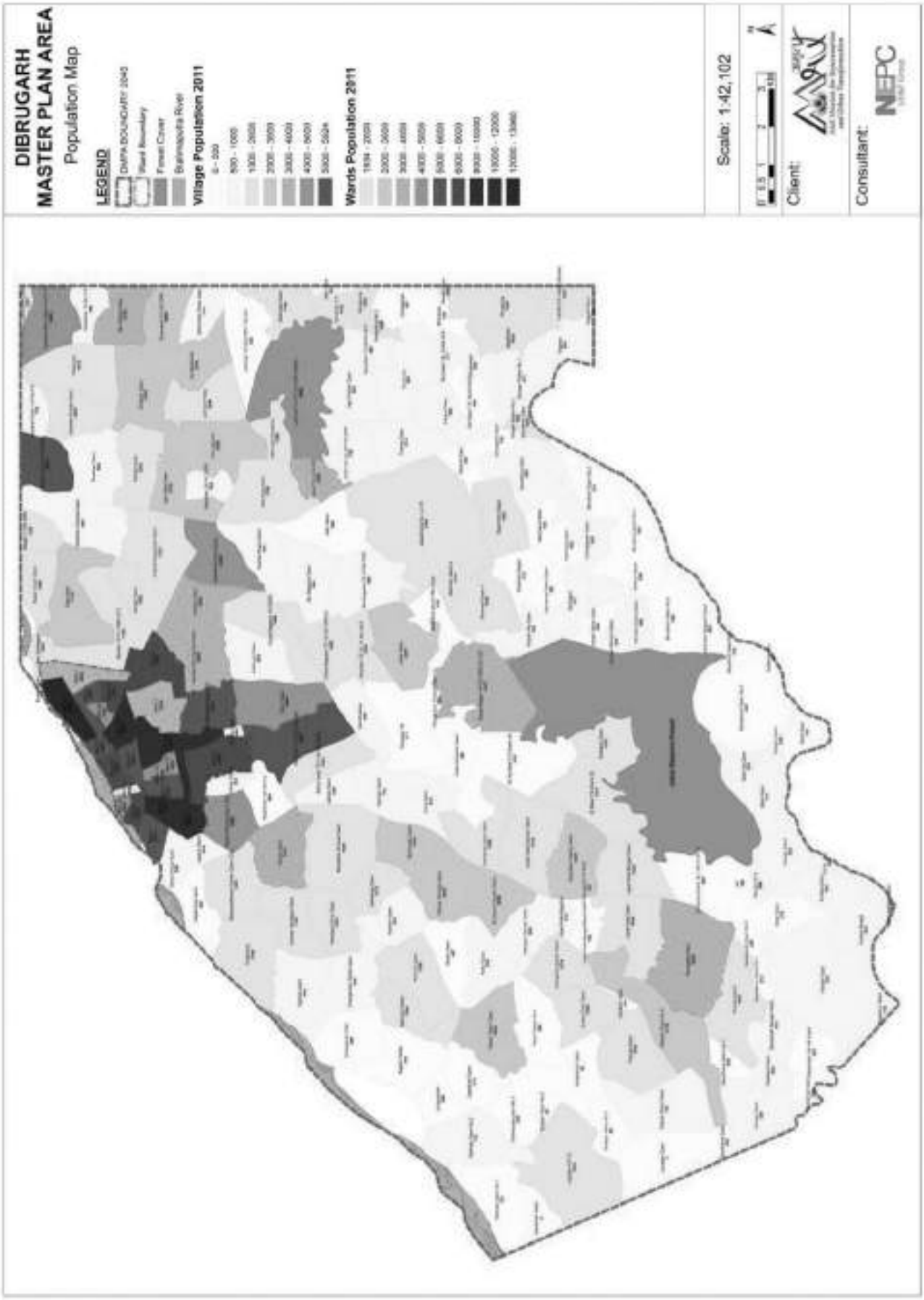


Figure 20 Ward wise Population density Map of Dibrugarh MB area


DIBRUGARH
MASTER PLAN AREA
Population Density Map
LEGEND
DMPA BOUNDARY 2045
Ward Boundary
National Highway (NH)
State Highway (SH)
Major District Road
Other District Road
Railway Trails
River
Forest Cover
Village Population Density 2011
0 - 500
500 - 1000
1000 - 1500
1500 - 2000
2000 - 3000
3000 - 5000
5000 - 14000
14000 - 20000
20000 - 28000
28000 - 36000
Wards Population Density 2011
2301 - 3000
3000 - 14000
14000 - 20000
20000 - 24957
Scale: 1:41,212
Client:
Consultant:
NEPC


DIBRUGARH
MASTER PLAN AREA
Population Map
LEGEND
Village Population 2011
Wards Population 2011
Scale: 1:42,102
Client:
Consultant:
NEPC

2.1.5 SEX RATIO

Sex ratio is a valuable source for finding the population of women from the total population and that is the ratio of women to that of men in a particular area. In the Census 2011, it was revealed that the sex ratio in India for 2011 is 940 females per 1000 of males. The Sex Ratio of 2011 shows an upward trend from the census 2001 data. Census 2001 revealed that there were 933 females to that of 1000 males. India has seen a decrease in the sex ratio till 2001, but after that there has been in slight increase in the sex ratio. The sex ratio in Dibrugarh district is much higher than the national and state sex ratio, whereas it is less in Dibrugarh MB area as 928.

Table 26 Sex ratio of India

S. No	Country	year	2001	2011
1	India	Sex Ratio	933	940

(Source: Census of India 2001 & 2011)

Table 27 Regional Comparison of Sex ratio

Region	Sex ratio
India	940
Assam	958
Dibrugarh District	961
Dibrugarh MB	928

(Source: Census of India 2011)

Table 28 Sex ratio of GIS based Master Plan area

Sl.No	Description	Population	Sex Ratio
1	Dibrugarh Municipal Board (22 Wards)	139565	928
2	2 (Two) OG & 2 (Two) CT	14731	1001
3	13 Semi-Urbanised villages from Dibrugarh East & West Rev. Circle	31207	971
4	53 villages from Dibrugarh East Rev. Circle	75921	957
5	115 villages from Dibrugarh West Rev. Circle	99518	971
6	2 villages from Moran Rev. Circle	455	904
	Total for GIS based Dibrugarh Master Plan	361397	952

(Source: Census of India, 2011 and Consultant Compilation)

Observations from the table 28 have concluded that the Female population is higher in OG and CT area compare to male population, whereas it is lower in two villages fall under Moran revenue circle area.

2.1.6 LITERACY RATE

Table 29 Literacy rate in Dibrugarh GIS Based Master Plan area

Sl No	Description	Population	Pop. excluding 0-6 age	Actual Lit. Pop.	Male Lit.	Female Lit.	% of Total Lit.	% of Male Lit.	% of Female Lit.
1	Dibrugarh Municipal Board (22 Wards)	139565	**126754**	**113343**	60555	52788	**89.41**	92.08	86.55
2	2 (Two) OG & 2(Two) CT	14731	**13228**	**11505**	5993	5512	**86.97**	90.50	83.43
3	13 Semi-Urbanised villages from Dib. East & West Circle	31207	**27918**	**24095**	12705	11390	**86.30**	89.79	82.72
4	53 villages from Dibrugarh East Rev. Circle	75921	**66084**	**43379**	25176	18203	**65.64**	74.58	56.30
5	115 villages from Dibrugarh West Rev. Circle	99518	**86656**	**63619**	35728	28388	**73.42**	81.33	66.43
6	2 villages from Moran Rev. Circle	455	**411**	**366**	198	168	**89.05**	92.52	85.28
	Total	**361397**	**321051**	**256307**	**140355**	**116449**	79.83%	85.36%	74.35%

(Source: Census of India, 2011)

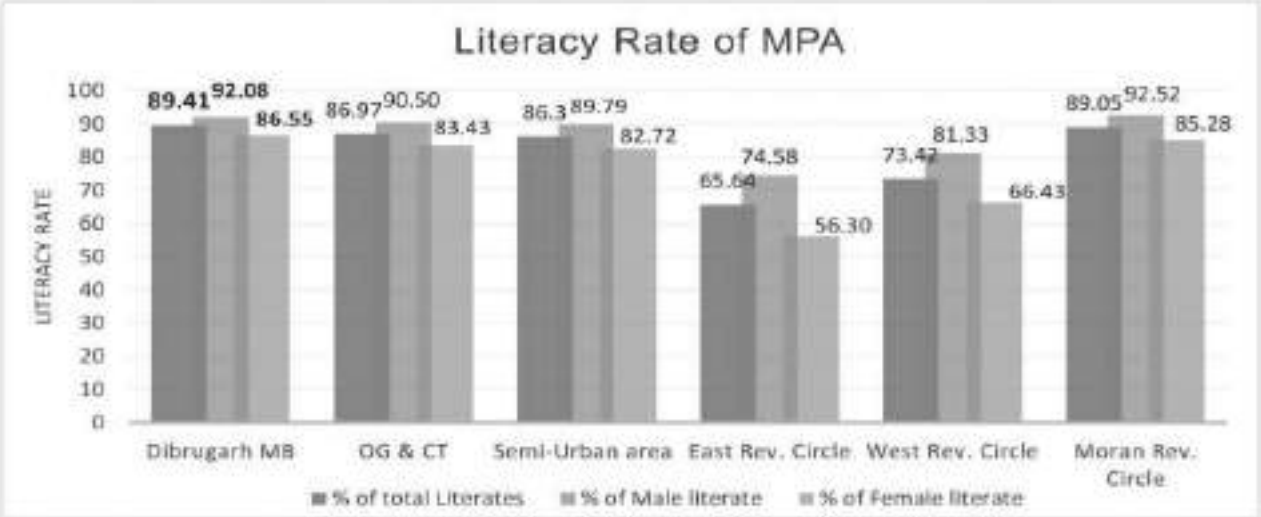


Figure 21 Total and male Female Literacy rate of Dibrugarh Master Plan area

The literacy rate of Dibrugarh Master Plan area is 79.83% in which Male literacy rate is 85.36% and female literacy rate is 74.35%. The highest male and female literacy rate is observed in Dibrugarh MB area compare to all other delineated area of MP boundary. The lowest literacy found in villages of east revenue circle.

Table 30 Regional Comparison of Literacy rate

Region	Literacy rate (2011 census)
Assam	72.19%
Dibrugarh dist.	76.05%
Dibrugarh Master Plan area	**79.83%**

2.1.7 WORKING AND NON-WORKING POPULATION

Table 31 Working and Non-working population in Master plan area

Sl. No	Name of Area	Population	Workers	Non-Workers	% of Worker in total population	% of Non-Worker in total population
1	Dibrugarh Municipal Board	139565	52986	86579	37.96	62.04
2	OG & CT	14731	5247	9484	35.62	64.38
3	13 Semi-Urbanised villages	31207	11630	19577	37.27	62.73
4	53 villages of Dibrugarh East Revenue Circle	75921	31135	44786	41	59
5	115 villages of Dibrugarh West Circle	99518	42903	56615	43.11	56.89
6	2 villages of Moran Circle	455	285	170	62.64	37.36
Total		**361397**	**144186**	**217211**	**39.90%**	**60.10%**

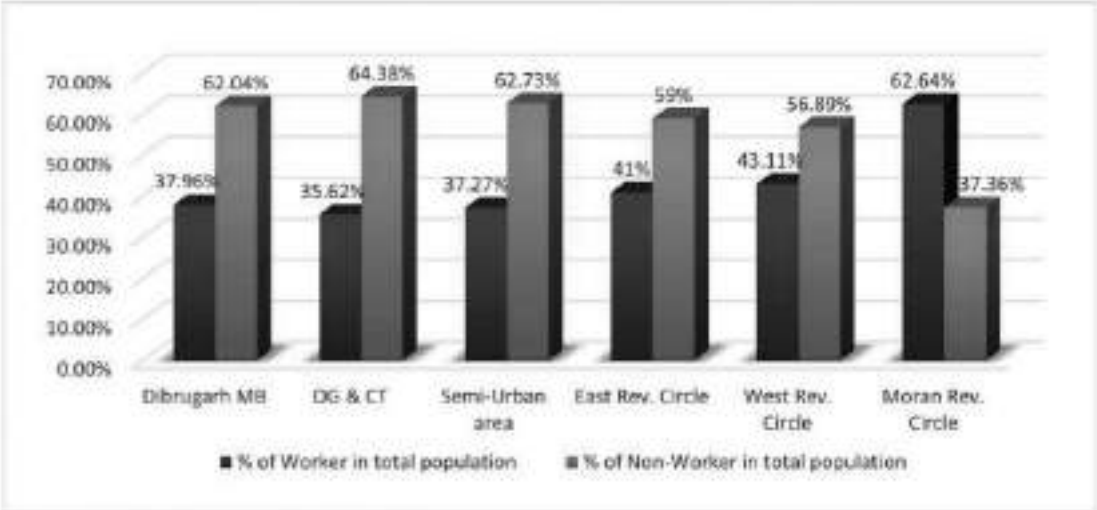


Figure 22 Work force participation rate of Master Plan area

2.1.8 SC-ST POPULATION

2.1.8.1 SC/ST Population of Dibrugarh MB Area

Table 32 SC/ST Population ward wise

Ward	Total Population	SC Population	ST Population	%SC	% ST
1	3032	787	67	25.96	2.21
2	7974	377	693	4.73	8.69
3	3375	227	265	6.73	7.85
4	9172	829	876	9.04	9.55
5	7046	955	533	13.55	7.56
6	9005	1189	475	13.20	5.27
7	5214	781	79	14.98	1.52
8	8446	586	22	6.94	0.26
9	7017	1092	72	15.56	1.03
10	4336	50	0	1.15	0.00
11	1934	0	7	0.00	0.36
12	5371	396	0	7.37	0.00
13	5860	360	12	6.14	0.20
14	4824	160	22	3.32	0.46
15	5403	236	191	4.37	3.54
16	7419	516	146	6.96	1.97
17	5629	573	5	10.18	0.09
18	8687	727	176	8.37	2.03
19	7047	495	147	7.02	2.09
20	4207	377	47	8.96	1.12
21	5507	436	76	7.95	1.38
22	13060	832	178	6.37	1.36
Total	**139565**	**11983**	**4089**	**8.59**	**2.93**

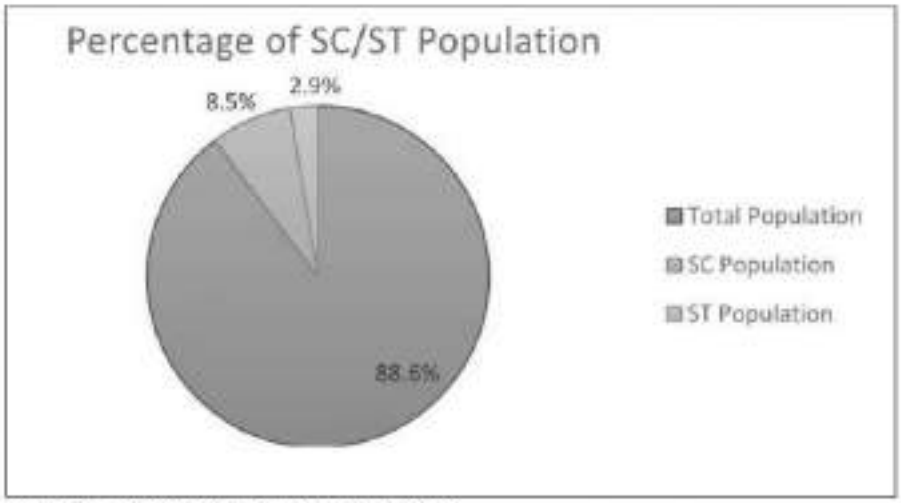


Figure 29 Percentage of SC/ST Population in Municipal Area

2.1.8.2 SC/ST Population of OG/CT area

Table 33 SC/ST population of OG/CT Area

Name of OG / CT	Total Population	SC Population	ST Population	%SC	% ST
Mohpuwalimora Gohain Gaon (OG)	1425	16	0	1.12	0
Tekela Chiring Gaon (OG)	4498	749	102	16.65	2.26
Niz-Mancotta (CT)	5924	50	1891	0.84	31.92
Barbari (CT)	2884	292	126	10.12	4.36
Total	**14731**	**1107**	**2119**	7.51	14.38

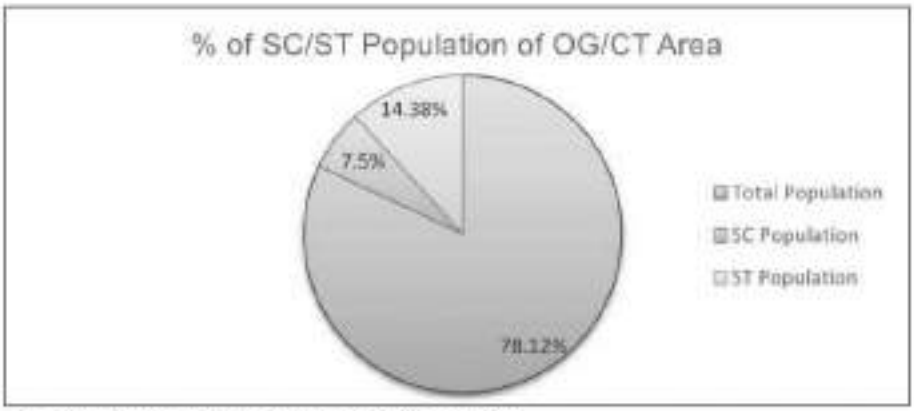


Figure 24 Percentage of SC/ST Population in OG/CT Area in 2011

2.1.8.3 SC/ST Population of Rural Area

Table 34 SC/ST population in Rural area

Name	Total Population	SC Population	ST Population	%SC	% ST
Rural Area Population	**207101**	**8672**	**18597**	**4.18**	**8.98**

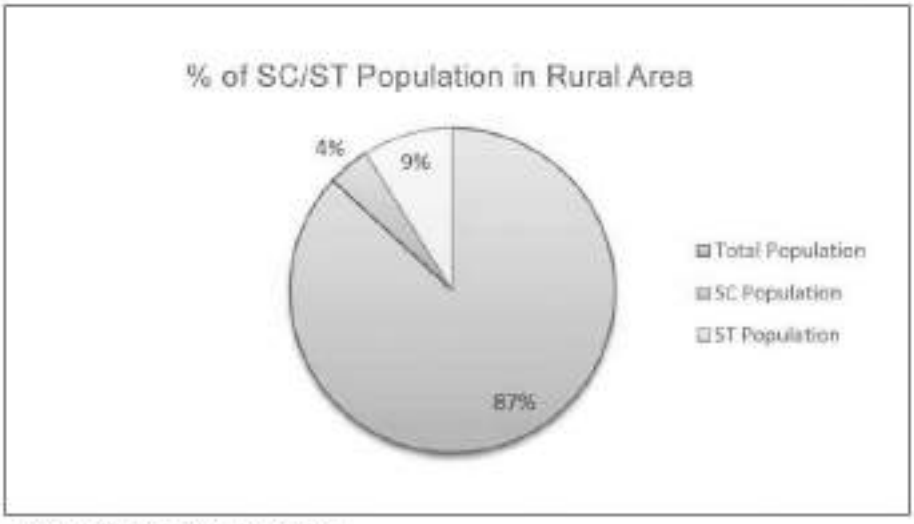


Figure 25 SC/ST population of Rural Area

2.2 MIGRATION POPULATION

Migration into Assam is not a recent phenomenon; it is an age-old process since the British colonial period. However, it has occurred on a relatively larger scale in more recent decades particularly after 1971. Although migrants coming to Assam include people from the rest of India as well as from the neighbouring countries of Bangladesh, Nepal and Pakistan, it is the second group which has been a focus of attention during last several years. The high population pressure on land drive huge influx of farm labourer from Bangladesh to Assam. The economic potentiality of the region along with reluctant nature of indigenous people and absence of capital and entrepreneurship made such immigration a vital one.

Out of the total population in Assam about 3.91 percent and 2.65 percent are migrants during 1991 and 2001, of which about 1.51 per cent and 0.71 per cent constitute as the international migrants for the respective years particularly from the countries.

Along with the international migration the migrants from the other states of India also contributes significant volume of population growth in Assam. Out of the total migrants, the interstate migrant into Assam contributes about 2.39 per cent and 1.93 per cent during 1991 and 2001.

The existence of labour market, employment prospects in the destination area attracts the huge influx of migrants from the different districts of India, leading to structural disequilibrium and cultural mess-up in the region. The differential natures of migrant population from the different parts of the country along with the international migrants lead to the modification of the original population structure of the state of Assam. It also leads to the population redistribution among the states of the country, creating tension or pressure on the land of Assam and its indigenous population.

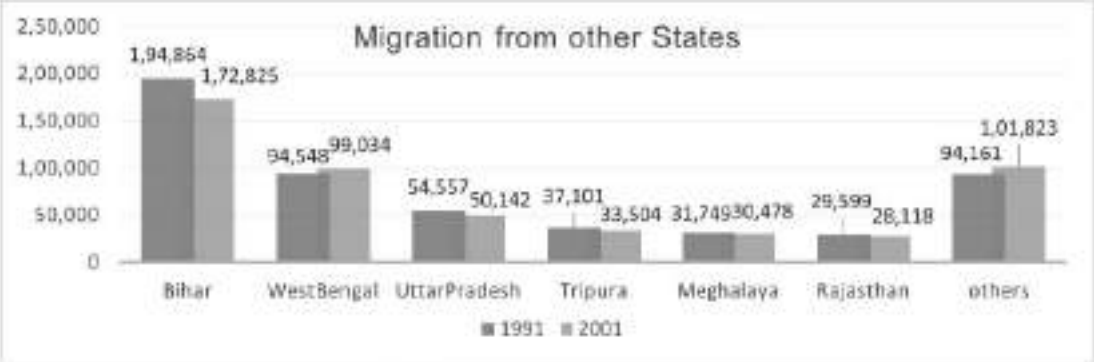


Figure 26 Inter State migration trend for year 1991-2001

Table 35 Interstate migration trend in Assam, 1991-2001

Volume of Migration (other states of India) in Assam, 1991-2001

States	1991		2001	
	No. of Migrants	Percentage of total migrants	No. of Migrants	Percentage of total migrants
Bihar	1,94,864	36.31	1,72,825	33.5
West Bengal	94,548	17.62	99,034	19.19
Uttar Pradesh	54,557	10.17	50,142	9.72
Tripura	37,101	6.91	33,504	6.49
Meghalaya	31,749	5.92	30,478	5.91
Rajasthan	29,599	5.52	28,118	5.45
others	94,161	17.55	1,01,823	19.74
Assam	5,36,579	100	5,15,924	100

(Source: India tourist statistic, 2015)

Table 36 Spatial distribution of migrants from outside India, 1991-2001

Sl No	Districts	1991				2001			
		Total migrants	% of total migrants	% of male migrants	% of female migrants	Total migrants	% of total migrants	% of male migrants	% of female migrants
1	Dibrugarh	6790	0.65	0.71	0.58	3522	0.3	0.33	0.26

(Source: India tourist statistic, 2015)

Table 37 Spatial distribution of migrants from other states of India, 1991- 2001

Sl No	Districts	1991				2001			
		Total migrants	% of total migrants	% of male migrants	% of female migrants	Total migrants	% of total migrants	% of male migrants	% of female migrants
1	Dibrugarh	1172056	3.93	3.3	2.51	34225	2.92	3.3	2.51

(Source: India tourist statistic, 2015)

The processes of human movement are always associated with number of reasons including social, cultural, political reasons, employment, business, education, marriage, family movement, etc. People move from one area to another for fulfilment of required and better facilities of amenities. The areas appalling poverty, unemployment, low and uncertain wages, uneconomic land holdings, poor facilities for education, health, recreation etc. move forward the people to migrate to another place where batter facility prevails. Thus, it is the push and pull factor acts as ingredients of population migration. Among all the reasons of migration, marriage (36.48 per cent) is considered as the single largest reason for migration. This reason of migration is more pronounced among the females (58.79 per cent) than the male (1.59 per cent) counterparts as female are forced to migrate under the social custom of marriage system. While after marriage, family movement (15.08 per cent) is also another prominent reason for migration followed by employment, (5.55 per cent) trade and commerce (2.83 per cent), movement after birth (1.03 per cent) and education (0.69 per cent).

Most of the family movement form of migration is governed by religious and political reasons of migration process. The shortage of labour force in the primary and secondary sector of economic activity generates the employment opportunity which attracts the large volume of migrants into Assam both in the form of interstate and international migrants. Similarly, the lack of skill of trade and commerce among the people of Assam attracts the large volume of traders to the region.

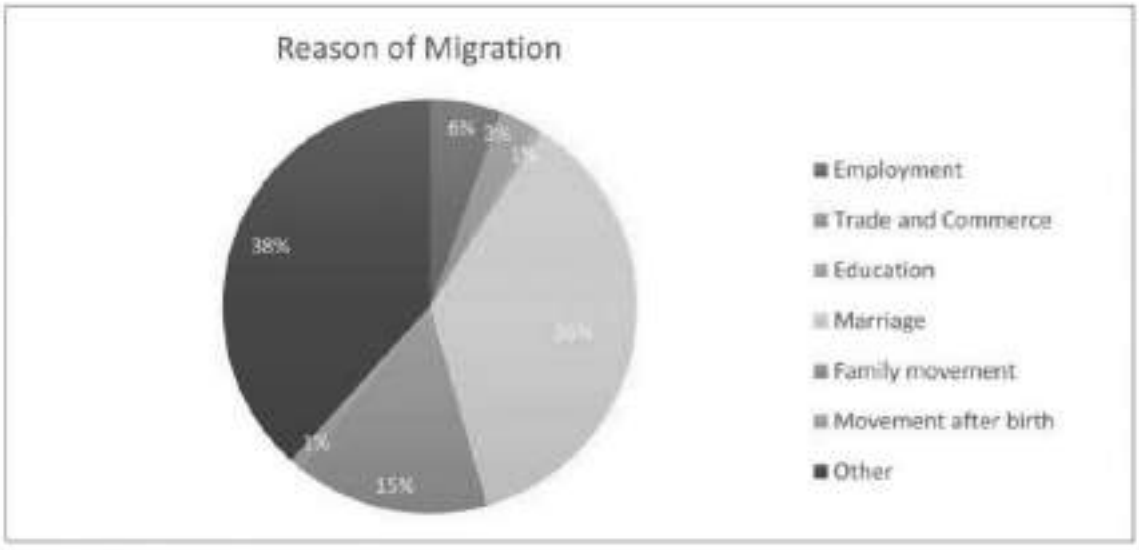


Figure 27 Reason of migration, Census 2011

2.3 HOUSEHOLD DENSITY AND HOUSING SIZE

Table 38 Household Density

Sl. No	Name of Area	No. Of Household	Area (Sq.km)	Household Density
1	Dibrugarh Municipal Board (22 Wards)	30525	15.57	1960
2	2 (Two) OG & 2(Two) CT	3294	8.53	386
3	13 Semi-Urbanised villages from Dibrugarh East & West Rev. Circle	6978	23.42	294
4	53 villages from Dibrugarh East Rev. Circle	15819	89.37	177
5	115 villages from Dibrugarh West Rev. Circle	20231	226.14	89
6	2 villages from Moran Rev. Circle	89	4.89	18
Total		**76836**	**367.92** (Excluding R.F.)	209

Figure 28 Household density of Dibrugarh Master Plan Area 2011

Table 39 Housing Size

Wards	Total No. of Households	Area (Sq km)	HH Density (No. of HH)	Housing size
1	656	0.9	729	4.6
2	1854	1.64	1130	4.3
3	774	1.18	656	4.3
4	2204	1.29	1708	4.1
5	1699	1.61	1055	4.1
6	2152	1.32	1630	4.1
7	1206	0.63	1914	4.3
8	1823	0.46	3963	4.6
9	1359	0.44	3088	5.1
10	878	0.14	6271	4.9
11	324	0.15	2160	5.9
12	1192	0.36	3311	4.5
13	1340	0.26	5153	4.3
14	1079	0.35	3082	4.4
15	1266	0.63	2010	4.2
16	1369	0.61	2244	5.4
17	1070	0.38	2815	5.2
18	1851	0.88	2103	4.6
19	1599	0.46	3476	4.4
20	942	0.27	3488	4.4
21	1211	0.45	2691	4.5
22	2677	1.09	2456	4.8
Total	**30525**	**15.5**	**57133**	**4.5**

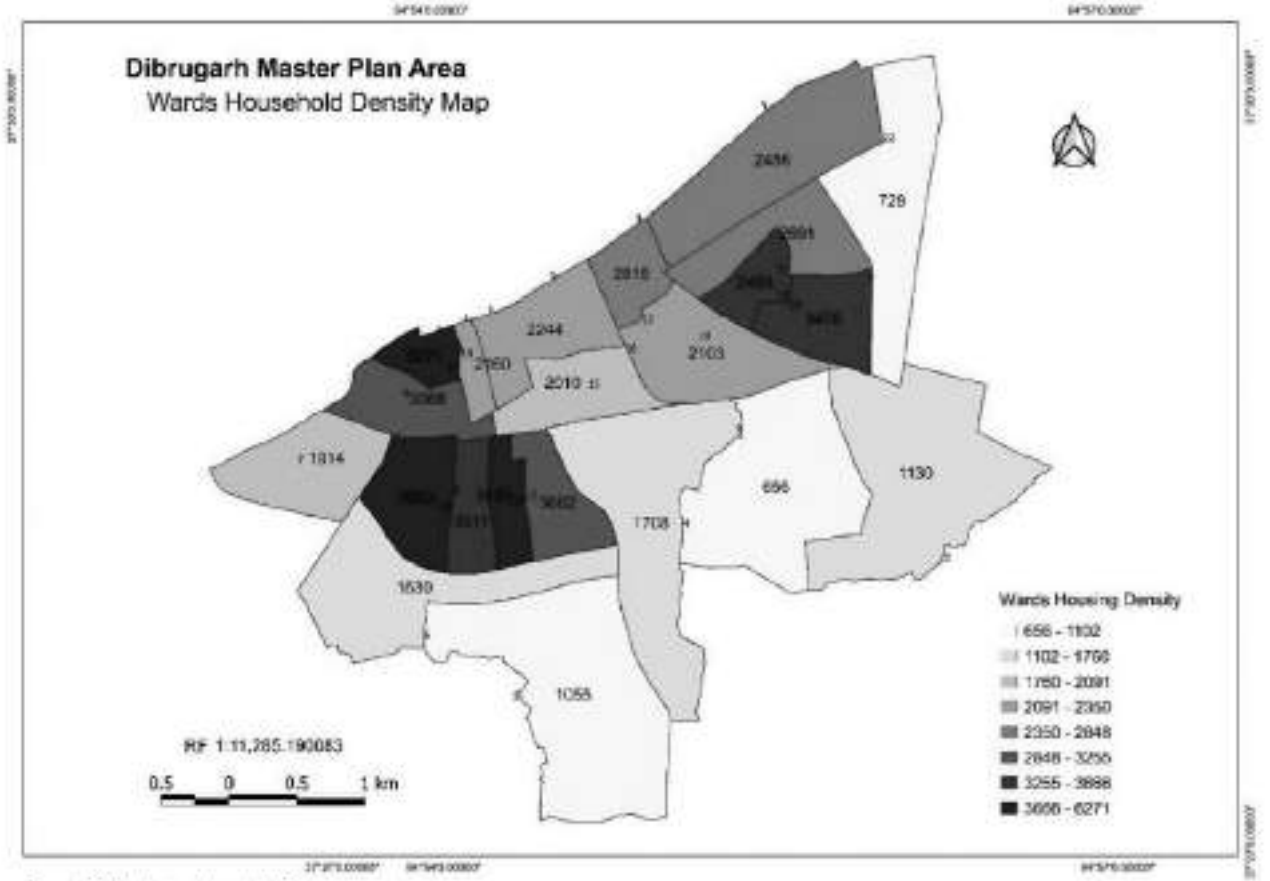


Figure 29 Ward wise Household Density

2.4 POPULATION PROJECTION

Population projection is a forecasting tool that helps to estimate the changes in population size and demographic structure. It is mandatory for Government policy makers and planners to determine the future demand for basic human needs such as food, water, education, health, energy and other services and to forecast future demographic characteristics. The main objective is to provide or undertake activities aimed at achieving population stabilization, sustainable and environmental protection by the year 2045.

Population projection is a scientific/mathematical attempt to peep into the future population scenario, conditioned by making certain assumptions using data to the past available at the point of time. Assumptions used and their probability of adhering in future forms a critical input in this mathematical effort. Predicting the future course of human fertility and mortality is not easy, especially when looking beyond much further in time. Medical and health intervention strategies, food product and its equitable availability, climatic variability, socio-cultural setting, economic condition and a host of other factors influence population dynamics, making it a somewhat unpredictable exercise. Therefore, much caution must be exercised when either making or using the population projection and the context of various conditions imposed, should not be lost sight of on the basis of past behaviour and the likely future scenario assumed.

In Dibrugarh Planning area different mathematical methods are used for the estimation of projected population for the horizon year are Arithmetic Progression Method, Geometric Progression Method, Incremental Increase Method and Average Arithmetic Incremental Increase method.

2.4.1 ARITHMETIC PROGRESSION METHOD

This method is suitable for large and old city with considerable development. If it is used for small, average or comparatively new cities, it will give lower population estimate than actual value. In this method, the average increase in population per decade is calculated from the past census reports. This increase is added to the present population to find out the population of the next decade. Thus, it is assumed that the population is increasing at constant rate.

- Hence, dP/dt = C i.e., rate of change of population with respect to time is constant.
- Therefore, Population after nth decade will be Pn= P + n.C (1)
- Where, Pn is the population after 'n' decades and 'P' is present population.

Table 40 Population projection for 2045 based on Arithmetic Progression Method

Method	1991	2001	2011	2021	2031	2041	2045
Arithmetic Progression Method	269842	305974	361397	395585	437832	480080	496979

(Source: Consultant Compilation)

2.4.2 INCREMENTAL INCREASE METHOD

This method is modification of arithmetical increase method and it is suitable for an average size town under normal condition where the growth rate is found to be in increasing order. While adopting this method the increase in increment is considered for calculating future population. The incremental increase is determined for each decade from the past population and the average value is added to the present population along with the average rate of increase.

- Hence, population after nth decade is Pn = P+ n.X + {n (n+1)/2}.Y (3)
- Where, Pn = Population after nth decade
- X = Average increase
- Y = Incremental increase

Table 41 Population projection for 2045 based on Incremental Increase Method

Method	1991	2001	2011	2021	2031	2041	2045
Incremental Increase Method	268842	305974	361397	405816	521004	709132	728898

(Source: Consultant Compilation)

2.4.3 GEOMETRIC PROGRESSION METHOD

In this method, the percentage increase in population from decade to decade is assumed to remain constant. Geometric mean increase is used to find out the future increment in population. Since this method gives higher values and hence should be applied for a new industrial town at the beginning of development for only few decades. The population at the end of nth decade 'Pn' can be estimated as:

- Pn = P (1+ IG/100) n (2)
- Where, IG = geometric mean (%)
- P = Present population
- n = no. of decades.

Table 42 Population projection for 2045 based on Geometric Progression method

Method	1991	2001	2011	2021	2031	2041	2045
Geometric Progression Method	268842	305974	361397	403731	527105	786329	828403

(Source: Consultant Compilation)

2.4.4 AVERAGE ARITHMETIC INCREMENTAL INCREASE METHOD

This method is modification of arithmetical increase method and incremental increase method. It is suitable for an average size town under normal condition where the growth rate is found to be in moderately increasing order. While adopting this method the average of arithmetic and increase in increment is considered for calculating future population. The increase is determined for each decade from the past population considering results of both the method and average value is added to the present population.

Table 43 Population Projection based on Average Arithmetic Incremental Increase method

Year	Projected Population for DMPA 2045	% of Increase
1991	268842	-
2001	305974	13.81
2011	361397	18.11
2021	417572	15.54
2031	470719	12.73
2041	527424	12.05
2045	551757	4.61 (in 4 years)

(Source: Consultant Compilation)

2.5 POPULATION PROJECTION FOR 2045

Population projection has been done using all the four methods. It is important to note that none of the above-mentioned methods is empirical, and they are based on probability. Out of them, Average Arithmetic Incremental Increase Method has been considered suitable for Dibrugarh Master Planning Area. 1991, 2001 and 2011 figures are from the Census of India and 2021, 2031, 2041 & 2045 figures are estimated by the consultant.

Table 44 Population Projection

Year	1991	2001	2011	2021	2031	2041	2045
Population	268842	305974	361397	417572	470719	527424	551757

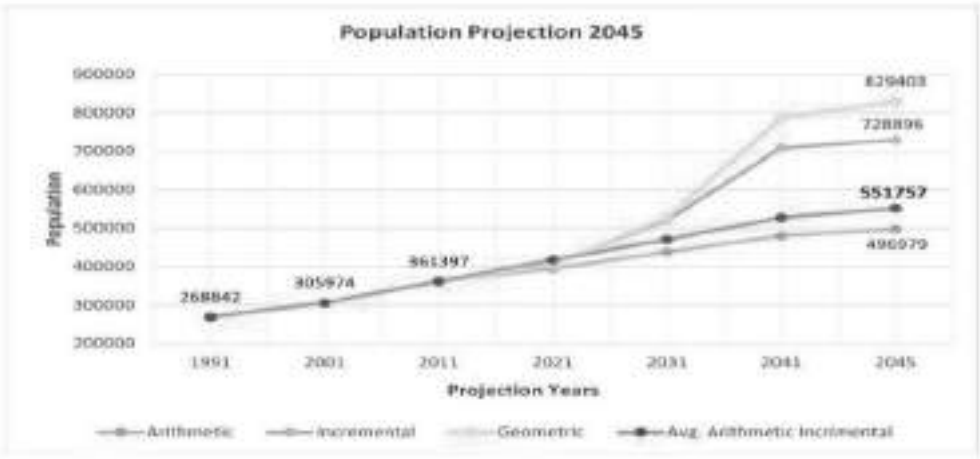


Figure 30 Population Projection for 2045 *(Source: Consultant Compilation)*

2.5.1 WARD WISE POPULATION PROJECTION

Table 45 Ward wise population projection

Wards	Population (2011)	Estimated population (2021)	Estimated population (2031)	Estimated population (2041)	Estimated population (2045)	Population Density (Person/ Sq.km)
1	3032	3503	3949	4425	4629	4451
2	7974	9213	10386	11637	12174	7469
3	3375	3899	4396	4926	5153	3655
4	9172	10597	11946	13386	14003	9657
5	7046	8141	9177	10283	10757	5878
6	9005	10404	11729	13142	13748	13348
7	5214	6024	6791	7609	7960	12246
8	8446	9756	11001	12326	12895	26316
9	7017	8107	9140	10241	10713	25507
10	4336	5010	5648	6328	6620	34842
11	1934	2235	2519	2823	2953	22715
12	5371	6206	6996	7839	8200	28276
13	5860	6771	7633	8552	8946	37275
14	4824	5574	6283	7040	7365	18412
15	5403	6243	7037	7885	8249	16835
16	7419	8572	9663	10828	11327	19872
17	5629	6504	7332	8215	8594	29634
18	8687	10037	11315	12678	13263	17923
19	7047	8142	9179	10285	10759	23389
20	4207	4861	5480	6140	6423	25692
21	5507	6363	7173	8037	8408	15570
22	13060	15090	17010	19060	19939	19172
Total	**139565**	**161253**	**181781**	**203686**	**213078**	**13,747**

It is observed from table 45 that the estimated population growth rate for all individual wards will derive a huge amount of population in upcoming decades. If we calculate the probable population density for year 2045 in every wards it gives a huge number of population per sq.km of area which clearly indicates the spill over of compare to the carrying capacity of the ward. It concludes that there is an immediate demand to decentralise the population and the creation of more new wards within planning area.

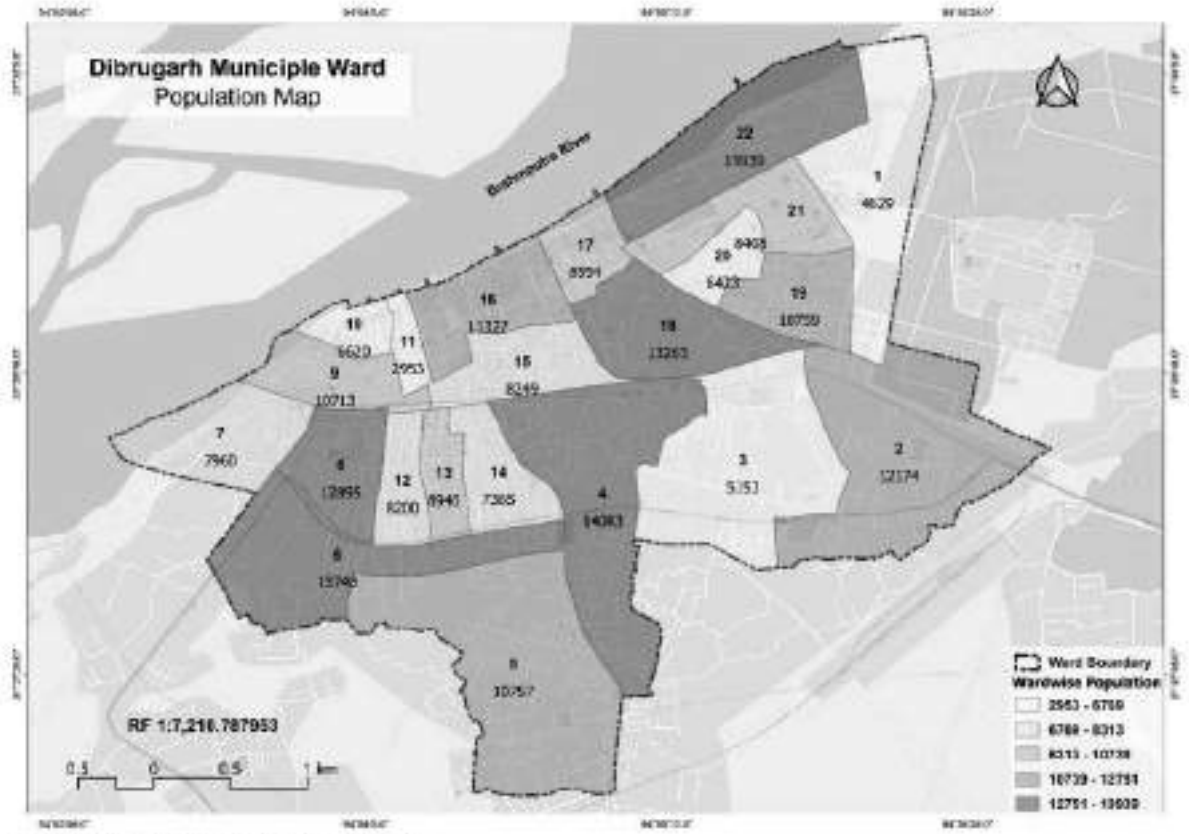


Figure 31 Ward wise Population Projection for 2045

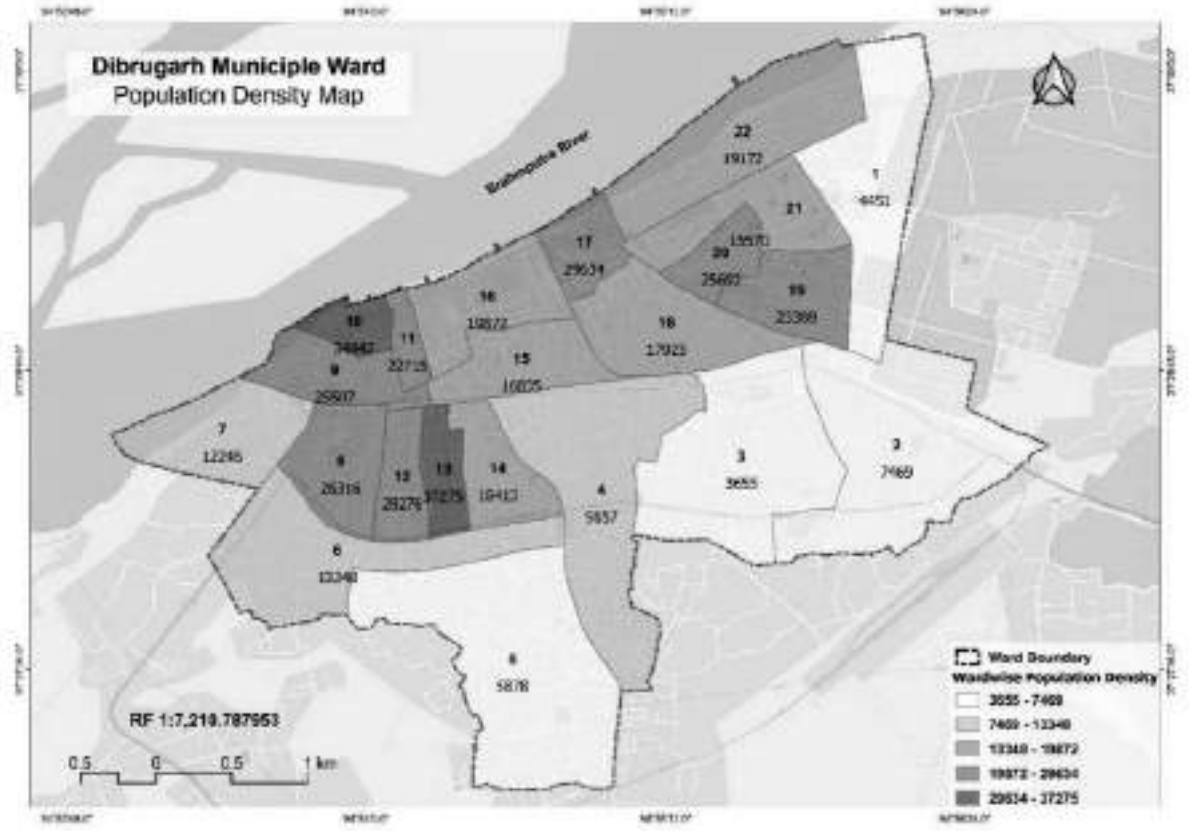


Figure 32 Ward wise Population Density Projection for 2045

3 ECONOMIC BASE AND EMPLOYMENT

Economy can be defined as the interrelated activities that deal with consumption and production. Different activities that provide employment opportunities and income constitute the economic base of an area. Local economy depends of the economic base of an area. The economic sector needs to be tapped well and contribute for the growth of the planning area and region. Therefore, the region requires strong economic magnets for future economic development of the Region. Sometimes during religious festivals and melas, tourist activity and non-availability of employment for unskilled population we can also see some development in informal sector also which has been an important issue of physical planning in Dibrugarh.

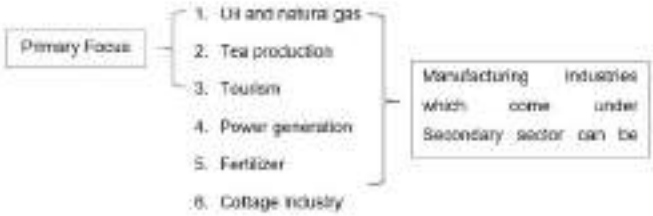
Sectors of Economy

Table 47 Sector wise economic distribution

Primary Sector	Agriculture & Horticulture, Sericulture & Fishing, Oil & Gas, Animal Husbandry
Secondary Sector	Manufacturing, Household Industries, Construction.
Tertiary Sector	Trade, Tourism, Hotels & Restaurants, Transport, Storage & Communication, Banking and Informal sector

Dibrugarh Local Economic Base

Dibrugarh is considered as an economic hub of North East region of India, because of the following industries:



Economy Scenario

Economy of a city plays an important role in determining the future pattern of growth and economic development. Dibrugarh being a famous tourist center, tourism is one of the major sources of economy. Apart from that, people are dependant on fishing and agricultural sectors for economy generation. According to the census of 2011, the total working population of the Dibrugarh Planning Area is around 144186, out of which male working population is 1.01 lakhs and 40,552 is female working population. This clearly indicates that 2.17 lakhs are dependent population in the Dibrugarh Planning Area. As far as the total working population is concerned, more than two third (78.88 %) of the working population is engaged in tertiary sector, (18.34 %) in primary sector and very meagre i.e. 2.78 % are in secondary sector.

3.1 FORMAL SECTOR

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

3.1.1 PRIMARY SECTOR

3.1.1.1 Agriculture & Horticulture

The majority of the population are occupied in farming of rice, sugar-cane, pulses and fish farming. Dibrugarh has the world's largest area covered by tea gardens. The entire district is surrounded by tea plantations and has tea factories. Many tea gardens are more than 100 years old. Horticultural crop in the State occupy about 15 percent gross cultivated area and annually produces more than 15.0 lakhs MT of fruits, 44.0 lakhs MT of vegetables and 2.0 lakhs MT of spices besides nut crops, flowers and medicinal & aromatic plants thus contributing significantly towards food and nutritional security of the State.

3.1.1.2 Tea

Dibrugarh hosts several tea gardens dating back to the British era. The first garden was at Chauba, a place 20 miles (32 km) away from Dibrugarh, owned by Maniram Devaan. Today, the headquarters of the Directorate of Development of Small Tea Growers in India is functioning from Dibrugarh, besides a Regional Office of the Tea Board of India headed by a Deputy Director of Tea Development (Plantation) is also located in the city. The Zone I of the Assam Branch Indian Tea Association (ABITA) is located at Dibrugarh.

Table 47 Tea Estates in the city

Name of the estate	Location	Name of the estate	Location
Behiating Tea Estate	Dibrugarh West	Banamalie Tea Estate	Dibrugarh East
		Jalan South Tea Estate	
Durgapur Tea Estate		Borah Tea Estate	
Sahu Tea Estate		Bokal Tea Estate	
Barborah Tea Estate		Bukel Tea Estate	
Barbarocah Tea Estate		Greenwood Tea Estate	
Lepetkatta Tea Estate		Muttuck Tea Estate	
		Ghograjan Tea Estate	
		Ganeshbari Tea Estate	
		Madarkhat Tea Estate	

(Source: Tea Garden Atlas, Ministry of Commerce and Industry)

Table 48 Total Area and Classification of Area in Assam, 2016-17 (P)

Sl. No.	District	Geographical Area (in Hect.)	Reporting Area for Land Utilisation (in Hect.)	Forest (in Hect.)
1	Assam (2015-16)	7843800	7843800	1852676
	Assam (2016-17)	7843800	7843800	1852694
2	Dibrugarh	338100	338100	21794

(Source: Directorate of Economic and Statistics)

Sl. No.	District	Not available for Cultivation (in Hect.)						
		Water Logged Land	Social Forestry	Land under Still Water	Other Land	Total (Col.6 to Col.9)	Barren and Unculturable Land	Total (Col.10 to Col.11)
1	Assam (2015-16)	63563	11651	148797	1057902	1281913	1199612	2481525
	Assam (2016-17)	86193	11698	147824	1067497	1293212	1191251	2484463
2	Dibrugarh	1608	172	5571	108713	116064	17126	133190

Sl. No.	District	Other Uncultivated Land Excluding Fallow Land (in Hect.)			
		Permanent pastures and other Grazing Land	Land under Misc. Trees groves not included in Net Area sown	Culturable Waste Land	Total Land
1	Assam (2015-16)	166919	221578	137233	525730
	Assam (2016-17)	169745	222490	143509	535744
2	Dibrugarh	4825	12131	8729	25685

Sl. No.	District	Fallow Land (in Hect.)			Net area Sown (in Hect.)	Total cropped Area (in Hect.)	Area Sown morethan once (in Hect.)
		Fallow Land other than Current Land	Current Fallow	Total			
1	Assam (2015-16)	88336	94061	182397	2801472	4059934	1258452
	Assam (2016-17)	92286	104758	197044	2773855	4087449	1313594
2	Dibrugarh	5311	5100	10411	147020	160517	13497

3.1.1.3 Sericulture & Fishing

Sericulture is an age cottage industry of the rural people. It is done during the agricultural off season as a subsidiary occupation. The popular and durable Endi and Muga are the products of this industry. Muga is a non-mulberry silk. The most popular among the large variety of fishes are Rahu, Bahu, Mirika, Pithila, Kurhi, Bhangon, Barali etc. The smaller variety of fishes Kaoi, Magur, Singee, Pabha, Eleng, Bariala are common.

3.1.1.4 Animal Husbandry

Livestock plays an important role in state economy. Agriculture economy is supplemented by animal husbandry. Agriculture production depends very much on the livestock available. Cattle and goats are main animals. Buffaloes, Sheep, Horses, Pigs, Fowls and Ducks are the livestock and poultry found in the district.

Fish is abundantly available in all the districts of Assam, as it is a land of rivers, bils, swamps, ponds etc. The most popular among the large variety of fishes are Rahu, Bahu, Mirika, Pithila, Kurhi, Bhangon, Barali etc. The smaller variety of fishes Kaoi, Magur, Singee, Pabha, Eleng, Bariala are common. The development of fisheries in the district is undertaken by the Government after independence. The Department of Fisheries has one natural seed collection centre at Kotoha near Dihing River.

3.1.1.5 Oil

The first oil well dug during the British era was in Digboi, 50 miles (80 km) from Dibrugarh. Today, Duliajan, Dikom, Tengakhat and Moran are the key locations for oil and gas industry in the district. Oil India Limited, the second public sector company in India engaged in exploration and transportation of crude oil has its

field headquarters in Duliajan, 50 km from Dibrugarh city. The company was granted Navratna status by the Ministry of Petroleum and Natural Gas, in 2010.

AGCL

Assam Gas Company Limited (Duliajan).

DNPL

Duliajan Numaligarh Pipeline Ltd is a joint venture company promoted by Assam Gas Company Limited (AGCL), Numaligarh Refinery Limited (NRL) and Oil India Limited (OIL). The Duliajan-Numaligarh pipeline will be the first major cross-country natural gas pipeline in Assam and once the availability of natural gas is ensured, it is expected to be extended to major consumption centers of natural gas in Nagaon and Guwahati.

BCPL

The Assam Gas Cracker Project, also known as Brahmaputra Cracker and Polymer Limited, was proposed as a part of implementation of Assam Accord signed by Government of India on 15 August 1985.

3.1.2 SECONDARY SECTOR

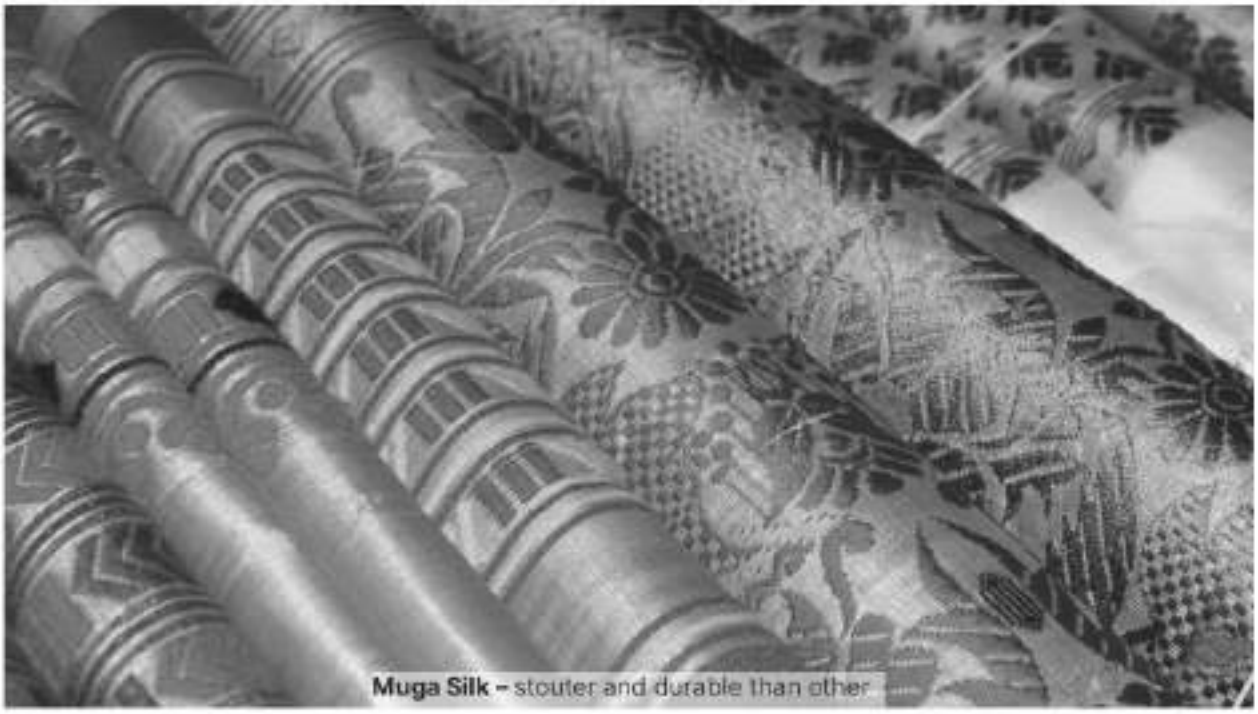
3.1.2.1 Household Industries (Handloom)

Weaving is one of the most important traditional occupations of the women in Dibrugarh district of Assam. Their artistic products have good demand in the market, and they are cherished by the tourists from other parts of the country as well as those from abroad. However, the productions on traditional looms are low besides time consuming. So, to train the weavers on modernized looms, three Handloom Training centres are opened in the district. During the year 2011-12 there were 23 trainees in these training centres.

Table 49 statistics of handloom demonstration circle & weaving

District	No. of Demonstration Circles	No. of Villages covered	No. of weavers engaged		
			Part time	Whole time	Total
Dibrugarh	16	1067	56094	300	56394

(Source: Directorate of Economic and Statistics)



Muga Silk – stouter and durable than other

3.1.2.2 Construction

Every rural house has Choraghar (Receiption house), Borghar (living house), Bhoralghar (granary), Gohainghar (worship house), Gohalighar (cow shed), Pakghar (cookshed) etc. The houses are made of thatch, bamboo, reed, and mud. Wooden posts are also used. In the present day however house on modern line using C.I. sheet, brick and cement are quite common both in rural and urban areas.

3.1.2.3 Industries

Dibrugarh is considered as an economic hub of North East region of India. Dibrugarh is at the centre of economic activities dominated by the following industries:

- Oil and natural gas
- Tea production
- Tourism
- Power generation

- Fertilizer
- Cottage industry
- Pharmaceuticals
- Cane and Bricks

A Large scale

Table 50 Industrial Units around the city

Sl. No.	Industrial Units	Details
1	**Oil India Limited, Duliajan**	The oil found in this area led to installation of five refineries at Digboi, Guwahati, Bongaigaon, Numaligarh all in Assam and at Barauni in Bihar. Oil was discovered in Digboi in 1882 and it marked the birth of Oil Industry in India.
2	**Brahmaputra Gas Cracker & Polymer Limited (BCPL), Lepetkata**	It is a new industrial project which is under development in the Lepetkata region, about 15 km away from the Dibrugarh town. Has been seen as a great project with many scopes in terms of employment generation and economic growth of the state.
3	**Brahmaputra Valley Fertilizer Limited, Namrup**	It produces aluminium sulphate, urea and sulphuric acid. The raw material required for the plant is natural gas which is received from Assam Gas Company and the other raw material like sulphur is imported from outside.
4	**Assam Gas Company Limited (AGCL), Duliajan**	It distributes natural gas to various users and provide base for petro-chemical industry. The tea gardens also are benefited by its gas for running their factories.
5	**Assam Petrochemicals Limited, Namrup**	The main raw materials required are natural gas, urea and carbon dioxide and produces Methanol, Formalin and Petrol. It receives natural gas from Assam Gas Company. Urea and Carbon dioxide is received from Namrup fertilizer Factory.
6	**Namrup Thermal Power Station, Namrup**	It utilizes gas supplied by it as fuel from Assam Gas Company.
7	**Andrew & Yule Ltd. (Khowang, Basmatia, Desam, Tinkong, Rajgarh Tea Estates)**	Dibrugarh accounts for the finest Assam Tea that is drank anywhere in the world. There are several tea gardens dating back to the British era. The first garden was at Chabua, 32 km away from Dibrugarh, owned by Maniram Devaan. Today, the headquarters of the Directorate of Development of Small Tea Growers in India is functioning from Dibrugarh, besides a Regional Office of the Tea Board of India headed by a Deputy Director of Tea Development (Plantation) is also located in the town. The Zone I of the Assam Branch Indian Tea Association (ABITA) is also located at Dibrugarh.
8	**Rossell India Ltd. (Romai Tea Estate)**	
9	**McLeod Russel India Ltd. (Dirai Tea Estate)**	
10	**Tata Tea Ltd.**	

(Source: Directorate of Economic and Statistics)

Oil India Limited, Duliajan

B Medium scale

Table 51 Medium scale industries

Sl. No.	Industrial Units	Details
1	**Plywood Industry**	A good number of plywood factories are in Dibrugarh district. The products include commercial ply black board, flush door, marine plywood, tea chest.
2	**Railway Workshop**	The railway workshop located at Dibrugarh is one of the largest workshops in the North-East India. It undertakes overhauling works, repairing of locomotive and coaches. Various components required for this area are also manufactured here.

(Source: Directorate of Economic and Statistics)

Several industries engaged in manufacture of machinery, machine tools and parts, steel furniture, steel structure and other material products are established. The district has also many sawmills and bricks making industries, besides other various small-scale industries. There is good scope for further development but there are identified weaknesses that include - poor supply of electricity & high rate of electricity charges, insufficient supply of skilled labourers, transportation of goods, financial institutions lend money at higher rate and no marketing linkage with Public Sector Enterprises and Large Tea Gardens.

Table 52 Industrial units' data

Sl. No.	Type of Industry	Units	
		Assam	Dibrugarh (district)
1	Manufacturing of Food products and Beverage	1559	199
2	Manufacturing of Textiles	60	7
3	Manufacturing of Wood and its products	420	24
4	Manufacturing of Rubber, Plastic Products	177	5
5	Manufacturing of Non-Metallic mineral Products	8416	116
6	Manufacturing of fabricated Metal Products and Parts (except Machinery and equipment)	109	9
7	Manufacturing of Electrical Machinery and Apparatus	61	3
8	Manufacturing of other Transport equipment	12	1
9	Printing, Publishing and reproduction of recorded media	43	3
10	Manufacturing of chemicals and its products	152	7
11	Manufacturing of basic metals	172	6
12	Manufacturing of Machinery and equipment	50	7
13	Manufacturing of Furniture	26	3
14	Electricity, Gas, Steam and Hot water supply	43	6
15	Sale, maintenance and repair of motorcycles and motor vehicles	113	16
16	Retail trade, except for motor vehicles repair of personal and household goods	19	5
17	Supporting and auxiliary transport activities (including warehousing and storage)	31	2

(Source: Directorate of Economic and Statistics)

3.1.2.4 Clusters of MSMEs

There are two identified clusters of Micro & Small Enterprise, as shown below:

Table 53 Industrial Cluster

Sl. No.	Name of the Cluster	Characteristics	Details
1	**Fabrication and General Engineering Cluster**	Principal products manufactured	MS Fabrication & Structure
		Name of the SPV	Not Finalized
		No. of the functional units	248
		Turnover of the clusters	Approx. Rs. 20 crores annually
		Employment in the cluster	1230
		Major issue/requirement	• New Technology • Requirement of skilled manpower • Credit Flow • Lack of knowledge of Govt. Schemes • Linkage with CPSUs & Large Tea Gardens
		Thrust area	Need new technology to obtain quality standard
2	**Bought Tea Leave Factory**	Principal products manufactured	CTC, Orthodox Tea
		Name of the SPV	Not Finalized
		No. of the functional units	73
		Turnover of the clusters	Approx. Rs. 400 crores annually
		Employment in the cluster	1175
		Testing needs	Yes
		Thrust area	The potential of domestic market should be utilized because India is the biggest consumer of the tea, but per capita tea consumption is very low than the other countries. Promoting more flavours like fruits and herbal tea into tea like ginger, lemon, elaichee, etc. will add up a new arena into tea industry. Furthermore, certain varieties of tea are grown only in Assam and are in great demand across the world.

(Source: MSME – Branch Development Institute, Karbi Anglong, Assam and Census, 2011)

Dibrugarh district is predominantly engaged in tea farming and industrial activities. It needs for further industrial development. But the town is mainly on tea, oil and rice products. Based on the available resources the following MSMEs found Industrial Potential in the district, as shown below:

Table 54 Potential for New MSMEs and Industries

Potential Areas for Service Industries	Potential for New MSMEs
Powder coating	This district has very good potential for MSME Sector as there are large requirements of products which can be manufactured in MSME sector. If strategically approach for development of MSME sector, the share of manufacturing sector under MSME can be raised as the CPSUs have to procure 20% of their annual 14 requirement from MSME Sector and at present it is only about 1% of total requirement achieved by the CPSUs of this district.
Interior decoration	
Electronic equipment /appliance	
Freight Transport	
Automobile Repairing & services	
Hotel cum Tourism	
Cold Storage	
Security Services	
Electric wiring/Electrical equipment repairing	
Computer repairing, Cyber marketing	
Consultancy services	

(Source: MSME – Branch Development Institute, Karbi Anglong, Assam and Census, 2011)

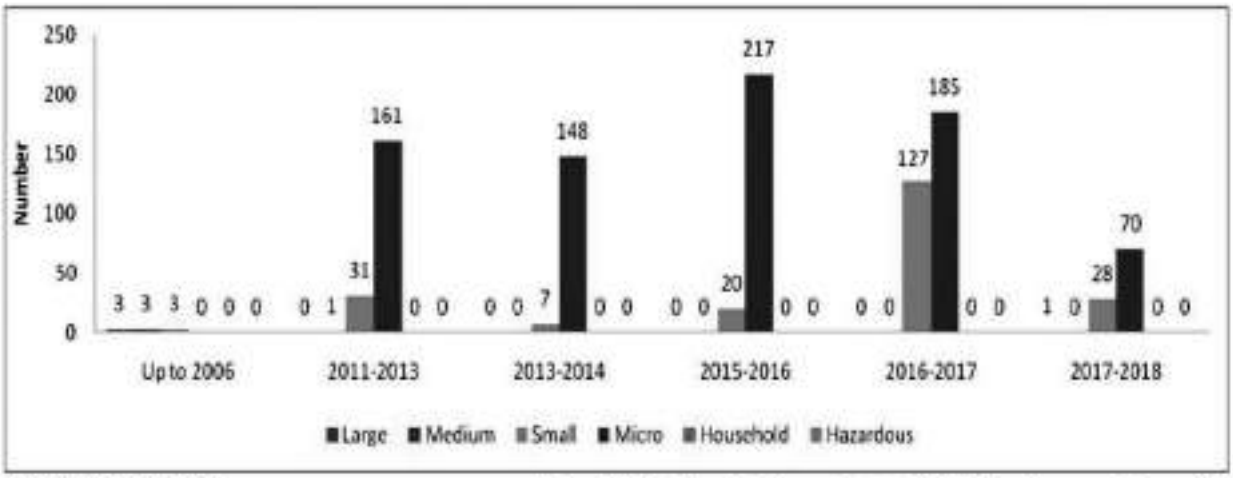


Figure 33 Industrial Aspects *(Source: MSME – Branch Development Institute, Karbi Anglong, Assam and Census, 2011)*

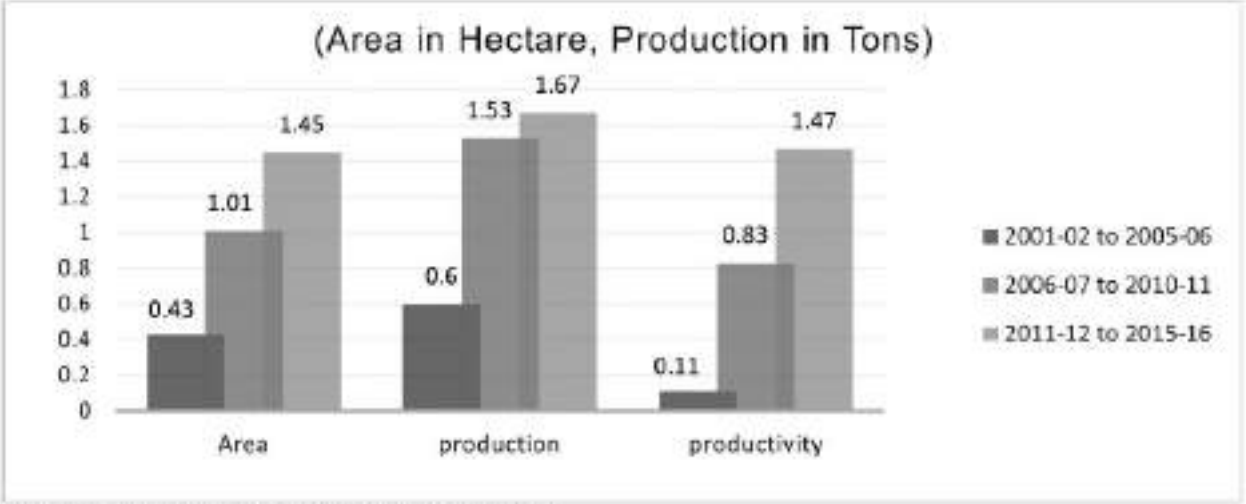


Figure 34 Area, Production and productivity of Tea Industry (2001-2016)

3.1.2.4 Tea Industry

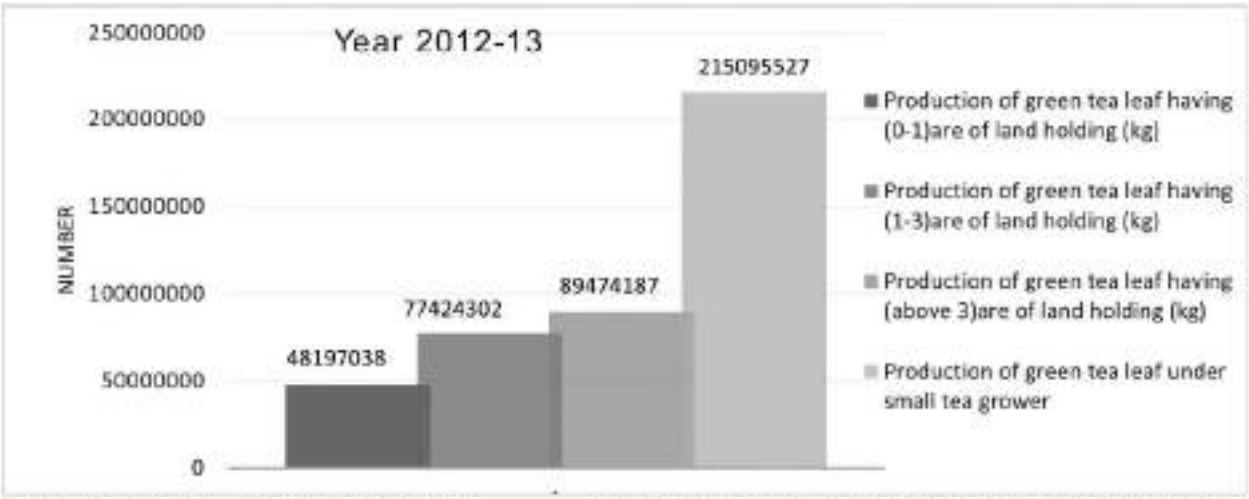


Figure 35 Development of Tea Industry in Assam (2012-2013) *(Source: A Study on the Status of Growth and Development of Tea Industry in Assam)*

3.1.3 TERTIARY SECTOR

3.1.3.1 Tourism

Rail, road and air connectivity coupled with the presence of large number of tourist spots in and around Dibrugarh city has seen impressive growth of tourism industry in this part of India in recent part. Dibrugarh has also become an important destination as well as a major transit point for tourists from both India and abroad. Such tourist circuits include - Dibrugarh - Roing - Mayudia - Anini Tourist Circuit, Dibrugarh - Guwahati river cruise besides 'Tea Tourism' for tourists who prefer serenity and novelty to the hustle-bustle of established tourist destinations.

Generally, the Manufacturing industries comes under Secondary sector, but in case of Dibrugarh, it comes under Primary Sector as it has major Oil and Tea industries, tourism aspects like tea tourism, golf tourism. And, Dibrugarh has the world's largest area covered by tea gardens. The entire district is surrounded by tea plantations and has a tea factory. Most of the rural population are in the occupation of rice, sugarcane, pulses and Pisciculture.

3.1.3.2 Trade

Dibrugarh attracts the Britishers with its natural wealth greatly. Large quantities of the products are exported from the various parts of the country and some even to the international markets. **Tea is the most important commodity of export and earns considerable amount of foreign exchange.** Dibrugarh is the second most important commercial town in upper Assam after Tinsukia. Most of the trading activities related to packaging and distribution of tea within the country and abroad are done here. Although there are a number commercial establishment existing in the heart of the town but there is no organized market within the planning area. As per the draft master plan there are around 9,000 commercial establishments in and around Dibrugarh town. Socio-economic surveys conducted in the town show a major chunk of the population engaged in trade, commerce, and office work.

Plywood is very important commodity of export and plays a significant role in the economy of the country. The other products exported are timber products, cane products, tea chests and other miscellaneous products of small-scale industries

established in the recent years. The main imported articles are rice, wheat, pulses, grain, peas, groundnuts, spices, all kinds of edible oils, onion, garlic, sugar, other chemical fertilizers, cement, C.I. sheet, iron materials, paints, tube-well pumps and pipes, cycles, motor cars machineries required for major and small scale industries, clothes and garments. Bulk of wholesale trade is concentrated in the town of Dibrugarh.

3.1.3.3 Tourism, Hotels and Restaurants

Renowned as the "Tea City of India", Dibrugarh has been a popular travel destination of Assam for decades at a stretch. Along with tourism development, Dibrugarh is one of the major cities of India with massive growth in communication and industrial sector. Its economy thrives on 3 booming business: tea, oil and tourism.

With several tourist attractions, religious as well as spiritual in Dibrugarh, one has the chance to enhance his cultural knowledge and experience its beautiful heritage and landscapes. Amongst the many top things to do in Dibrugarh, tourists find visiting the tea gardens to be the most appealing. Given below is the worth watching sites in/around the city:

Table 55 Tourist Spots in the city

Sl. No.	Tourist Spots	Details
1	**Jokai Botanical garden cum Germplasm Centre**	It is spread over an area of 1.2 Hectares amidst Jokai Reserve Forest and is 12 km from Dibrugarh town on Mancotta-Khamtighat road.
2	**Radha Krishna Temple**	The temple situated in a sprawling campus near the Assam Medical College, features two life size idols of Lord Krishna and Goddess Radha. The temple is considered to be an achievement marvel and is entirely made of marble stone.
3	**Mahatma Gandhi Park**	Situated at Khanikar, 10 km south of Dibrugarh city centre, the newly developed park is on a 22 Bigha plot of land.
4	**Namphake Village**	At a distance of about 37 km from the town, on the bank of the river Buridhing, is the Namphake village. A very beautiful Buddhist monastery is located in this area. The other attractions are Nong Mungchiringta (Musulinda tank), Ashoka Pillar, Pagoda and traditional still houses.
5	**Maijan Lake**	It's a beautiful lake in the outskirts of Dibrugarh town, near Brahmaputra river.
6	**Jagannath Temple**	A replica of Lord Jagannath Temple at Puri is being constructed at Khanikar area in the city. Most of the workers were from Odisha and hence devotees of Lord Jagannath.
7	**Mancotta Tea Estate Garden**	A tea estate with a heritage bungalow to enjoy the tea plantations. Situated at 4 km away from Dibrugarh railway station; 20 km from Dibrugarh airport.
8	**Bogibeel Bridge**	It is the longest rail-cum-road bridge in India measuring 4.94 km over the Brahmaputra river and is a combined road and rail bridge. Situated 17 km downstream of Dibrugarh and Dhemaji, spans the Brahmaputra river and will connect the town of Dibrugarh in the south to Dhemaji to the river's north.

(Source: Domestic Tourism, Assam, Ministry of Tourism)

As per Survey in Tourism statistics in Assam, total number of visitors in Dibrugarh is 1,15,000 (approx.), out of which 400 are foreign visitors. It is one of the highest when compared with other cities of the state, namely, Jorhat, Majuli and Tinsukia. The tourists majorly visit Dibrugarh due to its scenic beauty and rich cultural heritage; predominantly, tea estates and national parks. The problems are listed below:

Table 56 Tourism problems with solution

Problems	Solutions
Lack of Awareness **A large percentage of tourists found the tourist attractions not interesting.**	To develop a proper website, that enables to give enough information to domestic and foreign tourists.
Lack of Skilled Manpower **Majority of the visitors found shopping facilities inadequate.**	To involve tribal youth to showcase the art, culture, heritage and livelihood.

The city of Dibrugarh is emerging as a popular destination for business and leisure trips for tourists from India and abroad.

Table 57 Hotels and Resorts in Dibrugarh

Hotels	Resorts/Homestays/Lodge/Hostel	
Hotel Natraj Hotel Rajawas Hotel Tea County Hotel Rainbow Regis	**4 Star**	**Mancotta Chang Resort** • Located on the edge of Mancotta tea estate, Mancotta Chang is a 157-year-old colonial style bungalow, turned into a commercial accommodation. • Situated at 4 km away from Dibrugarh railway station; 20 km from Dibrugarh airport. • Mayflower Resort
The Regency Hotel Little Palace Hotel Raj Palace Prashanti Tourist Lodge Hotel Prince Hotel Khyati Hotel Padma Palace Tulip Residency	**3 Star**	**Homestay by the Tea Garden** • It is an upscale property, situated in Seujpur, the greenest neighbourhood of Dibrugarh. • The host, Nishiraj Baruah, is a well-travelled lifestyle journalist and it is just 10-15 minutes away from Assam Medical College and Main Bazaar. • Namphake Buddhist Monastery Homestay • Nikki's Homestay. • Bhaskar Homestay. • Tanay's Dibrugarh Residency.
Hotel Vishal Hotel Manas Dibrugarh Club House Hotel Maurya Hotel Raj Hotel East End Hotel Devika Hotel Monalisa Hotel Ketki Hotel Varsa Hotel Kusum Hotel J. S. Tower	**2 Star**	• Gauri Lodge • Hotel Shri Surya • Hotel Amit • Hotel Sagar • Goswami Guest House • Kangaroo Guest House

(Source: Domestic Tourism, Assam, Ministry of Tourism)

Table 58 Restaurants in Dibrugarh

Sl. No.	Name of Restaurant	Type of outlet	Veg/Non-veg
1	Hotel Garden Treat	Family-friendly, Indian cuisine restaurant	Both
2	Oink Infinity		
3	Zafrans restaurant		
4	Food Infinity		
5	Dibarur Akhal		
6	Gulmohar		
7	MFC		
8	Yolo		
9	Spice Fusion	Chinese cuisine restaurant	
10	Tripti Fast Food	Fast Food	
11	Yummy Grilled		
12	Domino's Pizza		
13	El Dorado	Bar and Restaurant	
14	H2O The Restro Bar		
15	Studio 69		
16	Dreamland Bar		
17	MB's Sweet and Snacks	Sweets and Snacks	
18	Let's Go Sweet Shop		
19	Chiphoong	Ethnic restaurant	
20	Tai Ethnic Kitchen		
21	Chawla Dilliwala	North Indian cuisine restaurant	
22	Moti Mahal Delux Tandoori Trail	Indian cuisine restaurant	
23	Chakhum		
24	Fusion Aslana	Cafe	
25	De Rock Cafe		Veg
26	Kas Cafe and Restaurant		
27	The Fat Belly Cafe and Restaurant		
28	Eat Repeat	Family-friendly, Indian cuisine restaurant	

(Source: Domestic Tourism, Assam, Ministry of Tourism)

3.1.3.4 Transport, Storage and Communication

Being the gateway to Arunachal Pradesh, Dibrugarh district is well connected with the other parts of the state by road, air and rail. The State Transport buses as well as private buses ply regularly in the roads of the district carrying passengers to and from all important places with state and district headquarters. It also possesses a developed waterway transportation system along and across the Brahmaputra River, known as the National Waterway 2 which runs internally in the state.

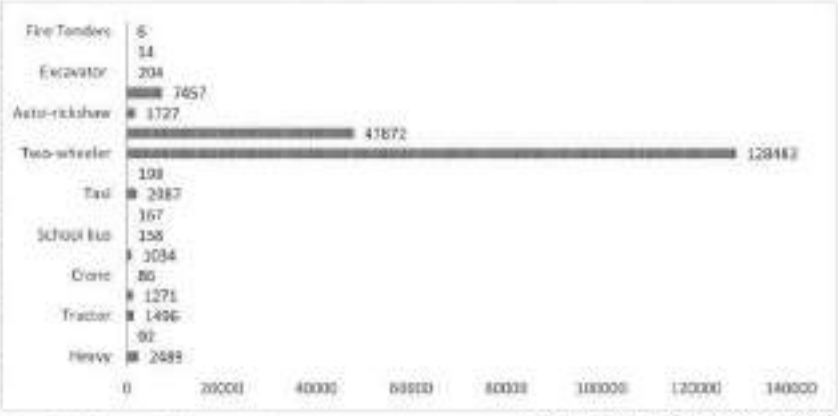


Figure 36 Motor vehicles on road

(Source: District Transport Office, 2020)

Table 59 Passenger and Goods carried by National Waterway 2 in Dibrugarh city

Sl. No.	Name of Ferry Service	Revenue (in Rs.)	Passengers (in Nos.)	Goods (in QTs)
1	Dibrugarh-Majorbari	4,05,270	71,160	780
2	Dibrugarh - Panbari	1,94,200	4,648	-

(Source: Statistical Handbook Assam, 2016)

Table 60 Passenger and Goods carried by National Waterway 2 nearby Dibrugarh city

Sl. No.	Name of Ferry Service	Revenue (in Rs.)	Passengers (in Nos.)	Goods (in QTs)
1	Desangmukh-Matmora	2,78,536	40,680	7,200
2	Dikhow-Phulani-Salmora	56,160	6,120	-
3	Sadia-Saikhowa	50,00,000	3,97,512	87,876
4	Bogibeel-Karengbali	1,61,50,430	6,62,976	-
5	Dibru-Kachari-Oriumghat	410215	10896	1068
6	Borgibeel - Sissi - Kalghar	131640	9888	-
7	Saikhowa - Puglam	82684	13728	1512
8	Guljan - Borghuli	330870	41484	-
9	Luhit Ferry	335330	43200	-
10	Ghagor Ferry	455654	125640	1032

(Source: Statistical Handbook Assam, 2016)

One very old Food Corporation of India (FCI) godown is located just near to the New railway station and being utilised for Govt. grocery storage for public distribution. One DBRG railway goods yard is located in New Railway station premises for the daily import and export supply in Domestic freight. Dibrugarh Airport consist its own warehouse for storage of goods and daily courier services. Royal Paradise Bonded warehouse is a privately owned warehouse located on Nh-37- Convoy road junction.

Being a nerve centre of communication, industry and healthcare in Assam after Guwahati, Dibrugarh has well established information and broadcasting network. Dibrugarh has a full-fledged All India Radio Centre, commissioned in 1968. The station has its studios located at Malakhubosa in Dibrugarh and the transmission tower located at Lepetkata near the present BCPL. The Dooradarshan Kendra was established in the city in the year 1993. Earlier the Kendra used to telecast Assamese language programme capsuled in Guwahati beginning from 1991. It is contributing programmes to the "DD North East" channel. Moreover, NETV is a channel operating from Dibrugarh with a Zonal Office besides V&S, Dibru Live and Luit View are cable TV channels from Dibrugarh. Dibrugarh also has a digital cable TV network.

People of Dibrugarh are well-connected with primary mode of communication like mobiles, wire line phones, P.C.O and Wi-Fi connection. Rural Telephone Connection and Village Covered by public telephone are connected in the rural areas. Secondary mode includes post offices and logistics. Newspapers are majorly published in Assamese and other languages are also significant.

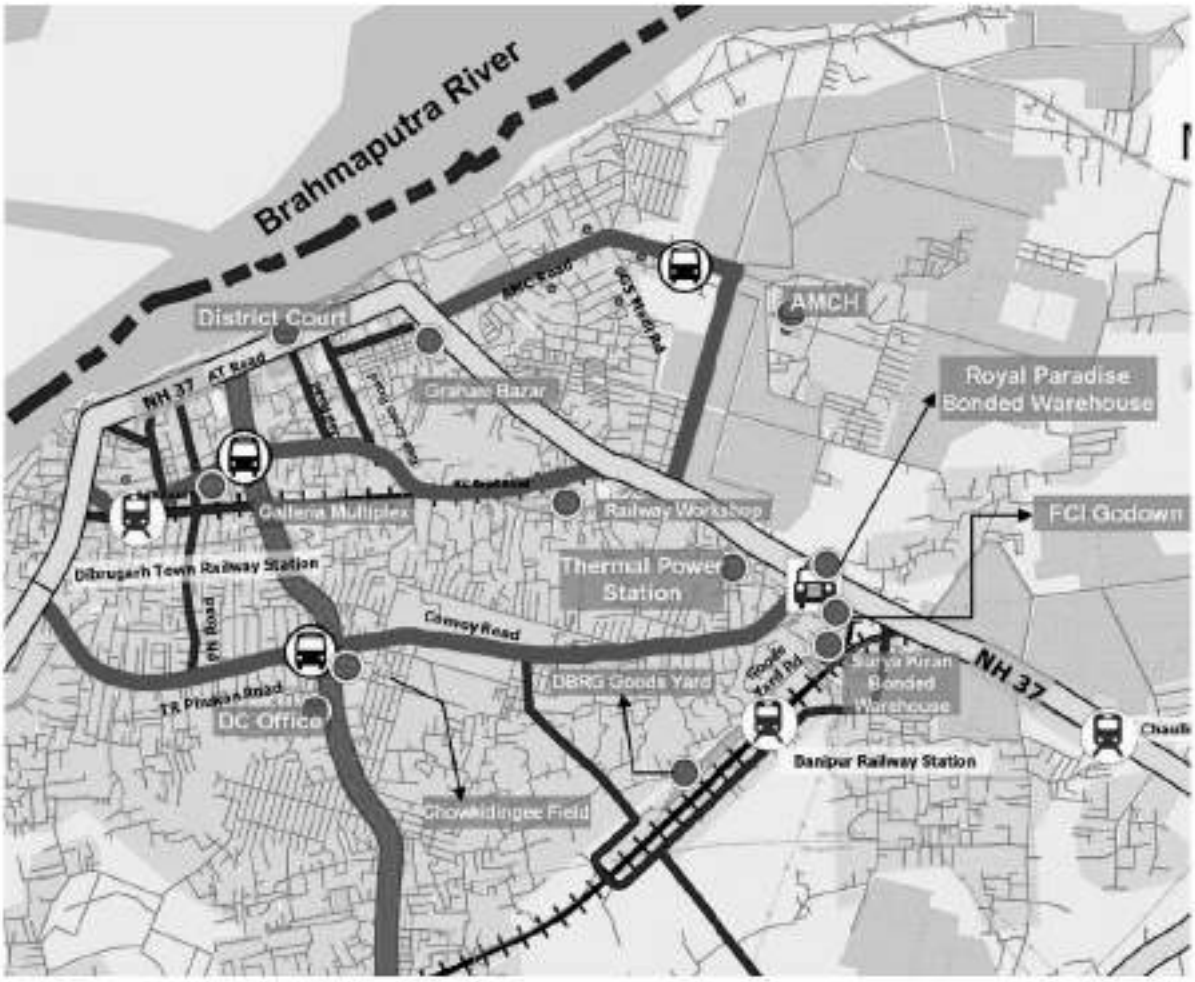


Figure: Post office data of Dibrugarh district (Urban regions)

Table 61: Post office data of Dibrugarh district (Urban regions)

Sl. No.	No. of Post Office	Area served per Post Office (in sq. km.)	Population served per Post Office
1	24	1.90	10,155

(Source: Statistical Handbook Assam, 2016)

3.1.3.5 Print Media

Dibrugarh has been a pioneer of newspaper journalism in entire Eastern India with the "Times of Assam" being the first newspaper published from Dibrugarh in the late 19th century. After four decades of publication, it ceased to publish and from 1939 "The Assam Tribune" started its journey from Dibrugarh, which after 7 years of publication got shifted to Guwahati. However, this premier English daily of the North-East India is published from Dibrugarh along with Guwahati and The Sentinel is published from Dibrugarh along with four other cities of North East India. Several vernacular, as well English, and Bengali dailies are published from Dibrugarh. Assamese newspapers published from Dibrugarh are Asomiya Pratidin, Janasadharan, Niyamiya Barta, Dainik Asom and Pratibimba. Jugashangkha is a Bengali daily published from Dibrugarh along with Guwahati and Silchar.

3.1.3.6 Banking

With the expansion of the tea industry and oil industry, several banks have been set up in various parts of the city. In addition, co-operative credit societies are also in operation but there are no Non-agricultural Credit Societies. However, even now also, the moneylender continues to be an important source of rural credit. The following graph explains the number of banks in the city:

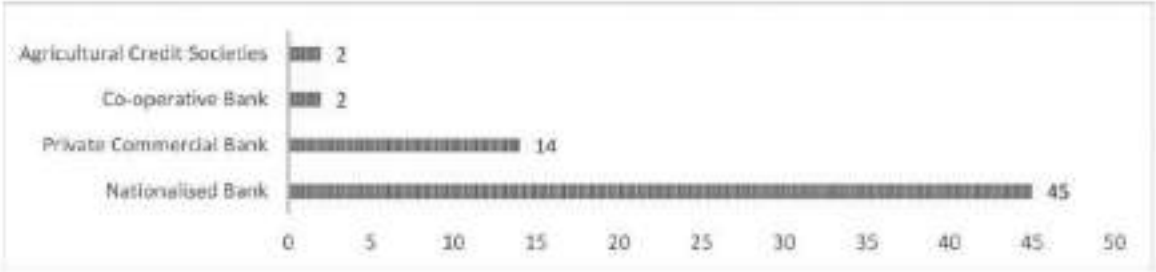


Figure 37 Banks data *(Source: Census of India, 2011)*

3.1.3.7 Public Administration

The Dibrugarh Municipal Board is one of the oldest municipalities in North East India, established in 1873. The city since then has become an important nerve centre of political, administrative, cultural and commercial activities of a vast region comprising entire eastern Assam, Arunachal Pradesh and Nagaland. The area of the Municipal Board is 15.5 sq. km. There are 22 wards in the city, among them Dibrugarh Ward No. 22 is the most populous ward with population of about 13 thousand and Dibrugarh Ward No. 11 is the least populous ward with population of 1934.

The Deputy Commissioner of the District is the overall in charge of the administration of the entire district. Several Officers, like Additional Deputy Commissioners, Sub-divisional Officers, Extra Assistant Commissioners, and others assist the Deputy Commissioner is looking after the administration of the district. At lower level each sub-division is headed by one Sub Divisional Officer whereas under him there will be Revenue Circle Officers who are responsible for the entire administration of their respective revenue circle. Directorate of Town and Country Planning implemented the first master plan of Dibrugarh town in 1977.

3.2 INFORMAL SECTOR

The informal sector, also known as the underground economy, black economy, shadow economy, or gray economy, is part of a country's economy that is not recognized as normal income sources. People who work in the informal sector do not declare their income and pay no taxes on them.

Mainly the roads, footpaths are encroached by the vendors in the town. But there are markets and small bazaar which includes Tibetan Market, Dibrugarh University Market Complex, Vegetable Market, Khalil Market to name a few. These markets are on daily and weekly basis. It includes food stalls, grocery, green grocers, meat vendors, cheap cosmetics stalls, etc.

3.3 EMPLOYMENT

3.3.1 OCCUPATIONAL PATTERN

Employment is one of the key indicators in determining the purchase power and social status of a community. According to census 2011, the majority of the working population (80%) is engaged in tertiary sector which include tourism, trade & commerce, transport, communication and services etc. This can be attributed to the reduction in agricultural land, higher income employment opportunities and urbanization of the planning area.

Table 62 Sector wise workforce participation ratio in Dibrugarh MB area

Year	Population	Total workers	WFPR	Primary	%	Secondary	%	Tertiary	%
2001	121893	40216	33.0	206	0.5	847	2.1	39163	97.4
2011	139565	52986	38.0	614	1.2	1361	2.6	51011	96.3

(Source: Census of India 2001, 2011)

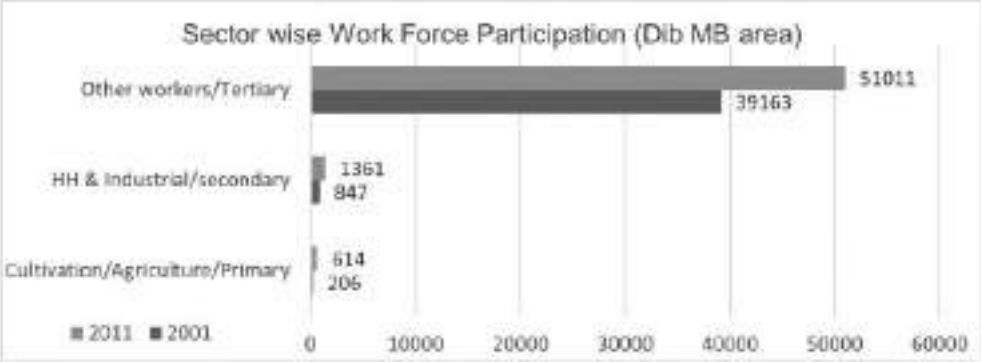


Figure 39 Sector wise distribution of workers in Dibrugarh MB area

As per census 2011, the workers are classified into three categories Primary (agricultural cultivators, agricultural labourers), Secondary (household industrial workers) and Tertiary (other workers). In Dibrugarh MB area, the distribution of economic base into type of sector namely primary sector, secondary sector & tertiary sector are imperative to provide a guideline for the development of entire planning area and creation of potential centers of development. It is evident from the Figure 38 that engagement in tertiary sector is higher since 2001, at the cost of primary sector in Municipal area. This can be attributed to the reduction in agricultural land, higher income employment opportunities and urbanization of the municipal planning area. According to census 2011, the majority of the working population (96.3%) is engaged in tertiary sector which include tourism, trade & commerce, transport, communication, and services etc. Figure 38 also reveals that an increasing trend has been observed in the primary sector (0.5% to 1.2%) during the year 2001-2011 respectively in the system. Further it has been observed that there is decreasing trend in the tertiary sector during the same period from (97.4% to 96.3%). It can be concluded from the above analysis that the tertiary sector is the major contribution in the economic growth and development of the Dibrugarh Municipal Planning Area.

The trend of the higher numbers in the employment in tertiary sector is indicative of the engagement of workers mainly in the service sector. There is need to balance this transformation into tertiary sector as well as primary sector for balanced economic development.

3.3.2 WORKFORCE PARTICIPATION IN GIS BASED MASTER PLAN AREA

The details of workforce participation of Dibrugarh Planning Area for year 2011 is presented in the table 63.

Table 63 Work force participation rate of Master Plan area

Sr. No.	Name of Area	Population	1	2	(1+2)	Non-Worker	% of Worker in total population	% of Non-Worker in total population
			Main Worker	Marginal Worker	Total Worker			
1	Dibrugarh Municipal Board	139565	45684	7302	52986	86579	37.96	62.04
2	OG & CT	14731	4579	668	5247	9484	35.62	64.38
3	13 Semi-Urbanised villages	31207	9314	2316	11630	19577	37.27	62.73
4	53 villages of Dibrugarh East Revenue Circle	75921	22300	8835	31135	44786	41	59
5	115 villages of Dibrugarh West Circle	99518	25811	17092	42903	56615	43.11	56.89
6	2 villages of Moran Circle	455	279	6	285	170	62.64	37.36
Total		**361397**	**107967**	**36219**	**144186**	**217211**	**39.90%**	**60.10%**

(Source: Census of India, 2011)

The table 63 reveals that the workforce participation rate (WPR) for the planning area for year 2011 is 39.90%. The higher number of workers for the year 2011 is observed in Dibrugarh MB area, whereas the lower is observed in villages of Rural and Moran area.

The table also reveals that the workforce participation rate is almost equal in Dibrugarh Municipal Board and Semi-urban area in last decade. It is observed that the workforce participation rate in 2011 is less in Dibrugarh Municipal Board, Semi-urban and Outgrowth area compared to East, West and Moran area. Hence, the less participation rate, the more the tax base shrinks. It depresses economic growth.

3.3.3 WORKFORCE DISTRIBUTION

Workforce population distribution according to sectors are as mentioned below

3.3.3.1 Workforce distribution by type of workers

Table 64 Workforce distribution in planning area, 2011

Sr.No	Name of Area	Population 2011	Total Worker	Main Worker	%	Marginal Worker	%	Non-Worker	%
1	Dibrugarh Municipal Board	139565	52986	45684	32.73	7302	5.23	86579	62.03
2	OG & CT	14731	5247	4579	31.08	668	4.53	9484	64.38
3	13 Semi-Urbanised villages	31207	11630	9314	29.85	2316	7.42	19577	62.73
4	53 villages of Dibrugarh East Revenue Circle	75921	31135	22300	29.37	8835	11.64	44786	58.99
5	115 villages of Dibrugarh West Circle	99518	42903	25811	25.94	17092	17.17	56615	56.89
6	2 villages of Moran Circle	455	285	279	61.32	6	1.32	170	37.36
Total		**361397**	**144186**	**107967**	29.87	**36219**	10.02	**217211**	60.10

(Source: Census of India, 2011)

The details of share of main, marginal and non-working population of the Dibrugarh Master Plan Area is furnished in the table 64. This table reveals that less than one third (29.87%) of the total population is main workers, very meagre (10.02%) falls under marginal workers and nearly two third (60.10%) is non-workers in Dibrugarh Planning Area. The Higher share of non-working population indicates that lack of employment opportunities/infrastructure is prevailing in the system. The higher number of main workers to the total population is in Dibrugarh MB area while the lower numbers in villages of rural and Moran circle. These phenomenon highlights that there is a shift from rural to urban migration i.e., Push effect from rural area was observed in the system during the year 2011

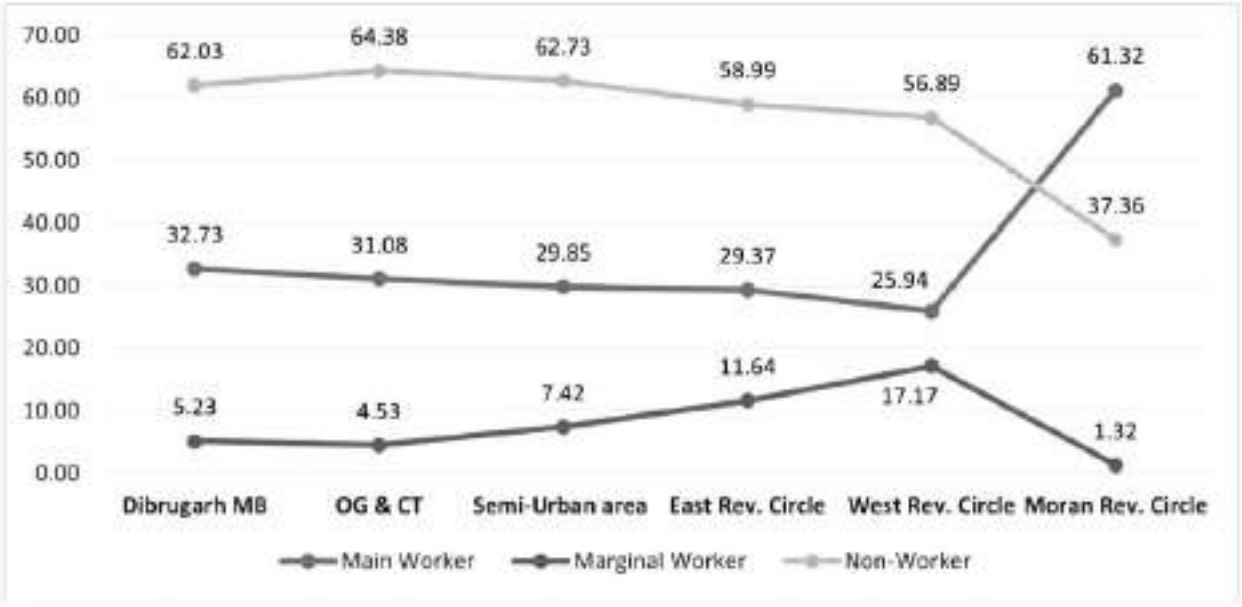


Figure 39 Workforce distribution by type of workers, 2011

3.3.3.2 Workforce distribution by sectors of economy

Table 65 Workforce Distribution by sectors of Economy (2011)

Sr. No.	Name of Area	Population 2011	Total Worker	Primary Sector	%	Secondary Sector	%	Tertiary Sector	%
1	Dibrugarh MB	139565	52986	614	1.16	1361	2.57	51011	96.27
2	OG & CT	14731	5247	100	1.91	105	2.00	5042	96.09
3	13 Semi-Urban area	31207	11630	1619	13.92	304	2.61	9707	83.47
4	53 villages of East R.C.	75921	31135	5838	18.75	1012	3.25	24285	78.00
5	115 villages of West R.C.	99518	42903	18004	41.96	1221	2.85	23678	55.19
6	2 villages of Moran Circle	455	285	274	96.14	1	0.35	10	3.51
Total		**361397**	**144186**	**26449**	**18.34**	**4004**	**2.78**	**113733**	**78.88**

(Source: Census of India, 2011)

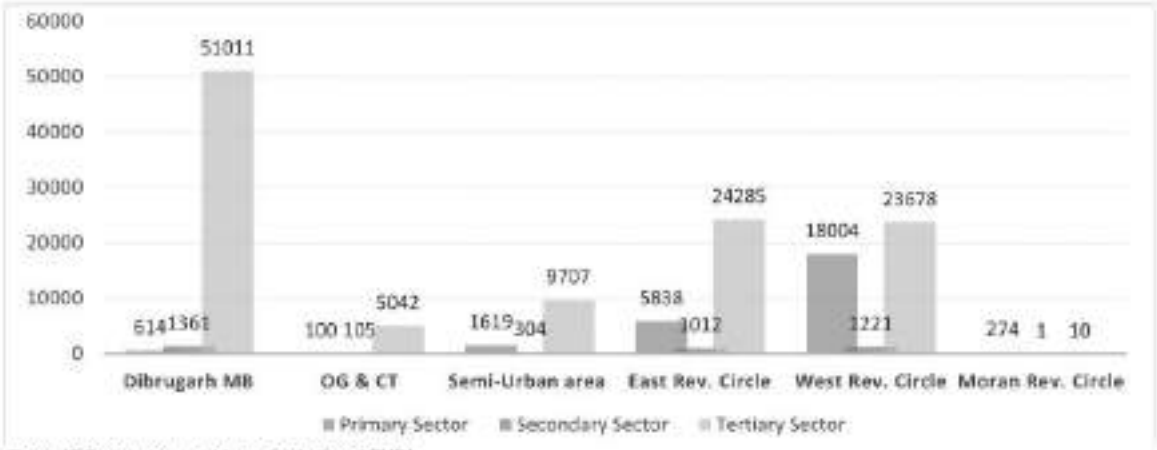


Figure 40 Sector wise workforce distribution of DMPA

The details of workforce distribution by sectors of economy are described in the table 65 reveals that out of the total working population of Dibrugarh Planning Area, 18.34 % work in the primary sector, very meagre (2.78%) in secondary sector and almost major (78.88%) in tertiary sector. This composition clearly indicates that there is a higher dependency of working population on tertiary sector, followed by primary sector. However, in rural areas, dependency on primary sector is moderate. Dibrugarh municipal board area is mainly dependent on tertiary sector as major commercial and activities are concentrated in and around the ward 22. As there are very less processing industrial establishments such as those that take the raw materials produced by the primary sector and process them into manufactured goods and products, the dependency on secondary sector is also very less.

3.3.4 EMPLOYMENT PROJECTIONS

3.3.4.1 Workforce Population projections for Dibrugarh Master Plan area

For workforce estimation the major concerns of the economic base are type of activity, employment rate, work force participation rate (WFPR), occupation structure etc. The overall development and opportunities in a town depend on the level of economic activities in an area.

The employment projection for working population for year 2045 is given in the table 66 below.

Table 66 Workforce projections of Dibrugarh Master Plan area for year 2045

Year	Total Projected Population	Total working population	Growth Rate in Working Population	WFPR
1991	268842	83663	-	31.12
2001	305974	108988	30.27	35.62
2011	361397	144186	32.30	39.89
2021	417572	173454	20.30	41.53
2031	470719	202351	16.66	42.98
2041	527424	222867	14.60	42.22
2045	551757	232106	6.79	42.06

(Source: Compiled by Consultant)

Considering the scenario that the Workforce Participation Rate (WPR) will increase as the Master Plan 2045 projects will be implemented and more job opportunities will be created, the employment projection is calculated. After consecutive discussions with various govt. departments, the employment projection is worked out based on the optimistic scenario. Thus, the workforce participation rate for year 2045 is coming around 42.06%, which was 39.89% in year 2011 as per Census 2011. The total projected working population in Dibrugarh Master Plan area for the horizon year 2045 is 232106.

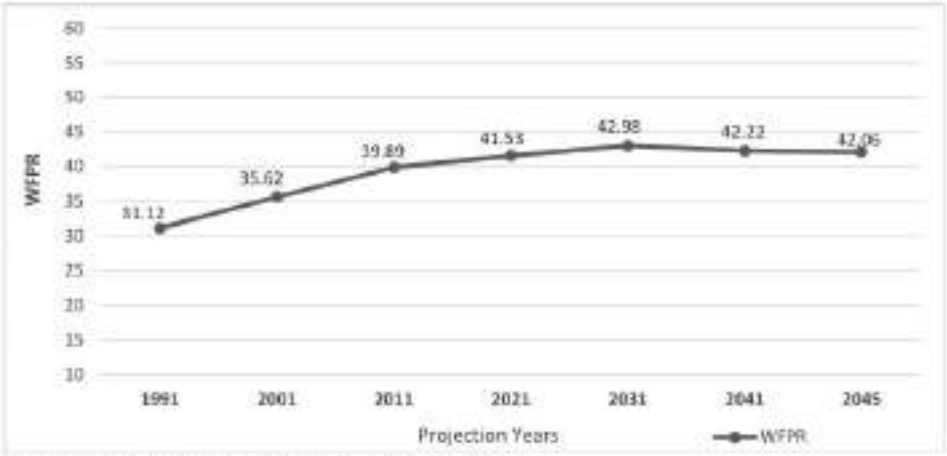


Figure 41 Projection of Work Force Participation Rate for year 2045

3.3.4.2 Sector wise projection of working population - 2045

For the year 2030 in Dibrugarh the total workforce projected is 1,59,714 out of which primary sector contributes to 92,511 which is about 57.9%, secondary sector contributes to 4367 of about 2.7% and about 62,836 of about 39.3% is contributed by tertiary sector. Sector wise Workforce Participation for different plan phases is indicated in the table below.

Table 67 Sector wise workforce population participation – 2045

Activity	2001		2011		2021		2031		2041		2045	
	Workers		Workers		Workers		Workers		Workers		Workers	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Primary	1744	1.6	4023	2.79	9193	5.31	15581	7.72	35629	16.07	43636	18.82
Secondary	2365	2.17	2394	1.66	4510	2.6	5464	2.7	6013	2.7	6267	2.7
Tertiary	104879	96.23	137769	95.55	159578	92.09	181104	89.58	180821	81.23	181971	78.48
Total	108988	100	144186	100	173454	100	202351	100	222687	100	232106	100
WFPR	35.62		39.89		41.53		42.98		42.22		42.06	

(Source: Compiled by Consultant)

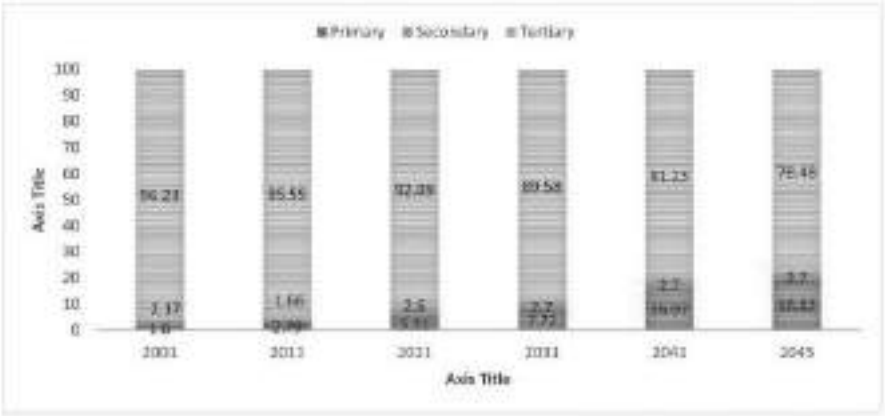


Figure 42 Sector wise workforce participation projection for year 2045

From the figure 42 it is observed that the working population in primary sector is gradually increased from year 2001 to 2011. From 2021 onwards the graph shows the steady growth in the primary working population due to the supporting policies for the agricultural sector. Beyond the policies, as a part of reducing the BPL population encouraging the active participation by the grass root level SHGs, farmers and labourers' forums would improve the relevance and the quality of the sector. In year 2045 the balance between primary and tertiary sector population seems to increase to satisfactory level.

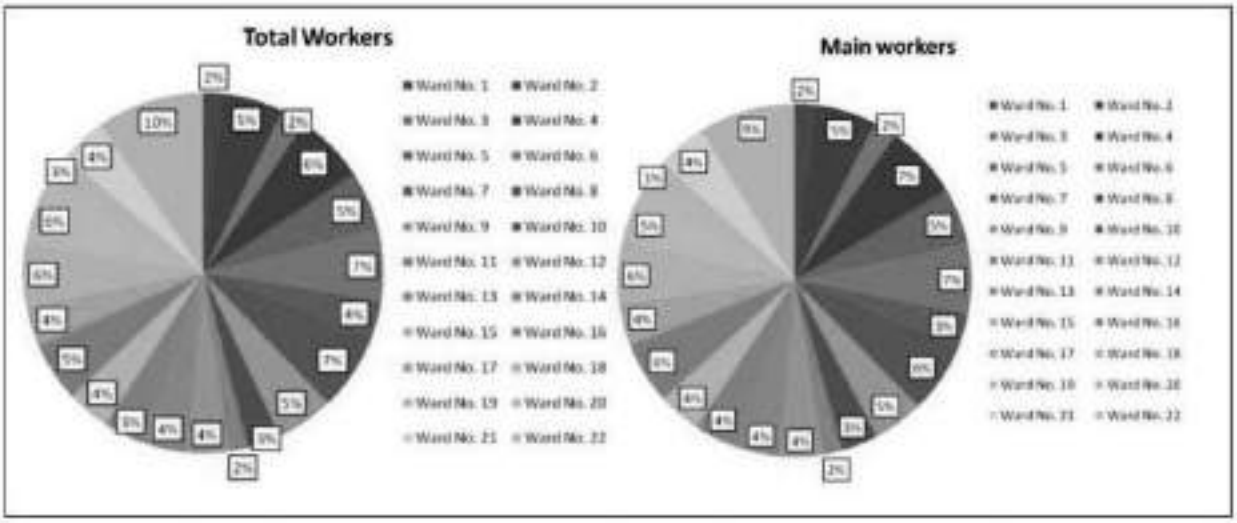
3.3.5 WARD WISE WORK FORCE PARTICIPATION, 2011

Table 69 Ward wise workforce participation, 2011

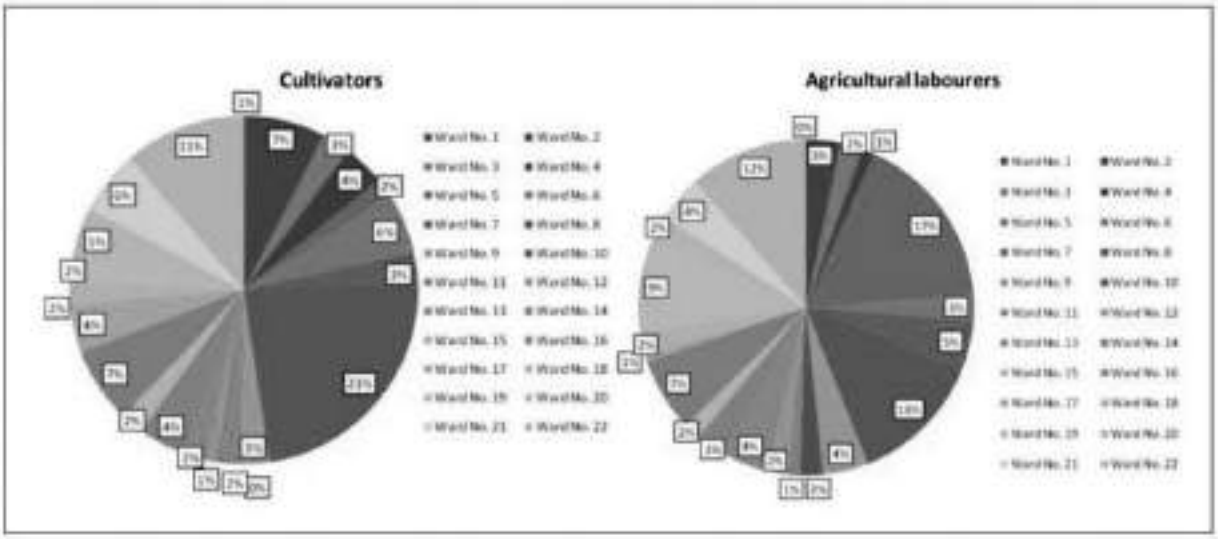
Ward	Main workers			Marginal workers			Other workers			Total workers			Non-workers		
	persons	male	female	persons	male	female	persons	male	female	persons	male	female	persons	male	female
1	962	807	155	38	25	13	955	802	153	1,000	832	168	2,032	699	1,333
2	2,472	2,031	441	250	249	101	2,433	2,000	433	2,822	2,280	542	5,152	1,775	3,377
3	975	754	221	209	97	112	960	745	215	1,184	851	333	2,191	796	1395
4	3,126	2,489	637	228	144	84	3,107	2,476	631	3,354	2,633	721	5,818	1,874	3944
5	2,311	1,712	599	415	192	223	2,169	1,629	540	2,726	1,904	822	4,320	1,514	2806
6	3,016	2,379	637	486	311	175	2,978	2,351	627	3,502	2,690	812	5,503	1,885	3,618
7	1,501	1,222	279	416	296	120	1,454	1,198	256	1,917	1,518	399	3,297	1,106	2191
8	2,824	2,400	424	703	388	315	2,726	2,339	387	3,527	2,788	739	4,919	1,562	3,357
9	2,134	1,966	168	619	346	273	2,100	1,934	166	2,753	2,312	441	4,264	1,497	2,767
10	1,517	1,431	86	82	70	12	1,469	1,387	82	1,599	1,501	98	2,737	920	1,817
11	742	650	92	96	48	48	731	644	87	838	698	140	1,096	348	748
12	1,882	1,680	202	189	120	69	1,835	1,638	197	2,071	1,800	271	3,300	1,020	2,280
13	1,941	1,723	218	239	168	71	1,894	1,685	209	2,180	1,891	289	3,680	1,122	2,558
14	1,718	1,444	274	123	69	59	1,678	1,407	271	1,841	1,508	333	2,983	944	2039
15	1,796	1,431	365	280	160	120	1,763	1,412	351	2,076	1,591	485	3,327	1,130	2,197
16	2,626	2,407	219	219	158	61	2,585	2,375	210	2,845	2,565	280	4,574	1,923	2,651
17	1,707	1,508	199	159	107	52	1,682	1,490	192	1,866	1,615	251	3,763	1,300	2,463
18	2,598	2,128	470	405	265	140	2,542	2,088	454	3,003	2,393	610	5,684	2,045	3,639
19	2,317	1,776	541	797	477	320	2,265	1,744	521	3,114	2,253	861	3,933	1,335	2,598
20	1,397	1,194	203	55	45	21	1,363	1,160	203	1,452	1,239	213	2,755	857	1,898
21	2,054	1,660	394	122	75	47	2,016	1,640	376	2,176	1,735	441	3,331	1,083	2,248
22	4,068	3,539	529	1,072	748	324	3,856	3,357	499	5,140	4,287	853	7,920	2,765	5,155

3.3.5.1 Ward wise working population profile

According to Census of India, 2011, Ward no. 22 has the highest percentage i.e. 10% and 9% of total workers and main workers respectively.

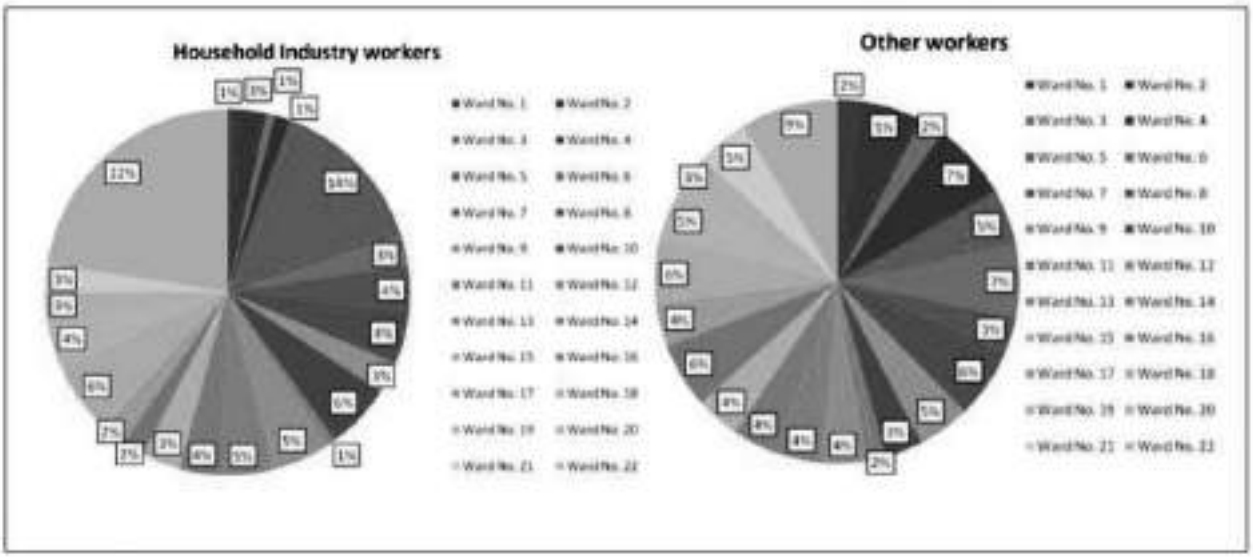


Ward no. 1, 3 and 11 have the lowest percentage i.e. 2% of total workers also main workers. Ward no. 8 has the highest percentage 23% of cultivators and ward no. 10 has no cultivator. In case of agricultural labourers, ward no. 5 has highest of 17% and ward no. 1 has none.

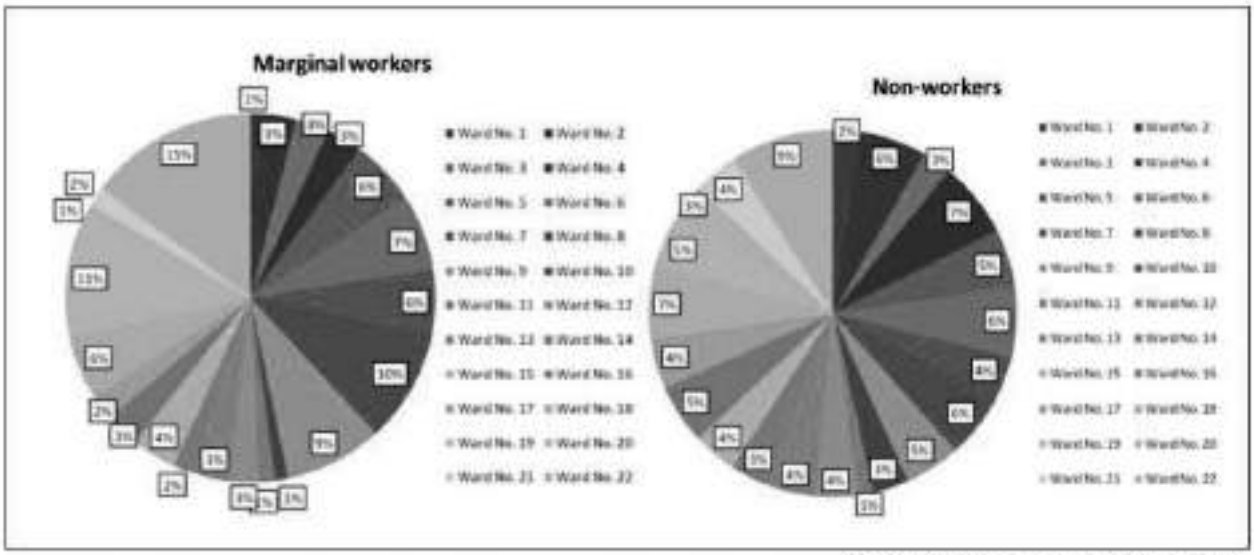


Ward no. 22 has the highest percentage of household industry workers and other workers of 22% and 9% respectively and ward no. 1, 3, 4 % 11 have the lowest of 1%

in household industry workers, also ward 1, 3 & 11 have the lowest of 2% in other workers.



Ward no. 22 has the highest percentage of marginal workers and non-workers of 15% and 9% respectively. Ward no. 1, 10 & 11 have the lowest percentage of 1% of marginal workers and non-workers of 1% in ward no. 11.



(Source: District Census Handbook Dibrugarh, 2011)

3.3.6 WARD WISE OCCUPATIONAL CLASSIFICATION OF MAIN WORKERS, 2011

Table 69 Ward wise occupational classification of main workers, 2011

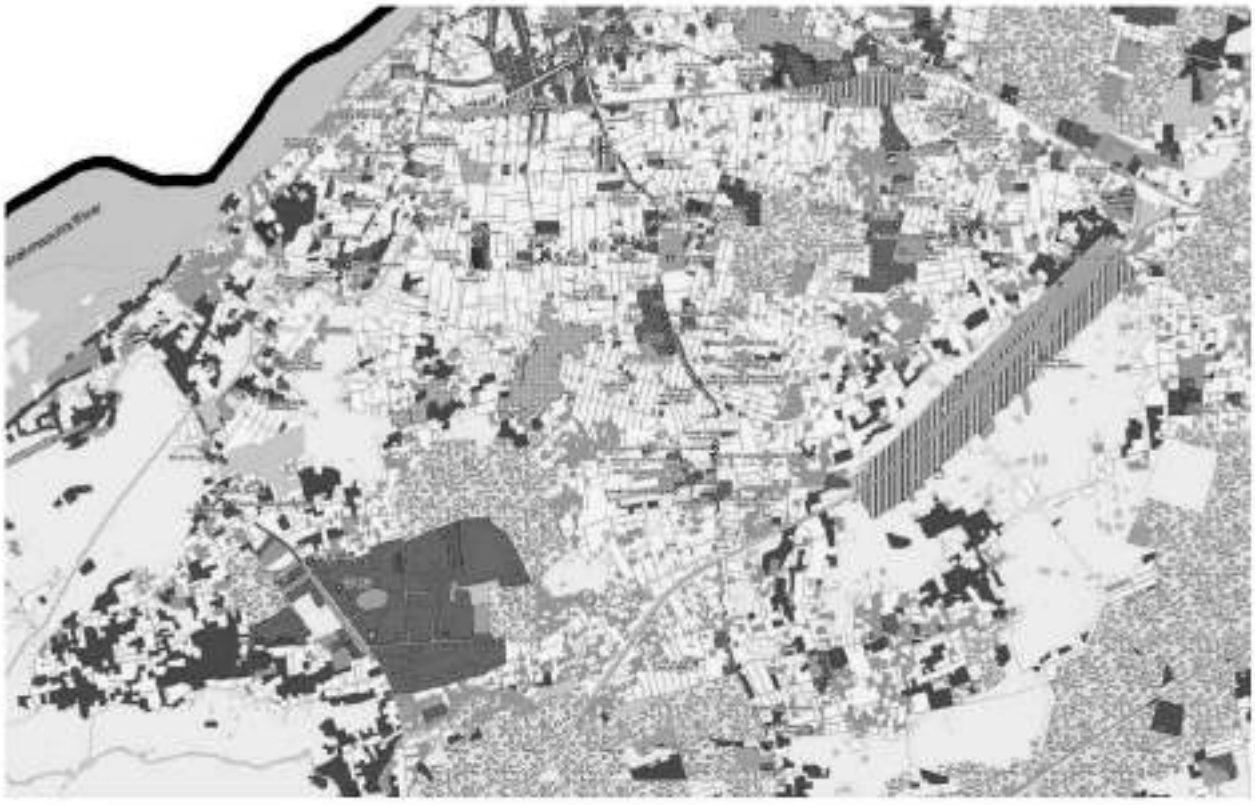
Ward	Cultivators			Agricultural labourers			Household industry workers			Other workers		
	persons	male	female	persons	male	female	persons	male	female	persons	male	female
1	1	0	1	0	0	0	6	5	1	955	802	153
2	13	12	1	6	6	0	20	13	7	2,433	2,000	433
3	5	2	3	4	3	1	6	4	2	960	745	215
4	7	4	3	2	2	0	10	7	3	3,107	2,476	631
5	3	2	1	31	15	16	108	66	42	2,169	1,629	540
6	11	7	4	5	4	1	22	17	5	2,978	2,351	627
7	6	4	2	9	7	2	32	13	19	1,454	1,198	256
8	42	23	19	23	16	7	33	22	11	2,726	2,339	387
9	5	4	1	8	8	0	21	20	1	2,100	1,934	166
10	0	0	0	4	3	1	44	41	3	1,469	1,387	82
11	4	3	1	2	0	2	5	3	2	731	644	87
12	2	2	0	4	4	0	41	36	5	1,835	1,638	197
13	4	3	1	8	5	3	35	30	5	1,894	1,685	209
14	8	7	1	5	4	1	27	26	1	1,678	1,407	271
15	4	3	1	3	2	1	26	14	12	1,763	1,412	351
16	13	7	6	13	12	1	15	13	2	2,585	2,375	210
17	8	6	2	1	1	0	16	11	5	1,682	1,490	192
18	4	3	1	4	4	0	48	33	15	2,542	2,088	454
19	4	3	1	17	14	3	31	15	16	2,265	1,744	521
20	9	9	0	4	4	0	21	21	0	1,363	1,160	203
21	11	7	4	8	7	1	19	6	13	2,016	1,640	376
22	21	11	10	21	14	7	170	157	13	3,856	3,357	499

(Source: Census of India, 2011)

4 EXISTING LANDUSE ANALYSIS-2020

Land is the habitat of men, and its wide use is crucial for the economic, social, and environmental advancement of all countries. Land is partitioned for administrative and economic purposes, and it is used and transformed in a myriad way. Land use is the use of land made by man. It is broad and important term used to classify land according to its use. Land use is commonly used to refer the spatial distribution of functions in each area. The study of land use holds a very significant place where a particular settlement can be recognized as a town depends on its functional structure. The functional activity can be regarded as the main regions for the growth of an urban centre. The main purpose of land use study is to provide framework for the development of a particular area. it gives us an idea about the proportion of various types of land. Landuse give an accurate picture of an urban area which is having a great significance for future planning. The main purpose of land use classification is to provide framework for the development of a particular area. The need for studying the land use aspect is elaborated as follows: To know the arrangement of various parts of town put to different uses such as residential, commercial, industrial etc. To provide standardize distribution of land use. Land use study provides the framework for the development of a particular area and direction of development. It gives us an idea about the proportion of various types of use of land.

As part of the preparation of GIS Based Master Plan - 2045, an extensive existing land use survey was carried out for the entire Dibrugarh Planning Area. The Existing Land Use was updated based on ground reality on the scientific base map prepared with the help of Satellite Image and Revenue records like village level cadastral sheets, Field Measurement Book sheets and Town Survey Sheets. The Dibrugarh Planning Area is administratively divided into two entities, Urban and Rural. Urban area comprises Municipal Board area, 2 Census Towns and 2 Out Growths. and Rural comprises 181 Villages. This chapter presents the existing landuse analysis, 2020 for urban, rural and overall planning area. Further the existing land use analysis of the proposed conurbation area is also discussed to understand the current scenario of the new conurbation area.



4.1 CONURBATION AREA

The Conurbation area is a continuous urban area comprising of towns and their outgrowths merged with each other due to physical expansion and population growth. In the case of Dibrugarh, conurbation area includes one municipality area namely Dibrugarh Municipal Board, 2 Census Towns (Niz-Mancotta and Barabari AMC area) and 2 Outgrowth area (Mohpuwalimora Gohain Gaon and Tekela Chiring Gaon). The total Conurbation area is 27.04 sq.km, out of which DMB comprise 15.50 sq.km whereas OG and CTs comprises 8.54 sq.km. area. The detailed existing land use analysis of conurbation is presented in table 71. DMB is bound by Brahmaputra River & Tekela Chiring (OG) on the North-west, Barbari AMC (CT) & Bangal Gaon the western side and Niz-Mancotta and Bairagimath Kachari gaon on the southern side.

Table 70 Details of Dibrugarh Conurbation

Sr. No	Description	Details
1	Area	27.04 sq.km.
2	Gross Density	5706 person / square km. (57 pph)
3	Net Density	13336 person / square km (133 pph)
4	Loaction	City Centre
5	Major Landmarks	Dibrugarh railway Station, Gallaria Multiplex, Graham Bazar, Paltan Bazar, Assam Medical College and Hospital, Cantonment, New Market, Chowkidingee Field, Police reserve, District Court, District Jail, FCI Godown

One of the predominant Landmark in the DMB is the New Market Area which lies in the centre of the DMB area. New Market area is bound by Cole Road on the West, HS Road on the East, RKB Road on the South and Fulbagan Street on the North. City's major commercial activities lies along the RKB Road, HS Road Street, Cole Road, Babulal Poddar Street and New market road Street. Another major landmark in this precinct is Fulbagan Park which is a recreational site for the local as well as floating population. Dibrugarh Railway station, Chowkidingee Field, Big Bazar and Tibetan Market are also other major landmarks located in DMB area.

The existing land use analysis chart for urban area - 2020 is presented in figure 43. In urban area, 9.50 sq.km of land is under residential use and it is the predominant land use in this region. Traffic & Transportation land use occupies 1.24 sq.km of area in urban area. Vacant land use is around 1.80 sq.km and Waterbody is 3.74 sq.km, agricultural land use is 2.23 sq.km of the urban area. The Public & Semi-Public land use covers 0.26 sq.km in the urban area. The commercial land use in the urban area is occupying 0.66 sq.km, mixed landuse is 0.20 and industrial landuse is observed 0.25 sq.km. The Existing land use Map - 2020 for the entire urban area is illustrated in figure 43.

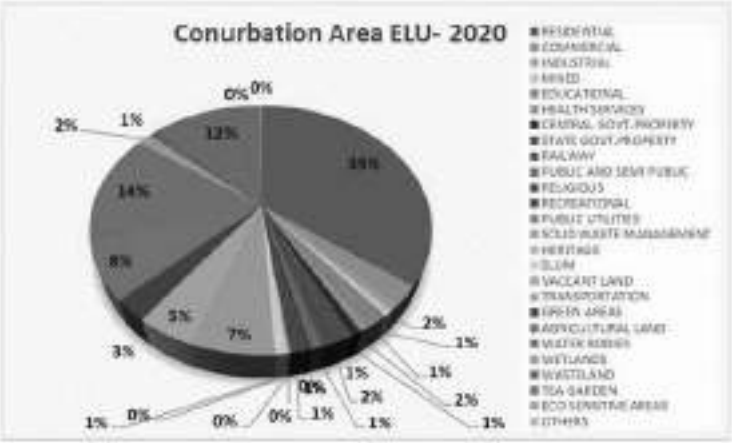


Figure 43 Existing Landuse Analysis of Conurbation area

Table 71 Existing Land Use Analysis of Conurbation Area - 2020

Sr. No.	Landuse Types	Area (Sq Km)	Percentage Area (%)
1	Residential	9.50	35.13
2	Commercial	0.66	2.44
3	Industrial	0.25	0.92
4	Mixed	0.20	0.74
5	Educational	0.50	1.85
6	Health Services	0.20	0.74
7	Central Govt.Property	0.20	0.74
8	State Govt.Property	0.50	1.85
9	Railway	0.20	0.74
10	Public And Semi Public	0.26	0.96
11	Religious	0.09	0.32
12	Recreational	0.35	1.29
13	Public Utilities	0.02	0.07
14	Solid Waste Management	0.05	0.18
15	Heritage	0.01	0.02
16	Slum	0.24	0.89
17	Vaccant Land	1.80	6.66
18	Transportation	1.24	4.59
19	Green Areas	0.75	2.77
20	Agricultural Land	2.23	8.25
21	Water Bodies	3.74	13.83
22	Wetlands	0.43	1.59
23	Wasteland	0.30	1.11
24	Tea Garden	3.30	12.20
25	Others	0.03	0.11
Total		**27.04**	**100**

Figure 44 Existing Landuse Map- 2020 for Conurbation Area

4.1.1 RESIDENTIAL

The residential land use is the predominant use in urban area and it covers 9.50 sq km of area which is around 35.13 % of the total area of the Conurbation area. Residential use is dominant on the Southern and central part of the Dibrugarh town and it is one of the oldest residential settlement within the Dibrugarh Municipality. Other major settlement contributing to the residential use in the urban area are Borpukuripar, Bushnu nagar, Santipara, Nalapool and Chiring Chapori which are major residential area in this municipality. Tekela Chiring and Barbari are other revenue villages contributing to the residential land use.

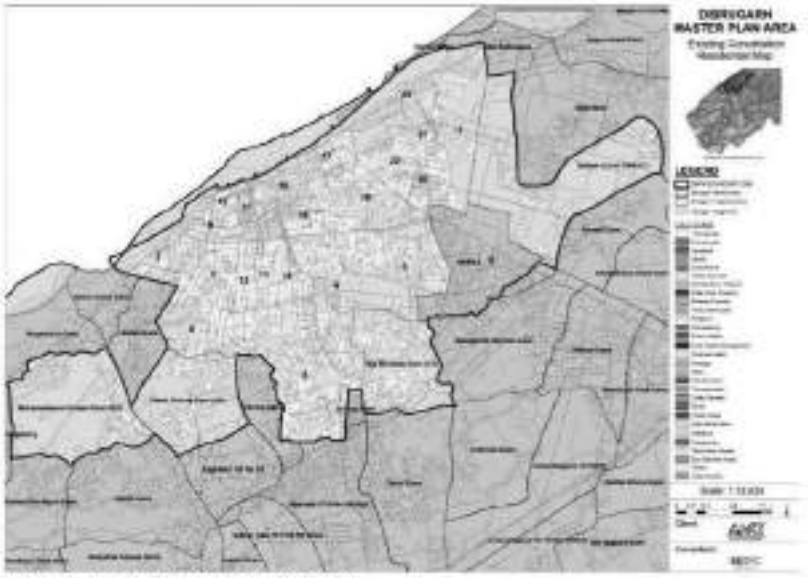


Figure 45 Residential Land Use - Conurbation

4.1.2 COMMERCIAL

The commercial land use in the urban area accounts to 2.44% (0.66 sq.km.) of the total area of the Conurbation. The CBD of the Dibrugarh region is the major contributor for the commercial land use in this Municipality. Other than the CBD, commercial land use is observed in the central part of the Dibrugarh town which is the Thana Chariali and Chowkidingee junction surrounding area. Predominant commercial use is found on both the sides of New Market Street, HS Road within the Dibrugarh Municipality.

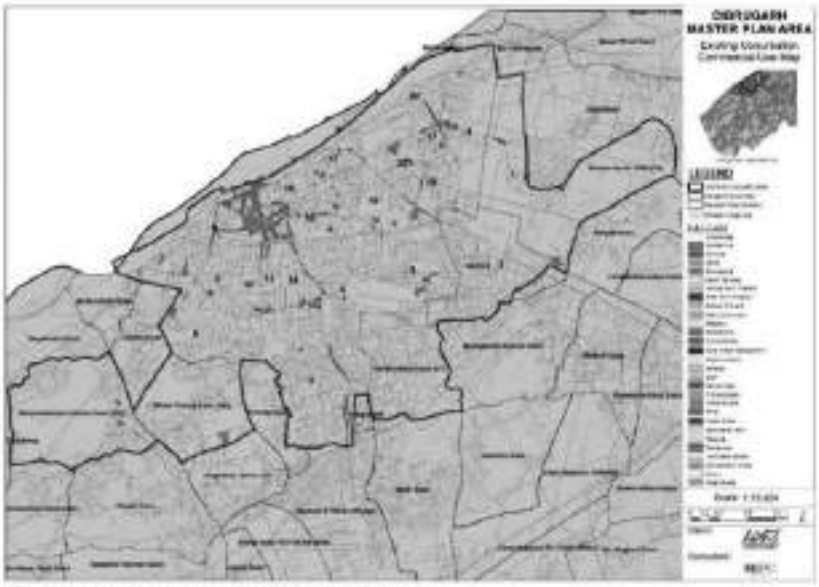


Figure 46 Existing Commercial Land use - Conurbation

4.1.3 INDUSTRIAL

The Industrial Landuse covers around 0.25 sq.km of the Urban area which accounts to 0.92% of the total area of the conurbation. Out of this, major portion is under Sessa Tea Estate Mill which is currently functional and this provides an opportunity for earmarking these land parcels for public uses like recreational or for development of urban forestry.

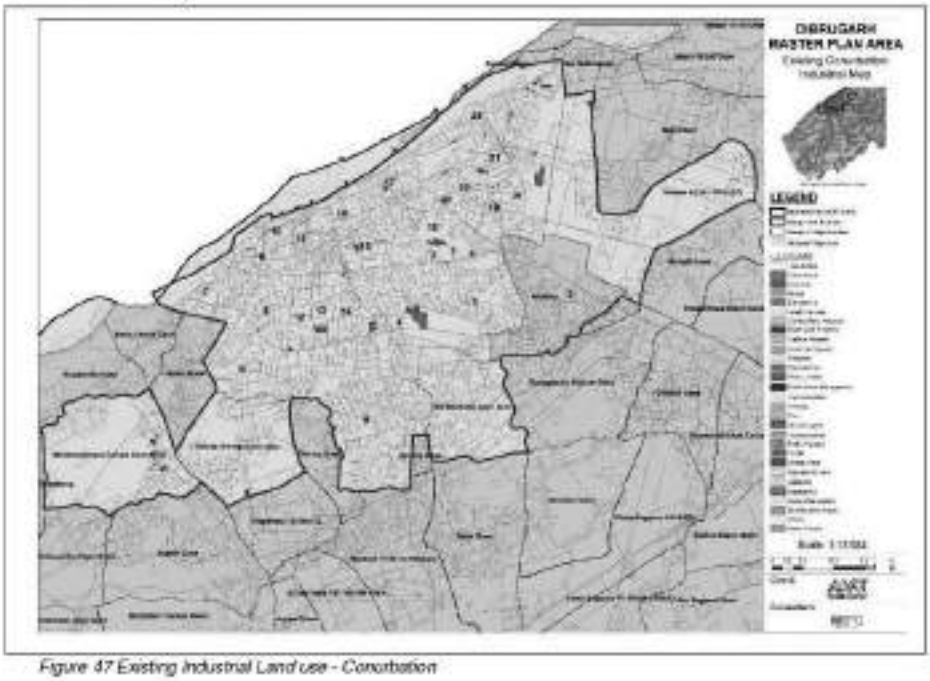


Figure 47 Existing Industrial Land use - Conurbation

4.1.4 PUBLIC & SEMI-PUBLIC

The Public & Semi-public Landuse in the urban area is about 0.26 sq.km which is around 0.74 % of the total area of the Conurbation. The Dibrugarh town accommodates several government offices like DC Office, Cantonment, District Court, Circuit House, Legislative Assembly, Department of Revenue, Public Works Department etc. Further, it has been observed that there are good number of religious buildings like Temples, Churches & Mosques which contributes to the Public & Semi-Public landuse of the Conurbation area.

Figure 48 Existing Public and Semi-Public Land use - Conurbation

4.1.5 OPEN SPACES

The recreational land use within the urban area accounts to 0.35 sq.km which is around 1.29% of the total area of the Conurbation. The important recreational sites within this area are Fulbagan Park in northern part of Town, Chowkidingee field, situated in the city centre side of the dibrugarh town, Shishu Udhyan, located on the southern side of the Town adjacent to the Deputy Commissioner's Office.

Figure 49 Existing Recreational Land Use - Conurbation

4.1.6 TRAFFIC & TRANSPORTATION

Traffic & Transportation covers 1.24 sq.km which is around 4.59 % of the total area of Conurbation. Large land parcels coming under the traffic & transportation land use in this region are Railway Station and ASTC bus stand. Major roads within the urban area are Mancotta road, Convoy Road and NH-37 etc.

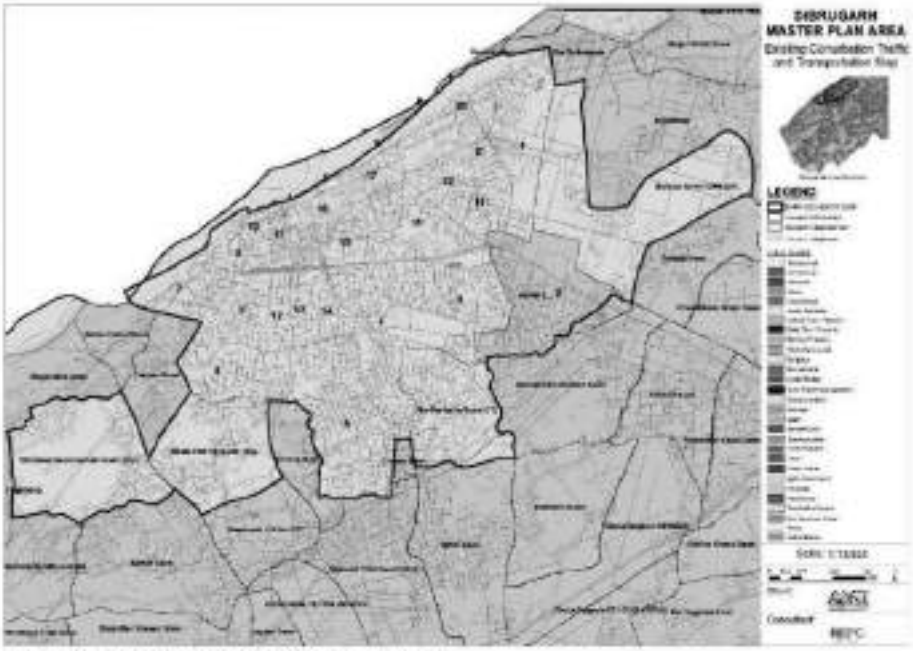


Figure 50 Existing Transportation Land Use - Conurbation

4.1.7 VACANT

In urban region around 1.80 Sq.km of land is vacant as on year 2020, which accounts for 6.66% land of the total area. Major vacant parcels are located in the revenue villages of Niz Mancatta Gaon, Chiring Gaon, Barbari & Mohpowalimora Gaon. In these villages, a lot of land is developed into layouts and are currently lying vacant. These lands can be utilized for addressing the future needs of the planning area for the plan period.

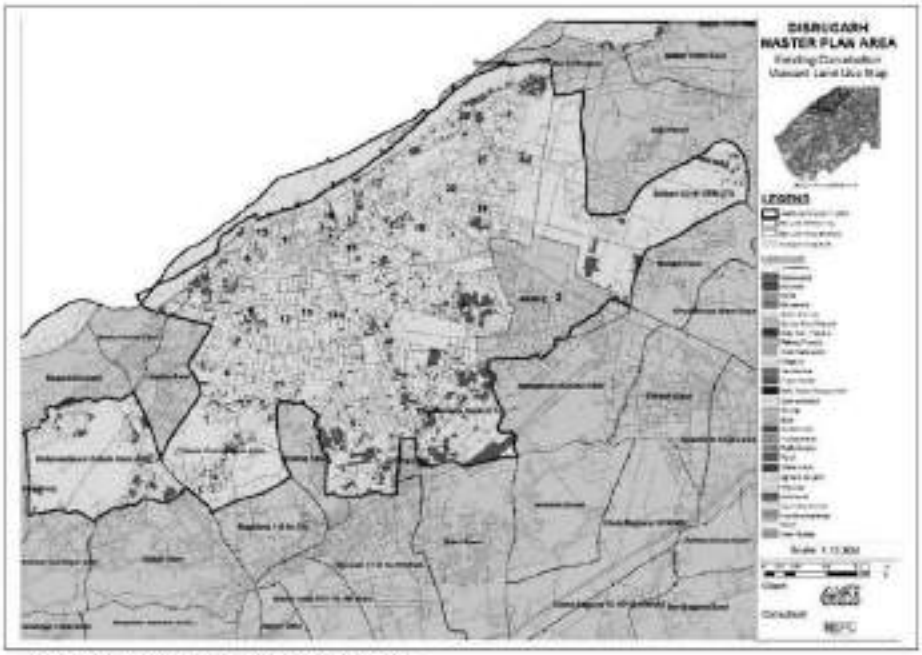


Figure 51 Existing Vacant Land Use - Conurbation

4.1.8 PROTECTED & UNDEVELOPABLE USE

Dibrugarh urban area has 4.17 sq km of area falling under protected and undevelopable land use zone. Majority of the area falling under this category is covered by wetlands and Brahmaputra river bed.

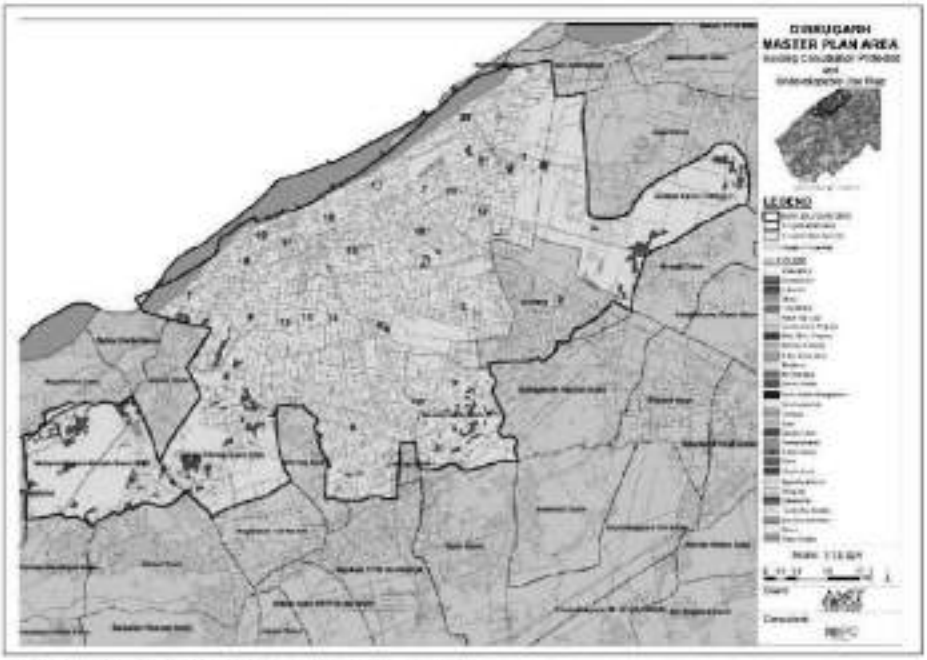


Figure 52 Existing Undevelopable Land Use- Conurbation

4.2 RURAL AREA

Dibrugarh Planning Area accommodates total 183 villages as rural area. The total area covered by rural region is 343.89 sq.km. The rural area is divided into three land pockets 13 Semi urbanize villages, 53 villages from Dibrugarh East, 115 villages from Dibrugarh West and 2 villages from Moran. The detailed existing land use analysis of Dibrugarh Rural Area - 2020 is presented in table 72.

Table 72 Details of Rural Area

Sr. No	Description	Details
1	Area	383.95 sq.km.
2	Gross Density	569 person / square km. (6 pph)
3	Net Density	4502 person / square km. (45 pph)
4	Location	South and East of City Centre
5	Major Landmarks	Jagannath Temple, Khanikar Park, Jokai Reserve Forest, Botanical Garden, Sessa Tea Estate, Police reserve, Airport

One of the predominant Landmark in the rural Dibrugarh is the Jagannath Temple which lies on Dibrugarh Bypass Road in Tepor village. Khanikar park and Police reserve are also important landmark located in Khanikar village. Botanical garden in Jokai Reserve Forest area is a major attraction which is surrounded by Harak pather and Kalyani Na-gaon. Sessa and Jalan Tea estates are well known landholders in rural agriculture area.

The existing land use analysis chart for Rural area - 2020 is presented in figure 53. In rural area, 141.12 sq.km of land is under Agricultural use and it is the predominant land use in this region.

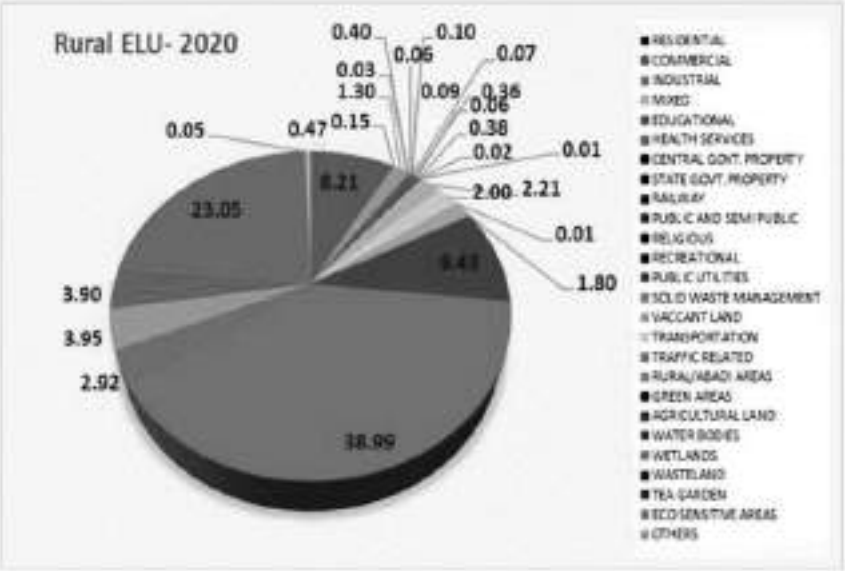


Figure 53 Existing Land Use Analysis - 2020, Rural Area

Tea gardens occupies 83.42 sq.km area and Tree clad and Green area covers 34.15 sq.km of area. Residential area occupies 29.70 sq.km of land and Industrial land use occupies 4.70 sq.km of area in rural area. Wetland covers 14.30 sq.km, Waterbody occupies 12.52 sq.km area and Vacant land use is around 8 sq.km. Commercial land use is 0.53 sq.km of the rural area. The Public & Semi-Public land use covers 1.29 sq.km in the rural area. The Mixed land use is 0.10 sq.km and recreational land use is observed 1.36 sq.km. The existing land use Map - 2020 for the entire urban area is illustrated in figure 54.

Table 73 Existing Land use Analysis for Rural Dibrugarh - 2020

Sr. No.	Landuse Type	Area (Sq Km)	Percentage (%)
1	Residential	29.70	8.21
2	Commercial	0.53	0.15
3	Industrial	4.70	1.30
4	Mixed	0.10	0.03
5	Educational	1.44	0.40
6	Health Services	0.20	0.06
7	Central Govt.Property*	0.36	0.10
8	State Govt.Property	0.34	0.09
9	Railway	0.26	0.07
10	Public and Semi Public	1.29	0.36
11	Religious	0.20	0.06
12	Recreational	1.36	0.38
13	Public Utilities	0.09	0.02
14	Solid Waste Management	0.03	0.01
15	Vaccant Land	8.00	2.21
16	Transportation	7.25	2.00
17	Traffic Related	0.03	0.01
18	Rural/Abadi Areas	6.52	1.80
19	Green Areas	34.15	9.43
20	Agricultural Land	141.12	38.99
21	Water Bodies	12.58	2.92
22	Wetlands	14.30	3.95
23	Wasteland	14.10	3.90
24	Tea Garden	83.42	23.05
25	Eco Sensitive Areas	0.18	0.05
26	Others	1.70	0.47
	Total	**363.95**	**100**

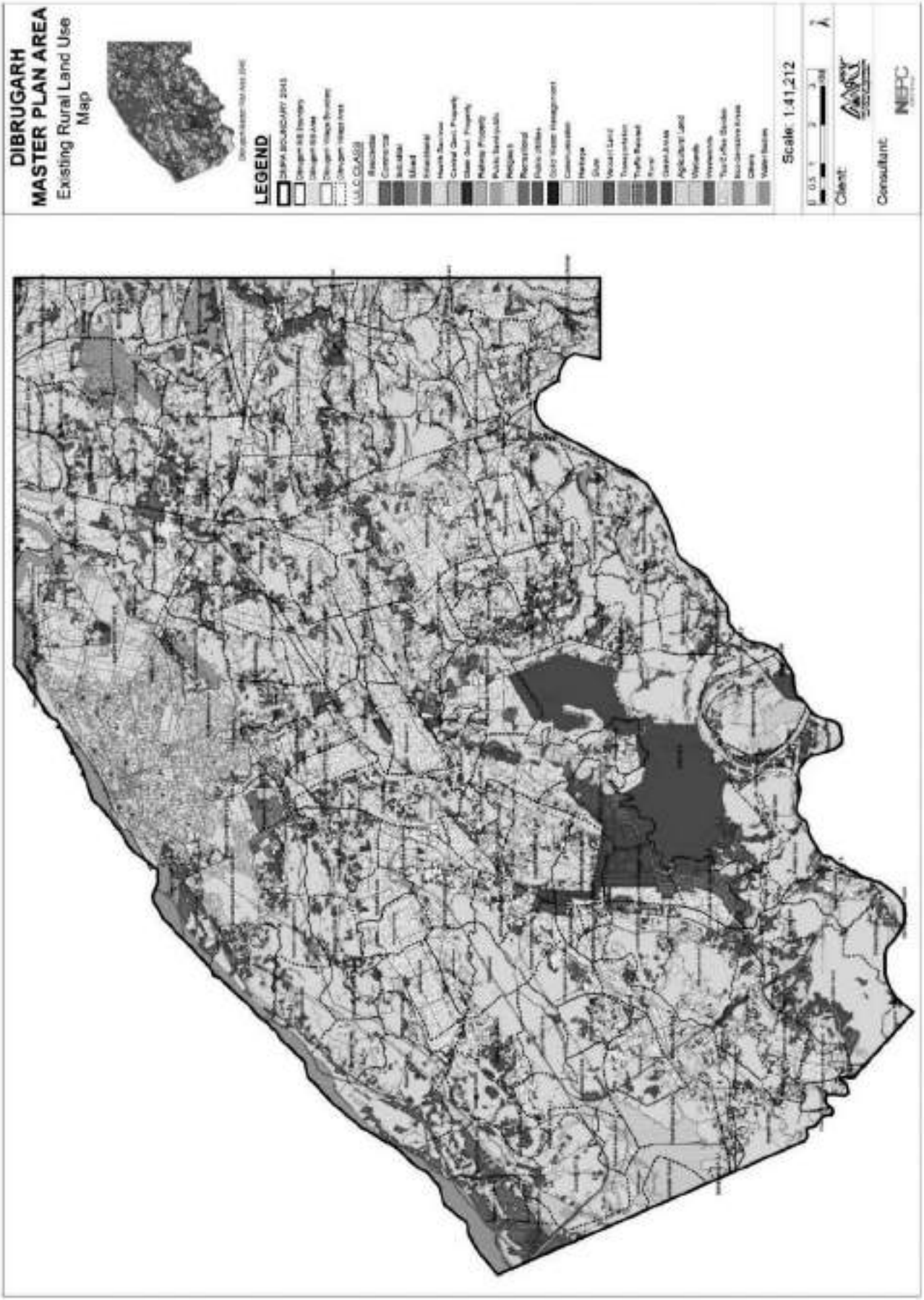


Figure 54 Existing Land Use Map - 2020, Rural Area

4.2.1 RESIDENTIAL

The residential land use is the predominant use in rural area and it covers 29.70 sq km of area which is around 8.21 % of the total area of the rural Dibrugarh. Residential use is dominant on the Southern-west side and east part of the DMPA.

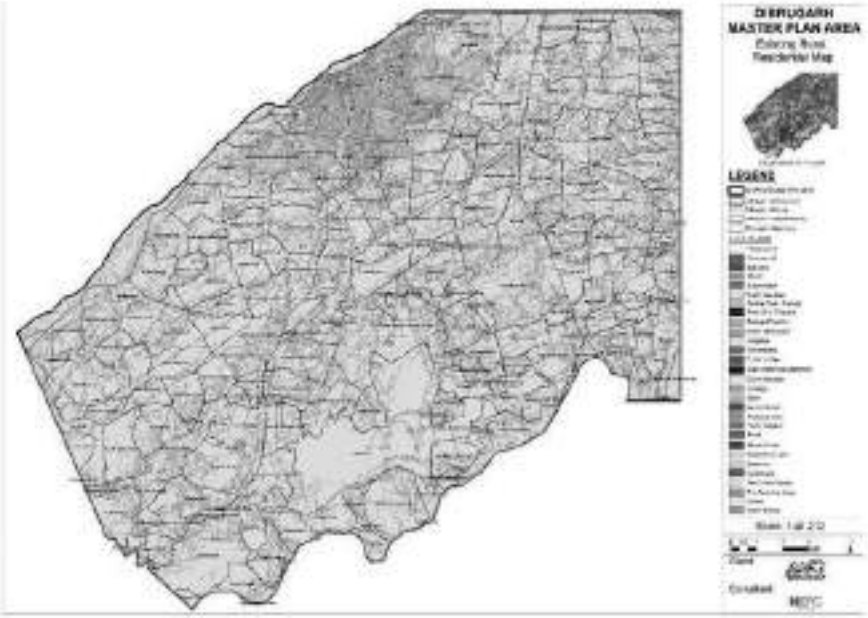


Figure 55 Existing Residential Landuse - Rural area

4.2.2 COMMERCIAL

The commercial land use in the rural Dibrugarh accounts to 0.15% (0.85 sq.km.) of the total area of the villages.

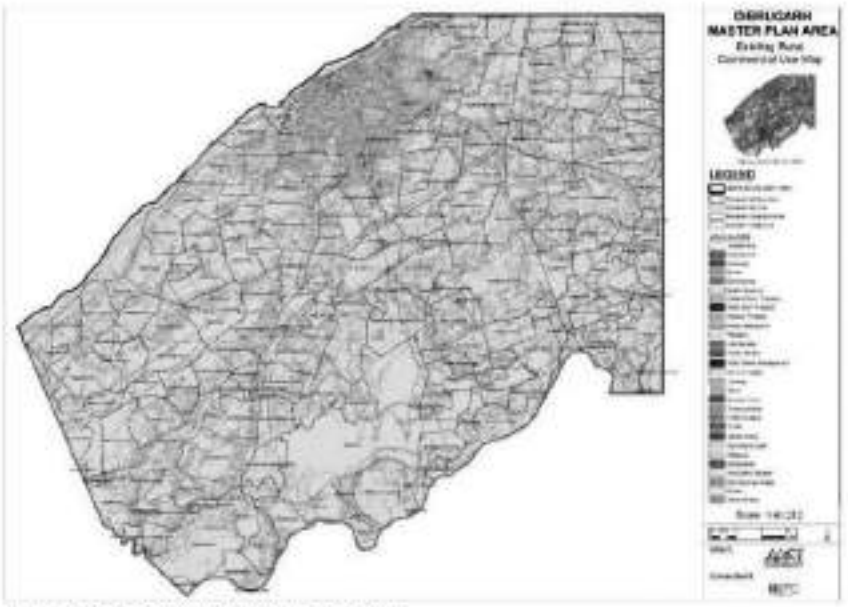


Figure 56 Existing Commercial Landuse - Rural area

4.2.3 INDUSTRIAL

The Industrial Landuse covers around 4.70 sq.km of the rural area which accounts to 1.30% of the total area of the Villages. Out of this, major portion is under BCPL industries which is currently functional and this provides good employment opportunity for economic development of the region.

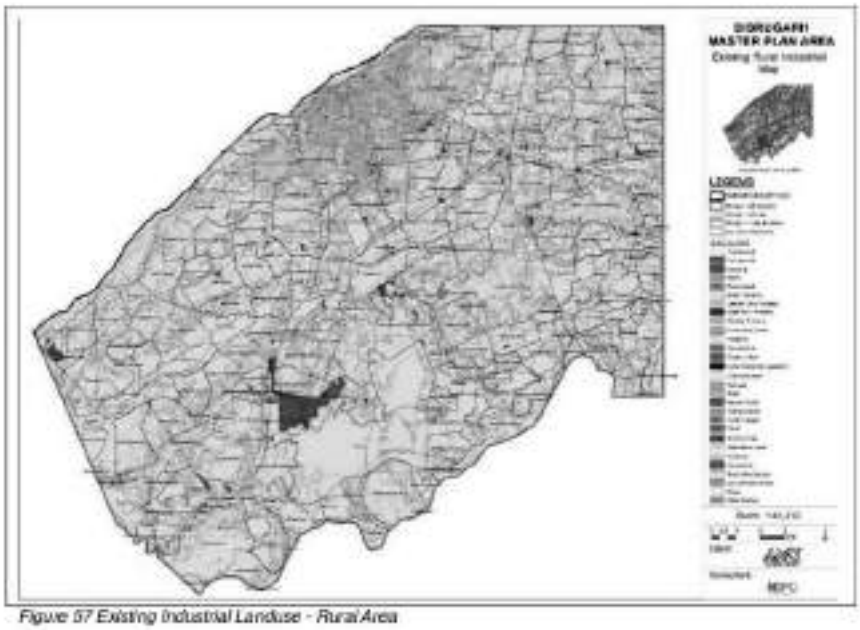


Figure 57 Existing Industrial Landuse - Rural Area

4.2.4 PUBLIC & SEMI-PUBLIC

The Public & Semi-public Landuse in the rural area is about 1.29 sq.km which is around 0.36 % of the total area of the village area. The rural area accommodates Dibrugarh Airport as major public place.

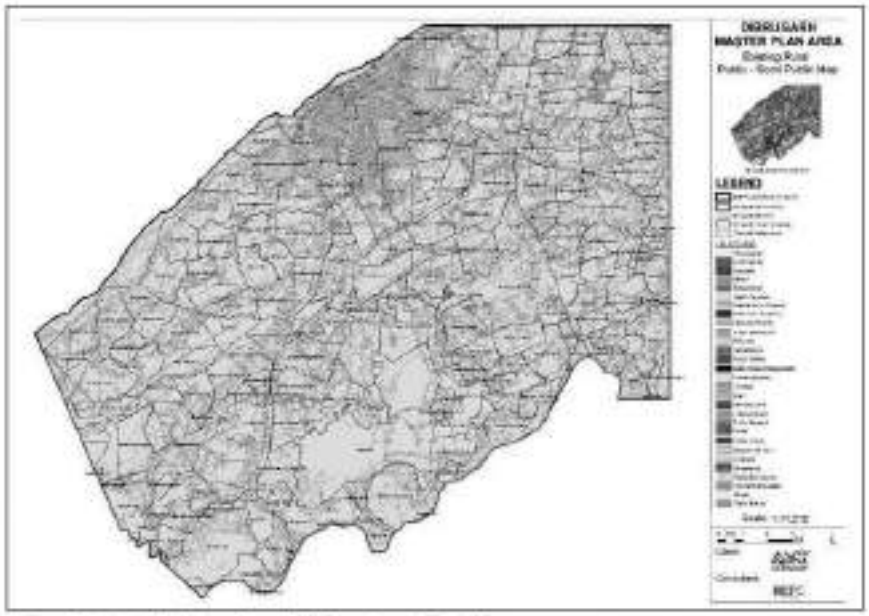


Figure 58 Existing Public and Semi-Public Land use - Rural Area

4.2.5 OPEN SPACES

The recreational land use within the rural area accounts to 1.36 sq.km which is around 0.38% of the total area of the region. The important recreational sites within the rural area are Khanikar park and botanical garden near Jokai reserve forest.

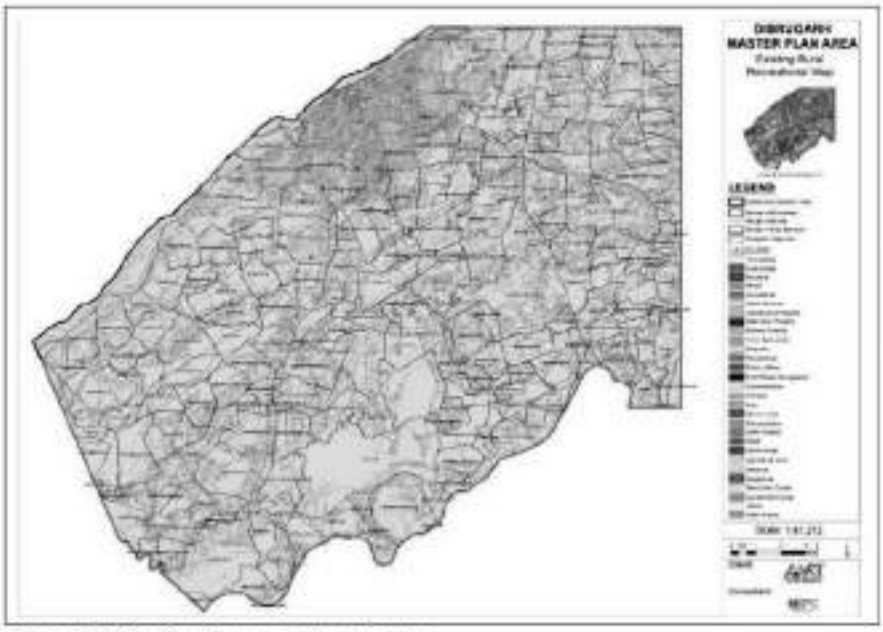


Figure 59 Existing Open Space Land Use- Rural Area

4.2.6 TRAFFIC & TRANSPORTATION

Traffic & Transportation covers 7.25 sq.km which is around 2 % of the total area of rural land cover. Large land parcels coming under the traffic & transportation land use in this area is Airport.

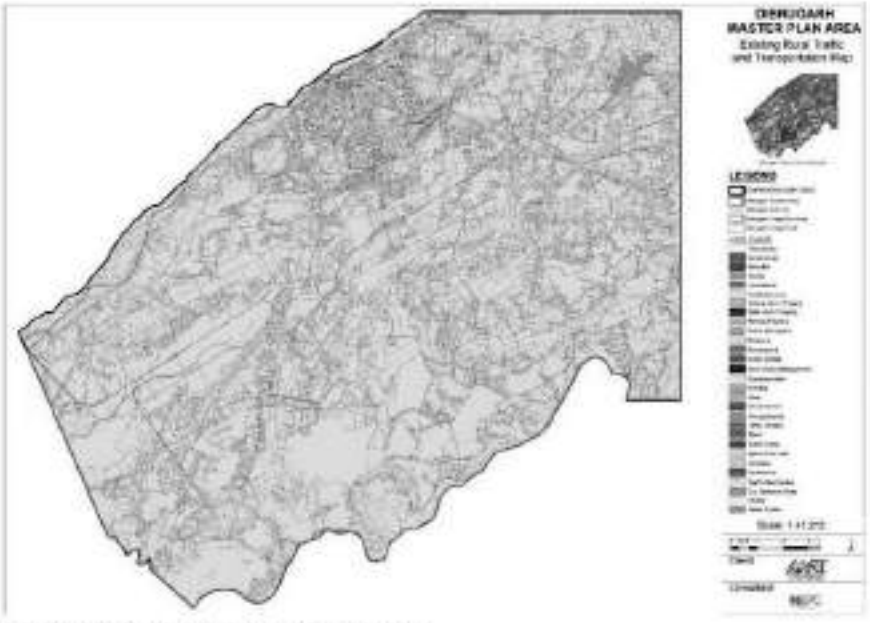


Figure 60 Existing Transportation Land Use - Rural Area

4.2.7 VACANT

In Dibrugarh rural around 8 sq.km of land is vacant as on year 2020, which accounts for 2.21% land of the total rural area.

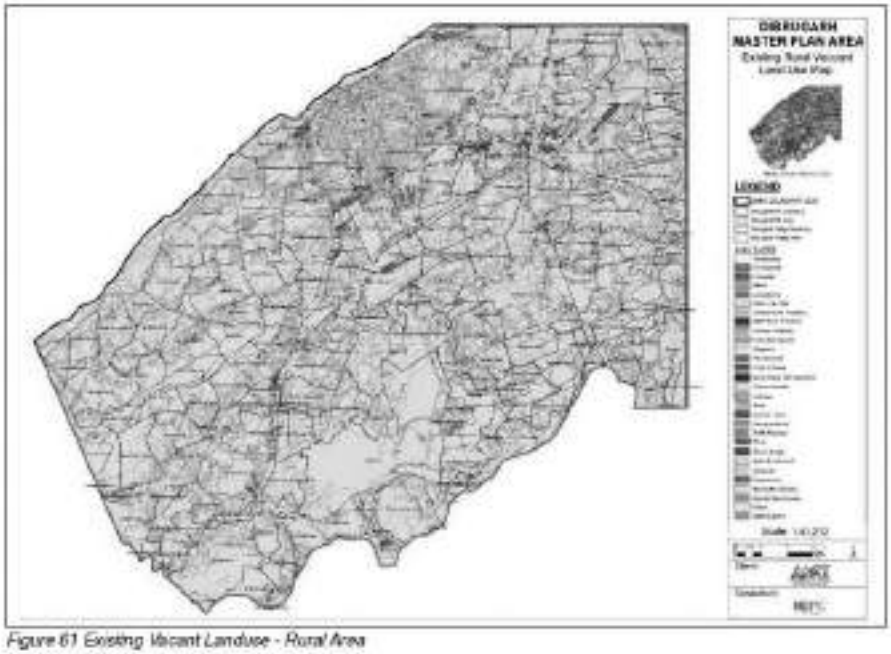


Figure 61 Existing Vacant Landuse - Rural Area

4.2.8 PROTECTED & UNDEVELOPABLE USE

Rural Area has 61.21 sq km of area falling under protected and undevelopable land use zone. Majority of the area falling under this category is covered by Jokai Reserve, Brahmaputra River line and Wetlands.

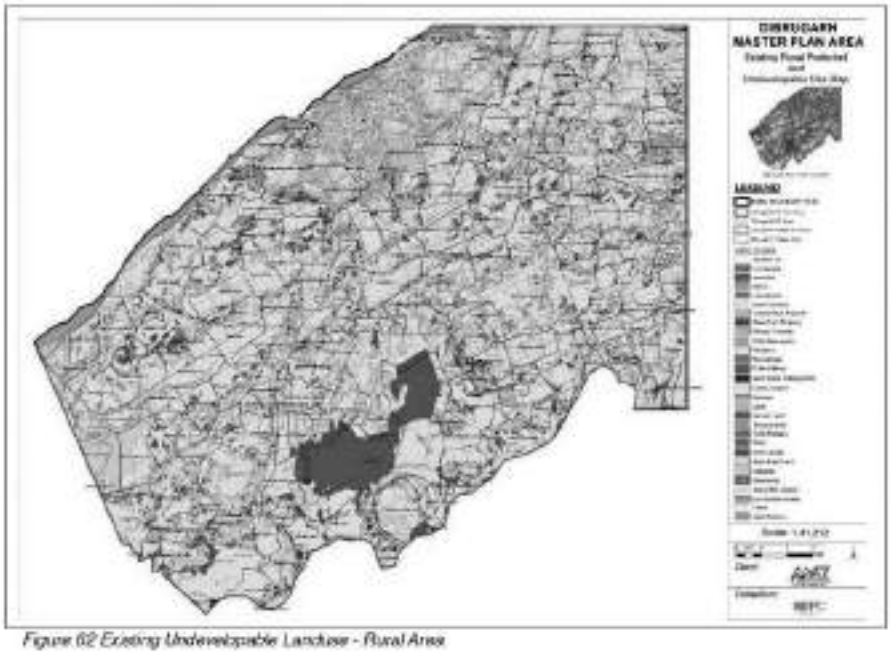


Figure 62 Existing Undevelopable Landuse - Rural Area

4.3 DIBRUGARH PLANNING AREA - 2020

The overall existing land use analysis chart for Dibrugarh Planning Area - 2020 is shown in figure 63. Agricultural land use occupies 37% of the total area of the Dibrugarh Planning Area, Tea gardens occupies around 22 % of the land area and residential land use is spread over 10% of total land area of the planning area. About 2.4% of the planning area is currently lying vacant, 2.15% is under traffic and transportation use, 1.26% is in industrial land use category and 0.39% of the Dibrugarh Planning Area land is under Public and Semi-Public land use category.

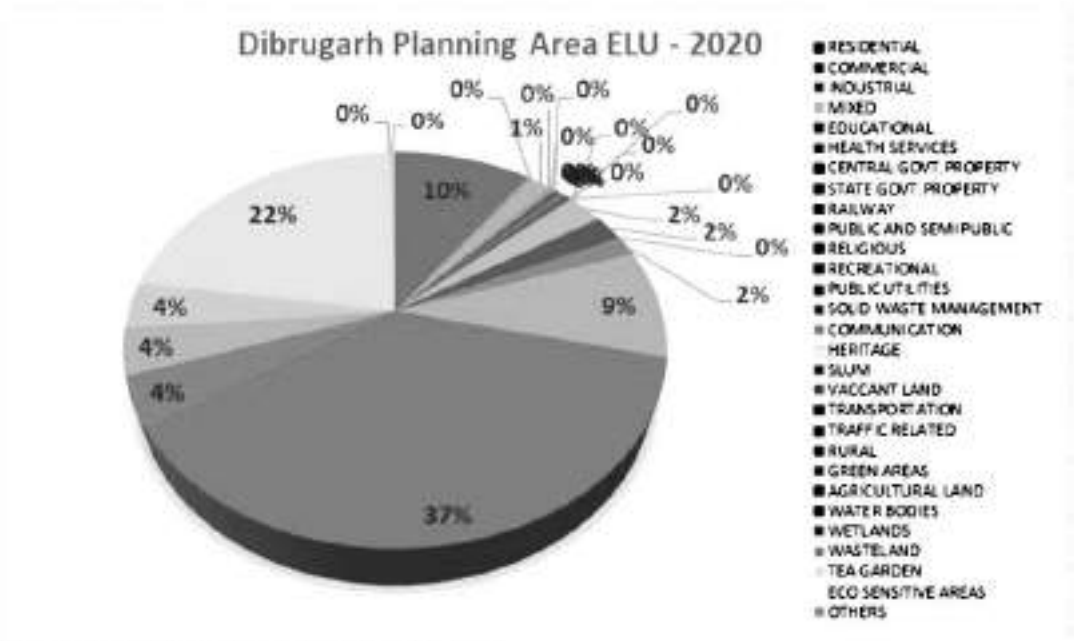


Figure 63 Landuse breakup of Dibrugarh Planning Area - 2020

Details of Existing Land Use analysis-2020 is shown in table 74, agricultural land use being the predominant land use in the planning area occupies 143.35 sq.km area, Water body or Protected and Undevelopable use is spread over 65.79 sq.km, residential use covers 39.2 sq.km and 9.8 sq.km is currently vacant. Priority should be given to utilize the vacant land to address the future residential requirements of the planning area and compacting the development should be kept as a key point in the preparation of GIS Based Master Plan-2045 to avoid sprawl.

Table 74 Existing Landuse Analysis for Dibrugarh Developable Area

Sr. No.	Landuse Type	Area (Sq Km)	Percentage Area (%)
1	Residential	39.2	9.85
2	Commercial	1.19	0.36
3	Industrial	4.95	1.26
4	Mixed	0.30	0.07
5	Educational	1.94	0.48
6	Health Services	0.40	0.10
7	Central Govt.Property	0.56	0.14
8	State Govt.Property	0.84	0.20
9	Railway	0.46	0.10
10	Public And Semi Public	1.55	0.39
11	Religious	0.29	0.07
12	Recreational	1.71	0.42
13	Public Utilities	0.11	0.03
14	Solid Waste Management	0.08	0.02
15	Communication	0.005	0.00
16	Heritage	0.005	0.00
17	Slum	0.24	0.07
18	Vacant Land	9.8	2.47
19	Transportation	8.49	2.15
20	Traffic Related	0.03	0.01
21	Village Abadi	6.52	1.67
22	Green Areas	34.97	8.94
23	Agricultural Land	143.35	37.07
24	Water Bodies	16.32	4.02
25	Wetlands	14.73	3.82
26	Wasteland	14.4	3.84
27	Tea Garden	86.72	22.10
28	Eco Sensitive Areas	0.18	0.05
29	Others	1.73	0.44
Total		**391.00**	**100**

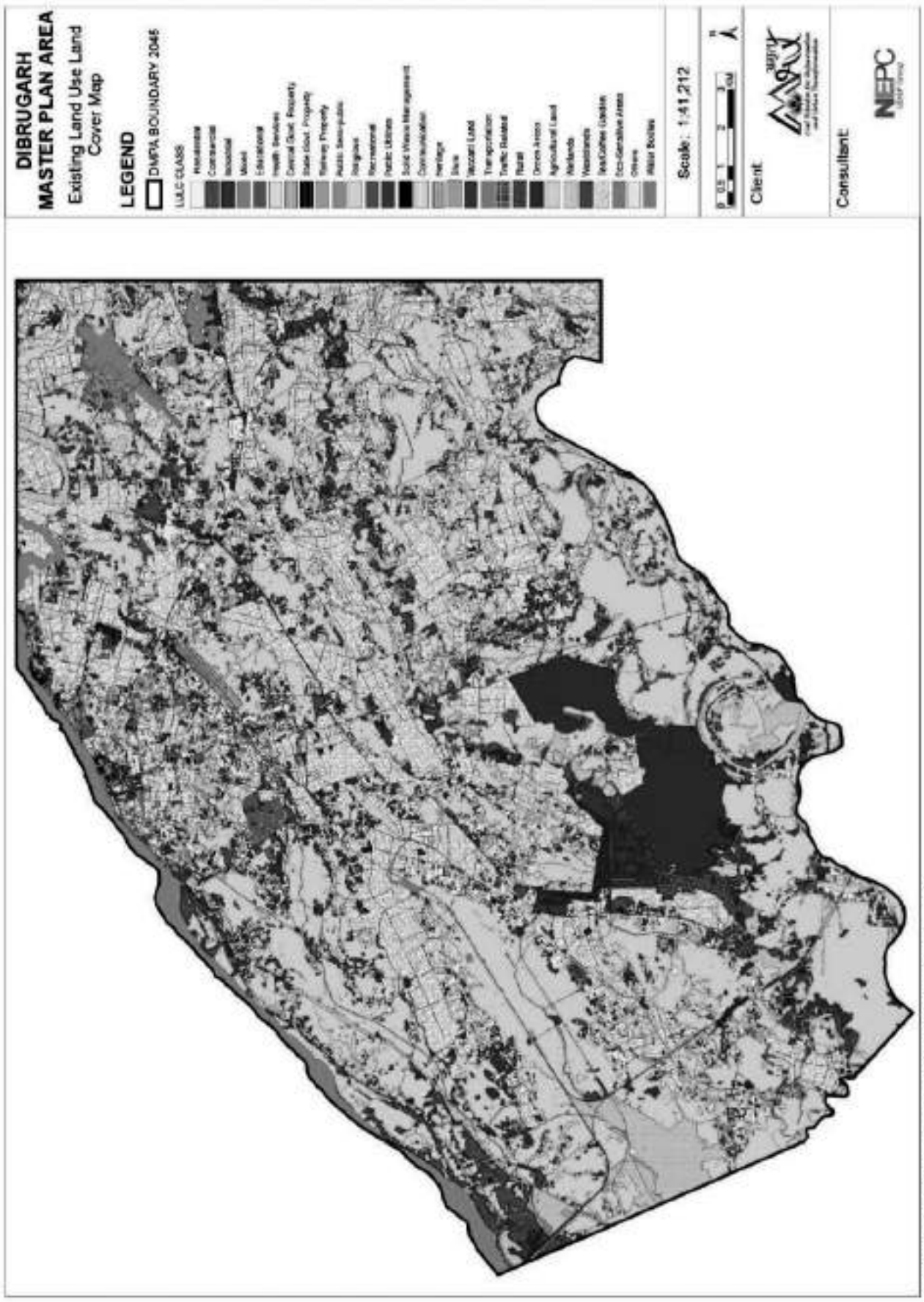


Figure 64 Existing Landuse Breakup of Dibrugarh Masterplan Area - 2020

Table 75 Comprehensive Existing Landuse Analysis if DMPA - 2020

Sr. No.	Landuse Type	Conurbation Area (Sq Km)	Rural Area (Sq Km)	Entire DMPA (Sq Km)
1	Residential	9.50	29.70	39.2
2	Commercial	0.66	0.53	1.19
3	Industrial	0.25	4.70	4.95
4	Mixed	0.20	0.10	0.30
5	Educational	0.50	1.44	1.94
6	Health Services	0.20	0.20	0.40
7	Central Govt.Property	0.20	0.36	0.56
8	State Govt.Property	0.50	0.34	0.84
9	Railway	0.20	0.26	0.46
10	Public And Semi Public	0.26	1.29	1.55
11	Religious	0.09	0.20	0.29
12	Recreational	0.35	1.36	1.71
13	Public Utilities	0.02	0.09	0.11
14	Solid Waste Management	0.05	0.03	0.08
15	Communication	-	0.005	0.005
16	Heritage	0.005	-	0.005
17	Slum	0.24	-	0.24
18	Vacant Land	1.80	8.00	9.8
19	Transportation	1.24	7.25	8.49
20	Traffic Related	-	0.03	0.03
21	Village Abadi	-	6.52	6.52
22	Green Areas	0.75	34.35	34.97
23	Agricultural Land	2.23	141.12	143.35
24	Water Bodies	3.74	12.58	16.32
25	Wetlands	0.43	14.30	14.73
26	Wasteland	0.30	14.10	14.4
27	Tea Garden	3.30	83.42	86.72
28	Eco Sensitive Areas	0.00	0.18	0.18
29	Others	0.03	1.70	1.73
	Total	**27.04**	**363.95**	**391**

The Existing Land Use area for entire DMPA as well as for two categories is presented in the table above. As it is observed from the table that, in conurbation area, there is very less vacant area available which indicates that Dibrugarh town has no further scope of development. Thus, for the town the focus is to conserve the existing buildings or redevelopment in conformity with the heritage importance and special regulations for urban area.

While concentrating on the rural area it has good amount of Agriculture and Vacant area which opens up the scope for development in the area. Additionally, it has large amount of area falling under residential and Public Semi Public categories making it clear that the inflow of people is already there due to various reasons.

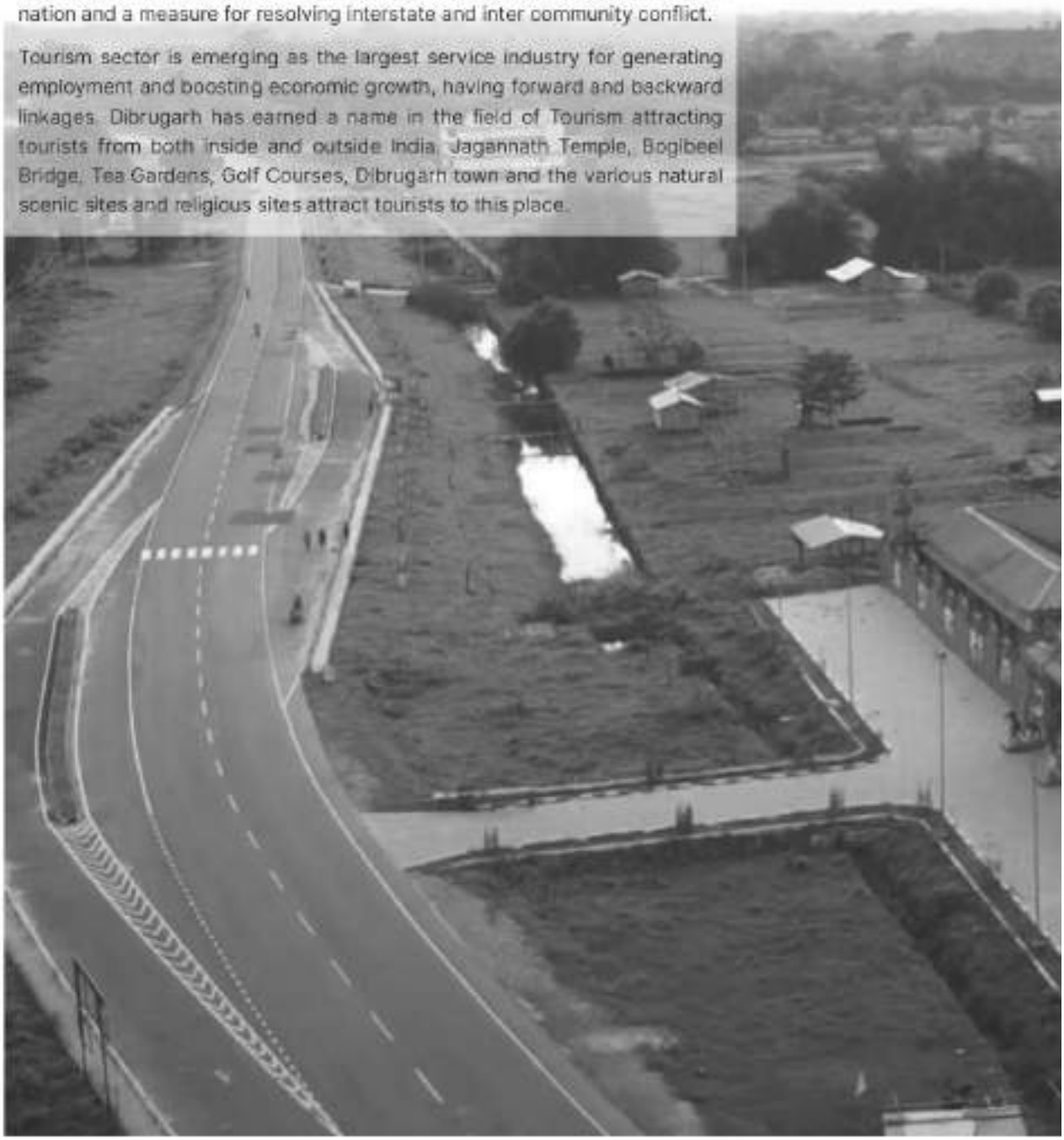
However, conurbation area is located near to CBD and includes area which are observing good amount of development, it is envisaged that the conurbation area will have the highest development in the upcoming years.

As observed from the table above, in the areas outside of conurbation, most of the land is under agricultural use as this is rural area. Thus, more than 60% of the area falls under agriculture use and Tea gardens followed by waterbodies. Very less area is covered for residential, commercial, industrial etc.

5 TOURISM AND HERITAGE

Tourism is a social and economic phenomenon that heavily influences contemporary society. Nowadays, tourism industry can be considered as business behaviour since it might influence the development of a local economic. Tourism is considered as an important industry which has vast scope for the generation of income and employment. It is one of the world's fastest growing industries, a major source of foreign exchange earner of a nation and a measure for resolving interstate and inter community conflict.

Tourism sector is emerging as the largest service industry for generating employment and boosting economic growth, having forward and backward linkages. Dibrugarh has earned a name in the field of Tourism attracting tourists from both inside and outside India. Jagannath Temple, Bogibeel Bridge, Tea Gardens, Golf Courses, Dibrugarh town and the various natural scenic sites and religious sites attract tourists to this place.



Jagannath Temple, Dibrugarh

5.1 INDIAN STATE'S/UT'S WISE TOURISTS INFLOW.

Assam Stands 22nd in the Tourism sector when compared with other states and UT's. But in case of North Eastern States, Assam stands 1st in the Tourism Sector.

Table 76 North Eastern States Wise Domestic Visitor Arrival in Assam (2006 - 2016)

Sl. no	State/UT	Domestic	Foreign	Sl. no	State/UT	Domestic	Foreign
1	Uttar Pradesh	1161297774	3130437	19	Odisha	12314442	71666
2	Tamil Nadu	338635730	4703343	20	J & K	9279798	60888
3	Andhra Pradesh	137377204	289809	21	Haryana	7389246	317205
4	Karnataka	124813271	549127	22	Assam	5326222	18703
5	Madhya Pradesh	114233039	392280	23	Goa	5203242	611082
6	Maharashtra	109959868	4539483	24	Puduchorry	1347741	111795
7	Telangana	94838573	146324	25	Chandigarh	1128173	30544
8	West Bengal	72326850	1509100	26	Daman &Din	808556	5764
9	Gujarat	39270686	314363	27	Meghalaya	791026	8252
10	Rajasthan	38341344	1494520	28	Sikkim	726183	52246
11	Jharkhand	33234408	168614	29	Dadra & Nagar Haveli	558428	1844
12	Punjab	32249844	451052	30	Arunachal Pradesh	368971	6152
13	Uttarakhand	30001151	111494	31	Tripura	366895	35833
14	Bihar	28272623	967134	32	Andaman & Nicobar Island	340618	15070
15	Delhi	26859442	2449626	33	Manipur	148404	3162
16	Himachal Pradesh	17561398	429439	34	Mizoram	66922	870
17	Chhattisgarh	17431156	7807	35	Nagaland	61397	3015
18	Kerala	12819054	1007949				

(Source: State/Union Territory Tourism Department, Ministry of Tourism)

5.2 OVERVIEW OF TOURISM IN THE NORTH EAST

The location of the region is strategically important as it shares its border with Bangladesh, Bhutan, China, and Myanmar. The natural beauty of the place, rivers and mountains, Buddhist monasteries, serene natural environment, exotic flora and fauna, unique tribal culture, folk dance and music in the North Eastern region together offers an opportunity for development of tourism in the region.

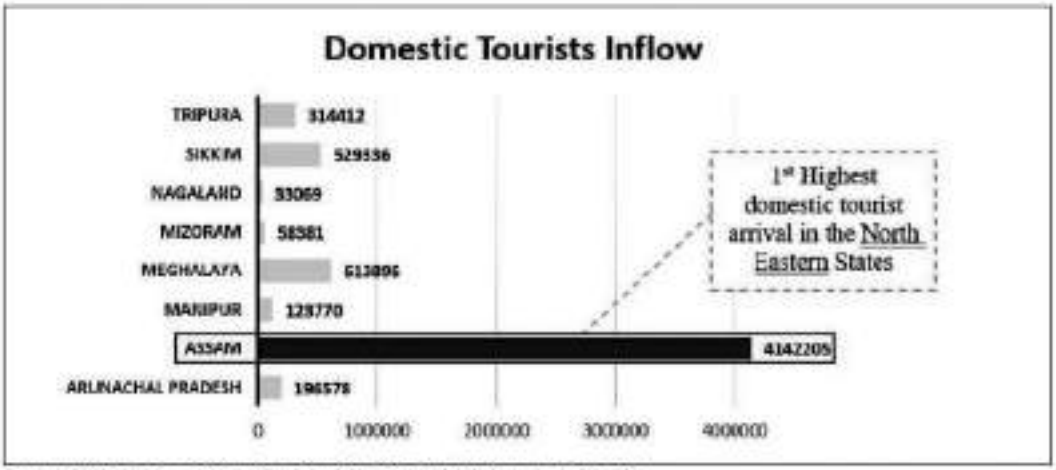


Figure 65 North Eastern States Wise Domestic Visitor Arrival in Assam (2006 - 2016)

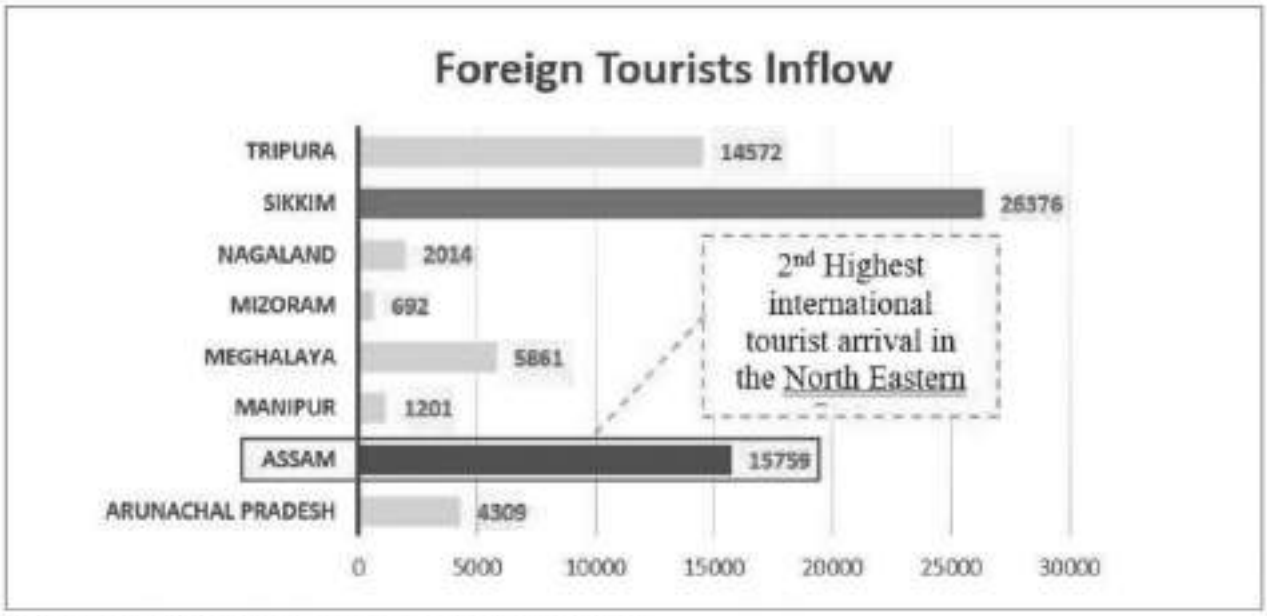


Figure 66 North Eastern States Wise Foreign Visitor Arrival in Assam (2005 - 2018)

(Source: State/Union Territory Tourism Department, Ministry of Tourism)

5.3 ASSAM STATE TOURISTS INFLOW

The tourist in-flow of the Assam state shows that maximum tourist arrivals are the Domestic tourists and it clearly depicts that there is a growth in the Tourism Sector from 2005 – 2018. There is a huge scope for Tourism Industry in the Assam state.

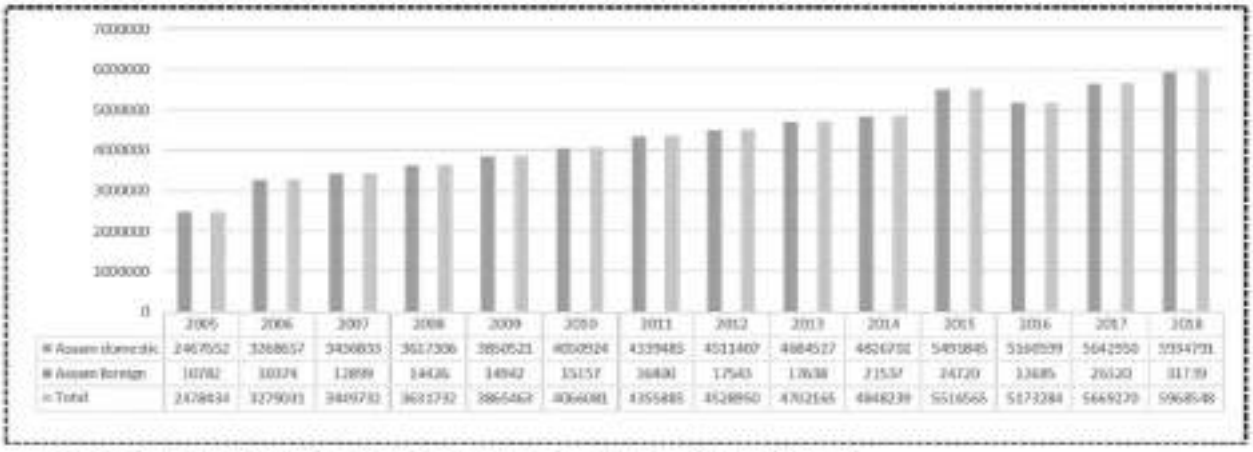


Figure 67 Assam State Tourists Inflow (Source: State/Union Territory Tourism Department, Ministry of Tourism)

5.4 ASSAM DISTRICTS WISE TOURISTS INFLOW

Table 77 District wise tourists' inflow of Assam

Sr. No.	Name of the District	Domestic	Foreign	Total
1	Guwahati	607989	2202	610191
2	Tinsukia	123327	323	123650
3	Dibrugarh	115172	408	115580
4	Jorhat	97512	431	97942
5	Silchar	68183	127	68310
6	Tezpur	51093	234	51326
7	Dhubri	45170	55	45225
8	Subsagar	41961	188	42149
9	Kaziranga	34915	1789	36704
10	Barpeta	29366	91	29458
11	Lakhimpur	25841	12	25853
12	Goalpara	24325	48	24372
13	Golaghat	22182	7	22189
14	Nagaon	18252	21	18273
15	Dhemaji	5910	0	5910
16	Morigaon	4542	2	4544
17	Majuli	327	0	327
18	Hajo	282	10	292
19	Namsai	224	54	278

(Source: State/Union Territory Tourism Department, Ministry of Tourism)

In the Tourists Centres of Assam, Guwahati has the highest Domestic and Foreign Tourists Inflow, followed by Tinsukia, Dibrugarh and Jorhat.

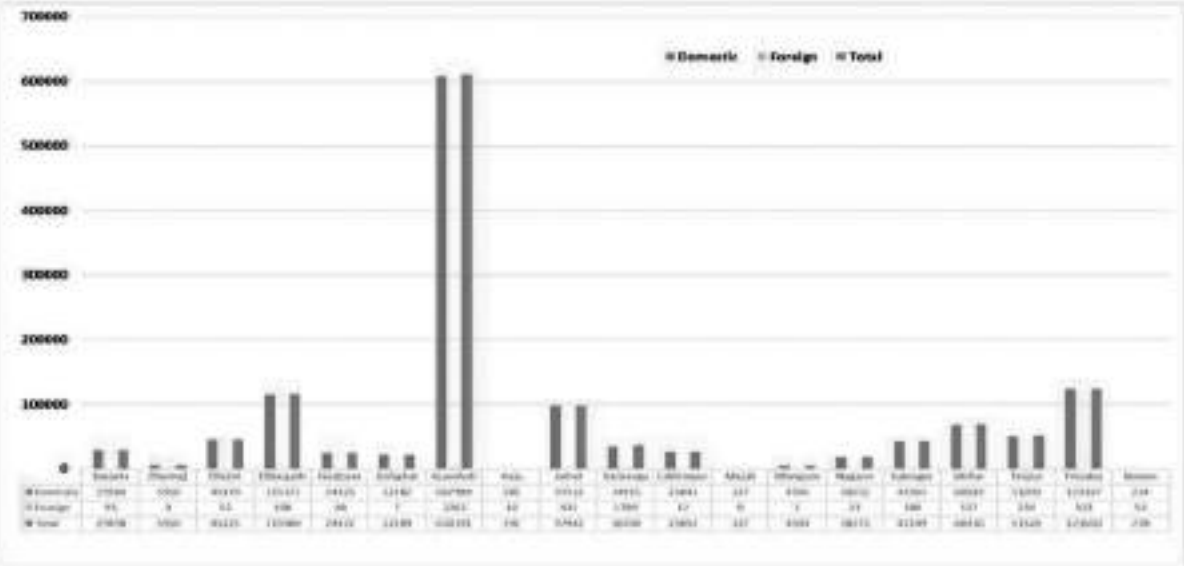


Figure 68 Tourists visits at the Tourists Centres/Districts of the Assam State (April 2005 – March 2006)

(Source: State/Union Territory Tourism Department, Ministry of Tourism)

5.5 TOURISM SCENARIO IN DIBRUGARH

The city of Dibrugarh is quite a colourful, vibrant but tiny location situated in the state of Assam. It is recognized as the Tea city of India quite naturally due to abundance of tea crops that are grown here. The 'Tea City of India', Dibrugarh in the Upper Assam area, boasts of the highest amount of tea production in India. With so many tea gardens and tea estates located in Dibrugarh, the town serves as an ideal place of tea tourism.

The Place is emerging at an increasingly fast pace at being known as the ultimate communication and industrial hub of the popular North East India.

Not only is the place being full of lush green plantations, but the city also offers its visitors with a variety of experiences including adventure activities.

There is tremendous potential in the district of Dibrugarh as far as the travel and tourism industry is concerned. Many sites located around the Dibrugarh town and spread over wide areas within the district serve as the hot bed for a variety of tourism activities, and henceforth requires immediate attention and careful handling of the concerned authorities so as to allow the tourism prospects to grow, develop and flourish.

As per Survey in Tourism statistics in Assam, total number of visitors in Dibrugarh is **1,15,000 (approx.), out of which 400 are foreign visitors.** It is one of the highest when compared with other cities of the state, namely, Guwahati and Tinsukia. The tourists majorly visit Dibrugarh due to its **scenic beauty and rich cultural heritage; predominantly, tea estates and national parks.**

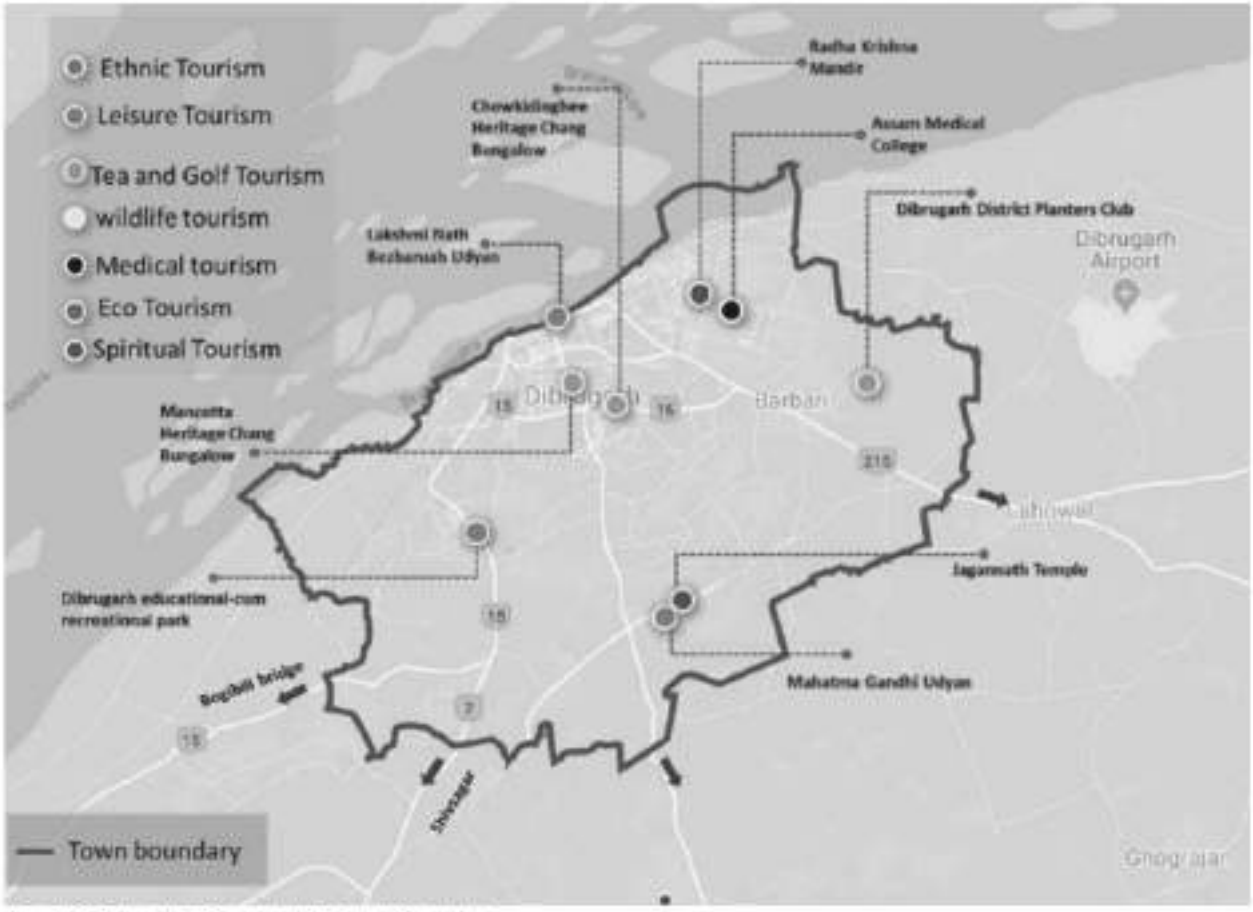


Figure 69 Tourist spots in Dibrugarh and its surrounding region

5.6 TOURISM DESTINATIONS WITHIN 25 KM OF RADIUS

5.6.1 SPIRITUAL TOURISM

5.6.1.1 Jagannath Temple

The Jagannath Temple in Dibrugarh in all ways translocate the essence of the extravagant Vaishnava temple dedicated to Lord Jagannath in Puri, Odisha. Built as a replica of the Temple in Puri, the Temple is constructed at Kanikar area in the Dibrugarh is touted to be the second largest after Puri in terms of magnitude and size.

5.6.1.2 Radha Krishna Mandir

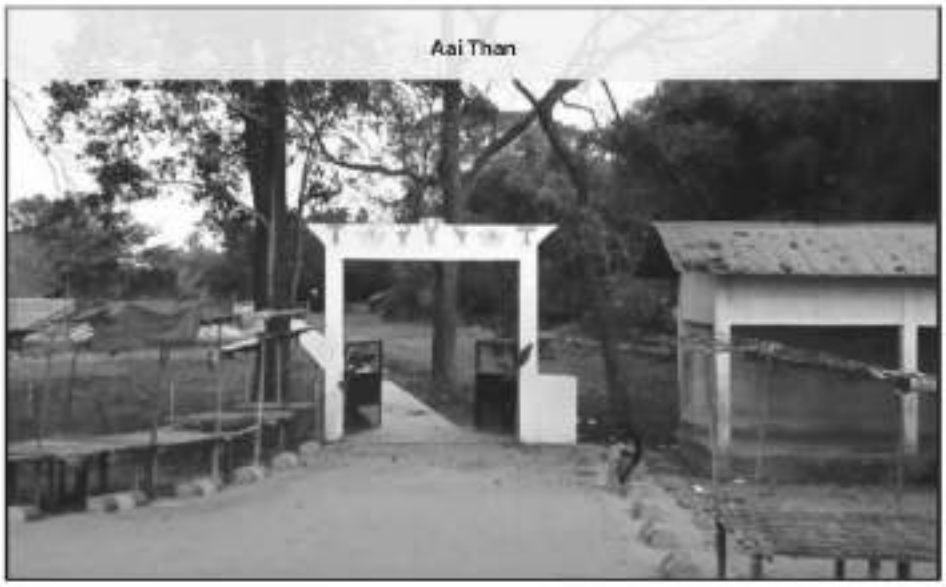
It is a temple, built of marble stones near the Assam Medical College campus. Also popularly called the Jalan Mandir.

5.6.1.3 Maira Mora Than

Located in the vicinity of the Jokai Reserve Forest, it is presently managed by Sattradhikar Hema Mahanta, the Moira Mora Than, established near the Burhi Dihing River in the year 1703 A.D., has been managed by the same family, a clan of seven generations altogether, who are looking after the Than from the onset. A few statues and sculptures have been excavated in and around the Than and these are displayed.

5.6.1.4 Aai Than

The Aai Than, located on the bank of the river Brahmaputra and close to the Embankment built across the river, is a hugely popular Than in this part of the world, and it attracts a large number of devotees and religious tourists from different parts of the state as well as the country.



5.6.2 ETHNIC TOURISM

Dibrugarh is a melting pot of many tribes – the main communities inhabiting the district includes Ahoms, Tea tribes, Sonowal Kacharis, Chutiya, Muttock, Moran, etc. There are also some Tai speaking Buddhist communities like Tai-Phake, Khamti and Khamyang. With a rich culture, their lifestyles are unique and colourful. Some major ethnic villages located in the district are as mentioned.

5.6.2.1 Namphake and Tipam Phake Village

The Tai Phake is a lesser-known tribe with microscopic population found in the Dibrugarh district. It is 37 km far from Dibrugarh town via NH 215. Though they are small in population, yet they maintain their gorgeous multicoloured custom of their traditional distinctiveness and retain the Tai Phake language and culture. Tai Phake is the branch of the great Tai race, which entered Assam in the latter half of the 18th century. They came through the Patkai range and lived in Mogoung (now in Myanmar) till 1700 A.D. The word 'Phake' has been derived from the Tai words 'Pha' meaning wall and 'Ke' meaning old antiquity. People living near and around the antique stone wall in the due course came to be known as 'Kunphake' i.e. people residing near phake part of the country.

They are also called 'Phakeyal' by the Assamese Indians. They introduce themselves as phakeyat (Jat) i.e. people of phake caste, as there had been no letter pronouncing 'Z' in Tai. In course of time the work 'phakejat' changed into 'phakiyal' and later on 'phakial', which is contested by the phake people. On their arrival in Assam they in search of a suitable land for inhabitation, inhabited the riverine areas of Burhi Dihing's southern Bank creating the biggest Taiphake village in 1850, which is now called as Namphake village.

The salient of attractions of this village are sunset over the Burhi Dihing, boating in the river Burhi Dihing, Pagoda built in 1937, the symbolic Ashoka Pillar, Nong Mungchiringte (Musulinda Tank), traditional stilt house, traditional dances like Kakong (drum dance), Kapan (welcome dance), Kachong (umbrella dance) and Ka Feefai (diamond dance). Poi-Nen-Chi festival is observed in the month of March by this tribe with the belief that offering of Chaitya will help to attain peace in this life and also in the life after that. The Tipam Phake Village is a twin village of the Namphake village. It has the Tai Phake EcoTourism Camp, newly built on the bank of Dihing river.

5.6.2.2 Khampti Ghat Village

A small Assamese village by the river Burhi Dihing about 12 kilometres from Dibrugarh town. Here, one sees the rural way of living of the Assamese as well as typical Assamese houses made of split bamboo and mud. Almost every house has a fishery, granary, vegetable garden, cattle shed and a loom.

5.6.2.3 Jokai Borbam Village

Situated very close to the Jokai Reserve Forest, it is village reflecting authentically the life of the Assamese. A typical attraction is the Namghar (prayer hall) located in the village centre.

5.6.3 TEA AND GOLF TOURISM

Tea was first discovered in Assam in 1823 by Robert and Charles Bruce and since then tea has become an integral part of Assam's economy. It is the largest single industrial sector in the state. The importance of Tea industry can be realised from the fact that Assam alone produces more than 50% of the country's total area production.

The Dibrugarh District in Upper Assam, famous for tea is home to number of such heritage golf courses where the British Planters and Army officers at one time played, wined and dined. Dibrugarh District Planters Club is one of the oldest golf courses in Assam situated at Mohanbari, Dibrugarh Town. Golf courses which have infrastructure for other sports can also be designated as a hub for a specific sport Squash Courts, Indoor Badminton Stadium, Table Tennis Stadium, Boxing Gyms, and according to its designation, required modern infrastructure catering to that sport can be added.

5.6.3.1 Tea Estates

The lush green tea gardens in Dibrugarh is a treasure house of exotic beauty of nature with colourful people and their enchanting songs and dances, sprawling bunglawos, and residential facilities. Dibrugarh is the Tea city of India and the largest Tea exporting Town. It is but natural that Dibrugarh is dotted with many large and small Tea Gardens. town has mushrooming growth of tea. Many tea estates and gardens are located, significant among them are: Chauba tea estate, Achabam tea estate, Nahortoli tea estate, Naharkatiya tea estate, Namroop tea estate, Jalannagar tea estate, Deha tea estate, Heritage tea, Abali Organic tea estate etc.

The tea garden landuse in Dibrugarh region is fairly complicated with board categories include tea grown area, functional built up area, facilities, agriculture / crop land, area under afforestation, vacant land, nursery, grassland, soil rehabilitation, wasteland and water body / river. The landuse classes have been generalized as per the NNRMS standard and categorized into 9 classes viz. built up land, agricultural /crop land, wasteland, grassland, nursery, plantation, tea, waterbody and others. The landuse statistics generalized at second level is given in Table below.

Table 78 Distribution of Tea Garden Land Use

Sl. No	Garden name	Area (Ha)	AL	BUL	GL	NUR	OTH	PLA	TEA	WB	WL
1.	Mancotta	326.33	31.05	47.95	0	0	2.10	2.52	237.26	0	5.45
			(9.51)	(14.69)	(0)	(0)	(0.64)	(0.77)	(72.71)	(0)	(1.67)
2.	Sessa	753.93	191.96	69.32	2.42	0	20.97	2.77	456.58	4.66	5.25
			(25.46)	(9.19)	(0.3)	(0)	(2.78)	(0.37)	(60.56)	(0.62)	(0.7)
3.	Ghoorania	149.94	0	16.40	1.90	0	0	0	131.64	0	0
			(0)	(10.94)	(1.27)	(0)	(0)	(0)	(87.8)	(0)	(0)
4.	Borabari	63.39	2.02	3.35	0	0	0.54	0	57.46	0	0.04
			(3.18)	(5.28)	(0)	(0)	(0.84)	(0)	(90.64)	(0)	(0.06)
5.	Jamirah	478.34	2.04	65.27	1.31	0	9.20	0	398.87	0	1.65
			(0.43)	(13.65)	(0.27)	(0)	(1.92)	(0)	(83.39)	(0)	(0.35)
6.	Maijan	872.80	137.19	114.50	4.82	0	19.22	0	588.35	5.48	3.23
			(15.72)	(13.12)	(0.55)	(0)	(2.2)	(0)	(67.41)	(0.63)	(0.37)
7.	Greenwood	831.73	48.53	82.48	25.74	0	38.09	0	617.34	1.87	20.70
			(5.83)	(9.92)	(3.09)	(0)	(4.58)	(0)	(73.26)	(0.22)	(2.49)

AL – agricultural land, **BUL** – built up land, **GL** – grass land, **NUR** – nursery, **OTH** – others, **PLA** – plantation, **WB** – water body, **WL** – wastelands, *Figures in the parenthesis indicate the percent of garden area. (Source: Tea Garden Atlas, Dibrugarh District, Ministry of Commerce and Industry, 2013).

5.6.3.2 Colonial Heritage Bungalows

Most of these tea estates are century old with a rich colonial heritage in the form of colonial style Chang Bungalows. Chang in the local language means "raised on stilts" and the design served multiple purposes- both to keep the house cool by allowing fresh air to blow underneath and to keep water and animals out.

Mancotta Chang Bungalow

Two well know bungalows are Mancotta Chang Bungalow and Chowkidinghee Chang Bungalow located within Dibrugarh town. Both are operated by Purvy Discovery owned by the Jalan Group. They provide well furnished rooms with all modern facilities. Staying in these bungalows is an experience quite distinct from hotels and resorts.

Chowkidinghee Chang Bungalow

5.6.3.3 DDPC Golf Course

Dibrugarh has some of the finest golf courses with sheer beauty and elegance. In the golf courses, one gets to taste different fairways, bunkers, water hazards, and greens. It has the flat tracts of Dibrugarh; the barrenness of Naharkatia and the woody terrain of Zaloni, to highlight the diversity of the courses.

The DDPC Golf Course took birth on the land of Bokel Tea Estate along with DDPC (Dibrugarh District Planters' Club) in 1955, when the 1878-born Maden Memorial Gymkhana Club was engulfed by the mighty

Brahmaputra. The 9-hole golf course then was 5880 yards in length, rated 67.3 with Par 67. Later in 1998, the 18th Hole was onverted to a Par 4 making the Course 5910 in length, 68 Par keeping the rating same at 67.3. The flat course of DDPC, though thought to be a short and simple one by many, tempts golfers for big hits but unfortunately has Out of Bounds in every hole making the big hitter's life measurable.


Dibrugarh District Planters Golf Club

5.6.4 MEDICAL TOURISM

Medical Tourism may be broadly classified as provision of cost effective private medical care in collaboration with the tourism industry for patients. Established in 1847, the broad campus of Assam Medical Collage has vast contribution in health care sector and community services in District and surrounding region. It has become much popular as it provides patients with the opportunity to receive top quality medical services at cheaper prices and thereby enjoying healthcare and tourism simultaneously.

Studies indicate that the booming private healthcare sector in the North-eastern region of India has already started working catalyst in promoting tourism in the region. Owing to its geographic proximity as well as language and cultural linkages, this region has enormous potentiality to be medical tourism hub for the state like Assam.

5.6.5 ECO TOURISM

Dibrugarh being heavily rain fed boasts of wet evergreen forests, tropical moist deciduous forest, canebrakes and grasslands. They support a wide variety of flora and fauna, many of which are highly endangered.

5.6.5.1 Jokai Reserve Forest

The Jokai Reserve Forest, located around 12 km away from the Chowkidinghee Chariali point, happens to be the natural habitat for a number of flora and fauna, with variations strictly marking from a wide variety of monkeys to different species of deer, wild cats, hornbills, cranes, storks, woodpeckers and kingfishers. The forest has an area of 19.13 sq.km., and it has within it the Jokai Botanical Garden cum Germplasm Center.

Jokai Reserve Forest

The sweet fragrance emanating from the various colourful and scented flowers, bearing different contours and textures and having their own well defined set of domains and attractions, have heralded the arrival of a magical number of unique butterfly species, which have prompted the concerned authorities and the naturalists to strive towards declaring Jokai Reserve Forest as a Butterfly Zone, and the Botanical Garden itself as a Butterfly Park.

5.6.6 RIVER TOURISM

Brahmaputra is a huge river. In some places of Assam, it is close to 10 kilometers wide and looks more like a sea than a river. The Brahmaputra is very wide and braided in the district of Dibrugarh. Dibrugarh being present very close to Brahmaputra provides great views of the river which are worthy to watch.

It originates in the eastern Himalayas in the Patkai Mountain range. The river flows through the origin in Arunachal Pradesh and then through the Tinsukia and Dibrugarh districts before finally merging into the Brahmaputra in Dihingmukh. The proposed River Front project on the bank of Brahmaputra by Water Resource Division is a huge potential in public realm for recreational activities. The Burhi Dihing meanders through the plains facing Patkai Hills for a length of 50 kilometers and then enters Joypur-Digboi low hill range. It then comes out near Joypur to flow through the plains for a length of 120 kilometres and ultimately joins the Brahmaputra at about 32 km south-west of Dibrugarh town. At the later stage in its course, Burhi Dihing acts as a divider between Dibrugarh and Sivasagar districts.

5.6.7 LEISURE TOURISM

5.6.7.1 Parks

Dibrugarh is also a place having parks/areas of natural, semi-natural or planted space set aside for human enjoyment and recreation or for the protection of wildlife or natural habitats. Those areas are said to be children's unique park of its kind in the state. The parks have the facilities like Toy Train, water activities and various children's play equipment. Major community parks at Dibrugarh town are Mahatma Gandhi Park, Lakshiminath Bezbaruah Park, Dibrugarh University Park, Sishu Udyan (near DC Court), Kushal Konwar Park at Chowkidingee field and park at Jail campus

Sishu Udhyan

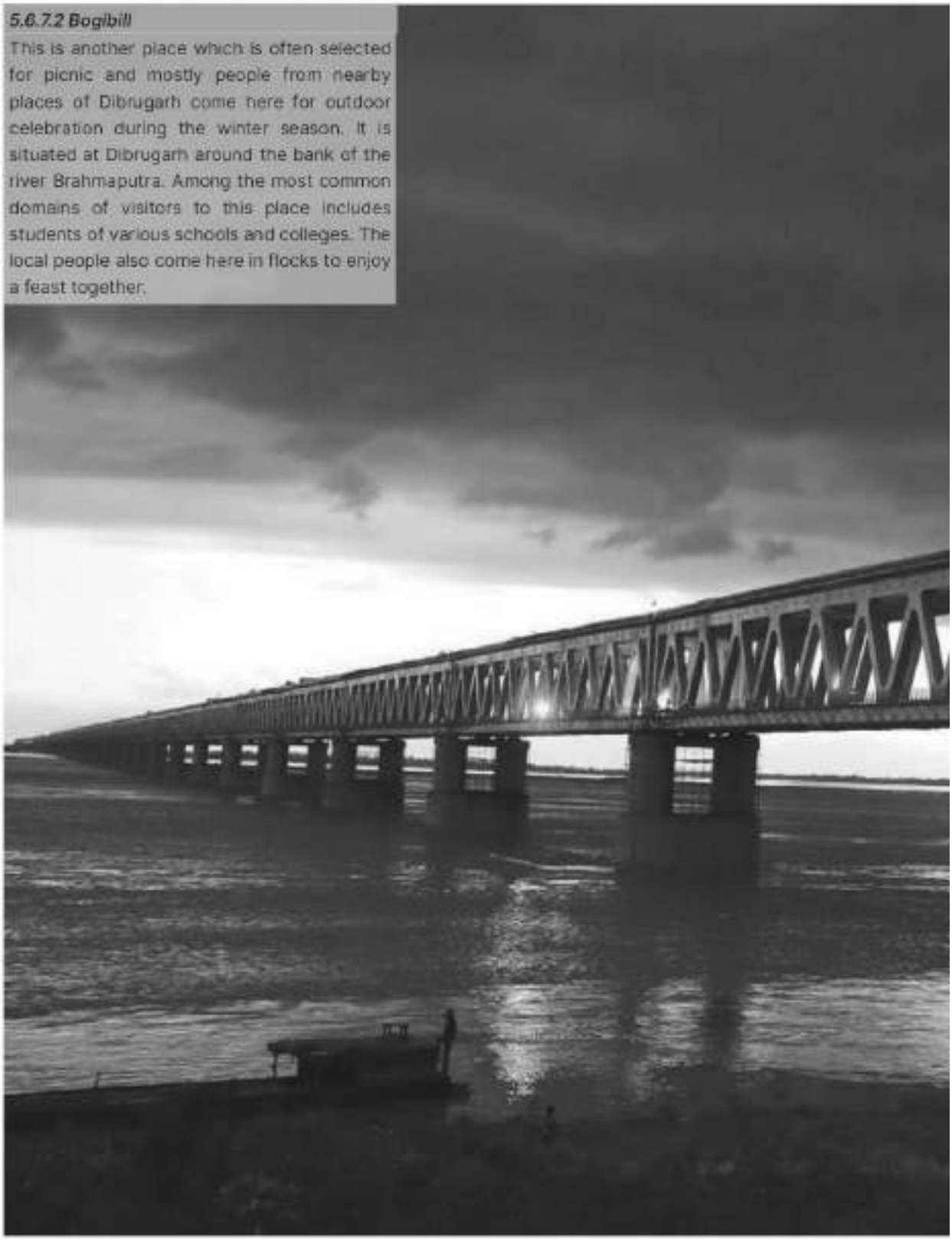
Dibrugarh University Park

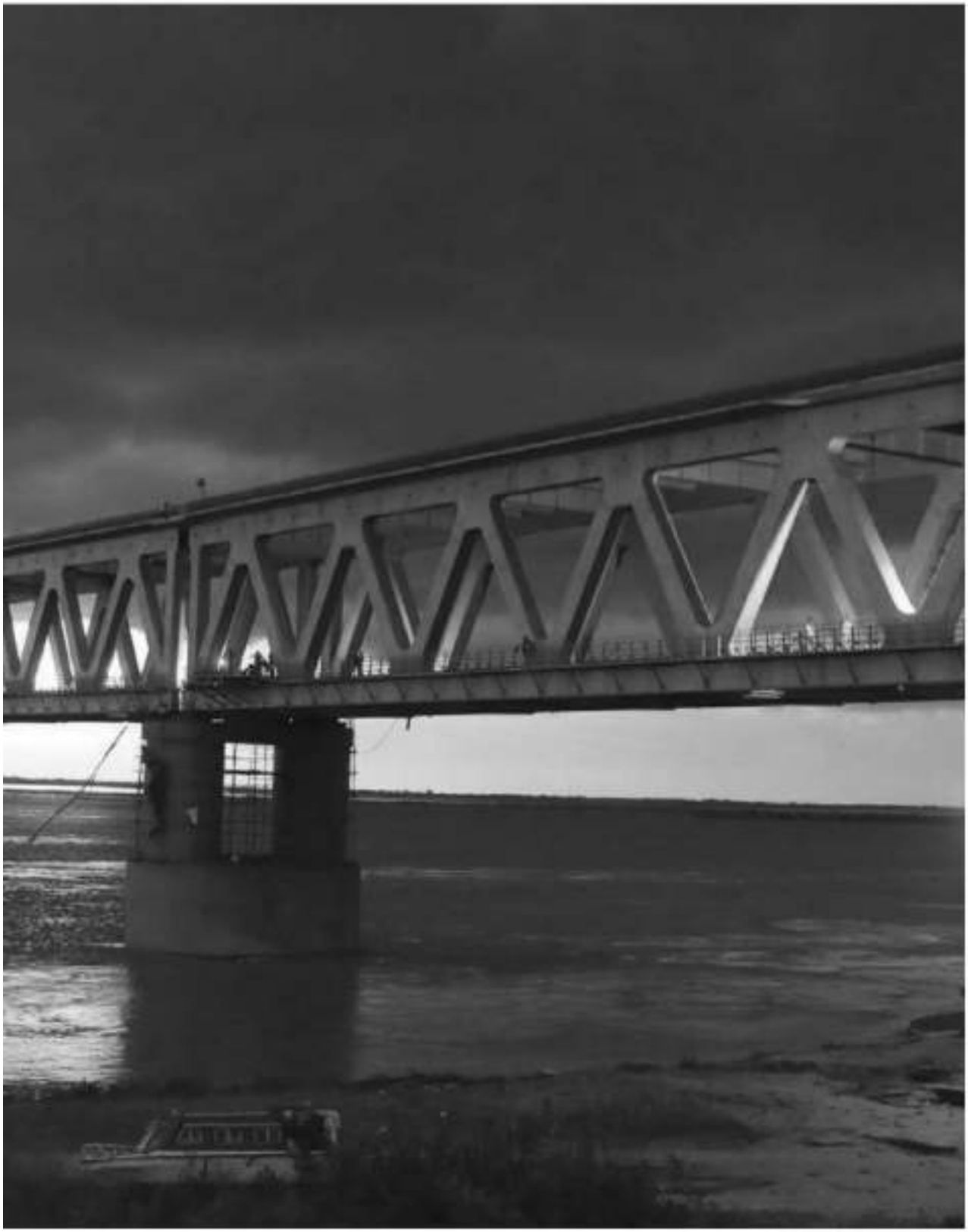
Mahatma Gandhi ParK

Fulbagan ParK

5.6.7.2 Bogibill

This is another place which is often selected for picnic and mostly people from nearby places of Dibrugarh come here for outdoor celebration during the winter season. It is situated at Dibrugarh around the bank of the river Brahmaputra. Among the most common domains of visitors to this place includes students of various schools and colleges. The local people also come here in flocks to enjoy a feast together.





5.6.7.3 Khamti Ghat:

Located at a distance of 16 kilometres from the Chowkidinghee Chariali along the Mancotta road, is a popular picnic spot called Khamtighat. It attracts a lot of picnickers in the picnic season, basically between November and February end, from far and wide, and has already established itself to be a picnic spot of repute. The ghat is along the river Burhi Dihing and has got tremendous potential to be developed as a tourist destination. The abundance of greenery, lushy green paddy fields and tea gardens all across the place, make it a natural hot bed to promote Eco- tourism. Moreover, the places near the Khamtighat are naturally blessed with a lot of wetlands and marshy areas, especially Choraihabi, located just on the other side of the river.

5.6.7.3 Dibrugarh University

A new developed park built by Dibrugarh University within its campus showcasing the diversity of Assamese culture. A prime attraction is the replica of Ranghar – the Ahom ear showpiece located at Sivasagar.

5.7 TOURISM DESTINATIONS ABOVE 25 KM OF RADIUS

5.7.1 SPIRITUAL TOURISM

5.7.1.1 Kunda Aata Than

Kunda Ata Than, located on the bank of the river Brahmaputra in the Rohmoria area of Dibrugarh district, 33.3 km far from Dibrugarh town via NH 15. It can be best regarded as the only Than in the entire district, which has evolved out of Mongoloid origin or has got a Mongoloid touch to it. The Than was established in the year 1819 A.D., though some sources presume it to be established a few years earlier in the year 1799 A.D. It was established by Kunda Ata Dangoriya , who was of Mongoloid origin, and he came to the site of the present Than with Rongacharan Dangoriya. After the demise of Rongacharan Dangoriya, Kunda Ata assumed the charge of the Sattradhikar and he established the Than.

Around 12 kilometres from the town of Naharkatia, on the banks of river Disang (under Sasoni mouza), is the age old Dehing Namti Satra of Assam. The satra was established by Binandashyam Gohain and was initially situated between the roads of Hologuri and Sariyahtoli, in Dibrugarh.

5.7.1.3 Dinjoy Satra

his satra was first established by a prime devotee of Gopal Atadev, Srimanta Aniruddha Dev, in a village of North Lakhimpur. It is 30.5 km far from Dibrugarh town via NH 15. It was later shifted to Khutiaputa, around the time when the Moamoria rebellion took place. During this period, Astabhuj Gosain was the head of the satra. But after his demise, this religious seat remained vacant for 14 years. Later on, Pitambar Chandra Dev was made the head. The satra fell into trouble once again at the time of Burmese invasion of India. It was finally brought to the present site of Dinjan, about 5 km from the township of Chabua, after peace returned.

5.7.2 WILDLIFE TOURISM

5.7.2.1 Dibru Saikhowa National Park

It is a National Park located in Dibrugarh and Tinsukia Districts which is bounded by the Brahmaputra and Lohith Rivers in the north and Dibru River in the south. It is approx. 92 km far from Dibrugarh town spreded in 200 sq.km area. It is the largest salix swamp forest in the north-eastern India. It is one of the 19 Bio-diversity hotspots in the World. It is also an ideal place for various adventure sports and the rugged landscape of the forest is ideal for trekking and mountain hiking trips.Originally created to help conserve the habitat of the rare white-winged wood duck, the park is also home to other rare creatures such as water buffalo, black-breasted parrotbill, tiger and capped langur.

Dibru Saikhowa National Park

5.7.2.2 DihingPatkai Wildlife Sanctuary

The forest is often called as "The Amazon of the East" owing to its large area and thick forests. Dehing Patkai National Park is located partly in Dibrugarh and partly in Tinsukia district of Assam. It covers an area of 231.65 km2 (89.44 sq mi) rainforest. It is 105 km far via NH 315, 99.8 km via NH 215 & Duliajan-Digboi Road. It has 3 parts Dirok rainforest, upper Dihing river and Jeypore. World War II cemeteries, Digboi Oil Refinery and the still well Road are also located in the close proximity. Dehing Patkai festival takes place in February and this is the best time to visit and September to march are the best months.

Being a completely virgin rainforest, this sanctuary is very rich in biodiversity. It is an ideal habitat for non-human primates. Till date, 47 mammal species, 47 reptile species and 310 butterfly species have been recorded. The most common mammal species of this sanctuary are hoolock gibbon, slow loris, Assamese macaque, stump-tailed macaque, capped langur, Asian elephant, Bengal tiger, Indian leopard, gaur, Chinese pangolin, Himalayan black bear, Red giant flying squirrel, leopard cat, clouded leopard, porcupine, crab eating mongoose, sambar, sun bear, binturong, barking deer, Asian golden cat and marbled cat. Dehing Patkai rainforest harbours about 293 bird species, belonging to 174 genera and 51 families. The majority is resident (63.7%), some are winter visitors (23.1%), and very few are summer visitors (2.5%). About 10.7% are altitudinal migrants, coming mainly from the higher reaches of the western, central and eastern Himalayas. Avifauna includes slender-billed vulture, white-winged duck, greater adjutant, lesser adjutant, greater spotted eagle, yellow-vented warbler, broad-billed warbler, white-naped yuhina, white-cheeked partridge, great hornbill, brown hornbill, Oriental darter, osprey, kalij pheasant, grey peacock pheasant, besra, black baza and hill myna.

Mammal at Sanctuary

Blue Eared Kingfisher

[1] Chakraborty, Avik (7 December 2020). "Environmentalist hails Assam government's decision to upgrade Dihing Patkai Wildlife Sanctuary into national park", news.in, Northeast now. Retrieved 14 December 2020.

[2] Choudhury, A. U. (2013). The mammals of North East India. Guwahati: Gibbon Books and the Rhino Foundation for Nature in NE India.

[3] Bhattacharjee, J. (2013). "Exploring Environmental Movements in Assam: Some Case Studies

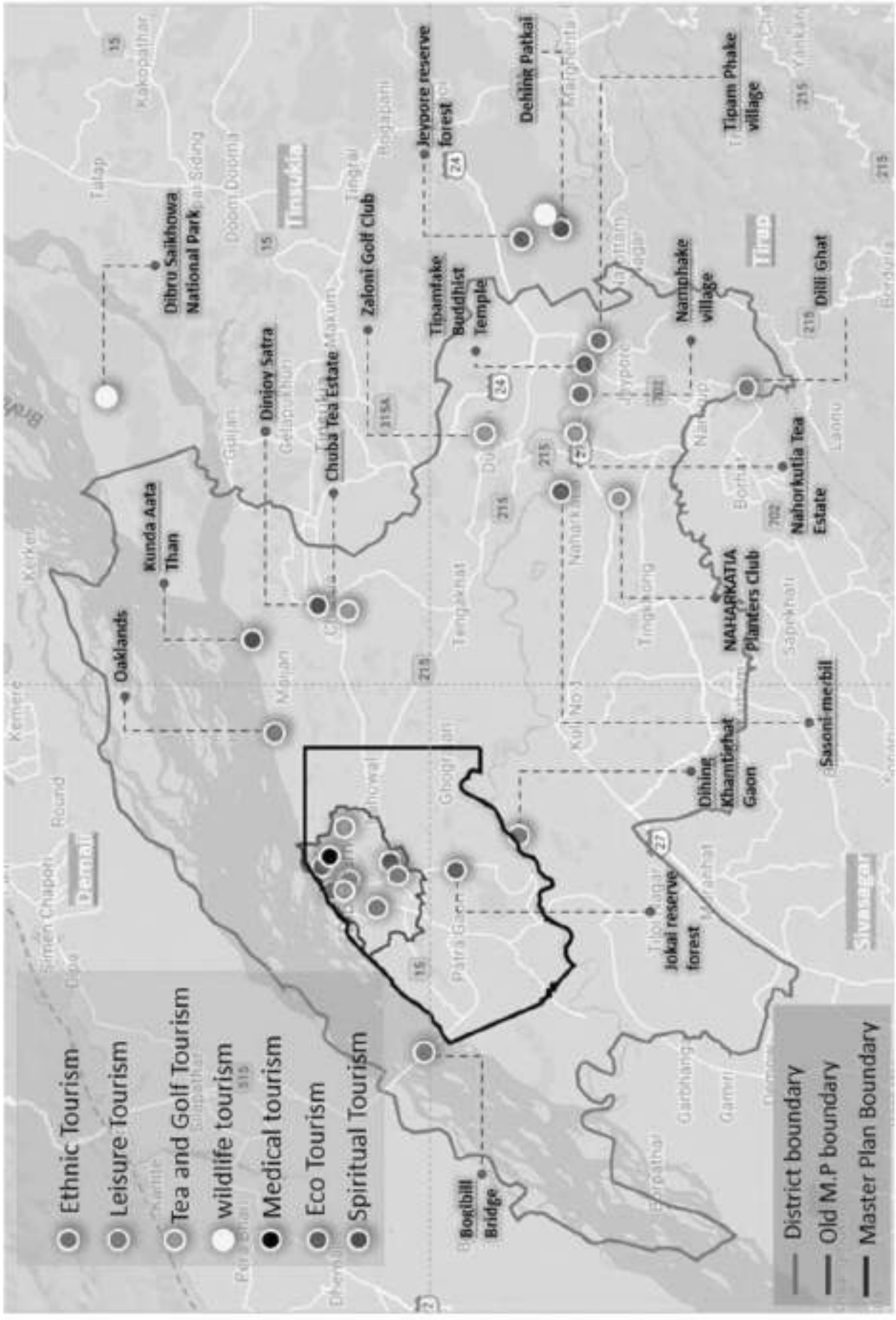


Figure 70 Tourist spots in Dibrugarh District and its surrounding region

5.7.3 OTHER IMPORTANT TOURIST DESTINATIONS AROUND DMPA

Table 79 Important Tourists places, their distance and importance in and around Dibrugarh MPA

From	To	Distance	Importance
Dibrugarh	Naharkatiya Tea Estate	51.1 km via NH 215	It is one of the Historic Landmark which was named after the neighboring town of Naharkatia which in Assamese denotes an area cleared by cutting Nahor trees.
	Chabua Tea Estate	34.1 km via NH 15	It is one of the Historic Landmark. The tea estate occupies a unique place in the history of tea plantation.
	Zaloni Golf Club	47.4 km via Duliajan-Dibrugarh Rd	It had got the recognition and rating from Indian Golf Union, Calcutta. A specialty of this course is that it is flood-lit.
	Eastern Bastion Golf Course	28.2 km via NH 15	Eastern bastion golf course is very much renowned for its various features like outstanding location, extraordinary fareway, greens and rough ways added up with the wildlife around the course.
	Naharkatiya Planters Club Golf Course	61.1 km via NH 215, 79.4 km via Moran - Naharkatiya Rd	It is a place where full of greenery all around with tea gardens.
	Oakland	32.3 km via NH 15	It is a picnic spot alongside the river Brahmaputra in the vicinity of Oakland Tea Estate
	Dilih Ghat	73.5 km via NH 215	A very nice winter picnic spot in the river Dilih. There is a bridge linking Sivasagar and Dibrugarh District at this place.
	Jeypore Reserve Forest	60 km via NH 215	It is one among the few remaining tropical forest patches of eastern Assam which is a part of the Eastern Himalaya biodiversity hotspot region. Famous for the largest known population of the Endangered White-winged Duck, five species of Hornbills
	Sasoni - Merbil	72 km via NH215	The Merbil is a wet land area and it has a habitat of different species of birds and reptiles including the Siberian Crane and python respectively and is also endowed with rich aquatic flora and fauna.
	Tai Phake Eco-tourism Camp	58.5 km via NH215	With a unique blend of smell of rainforest and touch of a minor but well cultured beautiful community of Phakials, the "Tai Phake Eco-tourism Camp (TPETC)" is an ultimate destination for wildlife lovers.

5.8 HERITAGE

Conservation of buildings, artefacts, structures, areas and precincts of Historic, aesthetic, architectural, cultural significance (Heritage buildings and heritage precincts) will fall under the norms prescribed by the ASI, would need redevelopment and redesign without hampering the fabric of area. Following are the tangible and intangible identified heritage site which fall under the National, Regional and Local context levels.

5.8.1 HERITAGE AT REGIONAL LEVEL

Dibrugarh is a historical place in Assam having evidence of the rule of the Ahom dynasty. Dibrugarh town has many Maidams (graveyard) which bear the royal structure and are epitome of the glorious rule of the Ahom Empire in Assam. The Ahom Kingdom was spread across most places in Upper Assam including Dibrugarh. Many maidams were built during the time of the Ahom kindon in Assam in honour of the Ahom rulers. These maidams in Dibrugarh also serve as important tourist places here. Some of these maidams and historical sites in Dibrugarh are:

5.8.1.1 Barbaruah Maidam

The Barbarua Maidam is one of the famous tourist places located at Sessa Tiniali, NH-37 about 14 kms away from the Dibrugarh. There are two main graveyards here that were constructed in order to honour the two well-known officials of the Ahom Dynasty. The architecture patterns used in the Maidams depict the fine work of engineering of the ancient times. As the graveyards were built to honour high rank holding Ahom officials, the size and structure of them are quite big. There is a believe that the site probably consists of Maidam of Alan Barbauah Dihingia, who constructed several temples during Ahom Kingdom. The Maidams reflect aristocracy and royalty in their design and structure. The place has many other small maidams which were built to honor the other small officials of the Ahom period. The Barbarua Maidam is a clear image of how respectable the dead soldiers are for the people of Dibrugarh.

5.8.1.2 Bahikhowa Maidam

Situated in the Khowang tea estate area of Dibrugarh, the Bahikhowa Maidam is dedicated to Bahikhowa Rajeswar Singha, the Army staff chief of the Ahoms during the reign of Swargadeo Rajeswar Singha. The tomb stands in the memory of the army chief. The vast tea estate encircles the Bahikhowa Maidam and add more charms to its appearance. Bahikhowas Maidam also consists of smaller Maidams which are in ruins at present.

5.8.1.3 Lekia Chetia Maidam

Located in Sessa near Mankota road, Lekia Chetia maidam was constructed in honor of Lekia Chetia, an officer of the Ahom kingdom during the reign of Swargadeo Pratap Singha. The maidam is large in size compared to the other maidams and presently also serves as a 'Thaan' (Assamese religious place).

5.8.1.4 Sarumechlow and Bormechlow Maidam

Sarumechlow and Bormechlow Maidams are located in the Lengeri Mouza locality of Dibrugarh. These two maidams are the graveyards of the queens (Sarumechlow and Bormechlow) of King Sukhamppha Khura of Ahom dynasty.

5.8.1.5 Moira Mora Satra

It is a brick built pancharatha Temple plinth of Pre-Ahom period stylistically datable to the 9th-10th Century A.D., consisting of various stone sculptures. The excavation revealed a brick plinth of a temple of Hindu pantheon having garbhagriha and mandapa. Trace of an antarala has been found in between the two segments. The eastern parts of both the segments of the temple got eroded by the activities of now morbid river. The adhistana part of the garbhagriha has two horizontal brick moulding that looks like imitation of the basement of a stone temple design. The plan of the garbhagriha has seven projections in each corner for which it may be called a saptaratha temple. The garbhagriha wall is 2.35 metres wide, while the inner part of the garbhagriha is 2.60 metres by 2.80 metres. The length of the existing mandapa wall is 4.75 metres, while the entrance and stairs of the mandapa is completely missing. The outer part of the adhistana was plastered by lime.[5]

Though the temple is small in size, it is a solitary example in upper Assam having immense importance and significance. It was believed that this part of the State was a barren land before the advent of the Ahoms, but discovery of this saptaratha temple plinth helped in redrafting the history of this area back to 9th century AD.

5.8.2 HERITAGE WITHIN TOWN

5.8.2.1 District Court Dibrugarh

The British arrived in Assam in the year 1826 as per Yandaboo Accord and since then they selected Dibrugarh as a centre of Administration as well as business purpose in Upper Assam. In the year 1842 Dibrugarh was announced as the Head Quarter of Lakhimpur District. The court was also shifted to Dibrugarh in the same year from Lakhimpur. Administrative functions were executed from ward No. 1 of the Central Jail of Dibrugarh till construction of a permanent court building. It is to be mentioned that ward No.1 was the first "Pacca" building in the entire North- East region. In the early stage the Sadaramin and the Munsiff court were established for Judicial Administration. Probably the present court building was constructed in the year 1870. The required materials like rod, cement etc. were carried by steamer through the water route of River Brahmaputra for construction of court building. A bricklin was constructed at Chaulkhowa for making bricks. After passing about one and half century the court building is still standing proudly at Phulbagan near Brahmaputra River. Since more than 40 years the Judicial functions are running from this court building till today, it may be mentioned that the life of the building was expected for one hundred years only. In this regard, a letter was received by the Deputy Commissioner, Dibrugarh in the year 1999 from LONDON. It is sure that the building will last for more than one hundred years though it has already crossed long one hundred years.

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[5] *https://assamtribune.com/palaeo-channel-of-dihing-found-near-archaeological-site, Accessed on 14th Nov,2021*

5.8.2.2 Dibrugarh Town Railway Station

With discovery of Tea in early 1823 by the British, followed by oil and coal in area near Dibrugarh Town, the significance of the town as a centre of commercial and industrial activities was enhanced. Assam got its first railway line in the year 1881 when commercial trade was at its high in Dibrugarh. The 65 km long metre guage line was constructed from Dibrugarh to Margherita. This metre-gauge railway was owned by Assam Railways and Trading Company (AR&TC), which was incorporated by John Berry White for transportation of Coal, Tea and public in the rapid growth of the tea industry. The first section of the line opened in 1882 from Brahmaputra River steamer ghat, Dibrugarh eastward, 15 miles. A 40 miles track between Dibrugarh and Makum was opened to traffic on 16 July 1883. The first railway junction in Assam was Makum Junction on the railway line that opened in 1884 to Dihing bridge. The railway network was converted to 1,676 mm (5 ft 6 in) broad gauge in late 1990s.

5.8.2.3 Berry White Medical School

The building of the Berry White Medical School constructed around 1898. Berry White had served as Civil Surgeon of Upper Assam in the 1870s after retiring from the British Army, and it was he who drew up plans for setting up a medical school in Dibrugarh. While he had donated his entire savings, about Rs 50,000, for the establishment of the medical school, White passed away in 1896, four years before his dream project actually began to function. The medical school was later converted to Assam Medical College in 1947, to become the first medical college in the entire Northeastern region.

A 120-year old building where the Berry White Medical School – later Assam Medical College – had started way back in 1900, is being conserved with Indian National Trust for Art and Cultural Heritage (INTACH) being entrusted the task of renovating it.

5.8.2.4 Central Jail

Central Jail is located in the core city area of Dibrugarh town at Phulbagan. This jail was established in the year 1859 as District Jail and subsequently upgraded to Central Jail, presently known as Central Jail Dibrugarh. Central Jail Dibrugarh has the capacity to host 680 nos. of Prisoners.

5.9 ISSUES AND POTENTIAL

The Dibrugarh district and city has immense potential and scope for the tourism industry. Dibrugarh is best known for her unique natural beauty with flora and fauna, historical monuments, tea gardens, golf courts in the tea gardens and its colourful cultural festivals. The various places of visit can be nature related, religious, historical etc. The whole tourism potentialities can be grouped together under the following categories:

1. Ethnic Tourism
2. Leisure Tourism
3. Tea & Golf Tourism → **Main Focus**
4. Wildlife Tourism
5. Medical Tourism
6. Eco Tourism
7. Spiritual Tourism

5.9.1 HERITAGE ISSUES

1. **Dilapidated Condition of structures:** Most of the heritage structures are in dilapidated condition due to the unavailability of conservation, restoration and preservation practices in Dibrugarh area. These structures need periodic preservatory treatments in order to enhance their cultural life for coming generations.

2. **Unavailability of Infrastructure and Services:** There is an absolute absence of proper infrastructure and services in the immediate areas around the possible heritage as well as tourist spots of Dibrugarh. The basic tourist amenities also lack at these places which have to be planned accordingly.

3. **Absence of Monitoring:** There is no nodal body responsible for periodic monitoring of the heritage structure around Dibrugarh. Such nodal bodies are to constituted in order to provide proper jurisdiction to such capable heritage areas so that there's no threat to them in future.

4. **Haphazard Development:** The unplanned developmental activities around the heritage sites are serious threats and it harms the integrity of the heritage structures. Such activities are to be monitored by a proper administrative framework under by the local, regional or state authorities.

5. **Lack of Awareness among Public:** The citizens are unaware about the cultural assets owned by them and they are to be made aware in order to have proper public participation in order to preserve such important historic sites. Public participation is an utmost important aspect for the conservation of any site.

6. **Absence of Legal Plan:** There is an absence of a visionary master plan available specifically for the heritage sites in Dibrugarh. Such important sites require a separate space in the administrative framework of the authorities in the form of a legal document which has been prepared after consulting proper stakeholders and experts.

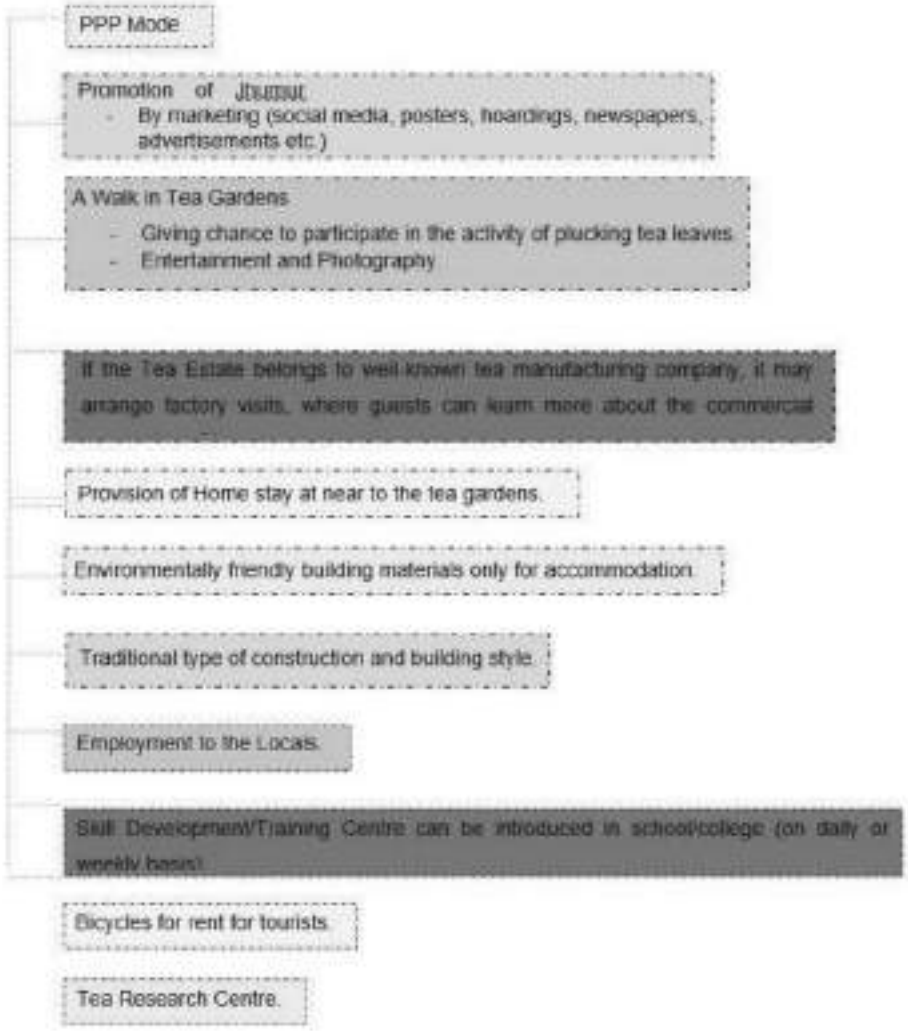
7. **Documentation of Heritage Structure:** The heritage structures of Dibrugarh region are not documented till date. There is a need of proper listing and documentation of heritage sites in Dibrugarh. Such sites are to be properly listed under various grades of their importance and documented specifically so that a proper conservation approach can be implemented for such important sites.

5.9.2 TOURISM ISSUES

1. **Poor Road Connection:** The roads are in poor shape in many of the tourist spots. Some of the roads cannot be used during the rainy season. The pucca roads too are crying for attention.
2. **Absence of Tourist Facilities:** A tourist expects some basic facilities like well-maintained toilets and eateries.
3. **Poor Maintenance:** The tourist spots are neglected to say the least. Most of the infrastructure are in bad shape and needs urgent renovation. Caretakers are non-existent which affects the maintenance.
4. **Haphazard Development:** Unplanned and un-organized development activities can be seen round various tourist places and at some of the places, the slum development can be seen.
5. **Lack of Promotional Activities:** There is lack of promotional activities in Dibrugarh to conserve and protect the heritage structure and values. Residents of the city are not even aware of the importance of culture and heritage of the Dibrugarh Town.
6. **Lack of Awareness among Public:** The peoples visiting the monument or staying in the surrounding area are notconcern to save the heritage of the city. Lettering within the premises of the building is the common practice of the people.
7. **Lack of information:** There is lack of information for the tourists regarding the tourist spots, their significance, and location. Guide facilities are also not there.

5.10 PROPOSED STRATEGIES TO BOOST TOURISM

5.10.1 STRATEGIES FOR TEA & GOLF TOURISM



5.10.2 CAPACITY BUILDING

- Selected villages should be given assistance for showcasing of handlooms and handicrafts to help the villagers sell their products. The Handloom Trade Centre can be proposed at Chowkidingee place as the place having consumer friendly.
- If necessary, city can have tea exhibition centers for a group of tea growing villages also. That will also serve as tea museum and will attract tourist and hence will boost the tea economy.
- Local Art and Craft centers can be proposed. This will help to sustain the crafts as these activities will help generate income for the villagers.
- Local youths can be trained to become tourist guides. They already have adequate knowledge about the places; they just need to be trained to enhance their soft skills so that they are in a better position to interact with the tourists.
- To develop a proper website, that enables to give enough information to domestic and foreign tourists.

5.10.3 STRATEGIES FOR CULTURAL COMPLEX CUM PARK DEVELOPMENT

- One cultural hub come park could be developed where the art of the different community people can be placed, and the place should be designed in such a way that it should be environmentally friendly.
- One side of the hub cane be used to exhibit their traditional ornaments, dresses and food so that tourist can also enjoy their culture and tradition.
- The other side can be used for recreational which includes landscape and sculptures.
- The facilities like parking, drinking water and toilets should be provided inside the park.

Land scaping

Art works

Sculptures

- Promotion of Traditional Fairs and Festivals through government and NGOs participation so as to generate awareness among the new generation towards rich cultural heritage and inviting cultural tourism
- Development of a Cultural Complex at Dibrugarh with infrastructural development for round the year activities
- Centre for Development of handicrafts development and tourism promotion for the region.

5.10.4 STRATEGIES TO BOOST TRIBE CULTURE

- Tai Ahom's, Mishing, Sonowal Kachari, Deori, Moran, Bodo and other tribes are living in Dibrugarh region.
- They had different culture and tradition on their own way.
- They celebrate the Bihu festivals on their own culture and tradition.
- Some of the festivals like Dehing Patkai festival, Chavang kut festival, Tea festival are celebrated in Dibrugarh by different community people.
- Dances like Jumur Nach, Barpetas Bortal nritya, Ka-chin dances are performed by the people at the time of their festivals.

> The existing open spaces should be used for multipurpose such as that should be provided to the different communities during their festival times to show case their culture and tradition.
>
> Temporary commercial stalls should be developed, and no permanent construction should be constructed, and basic infrastructure facilities should be provided to avoid problems.

5.10.5 STRATEGIES FOR DEVELOPMENT OF RECREATIONAL AREA

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

- **Revitalization:** restoration and enhancement of mental and physical health.
- **Play:** relaxation and exercise
- **Adventure:** excitement and challenge
- **Education:** organized and incidental

City level recreational facilities are of two types:

- **Indoor facilities** consist of libraries, clubs, cinema hall, auditorium, multiplex, art and craft centre, shopping malls, food courts, cyber cafés, gymnasium etc.
- **Outdoor recreation facilities** consist of gardens, parks, play grounds, golf courses, zoo, botanical garden, race course, stadium, exhibition ground, water sports complex, green ways,bike ways etc.

5.9.5.1 Proposals for Augmentation and Development of Recreational Facilities

- Development of green belts, plantations, parks, Ghats, plazas along the Brahmaputra riverfront abreast the Urban set up and invite nature in harsh built environment through myriad ways.
- Amusement Parks to be developed along with horticulture, Pisciculture, herbal parks, etc.
- Development of eco-tourism with provision of water theme parks, lagoon resorts, weekend resorts and world class recreation centres such as club towns, golf clubs, spa resorts, etc. at Planning Area level

5.10.6 POLICIES FOR TOURISM DEVELOPMENT

As a service industry, tourism has numerous tangible and intangible elements. Major tangible elements include transportation, accommodation, and other components of a hospitality industry. Major intangible elements relate to the purpose or motivation for becoming a tourist, such as rest, relaxation, the opportunity to meet new people and experience other cultures, or simply to do something different or have an adventure.

Tourism is vital for every place, due to the income generated by the consumption of goods and services by tourists, the taxes levied on businesses in the tourism industry, and the opportunity for employment and economic advancement by working in the industry. For these reasons government and private agencies sometimes promote a specific region as a tourist destination and support the development of a tourism industry in that area. The contemporary phenomenon of mass tourism may sometimes result in overdevelopment; however alternative forms of tourism such as ecotourism seek to avoid such outcomes by pursuing tourism in a sustainable way.

Dibrugarh Region offer great potential for tourism development. According to the existing scenario analysis, it has been observed that the following categories of tourism have immense potentialities for this region:

- Nature based outdoor recreation and Eco-tourism for Tea estates, botanical garden, forest, riverfront and vast agricultural area/ village settlements with undulating landforms including picnic spots, sightseeing, camping sites etc. Presence of all these tourism products calls for the growth of Adventure Tourism.
- Religious Tourism with historically important structures such as temples and other outdoor worshipping areas in the vicinity.
- Heritage Tourism with old architectural building, British dynasty build old Dibrugarh Town Railway Station and annual/ seasonal traditional village fairs and festivals, folk or tribal socio-cultural events with arts, crafts, music, dance etc.

5.10.6.1 Common Strategies

- Promote Homestays to help tourists experience Dibrugarh's culture.
- The Dibrugarh Govt. wants to boost tourism in Dibrugarh. As part of this, they intend to promote homestay, heritage and spiritual Tourism circuit in the DMPA.
- Targeting the middle and upper middle-class tourists, the homestay units are proposed which will enable them to experience Dibrugarh hospitality, cuisine, customs and traditions by staying with families.
- This system will benefit the owner of the house and make it easy for tourists who find it difficult to get hotel accommodation in peak season.
- Under the Heritage Circuit the following works can be taken up:
- Revitalization of streetscapes in the Heritage Area in Dibrugarh
- Beautification and improvement of HS Road and New Market Street in Dibrugarh being a major commercial center of city.
- Beautification of DPT Canal passing through core city area of Dibrugarh.
- Toilet facilities to be provided at tourist spots
- As part of the Spiritual Circuit project, development of infrastructure in key temples such as Jagannath Temple, Radha Krishna Temple, Ganesh Temple (Naliapool), and Jallan Temple
- Public toilets at every major junction and public gathering spots as well as developing areas are to be provided for public convenience. It is to be provided especially in area where the tourists inflow is higher so that it can be utilized fully.
- Guided boat rides on the river could be provided to the resort guests who show a preference for it. Angling kit could be provided too for those who wish to amuse themselves with on-board fishing.
- By providing suitable incentives, encourage setting up at choice locations a few beer pubs which have aesthetic and upscale ambience. Tourists and commercial travelers who do not take up hotel accommodation during their visit to Dibrugarh are likely to patronise such bars.
- Establishment of budget accommodation at one or more suitable locations to cater to the short-period lodging facilities required by visiting artists for participation in the cultural / fine arts / religious festivals, pilgrims, sports persons, student groups / others may be examined by the tourism authorities. Alternatively, like the Grey-hound bus stations in the USA, locker-chests and wash facilities may be provided for those who opt for these amenities only instead of room accommodation.
- Establishment of "My Bike, My City " concept to help visitors explore the entire city and tourist spots independently by promoting e-Bicycle concept locally.
- None of the leading national hospitality chains such as the Taj, Oberois, Leela group and ITC hotels division have yet to come to Dibrugarh. Presence of quality national and international hotel chains will not only attract the high spending domestic / foreign tourists but also attract business conferences / seminars / workshops etc. Suitable steps may be taken in this regard by the authorities concerned to promote holding of conferences / seminars etc in the better class Dibrugarh hotels / resorts.
- Development of Science City, District Zoo, International Stadium, Golf Clubs, River Front, Amusement Park, Water Sport Complex and International Hospitality Chains will probably help

5.10.7 INTEGRATED APPROACH FOR DEVELOPMENT OF TOURISM

- Regulating and planning for Tourism to preserve ecology, environment and areas of tourism value.
- Reducing pressure on Dibrugarh city by planning, developing self- contained state of art Tourist destinations in the surrounding settlements.
- Eliminating haphazard and unplanned/ sub-standard development around sites of tourism value.
- Promote Dibrugarh as a Quality Tourist destination rather than as a mass tourist place.
- Leveraging the concept of Eco-Tourism for the development of places of tourist value.
- Leveraging Tourism for promoting and enhancing the state economy and generation of employment.
- Planning tourism supportive infrastructure with care and put in place on priority in order to exploit the full potential of tourism.
- Planning and developing state of art Convention Centres and supportive facilities to make Dibrugarh Global Convention Hub.
- Making adequate arrangements for parking as part of the planning tourist sites.
- Planning the circulation pattern for tourist in such a way that City tours can be held for tourists visiting the local sites of heritage value.
- Making Provisions for Public Transportation so that City Bus Tours can be taken up to promote tourism within the city and to minimize traffic on the roads.
- Leveraging strength of Boats to start city tours involving various water bodies, lakes and rivers.
- Coordinated Marketing to attract more tourists from other states and foreigners.
- Enhancing Product Quality so as to create a brand image for tourist destinations and enhancing service quality.
- Enabling Private Sector Participation for accelerated growth of the industry and efficiency in facilities and services.

5.10.8 HERITAGE MANAGEMENT AND ORGANIZATIONAL STRUCTURE

There is a need to setup a Heritage Committee for Dibrugarh Panning Area. The concerned Development Authorities/municipalities as well as local stakeholders, NGOs have significant role to play in successful implementation of strategies proposed for Dibrugarh's Areas.

Formulations of special regulations to control or mediate development within the available heritage areas are a prerequisite for effective implementation of the proposed recommendations. Special regulations for all development within heritage areas, including new construction, demolition or modification to existing buildings around historic structures or within historic precincts must be formulated by the concerned authority with the advice of Heritage Committee.

Detail plans must be prepared by respective development Authorities and Municipalities. It is necessary to prepare an inventory of built, cultural and natural heritage resources of the special areas. The inventory must include both protected and unprotected resources. the cost for most of the new developments in special heritage areas is already covered in budget allocation for 'Tourism, Recreation and Culture' and hence not included in this table. Estimates for projects those are specific for preservation of heritage resources are only included. River Front Development is treated as a separate item of budgetary allocation.

5.10.9 HERITAGE CONSERVATION PROPOSAL

Heritage Conservation process

Where to start	Institutional setup	Special Control Areas
• Listing of buildings • Locating on city map • Form clusters of significant buildings • Name as Heritage Zone/ Conservation Zone	• Institutions responsible for maintenance – ULB,PPA, TCPD, ASI, state Depts. • Inter institution linkages – ULB, ASI, INTACH • Heritage Cell • Civil society groups/industrial house	• For heritage structures and precincts • Controlled Development • Heritage Conservation Committee

Heritage Conservation Chart

The primary objective of listing is to record extant architectural heritage and sites and the outcome of this process should invariably be to grade the heritage by a multidisciplinary team of experts whose recommendations should be available for public stakeholders and they can assess those for further changes if required. The importance of this process cannot be underestimated because its results determine subsequent conservation decisions and it facilitates the prioritisation of decisions relating to the future of architectural heritage and sites.

Listing does not prevent change of ownership or usage but change of use of such Listed Heritage Building / Listed Precincts is not permitted without the prior approval of the Heritage Conservation Committee. Listed Heritage Buildings / Listed Heritage Precincts may be graded into three categories. The definition of these and basic guidelines for development permissions are as follows:

Grade-I	Grade-II	Grade-III
(A) Definition: Heritage Grade-I comprises buildings and precincts of national or historic importance, embodying excellence in architectural style, design, technology and material usage and/or aesthetics; they may be associated with a great historic event, personality, movement or institution. They have been and are the prime landmarks of the region. All-natural sites shall fall within Grade-I.	Heritage Grade-II (A&B) comprises of buildings and precincts of regional or local importance possessing special architectural or aesthetic merit, or cultural or historical significance though of a lower scale than Heritage Grade-I. They are local landmarks, which contribute to the image and identity of the region. They may be the work of master craftsmen or may be models of proportion and ornamentation or designed to suit a particular climate.	Heritage Grade-III comprises building and precincts of importance for townscape; that evoke architectural, aesthetic, or sociological interest through not as much as in Heritage Grade-II. These contribute to determine the character of the locality and can be representative of lifestyle of a particular community or region and may also be distinguished by setting, or special character of the façade and uniformity of height, width and scale.
(B) Objective: Heritage Grade-I richly deserves careful preservation.	Heritage Grade-II deserves intelligent conservation	Heritage Grade-II deserves intelligent conservation (though on a lesser scale than Grade-II and special protection to unique features and attributes).
(C) Scope for Changes: No interventions be permitted either on exterior or interior of the heritage building or natural features unless it is necessary in the interest of strengthening and prolonging the life of the buildings/or precincts or any part or features thereof. For this purpose, absolutely essential and minimum changes would be allowed and they must be in conformity with the original.	Grade-II (A) : Internal changes and adaptive re-use may by and large be allowed but subject to strict scrutiny. Care would be taken to ensure the conservation of all special aspects for which it is included in Heritage Grade-II. Grade-II (B) : In addition to the above, extension or additional building in the same plot or compound could in certain circumstances, be allowed provided that the extension / additional building is in harmony with (and does not detract from) the existing heritage building(s) or precincts especially in terms of height and façade	Not Requires
(D) Procedure: Development permission for the changes would be given on the advice of the Heritage Conservation Committee.	Development permission for the changes would be given on the advice of the Heritage Conservation Committee.	Development permission for changes would be given on the advice of the Heritage Conservation Committee.
(E) Vistas / Surrounding Development: All development in areas surrounding Heritage Grade-I shall be regulated and controlled, ensuring that it does not mar the grandeur of, or view from Heritage Grade-I.	All development in areas surrounding Heritage Grade-II shall be regulated and controlled, ensuring that it does not mar the grandeur of, or view from Heritage Grade-II	All development in areas surrounding Heritage Grade-III shall be regulated and controlled, ensuring that it does not mar the grandeur of, or view from Heritage Grade-III.

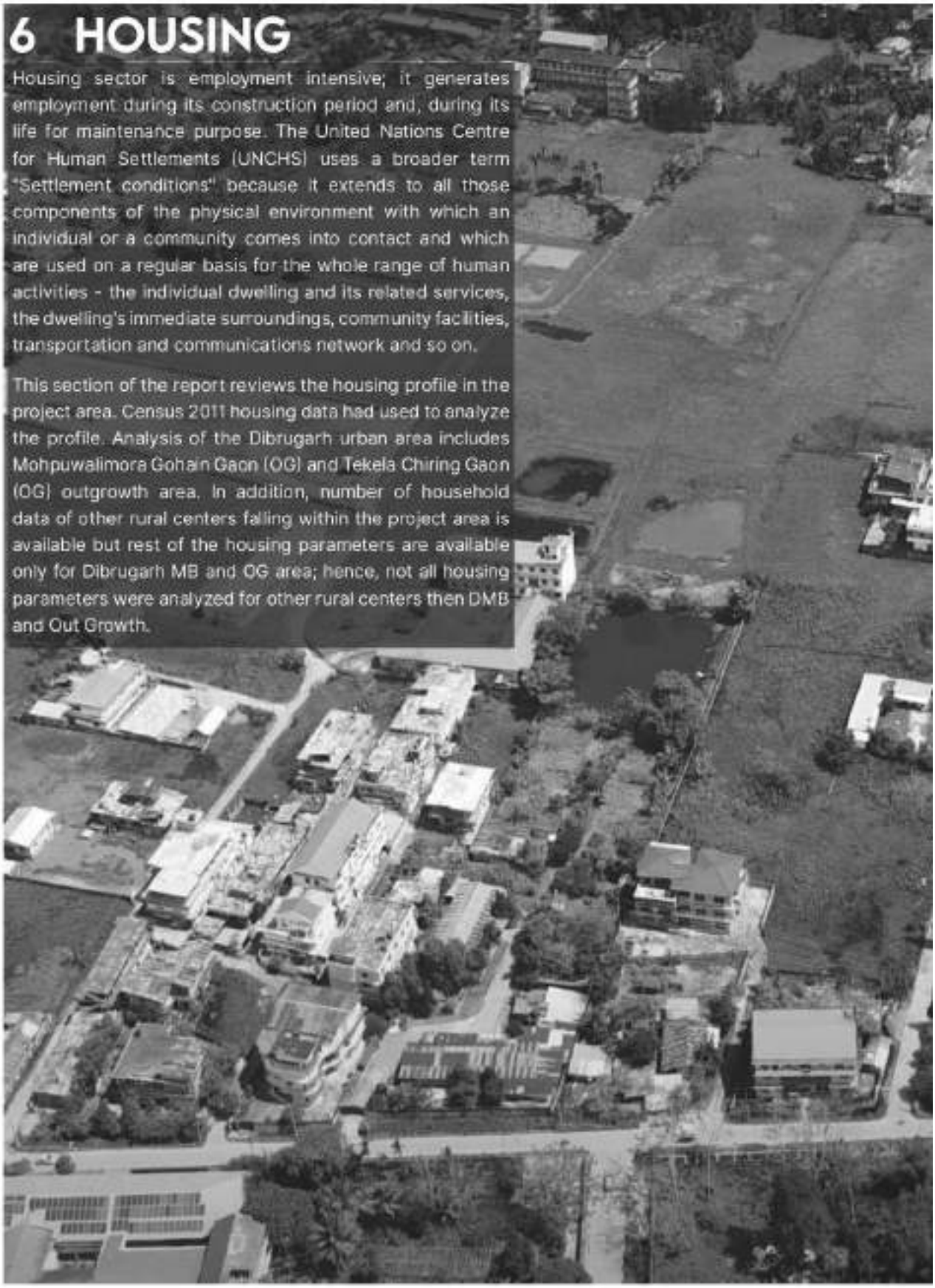
Source: CPWD

For the conservation of heritage buildings, the abovesaid steps are to be followed.

6 HOUSING

Housing sector is employment intensive; it generates employment during its construction period and, during its life for maintenance purpose. The United Nations Centre for Human Settlements (UNCHS) uses a broader term "Settlement conditions" because it extends to all those components of the physical environment with which an individual or a community comes into contact and which are used on a regular basis for the whole range of human activities - the individual dwelling and its related services, the dwelling's immediate surroundings, community facilities, transportation and communications network and so on.

This section of the report reviews the housing profile in the project area. Census 2011 housing data had used to analyze the profile. Analysis of the Dibrugarh urban area includes Mohpuwalimora Gohain Gaon (OG) and Tekela Chiring Gaon (OG) outgrowth area. In addition, number of household data of other rural centers falling within the project area is available but rest of the housing parameters are available only for Dibrugarh MB and OG area; hence, not all housing parameters were analyzed for other rural centers then DMB and Out Growth.



6.1 EXISTING HOUSING SCENARIO

In today's context, perhaps the most important issue for urban dwellers is to find an appropriate place to live. It is observed that the price of all kind of housing have been increasing exorbitantly, which indicate that the investment in housing sector is unable to match pace with the increasing demand for housing. Rapid urbanization and rural to urban migration have led to a substantial shortage of housing in the region. The direct result of this is the concentration of informal settlements in the city. Given that the shortage in housing is concentrated at the bottom of the pyramid, the sector can play an important role in the socioeconomic development.

Moreover, with the rapid urbanization and significant increase in the housing demand, housing sector is the engine of immense potential of giving a push to the economy because of its link with the employment generation and livelihood. Therefore, provision of housing can make a significant difference in income of families, both in rural and urban areas. The number of households in Dibrugarh MPA for year 2011 is given

Figure 71 Ward wise Household data in year 2011

Table 80 Municipal Board area

Ward No.	Population (2011)	No. of Households	Housing size
1	3032	656	4.6
2	7974	1854	4.3
3	3375	774	4.3
4	9172	2204	4.1
5	7046	1699	4.1
6	9005	2152	4.1
7	5214	1206	4.3
8	8446	1823	4.6
9	7017	1359	5.1
10	4336	878	4.9
11	1934	324	5.9
12	5371	1192	4.5
13	5860	1340	4.3
14	4824	1079	4.4
15	5403	1266	4.2
16	7419	1369	5.4
17	5629	1070	5.2
18	8687	1851	4.6
19	7047	1599	4.4
20	4207	942	4.4
21	5507	1211	4.5
22	13060	2677	4.8
Total	139565	30525	**4.5**

(Source: Compiled by Consultant)

The table 80 depicts the ward wise population and total number of households in Dibrugarh Municipal Board area. The maximum number of households are in Ward no. 22 followed by Ward no. 4 and 6. The minimum number of households are in ward no. 11. Based on the population and households, the housing size is calculated. The overall housing size is **4.5** which is calculated from the ward wise total population and total number of households. The maximum housing size observed in Ward no. 16 and 17 which is 5.4 and 5.2, respectively. The minimum housing size is 4.1 which is in ward numbers 4, 5, 6.

Table 81 Existing households in Outgrowth and Census Towns

Name of OG / CT	Population 2011	No. Of Household	Housing size
Mohpuwalimora Gohain Gaon (OG)	1425	300	4.7
Tekela Chiring Gaon (OG)	4498	1027	4.3
Niz-Mancotta (CT)	5924	1341	4.4
Barbari AMC(CT)	2884	626	4.6
Total	**14731**	**3294**	**4.4**

(Source: Compiled by Consultant)

This table 81 describes the existing households in Outgrowth and Census Town area as per Census 2011 and from this the housing size has been calculated which turns out to be 4.4 on an average. Housing size observed maximum in Mohpuwalimora Gohain Gaon (OG) which is 4.7 followed by Barbari AMC Area (CT) which is 4.6, it is 4.4 in Niz-Mancotta (CT) and 4.3 in Tekela Chiring Gaon (OG).

Table 82 Existing households in Rural area

Name	Population 2011	No. Of Household 2011	Housing size
Rural Housing within DMPA	2,07,101	43,017	4.8

(Source: Compiled by Consultant)

The population in DMPA's rural region is 2,07,101 and the total number of households are 43,017. The Household size observed in this region is 4.8

6.1.1 HOUSEHOLDS IN DMPA

In DMPA, the area wise household details are as mentioned below

Table 83 Existing households in Dibrugarh Master Plan Area for 2045

Sr. No.	Name of Area	Population	No. Of Household	Percentage	Household size
1	Dibrugarh Municipal Board (22 Wards)	139565	30525	37.98%	4.5
2	2 (Two) OG & 2(Two) CT	14731	3294	4.07%	4.4
3	13 Semi-Urbanised villages from Dibrugarh East & West Rev. Circle	31207	6878	8.63%	4.5
4	53 villages from Dibrugarh East Rev. Circle	75921	15819	21%	4.8
5	115 villages from Dibrugarh West Rev. Circle	99518	20231	27.53%	4.9
6	2 villages from Moran Rev. Circle	455	89	0.12%	5.1
Total for GIS base Dibrugarh Master Plan Area		361397	76836	100%	4.7

(Source: Census of India 2011, Compiled by Consultant)

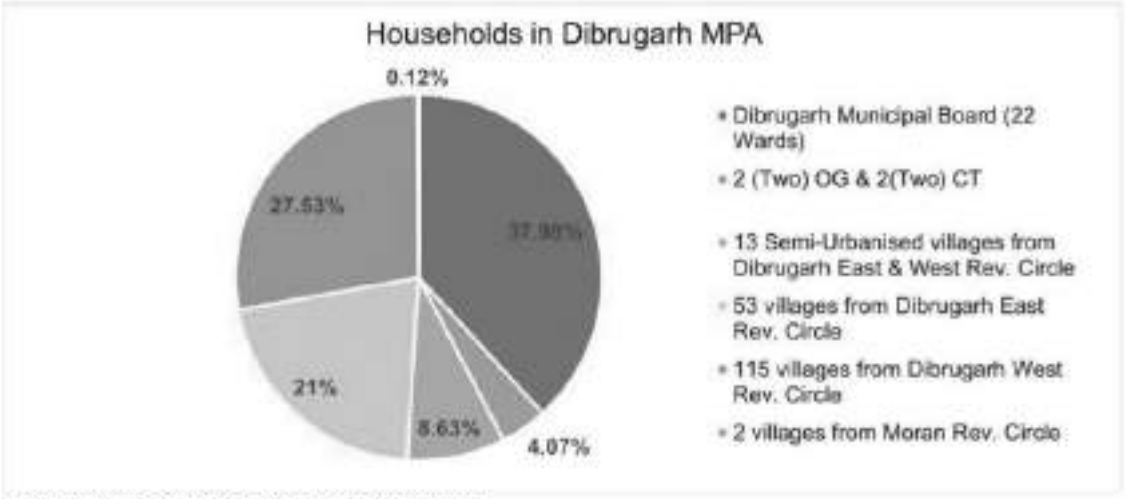


Figure 72 Existing Households in Dibrugarh Master Plan Area

The table 83 indicates total population in DMPA is 361397 and the No. of households are 76,836 which further leads to the overall household size 4.7. The maximum population is in DMB area which is 139565 and contributes 37.98 % of total DMPA. The lesser number of households observed in 2 villages from Moran Rev. Circle and OG and CT area which is 0.12% and 4.07% respectively.

6.1.2 SIZE OF THE HOUSEHOLD

The 1991 Census reveals that more than half of the households in the region were medium sized with an average member of 3 to 5. According to census 2011 the medium sized households (4-5) is predominant because of the increasing trend towards nuclear households. Since the trend in nuclear households and rapid urbanisation are at higher rate, there will be considerable pressure on housing in coming future. The overall household size of the Dibrugarh Planning Area is **4.7.** HH size is lowest in Outgrowth and Census Town area which is 4.4 and highest in Moran areas which is **5.1.**

6.1.3 HOUSING TYPOLOGY

The 'Housing Typology' is the complex nature of regional contexts as places to formulate human habitation. Investigating the interdependencies evolving between a building's entity and its territory can contribute in the future to development of region. Permanent houses are those with wall and roof made of permanent materials. Wall can be made of G.I., Stone packed with Mortar, Stone not packed with Mortar, Metal, Asbestos sheets, burnt bricks, Stone or Concrete. Roof can be made of Hand-made tiles, Machine made tiles, Slate, G.I., Metal, Asbestos sheets, Brick, Stone or Concrete. Semi-permanent houses are those in which either wall or roof is made of permanent material and other is made of temporary material. Temporary houses are the ones with wall and roof made of temporary material. Wall can be made of Grass, Thatch, Bamboo etc., Plastic, Polythene, Mud, Unburnt brick or Wood. Roof can be made of Grass, Thatch, Bamboo, Wood, Mud, Plastic or Polythene. Table 84 reveals the number of households living in permanent, semi-permanent and temporary houses within the DMPA. Out of 76,836 households, 33% are permanent, 56.2 % are semi-permanent and 10.4% are temporary houses.

Table 84 Distribution of households living in permanent, semi-permanent and temporary houses

Particular		Permanent	%	Semi-permanent	%	Temporary	%
Urban	Dibrugarh MB	19,353	63.2	10012	32.8	1160	3.8
	Census Towns (CT)	1350	61	590	30.1	178	9.04
	Outgrowth (OG)	958	60.85	493	37.15	27	2
Rural	Rural areas	12,622	29.7	25546	59	4849	11.2
	Total	34,749	33.3	36,051	56.2	6,036	10.4

(Source: District Census Handbook, Dibrugarh, Village & Town wise Primary Census Abstract 2011)

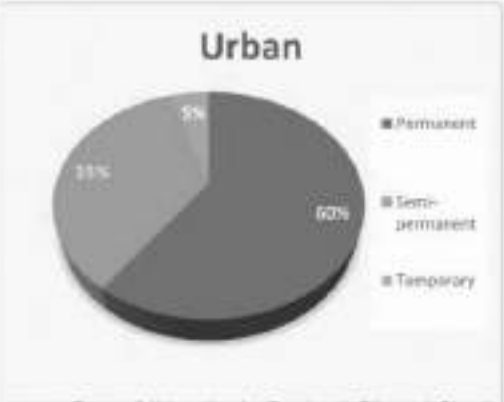


Figure 73 Urban Housing Typology in Dibrugarh Planning

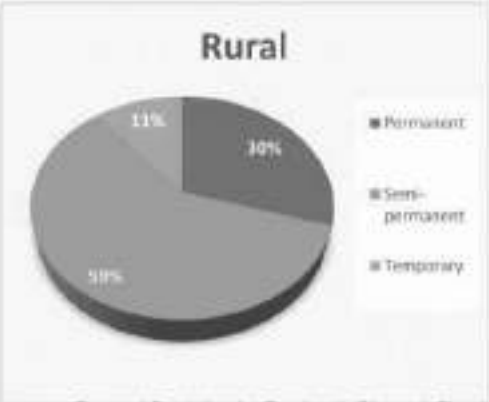


Figure 74 Rural Housing Typology in Dibrugarh Planning

The figure 73 indicates that around 60% are permanent households, 35 % are semi-permanent and 5% of dwelling units are temporary units in Dibrugarh urban area. In rural areas, the percentage of permanent housing is 30%, semi-permanent housing is 59% and temporary housing units are around 11%. It is also being observed that in rural areas 11% of total households are temporary houses. This clearly indicates that focusing the housing development in rural areas is of importance in order to provide basic need of the people.

6.1.4 HOUSING CONDITION

Housing Condition includes the study of condition of housing based on type of structure i.e. permanent/ semi- permanent, physical infrastructure, mass space relationship, condition of the material used for walls and floors etc. It is important to be studied because it indicates the efficiency and sustainability of the housing stock, whether the houses are liveable or not. Based on the above said parameters, the condition of houses has been segregated and the analysis is done as good, livable and dilapidated houses.

Table 85 Housing Conditions

Area	Residence (%)				Residence-cum-other use (%)			
	Total	Good	Livable	Dilapidated	Total	Good	Livable	Dilapidated
Assam	6,272,151	33%	56%	11%	95,144	30%	62%	8%
DIB District	2,67,486	45%	49%	6%	4,893	40%	56%	4%
DMB+OG	30,890	62%	33%	5%	977	52%	43%	5%

(Source: Census of India 2011)

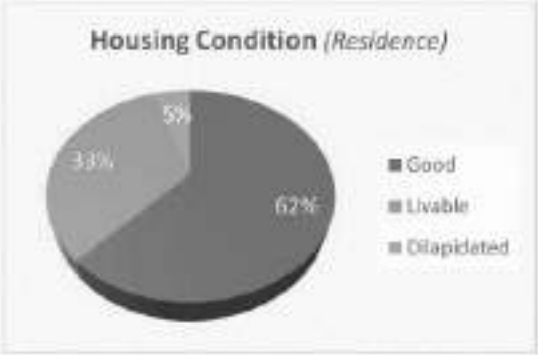


Figure 75 Housing condition as per Census 2011

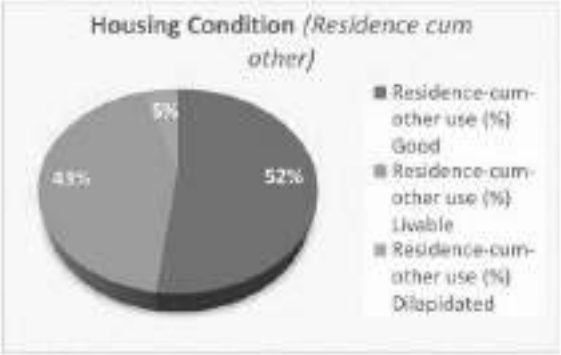


Figure 76 Housing condition in other use Census 2011

Table 86 Slum Housing Conditions

Area	Residence (%)				Residence-cum-other use (%)			
	Total	Good	Livable	Dilapidated	Total	Good	Livable	Dilapidated
Assam	6,272,151	33%	56%	11%	95,144	30%	62%	8%
DIB District	2,67,486	45%	49%	6%	4,893	40%	56%	4%
DMB+OG	5,548	49%	42%	9%	204	58%	39%	5%

Figure 77 Slum Housing condition as per Census 2011

Figure 78 Slum Housing condition in other use Census 2011

In 2011, out of total 31,867 occupied housing units in DMB+OG, 30,890, units are exclusively residential and 977 are used for residence-cum-other uses. Out of total residential housing units, majority units are in good condition and livable, while only 5% are in non-living condition. Ratio of housing units in good condition is much higher in DMB+OG (62%) as compare the share of good conditioned occupied housing units in the state (33%) and district (45%). However, the share of livable housing condition in the state and in the district is much higher as compared to the DMB.

In slum houses category, houses in good condition which are 49% followed by houses in liveable condition which are 42% and the least are in dilapidated condition which are 9%. Also, the condition of houses mentioned for the residential cum other use of slum houses, where only 5 percent are in dilapidated condition.

6.1.5 CONSTRUCTION MATERIAL OF HOUSES

6.1.5.1 Material of Roof:

Majority of households in the region have G.I. Metal sheets for roofing because they are great protection against rain, and is easily available in the region. In DMB area, around 70.26% of houses have G.I. Metal sheet roofs, which is still comparatively low numbers than the states (74.2%).

Table 87 Material of Roof

Area Name	Total number of HHs	Grass/ Thatch/ Wood/ Mud	Plastic Poly thene	Hand made Tiles	Machine made Tiles	Burnt Brick	Stone/ Slate	G.I./Metal/ Asbestos sheets	Concrete	Any other material
State	6,367,295	18.60%	2.10%	0.70%	0.30%	0.10%	0.80%	74.20%	2.90%	0.20%
District	2,72,941	19.56%	0.32%	0.35%	0.05%	0.26%	1.94%	71.87%	5.10%	0.55%
DMB+OG	32,046	3.62%	1.30%	0.35%	0.14%	1.01%	5.61%	70.26%	17.26%	0.09%

(Source: Census of India 2011)

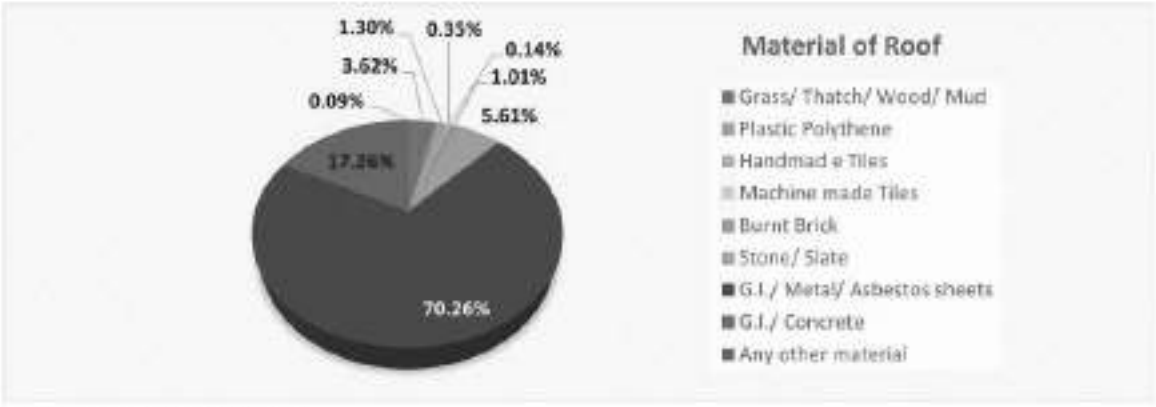


Figure 79 Housing by Material of Roof

In the districts 71.87%, households have the same roofing material. At the same time, around 17.26% households in DMB have the permanent roofs made of concrete; the number is comparatively higher than the number of households with the permanent roofs in the state and the districts.

6.1.5.2 Material of Wall:

Table 88 Material of Wall

Area Name	Grass/ Thatch/ Bamboo etc.	Plastic/ Polythene	Mud/ Unburnt brick	Wood	Stone not packedwith mortar	Stone packed with	G.I./ Metal/ Asbestos sheets	Burnt brick	Con crete	Any other material
State	66.40%	0.60%	3.60%	1.60%	0.70%	1.40%	1.10%	21.20%	2.90%	0.50%
District	59.92%	0.41%	2.38%	0.31%	0.68%	1.98%	0.24%	32.68%	1.30%	8.37%
DMB+OG	33.96%	0.94%	3.16%	0.99%	2.40%	6.97%	0.71%	45.84%	4.91%	2.54%

(Source: Census of India 2011)

Figure 80 Housing by Material of Wall

Majority of houses in DMB and OG are Pucca houses with walls made of either burnt bricks (45.84%). Houses made with bamboos and thatch is the second majority in DMB area (33.96%). However, on the other hand, majority of houses in the state (66.4%) and in the district (59.92%) are Kachha houses with the walls made of grass, bamboos and thatch.

6.1.5.3 Material of Floor:

In DMB and OG, cement is predominantly used material for flooring. Almost 59.20% households in DMB and OG have permanent flooring made of cement, and only 30% houses are with flooring made of mud, especially in the slums and other low-income group areas. On the other hand, at the state and the district levels, mud is the predominant flooring material widely used. Majority of households in the state (79%) and in the district (71%) have floor made of mud. Wood, bamboo, store, and mosaic tiles are other flooring materials used for flooring in the region.

Table 89 Material for Flooring

Area Name	Mud	Wood/ Bamboo	Burnt Brick	Stone	Cement	Mosaic/ Floor Tiles	Any other material
State	78.6%	2.1%	1.2%	0.4%	16.6%	1.0%	0.1%
District	71.43%	1.10%	2.56%	0.59%	22.87%	1.39%	0.05%
DB MB+OG	30.72%	1.07%	1.59%	0.82%	59.20%	6.43%	0.17%

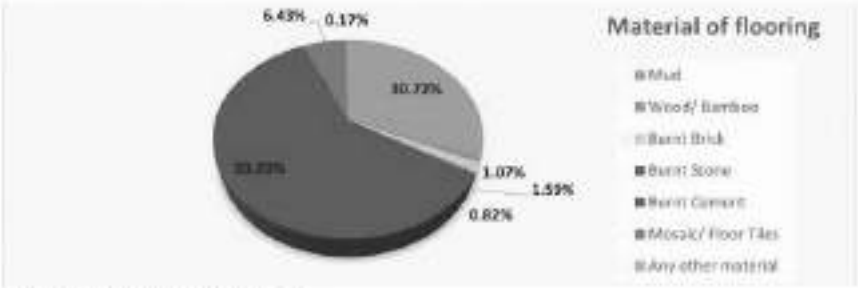


Figure 81 Housing by Material of Flooring

6.1.6 OWNERSHIP STATUS OF HOUSES

According to census 2011, the housing sizes are classified as number of dwelling units with following categories.

1. Dwelling units with no exclusive rooms
2. Dwelling units with single room
3. Dwelling units with two and three rooms
4. Dwelling units with four and five rooms
5. Dwelling units with six and above rooms

Table 80 Housing Ownership Urban area

Area Name	Ownership status	Total no. of households	Households having number of dwelling rooms						
			No exclusive room	One room	Two rooms	Three rooms	Four rooms	Five rooms	Six+ rooms
Dibrugarh (MB + OG)	Total	32046	436	6745	8037	6689	4475	2698	2966
	Owned	54.53%	42.20%	20.95%	41.88%	57.86%	80.16%	88.44%	90.02%
	Rented	38.23%	50.92%	72.50%	49.38%	30.75%	15.87%	9.19%	5.23%
	Any Other	7.24%	6.88%	6.55%	8.73%	11.39%	3.98%	2.37%	4.75%

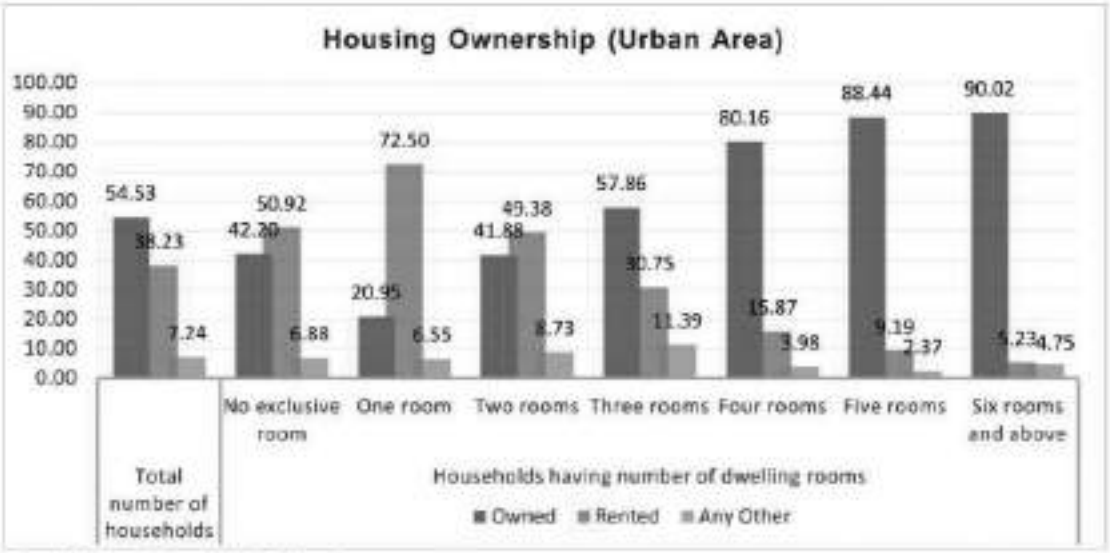


Figure 82 Housing Ownership by Dwelling Rooms

From the figure 83 it is observed that 21% of total households are owning single room and three-room units in the urban area while 25% households live in two room dwelling units. Out of 8037 two room units 41.88% are owned and 49.38% are on rent. It is also observed that 18% of the Households are living in five plus rooms where only 7.60% are rented and major units are under ownership status. In overall the 1% of the households are living without any exclusive room in urban area on the total urban households.

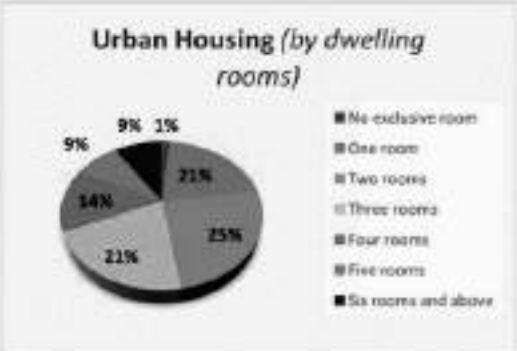


Figure 83 Housing ownership of dwelling in DMPA

Table 91 Housing ownership Rural Area

Area Name	Ownership status	Total number of households	Households having number of dwelling rooms				
			No exclusive room	One room	Two and Three rooms	Four and Five rooms	Six rooms and above
	Total	43293	199	1695	23376	14042	3981
Dibrugarh (Rural)	Owned	74.63%	49.25%	77.94%	81.79%	61.57%	78.47%
	Rented	22.68%	48.24%	19.35%	15.52%	35.74%	18.84%
	Any Other	2.69%	2.51%	2.71%	2.69%	2.69%	2.69%

Figure 84 Housing Ownership by Dwelling rooms (Rural)

The figure 85 discribes that 4% of total households are owning single room in the rural area while 54% households live in two and three-room dwelling units. Out of 23376 two-three room units 81.79% are owned, whereas only 15.52% are on rent status. It is also observed that 32% of the Households are living in four-five dwelling rooms where only 35.74% are rented and major units are under ownership. In overall the 1% of the households are living without any exclusive room in rural area on the total rural households.

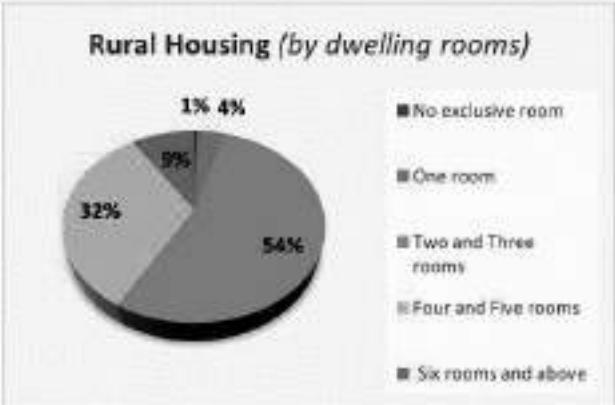


Figure 85 Housing ownership of dwelling in DMPA

Table 92 DMPA Housing Ownership by Dwelling Rooms

Area Name	Households having number of dwelling rooms (Excluding Vacant Houses)	Total number of households				
		No exclusive room	One room	Two and Three rooms	Four and Five rooms	Six rooms and above
DMPA	75339	635 (1%)	8440 (11%)	38102 (51%)	21215 (28%)	6947 (9%)

In DMPA, 51% are two and three-room dwelling units as majority followed by four and five room categories, while 1% not having any exclusive rooms. Overall, DMPA observes 66% housing under ownership status and very less under rent category status. 5% housing have not clear ownership status in DMPA.

Figure 86 DMPA Housing Ownership

6.1.7 SERVICES

6.1.7.1. Source of Drinking Water:

On an average, more than half of the household in the region have source of drinking water within their premises. Water taps, wells, hand pumps, tube wells or boreholes are the primary sources of drinking water for households within-premises water facilities, while river, pond, lake, spring, and tank are the main drinking water source of water for them who do not have sources within their premises or nearby their premises and have to go little far.

Table 93 Source of Drinking Water

Total/ Rural/ Urban	Location	No. of Hhs	Main Source of Drinking Water							
			Tap	well	Hand Pump	Tube well/ Bore hole	Spring	River/ Canal	Tank/ Pond/ Lake	Others
State	Within the premises	55%	10%	17%	62%	11%	0%	0%	0%	0%
	Near the premises	27%	12%	19%	40%	8%	1%	5%	14%	2%
	Away	18%	9%	24%	31%	6%	5%	12%	5%	7%
District	Within the premises	68%	14%	3%	59%	24%	0%	0%	0%	0%
	Near the premises	26%	4%	4%	64%	24%	0%	1%	1%	3%
	Away	7%	7%	6%	50%	18%	1%	6%	2%	10%
DMB+OG	Within the premises	88%	31%	0%	32%	37%	0%	0%	0%	0%
	Near the premises	10%	8%	0%	52%	35%	0%	3%	0%	2%
	Away	2%	4%	1%	43%	44%	1%	3%	0%	3%

As compared to the state, both District and DMB have higher number of houses with the drinking facilities within in the premises. Majority houses in DMB have drinking water facilities within their premises. Unlike DMB where taps and tube wells are the primary source of water for the in-premises water facilities, hand pumps and tube well are the preliminary source of drinking water for the district.

6.1.7.2 Source of Lighting:

Around 90% of households in DMB and OG have electricity connection. Similarly, majority of households in other urban centers of the project area have electricity connection. However, at the state level, less than 50% household have electricity connection, which means electricity has not yet reached to the all-rural areas in the state, and kerosene is still being used as a main lightening source widely in Assam. In DMB, the main source of lightning is electricity, which mainly provided by Assam State Electricity Board.

Table 94 Source of Lighting

Area Name	No. of households	Main Source of Lighting					
		Electricity	Kerosene	Solar Energy	Other Oil	Any Other	No Lighting
State	6,367,295	37.0%	61.8%	0.8%	0.1%	0.1%	0.2%
District	2,72,941	50.08%	49.32%	0.20%	0.07%	0.07%	0.26%
DMB+OG	32,046	89.85%	9.41%	0.07%	0.13%	0.04%	0.49%
Other Urban Centers (CT)	1,922	89.07%	10.77%	0.05%	0.00%	0.05%	0.05%

(Source: Census of India 2011)

6.1.7.3 Type of Latrine Facility:

Around 98% of households in DMB and OG have latrine facility within the premises. Similarly, majority of households in other urban centers of the project area also have latrine facility within the premises. However, around 21% to 35% households in the State and District do not have latrine facilities within their premises. Septic tank is the most common type treatment for in-premises latrine facility found in the project area.

Table 95 Type of Latrine Facility

Area Name	Number of Hhs Having Latrine Facility Within	Type of Latrine Facility Within the Premises								Number of Hhs Not Having Latrine Facility	No Latrine Within Premises	
		Flush/Pour Flush Latrine Connected			Pit Latrine		Night Soil Disposed Into	Service Latrine				
		Piped Sewer	Septic Tank	Others	Ventilated	Open Pit		Night Soil Remo	Night Soil service		Public Latrine	Open
State	65%	5%	15%	8%	10%	24%	1%	0%	1%	35%	2%	33%
District	79%	11%	29%	10%	14%	35%	1%	0%	1%	21%	10%	90%
DMB+OG	96%	24%	62%	5%	4%	3%	0%	1%	1%	4%	42%	58%
Other Urban Centers (CT)	98%	8%	81%	2%	2%	6%	0%	0%	0%	2%	0%	100%

(Source: Census of India 2011)

6.1.7.4 Type of Bathroom and Drainage Connectivity:

Over half of the households in the urban centers of the project area have bathing facilities within their premises. In fact, 83% households in DMB and OG have in-premises bathroom facility. On the other hand, 50% or more households in the State and the District do not have in-premises bathroom facility.

Except DMB, the rest of the region is facing issues due to the lack of properly planned drainage system (suffering from lack of planned drainage system) for wastewater discharge. However, the 76% of DMB and OG area has wastewater outlet connected to the drainage system, only 24% of the area has planned underground drainage system, and the rest of 52% area has open drainage system connected to the wastewater outlets from houses.

Table 96 Type of Bathroom & Drainage Facility

Area Name	Number of HHs having Bathing Facility within the Premises			Wastewater Outlet Connected to		
	Yes		No	Closed Drainage	Open Drainage	No Drainage
	Bathroom	Enclosure without roof				
Assam	24%	17%	58%	4%	17%	80%
District	36%	30%	35%	6%	34%	60%
DMB+OG	83%	10%	7%	24%	52%	24%
Other Urban Centre (CT)	79%	9%	12%	21%	61%	18%

(Source: Census of India 2011)

6.2 GROSS HOUSING DENSITY

Table 97 Gross Housing Density

Sr. No.	Name of Area	No. Of Household	Area (sq.km.)	Housing Density
1	DMB (22 Wards)	30525	15.57	1960
2	2 (Two) OG & 2(Two) CT	3294	8.53	386
3	13 Semi-Urbanised villages from Dibrugarh East & West Rev. Circle	6878	23.42	293
4	53 villages from Dibrugarh East Rev. Circle	15819	89.37	177
5	115 villages from Dibrugarh West Rev. Circle	20231	226.14	89
6	2 villages from Moran Rev. Circle	89	4.89	18
Total DMPA		76836	391	196

Cities in India tend to have highest housing density in the central area. The density often progressively falls towards outskirts of the city this phenomenon is produced by intermixing of land uses in the central area particularly commercial activities, with residences. Housing density is defined as the average number of houses in one square kilometre of land or total number of households per total area. The housing density is important to be studied in urban study because it describes the level of openness or congestion in an area in terms of built-up area and open areas with respect to total area. Analysis of housing density in Dibrugarh MPA has revealed the overall gross housing density as 196. The high housing density in Dibrugarh MB area is not a reflection of high-rise building but it is essentially due to the high occupancy rate and land coverage.

6.3 HOUSING TREND

Decadal Housing trend from year 1991 to 2011 for Dibrugarh Master Plan Area is given below. According to Census 2011, Municipal + OG area has less household requirement compared to rural area. Trend indicates the progressive fulfilment of household requirement from year 1991 to 2011.

Table 98 Housing trend according to decades

Year	1991				2001				2011			
Dibrugarh Planning area	Population	Households	Required Households for 1991	Shortage	Population	Households	Required Households for 2001	Shortage	Population	Households	Required Households for 2011	Shortage
Municipal + OG	120127	22512	25559	3047	126616	25013	26940	1927	145488	31852	30955	-897
Census town	3080	603	655	52	6955	1103	1480	377	8808	1967	1874	-93
Rural	159293	29754	33892	4138	179487	34823	38189	3366	207101	43017	44064	1047
Total	**282500**	**52869**	**60106**	**7237**	**313058**	**60939**	**66609**	**5670**	**361397**	**76836**	**76893**	**57**

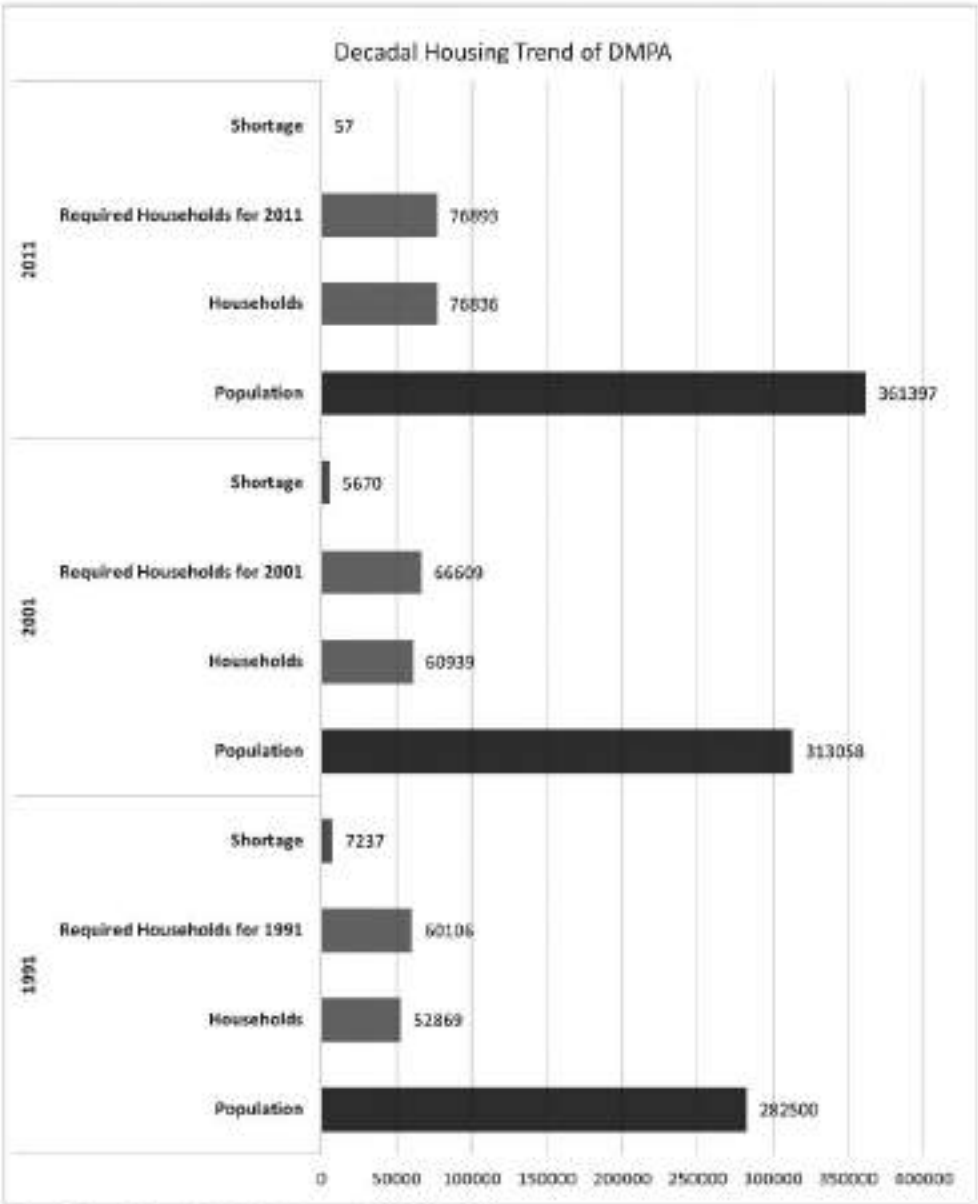


Figure 87 Decadal Housing Trend for the years 1991, 2001, 2011

6.4 GROWTH OF REAL ESTATE

The real estate sector is one of the most globally recognized sectors. In India, real estate is the second largest employer after agriculture and is slated to grow at 30 per cent over the next decade. The real estate sector comprises of further sub sectors like township, housing, retail, hospitality, infrastructure and commercial. The growth of this sector is well complemented by the growth of the corporate environment and the demand for office space as well as urban and semi-urban accommodations. The construction industry ranks third among the 14 major sectors in terms of direct, indirect and induced effects in all sectors of the economy. *(Source: Department of industrial policy and promotion 2016)*

Dibrugarh region experienced almost 20% population growth between the census year 1991 and 2011. This increasing trend has resulted in promotion of huge amount of all kind infrastructure development in Dibrugarh Planning Area. With a fair infrastructure availability and being a trade gateway to Arunachal, Dibrugarh has opened an immense opportunity for Real Estate as a Holiday home market along with existing commercial & residential requirements of the region. Certain transportation connectivity improvement and development of rail-road corridor integrity helped by newly constructed Bogibeel Double Deck bridge has led to a boost in economic activity and in the real estate market of Dibrugarh. This will lead builders and developers from across the country investing in the Dibrugarh Planning Area. Moreover, the industrial infrastructure development carried out by BCPL has attracted investments to the region and has played a vital role in promoting industrial development of region and making it an attractive location for investors from across the country. The Government of India along with the governments of the surrounding states has taken several initiatives to encourage the development in the sector.

The real estate growth witnessed in the region is a result of the aforementioned reasons and it is poised to grow at a good pace with development initiatives taken by the Government of Dibrugarh and measures adopted as part of Master Plan 2045 which will open more residential properties for development along with industrial properties and industrial corridors. With these proposals being adopted and implemented by the government, it will create an exponential growth in the real estate market of the Dibrugarh region. Hence based on the study of above facts, it indicates that there are 5 growth driven factors of Indian state's real estate. They are:

- Rapid Urbanisation
- Significant rise in consumerism
- Policy and regulatory reforms
- Surge in industrial and business activities
- Increasing demand for newer avenues for entertainment, leisure and shopping

Considering the above factors, the Real estate developers aim to utilise opportunities in line of market demand. Hence, these phenomena of possible development act as catalyst in the development process by creating more demand for residential and commercial area in the Planning Area. On the other hand, it gives boost to the property values and paves the way to keep the real estate sector vibrant in Planning Area. However, while this development is progressive for human beings, sociologist and ecologists are concerned about the fate of the agriculture land. More and more farmers of Dibrugarh region will be forced to sell their lands to builders as they pay lucrative amounts for the plots. Areas which were barren or even wetlands at one point are now seeing construction of residential or commercial buildings. Therefore, in order to bring the orderly development and to protect the fertile agricultural land, the Government of India has come up with "The Real Estate (Regulation and Development) Act, 2016".

6.4.1 THE REAL ESTATE (REGULATION AND DEVELOPMENT) ACT, 2016

The Real Estate (Regulation and Development) Act, 2016 is an Act which protects the interest of purchasers of plots and dwelling units / flats. It further helps to boost investments in the real estate industry. The Act mandates establishment of Real Estate Regulatory Authority (RERA) in each state for regulation of the real estate sector and also acts as an adjudicating body for speedy dispute redressal. The Real Estate Regulatory Authority regulates the real estate sector and ensures sale of plot, apartment or building, as the case may be, or sale of real estate project, in an efficient and transparent manner and also protects the interest of consumers in the real estate sector. The act has got provision for an adjudicating mechanism for speedy dispute redressal and also for establishment of Appellate Tribunal to hear appeals filed under the Act.

it is now a mandate for the city's real estate developers to register their projects under the Real Estate (Regulation and Development) (RERA) Act 2016, after the Assam Government notified the Act as Assam Real Estate (Regulation and Development) Rules 2017 in May,2017.

6.4.2 SALIENT FEATURES OF THE REAL ESTATE REGULATION ACT (RERA), 2016

- The act establishes the state – level Real Estate Regulatory Authority for the regulation and promotion of the real estate sector, under section 20;
- The Act mandates prior registration of a project with the Real Estate Regulatory Authority under section 3(1). It also states that prior to registration no promoter shall advertise, market, book, sell or offer for sale, or invite persons to purchase in any manner any plot, apartment to building in any real estate project registering the real estate project with the Authority;
- The Act additionally provides for the registration of real estate agents by the real Estate Regulatory Authority under Section 34(a).
- The Act lays down the functions and duties of promoters under section 4, and under section
- It provides that once registration is applied for, RERA is given a time period of 30 days to either approve upon registration, the promoter shall be provided with a log-in and password to access the website of the authority, and shall create his web page on the website and enter the details of proposed projects;
- Under Section 4(2) (l) (d), it makes mandatory upon the promoters to deposit fund amounting to 70 per cent to over the construction cost of the project in a separate bank account to be maintained at a scheduled bank, to prohibit unaccounted money from being pumped in and out of the sector to the detriment of the consumer.
- The Act states, under section 4(2) (d), the project shall be developed by the promoter in accordance with the sanctioned plans, layout plans and specifications as approved by the competent authorities.
- Under Section 15(1), promoter shall not transfer or assign his majority rights and liabilities in respect of a real estate project to a third party without obtaining prior written consent from two-third allottees.
- Under Section 19, the Act provides for the rights and duties of allottees, like allottee shall be entitled to know stage-wise time schedule of completion of the project, right to claim the refund of amount paid along with interest and compensation in the manner as provided under the Act.
- Under Section 38(1), the Act provides for penalties and offences in case of violations of law by the promoters, allottees and the real estate agents.

6.4.3 NEED FOR HOUSING POLICY

Housing is an important economic activity besides being a necessity. As part of the construction industry, which accounts for more than 50 per cent of the development outlays, housing has emerged as a major sector of economy having backward and forward linkages with almost all other sectors. With the increasing urbanisation and rural to urban migration for employment, it becomes inevitable to provide basic infrastructure to people. Thus, to meet this demand, Government of India is introducing various policies like Pradhan Mantri Aavas Yojana (Housing for all), affordable housing policies etc. For the vulnerable and weaker sections of the society, the Government is playing the role of direct provider. A Centrally sponsored scheme called Valmiki Ambedkar Awas Yojana (VAMBAY) was launched with a view to ameliorating the conditions of the urban slum dwellers living below poverty line who have inadequate shelter. The scheme has the primary objective of facilitating the construction and upgradation of the dwelling units in the slum areas and to provide health and enabling urban environment through community toilets under Nirman Bharat Abhiyan, a component of the scheme. The scheme is being implemented through HUDCO.

The Pradhan Mantri Aavas Yojana is being implemented during 2015-2022 and provides central assistance to Urban Local Bodies (ULBs) and other implementing agencies through States/UTs for:

- In-situ Rehabilitation of existing slum dwellers using land as a resource through private participation
- Credit Linked Subsidy
- Affordable Housing in Partnership
- Subsidy for beneficiary-led individual house construction/enhancement

Credit linked subsidy component is being implemented as a Central Sector Scheme while other three components as Centrally Sponsored Scheme (CSS). All statutory towns as per Census 2011 and towns notified subsequently would be eligible for coverage under the Mission.

In the spirit of cooperative federalism, mission provides flexibility to the States for choosing the best options amongst four verticals of mission to meet the demand of housing in their states. Process of project formulation and approval in accordance with the mission Guidelines has been left to the States so that projects can be formulated, approved and implemented faster.

Recently, the government of India has also come up with the Draft Model State Affordable Housing Policy for Urban Areas in 2014. The aim of this policy is to "create an enabling environment for providing "affordable housing for all" with special emphasis on EWS and LIG and other vulnerable sections of society such as Scheduled castes/Scheduled Tribes, Backward Classes, Minorities and senior citizens, physically challenged persons in the State and to ensure that no individual is left shelter less. The Policy further aims to promote Public Private People Participation (PPPP) for addressing the shortage of adequate and affordable housing."

State government in order to achieve the central governments' goal of providing affordable housing for all under the Model State Affordable Housing Policy for Urban Areas.

The agencies responsible for various works to be implemented in Assam under majority of the central government's initiative are Town and Country Planning Department, Housing Board or Slum Board etc..

In Dibrugarh region, due to pressure in the urban areas, rampant development has taken place. Therefore, in order to have a streamlined growth in the coming future, Dibrugarh will require a Housing policy for the DMPA. Various Indian states like Madhya Pradesh, Chhattisgarh, Maharashtra, Karnataka etc. have introduced housing policy in order to have ordered development in the state. Thus, Assam Government shall also come up with a detailed Housing Policy. This policy should focus on various issues being faced by regions in terms of Housing.

It is noticed that a large number of unapproved layouts and sub-divisions have been developed in the Dibrugarh regions without adequate infrastructure and public civic amenities and most of the plots in such layouts and sub-divisions have been purchased by ignorant people and there is no way to convert these layouts and sub-divisions or plots back to their original land use;

Regularization of unapproved layouts will enable the purchasers to avail institutional finances to build houses at affordable interest rates and to improve their security of tenure and thereby their quality of life. It is also observed that regularisation of sold out plots alone without considering the layout or subdivision as a whole will result in discontinuous pockets of development, causing enormous difficulties to the Local Bodies to provide services to the regularised plots in isolation and therefore, it is considered necessary to regularise these unapproved layouts and sub-divisions in their entirety by insisting to widen the roads, improve circulation, reserve areas for open space and public purpose to the extent feasible in each layout.

Effect of regularization – Plots regularised under this scheme shall be deemed to be regularised for residential use.

Some imperative objectives of the Housing Policy to be formulated is described as under:

- To facilitate affordable housing in urban and rural areas, create adequate housing stock for Lower Income Group (LIG), Economically Weaker Section (EWS) and shelters for the poorest of the poor on ownership or rental basis.
- To pursue the target of cities without slums through equitable slum redevelopment and rehabilitation strategy and shelters for the poor.
- To deregulate housing sector and encourage competition and public private partnerships in financing, construction and maintenance of houses for Lower Income Groups (LIG) and Weaker Sections of the society.
- To rationalize development control regulations and streamline approval procedures.
- To promote rental housing and incentives to different options of rental housing for weaker sections.
- To facilitate the redevelopment and renewal of inner city areas and dilapidated buildings through options of land assembly; conserving heritage structures and places of archeological importance.
- Encourage technology innovation, training and capacity building of the construction workers to enhance their productivity and improve quality of housing stock.
- To promote larger flow of funds for investment in housing and infrastructure using innovative products and appropriate institutional mechanism.
- To encourage progressive shift from target orientation to a demand driven approach as also from a subsidy based housing scheme to cost sharing or cost recovery-cum-subsidy schemes.
- To provide for mandatory construction of EWS/LIG housing by the private sector in the government-provided land, government facilitated site or their own projects.
- The policy will orient towards setting up of a land bank to ensure smooth supply of land for projects specifically meant for construction of houses to low income segment households
- To create skilled manpower for building construction industry and create employment opportunity for low income group.
- To conserve ecologically sensitive areas and promote environmentally sustainable cities and townships.
- To establish Management Information System to strengthen monitoring of building activity in the Union Territory.

6.4.4 AFFORDABLE HOUSING POLICY

A policy document is a set of guidelines to direct the actions of all persons/ institutions involved or connected regarding any area of activity. Preparation of a housing policy is the need of the hour with respect to growing requirement of shelter and related infrastructure. As discussed in the previous section requirement for shelter is growing in context of rapid urbanization, migration to cities, mismatch between demand and supply of housing (especially affordable housing for EWS/ LIG), and inability of the urban poor to access the formal housing market to fulfil its housing need.

6.5 HOUSING STOCK AND SHORTAGE

Housing shortage is defined as the set of populations who does not hold any house. There may be a growing concern for homeless across big cities during winters, but progress in construction of night shelters has been very slow across most of the states despite the centre providing 75% of funds required for building and refurbishing shelters for the urban homeless. In absence of city level data on the houseless population and pavement dwellers, the houseless population is derived from the data published as part of Census of India, 2011. Details of housing stock, Municipal Board and urban centre wise, in DMPA were computed based on the Census of India, 2011 and are presented in the table 100.

Table 89 Housing Stock in DMPA 2011

Sr. No.	Dibrugarh Planning Area	No. Of Household 2011	Total no. of Housing Stock 2011	Housing Shortage
1	Dibrugarh Municipal Board (22 Wards)	30,525	29365	1160
2	2 CTs	1967	1940	27
3	2 OGs	1327	1149	178
4	Rural	43,017	38168	4849
Total for DMPA		**76,836**	70,800	6,036

(Source: Compiled based on Census 2011)

Figure 88 Total household region wise

Figure 89 Shelterless household in DMPA

6.6 SLUMS

A Slum, for the purpose of Census, has been defined as residential areas where dwellings are unfit for human habitation by reasons of dilapidation, overcrowding, faulty arrangements and design of such buildings, narrowness or faulty arrangement of street, lack of ventilation, light, or sanitation facilities or any combination of these factors which are detrimental to the safety and health.

According to Census, slums are categorized into notified and identified slums. The high rate of growth of urban population and its accumulative nature with a population has led to increasing problem of housing, reducing privacy and overcrowding in small house, steady growth of slums and unplanned settlements and severe effect on civic services in urban areas in the system.

Slums can be commonly seen in urban areas which are occupied by urban poor or economically weaker sections of the society or the migrants from nearby villages or other states that come to the urban areas in search of employment in order to earn their livelihood. Slums are an indispensable part of our cities because as the cities grow, due to economic and physical growth of the urban area, people migrate from different areas in search of employment. So, to provide basic amenities to the urban poor and slum dwelling people this aspect needs to be incorporated while doing urban study to have an overall development of the city. Planning is for the people and in a way, slums are an indispensable part of the society. To make the city livable for all and to improve the condition of slums, this comprehensive study regarding slums plays a vital role in planning.

6.6.1 REASON FOR SLUM

The Dibrugarh region presents a wide range of activities in various institutional, Commercial and tourism sectors. Growth in such activities, possibilities of absorption in various service sectors, scope of employment in trade and business activities, hawking, retailing, carting etc., could have attracted more rural poor to the urban. Due to their economic status, these urban poor are unable to get a house within their limited income and hence occupy vacant spaces wherever available and lead a marginal level of living. These habitations in due course develop into slums proliferate exponentially further due to rapid urbanization and natural growth of population. In this scenario, the role of Government in tackling the slum becomes more pertinent.

6.6.2 IMPACT OF SLUM

The development of slums leads to Poor environmental conditions in such areas which lead to poor health, which aggravates poverty and often results in lower educational levels, as well as loss of income owing to sickness, disease, and increased spending on health care, which may deplete household savings. On the other hand, environmental problems exacerbate urban poverty and poor neighbourhoods suffer disproportionately from inadequate water and sanitation facilities and indoor air pollution. Poor people living in slum are often forced to live in environmental unsafe areas, steep hillsides and flood plains or polluted sites near solid waste dumps, open drains and sewers, and polluting industries. Conflicts like quarrel, clash and fight in the squatters of this area is a regular phenomenon. This creates noise and violence which leads to lack of security in the area and disturbs the city dwellers, particularly the nearby residents, office workers, and school children. Besides, many of the residents are involved in prostitution, drug trafficking, hijacking, smuggling etc. These activities threaten the social and cultural environment of the city.

6.6.3 SLUMS IN DMPA

As per Census 2011, there are 36,166 persons living in slums within Dibrugarh MB and OG area which is approximately 25%.

Table 100 Percentage of slum population from total population

Town Name	Total Population of Town	Slum Population	Percentage share from total population (%)
Dibrugarh (MB + OG)	145488	36166	24.85

6.6.4 NOTIFIED AND NON-NOTIFIED SLUM

Areas notified as slums by the respective municipalities, corporations, local bodies or development authorities are treated as "notified slums". In any city, it is generally observed that the slum is developed mostly near their working places. Slum dwellers first prefer the location of land which is nearer to the workplace and then they prefer the location where basic amenities such as water, proximity to public transport etc. is available. That is why slums generally develop near the industries, wholesale-markets, godowns, railway stations and even in residential areas. They generally use public-transport or slow-moving vehicles such as cycle, rickshaws etc. as it is economical.

The figure 90 shows the location of notified and non-notified slums across the Planning area.

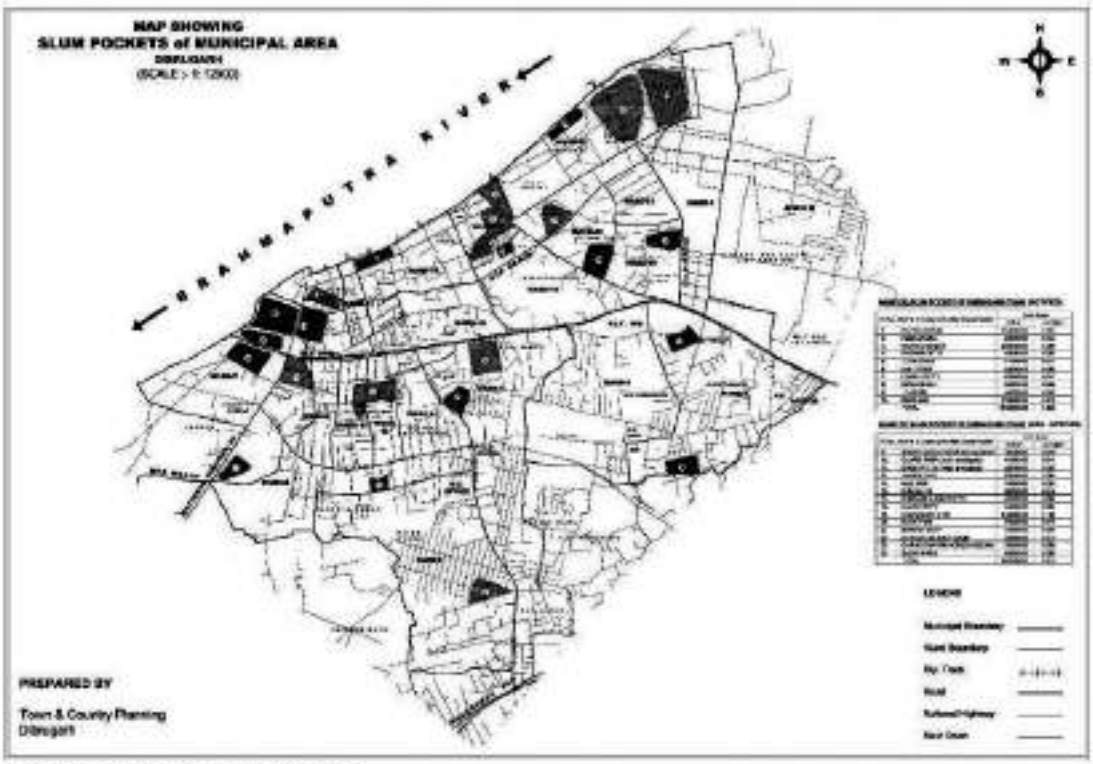


Figure 90 Notified and Non-notified slums area

Few notified slums are already situated within city area which are marked here in light green color polygons and non-notified slums are marked in red color polygons. The hygiene condition within slum area is degraded and major area is found with litters and thrown garbage. Open channel sewerage is a part of slum which also spills over with garbage at some places. Some patch of slum area along riverbank is non notified as they are accompanied by legal properties. Owing to slum area the premises is lacking in fundamental amenities of sanitation and hygiene. The area is on the rudimentary level of development.

The table 101 shows the details of slums which includes the name of slums, the land ownership status, total area, population, and number of households. According to the T&CP data, there are 10 notified slums in the town and 14 non-notified slums. The total area constituted by slums is 1.98 sq.km. with total population of 36,166.

Table 101 Slum population and housing details

Sr. No.	Name of the Slum	Ownership of land where slum is located	Area (sq. km.)	Slum Population	No. of Slum Household
		Notified Slum			
1	Paltan bazaar	04	0.234	4062	790
2	Gangapera	04	0.043	1022	240
3	Graham bazaar	01	0.259	5658	1095
4	Pathan patti	04	0.083	511	102
5	Tulsi gaon	04	0.071	551	123
6	Satipara, horizon colony	01 and 04	0.088	2278	470
7	Lohar patti	04	0.047	2951	570
8	Mirzabag	04	0.068	702	142
9	Tinkuria	04	0.059	922	170
10	Dibrujan	04	0.216	2578	540
	Total		1.168	21235	4242
		Non-notified Slum			
11	South amollapatty (near kabristan)	04	0.039	358	81
12	Guardpara (North Amolapatty)	04	0.041	735	160
13	Dhubipatty (North Amolapatty)	04	0.028	587	126
14	Ameraguri	02	0.063	1633	341
15	Kalibari	04	0.054	1191	244
16	Koliaghat	02	0.046	1024	207
17	Borbari Dusadpatty	04	0.080	351	68
18	Kauripatty	04	0.054	749	166
19	Chandmari ghat	03	0.132	3199	627
20	Kalishtan	03	0.075	806	189
21	Boiragimath	04	0.034	692	157
22	Itabhata Suwani gaon	03	0.042	1315	306
23	Chiring chapori, horizon colony	04	0.058	900	196
24	Shasanpara	04	0.069	1319	416
	Total		**0.815**	**14931**	**3284**
	Grand Total		**1.983**	**36166**	**7526**

(Local body – 01, State Government – 02, Central Government – 03, Private – 04, others – 05)

Table 102 Slum Census Houses

Sr. No.	Area Name	Dibrugarh (MB + OG)
1	Total number of Slum census houses	7526
2	Total number of occupied Slum census houses	6874
3	Total number of vacant Slum census houses	612
4	Total number of occupied locked Slum census houses	40

(Source: Compiled by Consultant)

6.7 HOUSING DEMAND GAP ANALYSIS

6.7.1 FACTORS CAUSING HOUSING SHORTAGE

There are several factors which would affect the housing shortage. The recent technique in finding the housing shortage is published by Ministry of urban poverty and alleviation. There are 5 major factors which decides the housing shortage in the system. They are -

1. Congestion factors
2. Obsolescence factors
3. Non-Durability
4. Present housing shortage
5. Calculation of housing shortage for 2045 for the projected population

6.7.1.1 Congestion Factor

Congestion factor is the ratio of households that are residing in unacceptable congested conditions, from physical and socio-cultural viewpoints (i.e. married couples sharing the room with other adults etc.,) or the percentage of households in which each married couple does not have separate room to live. The table 104 indicates that the congestion factor for each Municipalities/Commune Panchayats according to the census 2011. It is observed that the planning area shows a uniform congestion factor for all the Municipalities/ communes in Dibrugarh region for the year 2011.

Table 103 Household without exclusive room

Sr. No.	Dibrugarh Planning Area	HH 2011	No exclusive room for marriage couples 2011	Congestion Factor
1	DMB+OG	31852	436	**0.01**
2	2 CTs	1967	20	**0.01**
3	Rural	43,017	199	**0.004**
Total for DMPA		**76,836**	**655**	**0.008**

(Source: Compiled by Consultant)

6.7.1.2 Obsolescence Factor

Obsolescence factors is all the bad houses, excluding those that are less than 40 years old and all houses ages 80 years or more. Obsolescence are the households living in obsolete buildings (40 to 80 years old in a bad structural condition, and 80 or more years) and excluding temporary houses (to avoid double counting). The table 104 illustrates the Obsolescence Factor for Dibrugarh Planning Area according to Census 2011.

Table 104 Housing shortage due to obsolescence

Sr. No.	Dibrugarh Planning Area	HH 2011	HH above 50+ yrs in DMPA	Congestion Factor
1	DMB+OG	31852	955	0.03
2	2 CTs	1967	99	0.05
3	Rural	43,017	2150	0.05
Total for DMPA		**76,836**	**3204**	**0.04**

The table reveals that the highest obsolescence factor is observed in CT and rural area which indicates that the status of housing condition is poor with respect to the overall housing condition of the Dibrugarh Planning Area. It is also observed that the lowest Obsolescence factor is in DMB area which also witnesses the good quality of socio-economic status in the region mainly due to the urban nature of the area and developments which are in tune with the overall development of the Dibrugarh region.

6.7.1.3 Non-Durability

Non-durability is the no. of temporary houses which are not suitable for living or Non-serviceable units are taken out. Temporary/ kutcha houses are those in which both the walls and roof are made of materials that need to be replaced frequently. As per the census definition, temporary houses are made with walls and roofs made of temporary material. Walls can be made of grass, thatch, bamboo, plastic, polythene, mud, unburnt bricks or wood. Roofs can be made of grass, thatch, bamboo, wood, mud, plastic or polythene. Hence the non-durability of housing is the difference between the number of housing stock to the number of permanent houses. The table 105 represents the details of permanent, semi-permanent house and temporary house within the DMPA.

Table 105 Housing shortage due to non-durability

Particular		Permanent	Semi-permanent	Temporary	Number of Housing Stock
Urban	Dibrugarh MB	19,353	10012	1160	29365
	Census Towns (CT)	1350	590	178	1940
	Outgrowth (OG)	958	493	27	1149
Rural	Rural areas	12,822	25548	4849	38169
	Total	**34,749**	**36,051**	**6,036**	**70,800**

6.7.2 ESTIMATION OF HOUSING SHORTAGE

Acute housing shortage in country specially in urban centres has become a burning problem of the day since house construction activities do not keep pace with the growth of population of urban centres. The number of houses has, therefore, been successively falling short of actual requirement of the urban population.

Based on the Ministry of Housing and Urban Poverty Alleviation, National housing shortage, the final estimation of housing shortage is calculated based on the corresponding factors such as homeless population, Non-durability factor, Congestion factor, Obsolescence. It has been calculated based on the census 2011. For this exercise, the following assumptions were adopted with the reference to the Assam state, District and DMB Housing Profile based on Census 2011 housing data:

- Dilapidated houses accounts for 11% of total housing stock for the project area and 4% for the urban areas.
- Vacant houses accounts for 4% of total housing stock for the project area and 10% for the urban areas.

The details of housing shortage based on census 2011 data are presented in the table 106 below.

Table 106 Total Housing Shortage in DMPA

Sr. No.	Housing Shortage	No. of Shortage household
1	Shortage due to Homeless Population	6036
2	Shortage due to Dilapidated Houses	7788
3	Shortage due to Vacant houses	2832
4	Shortage for Slum households	7526
5	Shortage due to congestion in 2011	655
6	Shortage due to obsolescence in 2011	3204
Total Housing Shortage (2011)		**28,041**

6.8 HOUSING DEMAND GAP ANALYSIS

The future housing requirement for DMPA has been assessed considering both, the quantitative housing shortage, and the qualitative housing shortage. Below mentioned is the quantitative calculation of future housing requirement for year 2045.

Table 107 Decadal additional housing requirement

Year	Additional Population	HH size	Additional HHs
2021	56175	4.5	12483
2031	53147	4	13287
2041	56705	4	14176
2045	24333	4	6083
Total Additional Housing Requirement till 2045			**46029**

(Source: Compiled by Consultant)

For the 2021 housing projection considered average household size is 4.5; while for 2031,2041 and 2045 projection 4 household size is considered, based on the assumptions of having more numbers of nuclear families in the future than today and constant household formation rate for the entire Planning Area. The projected additional housing requirement considering increase in population by 2045 is 46,029.

Table 108 Total Housing Demand by 2045

Sr. No.	Particulars	Numbers
1	Region	DMPA
2	Total Population 2011	361397
3	Total Household	76836
4	No. of Housing Stock 2011	70800
5	Housing Gap (Factor 1)	6036
6	No. of Good and Livable Houses	69048
7	No. of Dilapidated houses (Factor 2)	7788
8	Congestion Factor 2011	0.008
9	Shortage Due to Congestion Factor (Factor 3)	655
10	Obsolescence Factor 2011	0.04
11	Shortage due to Obsolescence Factor (Factor 4)	3204
12	No. of Locked and Vacant houses (Factor 5)	2832
13	No. of Slum houses (Factor 6)	7526
14	Projected Population 2045	551757
15	Projected Increase in Population from 2011 to 2045	190360
16	Housing requirement for increase in Population (Factor 7)	46029
Total Housing Demand – 2045 (Factor 1+2+3+4+5+6+7)		**74,070**

(Source: Compiled by Consultant)

6.9 HOUSING PROVISION

The housing provision is met can be accommodate in the proposed Residential, Mixed Use and Conservation zones. Further, the residential and mixed uses zones are divided into different categories; with each has various FSI to offer so the development intensity can be managed. It is proposed to facilitate the provision of a fully serviced dwelling unit for each family and reduce the gap between housing shortage and supply through suitable measures. The planned catering for the additional housing is as mentioned in table 109

Table 109 Decadal housing provision in DMPA

Year	Additional Population	HH size	Additional HH	Catering for the Shortage	Total Housing Need (decade wise)
2021	56175	4.5	12483	9816 (35%)	22299
2031	53147	4	13287	8414 (30%)	21701
2041	56705	4	14176	5611(20%)	19787
2045	24333	4	6083	4200 (15%)	10283
Total			**46,029**	**28,041**	**74,070**

(Source: Compiled by Consultant)

For the decade 2021, 35% catering for housing shortage is been considered by taking benefit of the different housing schemes and state-central government fund utilization. Similarly, 30%,20% and 15% catering for year 2031,2041 and 2045 respectively.

6.9.1 HOUSING PROVISION BASED ON INCOME GROUP

Table 110 Housing provision considering Income Group

Year	Total Housing Need (decade wise)	EWS 20%	LIG 30%	MIG 40%	HIG 10%
2021	22299	4460	6690	8919	2230
2031	21701	4340	6510	8680	2173
2041	19787	3957	5936	7915	1978
2045	10283	2056	3085	4113	1028
Total	**74,070**	**14813**	**22221**	**29627**	**7409**

(Source: Compiled by Consultant)

As per the Ministry of Urban Poverty and Alleviation the population is categorised based on the income level such as Economically Weaker Section (EWS), Low Income Group (LIG), Medium Income Group (MIG) and High-Income Group (HIG).

The table 110 indicates that the housing shortage for 2045 is calculated for each classification based on income level. This table helps to earmark the affordable housing in the Dibrugarh Planning Area and would also help to formulate the housing policy.

6.10 HOUSING POLICY

The main objective of the housing policy for Dibrugarh Planning Area is not only to meet the housing demand by horizon 2045 but also to improve the residential conditions at large. In view of this, Master Plan proposes development of residential neighborhoods having adequate facilities within walk able distance. Design considerations require better planning.

Private sector Participation

Privatization must be encouraged by participation of individuals and developers in the house building activities. The local administration could provide land with offsite and on-site physical and social infrastructure and the private entrepreneurs could invest in house building. In principles, housing has four distinct components for its development i.e., Land Assembly, infrastructure provision, building construction and post occupancy management. The above diagram gives an idea how these activities should be distributed amongst the Government, private and cooperatives making the Government a facilitator for housing development.

Role of Government

Government has to play proactive role of promoting the housing industry by regulatory measures and acting as a watch-dog rather than fully involving its organs in the provision of shelter to the town inhabitants. The magnitude of housing shortage is enormous and the State on its own cannot provide the housing stock. Government will limit its role to development of serviced land and subsequently its release to private developers and Cooperative Societies on premium equivalent to the cost of land plus marginal profit with only advisory and regulatory role in the development of housing industry.

Housing of Different Income Categories

The Master Plan recommends identification of priorities in dealing with different segments of the population. Out of the total demand, income category wise demand has been given in fixing the priority in dealing with different segments of the population: H.I.G. and M.I.G. dwelling units shall be provided with only developed land at market price to cross subsidize the housing for E.W.S./L.I.G.

Group Housing Schemes

To meet the housing demand by 2045, based on the need housing colonies or townships can be developed. Economies of scale are favorable to large colonies because of reduced per capita on investment on infrastructure and services development in large colonies. The Master Plan also envisages smart growth of the

city to overcome the scarcity of land and regulate sprawl of urban development in rich agricultural hinterland.

Urban Village

The peripheral village settlements, which have been incorporated in the Planning Area of Dibrugarh, are going to be part of its proposed Urban Area Limits during the process of its expansion. The settlements having a completely different life-style for centuries are now getting merged into urban environment and need a sensitive approach in the planning and development process. At present these settlements do not confirm to any urban character and need an 'Action Plan' for extension of water supply, sewerage and drainage facilities and other basic urban amenities and efficient linkages with the main city. The settlements should get the modern services and amenities and should also be catered for their traditional cultural styles.

6.11 SLUM UPGRADATION PROGRAM

The scheme aims at acquiring sites in various parts of urban areas and to construct tenements and provide developed plots under "Sites and Services" concept to the slum dwellers. Improvement works to the existing Slums are being implemented through the Assam State Housing Board. The tenements in storeyed blocks are made available to the slum dwellers on rental basis. Apart from that, upgradation of slum areas by extending basic amenities viz., roads, water supply, sewerage, education, health, electricity, social infrastructure are also undertaken.

6.11.1 RAJIV AWAS YOJNA (RAY)

Rajiv Awas Yojna a path breaking centrally sponsored scheme for the slum dwellers and urban poor envisages a "Slum Free India" through encouraging states to tackle the problem of slums in holistic manner. The main objectives of RAY are -

1. Bringing existing slums within the formal system and enabling them to avail the same level of basic amenities as the rest of the town.
2. Redressing of failures of the formal system that lie behind the creation of slums.
3. Tackling the shortage of urban land and housing that keep shelter out of reach of the urban poor and force them to resort to extra-legal solutions in a bid to retain their sources of livelihood and employment.

6.11.2 PRADHAN MANTRI AWAS YOJANA (PMAY)

The "Pradhan Mantri Awas Yojana (Urban) - Housing for All" was launched by Government of India with an objective of providing houses to every family by the year 2022. The Mission is being implemented during 2015-2022 and provides central assistance to Urban Local Bodies (ULBs) and other implementing agencies through States/UTs. The "Pradhan Mantri Awas Yojana (Urban) - Housing for All' has following four Sub-schemes giving options for beneficiaries, ULBs / Implementing Agencies and the State Governments:

1. In-situ Slum rehabilitation of Slum Dwellers
2. Credit Linked Subsidy Scheme.
3. Affordable housing in partnership with Public & Private sectors.
4. Beneficiary Led Individual House Construction or enhancement.

6.11.2.1 In-situ Slum Rehabilitation of Slum Dwellers (ISSR)

"In-situ" slum rehabilitation using land as a resource with private participation for providing houses to eligible slum dwellers is an important component of the "Pradhan Mantri Awas Yojana (Urban) – Housing for All" mission. This approach aims to leverage the locked potential of land under slums to provide houses to the eligible slum dwellers bringing them into the formal urban settlement. Slums so redeveloped should compulsorily be denotified.

Eligibility

- Slums, whether on Central Government land/State Government land/ULB land, Private Land, should be taken up for "in-situ" redevelopment for providing houses to all eligible slum dwellers.
- Eligibility of the slum dwellers like cut-off date etc. will be decided by States/UTs preferably through legislation.

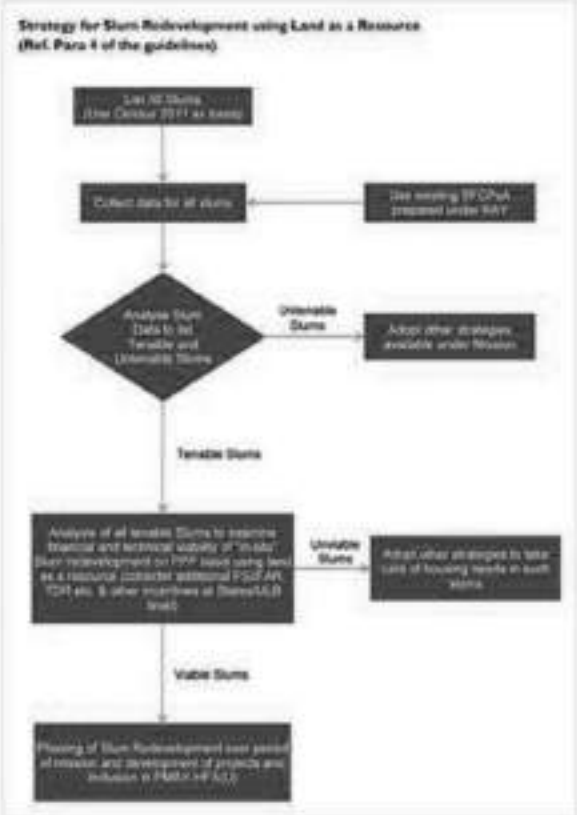
Highlights

- Additional Floor Area Ratio (FAR)/Floor Space Index (FSI)/Transferable Development Rights (TDR) for making slum redevelopment projects financially viable.
- Slum rehabilitation grant of Rs. 1 lakh per house, on an average, would be admissible for all houses built for eligible slum dwellers in all such projects.
- Beneficiary contribution in slum redevelopment project, if any, shall be decided and fixed by the States/ UTs Government.
- State/UT Governments and cities would, if required, provide additional Floor Area Ratio (FAR)/Floor Space Index (FSI)/Transferable Development Rights (TDR) for making slum redevelopment projects financially viable.
- States/UTs will have the flexibility to deploy this central grant for other slums being redeveloped for providing houses to eligible slum dwellers with private participation, except slums on private land. It means that States/UTs can utilise more than Rs. 1 lakh per house in some projects and less in other projects but within overall average of Rs. 1 lakh per house calculated across the States/UTs.
- The per house upper ceiling of central assistance, if any, for such slum redevelopment projects would be decided by the Ministry.
- States/UTs may decide whether the houses constructed will be allotted on ownership rights or on renewable, mortgageable and inheritable leasehold rights.
- States/UTs may impose suitable restrictions on transfer of houses constructed under this component.
- "In-situ" redevelopment of slums on private owned lands for providing houses to eligible slum dwellers can be incentivised by State Governments/UTs or ULBs by giving additional FSI/FAR or TDR to land owner as per its policy. Central assistance cannot be used in such cases.
- A viable project would have two components i.e. "slum rehabilitation component" which provides housing along with basic civic infrastructure to eligible slum dwellers and a "free sale component" which will be available to developers for selling in the market so as to cross subsidize the project.

Implementation/Approach for Slum Rehabilitation with Private Partnership is outlined as below:

- All tenable slums as identified in Housing for All Plan of Action (HFAPoA) of the city should be analysed with respect to their location, number of eligible slum dwellers in that slum, area of the slum land, market potential of the land (land value as per ready reckoner can be used), FAR/FSI available and density norms applicable to that piece of land etc..
- On the basis of analysis of slums, the implementing authorities should decide whether a particular slum can be redeveloped with private participation or not using land as a resource and to provide houses to eligible slums dwellers.
- For making projects financially viable, in some cases, States/UTs and cities might have to provide additional FAR/FSI or TDR and relax density and other planning norms. States/UTs may also allow commercial usage for part of the land/FAR as mixed usage of the land.
- States/UTs can also consider clubbing of nearby slums in clusters for in-situ redevelopment to make them financially and technically viable. Such cluster of slums can be considered as a single project.
- While formulating the project, the project planning and implementing authorities should also decide the area of slum land which should be given to the private developers. In some cases, the area of slum may

be more than what is required for rehabilitating all eligible slum dwellers plus free sale component for cross subsidizing the project. In such cases, project planning authorities should give only the required slum land to private developers and remaining slum land should be utilised for rehabilitating slums dwellers living in other slums or for housing for other urban poor.



- Slum dwellers through their association or other suitable means should be consulted while formulating redevelopment projects especially for the purpose of designing of slum rehabilitation component.
- The private developers who will execute the slum redevelopment project should be selected through an open transparent bidding process. The eligibility criteria for prospective developers can be decided by States/UTs and ULBs. The scope of work of the prospective developers should be to conceive and to execute the project as mandated by the implementing agency using its financial and technical resources. The project developers would also be responsible for providing transit accommodation to the eligible slum dwellers during the construction period.
- All financial and non financial incentives and concessions, if any, should be integrated in the project and declared 'a priori' in the bid document. These incentives and concessions should also include contribution from beneficiaries/slum dwellers, if any.
- Sale of "free sale component" of project should be linked to the completion and transfer of slum rehabilitation component to the implementing agency/state. Such stipulation should be clearly provided in the bid document to avoid any complication.
- Slum rehabilitation component should be handed over to implementing agency to make allotments to eligible slum dwellers through a transparent process. While making the allotment, families with physically handicapped persons and senior citizens should be given priority for allotment on ground floor or lower floors.
- Open bidding for the slum redevelopment project may result either into a positive premium or negative premium. In case of positive premium, the developer who offers the highest positive premium while satisfying all other conditions should be selected. In case of negative premium, the implementing authority may select the bidder proposing lowest negative premium. Funds required to make the project viable can be made available either from slum rehabilitation grant of Central Government or own fund of States and ULBs as well as positive premium received from other projects.
- Any private participation, that demands substantial grants from Government, may not be encouraged. Slums can either be taken up later for development or Kutcha/ unserviceable houses in such slums can be taken up under other components of the mission.
- States/UTs project planning and implementing authorities, ULBs should have a single project account for

slum redevelopment project where positive premium, slum rehabilitation grant from Central Government, funds from State/UT Government or any other source is to be credited and used for financing all slum redevelopment projects with negative premium. Such accounts can be opened city-wise.

- Slum rehabilitation projects would require various approvals from different agencies as per prevailing rules and procedures in the States/UTs. Project development may also require changes in various development control rules. To facilitate such changes and for faster formulation and approval of projects, it is suggested that a single authority should be constituted with the responsibility to change planning and other norms and also for according approval to projects.

6.11.2.2 Credit Linked Subsidy Scheme for EWS/LIG (CLSS)

Pradhan Mantri Awas Yojana (Urban) - Housing For All Mission, in order to expand institutional credit flow to the housing needs of urban poor is implementing credit linked subsidy component as a demand side intervention.

- Beneficiaries of Economically Weaker Section (EWS) and Low Income Group (LIG) seeking housing loans from Banks, Housing Finance Companies and other such institutions would be eligible for an interest subsidy at the rate of 6.5 % for a tenure of 20* years or during tenure of loan whichever is lower.
- The credit linked subsidy will be available only for loan amounts upto Rs 6 lakhs and additional loans beyond Rs. 6 lakhs, if any, will be at nonsubsidized rate.
- Interest subsidy will be credited upfront to the loan account of beneficiaries through Primary Lending Institutions (PLI), resulting in reduced effective housing loan and Equated Monthly Installment (EMI).
- The Net Present Value (NPV) of the interest subsidy will be calculated at a discount rate of 9 %.

Home Ownership

The houses constructed/acquired with central assistance under the Mission should be in the name of the female head of the household or in the joint name of the male head of the household and his wife, and only in case when there is no adult female member in the family, the house can be in the name of male member of the household.

Coverage

All Statutory Towns as per Census 2011 and towns notified subsequently, including planning area as notified with respect to Statutory Town.

Purpose

New construction, acquisition and addition of rooms, kitchen, toilet etc. to existing dwelling houses as incremental housing.

Beneficiaries

- Beneficiary family will comprise husband, wife and unmarried children.
- The beneficiary family should not own a pucca house either in his/her name or in the name of any member of his/her family in any part of India.
- EWS Households having annual income up to Rs. 3,00,000/-
- LIG Households having annual income between Rs. 3,00,001/- and upto Rs. 6,00,000/-
- Preference under the scheme, subject to beneficiaries being from EWS/LIG segments, should be given to Manual Scavengers, Women (with overriding preference to widows), persons belonging to Scheduled Castes/ Scheduled Tribes/ Other Backward Classes, Minorities, Persons with disabilities and Transgender.

Area which can be constructed

- Carpet area of house being constructed or enhanced under this component of the Mission should be upto 30 square meters for EWS category and upto 60 square meters for LIG category.
- Beneficiary, at his/her discretion, can build a house of larger area but interest subsidy would be limited to first Rs.6 lakh only.
- For incremental housing/extension, the area limit will be 30 sq.mt. and 60 sq.mt. of carpet area for EWS and LIG category respectively.

Subsidy and Loan details

- Maximum loan amount: as per eligibility of customer decided by bank / Financial Institution based on due diligence.
- Maximum loan tenure : based on the guidelines of the PLI.
- Maximum tenure for subsidy computation: 20* years or the tenure of the loan, whichever is lower.
- Maximum loan amount for subsidy calculation: Rs. 6 lakh.
- Interest rate for subsidy : 6.5%

Housing and Urban Development Corporation (HUDCO) and National Housing Bank (NHB) have been identified as Central Nodal Agencies (CNAs) to channelize this subsidy to the Primary Lending Institutions and for monitoring the progress of this component. This scheme will be implemented through Banks/Financial Institutions.

6.11.2.3Affordable Housing in Partnership (AHP)

The third component of the Mission is Affordable Housing in Partnership which is a supply side intervention. The Mission will provide financial assistance to EWS houses being built with different partnerships by States/ UTs/Cities.

Affordable housing projects are the projects where atleast 35% of houses are constructed for EWS category.

- To increase availability of houses for EWS category at an affordable rate, States/UTs, either through its agencies or in partnership with private sector including industries, can plan affordable housing projects.
- Central Assistance at the rate of Rs.1.5 Lakh per EWS house would be available for all EWS houses in such projects.
- • The States/UTs would decide on an upper ceiling on the sale price of EWS houses in rupees per square meter of carpet area in such projects with an objective to make them affordable and accessible to the intended beneficiaries. For that purpose, States/UTs and cities may extend other concessions such as their State subsidy, land at affordable cost, stamp duty exemption etc.
- The sale prices may be fixed either on the project basis or city basis using following principles:
- An Affordable Housing Project (AHP) can be a mix of houses for different categories but it will be eligible for central assistance, only if at least 35% of the houses in the project are for EWS category and a single project has at least 250 EWS houses. CSMC at GOI level, however, can reduce the requirement of minimum number of houses in one project on the request of State Government.
- Allotment of houses to identified eligible beneficiaries in AHP projects should be made following a transparent procedure as approved by SLSMC and the beneficiaries selected should be part of HFAPoA.
- Preference in allotment may be given to Physically Handicapped Persons, Senior Citizens, Scheduled

Castes, Scheduled Tribes, Other Backward Classes, Minority, Single Women, Transgender and Other Weaker and Vulnerable Sections of the Society.

- While making the allotment, the families with person with disability and senior citizens may be allotted house preferably on the ground floor or lower floors.
- Detailed Project Report (DPR) of such projects prepared by concerned implementing agencies should be approved by SLSMC.

Coverage

- All statutory towns as per Census 2011 and towns notified subsequently would be eligible for coverage under the Mission.
- The Mission will support construction of houses upto 30 square meter carpet area with basic civic infrastructure.
- States/UTs will have flexibility in terms of determining the size of house and other facilities at the State/UT level in consultation with the Ministry but without any enhanced financial assistance from Centre.
- Affordable Housing Projects in partnership should have basic civic infrastructure like water, sanitation, sewerage, road, electricity etc.
- The minimum size of houses constructed under the Mission under each component must conform to the standards provided in National Building Code (NBC).
- The houses under the Mission should be designed and constructed to meet the requirements of structural safety against earthquake, flood, cyclone, landslides etc. conforming to the National Building Code (NBC) and other relevant Bureau of Indian Standards (BIS) codes.
- All houses built or expanded under the Mission should essentially have toilet facility.
- The houses constructed/acquired with central assistance under the Mission should preferably be in the name of the female head of the household or in the joint name of the male head of the household and his wife.
- Only in cases when there is no adult female member in the family, the house can be in the name of male member of the household.

Implementation

A beneficiary will be eligible for availing only a single benefit under any of the existing options i.e. Slum Redevelopment with Private Partner, Credit Linked Subsidy, Direct Subsidy to Individual Beneficiary and Affordable Housing in Partnership. It will be the responsibility of States/UTs Government to ensure that the beneficiary is not given benefit under more than one component of the Mission.

6.11.2.4 Beneficiary Led Construction (BLC)

Beneficiaries could avail the benefits of scheme component for New construction and Enhancement of existing house. Highlights of 'Beneficiary Led (Individual House) Construction' or Enhancement (BLC) Progress to be tracked through geo tagged photographs of the house.

Eligibility for New Construction

- Urban residents of EWS : Economically Weaker Section (annual income upto Rs 3 lakhs) & LIG: Low Income Group (annual income Rs 3 to 6 lakhs).
- Beneficiary families should not own a pucca house anywhere in India.

For BLC Enhancement

- Beneficiaries may be residing either in slums or outside the slums.
- Beneficiaries in slums which are not being redeveloped can be covered under this component if beneficiaries have a Kutcha or Semi-Pucca house.

Benefit

- To individual eligible families belonging to EWS categories, to either construct a new house or enhance existing house on their own to cover the beneficiaries, who are not able to take advantage of other components of the mission.
- Such families may avail of central assistance of Rs. 1.50 lakhs for construction of new house or for enhancement of existing house under the mission.

Why Enhancement

- As per the Technical Group on Urban Housing Shortage (2012-17), 80% of households are living in congested houses.
- Congestion factor is defined as the percentage of households in which each married couple does not have a separate room to live.

Provisions related to enhancement in PMAY(U) Guidelines

As per clause 7.2 (b) of PMAY(U) guidelines:

"If the beneficiary has a pucca house with carpet area of up to 21 sq. mt. or a semi-pucca house, lacking in one of the facilities (i.e. room, kitchen, toilet, bathroom or a combination of any of these), it may be taken up for enhancement subject to ULB/State ensuring structural safety of the house and adherence to following conditions:

- The total carpet area after enhancement must not be less than 21 sq mt and must not be more than 30 sq mt.
- Enhancement shall mean addition of minimum carpet area of 9.0 Sq Mt into the existing house with pucca construction of at least one habitable room or room with kitchen and/or bathroom and/or toilet conforming to NBC norms.
- The details of the enhancement proposals under BLC vertical shall be submitted in proposed Annexure 7D of the PMAY (U) guidelines."

6.12 STRATEGIES FOR HOUSING & INCLUSIVE DEVELOPMENT

The housing strategies adopted for the Master Plan – 2045 is based on the principles of densifying areas where there is ample infrastructure available and land is available for residential development. Through the development control regulations, the authority intends to promote mid rise development to optimize the utilization of land and infrastructure and increase the housing stock in the planning area at minimum infrastructure cost to the government. The authority has adopted the mixed use land use to promote residential use adjacent to the employment centers and in areas where the employment centers are absent or in areas far from the residential areas, the authority has tried to bring in employment generating landuses in an attempt to strengthen these areas and promote better housing options nearby for the local population.

Providing residence adjacent to the employment center safeguards the interest of Economically weaker sections who prefers to stay closer to work and avoid transportation cost. It is also advised through the Master Plan-2045 to promote affordable housing by earmarking land for residential projects for economically weaker sections of the planning area. Through Master Plan - 2045 the authority has identified

the new conurbation for 2045 which forms a continuous development with residential as a major land use to address the major housing requirements of the planning area. This also enables the merger of unplanned development taken place during the last few decades into main urban development of the planning area with proper circulation network and basic infrastructure.

7 TRANSPORTATION

Transportation plays a vital role towards the mobility of people as well as goods & services of a particular system. People are always mobile, and mobility is most important dynamic functions of a city which is having more bearing towards the economic development. In addition, transportation and landuse are to be integrated so as to achieve reduction in trip length, increase in public transport usage etc.

Strategically located Dibrugarh is having all modes of Transportation like Airport, Water Way, Roads and Rail. Dibrugarh was the first town where Railway was introduced in entire Assam in year 1880 from Dibrugarh to Margherita. There are four railway stations fall under DMPA. Out of them, Dibrugarh Town railway station is the oldest one.

The Dibrugarh region has an airport facility, which is recording good numbers of footfall annually due to its key location, tourism and as gateway to Arunachal Pradesh. Dibrugarh Airport is located at Mohanbari in Dibrugarh with an area around 2.5 sqkm. The airport is under expansion to accommodate larger aircraft. The runway of the airport is being extended from 6000 feet to 7500 feet.

7.1 TRANSPORTATION NETWORK

7.1.1 REGIONAL CONNECTIVITY OF DIBRUGARH

The highways which pass through the planning area connect Dibrugarh to the nearby cities. By 4 mode of transportation- road, rail, airway, and waterway connected Dibrugarh to other districts and states.

7.1.1.1 Interstate Connectivity (From Dibrugarh)

Dibrugarh is connected to other states of India by road, rail, or airway. Table 111 manifest the time taking (in hrs.) and distance (in km) from Dibrugarh to other states by different modes of transportation.

Table 111 Interstate modes of transportation from Dibrugarh

Connectivity from Dibrugarh	Distance (km)	Duration (in hrs)		
		By Road	By Rail	By Flight
Itanagar	199	6 hrs	3.5 hrs	-
Kohima	336	10 hrs	8.5 hrs	5.5 hrs
Imphal	469	14 hrs	14 hrs	4.5 hrs
Aizwal	721	24 hrs	20 hrs	5.5 hrs
Shillong	502	12 hrs	14 hrs	4.5 hrs
Guwahati	442	10 hrs	9.5 hrs	2 hrs
Siliguri	876	20 hrs	16 hrs	1.5 hrs
Gangtok	942	24 hrs	-	-

(Source: Compiled by Consultants)

From Dibrugarh to Itanagar is covering minimum distance i.e. 199 km than other places also taking less time by road and railway but Gangtok is far away from Dibrugarh that taken 24 hrs. by roadway and other modes of transportation is not available in this case. Figure 91 represented graphical location from Dibrugarh to other state regions.

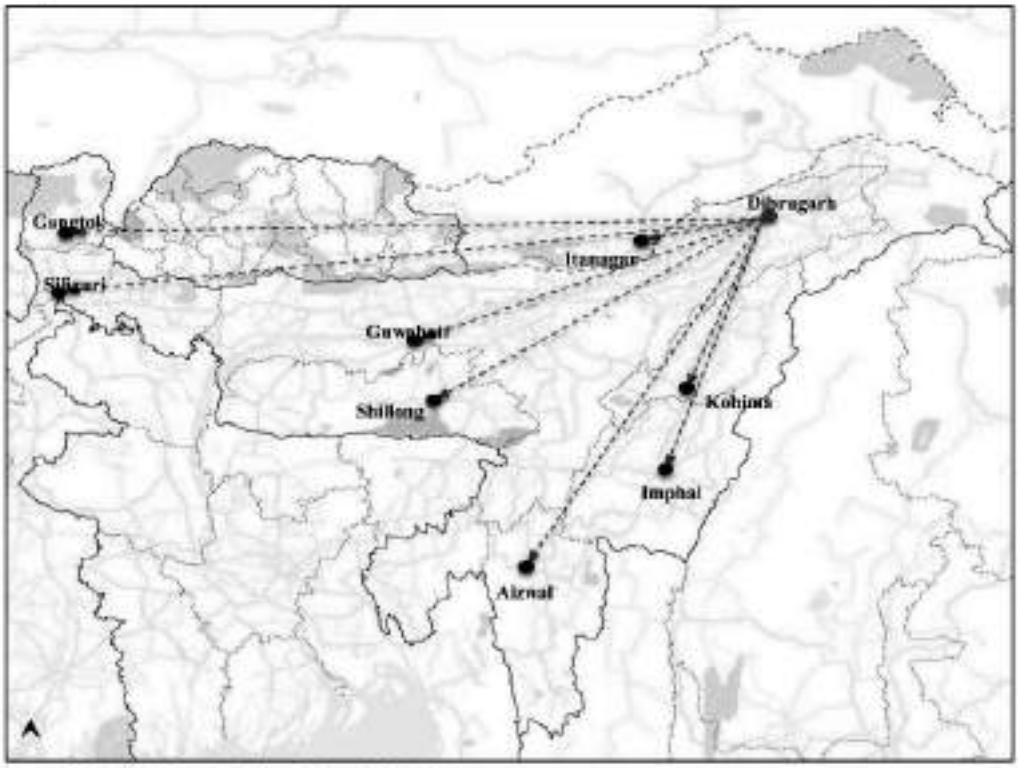


Figure 91 Interstate Connectivity from Dibrugarh district

7.1.1.2 Intercity Connectivity (From Dibrugarh)

Dibrugarh has the intercity connectivity by road as well as by rail. The table no. 112 below shows the various modes of transportation with the nearest cities which are Silapathar, Tinsukia, Sivasagar and Jeypore. The minimum distance is 49 kilometers from Tinsukia to Dibrugarh and maximum is 80 kilometers from Sivasagar.

Table 112 Intercity modes of transportation from Dibrugarh

Connectivity from Dibrugarh	Distance (km)	Duration (in hrs)	
		By Road	By Rail
Silapathar	50	1 hrs	-
Tinsukia	49	1.5 hrs	1.1 hrs
Sivasagar	80	2.5 hrs	1 hrs
Jeypore	65	3 hrs	2.5 hrs

(Source: Compiled by Consultants)

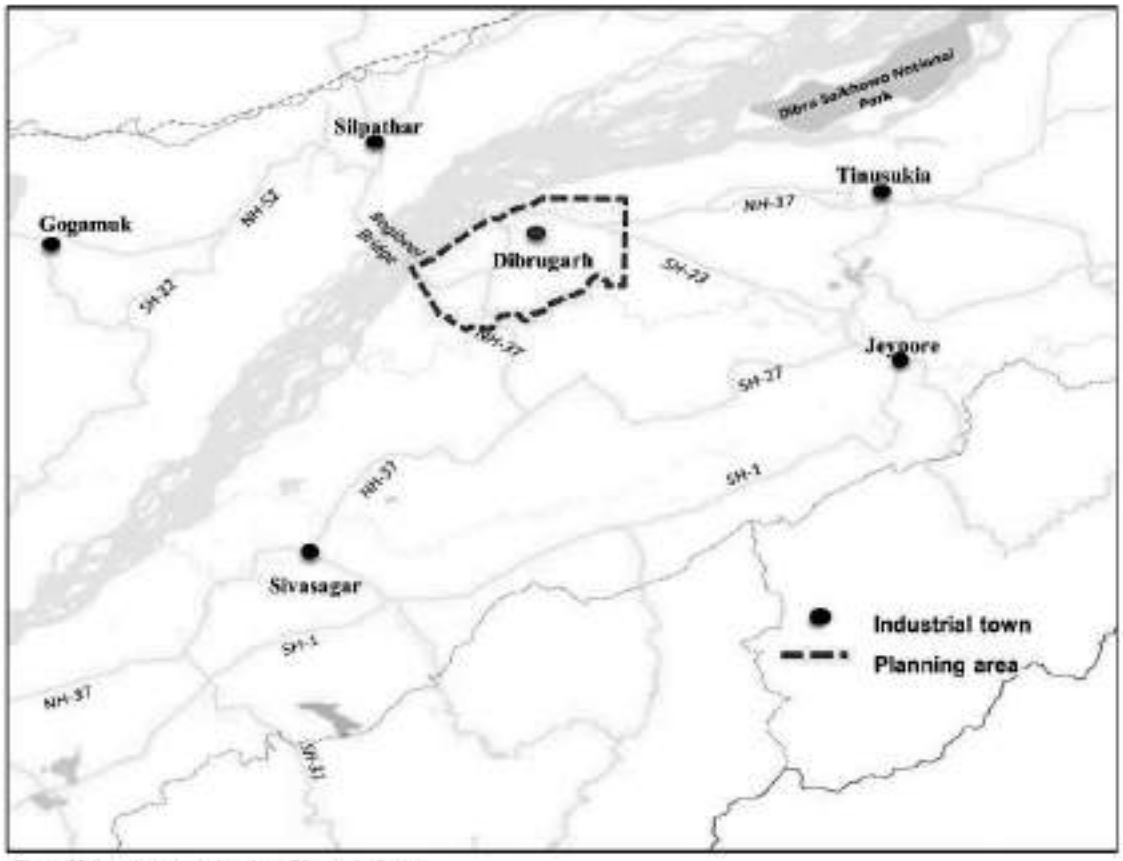


Figure 92 Intercity connectivity from Dibrugarh district

7.1.1.3 Waterway Connectivity (From Dibrugarh)

Apart from road and rail, Dibrugarh is connected via waterways also and that is National waterways – 2 which has length of 891 kilometers. Along with that the terminals have also been mentioned in table no. 113 below. Fig 93 is the graphical representation of National Waterways-2 integrating the important towns on the bank of Brahmaputra.

Table 113 National Waterways terminals

Name	Length (km)	Terminals
National Waterways - 2	891	Dhubri, Jogighopa, Pandu (Fixed terminals), Tejpur, Silghat, Neamati, Dibrugarh, Sengajan, Panbari, Sadiya, Saikhowa

Source: Compiled by Consultants

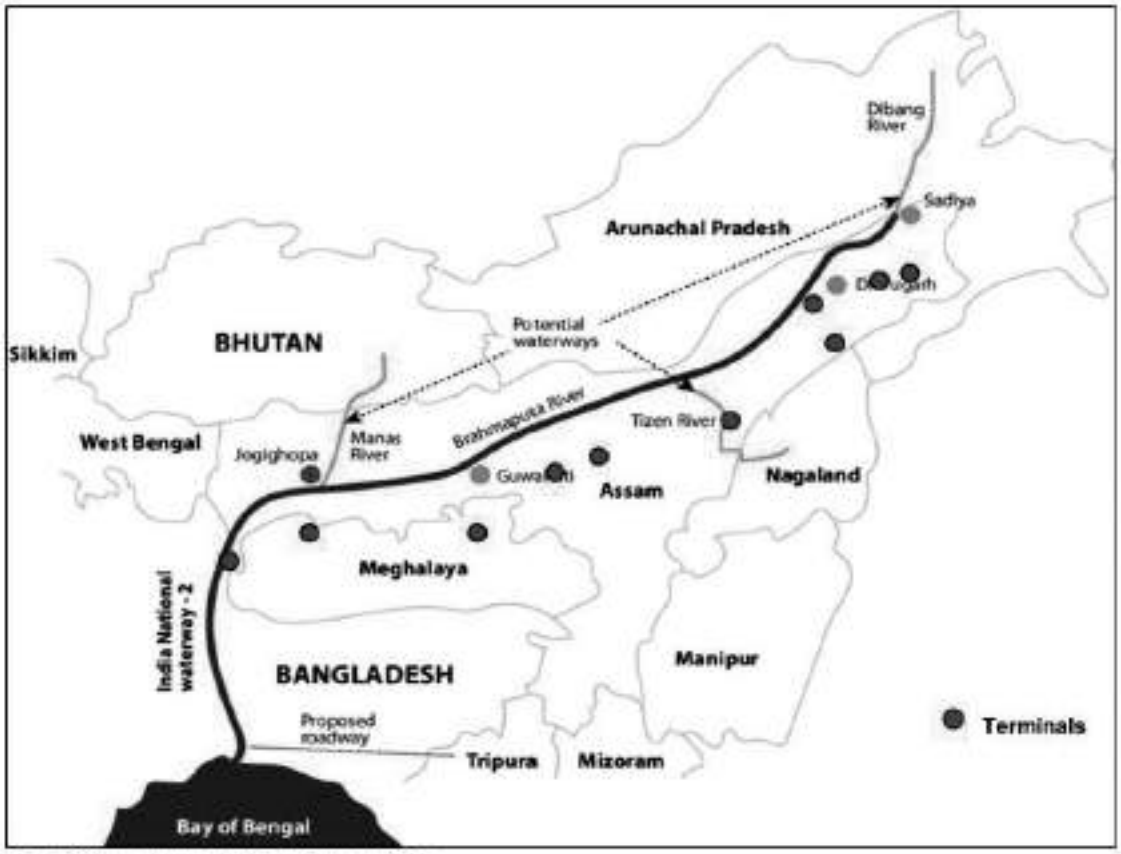


Figure 93 Waterway connectivity from Dibrugarh district

7.1.2 EXISTING ROAD NETWORK

To understand the demand-supply gap and accordingly to assess the improvement requirements of the study area a detail analysis of existing transport facility characteristics is necessary. As existing traffic and travel characteristics introduces the transport system demand, existing transport facility characteristics summarize the system supply. Appreciation of road network characteristics is important to assess existing capacity of the roads, identify the constraints, if any, and assess the potential for improvement/up gradation of the road network to cater the existing and projected traffic demand. For the present study, a detailed inventory of major road network has been carried out. The road network inventory data was analysed in terms of parameters like length of road, carriageway, width of footpath / shoulder, no. of lanes etc.

7.1.2.1 Primary Road Network

The primary roads in the Planning Area are NH-37, NH-52B and NH-15(new). National Highway Number 37 is passing through States Assam and Arunanchal Pradesh. In Assam, NH-37 starts from Goalpara and ends at Sadia Bridge (Tinsukia) covering total distance of 684 KM. The part of NH-37, within Dibrugarh Municipal Board area, traditionally famous as Assam Trunk (AT) road. Another is the NH-52B, which is a part of 1,850-km long Trans- Arunachal Highway covering 100km road stretch in Assam. NH-52B enters in DMPA from south Dihing Thakerani Gaon and by passing through Jokai reserve forest it ends at junction with NH-37 near Lapat Kata Kachari gaon. Finally, New NH -15 starting from its junction with NH-27 near Baihata-Charali connecting Tezpur, North Lakhimpur crossing Brahmaputra from north it enters in DMPA at Kawaimari gaon and meets NH-37 at Nahazar Kanwar Gaon.

7.1.2.2 Secondary Road Network

Dibrugarh Urban Area is connected to its adjoining regions mainly via five important Roads. They are:

1. Mancotta road (North - South link)
2. RKB Road (NH-37 West to Thana Chariali)
3. K.C.Gogoi road (Thana Chariali to NH-37 East link)
4. T R Phukan Road (Amolapatty East to Chowkidingee West)
5. Convoy Road (Chowkidingee to NH-37 East link)

Interaction of passenger traffic as well as freight is observed to be highest with Tinsukia followed by Sivasagar district. Both the connections with Dibrugarh are used for interaction– moreover, the route via Dibrugarh Bypass is preferred for less distance detour as it creates outer cordon link for traffic coming from Sivasagar district and makes trip towards Tinsukia, Duliajan, Chabua and Dibgoi. As the road is having 10m carriage way it can be travelled by all small and heavy vehicles.

7.1.2.3 Tertiary Road Network

The tertiary road network consists of all the city roads and village roads and link roads which connect the rest of the settlements in the Planning Area. These roads connect the settlements along various contours and hilly undulating terrain.

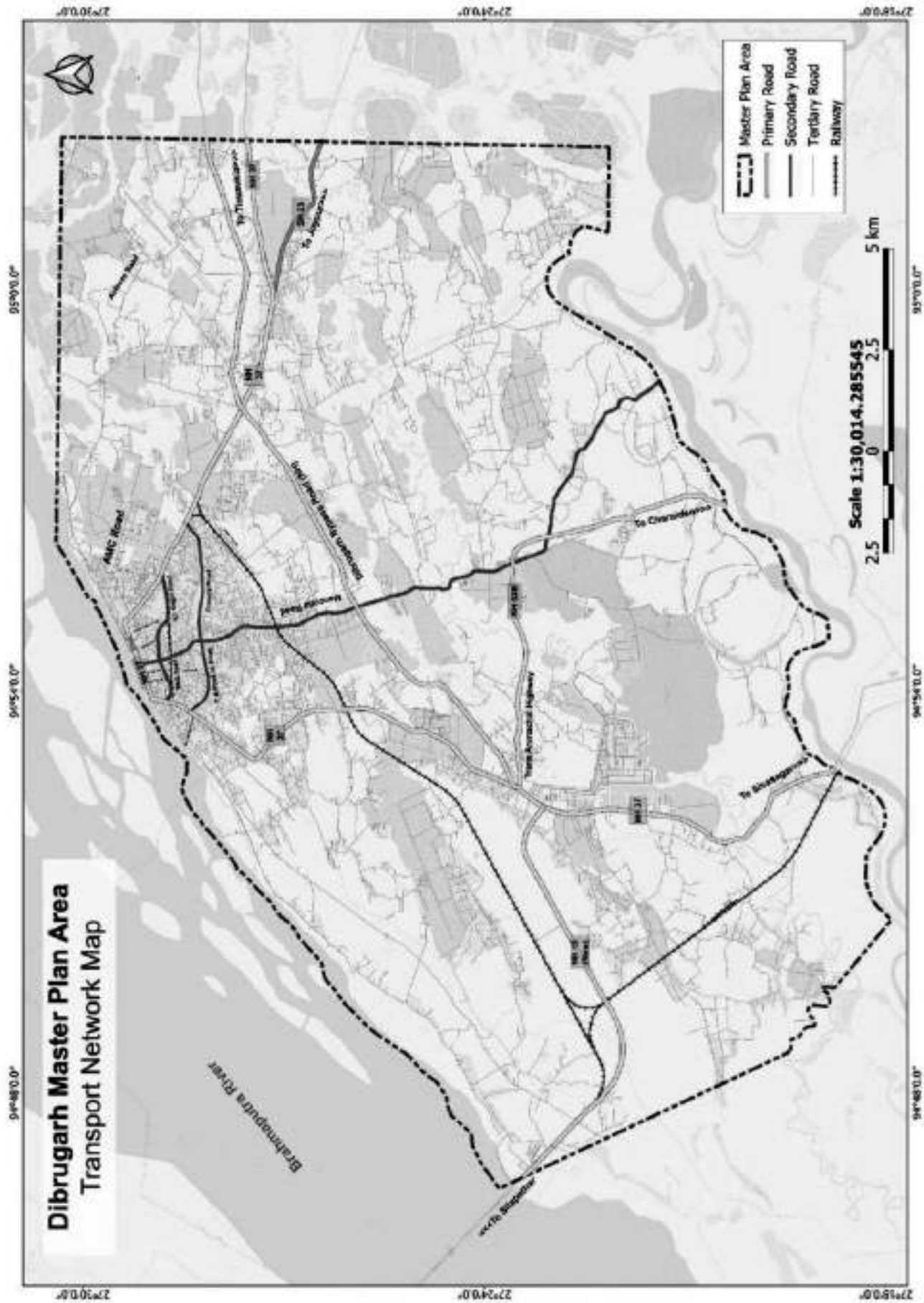


Figure 84 Transport network of Dibrugarh MP area

7.1.3 ROAD INVENTORY

Road network of a city gives idea of the hierarchy of roads present in the city. The hierarchy of city is based on different widths of the roads. It also tells that which road perform which type of function like arterial road, sub-arterial road, collector streets or access roads. It is important to identify higher hierarchy roads as they are major transit corridors of any city. Road inventory is depicted in the figure 95 which includes all the highways, major roads, minor roads, private/public roads, village roads etc. The whole network shows the road connectivity in the city.

7.1.3.1 Road Hierarchy

The highways which pass through the Planning Area connect Dibrugarh to nearby cities. Except Highways and few other roads, majority of the roads in the Planning area are having a right of way less than 12m. For example, the roads running across key commercial areas such as New Market are too congested, and this leads to increased travel time within the city and deterioration in quality of life in these important nodes of the planning area.

The roads in the Planning area are shown in the fig 94 in different categories with respect to their RoW. The RoW in the planning area varies from 4 m to 45 m. It can be observed from the fig 94 that some of the important roads such as NH 37 do not have a uniform right of way. In Assam, NH – 37 has a right of way of 15 m but reduces to 13 m as it enters in Dibrugarh MB area near Laluka gaon area. Part of NH – 37(AT Road), which passes through Marwaripatty to Phool Bagan tiniali is generally observed with encroachment by unauthorized parking of HMVs on both sides of road resulting in reduced accessible width of carriageway only by 8 m. NH – 52B, runs from river Burhi dihing to NH – 37 in DMPA has ROW of 40 m, however, consist carriageway up to 7 m only. Moreover, Dibrugarh bypass highway consist 45 m of ROW whereas carriage way is of 10 m only.

7.1.3.2 Primary Roads

National Highway (NH)

National Highways passing through the Dibrugarh Planning Area along with its length, width and number of lanes are presented in table 115. The New NH -15 starting from its junction with NH-27 near Baihata-Charali connecting Tezpur, North Lakhimpur crossing Brahmaputra from north it enters in DMPA at Kawaimari gaon and meets NH-37 at Nahazar Kanwar Gaon. NH-37 starting from South-West DMPA boundary near Kutaha gaon connecting Amolapatty, Marwaripatty, Phool Bagan from North it further connects Graham bazar towards South-East and heads towards Tinsukia in East. Dibrugarh bypass is a highway forming West-East link with NH-37 to through the traffic coming from North Lakhimpur and Sivasagar toward Tinsukia and Chabua. Another is the NH-52B, which is a part of 1,850-km long Trans- Arunachal Highway covering 100 km road stretch in Assam. For better understanding the width variation of NH-37, it's length within DMPA has been divided in to five parts and mentioned in table 114. The figure 95 depicts the major roads passing through the planning area.

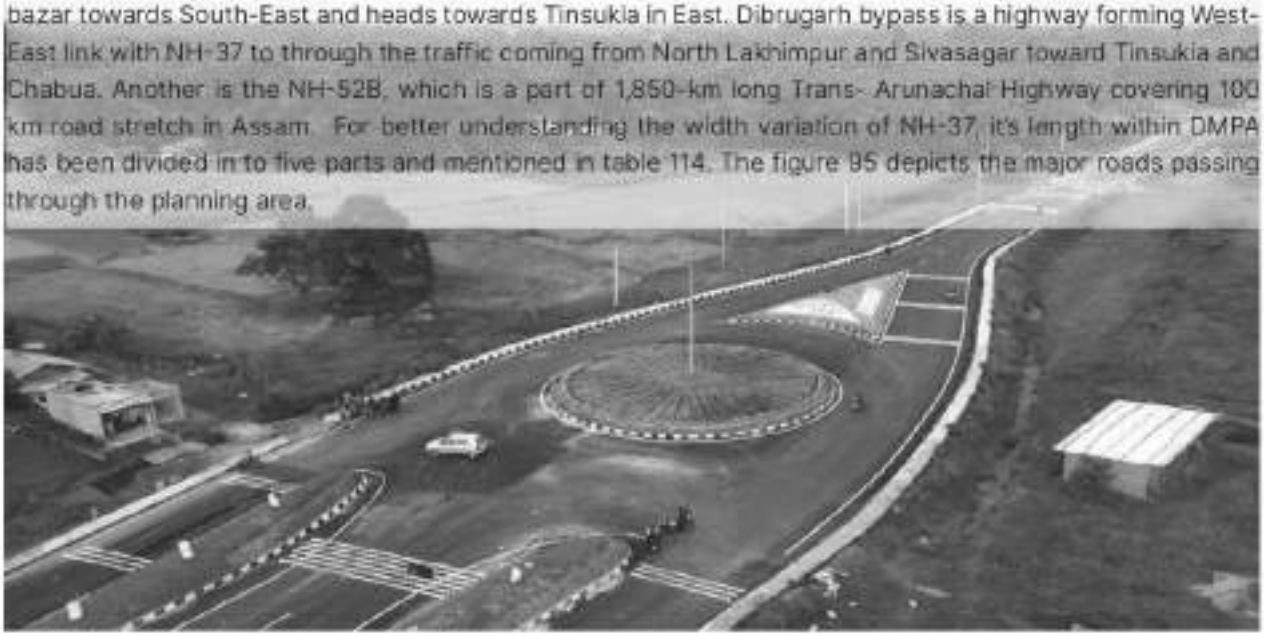


Table 114 List of National Highways passing through Dibrugarh planning area

Sl no.	Name of the road (NH)	Type of road	Length of the Road (km)	R.O.W (m)	Shoulder+ footpath width for one side (m)	No. of lanes
1.	Kawalmari Gaon to Patra Gaon	NH 15 (New)	8	15	2.5	2
2.	Kutaha Gaon to Laluka Gaon	NH 37	19	15	2.5	2
3.	Laluka Gaon to Amolapatty	NH 37	1	13	1.5	2
4.	Amolapatty to Marwari Patty	NH 37	1.5	15	2.5	2
5.	Marwal Patty to Gabhrupathar	NH 37	4	17	3.5	2
6.	Gabhrupathar to Tinsukia (upto DMPA)	NH 37	11.5	13	5	2
7.	Burhi Dihing to NH 37	NH 52 B	12	40	2.5	2
8.	Dibrugarh Bypass	NH	19.5	45	2.5	2

(Source: Compiled by Consultants)

State Highway (SH)

The table 115 describes the State Highway passing through Dibrugarh Planning area with parameters like width of carriage way, its length and number of lanes.

Table 115 List of State Highway passing through Dibrugarh planning area

Sl no.	Name of the road (SH)	Type of road	Length of the Road (km)	Road width (m)	Shoulder+ footpath width for one side (m)	No. of lanes
1.	Dhuliajan-Dibrugarh (Lahowal to Joypore) within DMPA	SH 23	4.5	10	1.3	2

7.1.3.3 Secondary Roads

The major roads are the means to serve and connect all the areas in the city and to villages. As per IRC, the roads which are having road width greater than 10 m are counted as Major roads. Following are the roads which fall under this category as per IRC guideline.

Table 116 List of Primary roads of Dibrugarh MP area

Sl no.	Name of the Roads (Major Roads)	Junction	Length of the Road (km)	Width of the C.W. (mt)
1.	**Mancotta Road**	Phool Bagan Tiniali to Chowkindigee	1.8	10
		Chowkindigee to Chring Gaon	3.4	10
2.	**RKB Path**	Boga baba Tiniali to Thana Chariali	1.3	11
3.	**KC Gogoi Path**	Thana Chariali to Gabharupothar Junction	1.7	10
4.	**T R Phukan**	Amolapatty Chariali to Chowkidingee	2	12
5.	**Convoy Road**	Chowkidingee to Podumnagar 2 (NH 37)	3	12
6.	**AMC Road**	Graham bazar Tiniali to Patlan Bazar Chariali	1.2	10

(Source: Compiled by Consultants)

7.1.3.4 Tertiary Roads

All rest road network including street road, village road and other roads and counted as tertiary roads. Below in table 117 mentioned are the roads fall under this category.

Table 117 List of tertiary roads within DMPA

Sl no.	Name of the Roads	Junction	Length of the Road (km)	Width of the C.W. (mt)
1.	Mancotta	Chiring gaon to Jokai Botanical Garden	6.8	7.5
		Jokai Botanical Garden to Chamoguri Bangali Gaon	6	7
3.	Public Road	Patitan bazar Chariali to Water resource department Dibrugarh	0.7	6.9
		Water resource department to Maijan Masjid	1.7	4.5
4.	Airforce Road	Maijan Masjid to Maijan Borsaikia gaon	6.5	4
		Maijan Borsaikia gaon to Athabari gaon	3.9	6.5

For Mancotta road, the stretch from Chiring gaon to Chamoguri Bangali Gaon is categorized as minor as it is having less than 10 m of C.W. width.

SH Road, Dibrugarh

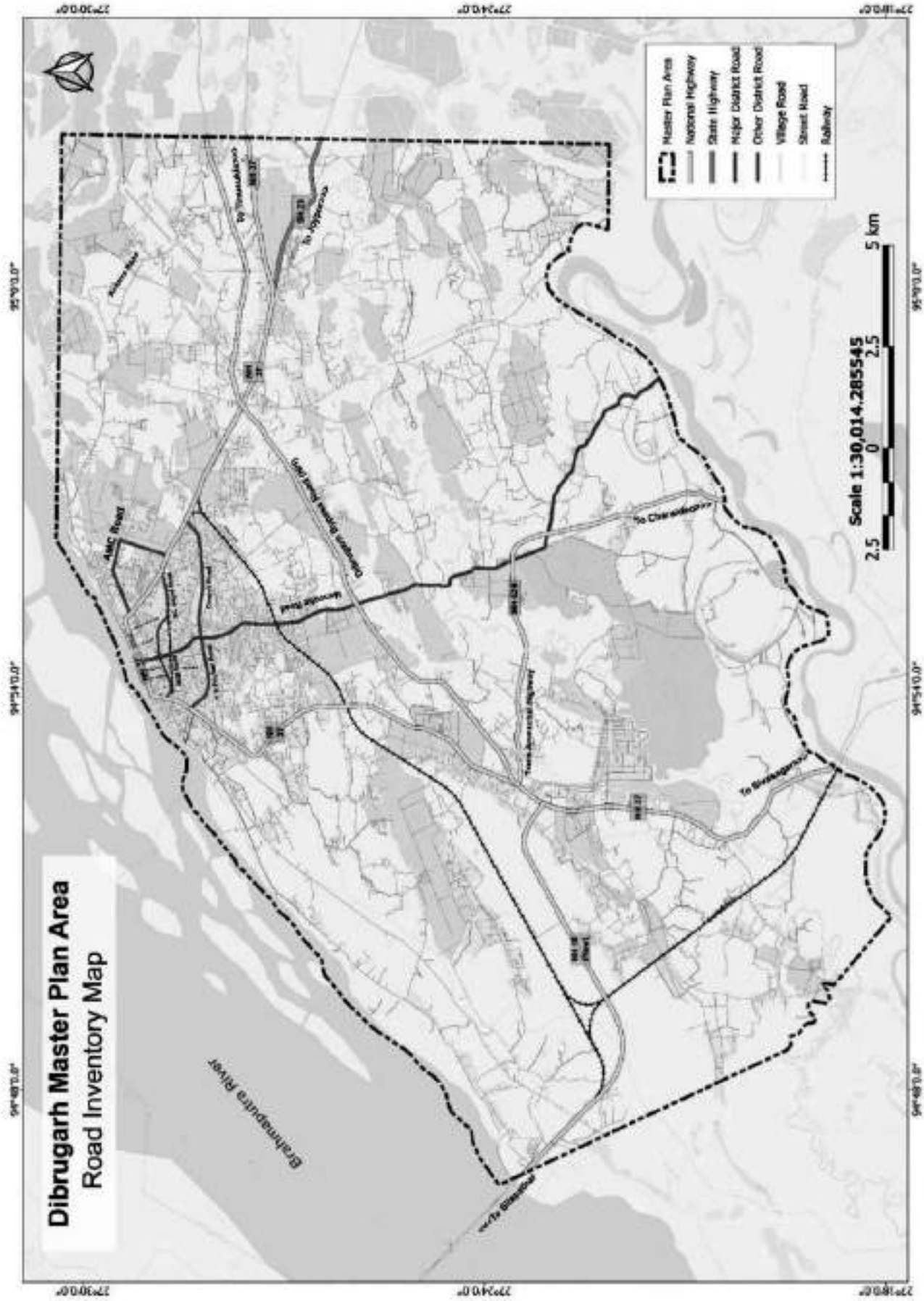


Figure 05 Road inventory map of Dibrugarh MP area

7.2 VEHICLE REGISTRATION

Vehicle registration is done to establish a link between a vehicle and an owner or user of the vehicle. In the table 118 given below, categories of public and private vehicles along with their number is mentioned. The information has been provided by the District Transport Office. The categorization has been done based on transport and non-transport use. Further in table 119, the number of vehicles is depicted of LMV (light motor vehicles) and HMV (heavy motor vehicles).

Table 118 Major Category of Vehicle Register in Dibrugarh MP area

Transport			Non-Transport	
Category		No. of Vehicles	Category	No. of Vehicles
Public	Ambulance	167	Articulated Vehicle	25
	Bus	59	Construction Equipment Vehicle	59
	Dumper	778	Crane Mounted Vehicle	61
	e-Rickshaw (P)	246	Excavator (NT)	37
	e-Rickshaw with Cart (G)	45	Fire Fighting Vehicle	14
	Goods Carrier	7457	Fire Tenders	6
	Maxi Cab	488	Forklift	10
	Motor Cab	2087	M-Cycle Scooter	128483
	Omni Bus	1	M-Cycle Scooter with Sidecar	9
	Three-Wheeler (Goods)	173	Mobile Clinic	1
	Three-Wheeler (Passenger)	1481	Mobile Workshop	1
	Tractor (Commercial)	1496	Vehicle fitted with compressor	5
	Tractor Trolley (Commercial)	1	Vehicle fitted with generator	11
	Trailer (Commercial)	1271	Vehicle fitted with Rig	20
Private	Camper Van/Trailer	7	Moped	31
	Cash Van	6	Motor Car	47842
	Excavator (Commercial)	204	Recovery Vehicle	1
	Hearses	1	GRAND TOTAL (Transport + Non-Transport)	193162
	Omni Bus (Private Use)	32		
	Private Service Vehicle	1		
	Private Service Vehicle (Individual Use)	2		

Table 11.9 LMV and HMV categorical data registered

Sl. No.	LMV – Light Motor Vehicle	No. of Vehicles
1.	Agricultural Tractor	11
2.	Ambulance	167
3.	Camper Van/Trailer	7
4.	Cash Van	6
5.	e-Rickshaw (P)	246
6.	e-Rickshaw with Cart (G)	45
7.	Forklift	10
8.	Hearses	1
9.	Maxi Cab	488
10.	M-Cycle/Scooter	128483
11.	M-Cycle/Scooter with Sidecar	9
12.	Mobile Clinic	1
13.	Mobile Workshop	1
14.	Moped	31
15.	Motor Cab	2087
16.	Motor Car	47842
17.	Private Service Vehicle	1
18.	Private Service Vehicle (Individual Use)	2
19.	Three-Wheeler (Goods)	173
20.	Three-Wheeler (Passenger)	1481
	HMV – Heavy Motor Vehicle	
21.	Articulated Vehicle	25
22.	Bus	591
23.	Construction Equipment Vehicle	59
24.	Crane Mounted Vehicle	61
25.	Dumper	779
26.	Excavator (Commercial)	204
27.	Excavator (NT)	37
28.	Fire Fighting Vehicle	14
29.	Fire Tenders	6
30.	Goods Carrier	7457
31.	Omni Bus	1
32.	Omni Bus (Private Use)	32
33.	Recovery Vehicle	1
34.	Tractor (Commercial)	1496
35.	Tractor Trolley (Commercial)	1
36.	Trailer (Commercial)	1271
37.	Vehicle Fitted with Compressor	5
38.	Vehicle Fitted with Generator	11
39.	Vehicle Fitted with Rig	20
	GRAND TOTAL	**193162**

(Source: DTO, Dibrugarh District, 2020)

7.3 PUBLIC TRANSPORT

7.3.1 PUBLIC TRANSPORT AND ROUTES

The town has both railway and bus terminus which increases the chances of trade and commerce with other towns and free flow movement of people from one place to another. Public transport points as Airport, Railway Station, Bus Stand and Bus Stops are mentioned in the fig 96 below.

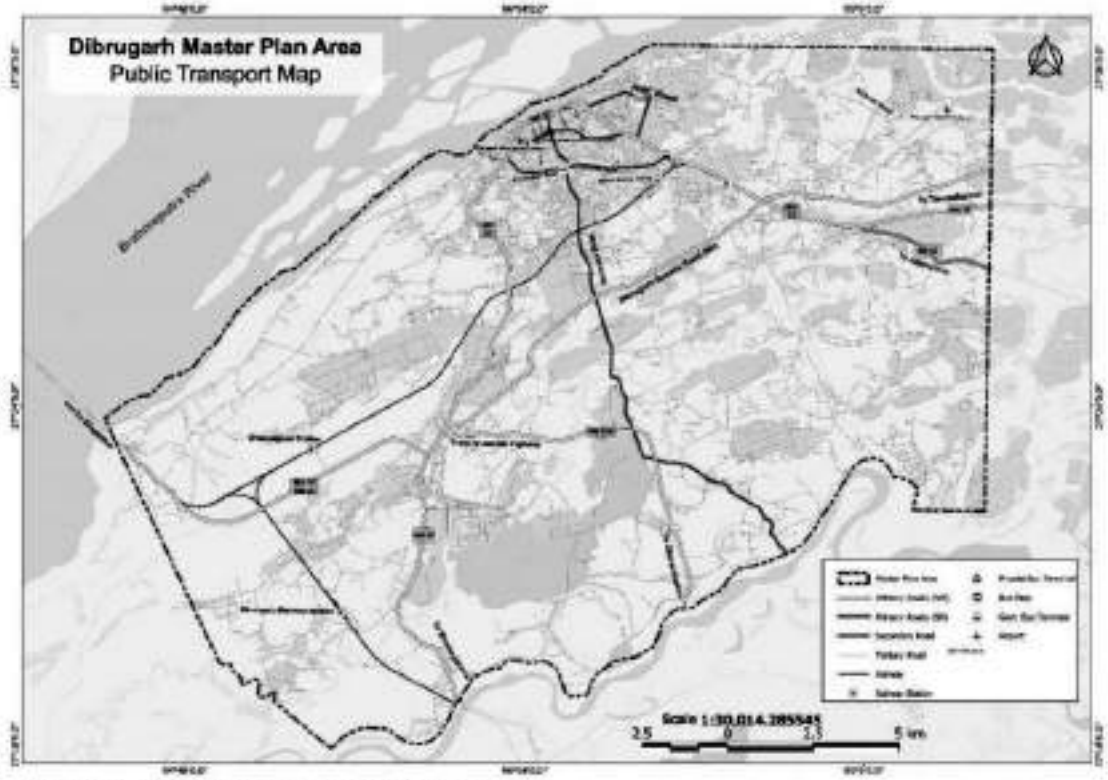


Figure 96 Bus Terminals and Railway Station in Dibrugarh MP area

7.3.1.1 Bus Terminals

The road transport system is dependent upon Buses/minibuses. Following are the bus routes for local and regional passengers. There are three bus terminals in the city, one private and two government bus terminals. The table 120 below shows the name and location of all the bus terminals.

Table 120 List of bus terminals in Dibrugarh master plan area

Bus Terminals	Name	Location
Govt. bus terminal	Murlidhar Jalan Bus Terminal	Along AT road, Near Muharram Chowk
	ASTC Bus stand	Along Convoy road, Chowkidingee
	AMC Bus Station	Along AMC road near AMC gateway

7.3.1.2 Railway Station

Dibrugarh has four railway stations and that has been mentioned in the table 121 below with the location. These stations are serving both passenger transportation as well as Freight transportation.

Table 121 Railway station in Dibrugarh master plan area

Railway Station	Location
Binoigutia Railway Stationn	Kalatomoni Gaon, Dibrugarh
Dhamalgaon Station	Dhamalgaon, Dibrugarh
Banipur Railway Station	Along Dibrugarh Station road
Dibrugarh Town	Along RKB Path, Near Bank of Baroda

(Source: Compiled by Consultants)

7.3.1.3 Major Bus Stops

The major bus stop in the city has been mentioned in the table 122 described below. This bus stop is in the Master plan area.

Table 122 Major Bus Stops of Dibrugarh MP Area

Bus Stop	Location
ASTC bus and Charted Bus Stops	Thana Charali (Dibrugarh)

(Source: Compiled by Consultants)

6.3.1.4 Freight Zones & Logistics

Figure 97 Warehouse and Feeder roads of Dibrugarh MP area

7.4 TRAFFIC SURVEY METHODOLOGY AND ANALYSIS

A comprehensive methodology has been evolved to carry out the work. A stepwise methodology is presented in Figure 98.

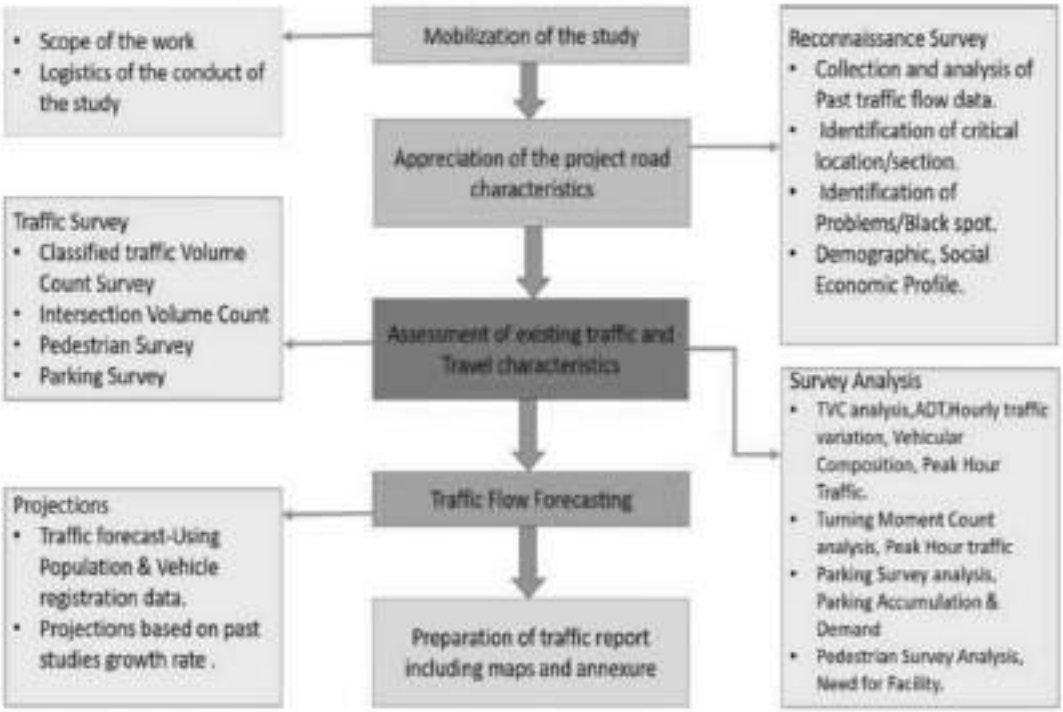


Figure 98 Traffic Survey Methodology

7.4.1 TRAFFIC SURVEY AND SCHEDUAL

Classified Traffic Volume Counts (CVC's) have been conducted using manual count by trained enumerators method at different locations. The survey locations are depicted in Figure 99 Traffic survey stations have been selected by the Consultant on the basis of understanding of the road network as well as consideration of the following aspects:

- To represent critical traffic section
- To be a major influence area
- To be located at a level with good visibility

Based on the detailed reconnaissance of the project area, major traffic generators, major intersections and travel patterns, Classified Volume Count (CVC) locations and other surveys were identified at different locations. 3-Day Classified Volume Count (CVC's) and 2- day Origin and Destination (O-D) Survey at a total of 9 locations (CVC at 7 and O-D at 2 locations) in Dibrugarh Planning Area to understand traffic intensity in the Master Plan Area.

Brief description and analysis of each of the above surveys are presented in the following sections. The schedule of all traffic surveys is presented in Table 123.

Table 123 Traffic Survey Locations and Schedule

Sr. No	Type of Survey	Location	Date
1	Classified Traffic Volume Count	NH 37 (AT Road)	27/11/20, 28/11/20
		RKB - Gogoi	27/11/20, 28/11/20
		Mancotta Road	27/11/20, 28/11/20
		Convoy Road	27/11/20, 28/11/20
		AMC Road	27/11/20, 28/11/20
		Dibrugarh Bypass Road	27/11/20, 28/11/20
2	Origin-Destination Survey	NH-37 (West)	27/11/20, 28/11/20
		NH-37 (East)	27/11/20, 28/11/20
3	Turning Movement Count (Junction Analysis)	Thana Chariali	30/11/20,01/12/20
		Chowkidingee	30/11/20,01/12/20
		Phoolbagan Tiniali	30/11/20,01/12/20
		Khanikar Junction	30/11/20,01/12/20
4	Parking Survey	HS Road	25/11/20, 26/11/20
		RKB Road	25/11/20, 26/11/20
5	Pedestrian Survey	HS Road	25/11/20, 26/11/20
		New Market Road	25/11/20, 26/11/20
6	Speed Delay Survey	NH-37 (AT Road)	25/11/20, 26/11/20
		Mancotta Road	25/11/20, 26/11/20
		T R Phukan Road	25/11/20, 26/11/20
		RKB Road	25/11/20, 26/11/20

(Source: Compiled by Consultants)

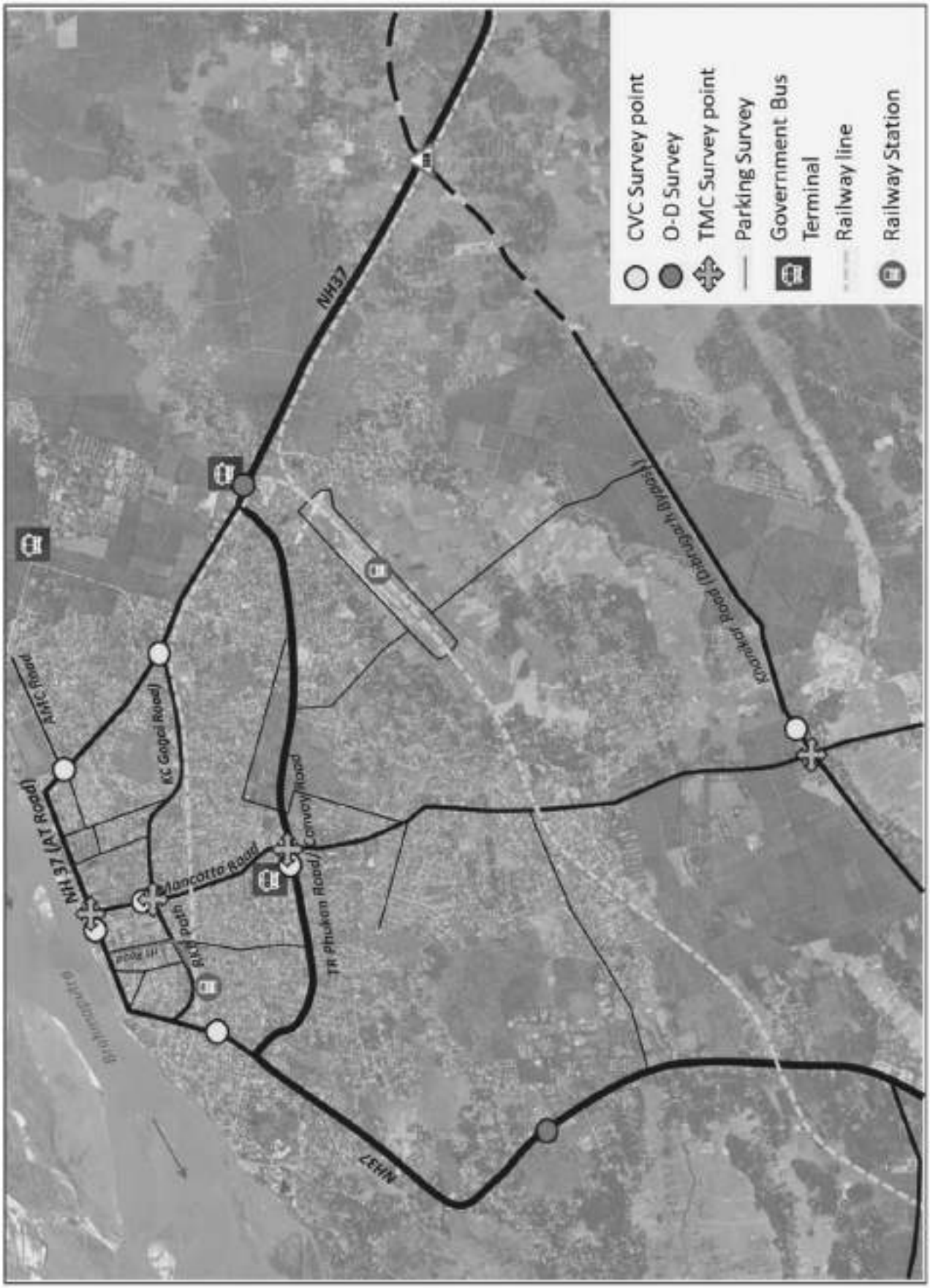


Figure 99 Traffic survey locations

7.5 TRAFFIC INTENSITY

The various vehicle types having different sizes and characteristics were converted into equivalent passenger car units. The selected survey stretches comprise both urban and rural areas. Hence PCU values were adopted from IRC 64-1990 for rural areas and IRC-106-1990 for urban areas. The PCU values used are presented in Table 124.

Table 124 vehicle classification system and PCU factors adopted for study

Sr. No	Vehicle type	PCU factor for Urban	PCU factor for Rural
1	Car/Jeep/Van	1	1
2	Taxi	1	1
3	2-wheeler	0.75	0.5
4	3-wheeler	1.2	1
5	Minibus	1.4	1.5
6	Standard Bus	2.2	3
7	3-wheeler (Goods)	1.2	1
8	LCV	1.4	1.5
9	2 Axle	2.2	3
10	2 Axle	2.2	3
11	MAV	4	4.5
12	Tractor	1.4	1.5
13	Tractor with Trailor	4	4.5
14	Cycle	0.5	0.5
15	Other (JCB/HCM)	4	4.5

(Source: IRC 64-1990, IRC 106-1990)

Among the total road network and as per the road heirarchey,NH-37 (AT Road), K C Gogoi Road, Moncatta Road, Convoy Road, AMC Road and Grahmbazar Road have been considered as urban roads. The photographs described further mentions the different traffic surveys conducted on the inner and outer cordon points of total Master Plan area. The glimpses of traffic survey on major roads are shown below.

T R Phukan Road

RKB road

Convoy road

Nh37- Patra Gaon road

Grahambazar road

Nh37 Amolapatty road

Figure 100 Traffic Survey Photographs Nh37 Lahowal road

Nh37 Patra Gaon road

7.5.1 MANCOTTA ROAD

Annual average daily traffic is 13255 PCU in this road section. Passenger vehicles like car/taxi/utility vehicles, two wheelers predominate the traffic stream. Non-Motorised vehicles were observed in less volume. Some LCV were present while heavy goods vehicles like 2-Axle, 3 Axle, MAV were not much observed. ADT and AADT by vehicle type is presented in Table 125.

Table 125 Average Daily Traffic & Annual Average Daily Traffic on Mancotta road

Vehicle Types	ADT	AADT
Car/Jeep/Van	2817	2951
Taxi	3625	3874
2-wheeler	3950	4012
3-wheeler	468	477
Minibus	0	0
Standard Bus	35	41
3-wheeler (Goods)	1722	1820
LCV	257	263
2 Axle	3	5
3 Axle	0	0
MAV	0	0
Tractor	0	0
Tractor with Trailor	0	0
Cycle	378	390
Other (JCB/HCM)	0	0
Total (Nos)	**13255**	**13833**
Total (PCU)	**12665**	**13255**

(Source: Compiled by Consultant)

7.5.1.1 Directional Split

The traffic data was analyzed to establish the directional distribution of traffic. The directional distribution of traffic at the TVC location is given in Table 126.

Table 126 Directional Distribution of Traffic on Mancotta Road

TVC Location	Directional distribution in vehicle numbers	Directional distribution in PCU
	Chowkidingee to Thana : Thana to Chowkidingee	Chowkidingee to Thana : Thana to Chowkidingee
Mancotta Road	54:46	53:47

(Source: Compiled by Consultant)

6.5.1.2 Vehicle Composition

Composition of traffic at the midblock location is presented in Figure 101. Road section is occupied by mainly two-wheeler and car/taxi/utility vehicles which are 30% and 48% of total traffic. Thus, commuters are using their personal vehicles to a large extent for daily routine. Public transport (bus) was observed to be less at 0.4% of traffic stream. Goods 3 wheeler vehicles comprised 13% of traffic.

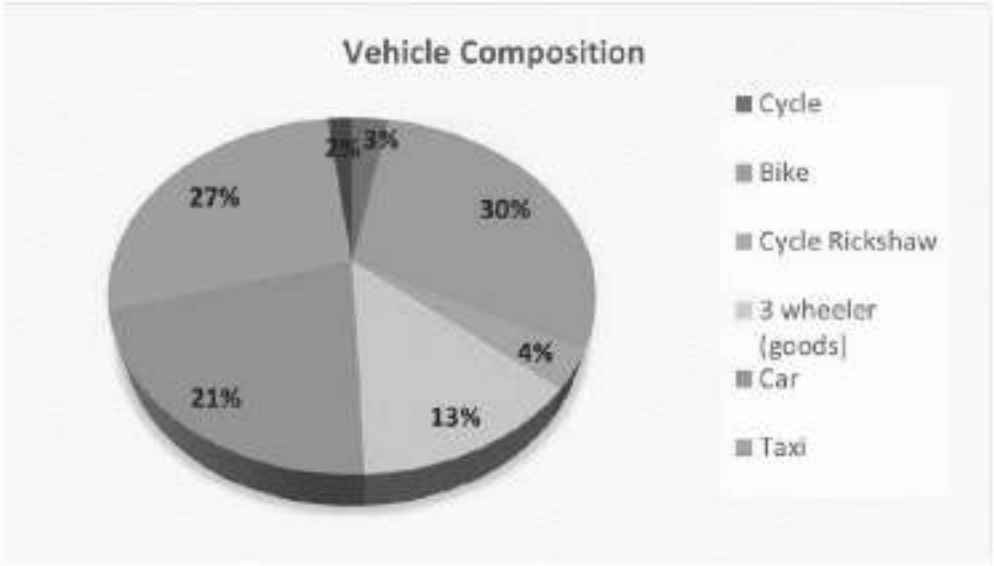


Figure 101 Composition of Traffic on Mancotta Road *(Source: Compiled by Consultant)*

7.5.1.2 Hourly Variation of Traffic

The hourly distribution of traffic to understand hourly variation and peak hour traffic characteristics at Mancotta Main Road as shown in Figure 102.

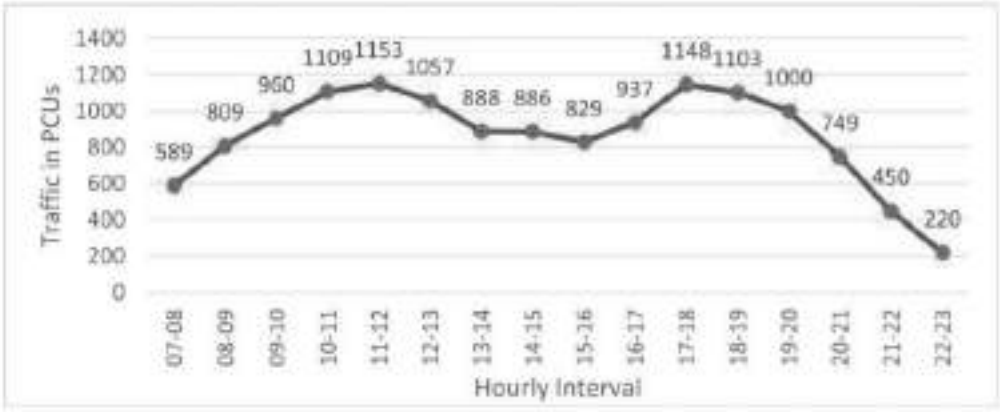


Figure 102 Hourly Variation of traffic at Mancotta road *(Source: Compiled by Consultant)*

7.5.1.3 Peak Hour Traffic

Peak hour was found to be from 18:00 to 19:00 HRS. Total peak hour traffic is 1148 in PCU which is 9.1% of ADT. The peak hour and peak hour traffic at the midblock location is presented in Table 127.

Table 127 Peak hour traffic on Mancotta road

PCU/hr	Peak Hours	Peak Hour Factor
1148	18:00 to 19:00	8.6

(Source: Compiled by Consultant)

7.5.2 NH 37 (AT ROAD)

Annual average daily traffic is 8162 PCU in this road section. Passenger vehicles like car/taxi/utility vehicles, two wheelers predominate the traffic stream. Non-Motorised vehicles were observed in less volume. Some LCV were present while heavy goods vehicles like 2-Axle, 3 Axle, MAV were not much observed. ADT and AADT by vehicle type is presented in Table 128.

Table 128 Average Daily Traffic & Annual Average Daily Traffic on NH 37 (AT road)

Vehicle Types	ADT	AADT
Car/Jeep/Van	2605	2715
Taxi	790	810
2-wheeler	3402	3512
3-wheeler	163	174
Minibus	17	19
Standard Bus	15	20
3-wheeler (Goods)	1094	1103
LCV	154	160
2 Axle	0	0
3 Axle	0	0
MAV	0	0
Tractor	0	0
Tractor with Trailor	0	0
Cycle	347	352
Other (JCB/HCM)	0	0
Total (Nos)	**8587**	**8865**
Total (PCU)	**7901**	**8162**

Source: Compiled by Consultant)

7.5.2.1 Directional Split

The traffic data was analyzed to establish the directional distribution of traffic. The directional distribution of traffic at the TVC location is given in Table 129.

Table 129 Directional Distribution of Traffic on NH 37 (AT Road)

TVC Location	Directional distribution in vehicle numbers	Directional distribution in PCU
	Panchali to Phoolbagan : Phoolbagan to Panchali	Panchali to Phoolbagan : Phoolbagan to Panchali
NH 37 (AT Road)	53:47	52:48

Source: Compiled by Consultant)

7.5.2.2 Vehicle Composition

Composition of traffic at the midblock location is presented in Figure 103. Road section is occupied by mainly two-wheeler and car/taxi/utility vehicles which are 40% and 39% of total traffic. Thus, commuters are using their personal vehicles to a large extent for daily routine. Public transport (bus) was observed to be less at 0.1% of traffic stream. Goods 3 wheeler vehicles comprised 13% of traffic, whereas trucks are 2% of total.

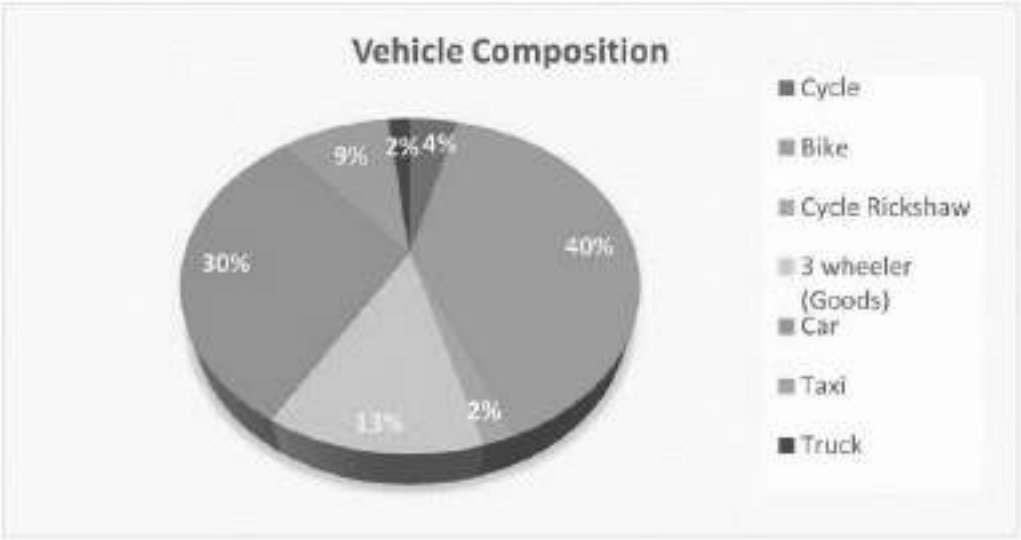


Figure 103 Composition of Traffic on NH 37 (AT Road) *Source: Compiled by Consultant)*

7.5.2.3 Hourly Variation of Traffic

The hourly distribution of traffic to understand hourly variation and peak hour traffic characteristics at Mancotta Main Road as shown in Figure 104.

Figure 104 Hourly Variation of traffic at NH 37 (AT road *Source: Compiled by Consultant)*

7.5.2.4 Peak Hour Traffic

Peak hour was found to be from 10:00 to 11:00 HRS. Total peak hour traffic is 775 in PCU which is 9.0% of ADT. The peak hour and peak hour traffic at the midblock location is presented in Table 130.

Table 130 Peak hour traffic on NH37 (AT Road)

PCU/hr	Peak Hours	Peak Hour Factor
775	10:00 to 11:00	9.0

Source: Compiled by Consultant)

7.5.3 CONVOY ROAD

Annual average daily traffic is 5449 PCU in this road section. Passenger vehicles like car/taxi/utility vehicles, two wheelers predominate the traffic stream. Non-Motorised vehicles were observed in less volume. Some LCV were present while heavy goods vehicles like 2-Axle, 3 Axle, MAV were not much observed. ADT and AADT by vehicle type is presented in Table 131.

Table 131 Average Daily Traffic & Annual Average Daily Traffic on Convoy road

Vehicle Types	ADT	AADT
Car/Jeep/Van	2129	2234
Taxi	798	810
2-wheeler	1081	1120
3-wheeler	182	190
Minibus	0	0
Standard Bus	25	26
3-wheeler (Goods)	594	602
LCV	156	160
2 Axle	104	119
3 Axle	0	0
MAV	0	0
Tractor	0	0
Tractor with Trailor	0	0
Cycle	134	144
Other (JCB/HCM)	0	0
Total (Nos)	**5203**	**5405**
Total (PCU)	**5238**	**5449**

Source: Compiled by Consultant)

7.5.3.1 Directional Split

The traffic data was analyzed to establish the directional distribution of traffic. The directional distribution of traffic at the TVC location is given in Table 132.

Table 132 Directional Distribution of Traffic on Convoy Road

TVC Location	Directional distribution in vehicle numbers	Directional distribution in PUC
	Chowkidingee to Podum Nagar 2 : Podum Nagar 2 to Chowkidingee	Chowkidingee to Podum Nagar 2 : Podum Nagar 2 to Chowkidingee
Convoy Road	54:46	54:46

Source: Compiled by Consultant)

7.5.3.2 Vehicle Composition

Composition of traffic at the midblock location is presented in Figure 105. Road section is occupied by mainly two-wheeler and car/taxi/utility vehicles which are 21% and 59% of total traffic. Thus commuters are using their personal vehicles to a large extent for daily routine. Public transport (bus) was observed to be less at 0.1% of traffic stream. Goods 3 wheeler vehicles comprised 12% of traffic, whereas trucks are 2% of total.

Figure 105 Composition of Traffic on Convoy Road *Source: Compiled by Consultant)*

7.5.3.3 Hourly Variation of Traffic

The hourly distribution of traffic to understand hourly variation and peak hour traffic characteristics at Convoy Main Road as shown in Figure 106.

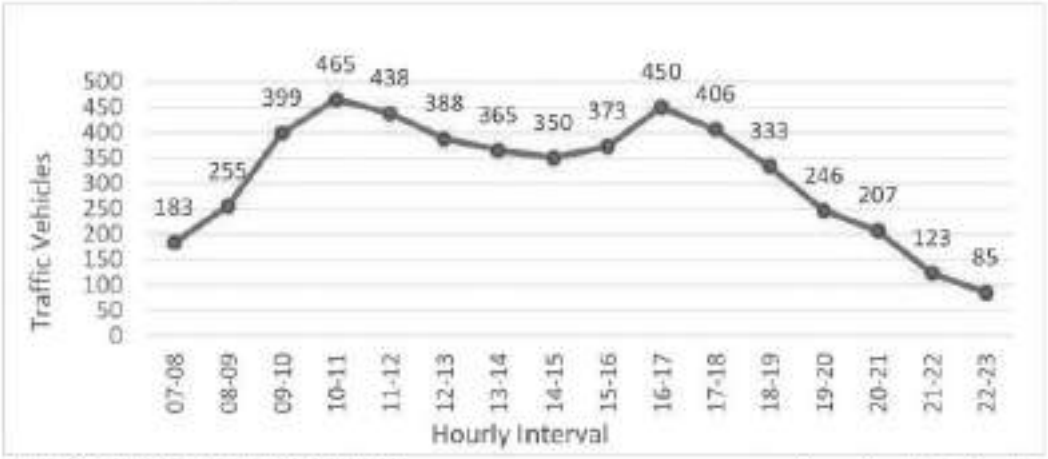


Figure 106 Hourly Variation of traffic at Convoy road *Source: Compiled by Consultant)*

7.5.3.4 Peak Hour Traffic

Peak hour was found to be from 10:00 to 11:00 HRS. Total peak hour traffic is 465 in PCU which is 9.0% of ADT. The peak hour and peak hour traffic at the midblock location is presented in Table 133.

Table 133 Peak hour traffic on Convoy Road

PCU/hr	Peak Hours	Peak Hour Factor
465	10:00 to 11:00	9.2

Source: Compiled by Consultant)

7.5.4 RKB ROAD

Annual average daily traffic is 11091 PCU in this road section. Passenger vehicles like car/taxi/utility vehicles, two wheelers predominate the traffic stream. Non-Motorised vehicles were observed in less volume. Goods 3-wheeler vehicles were present in good number while heavy goods vehicles like 3 Axle, MAV were not much observed. ADT and AADT by vehicle type is presented in Table 134.

Table 134 Average Daily Traffic & Annual Average Daily Traffic on RKB road

Vehicle Types	ADT	AADT
Car/Jeep/Van	3231	3250
Taxi	1335	1415
2-wheeler	4598	4610
3-wheeler	410	416
Minibus	0	0
Standard Bus	0	0
3-wheeler (Goods)	1402	1475
LCV	0	0
2 Axle	220	215
3 Axle	0	0
MAV	0	0
Tractor	0	0
Tractor with Trailor	0	0
Cycle	446	453
Other (JCB/HCM)	0	0
Total (Nos)	**11642**	**11834**
Total (PCU)	**10896**	**11091**

Source: Compiled by Consultant)

7.5.4.1 Directional Split

The traffic data was analyzed to establish the directional distribution of traffic. The directional distribution of traffic at the TVC location is given in Table 135.

Table 135 Directional Distribution of Traffic on RKB Road

TVC Location	Directional distribution in vehicle numbers	Directional distribution in PCU
	Boga baba Tinali to Thana Charali : Thana Charali to Boga baba Tinali	**Boga baba tinali to Thana Charali : Thana Charali to Boga baba Tinali**
RKB Road	54:46	54:46

(Source: Compiled by Consultant)

7.5.4.2 Vehicle Composition

Composition of traffic at the midblock location is presented in Figure 107. Road section is occupied by mainly two-wheeler and car/taxi/utility vehicles which are 39% and 39% of total traffic. Thus commuters are using their personal vehicles to a large extent for daily routine. Public transport (bus) was observed to be less at 0.1% of traffic stream. Goods 3 wheeler vehicles comprised 12% of traffic, whereas trucks are 2% of total.

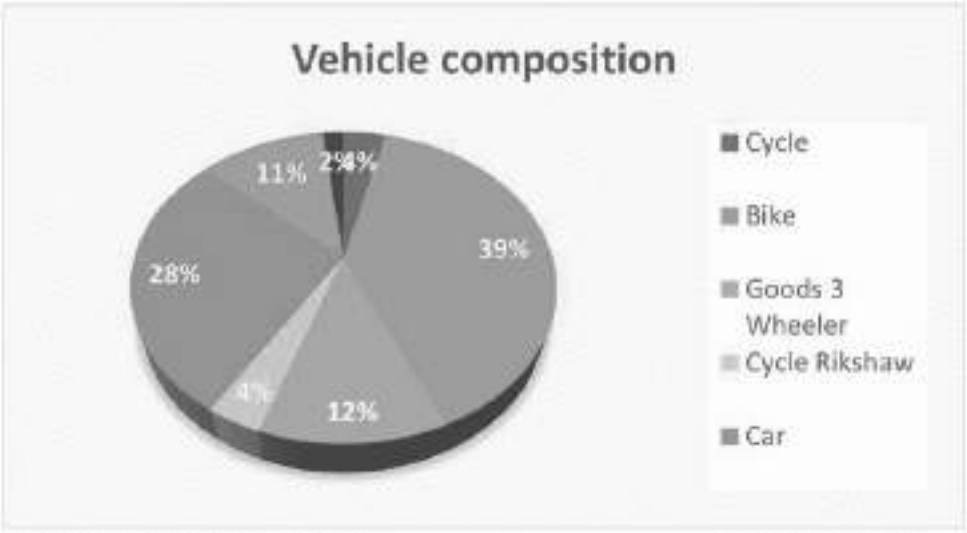


Figure 107 Composition of Traffic On RKB Road *Source: Compiled by Consultant)*

7.5.4.3 Hourly Variation of Traffic

The hourly distribution of traffic to understand hourly variation and peak hour traffic characteristics at RKB Main Road as shown in Figure 108.

Figure 108 Hourly Variation of traffic at RKB road *Source: Compiled by Consultant)*

7.5.4.4 Peak Hour Traffic

Peak hour was found to be from 10:00 to 11:00 HRS. Total peak hour traffic is 1002 in PCU which is 8.6% of ADT. The peak hour and peak hour traffic at the midblock location is presented in Table 136.

Table 136 Peak hour traffic on RKB Road

PCU/hr	Peak Hours	Peak Hour Factor
1002	10:00 to 11:00	8.6

Source: Compiled by Consultant)

7.5.5 AMC ROAD

Annual average daily traffic is 9506 PCU in this road section. Passenger vehicles like car/taxi/utility vehicles, two wheelers predominate the traffic stream. Non-Motorised vehicles were observed in less volume. Goods 3 wheeler vehicles were present in good number while heavy goods vehicles like 3 Axle, MAV were not much observed. ADT and AADT by vehicle type is presented in Table 137

Table 137 Average Daily Traffic & Annual Average Daily Traffic on AMC road

Vehicle Types	ADT	AADT
Car/Jeep/Van	3771	3801
Taxi	1072	1103
2-wheeler	3611	3681
3-wheeler	163	170
Minibus	0	0
Standard Bus	0	0
3-wheeler (Goods)	1094	1102
LCV	0	0
2 Axle	0	0
3 Axle	0	0
MAV	0	0
Tractor	0	0
Tractor with Trailor	0	0
Cycle	602	630
Other (JCB/HCM)	0	0
Total (Nos)	**10313**	**10487**
Total (PCU)	**9361**	**9506**

(Source: Compiled by Consultant)

7.5.5.1 Directional Split

The traffic data was analyzed to establish the directional distribution of traffic. The directional distribution of traffic at the TVC location is given in Table 138.

Table 138 Directional Distribution of Traffic on AMC Road

TVC Location	Directional distribution in vehicle numbers	Directional distribution in PCU
	NH 37 (Graham bazar) to Paltan Bazar : Paltan Bazar to NH 37 (Graham bazar)	**NH 37 (Graham bazar) to Paltan Bazar : Paltan Bazar to NH 37 (Graham bazar)**
AMC Road	**51:49**	**52:48**

7.5.5.2 Vehicle Composition

Composition of traffic at the midblock location is presented in Figure 109. Road section is occupied by mainly two-wheeler and car/taxi/utility vehicles which are 35% and 46% of total traffic. Thus commuters are using their personal vehicles to a large extent for daily routine. Public transport (bus) was observed to be less at 0.1% of traffic stream. Goods 3 wheeler vehicles comprised 10% of traffic, whereas trucks are 1% of total.

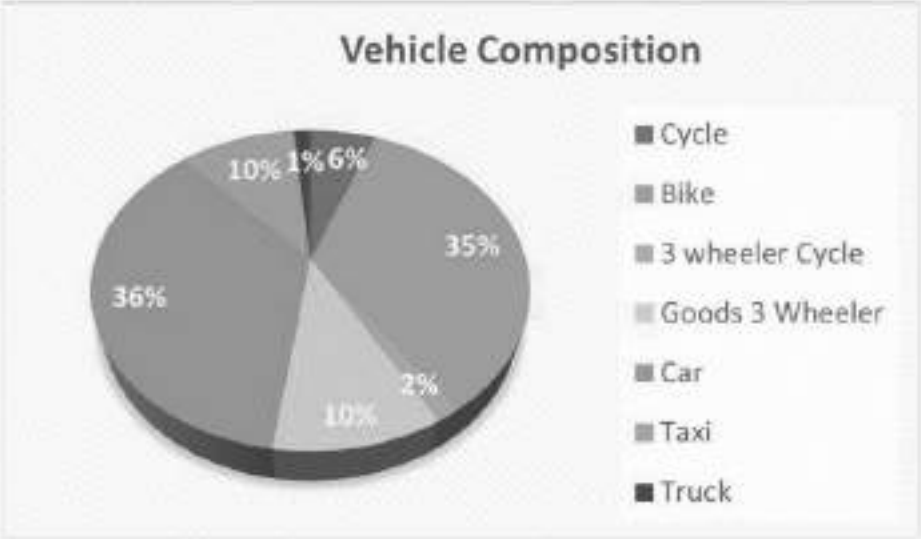


Figure 109 Composition of Traffic On AMC Road

7.5.5.3 Hourly Variation of Traffic

The hourly distribution of traffic to understand hourly variation and peak hour traffic characteristics at AMC Main Road as shown in Figure 110.

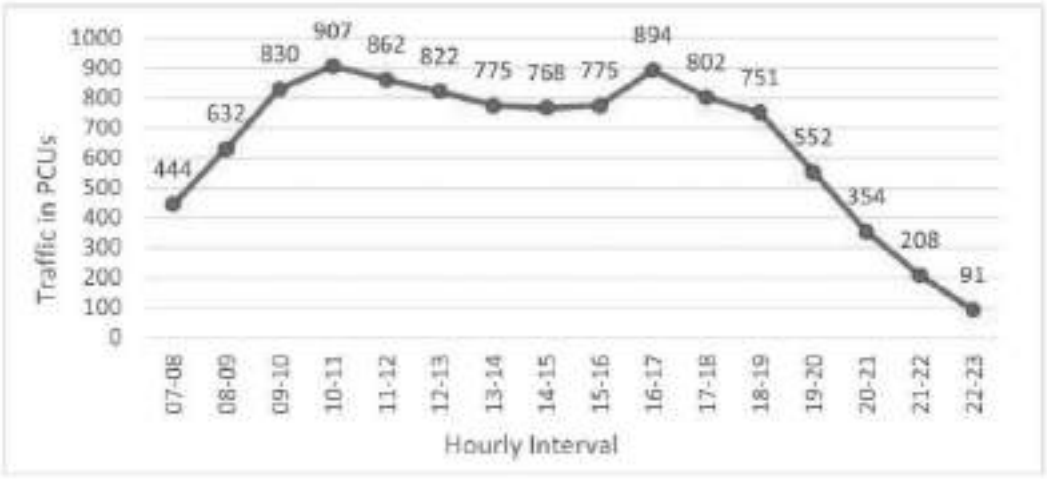


Figure 110 Hourly Variation of traffic at AMC road

7.5.5.4 Peak Hour Traffic

Peak hour was found to be from 10:00 to 11:00 HRS. Total peak hour traffic is 907 in PCU which is 8.6% of ADT. The peak hour and peak hour traffic at the midblock location is presented in Table 139.

Table 139 Peak hour traffic on AMC Road

PCU/hr	Peak Hours	Peak Hour Factor
907	10:00 to 11:00	8.6%

7.5.6 DIBRUGARH BYPASS ROAD

Annual average daily traffic is 4595 PCU in this road section. Passenger vehicles like car/taxi/utility vehicles, two wheelers predominate the traffic stream. Non-Motorised vehicles were observed in medium volume. LCV vehicles were present in good number while heavy goods vehicles like 3 Axle, MAV were observed here due to outer road links with other districts. ADT and AADT by vehicle type is presented in Table 140.

Table 140 Average Daily Traffic & Annual Average Daily Traffic on Dibrugarh bypass road

Vehicle Types	ADT	AADT
Car/Jeep/Van	1204	1250
Taxi	1012	1040
2-wheeler	1078	1045
3-wheeler	619	607
Minibus	20	15
Standard Bus	11	14
3-wheeler (Goods)	11	6
LCV	218	225
2 Axle	32	35
3 Axle	47	51
MAV	8	8
Tractor	24	27
Tractor with Trailor	0	0
Cycle	315	320
Other (JCB/HCM)	0	0
Total (Nos)	4599	4643
Total (PCU)	4535	4595

(Source: Compiled by Consultant)

7.5.6.1 Directional Split

The traffic data was analyzed to establish the directional distribution of traffic. The directional distribution of traffic at the TVC location is given in Table 141.

Table 141 Directional Distribution of Traffic on Dibrugarh bypass Road

TVC Location	Directional distribution in vehicle numbers	Directional distribution in PCU
	Mancotta Road to Chaulkhowa : Chaulkhowa to Mancotta Road	Mancotta Road to Chaulkhowa : Chaulkhowa to Mancotta Road
Dibrugarh bypass Road	52:48	53:47

(Source: Compiled by Consultant)

7.5.6.2 Vehicle Composition

Composition of traffic at the midblock location is presented in Figure 111. Road section is occupied by mainly two-wheeler and car/taxi/utility vehicles which are 30% and 33% of total traffic. Thus commuters are using their personal vehicles to a large extent for daily routine. Public transport (bus) was observed to be less at 1% of traffic stream. LCV vehicles comprised 6% of traffic, whereas trucks are 3% of total.

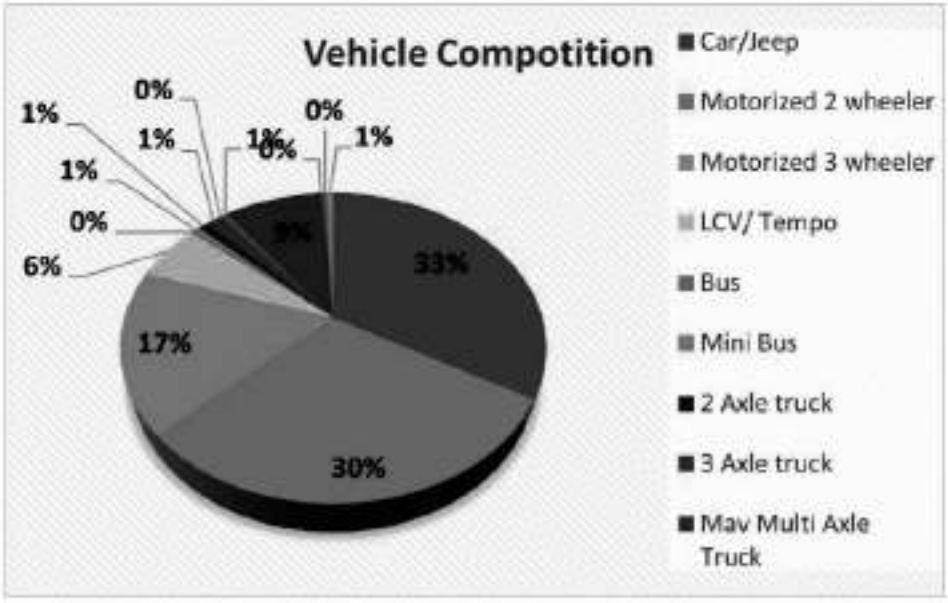


Figure 111 Composition of Traffic on Dibrugarh bypass Road

7.5.6.3 Hourly Variation of Traffic

The hourly distribution of traffic to understand hourly variation and peak hour traffic characteristics at Bypass Road as shown in Figure 112.

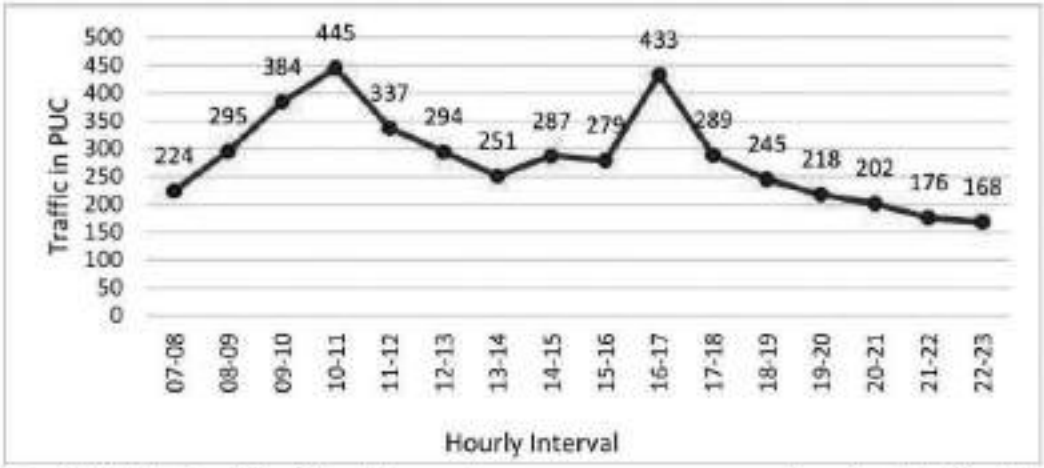


Figure 112 Hourly Variation of traffic at Dibrugarh bypass road *(Source: Compiled by Consultant)*

7.5.6.4 Peak Hour Traffic

Peak hour was found to be from 10:00 to 11:00 HRS. Total peak hour traffic is 445 in PCU which is 12.28% of ADT. The peak hour and peak hour traffic at the midblock location is presented in Table 142.

Table 142 Peak hour traffic on Dibrugarh bypass Road

PCU/hr	Peak Hours	Peak Hour Factor
445	10:00 to 11:00	12.28

(Source: Compiled by Consultant)

7.5.7 TRAFFIC CONGESTION

Traffic congestion takes place when traffic spills over than the design capacity of any road. The severity of traffic congestion can be identified using average daily traffic count und volume by capacity ratio method. Ratio greater than 1 indicates sever congestion, 0.75 to 1 indicates heavy congestion,0.50 to 0.75 indicates moderate congestion and less than 0.5 considered as low congestion.

Table 143 V/C ratio on Major roads

Sr no	Location	ADT	V/C
1	Mancotta Road	13255	0.76
2	NH 37 (AT Road)	8587	0.8
3	Chowkidingee	13833	0.79
4	Convoy Road	5203	0.3
5	RKB Road	11642	0.66
6	AMC Road	10313	0.59
7	Dibrugarh Bypass Road	4599	0.31

(Source: Compiled by Consultant)

Form the analysis mentioned in above Table 143 it can be inferred that the patches of Mancotta road at Thana Chariali and Chowkidingee are congested with heavy traffic. Moderate congestion observed at major junctions of NH 37 (AT road), RKB road and AMC road. East junction patch of Convoy road and Dibrugarh bypass road junction are under low congestion factor

7.5.8 OVERVIEW OF CRITICAL ROADS

Road capacity in general refers to the maximum traffic flow obtainable on a given roadway using all available lanes. Critical roads depend upon several factors, mainly, traffic conditions, road geometry characteristics, environmental factors etc. The critical assessment of road capacities on major urban roads is carried out by field traffic surveys to capture the classified volume count for primary, secondary and tertiary roads spread across the city through manual as well as video graphic techniques. Based on the collected data, the existing traffic volume per lane was ascertained during peak hours. This has been compared with the maximum Road capacity values to critically analyse the existing capacity potential of major roads in the city. Based on our study, the critical roads were observed and depicted in figure given below. The critical roads, depicted with blue color in the map, include NH 37 (AT Road), AMC Road, Mancotta – Convoy Road, RKB Path. However, major congestion issues were found in these roads leading to critical roads.

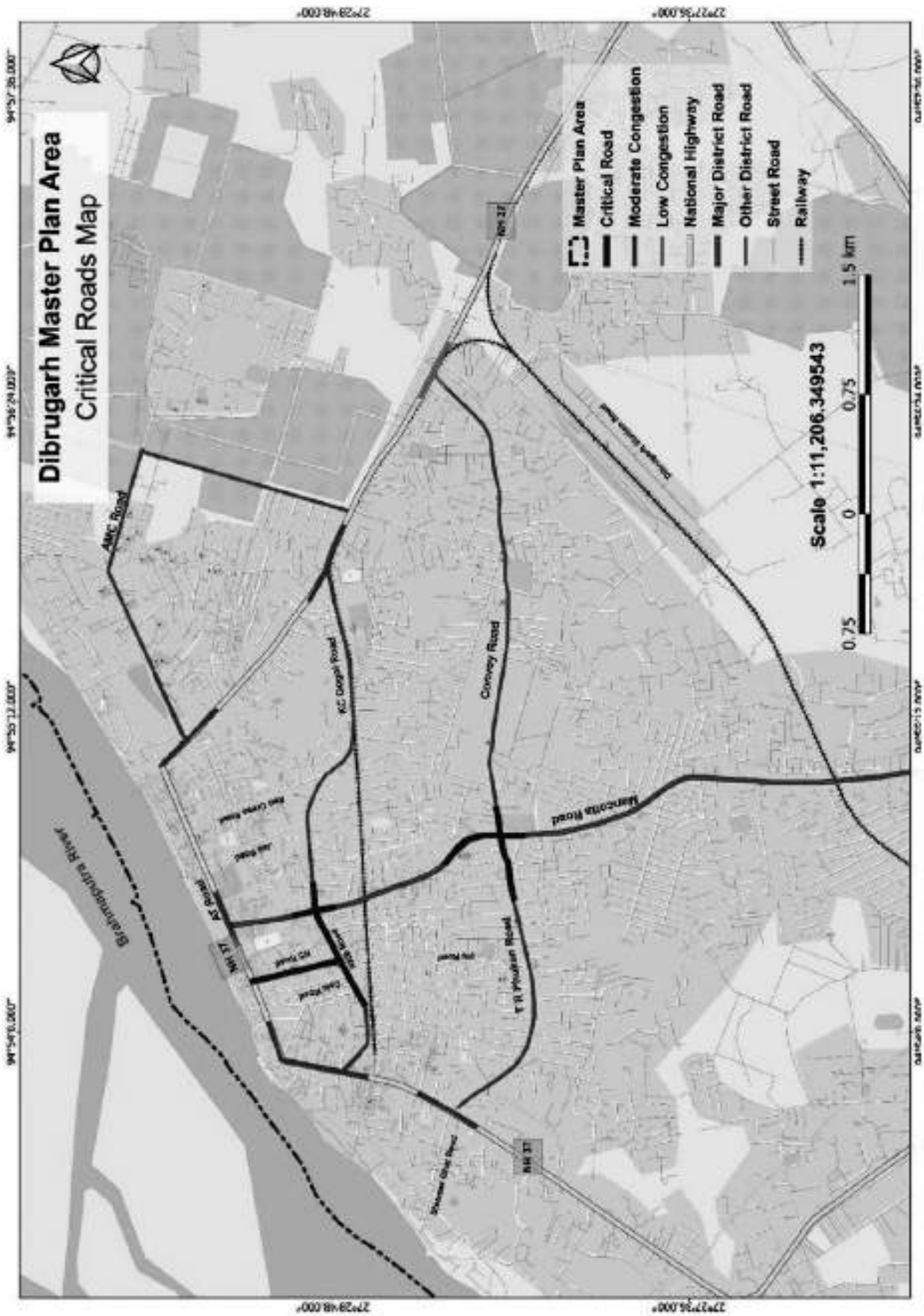


Figure 11.3 Congestion severity on Major roads

7.6 VEHICULAR TRAVEL PATTERN

The travel pattern of vehicles in the project area was studied. The data collected from the field was subsequently grouped according to origin and destination of vehicles, which led to development of the zoning system The Roadside Interview method, as detailed in IRC- 102-1988, has been adopted for O-D survey. The survey has been carried out for both passenger and goods vehicles for 12 hours (in both directions). For this purpose, cars (including new and old technology cars) and buses were considered as passenger vehicles. Similarly, LCVs, 2-Axle Trucks, 3-Axle Trucks, 4-6 Axle Trucks and >=7-Axle Trucks were considered as goods vehicles. Trained enumerators under the supervision of Traffic Police collected the travel information.

7.6.1 ZONING SYSTEM

Origin-Destination (OD) analysis is required for designation of the PIA in terms of codified origin and destination zones. It is thus important to code the trips recorded at site for origin and destination zones. The zoning, emanating from the understanding of the surrounding road network and the travel pattern of the vehicles by the consultants, was done in four levels. In the first level, all-important towns located along the study stretches were assigned zone code. Secondly, immediate influence areas of study stretches were considered and nearby areas/ towns were defined as

7.6.2 DATA CODING AND CHECKING

The collected data were coded and computerized. Checking of data for incorrect entries and coding was carried out by cross checking with original field data sheets. The data were also checked for inconsistencies. The checking included:

- Code number exceeding highest code
- Matching vehicle type with commodity carried
- Vehicle type with their corresponding lead/load/occupancy for any inconsistencies

7.6.3 DEVELOPMENT OF ORIGIN-DESTINATION MATRICES

After coding of Origin and Destination data, expansion factors were calculated by comparing the sample size collected for each vehicle type with traffic count data. After calculating expansion factors, vehicle wise O-D matrices were developed. On the basis of O-D matrices, travel pattern of the vehicles moving on the project road was determined. The O-D matrices of all 5 locations were combined to arrive at the project O-D matrix.

7.6.4 COMMODITY ANALYSIS

Commodity movement pattern shows that there is considerable movement of mining products, food grains & other agricultural products, finished & manufactured products and building materials. A large proportion of empty vehicles were also recorded. Mode-wise distribution of various commodities is presented in Table 144.

Table 144 Vehicle Wise Commodity Distribution (In Percentage)

Sr no	Commodity Analysis	LCV	MCV	HCV	MAV
1	Food grains, other agricultural products	8	3	0	0
2	Fruits, vegetables - perishables	4	1	0	0
3	Wood, Forest Products	3	0	0	0
4	Petroleum, oil, gas, lubricants	3	0	0	0
5	Minerals, chemicals, fertilizer	2	0	0	0
6	Iron , metal, steel	3	0	0	0
7	Finished & manufactured products	6	4	0	0
8	Building materials	3	3	0	0
9	Mining materials (Sand, Bajri, Coarse Aggregate)	14	4	0	1
10	Cement	4	0	0	0
11	Miscellaneous goods (Livestock, Waste, paper etc)	5	1	0	0
12	Empty vehicles	22	5	1	0

(Source: Compiled by Consultant)

7.7 ORIGIN-DESTINATION SURVEY

7.7.1 PASSENGER VEHICLE

The analysis of passenger vehicles shows that maximum traffic (35%) circulates within Dibrugarh City. Traffic between Dibrugarh City and Rest of Dibrugarh District is 18% and that between Dibrugarh and Tinsukia are 14% each. 13% traffic ply between Dibrugarh and North-Lakhimpur. Spatial distribution of passenger trips is presented in Table 145.

Table 145 Major Distribution of Passenger Vehicle

Between	% Share
Within Dibrugarh City	35
Dibrugarh City - within rest of District	18
Dibrugarh to Tinsukia	14
Dibrugrah to North Lakhimpur	13
Dibrugarh to Dhemaji	12
Dibrugarh to Sivasagar	8

(Source: Compiled by Consultant)

7.7.2 FREIGHT VEHICLES

Analysis of goods vehicles shows that 32% trips are between Dibrugarh City and Rest of Dibrugarh district and 14% are with Tinsukia district. The trips with Dibrugarh City and North Lakhimpur were recorded at 12% and those between Dibrugarh and Sivasagar at 13%. Table 146 shows the distribution of freight trips.

Table 146 Major Distribution of Freight Vehicle

Between	% Share
Within Dibrugarh City	12
Dibrugarh City - within rest of District	32
Dibrugarh to Tinsukia	14
Dibrugrah to North Lakhimpur	12
Dibrugarh to Dhemaji	8
Dibrugarh to Guwahati	9
Dibrugarh to Sivasagar	13

(Source: Consultant Compilation)

7.7.3 OCCUPANCY AND TRIP PURPOSE

The analysis of OD data for passenger cars and buses shows that the average occupancy for these vehicles along the project road is 4 and 30. It is observed that the major share of trips is related to work. The distribution of car passengers by trip purpose is shown in Table 147.

Table 147 Distribution of Car Passengers by Trip Purpose

Trip Purpose	% Trips
Work	88
Business	9
Education	1
Others	2

(Source: Consultant Compilation)

7.8 JUNCTION ANALYSIS

The areas with major traffic congestion have been marked (refer figure 116) with red spots. These are the areas where most of the problems generate due to various reasons and lead to congestion. These areas include AT – Mancotta Road Junction, Amolapatty Chariali, Convoy Road Junction, Gabharupothar Junction, Thana Chariali, RKB and AT Road Junction, Chowkidinghee Chariali, HS Road and RKB Path Junction, HS Road and RKB Path Junction.

7.8.1 ALL OBSERVED JUNCTIONS

All the differentiated categories of junctions have been mentioned in the tabled below. Table 148 represents the roundabouts and rotaries, table 149 represents all the cross junctions, table 150 shows the Y-junctions and table 151 shows the T-junctions in Dibrugarh Master plan area.

Table 148 List of Rotaries in Dibrugarh MP area

Sl. No.	Roundabouts/Rotary
1.	Thana Charali
2.	Chowkidingee Clock Tower
3.	NH 37 – Dibrugarh Bypass Road – NH 52B

(Source: Consultant Compilation)

Table 149 List of cross junctions in Dibrugarh MP area

Sl. No.	Cross Junctions
1.	Mancotta road – Dibrugarh bypass road
2.	NH 37 (AT road) – HS road
3.	Dibrugarh bypass road – Airforce road
4.	Mancotta road – NH 52B road
5.	Dibrugarh bypass road – NH 37
6.	Leela Gogoi path – Mancotta road
7.	NH 37 (AT road) – Convoy road – Steamer ghat road

Table 150 List of Y - Junctions in Dibrugarh MP area

Sl. No.	Y - Junction
1.	NH 37 road – RKB path
2.	K.C Gogoi path – NH 37 (Gabharu Pathar)
3.	Dhulianjan Dibrugarh road (NH 37)– Lahoal Dhulianjan road (SH 23)
4.	Lahor patty – Cole Road
5.	Red Cross road – K.C. Gogoi path
6.	NH 37 – TR Phukan road

(Source: Compiled by Consultants)

Table 151 List of T - Junctions in Dibrugarh MP area

Sl. No.	T - Junction
1.	NH 37 (AT road) – AMC road
2.	TR Phukan road – PN road
3.	NH 37(Graham Bazar road)- Convoy Road
4.	NH 37 – NH 15 (new)
5.	Mancotta road – NH 37(AT road)
6.	NH 37 (AT Road) - HS road
7.	NH 37 (AT road) – Cole road
8.	NH 37 (AT road) - Jail road
9.	Dibrugarh Bypass – NH 37 (Link road)
10.	Red Cross road – Jain mandir road
11.	Red Cross road – Shiv mandir road
12.	Red Cross road – NH 37 (AT road)

(Source: Compiled by Consultants)

The map below shows the analysis of junctions whether the junction is cross junction, T-junction, Y-junction, or Rotary (refer figure 114).

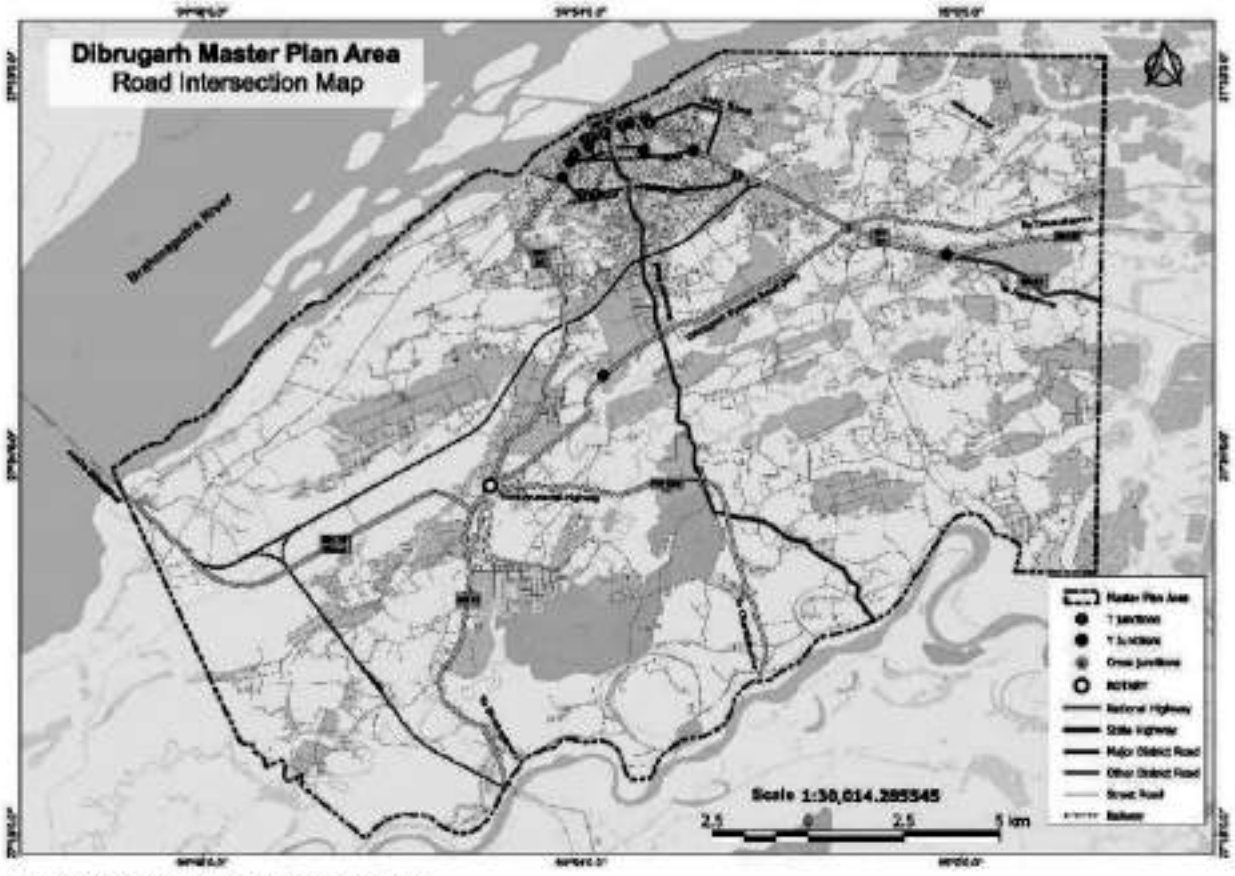


Figure 114 Road intersection map of Dibrugarh MPA

Major intersection nodes of DMPA are described in Fig 114 and the points selected for intersection (Junction) analysis are marked in Fig. 115.

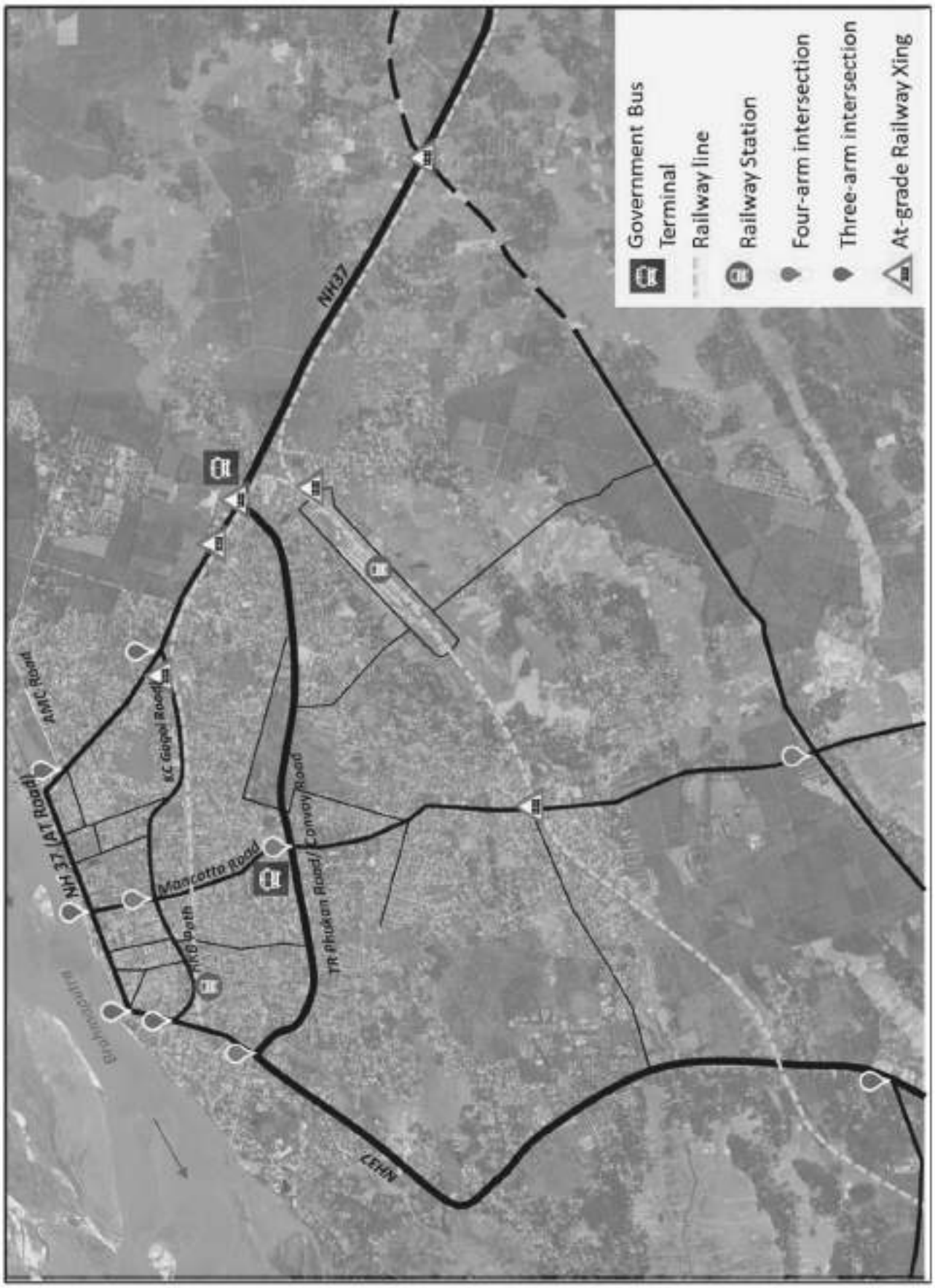


Figure 11.5 Major nodes of intersection

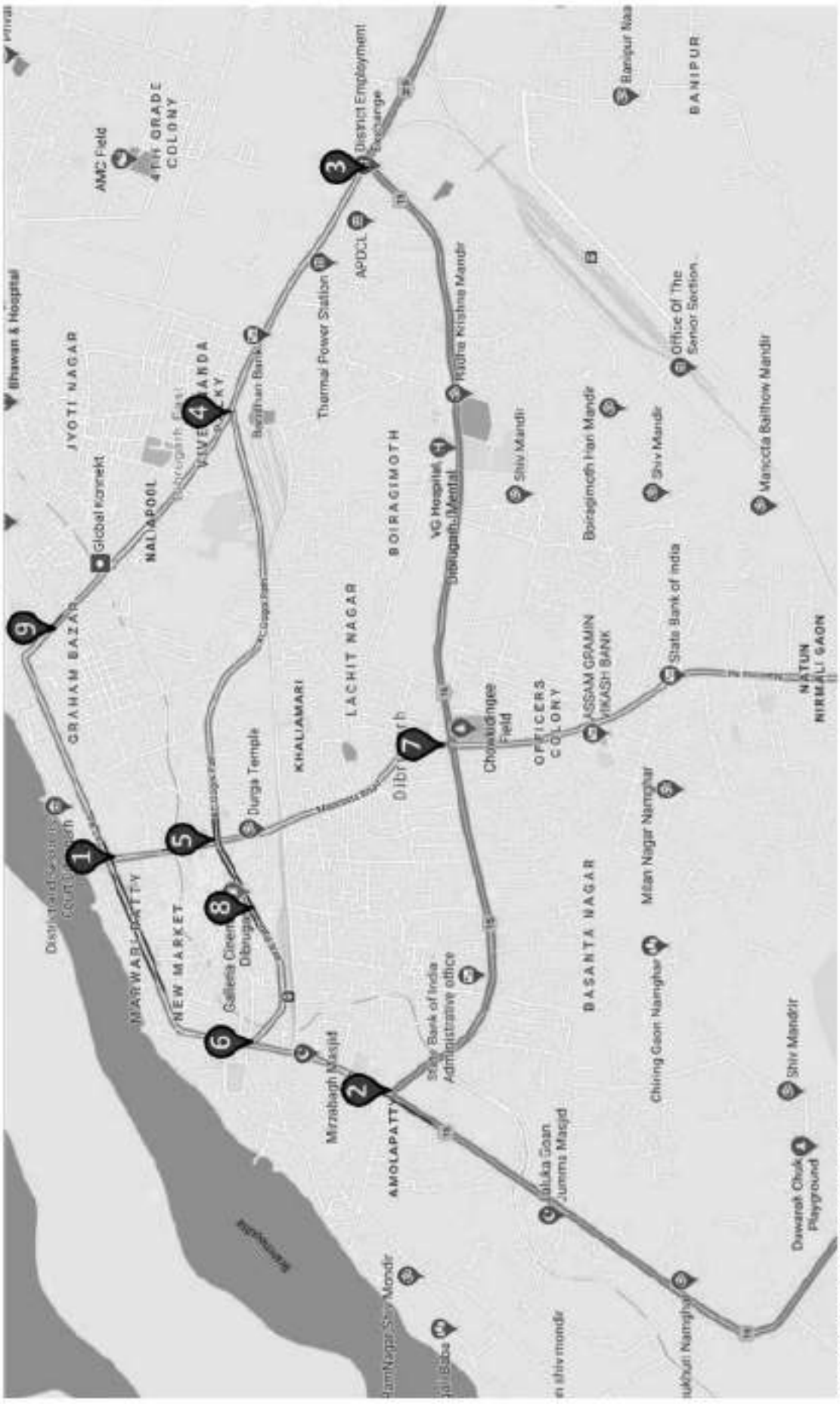


Figure 116 Major intersections for traffic study

7.8.2 INTERSECTION - 1 MANCOTTA ROAD JUNCTION)

Table 152 Intersection 1 Traffic Congestion Details

Road	C. W. Width (m)	No. of Lanes	Shoulder + Footpath Width (m)	Peak Congestion Hours
NH 37 (AT Road)	14	2 lane Undivided Two-way	5	11:30 hrs. &17:30 hrs.
Mancotta Road	10	2 lane Undivided Two-way	6	

(Source: Compiled by Consultants)

Figure 117 Queuing Length of Intersection 1

This Junction is a 3-Arm junction and the total daily traffic at NH 37 (AT road) -Mancotta Junction is 8162 PCU. The peak hour and peak hour traffic at the junction is presented in Table 153.

Table 153 Peak hour traffic at NH 37-Mancotta Junction

Peak Hour	10:00-11:00
Peak Hour Traffic (PCU/hr)	768

(Source: Compiled by Consultants)

The current capacity of junction may be improved by removing encroachment, electricity poles and vendors along with geometric improvement and signalisation.

Table 154 Veh/Day at NH37-Mancotta Junction

Location	Minor Road (Veh/day)	Major Road (Veh/Day)
NH 37 (AT Road) – Mancotta Road Intersection	8587	8867

(Source: Compiled by Consultants)

7.8.3 INTERSECTION – 2 (AMOLAPATTY CHARIALI)

Table 155 Intersection 2 Traffic Congestion Details

Road	C. W. Width (m)	No. of Lanes	Shoulder + Footpath Width (m)	Peak Congestion Hours
NH 37	12	2 lanes undivided Two-way	5	11:30 hrs. &17:30 hrs.
TR Phukan Road	10	2 lanes undivided Two-way	6	
Steamer Ghat Road	10	2 lanes undivided Two-way	1.2 (Footpath Only)	

(Source: Compiled by Consultants)

Figure 119 Queuing Length of Intersection 2 *(Source: Compiled by Consultants)*

Amolapatty Chariali is a 4-Arm junction and the total daily traffic at this Junction is 11106 PCU. The peak hour and peak hour traffic at the junction is presented in Table 156.

Table 156 Peak hour traffic at Amolapatty Junction

Peak Hour	10:00-11:00
Peak Hour Traffic (PCU/hr)	956

(Source: Compiled by Consultants)

The current capacity of junction may be improved by removing encroachment, electricity poles and vendors along with geometric improvement, channelization and signalisation.

Table 157 Veh/Day at Amolapatty Junction

Location	Minor Road (Veh/day)	Major Road (Veh/Day)
Amolapatty Chariali	6450	11254

(Source: Compiled by Consultants)

7.8.4 INTERSECTION - 3 (NH-37 – CONVOY ROAD JUNCTION)

Table 158 Intersection 3 Traffic Congestion Details

Road	C. W. Width (m)	No. of Lanes	Shoulder + Footpath Width (m)	Peak Congestion Hours
NH 37	12	2 lanes undivided Two-way	5	11:30 hrs. &17:30 hrs.
Convoy Road	10	2 lanes undivided Two-way	6	

(Source: Compiled by Consultants)

Figure 119 Queuing Length of Intersection 3

NH-37 – Convoy road Junction is a 3-Arm junction and the total daily traffic at junction is 9067 PCU. The peak hour and peak hour traffic at the junction is presented in Table 159.

Table 159 Peak hour traffic at Convoy-NH37 Junction

Peak Hour	10:00-11:00
Peak Hour Traffic (PCU/hr)	675

(Source: Compiled by Consultants)

The current capacity of junction may be improved by removing encroachment and electricity poles along with geometric improvement, channelization and signalisation.

Table 160 Veh/Day at Convoy-NH37 Junction

Location	Minor Road (Veh/day)	Major Road (Veh/Day)
Convoy – NH-37 intersection	5405	9287

(Source: Compiled by Consultants)

7.8.5 INTERSECTION - 4 (GABHARUPOTHAR JUNCTION)

Table 161 Intersection 4 Traffic Congestion Details

Road	C. W. Width (m)	No. of Lanes	Shoulder + Footpath Width (m)	Peak Congestion Hours
NH 37	12	2 lanes undivided Two-way	3	11:30 hrs. &17:30 hrs.
RKB Path	10	2 lanes undivided Two-way	2	

(Source: Compiled by Consultants)

Figure 120 Queuing Length of Intersection 4

Gabharupothar Junction is a 3-Arm junction and the total daily traffic at junction is 8125 PCU. The peak hour and peak hour traffic at the junction is presented in Table 162.

Table 162 Peak hour traffic at Gabharupothar Junction

Peak Hour	10:00-11:00
Peak Hour Traffic (PCU/hr)	345

(Source: Compiled by Consultants)

The current capacity of junction may be improved by removing encroachment, electricity poles and vendors along with geometric improvement, channelization and signalisation.

Table 163 Veh/Day at Gabharupothar Junction

Location	Minor Road (Veh/day)	Major Road (Veh/Day)
Gabharupothar Junction	4503	8397

(Source: Compiled by Consultants)

7.8.6 INTERSECTION – 5 (THANA CHARIALI)

Table 164 Intersection 5 Traffic Congestion Details

Road	C. W. Width (m)	No. of Lanes	Shoulder + Footpath Width (m)	Peak Congestion Hours
Mancotta Road	10	2 lanes undivided Two-way	8	11:30 hrs. &17:30 hrs.W
RKB Path	10	2 lane undivided Two-way	2	

(Source: Compiled by Consultants)

Figure 121 Queuing Length of Intersection 5

Thana chariali Junction is a 4-Arm junction and the total daily traffic at Thana Junction is 11091 PCU. The peak hour and peak hour traffic at the junction is presented in Table 165.

Table 165 Peak hour traffic at Thana Junction

Peak Hour	10:00-11:00
Peak Hour Traffic (PCU/hr)	1002

(Source: Compiled by Consultants)

The current capacity of junction may be improved by removing encroachment, electricity poles and vendors along with geometric improvement, channelization and signalisation.

Table 166 Veh/Day at Thana Junction

Location	Minor Road (Veh/day)	Major Road (Veh/Day)
Thana Chariali	9605	11834

(Source: Compiled by Consultants)

7.8.7 INTERSECTION - 6 (NH 37 AND RKB ROAD JUNCTION)

Table 167 Intersection 6 Traffic Congestion Details

Road	C. W. Width (m)	No. of Lanes	Shoulder + Footpath Width (m)	Peak Congestion Hours
NH 37	12	2 lanes undivided Two-way	5	11:30 hrs. &17:30 hrs.
RKB Path	10	2 lane undivided Two-way	2	

Figure 122 Queuing Length of Intersection 6

NH 37-RKB road Junction is a 4-Arm junction and the total daily traffic at the Junction is 7224 PCU. The peak hour and peak hour traffic at the junction is presented in Table 168.

Table 168 Peak hour traffic at NH 37-RKB Junction

Peak Hour	10:00-11:00
Peak Hour Traffic (PCU/hr)	350

(Source: Compiled by Consultants)

The current capacity of junction may be improved by removing encroachment and electricity poles along with geometric improvement, channelization and signalisation.

Table 169 Veh/Day at NH 37-RKB Junction

Location	Minor Road (Veh/day)	Major Road (Veh/Day)
NH 37 – RKB Road Intersection	4823	7567

(Source: Compiled by Consultants)

7.8.8 INTERSECTION - 7 (CHOWKIDINGEE CHARIALI)

Table 170 Intersection 7 Traffic Congestion Details

Road	C. W. Width (m)	No. of Lanes	Shoulder + Footpath Width (m)	Peak Congestion Hours
Mancotta Road	10	2 lanes undivided Two-way	6	11:30 hrs. &17:30 hrs.
TR Phukan Road	10	2 lane undivided Two-way	5	

(Source: Compiled by Consultants)

Figure 123 Queuing Length of Intersection 7

Chowkidingee Junction is a 4-Arm junction and the total daily traffic at Chowkidingee Junction is 13255 PCU. The peak hour and peak hour traffic at the junction is presented in Table 171.

Table 171 Peak hour traffic at Chowkidingee Junction

Peak Hour	10:00-11:00
Peak Hour Traffic (PCU/hr)	1153

(Source: Compiled by Consultants)

The current capacity of junction may be improved by removing encroachment and electricity poles along with geometric improvement and channelization

Table 172 Veh/Day at Chowkidingee Junction

Location	Minor Road (Veh/day)	Major Road (Veh/Day)
Chowkidingee	9287	13833

(Source: Compiled by Consultants)

7.8.9 INTERSECTION - 8 (HS ROAD AND RKB PATH JUNCTION)

Table 173 Intersection 8 Traffic Congestion Details

Road	C. W. Width (m)	No. of Lanes	Shoulder + Footpath Width (m)	Peak Congestion Hours
RKB Path	10	2 lanes undivided Two-way	6	11:30 hrs. &17:30 hrs.
HS Road	10	2 lane undivided Two-way	5	

Source: Compiled by Consultants

Figure 124 Queuing Length of Intersection 8

HS-RKB road Junction is a 3-Arm junction and the total daily traffic at this Junction is 7425 PCU. The peak hour and peak hour traffic at the junction is presented in Table 174.

Table 174 Peak hour traffic at HS-RKB Junction

Peak Hour	10:00-11:00
Peak Hour Traffic (PCU/hr)	698

Source: Compiled by Consultants

The current capacity of junction may be improved by removing encroachment, electricity poles and vendors along with geometric improvement.

Table 175 Veh/Day at HS-RKB Junction

Location	Minor Road (Veh/day)	Major Road (Veh/Day)
HS-RKB road intersection	7345	7567

Source: Compiled by Consultants

7.8.10 INTERSECTION - 9 (NH 37 AND AMC ROAD JUNCTION)

Table 176 Intersection 9 Traffic Congestion Details

Road	C. W. Width (m)	No. of Lanes	Shoulder + Footpath Width (m)	Peak Congestion Hours
NH 37	12	2 lane undivided Two-way	5	11:30 hrs. &17:30 hrs.
AMC road	12	2 lane undivided Two-way	4	

(Source: Compiled by Consultants)

Figure 125 Queuing Length of Intersection 9

NH 37-AMC Junction is a 3-Arm junction and the total daily traffic at tis Junction is 9426 PCU. The peak hour and peak hour traffic at the junction is presented in Table 177.

Table 177 Peak hour traffic at NH 37-AMC road Junction

Peak Hour	10:00-11:00
Peak Hour Traffic (PCU/hr)	907

(Source: Compiled by Consultants)

The current capacity of junction may be improved by removing encroachment, electricity poles and vendors along with geometric improvement, channelization and signalisation.

Table 178 Veh/Day at NH 37-AMC Junction

Location	Minor Road (Veh/day)	Major Road (Veh/Day)
NH 37-AMC Road intersection	8397	9506

(Source: Compiled by Consultants)

7.9 PEDESTRIAN SURVEY

Pedestrian survey was conducted both along the road and across the road near New market area on HS road and Market road.

Figure 126 HS Road Pedestrian movement

Figure 127 New Market Road Pedestrian movement

Table 179 Footpath inventory at HS and New Market road

Location	Peak Hour	Passenger Flow	Existing Footpath width (m)	Required Footpath width (m)
HS Road	16:00 - 18:00	350	1.5	1.5
New Market Road	11:00 - 12:00	520	1	1.5

IRC 103 recommends the minimum footpath width as 1.5m. Hence it is recommended that the footpath width on New market Road be increased to 1.5m.

Pedestrian-vehicular conflict can be effectively studied through the indicator PV2 suggested in IRC 103,'Guidelines for Pedestrian Facilities' The code suggests some form of control measures at mid blocks and intersections where the indicator PV2 is greater than or equal to 1 x 108 for undivided carriageways where 'P' is the peak hour pedestrian volume and 'V' is the number of vehicles in that peak hour. Analysis of the peak values for PV2 and the hour in which the same is observed is presented in Table 180.

Table 180 Pedestrian Cross traffic survey

Location	Peak Hour	P	V	$PV^2/10^8$
HS Road	16:00 - 18:00	350	675	1.59
New Market Road	11:00 - 12:00	520	320	0.5

(Source: Compiled by Consultants)

Huge pedestrian traffic volume is observed along the links and intersections within the core areas – as walking is one of the dominant modes of movement.

Most of the links do not have adequate footpaths on both sides to accommodate the high pedestrian volume. Many Streets observed with huge encroachment on footpaths by local vendors and commercial facility owners which forcing pedestrians to move along the carriageway. The major deficiencies are:

1. Inadequate/irregular riser and tread
2. Poor surface condition
3. Poor illumination
4. Lack of railing and landing facilities for long flight of steps

As walking is the only effective Non-Motorized Transit (NMT) mode, management of pedestrian facilities along with steps and accessibility on footpaths can significantly boost the patronage for NMT movement within DMPA.

7.10 SPEED DELAY SURVEY

The survey was conducted along five major travel corridors. Journey and running speeds derived from the survey in the two directions of travel are presented in Table 181.

Table 181 Observed Speed along Major road

Sr. No.	Road Section	Direction	Journey Speed (kmph)	Running Speed (kmph)
1.	NH 37 (AT Road)	Panchali to Phoolbagan	22.3	41.5
		Phoolbagan to Panchali	25.6	44.2
2.	Mancotta Road	Thana to Chowkidingee	18.6	26.4
		Chowkidingee to Thana	19.5	29.1
3.	T R Phukan Road	Amolapatty to Chowkidingee	24.8	35.6
		Chowkidingee to Amolapatty	25.6	39.3
4.	RKB Road	Boga baba Tinali to HS Road	26.8	40.2
		HS Road to Boga baba Tinali	28.6	42.6

(Source: Compiled by Consultants)

The low values of Journey and Running speeds indicate major congestion. Thus intervention is required to relieve congestion through capacity augmentation and traffic management.

7.11 PARKING STUDY

A space occupied by vehicle for a particular period of time when it is not under any use can be known as parking. If any vehicle comes on road, it always requires a parking to rest as a human requires bed to rest for a particular time period, so it is recommended in these days for any busy landuse activity to come up with proper parking plans for required number of vehicles. The parking in urban areas is found to be of two types namely on-street parking which is done on the side of streets with space provided and other is off-street parking which is a modern concept and is done when there is a lack of space in the urban area.

7.11.1 EXISTING PARKING AVAILABILITY

The parking areas are an important component in the urban transportation network. The parking areas become very important in the Central Business District areas (CBD) and public activity area, where the traffic movement is very heavy. At present around 0.14 hectare of organized parking at old railway station on RKB road area within CBD is being used for four-wheeler parking area. Jalan nagar Bus station is utilized as unorganized parking area on NH 37. Banipur railway station is having approx. 0.40 hectare open parking space. (refer to table 182 and fig 128).

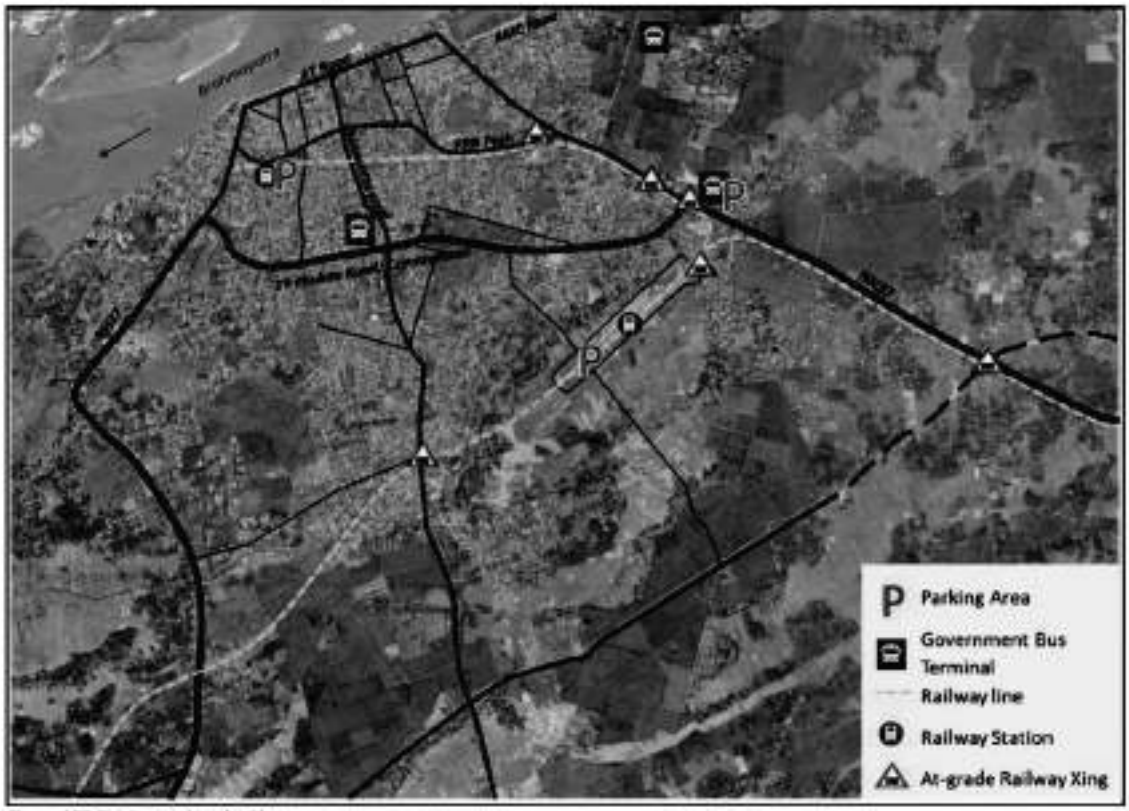


Figure 128 Existing parking facility

Table 182 Parking Spots and their Area Coverage

Parking Space/Area	Location	Type of Parking	Area (Hectare)
Old Railway Parking Area	Amolapatty	Organized ground level parking	0.14
New Railway Parking Area	Banipur	Organized ground level parking	0.40
Jalan Nagr Bus Station	Jalan Nagar	Unorganized ground level parking	0.30

(Source: Compiled by Consultants)

At present there is no multilevel organized parking facility been provided within CBD area urban local body control. There are 2 organized paid parking facility available in public spaces like Dibrugarh Airport terminus and at railway station.

Figure 129 Dibrugarh Traffic Management Map

Apart from the demarcated paid parking identified area, the on-street parking also practiced in the entire Dibrugarh town area where heavy traffic movement or public activity is observed. Dibrugarh Traffic Police department has identified some parallel patches along the roadside to meet the demand of two-wheeler parking within the CBD area. To decongest the commercial area from vehicular traffic the HS road and Cole road have been converted into one way road during working and peak hours. The entry of vehicle on HS Road is restricted from North end whereas from south end in case of Cole road. The on-street parking of vehicles coming within CBD area (New Market Area), Mancotta Road and RKB road are mainly

Figure 130 HS Road On-Street parking

Figure 131 RKB road street

due to commercial facility, trading activities, schools and government buildings. Since there is no provision given of private parking to local residents of CBD, they park owned vehicles at parallel parking slots which creates another hurdle of parking occupancy for consumers and visitors to market area. It is observed that need for additional parking area is keenly felt in CBD area, schools and government buildings which is already congested with heavy traffic. In fact, since the kerb parking reduces the carriage way width, the regulation authorities take action to allow parking on one side only. There is no scope for increasing the on-street parking in CBD area during Peak hours.

7.11.2 PARKING SURVEY

High ownership pattern and excessive dependence on private mode of movement, i.e., two-wheelers and cars exert huge parking demand. As most of the parking demand is met by on-street facilities due to absence of designated off-street facilities, leading to traffic congestion in the core area.

Parking survey was conducted at on street locations where vehicular parking was observed. On-street parking is observed to be high on HS Road and RKB Road. The percentage of vehicles parked for long-term (>1 hr) is high at the two locations constituting 93% at HS Main Road and 84% at RKB Road. Analysis of parking demand is presented in Table 183.

Table 183 Existing Parking Demand in Equivalent Car Space on HS Road and R.K.B Road

Sr. No.	Location	Parking Type	Peak Accumulation (ECS)	Peak Hour
1	HS Road	On Street	144	16:00 - 18:00
2	RKB Road	On Street	85	13:00 - 14:00

Table 184 Parking Demand Capacity Analysis on HS Road and R.K.B Road

Sr. No.	Location	Demand (ECS)	Capacity (ECS)	Demand/ Capacity
1	HS Road	144	90	1.6
2	RKB Road	85	60	1.2

As evident from the above table, the parking location on HS Main Road is fully saturated and leading to sever encroachment on street, moreover that on RKB Road is also saturated with parking slots but leads to encroachment on fewer locations only. After parking of vehicles, about 5m space is only available as roadway at the two locations. Interference to through traffic is caused during parking and un-parking operations. Thus, the authorised on-street parking lots results in considerable congestion. The on-street parking reduces the effective carriageway width thereby inducing congestion. Need for additional parking area is keenly felt in the Dibrugarh Town because of the commercial activities and due to the presence of schools and government buildings.

RKB Road, Dibrugarh

7.12 ISSUES AND REQUIREMENTS

7.12.1 UNAUTHORISED VENDING

- One of the major issues is of illegal vending on walking shoulders on the main streets.
- Due to this illegal vending sometimes the actual accessible patch of road decrease to half lane only.
- If proper spaces are being allocated to street vendors in every zone the issue can be eliminated.
- Due to illegal possession of shoulders the pedestrian come down to road for their local trip and some time proves unsafe on congested area.
- Narrow road network with restricted capacity, particularly due to the illegal vending, resulting in congestion and loss of productivity.
- The problematic areas include **Intersection of Sivanath Bhattacharjee path at Convey Road, Intersection of Rudhali path and Convey Road, Near Rupkonwar Trading Agency, Along T R Phukan Road, Leela Gogoi path and Covey Road Intersection, Along NH37, Near Sukafaa Bhobwan Tineali, Tepor Gaon Road and Mancota Road Intersection, along RKB path, along Convey Road etc.**
- The photographs below depict the current scenario of the illegal vending zones which restricted the capacity of road which in result lead to congestion.
- The illegal vending zone locations have been marked on the map (Fig. 132)

Maricotta Road, Dibrugarh

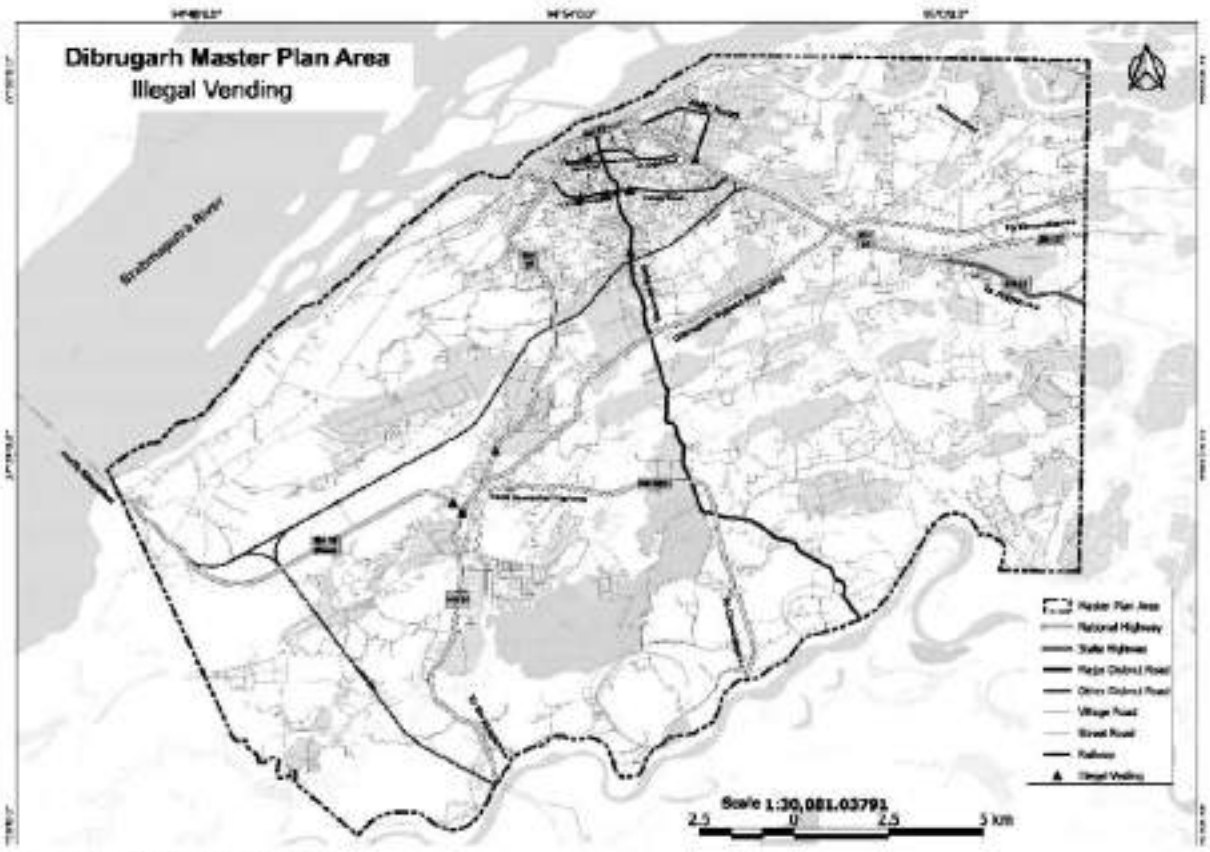
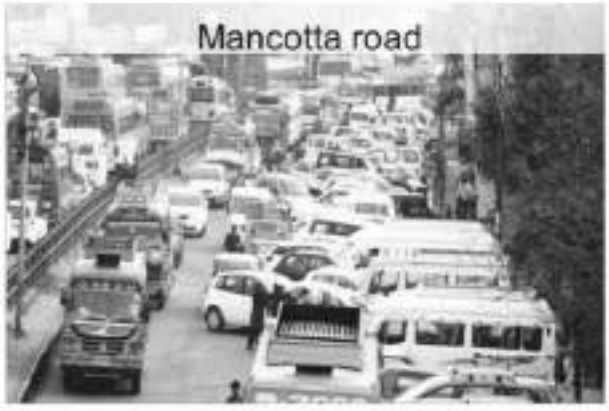


Figure 132 Illegal vending zone locations

7.12.2 TRAFFIC CONGESTION

- Traffic congestion is quite common, and it takes a lot of time to commute for the commuters.
- At many places geometry of roads and intersection are not adequate and absence of functional hierarchy of road network leads to the traffic congestion.
- The average roads width of the town is very less as they have not followed any norms and standards for the road pattern as well as for other related things like road cross sections, etc.
- Observed encroachments on the footpath by vendors, which acutely rise the traffic congestion between **Graham Bazar Tiniali and the gate of Assam Medical College and Hospital (AMCH)**, and parking on both sides of the road and the resultant traffic need to resolve.
- Many vehicles, due to lack of adequate parking facilities, were parked on the Chowkidinghee Field, causing inconvenience to people who use the field for recreational purposes like walking and playing and also people had to face inconvenience as that road leads to many important places like **Milan Nagar, Mancotta, Khanikar and Thakurthan.**
- Other roads having traffic congestion are **NH 37 (AT Road), Amolapatty to AMC and AT Road junction** having C.W. of 15 metres, **Convey Road / T.R Phukan Road (13 meters), Mancotta Road, Marwari Patty to Natun Nirmali Gaon (10 meters) and RKB Path upto Thana Chariali (11 meters).**
- The highlighted light blue patches in map within town area shows the frequent congested road patches (Fig. 133)



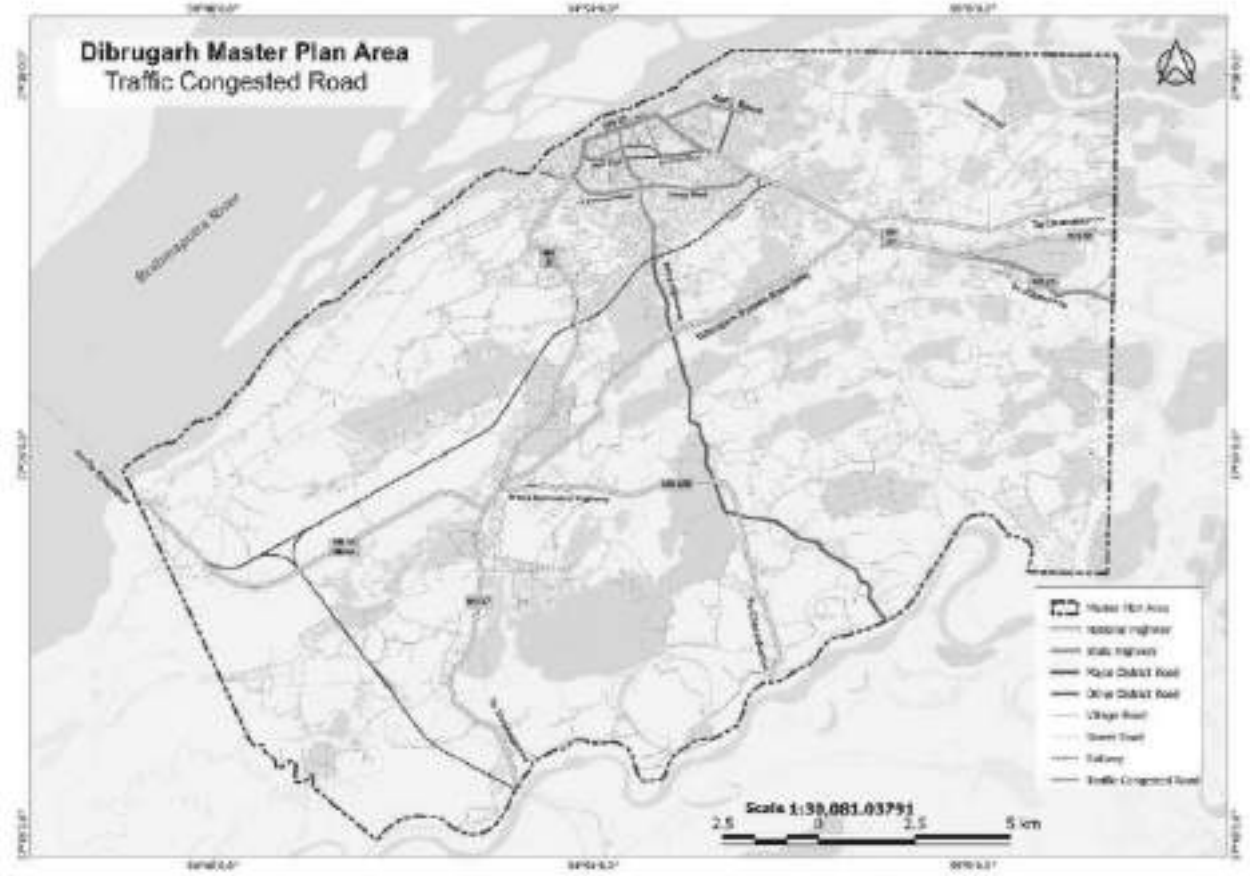


Figure 139 Traffic Congestion map of Dibrugarh Master Plan Area

7.12.3 ROAD ENCROACHMENTS

- Many factors can be listed out for such happenings, but few observations are mentioned below, which are
- Unauthorized parking of vehicle on pavement only.
- Many spots with exposed electric poles on pavement sides which leads to make space dead and potential for parking wheels.
- The town suffers from parking problems due to encroachment by vendors on road and off-street parking. As a result, the road width decreases and there is no space remaining to pass the vehicles or to give space to other vehicles.
- There is no designated space for parking in whole town.
- There are encroachment issues in areas namely both sides of Dibrugarh Flyover near Gadapani tinali, along RKB Path near Galleria Cinemas Dibrugarh, along NH 37 Road near Chaulkhowa Railway station, under Dibrugarh Flyover in Kamar gaon and along NH 37 near RKB Path and AT Road junction.
- Due to lack of space it is difficult for vehicles to pass on.
- Also, Proper facilities are needed for loading, uplifting and downloading.
- Encroachment on both sides of the road decreases the effective width which may cause road accidents and disturbs the smooth flow of traffic.
- The map shows the road network of planning area with identified spots of encroachment on roads (Refer to Figure 134).

Chowkidingee Road

Amolapatty Road

Mancatta Road

Figure 134 Road encroachment areas

7.12.4 ILLEGAL PARKING AREA

- With increasing number of vehicles, narrow roads, absence of parking spaces within majority of built areas, parking becomes critical for planning and development.
- There is more of commercial area, so the shopkeepers park their vehicles outside the shops leading to decrease in the width of the road.
- There is no proper arrangement for parking vehicles which results into roadside parking.
- Some of the streets are observed by frequent haphazard parking on side of the pavements.
- Low accessibility and traffic congestion are resulting due to such happenings.
- As per the temporal study the town is growing at fast rate leads to more and more traffic problems like todays it does not have sufficient parking and also number of vehicles are increased rapidly which will lead to the parking shortage in the town.
- The areas with illegal parking are **near RKB Path and Mancotta Road junction**, opposite Khaleel Market, **opposite Dibrugarh Police Station along Mancotta Road, RKB Path and HS Road Junction**, Cole Road and AT Road Junction, near Aastha Pharmaceuticals, **along Amolapatty NH 37 Road,** opposite S.S Enterprise, along **Mancotta Road near Bank of Maharastra Dibrugarh Branch, Mancotta Road and Lane E junction, near SBI ATM, along Convey Road** near Don Bosco Higher Secondary School.
- The marked spots on map are regular area for illegal parking (Figure 135).


Chowkidingee Mancatta Road


Chowkidingee Mancotta Road


AMC Road


RKB Road

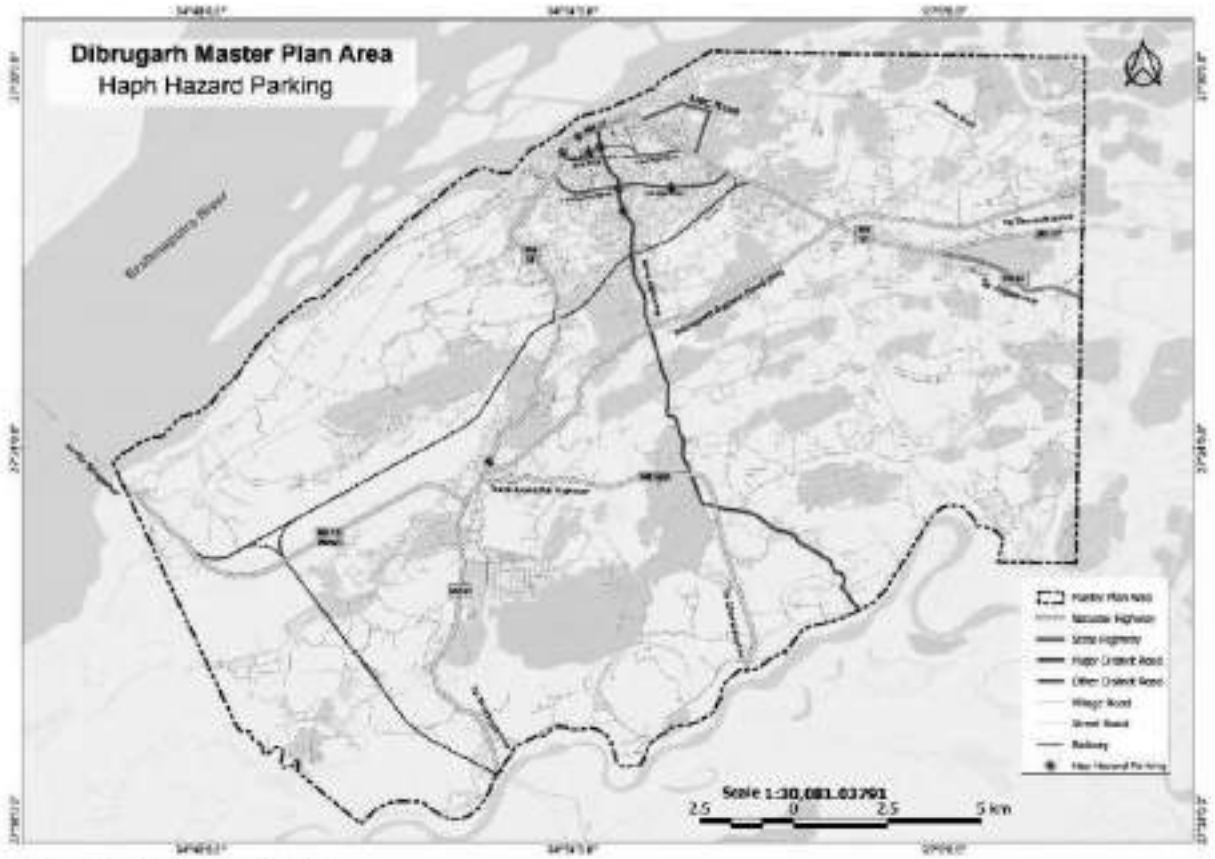


Figure 135 Haphazard parking locations


New Market Road, Dibrugarh

7.12.5 JUNCTIONS WITHOUT TRAFFIC SIGNALS

- Many traffic intersections observed with insufficient traffic control facility
- The below mentioned are junction with Non -working traffic signals
- Resulting in unnecessary traffic jams and more requirement of traffic brigade occurs.
- Various junctions are performing without traffic signals in town like Khanikar Chariali, RKB Road and Kalibari Road junction, HS Road and RKB Path junction, Thana Junction, Medical Tiniali, Graham bazar Road junction, Paltanbazar Panchiali Junction, AMC Road and GM Modi Road Junction etc.
- The marked spots on map are junctions without traffic signal (Figure 136).

Thana Chariali

Steamerghat- NH37 Junction

RKB- NH37 Junction

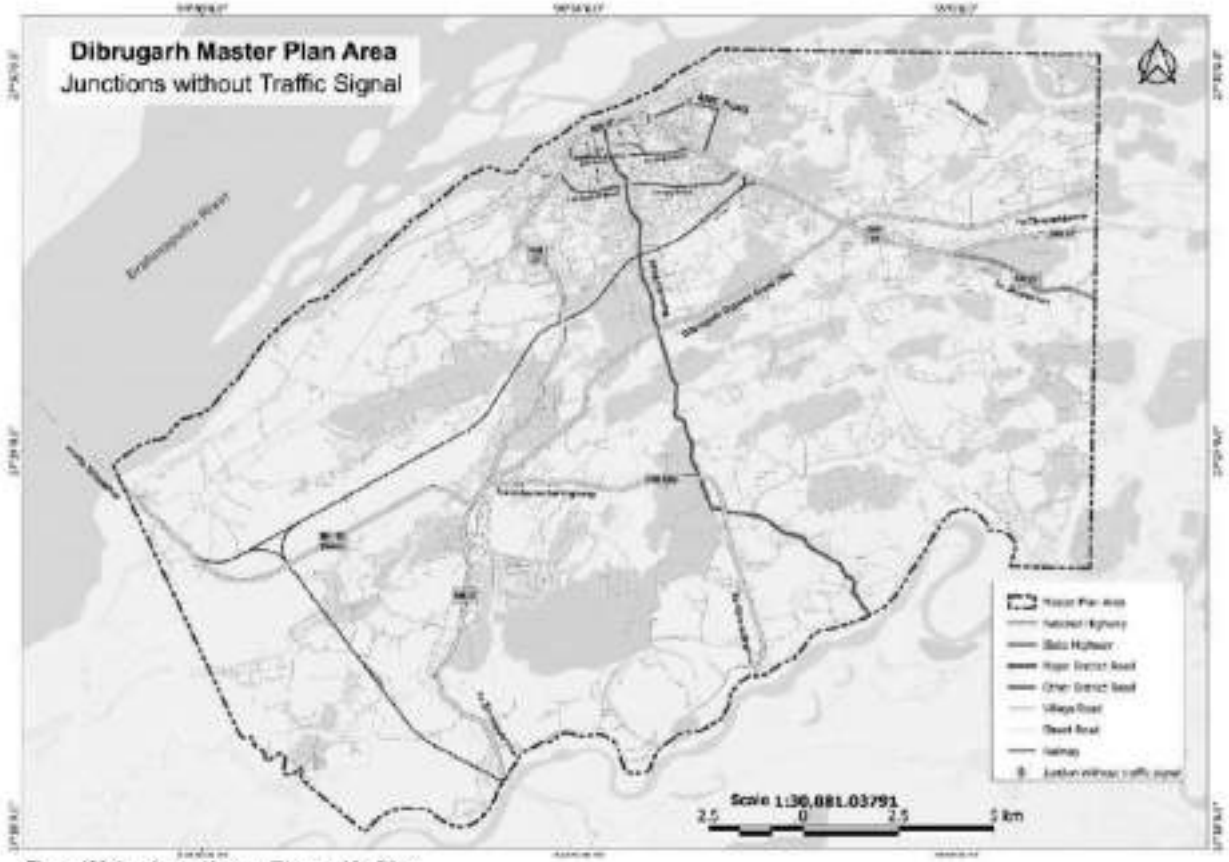


Figure 136 Junctions without traffic control facilities

7.13 PROPOSALS AND RECOMMENDATIONS

7.13.1 GRADE SEPARATION PROPOSAL

Grade separation is the separation of the levels at which roads cross one another to prevent conflicting rows of traffic or the possibility of accidents. Here the existing road is single lane with the 3.75 m of carriage way which is proposed to be a 4-lane road. The proposed location of grade separator is depicted in figure 137.

Table 185 Grade Separation Proposal

Length (KM)	Existing Configuration	Proposed Configuration
16.03	Single Lane (3.75m)	4 Lane divided

(Source: Compiled by Consultants)

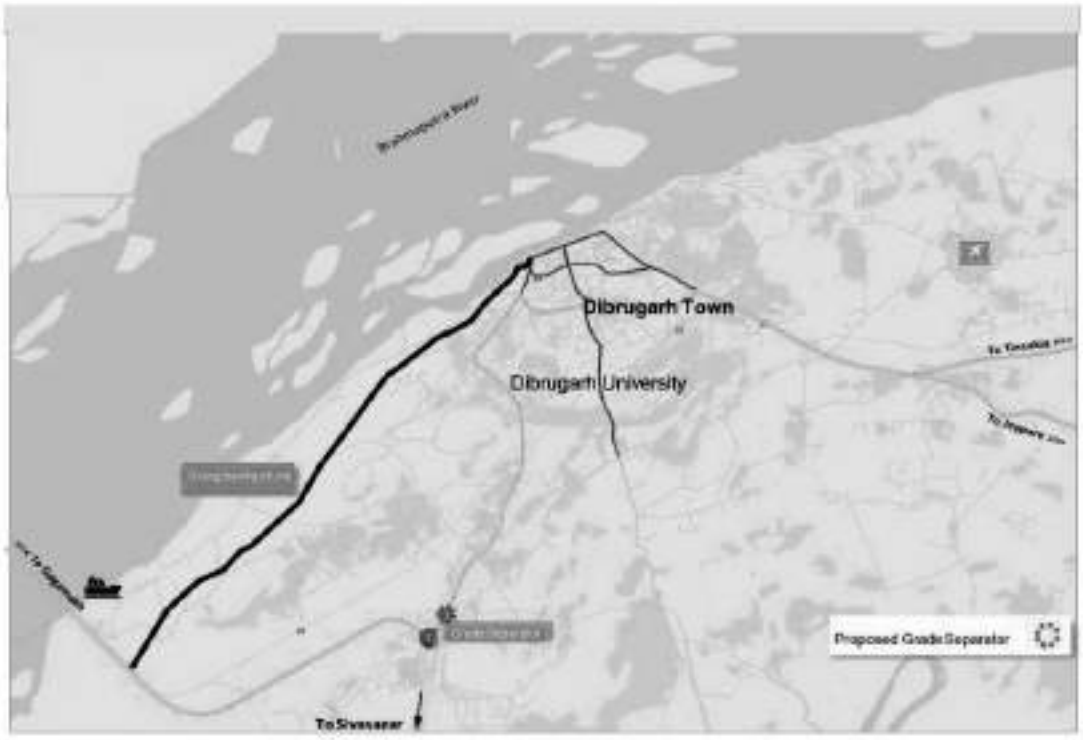


Figure 137 Proposed grade separator location

7.13.1.1 Grade Separator - 1 (NH-37 & Bypass Road Intersection)

A grade separator has been proposed on NH-37 which will divert the traffic and solve the issue of congestion. This is proposed on the NH-37 and bypass road intersection.

Refer figure 138 where the elevated section is shown with blue colour and the ram is shown in pink color.

Table 186 Road details of Intersection 1 - Grade Separation Proposal

Road	C.W. Width (m)	Lanes
NH 37/ NH 2	7.5	2 lanes undivided Two-way
Barbaruah Road	7	2 lanes undivided Two-way
Bypass Road	7.2	2 lanes undivided Two-way

Figure 138 Intersection 1 Proposed Grade Separation

7.13.1.2 Intersection - 2 (NH15 & NH-37)

Another proposed grade separator is on NH-15 to ease out the proposed daily traffic movement merging to NH-37. Since NH-37 is proposed for 60mt ROW, the traffic movement needs to be uninterrupted and that is only possible by designing such grade separator at the intersection.

Table 187 Road details of Intersection 2 - Grade Separation Proposal

Road	C.W. Width (m)	Lanes
NH 37	7.5	2 lanes undivided Two-way
NH 15	7.5	2 lanes undivided Two-way

Source: Compiled by Consultants

Figure 139 Intersection 2 Proposed Grade Separation

Source: Compiled by Consultants

7.13.1.3 Grade Separator - 3 (Mancotta Road R.O.B on Banipur Railwayline)

Another proposed grade separator is on Mancotta road to ease out the proposed daily traffic movement pass through Banipur railway line.

Table 188 Road details for ROB

Road	C.W. Width (m)	Lanes
Mancotta Road	7	2 lanes undivided Two-way

Figure 140 Proposed ROB on Mancotta road

7.13.1.4 Grade Separator - 4 (Khanikar Chariali)

Since Dibrugarh bypass is proposed for 60mt ROW, the traffic movement needs to be uninterrupted and to make it possible a grade separator at the Khanikar intersection required to take place.

Table 189 Road details of Khanikar Intersection

Road	C.W. Width (m)	Lanes
Mancotta road	7	2 lanes undivided Two-way
Dibrugarh bypass	10	2 lanes undivided Two-way

Figure 141 Proposed Grade separator on Bypass Road at Khanikar Chariali

7.13.1.5 Grade Separator - 5 (Banipur R.O.B)

Another proposed R.O.B is on Banipur Railway Station main lines to ease out the proposed daily traffic movement pass through current minor road surrounding railway station.

Figure 142 Proposed ROB on proposed major road near Banipur Railway Station

7.13.2 RING ROAD PROPOSAL

7.13.2.1 Widening and Acquisition in Proposed Ring Road

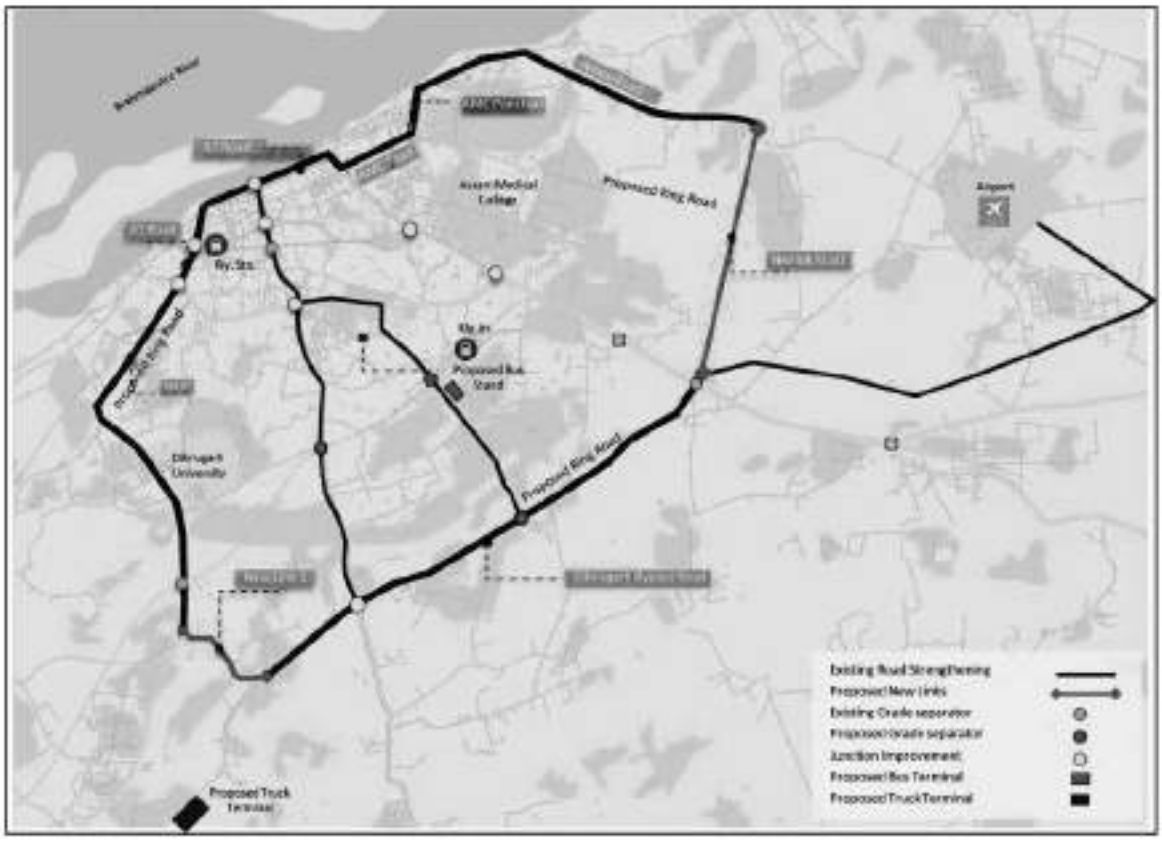


Figure 143 Proposed Improvements in Transport Infrastructure

Table 180 Ring Road Description

Sl. No.	Road Section	Length (km)	Existing C. W. (m)	Available Road Width (m)	Proposed Road Width (m)	Proposed Configuration
1	AT Road	2	7.0	12	24	4 lanes divided (widening required)
2	NH 37	7.14	7.5	14	30	4 lanes divided (widening required)
3	Dibrugarh Bypass Road	7.71	7.5	45	60	6 lanes divided (widening required)
4	AMC Road	1.17	6.0	10	18	4 lanes divided (widening required)
5	Paltan Bazar Road	0.67	6.0	10	18	4 lanes divided (widening required)
6	Airforce Road	5	6.0	-	30	4 lanes divided (widening required)
7	New Link 1	1.45	5.5	10	30	4 lanes divided (land acquisition required)
8	New Link 2	3.86	-	-	30	4 lanes divided (land acquisition required)
	Total	**29.00**				

7.13.2.2 Widening and Acquisition in Proposed Outer Ring Road

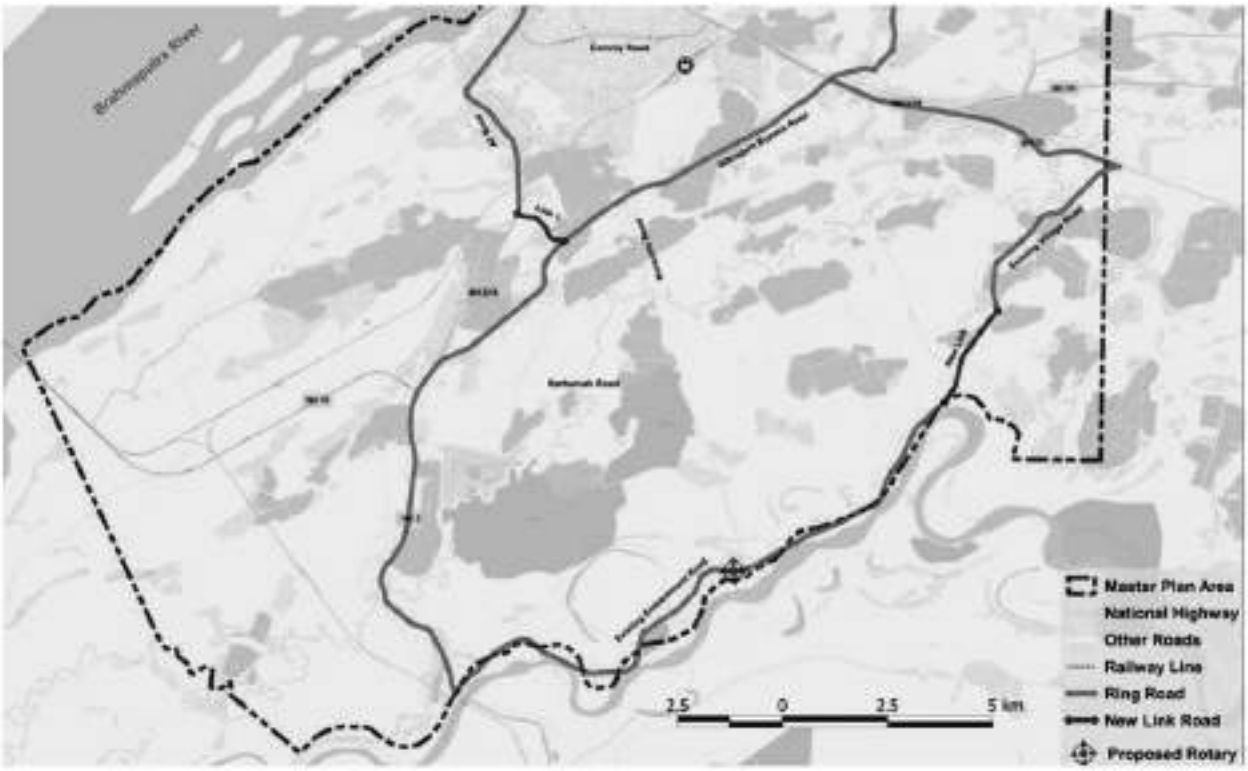


Figure 144 Proposed Outer Ring Road

Table 181 Outer Ring Road Description

Sl. No.	Road Section	Length (km)	Existing C. W. (m)	Available Road Width (m)	Proposed Road Width (m)	Proposed Configuration
1	Burhi Dihing River Embankment Road	16.04	4.5	6.5	45	4 lanes divided (widening required)
2	NH 37 (From Gammon Bridge to Borboruah Circle)	12.4	10.5	11	60	6 lanes divided (widening required)
3	Dibrugarh Bypass Road	9.68	7.5	12	60	6 lanes divided (widening required)
4	SH 23	4.6	6.8	8	45	4 lanes divided (widening required)
5	NH 37 (From Bokul to Lahowal)	2.82	6.5	11	30	4 lanes divided (widening required)
6	Village road	5.30	-	3.8	45	4 lanes divided (widening required)
7	New Link Road	2.78	-	-	45	4 lanes divided (land acquisition required)
Total		**53.62**				

7.13.3 PROPOSED IPT STANDS AND ROUTES

Intermediate Public Transport (IPT), sometimes known as Paratransit, refers to road vehicles used on hire for flexible passenger transportation, which do not follow a fixed time schedule. They may or may not follow a fixed route. It will be much viable if proper space allocation being done for the passanger transfer movement at prime locations. Here, mentioned in map are identified IPT stand for passenger's safe transfer for one mode to another mode.

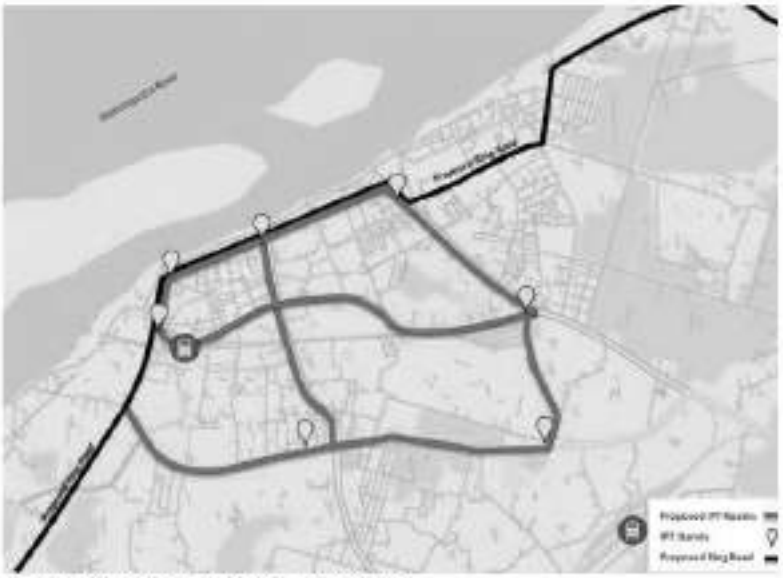


Figure 145 Proposed IPT stands and routes location

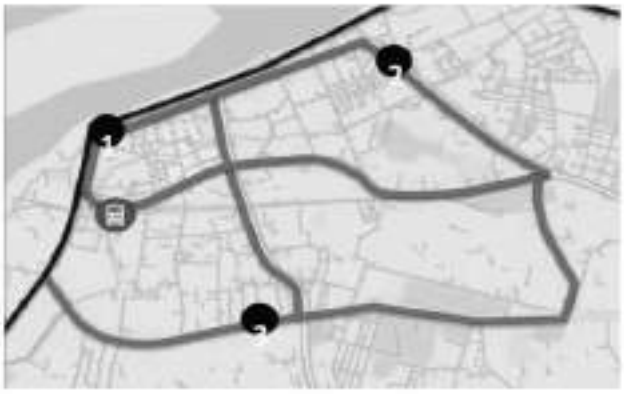


Figure 146 Proposal for IPT stands location

7.13.4 JUNCTION IMPROVEMENT

7.13.4.1 Intersection - 1 (Amolapatty Chariali)

The current capacity of junction may be improved by widening the road width of NH-37 by 24 mt. with divided 4 lanes, removing electricity poles and vendors along with geometric improvement and signalisation. Widening of T. R. Phukan Road and Steamer Ghat road will ease out maneuvering movement of vehicle around junction.

7.13.4.2Intersection - 2 (Thana Chariali)

The current capacity of junction may be improved by widening the road width of RKB Path by 15 mt. with divided 4 lanes, removing electricity poles and vendors along with geometric improvement and signalisation. Widening of Mancotta road up to 24 mt will ease out maneuvering movement of vehicle around junction.

7.13.4.3 Intersection - 3 (Gabharupothar Junction)

The current capacity of junction may be improved by widening the road width of K.C.Gogoi Road upto 15 mt. and NH-37 upto 18 mt. with divided 4 lanes. Additionally, removing electricity poles and Adhoc vendors along with channelization of junction, geometric improvement and signalisation will ease out the traffic condition at junction.

7.13.4.4 Intersection - 4 (Near Murlidhar Jalan Bus Terminus)

The current capacity of junction may be improved by closing right turn from Convoy Road to NH-37 and by facilitating U-turn access for Airport and Railway side turnings. Additionally, removing electricity poles and vendors along with geometric improvement and signalisation. Widening the road width of NH-37 upto 45 mt. with divided 4 lanes and Convoy Road up to 18 mt. will ease out maneuvering movement of vehicle around junction.

7.13.4.5 Intersection - 5 (Nr. Boga baba Masjid)

The current capacity of junction may be improved by widening the road width of NH-37 Path upto 24 mt. and RKB upto 18 mt. with divided 4 lanes. Additionally, removing electricity poles and Adhoc vendors along with channelization of junction, geometric improvement and signalisation will ease out the traffic condition at junction.

7.13.5 ROAD HIERARCHY

It is important to device a street classification which is in consideration with the proposed landuse. The roads are classified into the following 3 categories according to their function and activities that take place along the road.

Table 192 Road Category Proposed for Dibrugarh Planning Area

Sr. no	Category	Characteristics	ROW
1.	Arterial	• City to City linking • Largest volumes of traffic • Commercial/Mixed residential uses are predominant along the road	60 m
2.	Sub-Arterial	Mixed residential Use along the road • Feeding traffic to arterial roads	24 m & 30m
3.	Major Roads	Connecting residential areas with sub arterial roads/ arterial roads	18 m & 24 m

7.13.5.1 Arterial Road

A typical cross section of an arterial road is given in the figure below. It shall have carriageways, median, Multi Functional Zones (MFZ), service lanes and footpaths. Multi functional zone is a zone to accommodate street components such as tree planting, auto rickshaw stand, hawkers zone, bus stop, traffic police booth, fire hydrants, street lights etc. as per the requirement. The RoW of the arterial roads varies between 45m and 60m

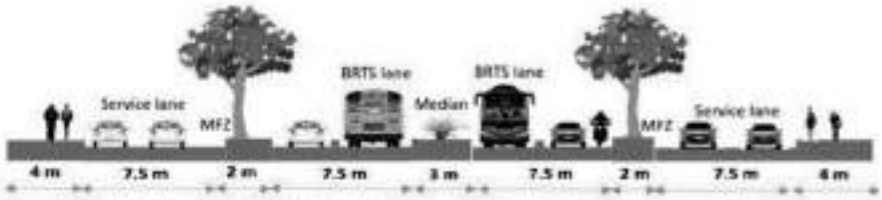


Figure 147 Cross Section of 45m wide Arterial Road

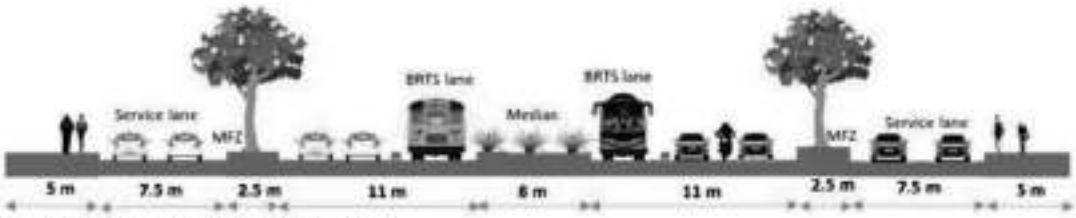


Figure 148 Cross Section of 60m wide Arterial Road

7.13.5.2Sub-Arterial Roads

Sub arterial roads shall have carriage ways, median, service lanes, Multi-Functional Zones and sidewalks as shown in the figure. As mentioned earlier, the RoW of the sub-arterial road is between 24m or 30m.

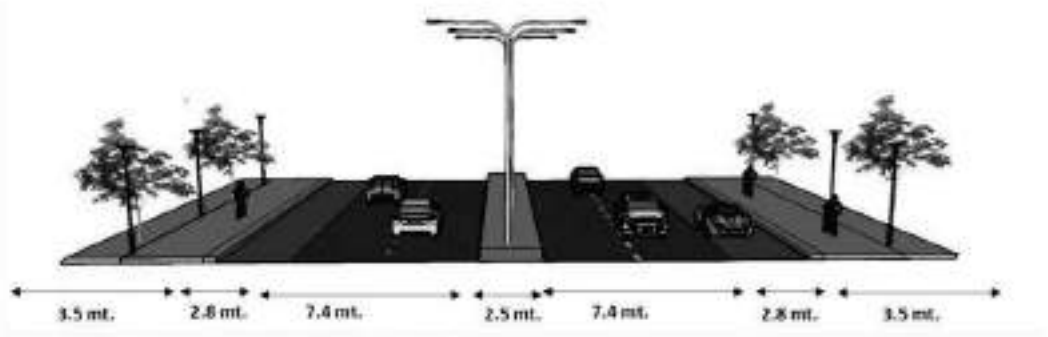


Figure 149 Cross Section of 30m wide Sub-Arterial Road

7.13.5.3 Major Roads

Major roads shall have Carriage ways, median, Multi Functional Zones and sidewalks as shown in the figure. As mentioned earlier, the width of the major road is either 18m or 24m.

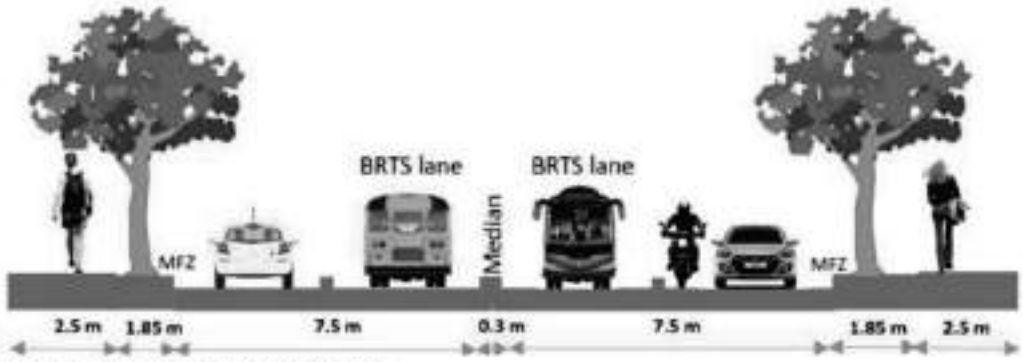


Figure 150 Cross Section of 24m wide Major Road

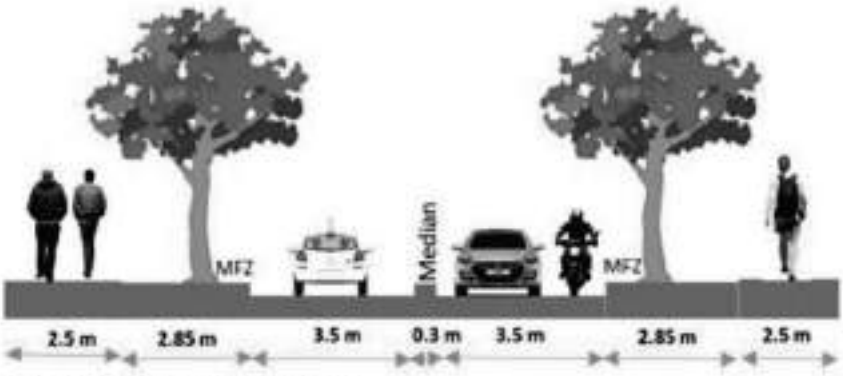


Figure 151 Cross Section of 18m wide Major Road

7.13.6 PROPOSED ROAD NETWORK FOR DMPA

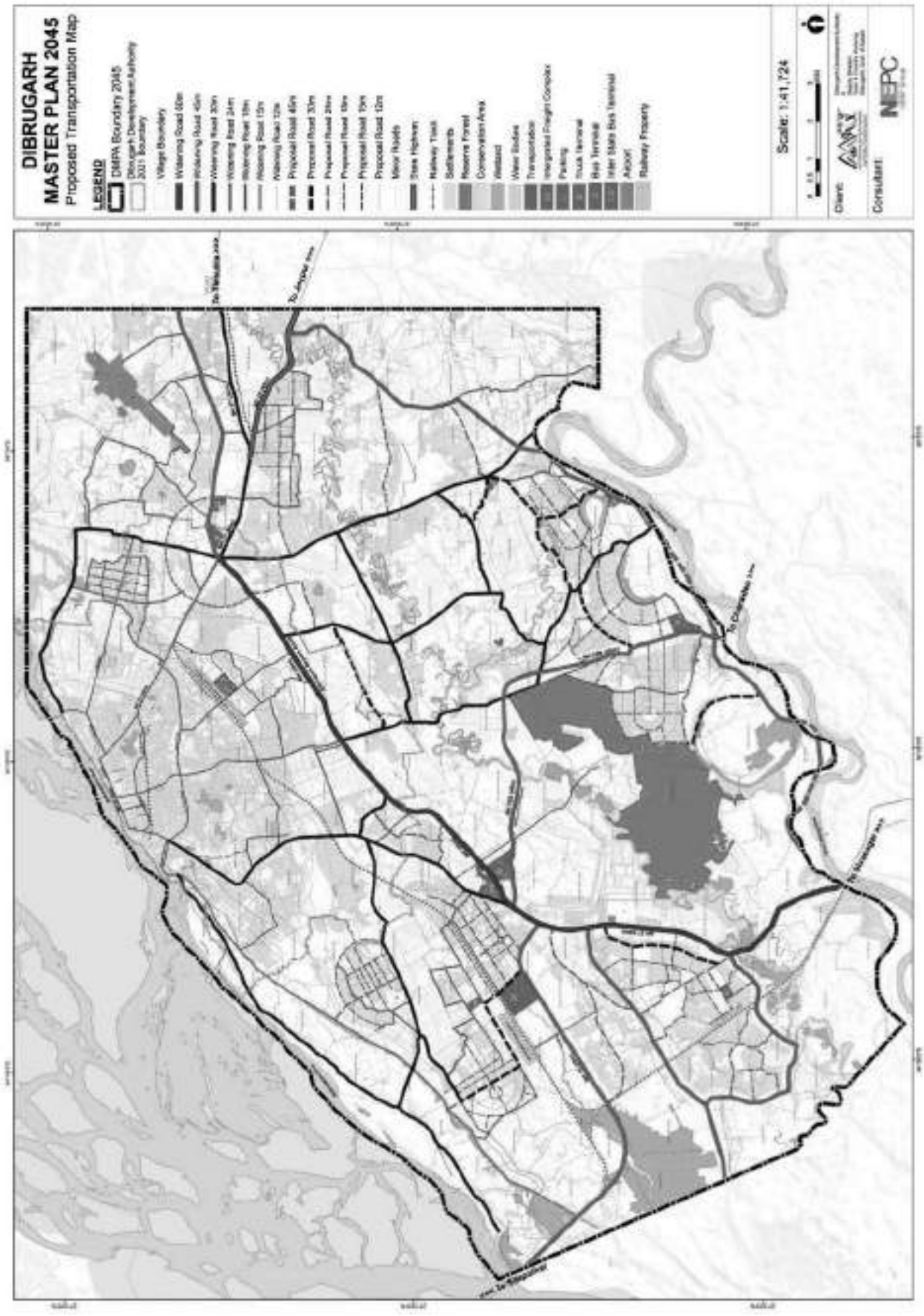


Figure 152 Proposed Road Network for DMPA 2045

7.13.7 ON-STREET AND OFF-STREET PARKING

As discussed above in section 7.12 Issues, there is no dedicated parking space available in Dibrugarh Planning Area. During reconnaissance survey, On-street Parking has been observed at various locations like NH-37 (AT Road), Mancotta road, Convoy Main Road, TR Phukan intersection, and Cole Road in Dibrugarh Planning Area leading to massive congestion and decreasing the road capacity.

In view of this, there is dire need for providing off street parking facility in potential commercial areas or in close proximity in CBD area. The off-street Car Parking facilities are proposed at different locations mentioned below in Map. The need of Multi Level Car Parking will also be required near Existing Banipur Railway Station. Rest of the locations are identified for on street and off street ground parkings. The Locations are as mentioned below.

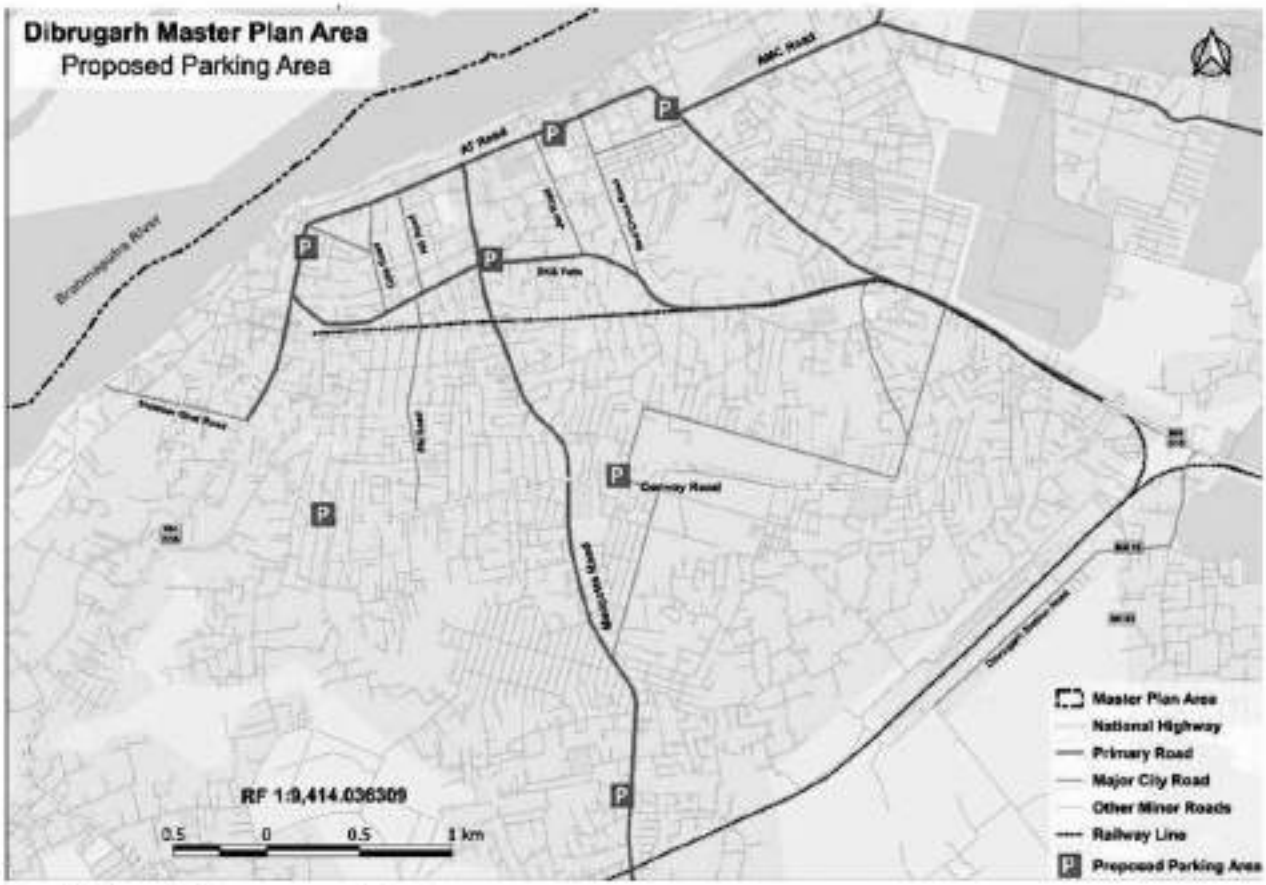


Figure 153 Proposed Parking area near around Core city area

7.13.8 PUBLIC TRANSPORT PROPOSALS

7.13.8.1 BRTS (Bus Rapid Transit System)

Bus Rapid Transit System (BRTS) are generally a high-quality bus based transit system that focuses its operations in large urban areas with fast, comfortable, cost effective services catered for larger commuter populations. BRTS achieves it through the adoption of dedicated lanes with bus bays and bus stations typically aligned to the center of the road, off board fare collection and fast and frequent operations. BRTS is similar to a light rail system, it is considered to be more reliable, convenient and faster than regular bus services due to the fact that they run on dedicate bus bays and hence not delayed by the regular city traffic.

The Dibrugarh City bus system needs to be improved to attract a large portion of the commuters to avoid the use of private vehicles in favour of public transport. For this the prevailing city bus system needs to be strengthened, this can act as a support for the mass rapid transit systems which are elaborated above. BRTS is a successful system adopted by many Indian cities like Ahmedabad and Indore. Due to faster implementation, lesser capital investment BRTS is a good alternative for sustainable transport solution for the planning area. BRTS can be implemented along the major transit corridors like NH-37, NH-52B, SH-23, NH-15, Dibrugarh Bypass road, Mancotta Road, Convoy Road, T R Phukan Road, AT Road, RKB Road, KC Gogoi Road and other major roads like AMC Road. Due to the non-contiguous nature of the planning area BRTS on these said roads might have to pass through normal traffic in areas which falls under core city centre, this might affect the operational advantage of BRTS systems.

Figure 154 Bus Rapid Transit System

7.13.9 PROPOSED TOD CORRIDORS

There are four TOD corridors proposed in Planning Area. Corridor 1 is proposed from Guwahati university to Dibrugarh bypass road of 4.3km length as a part of ring road. Corridor 2 is proposed on NH 15 from Thengal gaon railway line to Sukafaa tinali of 5.5 km on NH 2 (old NH 37). Corridor 3 is Ghoronia Tea Estateon NH 2 (old NH 37) to Bokul Flyover of 18.6 km through bypass road and Corridor 4 is from Borboruah point on NH 2 (old NH 37) to Khanikar charlali via Sessa Tea Estate through NH 52B of 10.2 km. Total 38.6 km of linear TOD zone proposed on identified prime arterial roads. Mixed Commercial Zone is proposed along these corridors except the land covered by Tea Estates. The FAR in this zone is suggested to be 250. Apart from this, construction of Multi Story Buildings will be promoted. For Multi Story buildings, the FAR is suggested to be increased from 250 to 300 with height permissibility of 40m from 30m. Hence, density of the surrounding area of the corridors will increase.

These corridors are proposed as Bus Augmentation Corridors under Comprehensive Development Plan for Dibrugarh due to which connectivity to surrounding locations will be increased. The proposed ISBT at Borboruah point is located on the Corridor 3 shown in the map due to which the possibilities of availability of various mode of transportation will be increased. All these corridors are having Residential, Commercial, Mixed Residential Zone and Public & Semi-Public Zone along them. For these zones, FAR is suggested to be 250 from 180 with height permissibility of 20m from 15m. These zones will be densified due to such higher provision of FAR and height permissibility. Due to such various provisions, the use of Public Transportation will be increased along these corridors. Mixed use Development shall be promoted along these corridors.