CHAPTER 3

APPRAISAL OF A FEW URBAN MASTER PLANS OF ASSAM WITH SPECIAL REFERENCE TO ROAD TRAFFIC PLANNING

3.1 Appraisal of Master Plan for Guwahati

Guwahati, the capital of Assam, is the most important city in North-East India in terms of its population size, transport connectivity and strategic location. It is situated on the southern bank of the river Brahmaputra in the intersection of 26°10' North latitude and 92°49' East longitude. It is on an undulating plain with varying altitudes above 49.5 m from the mean sea level (MSL). The southern and the eastern parts of the city are surrounded by hills and hillocks. The central part also has some small hillocks. The city is dotted with swamps, marshes and other water bodies.

![Location of Guwahati](image)

In order to deal with rapid urbanisation and related issues, the state Government had adopted a Master Plan for Greater Guwahati in 1965. It was prepared under Section 10 of the Assam Town and Country Planning Act, 1959. The Plan’s perspective was to ensure right kind of development till 1986. In February 1987, the Modified Master Plan and Zoning Regulations for the town were published and entrusted the Guwahati Metropolitan Development Authority for implementation. This plan had a plan perspective till 2001.
The Master Plan, which is now being implemented, is a Comprehensive Master Plan (CMP) for the Guwahati Metropolitan Area (GMA), with the year 2025 in perspective, under the Guwahati Metropolitan Development Authority (GMDA) Act, 1985. The total area covered by this plan is about 262 sq. km. The vision for Guwahati for its development is through to the year 2025, as the draft of the plan states: “Guwahati city to be one of the most admired state capitals of India, as the gateway to the North-East, with a unique image of its own”.

This CMP of Guwahati gives a good idea about the prevailing situation in the city, its future perspective and the investment plan. While comparing with the previous master plans for the town, it is seen that there are some major changes in this revised plan over the previous ones. For instance, the area of the master plan jurisdiction has been fairly extended. Besides, the CMP contains a number of coloured maps with details of land use and services. It seems that the CMP was prepared using statistical and spatial information on the city. However, in the revised master plan, like in its predecessors, the authorities stated that they were handicapped by data limitations at the city level. For instance, due to lack of adequate secondary data at the household level, in Section 5.1.6 on Situation Analysis for Household Characteristics, the plan had to resort to a sample survey covering only 1.63 per cent of the households of the entire plan area. Similarly, adequate secondary data at the household level on water supply, sanitation, solid waste management etc. are not provided. The following is an overview of the existing situation of the city as reported in the master plan draft.

3.1.1 Demography

The analysis presented in the master plan draft reveals that Guwahati experienced phenomenal growth only after independence of the country. Again, it is only since 1972, when the state capital was shifted from Shillong to Dispur (Guwahati) that the city had gained political importance and since then the city has grown enormously in terms of population and development of commercial activities. The population of Guwahati was only 8,394 in 1891, and it crossed the one lakh mark in 1961 but the population of Guwahati Municipal Corporation Area in 2001 became 8,09,895 persons. This stride in population indicates the pace of growth of the city.
Based on the past population growth trends, the plan had worked out the low, medium and high-population estimates for Guwahati Metropolitan Area for the period 2005 to 2025 as 19.10 lakh, 21.74 lakh and 22.50 lakh respectively. The plan had used the medium projection of 21.74 lakh for the planned development of GMA.

Besides the normal population in the city, the plan had reported that there is a floating population of about 10%, who come to Guwahati during the day time for various activities. Thus, it had worked out a daytime population in Guwahati, in 2025, to be at 22.94 lakh.

3.1.2 Economic base and work areas

Guwahati is arguably the most important hub of economic activities in North-East India. The major work areas in the city are:

1. Trade and commerce in terms of wholesale-cum-retail in and around Fancy Bazaar, Machikhowa, Paltan Bazaar; retail shops at Athgaon, Pan Bazaar, Ulubari, Silpukhri, Chandmari, Noonmati, Ganeshguri, Beltola, Maligaon, and Kalapahar; service shops distributed throughout the city; the informal sector trade and services scattered in the city; the weekly market in the Beltola area etc. As a whole, this sector engages over 30% of the work force of the city.

2. The industrial activity in terms of manufacturing in household industries and manufacturing in other than household industries. This sector supports about 20% of the work force.

3. Transportation, storage and communication sector engages around 10% of the work force.

4. Other services engage more than 34% of the work force at present.

Thus the workplaces are distributed all over the city, and these vary with the type, intensity and scale of activities. The land use plan reflects the spatial distribution of such activities and, hence, the people and the work spaces. The spatial distribution of employment seems to be based on the concept of multi-nuclei structure, land use pattern and the levels of accessibility.

The total size of the workforce, including floating employment, is estimated to be 8,60,866. The basis for this estimation was the data taken from Census of India. The census
data also show that the Workforce Participation Rate (WFPR) in the Guwahati Municipal Corporation Area increased from 32.3% in 1971 to 35.1% in 2001. In view of this trend, the plan had adopted a WFPR of 36% for GMA for the year 2025.

3.1.3 Land use

The Comprehensive Master Plan for Guwahati gives a fairly good idea of the present and proposed land use pattern. It also analyses the provisions in the master plan in Chapter No. 13. For the purpose of planning, it had divided the area under the GMA into nine use-zones. They are residential, commercial, industrial, public and semi-public, recreational, transportation, eco-sensitive zone, composite-use I and composite use II. The composite use I includes residential, commercial, and public- and semi-public uses, whereas composite use II includes residential, commercial, public- and semi-public and industrial (existing) uses. It has also prepared the Land use Plan – 2025 for GMA and presented in figure 12.1 of the CMP draft (Fig. 3.2).

Fig. 3.2: Land use zoning plan of Guwahati CMP-2025(Source: CMP-2025)

As stated in the draft, the preparation of this land use plan was based on the following:

(i) the vision and goals as enunciated in the plan,
(ii) Restructuring of land uses based on sectoral studies,
(iii) Accommodating the existing developments as possible,
(iv) Addition of three new towns for specific economic activities,
(v) Land use-transportation integration, and
(vi) The requirement of additional physical and social infrastructure

3.1.4 Transport system

The details of existing transport system and the proposed one are dealt with in Chapter 5 of the CMP. For the purpose of transport planning, it has divided the GMA area into 71 traffic zones coterminous with the planning sub-units. Similarly, the external areas are divided into 36 traffic zones.

To appreciate the traffic and travel characteristics for identifying the issues, constraints and potentials and to work out the most appropriate transport system for the city, the plan has reported that it had carried out the required traffic surveys and studies. For instance, it states that it had studied a main road network of 171.3 km in GMA for the purpose. Of these, arterial roads accounted for 42.3 km, while sub-arterials for 54.3 km. The results of this study show that only 42% of the road length had a carriageway of 7.0 m (2 lanes) and above; 72% of road length did not have footpaths and nearly 70% of the road length did not have street lighting facility.

The traffic volume survey for the purpose was reported to be done in 2004, which revealed that a total of 71,824 vehicles (1,07,819 PCUs) entered and exited the study area at the Outer Cordon (OC), on an average day. The peak hour volume at OC stations ranged between 7.4% and 14.4% of the Average Daily Traffic (ADT). Goods modes accounted for 18.6% of the ADT at the OC, while 2.9% of the passenger modes and 7.8% of goods modes at OC were ‘through’ in nature. Of the whole, 25% of goods vehicles at the OC were empty. Section 6.4.12 of the CMP-2025 deals with the traffic characteristics related to the movement of goods. About the inner cordon (IC), the same study found a total of 2,23,871 vehicles (2,55,118 PCUs) crossed the IC on an average day. Motorised modes ranged between 41% and 91% at different count stations along the IC and nearly 50% of the vehicles at the IC had a trip of 15 km. The traffic composition at IC and OC is well presented in figure 5.2 of the CMP-2025 (Fig. 3.3).
It is appreciable that the transport planning in CMP is also based on a household interview survey, which covered 1.63% of the households in the city. The details of age structure, monthly expenditure and occupation were estimated from this survey and presented in figure 5.3 of the CMP-2025 (Fig.3.4).

The survey was also used for revealing the trip characteristics of the city dwellers. It is reported that out of the total of 9,24,282 trips made by households in GMA on an average day, 18.2% were on foot, 31.3% were in private vehicles, 30.2% were in buses, 13.5% by intermediate public transport, and the rest covered 6.1%. Again, of the average trip length of 5.8 km, the average trip length by walking was 1.16 km, while the distance traversed by a 'city bus' was 7.31 km. Work was the predominant purpose of trips (32.08%). Business accounted for 22.63% of the trips and 15.01% trips were for education.

The CMP-2025, in its analysis of residential patterns and availability of land for development, had distributed the estimated population among the various planning sub-units (traffic zones). The overall gross city level density is proposed to increase from 34 to
68 persons per hectare. The residential densities by traffic zones range between 267 to 600 persons per hectare.

3.1.5 Travel demand forecast

Based on the aforementioned data the plan had estimated the travel demand (in terms of passenger-kms) of the GMA to be 5.36 million km per day. Of that, travel on foot accounted for only 3.64%, while the rest were connected to some form of vehicular
transport. The plan had also estimated the inter-city traffic. It was estimated based on projected growth rates, by mode type. To estimate the future inter-city and through traffic, the plan had used the growth rates of traffic from previous studies. It is estimated that about 2.79 million person trips will be performed in the city every day by 2025. In addition to this, there are the inter-city trips on intra-city system and commercial vehicles. The modal split model shows the following:

**Non-motorised transport**

Walk and cycle modes: 12.14% (excluding the access walk trips)

**Motorised vehicular modes**

- Public transport
  - Buses - 47.99%
  - Intermediate public transport (IPT) - 6.65%
- Private transport
  - Two wheeler - 24.66%
  - Car - 8.56%

### 3.1.6 Policy framework

As the draft master plan states, The National Urban Transport Policy (NUTP) of the Ministry of Urban Development, Government of India (which is a path breaking step in urban development in general and urban transport planning, development, operation and management, in particular) forms the basis for its policy framework.

### 3.1.7 Transport system development plan for the city

At the state (Assam) and regional (North East Region) level, the most important program that affects the transport plan of GMA is the development of east-west national highway corridor from Silchar to Porbandar, which passes through GMA (NHs 37 and 31). A large volume of inter-state and international traffic is expected to move on this corridor. Hence, it is important to establish the interface between the intra-GMA and inter-region road systems and also to define the path for regional traffic within the GMA. So, to facilitate inter-regional and intra-GMA freight traffic, the plan had proposed a new peripheral road system in the GMA. This includes construction of a new bridge across the Brahmaputra, east of the existing bridge at Saraighat. At the city level, the CMP recommends development of a hierarchy-based arterial road network system comprising primary arterial, sub-arterial and collector roads. The main functional roads recommended
include peripheral ring road to enable movement of bypass traffic, CBD orbital, ring roads, city radials/axial, alternative corridors, all purpose roads in the city centre.

On the whole, around 194 km of additional road network is proposed to be developed over and above the existing network. This configuration reflects the net effective carriageway requirements for traffic movement.

Besides, the existing roads are also proposed to be upgraded in terms of right of way (R/W), capacity and other geometrics. Within the core area, it is proposed that the roads will be developed as all-purpose roads.

About the R/W, the primary arterial roads will have a R/W varying between 45 to 60 m. The city level roads comprise sub-arterial roads – 24 to 45 m R/W, and collector roads – 15 to 24 m R/W. At the local level, the CMP has proposed to follow the network grids, each encompass an area of about 2 - 3 sq. km. The roads within each grid are expected to be planned as part of the local area plan (LAP) for each sector. Again, residential access roads are expected to be planned and developed as part of residential area development plans.

![GUWAHATI MASTER PLAN AREA PROPOSED ROAD NETWORK](image)

Fig. 3.5: Existing and proposed roads (Source: CMP-2025)

Turning to the central business district (CBD), as traffic volumes on these roads will be high, the plan does not emphasise on speed, but on providing parking space. However, it had indicated that the parking spaces would be in accordance with the parking policy. The
plan also had envisaged wide footpaths, safe crossing, refuge islands, clear markings, good lighting, guard rails etc. to be important components of the roads in the CBD.

Another plan that has been proposed is the development of radial-cum-orbital network, as against the present radial corridors diverging from the city CBD area. But in this point the plan had failed to give any detail idea as to how this would be done.

A tunnel link is also proposed to connect the proposed orbital road through Dhirenpara, Kahilipara and Dispur Last Gate to AT Road. It is said that this link is going to carry substantial amount of traffic. But tunneling is very expensive. So, it seems to be not justifiable.

As far as the public mass transport system is concerned, the plan has suggested and conceptualised an integrated multi-modal transport system. The component modes include the bus system catering to the plan area, supported by a medium capacity rail-based system along three identified corridors and supplemented by the IPT modes. For this, the plan has a vision to provide the bus system with a good infrastructure support in terms of depots, terminals, stops etc. But here question arises as to whether these suggestions are based on any field surveys or not.

The CMP recommended that traffic system management (TSM) plans be prepared on an area and corridor basis. It would include the circulation system, segregation and minimizing of conflicting movements, priority for high occupancy vehicles, appropriate geometric design and installation of control systems at intersections, identification and provision of facilities for pedestrians, identification and allocation of parking areas, provision of traffic signs, lane markings etc. and a concerted program of enforcement and education. Pedestrianisation of areas and streets in the CBD is aimed to be a part of TSM. In addition, the TSM plans are said to be prepared on a continuous basis for critical areas and corridors for optimizing the usage of the system capacity. The transport system plan also includes improvement of intersection geometrics, including provision of channelisers, acceleration/deceleration lanes, traffic signs, lighting etc., and provision of appropriate traffic control systems. In all, about seven intersections are recommended for grade separation during the plan period. However, 12 junctions have been identified for improvement.
3.1.8 Provision of parking

Parking characteristics within Guwahati vary from area to area. The on-street parking surveys carried out as part of the Master Plan Study presented the following characteristics:

- Peak accumulation per half an hour is high, ranging between 143 equivalent car spaces (AT Road) to 237 equivalent car spaces (HB Road).
- Two-wheelers constitute the major share (around 54%) of parked vehicles.
- Short-term (up to two hours) parking accounted for the maximum share (80 to 92%).
- Medium-term (two to four hours) parking accounted for a low of 7% (AT Road) to a high of 29.3% (on MS Road).
- Long-term parking was considerably low at all stretches, ranging between 2 to 6.1%, except at two locations, where it was 15.8 and 8.2% respectively (MS Road and Kedar Road).

Based on the above characteristics, provision of parking areas are proposed to be through multi-pronged strategies, providing parking areas at three levels (or types):

- On-street
- Public off-street spaces
- Private off-street spaces

**On-street Parking**

On-street parking is proposed to be provided with due respect to the functional hierarchy of the roads. For example, the plan states that on arterial and sub-arterial road links, on-street parking will be provided only if the road is six-lanes or more wide. On collector streets, on street parking will be provided if the road is of four-lanes without a median. The plan also aims at providing safety margins at intersections.

**Off-street public parking**

The plan aims to promote off-street parking facilities as a business venture by provision of land at concessional lease rates, permitting the facility to be a multi-use complex and prescribing charges for parking based on vehicle type and duration of parking. Regarding the location, Park and Ride System Parking Policy will be integrated with public
mass transport system policies and planning. Every major terminal of the bus system and every station of the medium/high capacity system like bus rapid transit/light rail transit shall be developed as a ‘park and ride’ facility. Adequate parking areas for different modes have been envisaged as part of public mass transport stations, particularly in outlying residential areas, so that people can park their private modes of transport at these stations and travel by public mass transport. It is recommended to develop off-street parking facilities along ‘traffic collars’, a series of imaginary circular rings spaced away from the central area (14 parking areas, of about 1 ha. each to accommodate about 300 cars at each individual location are proposed to be developed: 12 as part of facility centres, one individual location and one as part of present jail area).

3.2 Appraisal of Master Plan for Goalpara

The master plan for Goalpara was published on 27th Nov, 2007. It contains a number of maps giving details of land use and services of Goalpara town, the administrative headquarter of Goalpara district of Assam. The master plan has been prepared giving both statistical and spatial information for the master plan area.

Goalpara is one of the oldest towns in Assam. It is primarily an administrative town. The plan takes into consideration a time frame extending up to 2021 and envisages a scientific coordinated approach for the future development of the adjoining potential villages along with the development of the existing town. The objective is to achieve a balanced growth of the town and to avoid haphazard development.

As has been stated in the master plan, the demarcation of the planning area was made after careful study of the present trend of growth of the town, the physical feature of the surrounding areas, communication network and the potential for future development. The total area covered by Goalpara master plan is 71.49 sq. km.

3.2.1 Demography

While preparing the master plan for Greater Goalpara, the demographic aspect has been thoroughly studied and the plan has been prepared to cater to the various needs of its present as well as future population.

The population of the plan area as per 2001 Census was 85,354 as against 72,884 in 1991. The projection of population for the master plan area has been worked out to be
1,02,598 in 2011 and 1,17,527 in 2021. This estimation has been done by considering (a) natural growth, (b) trend of migration of population from rural to urban area, (c) impact of newly constructed Naranarayan Setu and (d) impact of various developmental projects in the town.

3.2.2 Economic base and occupational pattern

The economy of Goalpara town is based primarily on trade and commerce and government jobs. In fact, out of the total employed persons, 68.45% are engaged in tertiary sector, basically in government jobs. The trend of industrialisation in and around the town is very slow. Employment in the secondary sector, which is an indicator of economic growth, is low. The secondary sector as a whole engages 18.75% of the employees in the town and the rest 13.01% is in the primary sector.

In view of the above scenario of economic base and occupational pattern, the master plan observes that the economy of a town like Goalpara can not merely thrive on government sector employment. Therefore, it is imperative that adequate urban infrastructure along with power supply and good road communication be provided to attract small and medium scale industries to boost the economy of entire region.

3.2.3 Land use

The master plan of Goalpara gives a fairly good idea of the present and proposed land use pattern. Maps have also been provided in the plan on the land use patterns. The existing land use of the Master Plan Area, as per survey conducted by T&CP, Goalpara, 1998, is given in Table 6 of the master plan. However, the change in land use is not given.

The appreciable point of the plan is that, it has incorporated the analysis of the land resources of the master plan area (Table 7 of the master plan). This table shows that out of the total land, 18.17% is already under inhabited area and about 30.38% land of the town can still be developed for different uses.

The proposed land use up to 2021 is given in Table 14 of the master plan. The land use plan has been prepared taking into consideration the minimum dislocation of the existing land use, establishing workplace and living area relationship. The entire area is also planned to achieve safe and free movement of passengers and goods, better living environment and efficient urban infrastructure and civic amenities (Fig. 3.6).
3.2.4 Transport system

A major development in the transportation sector was ushered in this area after the completion of the Naranarayan Setu – a road-cum-railway bridge over the river Brahmaputra and today, Goalpara occupies a very important place in the traffic and transportation map of the region. As far as the basic road pattern of Goalpara town is concerned, it is governed by two major arteries, viz., Agia road and Matia road, which connect the town with the National Highway 37. Another important road of the town is the Pancharatna road. It serves as the link road from the Naranarayan Setu to the town. Among these, the Agia road is the major transport corridor with which all other roads including Matia road are connected. This road is the link between the town and the National Highway and carries all the traffic through the heart of the town. As almost all vehicular movement takes place along this road, it is suffering from traffic problems and congestion.

Coming to the road system, except in some parts of the town, the road system as a whole is very irregular. The total length of all categories of roads within Goalpara master plan area is 149.43 km, out of which 31.16% is black topped, 4.22% is WBM, 12.86% is gravel and 51.76% is earthen and brick paved. Lack of road hierarchy, narrow width,
improper geometries and poor maintenance of the roads make the level of transport service very poor. Some preliminary traffic surveys and studies are seen to carry out for developing the transport system. These include the traffic volume survey for the two major peak time of the day (Table 12.A and 12.B of the master plan). These tables show that the traffic of the town consists of motor vehicles, rickshaws, bicycle, hand-carts and pedestrians. The volume of fast moving traffic is 36.56% of the total traffic, showing the predominance of the slow moving ones.

3.2.5 Proposed circulation plan

The master plan of the town is expected to achieve the following goals through the proposed circulation plan -

(i) Quicker movement of goods and passengers within the planning area.

(ii) Direct linkage between the different traffic generating points for easy accessibility.

![GOALPARA MASTER PLAN AREA PROPOSED CIRCULATION PLAN, 2021](image)

Fig. 3.7: Proposed circulation network in the master plan area of Goalpara

In order to improve the present circulation system and to remove the traffic congestion within the town, the following points are suggested in the master plan, which can be adopted as short-terms measures. They include (a) improvement of the road junctions near ASTC, Nayapara, Borobazar, Idgah, BOC and Beltola points, (b)
improvement and widening of Agia road, (c) clearing and removal of unauthorized shops and vendors selling vegetables etc. along the streets in the municipal markets and in front of the Goalpara College, (d) enforcement of timing for entry of heavy vehicles into the town for loading and unloading, (e) improvement of the road linking the railway station with the town and (f) improvement of the link road to Goalpara via Pancharatna.

Since the railway line passes through the master plan area, quite a number of level crossings are there and to avoid this bottleneck a secondary road is proposed parallel to the railway line with two railway foot path-cum-over bridges. Besides, for the smooth movement of traffic through the existing roads, suitable arrangement for level-crossing is proposed at several points where the railway line crosses the roads (Fig.3.7).

3.2.6 Terminal facilities

Truck Terminal - a truck terminal is proposed at the southern part of the master plan area at Kalyanpur village along the National Highway. This can be equipped with godowns and cold storage facilities depending on the demand and can be transformed in to a full fledged truck terminal.

Bus-terminal - a bus terminal is already under construction besides the Hasila Beel, Pancharatna Road under the Integrated Development of Small and Medium Town (IDSMT) scheme. Once completed, this will be adequate to take care of the future demand during the plan period.

3.2.7 Provision of parking

With the growth of passenger vehicles over the years in Goalpara, the growing scarcity of parking space has started manifesting particularly in the town centre. This problem is proposed to be addressed properly by providing on street parking at strategic points and also by implementing the building bylaws and related regulations which prescribe minimum parking spaces required for public and semi-public buildings.

3.3 Appraisal of Master Plan for Dibrugarh

Dibrugarh is one of the five towns of Assam, which have seen their revised master plans. The revised master plan for Dibrugarh town was published on 27th February, 2004 and it had an aim to get the full fruits of the schemes and proposals presented in it. The draft of the plan contains three maps giving details of land use zoning plan and circulation plan
for the town. It is prepared giving both statistical and spatial information for the master plan area, by dividing the plan area into urban and rural area.

As far as the town of Dibrugarh is concerned, it is the administrative headquarters of the Dibrugarh District. It was originally a tea exporting town of Assam but now it is an important commercial centre serving the entire Upper Assam region. It has also its fame and importance for the Assam Medical College and the Dibrugarh University. The town is located on the south bank of the Brahmaputra at 27°28’ N latitude and 94°35’ E longitude and is surrounded mostly by tea gardens.

The revised master plan of Dibrugarh covers an area of 66.14 sq. km and it presents the developmental plan and proposals that spread over a period of 30 years i.e. up to 2021. Importantly, Dibrugarh Development Authority looks after the implementation of the guidelines of the plan.

The revised master plan of the town advocates that the concept of the plan has been developed in the context of the different objectives and in response to the immediate need and critical problems of the existing town and its environs. The plan envisages the urbanisable limits of Dibrugarh to be within the Brahmaputra river on the North, Dainijan Khanikar Road on the South, A.T. Road and Barbari Tea-Estate on the East and Behaiting Tea-Estate on the West. This area was selected in such a way that the existing tea gardens and the agricultural lands separate the plan area from the neighbouring rural areas.

In the plan area, the emphasis is seen to be given on some particular objectives. For the residential areas, for instance, the plan formulated the objective to restrict the development of residential areas into three particular areas of the town. These are (i) along the western side of the A.T. Road from Railway Workshop to Chawlkhowa Area, (ii) along the western side of the Mancotta Road, from Convoy Road to Kakhanikar Dairy Firm (iii) along the A.T. Road from Convoy Road to Kamargaon Road and Behaiting Road. The draft states that while fulfilling the above objective, the neighbourhood principle will be followed. Similarly, in the case of industries also, the plan aims at regrouping of the existing isolated industrial pockets into three industrial blocks. Regarding the circulation system the plan aims at discouraging through traffic from passing through the town and ensuring easy movement of people and goods from the place of residence to the place of work. The plan
also aims at developing the Urban Growth Centre, which has been set-up in the Chowkidinghee-Milan Nagar area. Besides, it aims at setting up some secondary and neighbourhood shopping centres at some selected places. As per the plan, any warehousing and wholesale centres will be in the outskirts of the town, where good transportation linkages are available.

The following is an overview of the existing situation as reported in the master plan draft.

3.3.1 Physical setting

From the viewpoint of physiography, Dibrugarh is situated on a flat alluvial land, just on the bank of the mighty Brahmaputra. The presence of alluvial soil (consisting of sand and clay in varying proportions) with heavy rainfall has been conducive to a rich growth of vegetation in this area. But at the same time, this type of soil and rainfall has been the catalyst of erosion and flood. In fact, the locational aspect of the town is becoming a major retarding factor for its development. Erosion has not only affected the topography, trade and commerce, industry and for that matter the economy of the town, but also added to the unplanned growth of population in and around the town. It is, however, due to the provision of stone spurs and embankments, the town remain protected from flood and erosion during the recent years.

The process of settlement in Dibrugarh started about 130 years back. In 1872, the total population of the town was only 3870 persons and it is only after 1940 that the population of the town began to grow at slightly faster rate. But form 1970 onwards, the pace of growth of population was such that the need for proper development of the urban area started to be felt.

3.3.2 Demography

It is clear from the master plan draft that the demographic aspects have been dealt with thoroughly and the plan proposals were made on the basis of the growth, distribution, composition and other characteristics of population and their trends and accordingly plan has been prepared to cater to the needs of its present as well as future population. Regarding the population projection, it is reported that the plan had considered all the relevant factors such as changes in fertility and mortality rate, age-sex composition of the population and
expected in-migration flows. For instance, it had assumed a general fertility rate of 0.19 for woman in the productive age group. For mortality, it had considered the recent experience in mortality rate and the trends on increase in the life expectancy on the United Nations Model Life Table for underdeveloped countries. So, the plan had worked out a population of 2,27,380 for 2011 and 2,75,634 for the horizon year i.e., 2021. In 2001, the population of the master plan area was 1,86,214 as against 1,20,127 in 1991. As far as the density of population of the town is concerned, in 2001 the density of population for the plan area was 2,865 persons per sq. km. but the same within the municipal area was 7,905 persons per sq. km.

3.3.3 Economic base and occupational pattern

The master plan for Dibrugarh stresses the urgent need for the creation of a conducive environment in which optimum use of local and regional resources may be made to build up a sound economic base. A glance at the analysis of the occupation pattern in the master plan draft shows that about 18% of the total workers are engaged in primary sector, 21% in secondary sector and about 61% in the tertiary sector. This indicates that the town is a service oriented town. However, the plan has also made it clear that there is a steady growth of industries in the town and its suburbs, especially after 1971. At present there are about 147 industrial establishments and a number of cottage type industries in the town and its adjoining areas. Besides, there are also tea, coal and oil industries in and around the town. All these form the economic base for the town.

3.3.4 Land use

The master plan of Dibrugarh gives a fairly good idea of the present and proposed land use pattern. In fact, out of the three maps provided in the plan, two maps are on the land use patterns. They present land use zoning for the Master Plan Area and the land use plan for 2021. The appreciable point of the plan is that, it has incorporated a detail analysis of the land resources of the master plan area (Table 7 of the master plan). This table shows that out of the total land resources, 32% is already developed under different activities. And as expected the land used for residential purpose is high (about 21% of the total plan area and about 65% of the total developed area). The percentage share of land under transport and communication is very low i.e., only 3.34% of the total plan area.
The proposed land use up to 2021 is given in Table 10 of the master plan. The table shows that while there is the provision for heavy increase in the share of land under residential and commercial uses (i.e. from about 20% to 40% - during the plan period in the case of residential use and from 0.87% to 3.13% for commercial use), only 4.28% of the total land is chosen for the circulation system up to 2021 (from existing 3.34%)

3.3.5 Transport system

In Dibrugarh, roads play an important role in local as well as regional transportation. The National Highway Number 37, which connects the town with Tinsukia on one side and with Sibsagarh on the other, serves as the main axis of regional movement. The railway also facilitates regional movement for both people and goods. But, the railway station, located in the heart of the town, and the railway line passing through the educational and residential areas, have created problems like traffic congestion, noise and other environmental problems.

It is seen from the analysis made in the master plan draft that it uses the road statistics of Dibrugarh Municipal area for plan proposals. There are about 39.19 km of...
surfaced roads and 69.7 km. of un-surfaced roads in the municipal area and most of the urban roads, except for the A.T. Road, are very narrow with little scope for further expansion. Besides, almost all the road junctions need improvements and modifications. The plan also states that there are 5 important level crossings in the town and as they remain always busy, they require immediate improvement.

Coming to the traffic volume, as the draft says, about 37000 vehicles run and pass through the town per day. Again, it is found that the Station Road near Khemka Market carries maximum number of vehicles per hour during the peak hour. It is seen that lack of proper road hierarchy, narrow width, improper geometrics and poor maintenance of the roads make the transport service in the area very poor.

3.3.6 Proposed circulation plan

As has been stated, the major objectives set for the circulation system relates to through traffic and ease in movement. So, the plan is found to give emphasis on (i) optimum use of the existing transportation system through improved traffic operation and controls, (ii) improvement of the existing road network through widening and extension, (iii) provision for adequate parking facilities for vehicles, and (iv) development of new roads and other transport facilities.

The plan has proposed to improve and widen some of the existing roads like A.T. Road, Mancotta Road, Convey Road, Khaliamari Road, Bogpara Road, Station Road, Mandir Road, Purnananda Road and Singhania Road of the town. Similarly, in order to improve the present circulation system and to remove the traffic congestion within the town, the plan also proposed some new roads and extension of few existing roads. All these proposals are made in such a way that they will strengthen the arterial and feeder road system of the town. To reduce through traffic, the plan keeps the diversion of NH 37, to act as a by pass, in its high priority schemes. All these plan proposals are made in such a way that they will strengthen the arterial and feeder road systems of the town and its immediate surroundings. To reduce the through traffic, the plan keeps the diversion of NH 37, to act as a by pass, in its high priority schemes. All these plan proposals are then presented through the map showing Traffic and transportation plan (Fig. 3.9).

The plan also recommended improvement of the old public bus stand located in Phoolbagan area near the District Session Judge office and reallocation of trucks, bus and
taxi terminals in the planning area. The locations of these terminals, as per the draft, are to be worked out during the time of preparing the detail schemes.

The important plan proposals for railway include – construction of a new railway station at Boiragimath Kachari Gaon and a new railway line from near Dhekeri Gaon to connect Bogibil Bridge over Brahmaputra River. Similarly, the plan wishes to shift the existing goods booking station to Chawlkhowa, where there will be a well planned marshalling yard. It is thought that this will reduce congestion on the existing station road. For the regional transport, the plan suggests that the existing branch railway line from Simalguri to Moran should be upgraded to a main line and extended up to the proposed new railway line at Dibrugarh. This will reduce the distance between Dibrugarh and Guwahati.