



**MASTER PLAN OF SHILLONG  
1991 - 2011**

**DIRECTORATE OF URBAN AFFAIRS  
MEGHALAYA, SHILLONG**



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1.1. **Introduction:** Shillong, the State Capital of Meghalaya is situated in the East Khasi Hills District and is linked by National Highway 40 with the State Capital of Assam at a distance of 103 kilometers. Located at  $25^{\circ}34'$  North Latitude and  $91^{\circ}53'$  East Longitude, the altitude of the city varies between 1400 metres to 1900 metres above mean sea level.

1.2. **Historical Perspective:** During the Pre-British period, Shillong existed in the form of a few clusters of scattered hamlets under the jurisdiction of the Syiem of Myllem. However in, 1863, the British Administration shifted the headquarter of United Khasi and Jaintia Hills District from Cherrapunjee to Shillong and consequently upon the separation of Assam from Bengal in 1874, Shillong become the provincial headquarter of Assam. The newly assigned function to the tiny settlement resulted in rapid growth of population which was 1363 inhabitants in 1872 to around 4000 persons in 1875. Further due to its favourable climate a sanatorium was set up by the Britishers and later on, a cantonment was also established. With the expansion of offices and establishments commercial activities expanded considerably to serve the growing population. During this period the missionaries also established various educational institutions and the town become an educational centre of the eastern region of India.

The post independent period marked an accelerated growth due to influx of migrants from the neighbouring states as well as from other parts of the country in pursuit of employment opportunities. Being a border State, the defence establishments also increased to a great extent.

However in 1972 Meghalaya attained its full Statehood and Shillong become the Capital of the State. This gave a further boost to the growth as various regional institutions of Central Government which was set up in Shillong. Hence, over a century this tiny settlement has overgrown to a flourishing city and functionally undergone a radical change from a hill resort to a multifunctional unit and acts not only as an administrative-cum-tourist centre but also as a regional commercial centre for the entire North-eastern India.

1.3. **Shillong in its Regional Setting:** Shillong the State Capital is the only major urban centre of the entire State. Out of the total Urban population of 2,41,333 persons of the State 1,74,703 persons or 72.39 percent is concentrated in Shillong itself whereas of the total urban population of 180,800 persons in the East Khasi Hills District, 96.63 percent is concentrated in Shillong (1981 census).

Although, Shillong acts as a nerve centre of the entire State, the effective region of influence extends to the whole district, being an administrative, commercial-cum-institutional centre.

1.4. **Shillong in its Geographical Setting:**

1.4.1. **Physiography and Drainage:** Shillong falls on the deeply dissected central upland zone of the Meghalaya Plateau. The relief of the city varies from 1400-1900 meters above mean sea level. The Khasi Hills range at the South descends at  $20^{\circ}$  slope to the Master Plan Area and acts as a water divide. A large part of the Master Plan Area falls within  $5^{\circ}$  to  $10^{\circ}$  slope range whereas the gentle slope range of  $0^{\circ}$  to  $5^{\circ}$  is found in Happy Valley, Pynthorumkhrah, Polo Ground and in some stretches on low relief hillocks. However, fairly steep slope range of  $10^{\circ}$  to  $15^{\circ}$  and steeper slope above  $15^{\circ}$  are on the northern, southern and western periphery of the Master Plan Area. While the fairly steep slope range is unfavourable and uneconomical for development purpose the steeper range are undevelopa-



ble. Development in these areas often leads to rapid erosion, promotes slope failure and slides and is detrimental to the stability of the slope.

Wah Umkrah, Wah Umkhen and Umshyrpi are the three main streams draining the area through a number of second order and third order tributaries. (Drawing - I).

1.4.2. **Geology:** Shillong lies on the low grade metamorphic rocks of Shillong group, predominantly of quartzites with subordinate phylites and Slates. The quartzites band dip at  $20^{\circ}$  to  $40^{\circ}$  in North - North East to South - South - West direction. Usually the rock band are found at a depth of one metre to three metres from the top soil level, except at places where the crusted quartzites band are exposed, the rock base is suitable for development purpose. However, Shillong being in the seismic Zone prominent lineaments and a major sheer Zone (Tyrpad - Barapani Sheer) occur in the near vicinity but there is no major fault thrust within the Master Plan Area.

1.4.3. **Climate:** The climate of Shillong is characterised by moderate warm wet summers and cool dry winters. The climate can be classified under humid subtropical climate found in the eastern part of the continent.

1.4.3.1. **Temperature:** The annual average temperature recorded during 1981 - 1990 was 22.26 degree Celsius in the maximum range and 11.84 degree Celsius in the minimum range. The average annual temperature during 1981 - 1990 was 17.06 degree Celsius. It is 0.18 degree Celsius or 1.07 percent more than the average annual temperature recorded during the years 1970 - 81.

On the whole, there has been a gradual increase in the annual average temperature of Shillong. This can be attributed to some ecological changes taking place over the last decade. Pollution and extensive deforestation appears to be influencing the micro climate of Shillong to a great extent. Despite all odds efforts can still be made to ameliorate the environment.

1.4.3.2. **Rainfall:** The mean annual rainfall of Shillong is 212 C.M. The moderate rainfall of Shillong is the result of its situation in the rain shadow Zone of the Shillong range. Of the total rainfall about two third falls in the monsoon months of June to September brought about mainly by the South - West mon soon winds. Pre-monsoon gets only one fifth of the total rains mainly by thunder storms. The retreating monsoon season is less rainy, while the winter is almost dry.

1.4.3.3. **Humidity:** Except in March, the relative humidity is always more than 50 percent. During the rainy season when the winds are mainly from the South-West, the relative humidity is high and is over 75 percent.

The main inference from the above analysis on climate is to retain the salubrious climate of Shillong and efforts should be given to preserve the natural environment.

1.5. **Economic base of the city:** Shillong like many other hill towns has developed principally as an administrative-cum-commercial centre which engages a major portion of the total working population. However due to change of industrial classification of workers in the census since 1981 detailed information on workforce engaged in different industrial categories are not available. Even information on input output flow of the city is not available. Hence the functional classification as well as the economic base of the city could not be worked out. However, on the basis of observation the economic base of the city can be classified as commercial followed by service sector economy.



- 1.6. **Planning Area:** In view of the fast expansion of Shillong town particularly in the last two decades, many villages located in the fringe area of the town now forms a part of the Shillong Urban Areas. The Master Plan Area has been delineated taking into account the extent of built up area, the continuity of development, the immediate hinterland of the city, the future requirements of land for growth and expansion upto 2011 A.D. and the catchment area to be preserved and protected from the environmental point of view.

On the basis of the above criteria the Master Plan area includes the Shillong Urban Agglomeration which covers Shillong Municipality, Shillong Cantonment, Madanring, Mawlai, Nongthymmai and Pynthorumkhrah and also includes 32 villages in and around Shillong namely, Mawklot, Lawsohtun, 6th Mile Upper Shillong, 5th Mile Upper Shillong, 4th Mile Upper Shillong,  $3\frac{1}{2}$  Mile Upper Shillong, Nongkseh, Umlingka, Nongmynsong, Nongrah, Rynjah, Umpling, Mawpat, Itshyrwat, Mawtawar, Mawkynroh, Mawlynrei, Mawshbuit, Nongumlong, Laitkor, Nongpyur, Nongkhlaw, Lynkien-Mawpat, Mawdiangdiang, Madan Seisiej, Mawkasing, Seijiong, Tynring, Mawpdeng, Umphyrnai, Mawlyngad and Mawlong, covering an area of 174.00 sq.kms the Schedule of Boundary of Shillong Master Plan is given below:-

1.7. **Schedule of Boundary:**

**North**

A-B	-	Barapani and Wah-Umiam
B-C	-	Foot-track from Wah-Umiam upto Kutcha road going to Bhoilymbong.
C-D	-	Kutcha road from near Nongkhlaw upto Wah Tamdong
D-E	-	Wah Tamdong
East:-		
E-F	-	Foot-track from Wah Tamdong to Kutcha road leading to Bhoilymbong.
F-G	-	Kutcha road leading to Bhoilymbong
G-H	-	Foot-track near Saiseit upto Kutcha road going to Umroh
H-I	-	From Kutcha road going to Umroh and foot-track to Tynring
I-J	-	Kutcha road from Tynring to Mawpdeng
J-K	-	Kutcha road from Mawpdang to Wah Umkhen
K-L	-	Wah Umkhen
L-M	-	Kutcha road from Wah Umkhen upto N.H. 44 near Sohryngkham.
South:		
M-N	-	N.H. 44 upto Laitkor
N-O	-	Road from Laitkor through air-force area upto Shillong peak.
O-P	-	Kutcha road from Shillong peak joining N.H. 40 to near Nonglyer.
P-Q	-	From junction near N.H. 40 upto Kutcha road going to Nongpyur.
Q-R	-	Kutcha Road going to Nongpyur
R-S	-	Footpath going from Nongpyur
West:		
S-A	-	Wah Umiam

Total Master Plan Area 174.00 Square Kilometers (more or less). (DRNG -2)



CHAPTER TWO



**Demography:-** This chapter deals with the demographic characteristics at three levels, i.e. Shillong Municipal Area, Shillong Urban Agglomeration and Shillong Master Plan Area for a better understanding of the growth trend.

**Population trend and decadal variation:-** The population of Shillong Municipal Area during 1971 and 1981 was 87,659 and 1,09,244 persons respectively, whereas the provisional figures of 1991 census recorded a population of 1,30,691 persons thereby accounted for 19.63 per cent increase during 1981 - 91 against 24.62 per cent in the earlier decade. The decadal increase of 19.63 per cent during 1981 -91 is the lowest growth since 1901 which is evident from its trend indicated in Table 2.1. Fig. 2.1. The lower growth of population within the Municipal Area may be attributed to combination of factors (i) non-availability of servicable land, (ii) non-availability of land and housing facilities to absorb the migrants; (iii) increasing growth of commercial activities (iv) to some extent the area has reached a saturation point. Hence there is a shift of population to the fringe urban as well neighbouring rural areas.

The population of Shillong Urban Agglomeration during 1971 and 1981 was 1,22,752 and 1,74,703 persons respectively with an increase of 42.32 per cent, whereas during 1991 the population has increased to 2,22,273 persons and increase of 27.23 per cent (Table 2.2 Fig 2.2). The high growth rate during 1971 - 81 was due to the inclusion of two new urban centres within the agglomeration. To avoid illusion of descending decadal rate and to have comparison of figures within the same area Pynthorumkhrah and Madanring population was added and it was found that the population during 1971 was 1,31,368, hereby the increase accounted for 24.80 percent.

The population of the Master Plan Area during 1971 and 1981 was 1,55,600 and 2,17,274 persons respectively with a growth rate of 39.64 per cent. Since the population figures of the rural components are not available, for comparison the rural population of 1991 has been projected, the projected population works out to be 2,92,445 with a growth rate of 34.60 per cent.

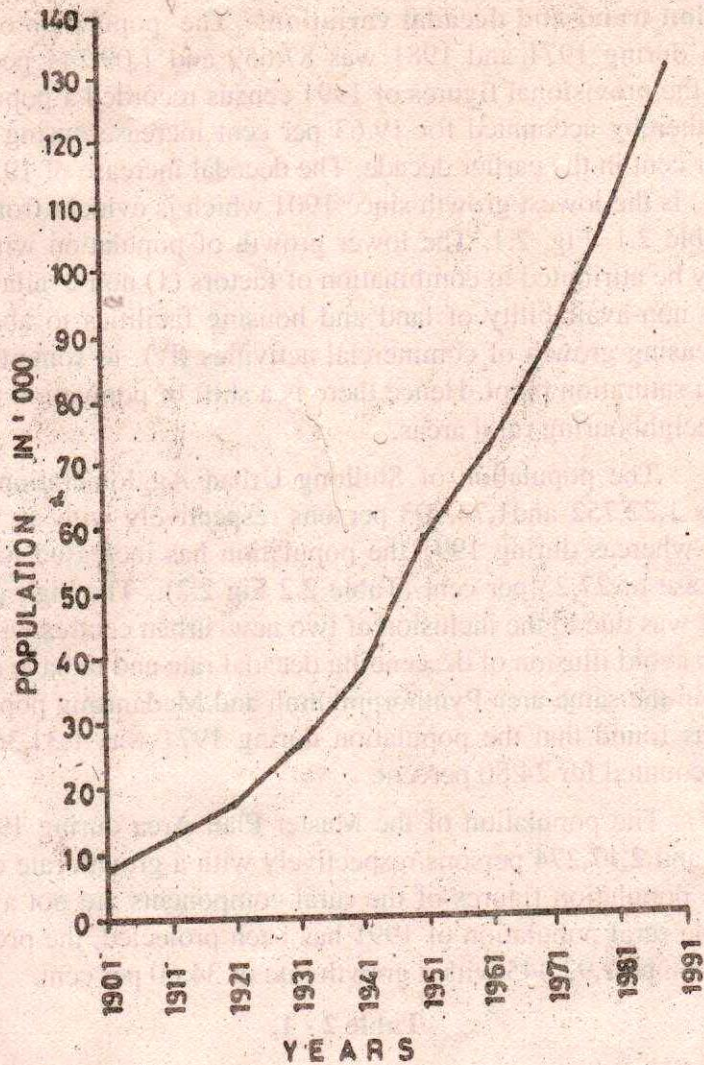
Table 2 - 1.

Growth of population - Shillong Municipality, (1901 - 1991)

Year	Persons	Decade Variation	Decade Variation (P.C)
1901	9,621	-	-
1911	13,639	+ 4018	+ 41.76
1921	17,203	+ 3564	+ 26.13
1931	26,536	+ 9333	+ 54.25
1941	38,192	+ 11656	+ 43.93
1951	58,512	+ 20320	+ 53.20
1961	72,438	+ 13926	+ 23.80
1971	87,659	+ 15221	+ 21.01
1981	1,09,244	+ 21585	+ 24.62
1991	* 1,30,691	+ 21447	+ 19.63

\* Provisional Census Figures, 1991.





GROWTH OF POPULATION  
SHILLONG MUNICIPAL AREA



TABLE - 2.2

## Growth of population

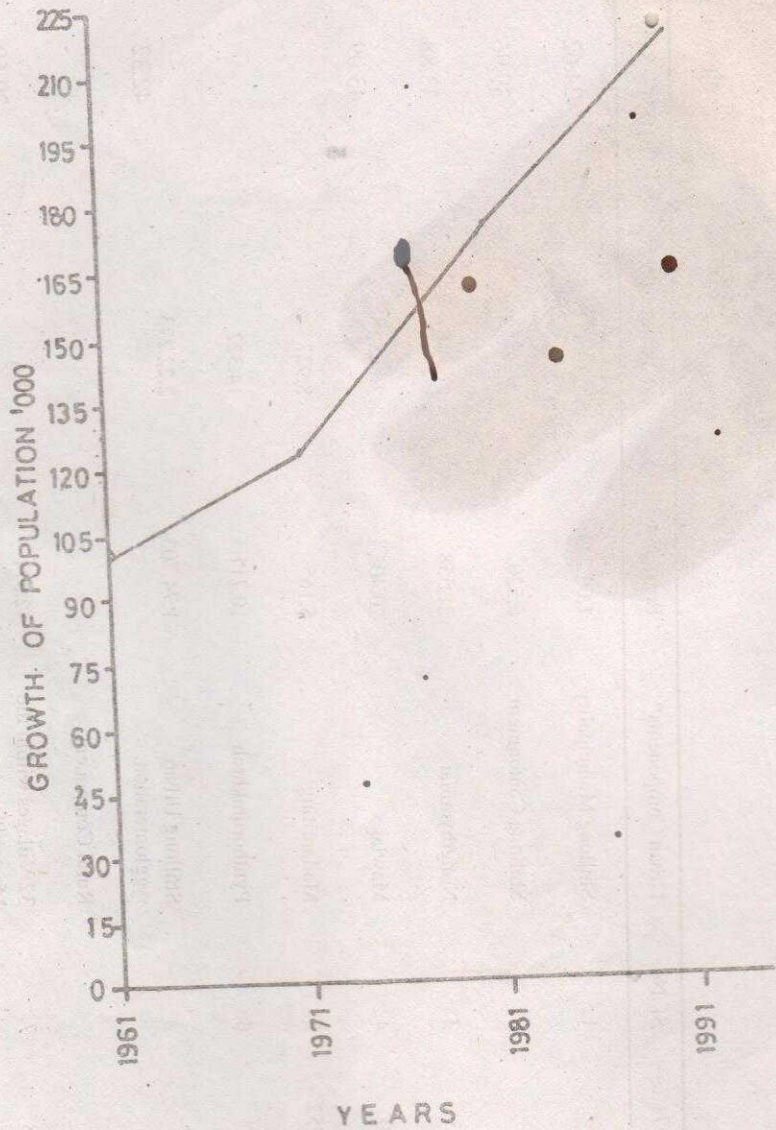
## Shillong Urban Agglomeration\Master Plan

Sl. No.	Urban Components	Population 1971	Sl. No.	Urban Components	Population 1981	population 1991	Growth Rate (P.C)	
							1971 - 81	1981 - 91
1.	Shillong Municipal	87,659	1.	Shillong Municipality	1,09,244	1,30,691	24.62	19.63
2.	Shillong Cantonment	4,730	2.	Shillong Cantonment	6,520	11,075	39.96	67.30
3.	Nongthymmai	16,103	3.	Nongthymmai	21,558	26,816	33.88	24.39
4.	Mawlai	14,260	4.	Mawlai	20,405	30,442	43.09	49.19
	Shillong Urban Agglomeration	1,22,752	5.	Madanriting	6,165	8,927		44.80
			6.	Pynthorumkhras	10,711	14,322		33.71
				Shillong Urban Agglomeration.	1,74,703	2,22,273	42.32	27.23
	Rural Components			Rural Components				
5.	35 Villages within the Master Plan Area.	32,848	7.	32 Villages within the Master Plan Area.	42,571	N.A.	29.50	
	Total Master Plan Area	1,55,600		Total Master Plan Area	2,17,274	N.A.	39.62	

Source: -Census of India

Not - Pynthorumkhras and Madanriting become a part of Shillong Urban Agglomeration in 1981.





GROWTH OF POPULATION  
SHILLONG URBAN AGGLOMORATION

Fig. 2-2



The estimated population during 1991 comes to 2,92,445 thereby an increase of 36.60 per cent.

2.2. **Sex Ratio:-** The sex ratio of an urban settlement is generally influenced by numerous factors like migration trends of working force, housing condition prevailing in the area, etc:- Shillong Urban agglomeration shows a relatively low sex ratio of 896 females per 1000 males as per 1991 census. However, within the Shillong Urban agglomeration the sex ratio of Madanriting, Mawlai and Nongthymmai is relatively high and is 968,993 and 968 females per 1000 males respectively where as Shillong Municipality and Shillong cantonment has a low sex of 889 and 666 females per 1000 males respectively. It may be presumed that the low sex ratio is attributed to the scarcity of housing accommodation.

2.3. **Migration:-** Data for migration for Shillong town is not available. It is however assumed that Shillong being the capital town and a district headquarter and more important being on of the major urban centre of the region migration from rural areas and surrounding states is mainly due to better economic opportunities available in the town.

2.4. **Work-force:-** The data on the 1991 work-force are not yet available hence only 1971 and 1981 figures have been analysed. The work force during 1981 within Shillong Municipal Areas was 36,303 against 29,070 in 1971. In terms of participation rate it accounted for 33.23 per cent to the total population in 1981 against 33.16 per cent in 1971. Whereas the work force in the Urban Agglomeration was 32.80 per cent during 1981 against 32.84 per cent in 1971. It may be mentioned that the percentage share of work-force remains almost constant whereas the rural components recorded a decrease of 3.68 per cent from 1971 to 1981. Similarly within the Master Plan Areas also there was a decrease of 0.81 per cent but in absolute figures it added 19,021 workers in 1981. The detailed figures on work-force is shown in Table 2.3.

In terms of participation of female work-force it accounted for 23.52 per cent and 24.70 per cent during 1981 within the Urban Agglomeration and Master Plan Area respectively. It may be started that the percentage share of female workers to the total workers in the Master Plan area as well as all the Urban Centres recorded increase except the rural components which has decreased to 29.48 per cent in 1981 against 31.81 per cent in 1971. This is due to the exclusion of Madanriting and Pynthorumkhrah from the rural component in 1981.

2.5. **Work-force Classification:-** The workers classification for Shillong Master Plan Area is given in Table 2.4. The table reveals that the total workers engaged in construction, trade and commerce transport and communication, etc, has increased while the workers in agricultural activities has decreased.

It is expected that with growing activities in trade and commerce, construction, transport and communication, etc:- The workers in the Agriculture Sector will decrease further.

2.6. **Functional Characteristics:-** Towns are attached with intangible values like status, character and functions which are very much akin to human personality. Activities of the town dwellers which emerge from the town functions are manifested in the physical development of the town. A harmonious blending of the 'Functions' and Activities' leads to a healthy and orderly development of the town.

Scientific analysis of "functional classification" has not been done as relevant data are not available. However the functional character of the city has been discussed in the following paras to have a better understanding of its functions.



TABLE - 2 - 3.

## SHOWING WORKFORCE AND SEX - WISE PARTICIPATION DURING 1971 AND 1981

Components	1971							1981						
	Total work force	Male workers	Females workers	% of workers to total population.	% of male workers to total workers.	% of female work force to total workers.	Total workers	Male workers	Female workers	% of workers to total population	% of male workers to total workers	% of female workers to total workers		
I. Urban Agglomeration	40,315	32,580	7,725	32.84	80.84	19.16	57,317	43,834	13,483	32.80	76.48	23.52		
1. Shillong Municipal	29,070	23,607	5,463	33.16	81.21	18.79	36,303	27,475	8,828	33.23	75.68	24.32		
2. Cantonment	1,470	1,426	44	31.08	97.01	2.99	2,258	1,986	272	34.11	87.95	12.05		
3. Nongthlymai	4,944	4,033	911	30.70	81.57	18.43	7,112	5,348	1,764	32.99	75.20	24.80		
4. Mawlai	4,831	3,524	1,307	33.88	72.95	27.05	6,669	4,790	1,879	32.68	71.82	28.18		
5. Madanrying	-	-	-	-	-	-	1,763	1,341	422	28.60	76.06	23.94		
6. Pynthorumkhrab	-	-	-	-	-	-	3,212	2,894	318	29.99	90.10	9.90		
II. Rural Component	12,108	8,257	3,851	36.86	68.19	31.81	14,127	9,962	4,165	33.18	70.52	29.48		
III. Master Plan Area	52,423	40,847	11,576	33.69	77.92	22.08	71,444	53,796	17,648	32.88	75.30	24.70		

Note : Madanrying and Pynthorumkhrab became urban component only in 1981, hence the work-force of these settlements have been included in rural figure of 1971.



TABLE - 2 - 4  
SHOWING WORKERS CLASSIFICATION, 1971, 1981  
SHILLONG MASTER PLAN AREA.

SLNo.	Occupation	1971		1981	
		Total workers	Percent to total workers.	Total workers	Percent to total workers.
1.	Agricultural Labourers and Cultivators.	8133	15.51	8900	12.46
2	Household Industry, Manufacturing, Processing and Repairs.	966	1.84	1003	1.42
3	Others	43,324	81.65	61541	86.14
	Total Wokers	52,423	100.00	71444	100.00

- 2.6.1. **Administration** : In examining the city functions, the most important of which Shillong is committed to is administrative being a State Capital and District Head Quarter. The Administrative status will remain as major function of the city in the near future.
- 2.6.2. **Commercial** : With the location of regional market, whole sale market and retail markets and offices of various financial and business institutions and with rapid increase in trade and commerce, town has emerged as an important commercial centre also. Being the only outlet for products from this region, Shillong has also developed as a commercial centre stretching its hinterland to the neighbouring states of Assam, Mizoram, Tripura etc.
- 2.6.3. **Institutional** : Shillong being a major urban centre, it has been offering all higher educational and health facilities for the entire State and as a result of which, Shillong has taken the form of an institutional town.
- 2.7. **Population Projection** : Population estimates are necessary to assess various needs of the town including requirement of land for various uses such as housing commerce, recreation, health, education, industry, infrastructure etc : It is difficult to work out the exact estimate of future population because the factors on which the growth of population depends can not be foreseen or forecast with accuracy.

The estimate of future population are based on the past trends. The projection is done for the years 2001 and 2011. In case of the Rural Components since 1991 census figures were not available, projection has been done for the year 1991 also. The projection was done by using methods like the Arithmetic Progressive Method, Registrar General Method and the Geometric Progression Method. Although the result differ from each other, an average figure of all the three methods was considered.

As per the projection, it was observed that the total Master Plan population by 1991, 2001 and 2011 will be 2.92 lakhs, 3.80 lakhs and 4.93 lakhs respectively. Table 2.5 Fig 2.3 shows the projected population by 2011 A.D.

- 2.8. **Projected Workforce**: As mentioned earlier economy of the town is highly tilted towards the commercial sector and service sector with very little diversification in other sector. It is urgently felt that the economy of the town has to be strengthened by developing and enlarging the industrial base of the town. Resource base industries, electronic industries, agro based and forest base industries should be widely introduced. Development of these industries will generate considerable amount of employment.

Assuming that the work-force participation will continue more or less in the same trend the total work-force in 1991, 2001 and 2011 will be 93,583, 121661 and 157684 persons respectively. It also presumed that the percentage share of workers in Agriculture and allied activities will come down while there will be a rise in trade and commerce, construction, transport and communication and in the service sector. Table 2.6 shows the projected workers classification by 1991, 2001 and 2011.



TABLE No. -2.5.  
POPULATION PROJECTION OF MASTER PLAN AREA BY 2011 A.D.

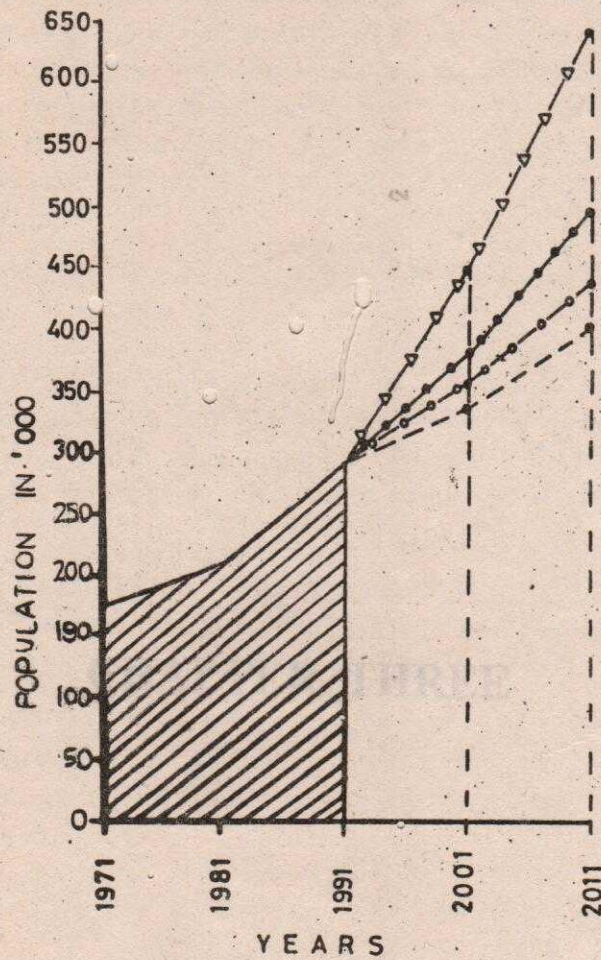
Components	2001					2011						
	A.P.	R.G.	G.P.	Average	A.P.	R.G.	G.P.	Average	A.P.	R.G.	G.P.	Average
I. Urban Agglomeration	60,910	74,789	74,818	* 2,22,273	1,69,843	2,82,724	3,16,142	2,89,569	1,66,403	3,50,592	4,07,929	3,60,908
1. Shillong Municipal				* 1,30,691	1,52,138	1,56,348	1,86,724	1,65,070	1,75,375	1,82,610	2,23,192	1,93,726
2. Shillong Cantonment				* 11,075	15,530	18,528	18,562	17,540	22,985	28,902	31,111	27,666
3. Bongaichhimml				* 26,816	32,074	33,356	33,335	32,022	37,332	40,610	41,439	39,794
4. N. J. J. J.				* 30,442	40,479	42,416	45,497	42,797	51,516	54,334	67,997	57,949
5. M. J. J. J.				* 8,927	11,689	12,926	12,962	12,525	15,451	18,931	18,821	17,734
6. P. J. J. J.				* 14,322	17,933	19,150	19,062	18,715	21,544	25,205	25,369	24,039
II. Rural Components				70,172	68,429	1,31,492	1,31,470	90,623	78,858	85,664	2,31,038	1,31,853
III. Master Plan Area				2,92,445	3,38,272	3,54,693	4,47,612	3,80,192	4,03,061	4,36,256	6,38,967	4,92,761
Decadal increase				34.95 %				30.00 %				29.60 %

\* Provisional Census Figures of 1991.  
A.P. - Arithmetic Progression method.  
R.G. - Registrar General method.  
G.F. - Geometric Progression method.





TABLE - 2.6  
PROJECTED WORKERS CLASSIFICATION, 1991, 2001, 2011  
SHILLONG MASTER PLAN AREA.

Sl.No.	Occupation	1991		2001		2011	
		Total workers	Percent to total workers.	Total workers	Percent to total workers.	Total workers	Percent to workers
1	Agricultural Labourers and Cultivators.	10762	11.50	12470	10.25	1498	9.50
	Household Industry, Manufacturing, Processing and Repairs.	1404	1.50	1886	1.55	2759	1.75
	Others	81,417	87.00	1,07,305	88.20	1,39,945	88.75
	Total Workers	93,583	100.00	1,21,661	100.00	1,57,684	100.00





GROWTH OF POPULATION (PROJECTED)  
SHILLONG MASTER PLAN AREA

-  ARITHMATIC PROGRESSION.
-  REGISTRAR GENERAL.
-  GEOMETRIC PROGRESSION.
-  AVERAGE.



...ing Land Use Quality of Urban and functional planning of a ... depends on proper distribution of activities and the inter relationship of ... the various different activities. In order to understand and analyze systematically the functional relationship between various uses particularly the pattern of work, living and recreational uses, a detailed land use survey of the planning area was conducted. This land use survey has also helped in identifying the incompatible activities in existing city life conditions. While the detailed land use survey of the inhabited areas reflect the problems of inadequacy of Urban Land Use patterns, the similar analysis of the adjoining areas reveals the pattern of available land resources. Relatively in most of the town problems lie in organizing the layout pattern.

Land Resources: The Shillong Master Plan covers an area of 17482 hectares of which 5492.10 hectares or 31.5% is area of developed area, 1573.82 hectares or 9.0% percent of the total area is undevelopable, 5077.02 hectares or 29.0% percent of the total area is under urban agriculture and 4431.99 hectares or 25.5% percent is forests and water bodies. Of the total master plan area, 8077.02 or 46.25 percent is developable area. Table 3.1 shows the land resources within the Master Plan Area. (Annexure 3.1)

Existing Land Use Pattern: In order to understand the pattern of land use and to study the quantity of land under various uses, the existing land use has been classified into

### CHAPTER THREE

- 3.1 Residential
- 3.2 Commercial
- 3.3 Public and Semi Public
- 3.4 Industrial
- 3.5 Security
- 3.6 Circulation
- 3.7 Vacant
- 3.8 Urban Agriculture
- 3.9 Forests and Water bodies

Table - 3.1

Land Resource - Shillong Master Plan

S. No.	Land Use	Area in Hectares	Percentage of total area
1.	Developed Area	5492.10	31.5%
2.	Undevelopable Area	1573.82	9.0%
3.	Developable Area	5077.02	29.0%
4.	Urban Agriculture	803.02	4.6%
5.	Forests and Water bodies	4431.99	25.5%
	Total area	17482	100%



3. **Existing Land Use:-** Quality of urban life and functional efficiency of a town is dependent on proper disposition of activities and the inter relationship it offers between the different activities. In order to understand and analyse systematically the functional relationship between various uses particularly the people of work, living and recreational areas, a detailed landuse survey of the planning areas was conducted. This landuse survey has also helped in identifying the incompatible activities influencing city life functions. While the detailed land use analyse of the inhabited areas reflect the problem of inadequacy of Urban land for various uses, the similar analysis of the planning area presents the picture of available land resources. Remedy to most of the town problems lie in organising the landuses pattern.

3.1. **Land Resources :-** The Shillong Master Plan covers an area of 17400 hectares of which 5494.10 hectares or 31.58 percent of the total area is developed area. 1573.88 hectares or 9.04 percent of the total area is undevelopable owing to excessive slope and height of land 803.07 hectares or 4.62 percent of the total area is under urban agriculture and 4451.93 or 25.58 per cent is under forest and water bodies. Of the total master plan area, 5077.02 or 29.18 percent is developable area. Table 3.1 shows the land resources within the Master Plan Area. (Drawing - 3)

3.2. **Existing Land Use Pattern :-** In order to understand the problem of land use and to study the quantum of land under various uses the existing land uses has been classified into the following categories.

- 3.2.1. Residential
- 3.2.2. Commercial
- 3.2.3. Public and Semi Public
- 3.2.4. Industrial
- 3.2.5. Security
- 3.2.6. Circulation
- 3.2.7. Vacant
- 3.2.8. Urban Agriculture
- 3.2.9. Forests and Water bodies.

Table - 3.1.

**Land Resource - Shillong Master Plan.**

S. No.	Land Use	Area (in hectares)	Percentage to total area.
1	Developed Area	5494.10	31.58
2	Undevelopable Area	1573.88	9.04
3	Developable Area	5077.02	29.18
4	Urban Agriculture	803.07	4.62
5	Forests and Water bodies	4451.93	25.58
	Total area	17400	100.00



- 3.2.1. **Residential** : Almost half of the total developed area covered by the Master Plan is under residential use. It is 2652.78 hectares or 15.30 percent of the total master plan area. The residential development of the city has grown much beyond the municipal limits due to non-availability of buildable land within the municipal area. At present the development of residences has spread in all the three directions along the major arteries namely towards Mawiong in the north, Upper Shillong in the south west and towards Madaniryting in the south east.
- 3.2.2. **Commercial** : Though Shillong is one of the main commercial centre of the North-Eastern Region it has only 56.62 hectares i.e. 0.33 percent of the total master plan area under commercial use. The commercial area of the city with its core in Barabazar and Police Bazar has been found to be extending along the major roads due to the lack of space. Increased activities in the main commercial areas has created problem of traffic jams due to increase of traffic volume and overloaded junctions. The situation is further aggravated due to the existence of godown and warehouses in and around this area with no proper parking, loading and unloading facilities. Hence the commercial areas are inadequate and congested.
- 3.2.3. **Public and Semi Public** :
- (a) **Administrative uses** : The total area under Administrative use is 117.93 hectares or 0.68 percent of the total plan area. The administrative area is concentrated in areas around Barik, I.G.P., Lower Luchumiere etc :- better known as the Secretariat Complex. Apart from offices of State level and District level, regional offices of Central Government and Semi Government offices are also located here. The above organisations have been expanding in the last few years and there has been no attempt to effectively decentralise them away from the core areas.
- (b) **Institutional uses** : *This covers such activities as educational institutions, hospitals, cultural and social institutions, religious-institutions etc:-* The total area under this use is 903.20 hectares or 5.19 percent of the total master plan area.
- (c) **Organised open space** : *This use includes areas devoted to playfields, parks, lakes, golf course, stadium etc :-* The total area under this uses is 118.13 hectares or 0.68 percent of the total plan area.
- (d) **Graveyards** :- The total area under this use is 61.75 hectares or 0.35 percent of the plan area. This use includes burial and cremation grounds.
- 3.2.4. **Industrial** : The total area under industrial use is only 10 hectares or 0.10 percent of the total master plan area. This clearly reflects that industrially, Shillong has not made any headway though there is enough potentially for development of cottage and small scale industries in and around Shillong. The existing industrial are haphazardly located mainly along the major traffic arteries thereby creating traffic congestion.
- 3.2.5. **Security** : Area under police, military, air-force, para-military, central reserve police, border security force, cantonment area has been termed as security use. The total area under such use is 779.33 hectares or 4.48 percent of the total master plan area.
- 3.2.6. **Circulation** : *Area under circulation includes all types of roads, parking lots, etc:-* The land occupied by this category of land use is 783.36 hectares or 4.50 percent of the total master plan area and 14.26 per cent of the total developed area



which indicates that the land under this use is inadequate. Narrow roads, areas without vehicular roads, missing links and inadequate parking and terminal facilities explains this low percentage.

3.2.7. **Vacant Land** : A vast amount of the total master plan area is without any activity whether urban or agriculture. These are the areas with poor accessibility, steep slopes etc. However, provided with proper services and facilities much of these areas may be brought under development. The total area under vacant land is 6650.90 hectares or 38.23 percent of the total master plan area.

3.2.8. **Urban Agriculture** : All land under agriculture, horticulture, dairy farming etc. are covered under this category of land use. Within the master plan area, there are big chunks of land devoted to this use. The total area under this use is 803.97 hectares or 4.62 percent of the total master plan area.

3.2.9. **Forests and Water Bodies** :- About 4451.93 hectares or 25.88 percent of the total master plan area is under forests and water bodies.

Table 3.2 shows the existing land use of the total master plan area.

### 3.3. Proposed Land Use :-

3.3.1. **Aims and Objectives** : The Master Plan of Shillong was prepared to achieve the following objectives.

(a) Integration of various areas within the Shillong city and its region through linkage development.

(b) development of transport and communication net work to discharge regional functions with efficiency.

(c) Functional disposition of Urban Area so as to achieve.

(i) Efficient and proper utilisation of lands.

(ii) Harmonious and coherent relationship between various uses and activities.

(iii) Functional distribution of work centres, administrative and residential areas for efficient functioning of activities.

(iv) Efficient transportation network and circulation system to provide for the growth of the town even after the plan period.

(v) Restoration and development of areas of natural beauty and historic importance.

3.4. **Basic Considerations**: The study of both problems and opportunities have thrown up the following basic points for preparing the Master Plan of Shillong.

(a) To develop town/regional markets centre, wholesale market centre to relieve congestion.

(b) To provide local shopping centres.

(c) Development of administrative area to accommodate various offices of the District, State, Central and Local level.

(d) Development of Truck terminus to relieve congestion in the central area.

(e) Provision of proper circulation pattern to enable the thorough traffic to by-pass the city.



**Table - 3.2.**  
**Existing Land Use**  
**SHILLONG MASTER PLAN**

Total Master Plan Area	-	17400 Hectares	100 percent
Total Developed Area	-	5494.10 Hectares	31.58 percent
Total Undeveloped Area	-	11905.90 Hectares	68.42 percent

Sl. No.	Land use	Area in hectares	Percentage to total area.	Percent to total developed area.
1.	Residential	2662.78	15.30	48.47
2.	Commercial	56.62	0.33	1.03
3.	Public and Semi Public	1202.01		
	(a) Administrative	177.93	0.68	2.16
	(b) Institutional	903.20	5.19	16.44
	(c) Organised open space	118.13	0.68	2.16
	(d) Graveyards	61.75	0.35	1.12
4.	Security	779.33	4.48	14.18
5.	Industrial	10.00	0.06	0.18
6.	Circulation	783.36	4.50	14.26
7.	Vacant	6650.90	38.23	-
8.	Urban Agriculture	803.07	4.62	-
9.	Forests and water bodies	4451.93	25.58	-
	<b>Total</b>	<b>17400</b>	<b>100.00</b>	<b>100.00</b>



- (f) Earmark the land for industries in such a way that future growth is possible without creating conflict in the land use pattern.
- (g) Provision of infrastructure, amenities and services in an integrated manner for the whole master plan area.
- (h) To ensure proper urban environment by
  - (i) Improvement of slum areas by providing proper services and utilities.
  - (ii) To preserved the catchment areas and the General Environment of Shillong so as to enhance the natural Scenic beauty of the city.

3.5. **Proposed Land Use Plan** :- Shillong Master Plan covers a 20 years period stretching from 1992 to 2011. The plan intends to serve as a guide for all future development. It does not give an accurate prediction of the future but gives a broad flexible policy statement of development indicating the potential of growth, the land requirement and location of various activities. The proposed additional area to be developed is 2866.66 hectares.

3.5.1. **Residential** : The additional area proposed under residential use is 2432.49 hectares, out of which the major residential areas is proposed to be developed towards the north eastern side of the master plan area covering an area of 1457 hectares. Further an area of 975.49 hectares is also proposed to be developed towards the south western side of the master plan area. The total area under residential use works out to 5095.27 hectares or 29.28 percent of the total master plan area.

3.5.2. **Commercial** : Presently, Barabazar and Police Bazar functions as the main C.B.D of the city. Both retail and wholesale activities functions within this area leading to congestion and allied problems. Further some shopping centres has also sprung up in different areas of the city.

With a view to decentralize activities an area of 36.10 hectares has been earmarked for this purpose. The plan propose to set up wholesale markets at Upper Shillong, Mawdiang-diang and Mawiong, besides a number of other shopping centres has also been proposed. The total area under this use is 97.72 hectares or 0.56 percent of the total master plan area.

3.5.3. **Public and Semi Public** : This category of use consists of multiple uses like Administration, Institutional, Organised open space, Graveyards etc.

3.5.3.1. **Administration** : After considering the existing level of development and the demand for land likely to be required in future, an area of 30 hectares has been earmarked towards the north eastern side of the master plan area for Administrative use. It is proposed that all district level offices, new administrative units etc., be set up in the proposed site. The total area under this use is 147.93 hectares or 0.85 percent of the total master plan area.

3.5.3.2. **Institutional** : *Institutional land use includes educational institutions like Schools, Colleges, training centres, religious buildings, hospital, clinics community halls, clubs etc:-* The additional area proposed under this use is 60 hectares. It is proposed that 12 high schools, 31 primary schools, 1 college, 2 hospital and 6 health centres be set up towards the north eastern side of the master plan area to serve the additional population. The total area under this use is 963.20 hectares or 5.54 percent of the total master plan area.

3.5.3.3. **Organised Open Space** :- An Additional area of 35.02 hectares has been earmarked for this purpose. The organised open space will be developed mainly towards the north eastern side of the planning area. Further it is proposed that the existing organised open spaces should be improved. The total area under this use is 153.15 hectares or 0.88 percent of the total master plan area.

3.5.3.4. **Graveyards** : No new graveyards or cremation grounds has been proposed as it is felt that there are a sufficient number of burial and cremation grounds to serve the future population also. It is only proposed that the burial grounds be



improved and maintained properly and the cremation grounds which follows the traditional system should be replaced by electric crematorium. The total area under this use is 61.75 hectares or 0.35 percent of the total planning area.

3.5.4. **Security** :- No more extension of security area is proposed within the planning area. The total area under this use is 779.33 hectares or 4.48 percent of the total master plan area.

3.5.5. **Industrial** :- Two new industrial areas has been proposed, one near Mawpat and the other at Mawshbuit covering an area of 50 hectares. The proposed industrial areas are expected to be provided with all infrastructure like roads, water supply and power besides some incentives from the Government in the form of subsidy Marketing and storage facilities, warehousing etc. Should also be provided.

The total area under this use is 60 hectares or 0.34 percent of the total master plan area.

3.5.6. **Circulation** : For well planned town it is necessary to have a good network of roads and efficient transportation system. Three categories of roads have been proposed in the Shillong Master Plan Area namely Primary, Secondary and tertiary roads. Most of these roads has been proposed towards the north eastern side of the master plan area. The total length and width of the proposed roads are given below.

Sl. No.	Category of Roads	Width in meters	Length in Kms.	Area in hectares
1.	Primary	40	4.05	16.20
2.	Secondary	30	30.10	90.00
3.	Tertiary	20	29.15	58.30

Due to non-availability of maps in proper scale the service roads could not be taken into account while calculating the circulation area.

Besides the plan also proposes widening of some existing roads, improvement of roads junctions and inter-sections, construction of parking places, site for truck-terminus, mini-bus/city bus terminus etc.

The total area under this use is 1013.41 hectares or 5.82 percent of the total master plan area.

3.5.7. **Urban Agriculture** : Agriculture is an important activity in an around the city. It is necessary that some amount of agriculture activities should remain within the city. Activities like diary farming, poultry, market gardening should be encouraged and developed. The total area under this use is 788.07 hectares or 4.53 percent of the total master plan area.

3.5.8. **Forests and Water Bodies**: The total area under forests and water bodies is 4391.93 hectares or 25.24 percent of the master plan area. It is proposed that the forests and water bodies are preserved so that the ecological balance is maintained.

3.5.9. **Conservation**: The master plan area includes areas meant for Conservation, Areas with steep slopes, land liable to sliding, undevelopable areas etc:- are earmarked as conservation areas. Here, activities like growing fruits, market gardening, Zoological gardens, Botanical gardens can be located. Activities within the conservation areas should be such that they help in the conservation of soil like terracing, afforestation, development of grassland etc. An area of 3848.24 hectares or 22.13 percent of the total master plan area has been proposed under this use.

Table 3.3 and drawing 4 shows the proposed land use plan of the Shillong Master Plan.



Table 3.3

## Proposed Land Use

Sl. No.	Land Use	Area in hectares	Percentage to total area	Percentage to total proposed developed area.
1.	Residential	5095.27	29.28	60.85
2.	Commercial	97.72	0.56	1.17
3.	Public and Semi Public	1326.03		
	(a) Administration	147.93	0.85	1.76
	(b) Institutional	963.20	5.54	11.51
	(c) Organised open space	153.15	0.88	1.83
	(d) Graveyards	61.75	0.35	0.74
4.	Security	779.33	4.48	9.31
5.	Industrial	60.00	0.34	0.72
6.	Circulation	1013.41	5.82	12.11
7.	Urban Agriculture	788.07	4.53	
8.	Forests and water bodies	4391.93	25.24	
9.	Conservation	3848.24	22.13	
	Total	17400	100.00	100.00

Note: (i) The overall percentage under different use under developed area indicates a low figure due to high percentage of unbuildable area which has been indicated under Forests and Conservation.

(ii) Due to non-availability of maps in proper scale some of the tertiary roads and service lanes has not been taken into account while calculating the circulation area.



## CHAPTER FOUR



#### 4. Housing

4.1. **Housing Environment** : Housing is one of the basic requirement of human life and the condition of housing influences the quality of human life. Since housing constitutes an important component of a city, it makes significant impact on its proper functioning. Housing environment e.g. living condition within and outside dwelling units is of considerable important to the city dwellers. While site conditions, water supply, drainage, road network, provision of amenities such as education, health, recreation are important aspect of external housing environment, the dwelling unit space per person, nature of utilities within the house, tenure status, occupancy, and structural condition are vital aspects of internal housing conditions.

In the absent of adequate data on the housing sector present analysis will confine to information obtained from secondary sources.

4.2. **Pattern of Residential Development**:- At present, the residential development of the city has grown much beyond the municipal limit but due to the undulating terrain condition, residential area have grown in a scattered manner. Lack of planning measures in the past, and absence of proper legal backing, also was an additive factor for the haphazed growth.

However, during the last decade, there has been tremendous pressure on land and land value has increased manifolds within the municipal area. Further, due to non-availability of buildable land within the municipal area, the development of residence has sprawl in all the three direction along the major arteries namely towards Mawiong in the north, Upper Shillong in the south West, and Madanryting in the South east. Even unbuildable lands was cleared for development of residences to meet the growing demands.

After Meghalaya achieving the full fledge status of State, the increase in population and pace of development in Shillong, being a State Capital, resulted in exerting great pressure on land as a result of which development in the core area intensified both horizontally as well as vertically in the form of multistoried buildings.

4.3. **Existing Housing Status** :- The high rate of increase of population, since 1951 has created among others, acute shortage of housing. The construction of houses could not keep pace with the growing population. After the shifting of the State of Assam and the headquarters of Arunachal Pradesh, the housing pressure eased considerably for a short spell but after the establishment of new institutions such as the Norht Eastern Hill University, North Eastern Council, North Eastern Electric Power Corporation, Indian Council of Agricultural Reseach and other central and state offices, the housing problem in Shillong has further aggravated and the shortage was once again profound.

Although there was no quantitative shortage of housing as per the 1981 census figure, which shows 41,580 residential houses against the same no of household, it will not be appropriate to assume that there is no house shortage on the basis of the statistic. Due to the climate extremities i.e. cold winter and heavy rains, no pavement dwellers are found, as a result irrespectively of the quality of the dwelling unit or housing facilities, each household do occupies the same. This has resulted in over crowding and survey conducted by the department reveals that in



some of the area as high as 20 percent to 30 percent of the household having a family size of 5 to 6 persons occupies single room unit.

- 4.4. **Type of Houses** :- Most of the residential housing units are of Assam type building usually single to two storied. This is by virtue of Meghalaya being in earth quakeprone zone, the building were constructed in light frame structure as well as traditionally the city dweller's taste of living in bungalows. However, of late due to market forces on pressure of land, development of technology and availability of skill, multi-storied R.C.C. buildings are proliferating the urban form.
- 4.5. **Rental Housing** : Most of the migrant population to the city depends on the rental housing where as a nominal fraction of intra-state migrant have their own houses. The residential facilities provided by Government to its employees are very limited and there is no rental housing facilities available either by Government or public agency. Hence, the rental houses available in the market are owned by private individuals. Although it is a healthy sign that the private sector takes care of providing rental houses, the following problems are observe which requires to be improved. (1) Most of the units available for rental purpose are either unliveable or devoid of basic facilities as the rented portion are either a portion of the house where the owner resides himself or in the basement floor. (ii) Since the demand of the house on rent is very high, the owner donot botter to provide basic minimum facilities as he is certain of getting a taker in the same conditions at his own terms; (iii) Rent charged against the accomodation facilities are exhorbitant and (iv) the tenants are always under the mercy of the owners whim and dic-tates.
- 4.6. **Density** : The gross density during 1981 was highest within the Shillong Municipal area *i.e.* 43 persons per acre followed by Nongthymmai and Pynthorumkhrah which accounted for 30 persons and 21 persons per acre respectively. However, on the other hand Shillong Cantonment Mawlaiand Madanryting had low density of 15, 13 and 12 persons per acre respectively (Table 4.1). These up coming urban centres, however, have higher pace of intensification than the Shillong Municipal and Nogthymmai during 1991. The gross density in Shillong Municipal and Nongthymmai increased to 51 and 37 persons per acre *i.e.*; 19 percent and 23 percent increase while in Cantonment, Mawlai and Madanryting the density reached to 24, 20 and 18 persons per acre accounting for 60 percent 54 percent and 50 percent increase. This indicates the steady development of the fringe settlements, then the core of the city. Considering the undulating terrain condition in a hilly topography and its implication gross density of 50 per acre may be construed as the idealistic optimal density. It can be seen in table 4.2; which shows the gross density of different localities within Shillong Municipal area, that the density has reached 119 persons per acre which is by any standard high for a hill town. However, there is a scope of obsorption of additional population in Mawlai, Pynthorumkhrah and madanryting to great extent followed by intensification in Nongthymmai town.
- 4.7. **Slum** : The emergence of slums in Shillong is mainly due to accelerated high growth rate and unplanned physical development. The pace and magnitude of intra-State migration capitulated with an influx from outside the State has left the authorities concerned, lagging behind in providing the resources to meet the basic amities and thereby the number of slum dwellers are increasing over the years. There are 23 slum pockets identified within the Master Plan Area with an estimated 76,730 dwellers during 1991 (Table 4.3.).



Table - 3.1

**Population Density and Household Size in Shillong Urban  
Agglomeration During 1981 and 1991**

Sl. No.	Urban Components	Area in Acres.	Population		Population Density per Acre		No. of House hold in 1981	Average House hold in 1991
			1981	1991	1981	1991		
1.	Shillong Municipality	2,560	1,09,244	1,30,691	43	51	21,289	5.13
2.	Shillong Cantonment	459	6,620	11,075	15	24	1,321	5.01
3.	Mawlai	1,517	20,405	30,442	13	20	3,593	5.67
4.	Nongthymmai	724	21,558	26,816	30	37	4,349	5.00
5.	Pyathorunkhrah	521	10,711	14,322	21	27	2,244	4.77
6.	Madanrying	499	6,165	8,927	12	18	1,182	5.22
Shillong Urban		6,276	1,74,703	2,22,273	28	35	33,978	5.14

Table - 4.2.

**Density of Population within Shillong Municipality Area  
During 1971, 1981 and 1991**

Sl. No.	Name of ward	Area in Sq. Km.	Population 1971	Density	Population	Density	Population	Density
				per Acre	1981	per Acre	1991	per Acre.
1.	Laitumkhrach	1.87	11726	25	15620	39	N.A.	-
2.	European Ward	1.50	5626	15	7604	21	N.A.	-
3.	Police Bazar	0.10	3141	127	2629	106	N.A.	-
4.	Jain Road	1.42	5371	15	8235	23	N.A.	-
5.	Mawkhar	0.31	6800	115	8869	116	N.A.	-
6.	Jaiaw	0.57	8991	64	10207	72	N.A.	-
7.	South East Mawkhar	0.29	7060	99	8549	119	N.A.	-
8.	Mawprem	1.09	13113	49	18408	68	N.A.	-
9.	Kench's Trace	0.67	3659	22	6266	38	N.A.	-
10.	Laban	0.34	5882	70	5903	70	N.A.	-
11.	Lumparing	1.60	7334	19	8150	21	N.A.	-
12.	Malki	0.60	6956	47	8804	59	N.A.	-
Total		10.36	87,659	34	1,09,244	43	1,30,691	51



4.7.1. **Slums Characteristic :** All slums can not be construed under same category as each of them has its own character. Hence, it is appropriate to have understanding on characteristic features of slums in Shillong which will facilitate in dealing with the problems. Unlike the slums in plain, the slum in Shillong are less bleak because of its societal structure, topographic advantage and low level of industrialisation. Further, the slum dwellers are not pushed to or compelled to occupy unfit or undesired marginal land but are occupying the land as a common city dwellers.

Table - 4.3.

## List of Identified slums in Shillong - 1991

Sl. No.	Localities	Population	Household
1.	Naspatighari	1747	349
2.	Qualapatti	2153	431
3.	Laitumkhrah (Harijan Colony)	817	163
4.	Polo Bazar	3358	672
5.	Part of Jail Road	2955	591
6.	Sweeper lane (S.E. Mawkhar)	1250	164
7.	Part of Laitumkhah	3124	520
8.	Demseiniong	500	77
9.	Malki	9826	1638
10.	Madan Laban	5838	1167
11.	Riat Laban	4323	720
12.	Lumparing	7645	1390
13.	Lower Mawprem	7375	1229
14.	Upper Mawprem	3113	518
15.	Wahingdoh	3221	644
16.	Barapathar	3145	629
17.	Wahthabru	1300	236
18.	Laban	7062	1405
19.	Part of Lamavila	250	45
20.	Part of Riatsanthiah	450	90
21.	Part of Umsohsun	500	111
22.	Jhalupara (Cantonment)	3028	505
23.	Pynthorumkhrah (Outside Municipa Area).	3750	750
	Total	76730	14044



Since the land is owned by private individual except 3.02 Sq within the municipal area, most of the slums are developed in private land. Only in Jhalupara within cantonment area and sweeper lane (at present the land is under possession of the Municipal Board) slums have developed. In the absence of the proper development control or regulation, indiscriminate plot subdivision and disposal for development devoid of proper provision for access, services and disposal system leading to the growth of slum, degrading the living environment. On the other hand, stated earlier, portion of houses without having sufficient kitchen or toilet facilities are rented to number of families in the same unit. In area like Lumparing, Demseiniong, Malki, Madan Laban, Riat Laban, Lower Mawprem, Wahingdoh, Wahthabru etc., most of the slum dwellers are having their own land and houses, in Barapathar, Qualapatti and Pynthorumkrah, etc., the maximum slum dwellers are in private rented houses.

Often the slums are termed as 'Poorman's settlement, which don't hold good in case of Shillong due to the non existence of caste system and class barrier in Meghalaya. The cordial co-existence of people as neighbour irrespective of economic status is an unique distinctive of the slums in shillong. Recent survey in some of the slum areas indicates that urban poor in the slum areas comprise 20 percent to 30 percent of the total population.

4.7.2. **Problems of Slums Areas** : The main problems of slums in Shillong are (i) lack of basic civil amenities such as approach lane & water supply, drainage, lighting and sanitary facilities (ii) over crowding, both interms of space density and occupied residential unit, (iii) unliveable housing units (iv) unemployment and under employment accompanied by (v) deprivation of educational facilities and health contingencies.

4.7.3. **Slum Improvement** : There was no are legal backing outside the normal wards for enforcing and implementing slum improvement work as the Meghalaya Slum Area (Improvement and Clearance Act) 1973 was extended over the whole State only in January, 1990. However, the problems of existing slums and growth of new once endangering health, hygiene and environment of the city had drawn the attention of the authorities to ensure in improving the degrading environmental condition. The Urban Affairs Department started the slum improvement works way back in 1974-75 and continuing doing so under environmental improvement of urban slum scheme by way of providing physical amemnities. In the process 13 slum area were fully covered but the benefit could not be sustained due to lack of follow up action. However, the impact on overall development could not be achieved as the scheme partially took care of one of the problem area *i.e.* public physical amenities where as the individual dwelling units which required improvement left untouched and the human aspect were neglected. Hence, to facilitate these aspect the department has introduced the Urban Basic Services Scheme as well as Nehru Rozgar Yojana in these slum areas. These schemes takes care of both social input such as health care and health facilities for the vulnerable section *i.e.*; the children and women nutrition, pre-school learning, adult literacy, upgradation of housing units, etc., as well as economic upliftment by way of providing job opportunities through wage employment, enhance and impart skill and facilitate finance for enterprenuership which will augment the family income. However, effort has to be made to takle the problem in a co-ordinated manner and requires an integrated approach to be adopted to overcome the problems.

4.8. **State Housing Policy** :- Recognising the importance of housing, the State Gov-



ernment has created a full fledged housing department right from its inception to Promote and facilitate the housing stock in the State. The housing department undertakes construction of residential houses as well as provides financial assistance to individuals for construction of houses. However due to the resource constraints it could not achieve the desired results. Hence, for channelizing institutional finance a State Housing Boards was set up in 1985. In spite of the involvement of various agencies it could not cope up with the increasing demand. Hence to make concerted effort in this direction the State Government has introduced the Meghalaya State Housing Policy in 1988 which lays emphasis on increasing the housing stock and qualitative upgradation of the existing shelters by way of providing necessary construction materials at subsidised rate and soft loan for the poorer section of the people. As regards other income group people it envisage to facilitate flow of institutional finance for constructing houses. The main emphasis is to encourage private individuals and Co-operatives for owning the houses. However there was no special emphasis on meeting the housing shortage in the Urban Areas where it is acute. Further, it only gave emphasis on owning the houses and not so much attention was given to encourage rental housing. It is also too early to assess the impact of this policy. Therefore a more comprehensive approach has to be adopted to encourage the private sector in increasing the housing stock to meet the demand of all sections of the people.

4.9. **Estimate of Future Housing Stock and Space Requirement:** The future expansion in urban activities will lead to increased demand for housing. The future need of housing is indicated by:-

- (a) The predicated rise in the population figures resulting from increased and new economic activities inviting large immigration and the natural increase of the base population.
- (b) Redevelopment of substandard housing from the existing stock.
- (c) A drop in the number of persons per housing unit as a result of the natural trend in the reduction of family sizes with the adaptation of the urban way of life.

It is expected that single family detached unified units will continue to provide the major type of accommodation and most of the units will be single storied while a very few will be double storied or triple storied depending on the slope condition. Variety of housing accommodation are to be made for different household sizes and income levels. Rental houses should be increased so that the migrant population do not face difficulty in getting accommodation.

The Government, the Corporations, the industrial estates and the large institutions should be encouraged to provide housing for their own employees.

It can be understood that due to difficult terrain and loose soil condition multi-storied buildings cannot be justified except in selected locations. It is therefore anticipated that single and double storeyed housing will be the general trend in the coming years.

The Meghalaya State Development Authority will be required to enforce rigid rules, regulations and specific by-laws for housing construction so that a systematic development can be assured.

Assuming a household size of 5 persons, it has been estimated that an addition of 40,060 housing units has to be added to the existing housing stock to accommodate the additional population. Out of this, by 2001 A.D. 17,550 additional units will be required. Besides, it is estimated that approximately 8,000 units (20 per cent of the existing housing stock) requires up-gradation/improvement to become habitable units.



The qualitative shortage has not been accounted separately since the natural growth was not excluded while estimating the additional housing stock.

It is presumed that the natural growth of population (who may not require new units) will neutralise the qualitative shortage.

Keeping in view the above additional stock the additional space required for gross residential use will be 1457 hectares with a gross density 30 to 40 persons per acre. It is assumed that around 75,00 persons will be absorbed within the Urban Agglomeration as well as the existing rural settlements within the Master Plan Area.

**10 Strategy Formulation :** The task of adding up another 40,060 dwellings can be achieved only by combine effort made by both the Government agency and private sector. The role of Government agency to mitigate the future housing demand requires a greater thrust. In order to encourage private sector, it is very much essential to provide suitable and developed land for housing by the Government agencies at the initial stage. Once the basic impetus and momentum picks up, this should be left completely to the private agencies and individuals.

The private sector effort can be further supplemented by providing essential building materials, *i.e.* steel and cement sufficiently through Co-operative stores which can cater to the needs of the people. This will facilitate the individual in making their house without wasting much time, cost and energy for procurement of materials.

The necessity of rental housing in case of Shillong can never be underplayed till near future due to the provision of the existing land Transfer Act as well as the land ownership system. Hence attempt should be made to encourage private sector in this direction by way of providing loans for the purpose at the same terms and interest as for individual ownership.

The slum pockets located within the city should be given due consideration by providing adequate infrastructure, opportunity to augment family income of the poorer section, Social Service facilities and greater priority in improving and upgrading the dwelling units. In order to avoid and reduce the possibility of growth of new slums, proper regulation should be adapted to prevent indiscriminate plot sub-division, undesired intensification and land uses.

Redensification in Shillong Municipality and Nongthymmai should be avoided as the services has already strained. However, the density of Mawlai, Pynthorumkhrah and Madanryting should be increased upto 40 persons per acre. After construction of the National Highway bye-pass the north eastern portion of the city will have tremendous potentiality to develop. Hence, this area can be developed for residential purpose in future and some of the gain full commercial activities can be guided to this area.

Although the National Housing Policy as well as State Housing Policy envisage extending required finance for housing, it will be an upheaval task for the authorities concerned to arrange huge quantum of finance required within 2011 A.D.. Even if 25 per cent of the future housing demand will be taken up by people out of their own resources, 30,000 dwelling units are to be financed within 20 years. Hence concerted effort should be made to finance from housing financial institutions, such as HUDCO., L.I.C., G.I.C., HFDC., and recently initiated National Housing Bank. Added to this, housing Co-operatives should be encouraged by way of preferential treatment to tap industrial savings.



COMMUNITY FACILITIES

The town has sufficient number of educational institutions to serve the present population and with the increasing population there will be need to create more schools. The town has a primary school, a secondary school, a middle school, a high school, a technical school, a vocational school, a night school, a library, a community center, a health center, a police station, a fire station, a water supply, a sewerage system, a drainage system, a public market, a bus station, a taxi stand, a parking area, a playground, a sports ground, a club house, a cinema, a theatre, a museum, a gallery, a concert hall, a lecture hall, a meeting room, a council chamber, a court house, a police station, a fire station, a water supply, a sewerage system, a drainage system, a public market, a bus station, a taxi stand, a parking area, a playground, a sports ground, a club house, a cinema, a theatre, a museum, a gallery, a concert hall, a lecture hall, a meeting room, a council chamber, a court house.

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Health - The town has a health center with a dispensary, a laboratory, and other special services. It is felt necessary that these facilities of health be set up to cater to the need of the town.

Table 5.1 shows the distribution of these facilities within the standard urban area.

# CHAPTER FIVE

Health - The town has a health center with a dispensary, a laboratory, and other special services. It is felt necessary that these facilities of health be set up to cater to the need of the town. Table 5.1 shows the distribution of these facilities within the standard urban area. It can be revealed from the table that the medical facilities available are not uniformly distributed over the entire area.

Recreation - Compared to many other towns of the area, Abidjan is not short of having more recreational facilities. The Clubhouse at Boko Camp is one of the best in the area where important competitions are held every year. The Club Ground and the Garrison Ground provided facilities for our soccer sport. There is the famous Ward 4 Lake, the Lady Hyacinth Park, various waterfalls, a botanical garden and a lot of private and public recreational facilities in the suburbs of the town.

As per the above, recreational facilities are grossly inadequate especially in the residential institutions which do not have a proper ground for recreational activities. As per the above, practically all the recreational facilities are located in the central areas of the town while the others areas remain deficient in these facilities.

Social and Cultural Facilities - The town has a number of clubs and community halls spread over the town. There is also a central library run by the Government. There are five cinema halls located mostly in the central area of the town. The town also has a stadium located in a park ground. Besides, there are a few organized sports centers located in different areas of the town.

As far as places of worship are concerned the town has adequate number of churches, mosques and temples.

### Future Proposals :-

5.5.1 Provision :- As per the planning norms and standards laid down by the Committee on Plan Projects (CPP) and Town and Country Planning Commission (TCPC) and taking for a population of 1.50 lakh has been proposed. Taking this into consideration, Abidjan does not require additional facilities till the end of the 20th period. However, seeing the growing demand, the policy has been



## COMMUNITY FACILITIES AND URBAN SERVICES:

### 5. COMMUNITIES FACILITIES.

- 5.1. **Education:-** Shillong has become an important educational centre not only for the State but the whole north eastern region. The establishment of the North Eastern Hill University has added to the importance of Shillong as an educational centre.

The town has sufficient number of educational institutions to serve the present population but with the increase in population there will be need to create some more educational facilities. Within the standard urban area, there are 88 primary schools, 49 junior secondary and middle schools, 56 high schools 10 colleges, 20 vocational institutions and 1 University but they are not uniformly distributed over the entire area. Besides, there is also one Polytechnic institution and two industrial training institutions catering to the need of the State population.

Shillong does not have facilities for medical sciences, engineering and other specialised courses. It is felt necessary that these branches of studies be set up to cater to the need of the State Population.

Table 5.1 shows the educational facilities available within the standard urban area.

- 5.2. **Health:-** Shillong town has the maximum number of medical facilities in the Khasi Hills District. People from all over the district come to Shillong for their medical requirements. However the town lacks in facilities of specialised medical services. Till 1981 there were seven hospital, one family planning centre, ten dispensaries one T.B. clinic and one maternity and child welfare centre. There were a total of 1124 beds in the different medical centres. Table 5.2 shows the medical facilities available within the standard urban area. It can be revealed from the table that the medical facilities available are not uniformly distributed over the entire areas.

- 5.3. **Recreation:** Compared to many hill towns of India, Shillong probably can boast of having more recreational facilities. The Golf course at Polo Ground is one of the best in Asia where important competitions are held every year. The Polo Ground and the Garrison Ground provided facilities for out door sport. Besides the famous Ward's Lake, the Lady Hydari Park, various waterfalls a botanical garden and a lot of pine forest provides active recreational facilities to the inhabitants of the town.

In spite of the above, recreational facilities are grossly inadequate especially in the educational institutions which do not have a proper ground for recreational activities. At present, practically all the recreational facilities are located in the central areas of the town while the others areas remain deficient in these facilities.

- 5.4. **Social and Cultural Facilities :** The town has a number of clubs and community halls spread over the town. There is also a central library run by the Government. There are five cinema halls located mostly in the central area of the town. The town also has a stadium located in polo-ground. Besides, there are a few organised sports centre located at different areas of the town.

As far as places of worship are concerned the town has adequate number of churches, mosques and temples.

### 5.5. Future Proposals :-

- 5.5.1. **Education :-** As per the planning norms and standards laid down by the Committee on plan projects (COPP) and Town and Country Planning Organisation (TCPO) one college for a population of 1.50 lakhs has been proposed. Taking this into consideration, Shillong does not require additional colleges till the end of the plan period. However, seeing the growing demand, one college has been



Table : 5.1.

## Educational facilities within Shillong Urban Agglomeration, 1981.

Sl. No.	Name of Towns	Colleges	Polytechnic	Vocational Institutions	University	High School	Junior Secondary School & Middle School:	Primary	others
1.	Shillong Municipality	9	-	14	-	45	28	59	4
2.	Shillong Cantonment	1	-	-	-	2	2	3	-
3.	Mawlai	-	1	2	-	4	6	11	2
4.	Nongthymmai	-	-	2	1	3	4	4	1
5.	Pynthorumkhrah	-	-	1	-	1	6	5	1
6.	Madanriting	-	-	1	-	1	3	6	-
6.	Total Urban Agglomeration	10	1	20	1	56	49	88	8

Source: Census of India 1981

## Medical facilities within Shillong Urban Agglomeration, 1981

Table 5.2

Sl. No.	Name of Towns	Hospitals	Family Planning centre	Dispensaries Health centre	T.B. Clinic	Maternity & Child Welfare centre.	Total No. of beds
1.	Shillong Municipality	5	1	6	1	1	N.A.
2.	Shillong Cantonment	2	-	1	-	-	N.A.
3.	Mawlai	-	-	1	-	-	N.A.
4.	Nongthymmai	-	-	1	-	-	N.A.
5.	Pynthorumkhrah	-	-	1	-	-	N.A.
6.	Madanriting	-	-	-	-	-	N.A.
	Total Urban Agglomeration.	7	1	10	1	1	1124

Source :- Census of India, 1981.



proposed towards the north eastern side of the Master Plan area. It is felt that this college will cater to the needs of the people living in and around that area. An area of 15 acres has been earmarked for this purpose

As regards High Schools, it has been prescribed that for every 10,000 population, 1 high school is required. Shillong at present has 56 high schools. However, for the additional population of 1.50 lakhs to be accommodate in the north eastern side of the Master Plan Area, 12 high schools with facilities for middle schools has been proposed. The total area requirement will be around 60 acres. Similarly 31 primary schools covering an area of about 77 acres has been proposed.

- 5.5.2. **Health**:- Even though Shillong has a number of medical facilities, the town lacks in specialised medical services and patient have to go outside the State for their medical treatment. In view of this, it is proposed that a specialised hospital having all modern facilities is set up in the proposed Regional Institute of Medical Sciences. This will go a long way in solving the medical needs not only of the town but the region as a whole.

As regards the number of beds in different hospitals, Shillong has 1124 number of beds but as per the prescribed norm there should be a minimum of four beds per 1000 population. Hence by the end of the plan period the total requirement of beds will be 2000 which means 876 beds has to be added to the existing number.

It is proposed that 2 new hospitals will have to be set up in the proposed area for development with a capacity of 250 beds each besides, 6 health centres has also been proposed.

- 5.5.3. **Recreation** :- Even though the town has a number of recreational facilities, most of them are concentrated in the central areas of the town while the other areas remain devoid of such facilities. Hence the plan proposes that more open spaces and playground are created all over the master plan area.

Further, with the Government's Policy of attracting more tourists to Shillong, the recreational facilities must be augmented and diversified, providing special attention to fishing, boating, hiking, Golf, etc. Besides absence of proper picnic spots for the Shillong people is felt badly when there are plenty of spot which can be cheaply developed for the purpose.

- 5.5.4. **Social and Cultural Facilities**:- It is proposed that community halls be set up in each major locality to create a better social and physical environment. It is proposed that the community buildings be so planned and designed so as to provide adequate space facilities which could be organised for different individual groups for social and cultural activities. Community halls should also include indoor games and library.

As far as place of worship are concerned no additional facilities are felt necessary till the end of the plan period.

## 5.6. Urban Services

- 5.6.1. **Water Supply**:- Most hill towns face acute problem of water supply during the dry season. This is because the water supply in most hill towns is by and large governed by rainfall. Sources of water supply in hills are generally rivers, lakes, springs, natural falls and streams. The water from these sources are fed directly in the piped distribution system and stored in tanks where it is distributed to the consumers through piped water supply. (Drawing -5).

The water scarcity in Shillong during the lean months is a common phenomenon which generally occur every year during the dry periods. It is known that drinking water in Shillong is drawn from natural sources thereby depending at the mercy of nature for the availability of water supply. Whenever the monsoon sets in early the usual scarcity during the dry months is not very severe but when monsoon fails the scarcity of water becomes very acute.



5.6.2.

**Present Source And Distribution :** When the Municipality was first set up in 1910 the population of Shillong was 10,000 only and the sources from which water was supplied to 10,00 population was Wahjalnoh, Wahrisa and Madan Laban. With the constant growth of population, the Government through the Public Health Engineering explored Umkhen Source and replenished the supply, through the position did not show any remarkable improvement. Again the Public Health Engineering implemented two schemes namely Umjasai and Crinoline but still there was no perceptible improvement as the sources were gradually drying up during the lean months.

The responsibility of supply of portable water within the municipal limits rests with the Shillong Municipality Board where as in the other township within the Shillong Urban Agglomeration and the other rural settlements it is being managed by the Public Health Engineering Department.

At present Municipal Board is tapping water from seven municipal sources given below :-

(a) Wahjalnoh	1.00 lakh gallons/day	
(b) Wahrisa	1.00	- do -
(c) Umjasai	2.00	- do -
(d) Madan Laban	0.50	- do -
(e) Crinoline	0.80	- do -
(f) Patta Khana (Madan Laban)	0.25	- do -
(g) Wahdienglieng	0.50	- do -

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TOTAL :- 6.05 lakhs gallons per day.

In addition Municipal Board gets 12.07 lakhs gallon per day from Mawphlang (Greater Shillong Water Supply Scheme) as per details given below :-

(1) Mawprem	4.35 lakhs gallon per day.	
(2) Iewduh Tank	2.95	- do -
(3) Lachumier Tank including Upland Tank.	4.25 lakhs gallon per day including	
(4) Ganesh Das Hospital Tank	0.41	- do -
(5) Jailroad area	0.11	- do -

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TOTAL : 12.07 lakhs gallon per day.

However the actual supplies varies from 10-12 lakhs gallon per day depending on availability of power supply.

1.25 lakhs gallon per day is available from Umkhen, which is tapped by P.H.E. Department. Hence the total quantum of water available to the Shillong Municipal Town is only 19.37 lakhs gallon per day.



With the installation of the Greater Shillong Water Supply Scheme (Phase I) the water scarcity within the Shillong Urban Area has been relieved to some extent. At present a regular supply of 17 lakh gallon per day is maintained by the Public Health Engineering Department. Besides the above sources water is also tapped from Umkhen and Umsohlang.

2.85 lakhs gallons of treated water is distributed from Umkhen Water supply scheme to different areas of Nongthymmai and Laitumkrah.

With Umsohlang as the source, 3.00 lakh gallons of treated water is pumped to different areas of Mawlai town.

Hence the total quantum of water available within the Shillong Urban Areas is 25.22 lakh gallon per day which is much below the desired requirement.

**6.3. Future Requirements :** Taking into account a minimum of 100 litres per head per day the total requirement of water within the Shillong Urban Agglomeration by 1991 works out to be 4.8 MGD per day and by the end of the plan period *i.e.*, 2011 it will go up to 7.9 per day. Where as within the master plan area the present requirement is 6.4 MGD per day and by 2011 it will go up to 10.8 MGD per day.

After commissioning the first phase of Greater Shillong Water supply scheme, the Public Health Engineering Department engaged a consultant in 1988 for design of distribution network and work on enhancing reservoir capacity and laying of distribution lines. It is expected that after completion of this scheme the supply of water within the master plan area will improve considerably.

However the public Health Department has estimated that by 2006 the ultimate supply of water, works out to be 8.40 MGD, which means a total deficiency of 2.40 MGD by 2011. It is proposed that the concerned departments must explore the possibilities of more sources around Shillong so that the scarcity of water supply can be over come in the long run.

**6.4. Water Treatment :** It is proposed that the minimum treatment requirement will consist of intake chambers with screening arrangements, chemical solution tanks and mixers, rapid sand filter and chlorination. It is essential to have the entire treatment plant near the intake point.

**7. Power Supply :** The Shillong Hydro Electric Company Limited was started in 1922 and after operating for about 55 years, was taken over by the Meghalaya State Electric Board in 1977. Since the take over of the supply unit, considerable improvement has been made by Meghalaya State Electric Board to meet the growing power demand.

The number of different types of electric connection within the Shillong Urban Agglomeration is as per table 5.3.



TABLE 5.3.  
Electrification (Number of connection)

Sl. No.	Name of Town	Domestic	Industrial	Commercial	Street lighting points
1.	Shillong Municipality	9001	2	2677	1902
2.	Shillong Cantonment	537	1	61	137
3.	Mawtai	511	-	136	N. A.
4.	Nongthymmai	850	-	123	N. A.
5.	Pynthorumkbrah	318	-	43	N. A.
6.	Madamrying	339	-	53	N. A.
	TOTAL	11,556	3	3109	2039

Source :- Census of India '81



The present peak demand in the city is more than 20 MVA and the whole network if properly designed and strengthened with adequate metering arrangements should enable the Board to earn a substantial revenue.

5.7.1. **Source of Supply** : The present source of supply of power is from the 132 KV grid sub-station at Mawlai. (Drawing - 6).

Even though the power supplied at present is adequate yet poor conditions are experienced in many areas as during peak and off peak hours. This is due to many technical defects.

5.7.2. **Street Lighting** : As regards street lighting the present schemes are implemented by the Meghalaya State Electricity Board with funds released by the Urban Affairs Department and Shillong Municipal Board. Table 5.4 shows the nature and power of lamps and number of lamps within the Shillong Municipal areas.

Due to the severe resource constraints faced by the Shillong Municipality, they are not in a position to pay the energy charges and as a result the Government gives assistance to the Municipal Board from time to time to clear the bills of Meghalaya State Electricity Board.

Outside the Shillong Municipal areas, the Government sanction funds for installation and maintenance of mercury and sodium vapour lamps.

5.7.3. **Future Proposals** : The present power supply catering to the need of Shillong require renovation and augmentation not only to meet the present demand of the consumers but at the same time should be able to meet the requirements of the ever increasing population.

Meghalaya being surplus in power should take the initiative in having a properly designed distribution system for Shillong to give

TABLE - 5.4.

**Street Lighting within Shillong Municipality.**

Sl. No.	Nature of Lamps	Power of Lamps	Number of Lamps
1.	Bulbs	60 watts	1302
2.	- do -	100 watts	5
3.	- do -	200 watts	4
4.	Tube Lamps	40 watts	572
5.	- do -	80 watts	586
6.	Mercury Lamps	125 watts	42
7.	- do -	250 watts	35
8.	Sodium Vapour Lamps	250 watts	190
9.	- do -	150 watts	63

Source : Shillong Municipal Board.

better services to its consumers and at the same time earn more revenue to improve the financial position of the Board. The Board should also take



initiative to go for more sophistication of the distribution network and once this is done, it is hoped that the Shillong Power Supply Scheme will be improved considerably.

The power requirement by 2011 works out to be 50 MVA within the Master Plan Area. Hence an addition of 30 MVA has to be added to the existing supply system. It is proposed that new distribution lines and sub-stations are set up in the new township to meet the future demand. At least one 132 K.V. main station and 4 numbers of K.V. substations in the new township will be required (Drawing 7).

The electricity board has recently taken up construction and augmentation of sub-stations at different localities within the town to cater the needs of Shillong and surrounding areas.

Besides it is proposed that proper street lighting are to be provided based on proper designs and drawings.

**Sewerage and Sewage Disposal System:** At present the town has no integrated sewerage system. The town, especially the areas falling outside the Municipal limits are dominated by latrines where the discharge falls directly to the open drains or streams thereby causing pollution.

It is obvious that Shillong requires an underground sewerage system to check pollution. It is felt that it will not be possible to lay sewerage lines in the thickly built up areas as this will call for considerable demolition. In view of this it is proposed that the latrines be converted into sanitary latrines as an alternative to the sewerage system, in the existing built up areas.

As regards the proposed built up areas, it is necessary to construct underground sewerage facilities and the main line should be connected to a treatment plant before being discharged to the streams.

The Meghalaya State pollution Control Board had prepared a scheme for sewerage system and its subsequent treatment for Greater Shillong Area which encompasses an area of about 208 Sqkm.

**Integrated Scheme on the Liberation of Scavengers and Improvement in Sanitation :** A scheme for liberation of scavengers and improvement in sanitation was introduced by the Government of India towards the end of Seventh five Year Plan period with an objective to totally eliminate manual scavenging involved in the dry latrines and convert them into low cost sanitation units, scavengers so liberated would have also to be rehabilitated under this scheme.

Prior to the introduction of this scheme, construction of low cost sanitation was also taken up by this department in collaboration with the P.H.E. Department, under the scheme of Urban Basic Services and Environmental protection and Development.

300 Nos of Small and Medium Towns were selected in the country out of which only 1 town of Meghalaya *i.e.* Shillong was selected later on, one more town namely Tura was included by the Government of India on the request of the State Government.



According to a Survey conducted recently by the Shillong Municipal Board there are 3468 dry latrines within the Municipal area of Shillong. The numbers of scavengers employed is 30 Nos (full timer) and 126 Nos (part timers). It is proposed to convert all the above dry latrines into low cost sanitation units. In addition 816 numbers of Low Cost sanitation units are proposed to be provided so as to cover households which have no sanitation facilities at all.

The main objective of this scheme is to improve the sanitation and environment in one hand and to eliminate manual scavenging on the other by constructing low cost sanitation units and also by taking suitable measures to rehabilitate the scavengers that would be displaced.

5.8.2.

**Water Pollution :** The contamination of the sources of water supply is detrimental to the health of the citizens. Fortunately most sources of water supply in Shillong is located in the higher reaches and away from the densely built up areas of the town. However, with the expansion of the town and continuing deforestation, these sources may be effected in the long run. In view of this, it is proposed that the Upper reaches of the town where water is tapped for public distribution need to be strictly conserved with strict prohibition on deforestation and building activities.

5.9.

#### **Other Services :**

5.9.1.

**Post And Telegraph :** There is one main post and Telegraph Office located within the Secretariat Complex Besides, there are a number of branch and sub post office located in different areas of the town. It is felt that a few more sub-post offices are needed to cater to the need of the entire master plan population.

5.9.2.

**Police Station :** The town is served by a main Police Beat Houses located in different areas of the town. But with the growth of population, it is felt that some more police beat houses and police out posts has to be set up to cater to the need of the entire master plan population.

5.9.3.

**Fire Service :** The town is served by two fire fighting services. It is proposed that the fire fighting services should be located at strategic locations throughtout the Master Plan area in such a manner so that they reach the effected spots in the shortest possible time.

5.9.4.

**Burial And Cremation Ground :** The town has a sufficient number of burial and cremation grounds to serve the future population also, but it is felt necessary that the burial and cremation ground needs to be improved and properly maintained. As regards cremation grounds it is proposed that the existing cremation grounds which follows the traditional system should be replaced by electric crematorium.



## CHAPTER SIX



6. **Trade and Commerce, Industry and Administration :** Apart from being a State Capital and a District Headquarter, Shillong has also shown prospects of trade and commerce especially during the last two decades. There is however a possibility as well as a need for a planned and proper development of commercial activities in the town. Although Shillong primarily developed as an administrative centre, its location and linkages in the north east attracted the enterprunures and commercial activities has grown rapidly and serves as a regional commercial centre.

6.1. **Commercial Cum Shopping Areas :** With increasing population commercial activities in Shillong has expanded considerably. Shopping activities has grown tremendously within the town area. Lewduh (Barabazar) and Police Bazar continues to be the biggest wholesale and retail market respectively in the whole state where as other shopping centres like Laitumkrah, Polo Bazar, Laban, Malki serves the neighbourhood population. However, there is a serious shortage of warehousing and storage facilities particularly for goods of parishable nature.

There is no organised market for agriculture products in the State sector. In the town there are 2 municipal markets and numerous daily bazars of local importance.

6.2. **Wholesale Trade :** Most of the wholesale activities of the city ranging from foodgrains to machineries are located at lewduh. It acts as a collection and distribution point for agro based products. The bulk of commodities are transacted on the same day even in a distress sale as there is no cold storage and adequate ware housing facilities available nearby. Besides its whole sale activities, it serves as a major retail centre of the city. However the areas in and around lewduh is overcrowded and there is hardly anyscope of its expansion. Hence, efforts has to be made to decentralise some of the functions to release congestion and to channelise the activities to facilitate its growth. Recently, an organised whole sale market centre has been initiated at Mawiong.

6.3. **Problems of Commercial Areas :** The commercial area of the city with its core in lewduh (Barabazar) and Police Bazar have been found to be extending along the major roads but their growth and expansion has been considerably checked by nemerous barriers on all sides, and this has resulted in high rise building activities.

Even though this area is served by major road arteries, increasing activities in the main commercial areas has created problems of traffic jams, due to the increase of traffic volume and overloaded junctions. The situation is further aggravated due to the existance of go-downs and warehouses in and around this area which lacks in parking and loading-unloading facilities.

Some of the other problems faced in the commercial area are :-

- (1) Over concentration of diversified commercial activities.
- (2) In the absence of well defined framework for development and enforcement has led to overcrowding and congestion.



(iii) lewduh, being located outside the Municipal jurisdiction, have created civic management and other environmental problems.

(iv) Non-availability of land for further extension or intensification of the commercial activities.

6.4.

**Future Proposals :** The main wholesale and retail centre at lewduh is congested and completely saturated with commercial activities. The near by areas of Paltan Bazar and Mawlonghat has also developed intensively resulting in traffic congestion and degradation of the environment. It is therefore necessary that both wholesale and retail activities are decentralised and shifted to suitable areas within the master plan boundary (Drawing - 8).

6.4.1.

**Wholesale and Regional Markets :** The desirability to relieve congestion in lewduh has been receiving consideration of the Government for quite some time. An examination of the existing situation in lewduh exhibits a high level of congestion and saturation leading to innumerable problems. It is time that the wholesale activities from lewduh and its surrounding areas are de-centralised to other suitable areas so that the pressure on lewduh is minimised.

6.4.1.1

**Wholesale Activities :** It is proposed to set up wholesale activities at 3 locations namely.

(a) at the junction of Upper Shillong and road leading to Shillong Peak.

(b) at a suitable site near Mawdiang diang (near the proposed N. H. by pass)

(c) at Mawiong.

The above wholesale markets are expected to cater to the agricultural produce coming from different directions of the District.

The above markets will also be provided with the following facilities :-

(a) **Cold Storage Facilities :** Cold storage facilities are to be provide so as to enable the traders as well as the farmers to store the perishable products for sale outside the State.

(b) **Proper Godowns and Warehouses :** The provision of good godowns and ware-houses are very essential for storage of unperishable consumer goods coming from outside the state for re-distribution to the interior areas.

(c) **Parking For Loading and Unloading Of Goods :** With the setting up of new markets in the adjacent areas of Shillong, it is expected that the traffic congestion in and around lewduh area will be minimised to a great extent. Proper parking spaces and facilities for loading of goods are to be created at the proposed wholesale centres for vehicles bringing goods from the interior areas as well as for vehicles bringing goods from outside the State.



6.4.1.2. **Retail and Shopping Centres:** At present, Jewduh and Police Bazar are the main retail centres and cater to the need of the entire city. In addition, there are retail markets at Polo, Laitumkhrah, Laban Dhankheti etc. It is proposed that some more retail markets at Umpling, Mawlai, Bishnupur and Nongthymmai, are set up. As regards local centres, it is proposed that each residential area will have its own local shopping centres.

6.5. **Industry :** Industrially, Shillong has not made any headway though there is enough potential for development of cottage and small scale industries in and around Shillong Urban area. The existing industries are haphazardly located mainly along the major traffic arteries thereby creating traffic congestion and various other problems. At present there is only one organised industrial area near the meter factory. It may however be necessary to create an industrial base for Shillong town in view of the fact that wider economic activities may have to be created to cater to and sustain the ever increasing population of the town.

6.6. **Problems of Industrial Development :** Although the town has a potential for industrial development the principle reasons for inadequate development in this sector can be attributed to the following facts.

(i) Apart from road linkages Shillong is seriously handicapped by the absence of rail or water linkages.

(ii) Suitable land for industrial development is restricted.

(iii) Lack of development of propulsive or basic industry which can regenerate further industries to use regional resources.

(iv) In relation to the industrial development coming up in the neighbouring state of Assam, there is no cost advantage in Shillong in respect of equipment, transportation cost, power and skilled labour.

In spite of the above, Shillong does have potential for industrial development being the only outlet for the large rural and rich hinterland and being the only service centre for the area. There is however a need to identify and organise this sector keeping in view the resources available in the region and the constraints and potentials.

6.7. **Existing Number and Type of Registered Industries :** Industrial development in Shillong has developed in the form of small scale service, handicraft, food and fruits products, wood and Wood products etc :- Table 6.1. shows the type and number of industries within Shillong Urban Area.

6.8. **Proposed Industrial Areas :** The Master Plan for Shillong envisages development of medium and small scale industries and as such, industrial estates has been proposed towards the north-eastern side of the Master Plan Area. The proposed industrial estates will be provided with all the infrastructure like road, water and power supply. An Area of 50 hectares has been earmarked for the purpose.



6.9. **Proposal For Industrial Development :** Since Shillong is devoid of medium and large scale industries it is difficult to forecast the number of industries that is likely to come up during the plan period. However, it is expected that the following small scale industries may come up in the town, namely building materials, wood and bamboo products bakery products, beverages, agrobase industries, cottage and household industries, electrical and electronic industries, fabrication and metal industries, repair workshops, warehousing etc :-

The designation of industrial development should be based on the following guidelines.

(i) Government should frame suitable industrial development policies in order to attract the enterprenore and extend possible incentives, in the form of short term loan, land, exemption of tax reliefs for

TABLE - 6.1.

Type and Number of Registered Industries within Shillong Urban Area.

Sl No.-	Name of Industry	Number of Units
1.	Paper Printing	20
2.	Tanneries and Leather based industries	7
3.	Pharmaceutical and Chemicals	10
4.	Mineral based industries Cement block	34
5.	Mineral and mining, lime making and stone crushing	4
6.	Food and Fruit (Bakery)	52
7.	Electrical and electronic products	11
8.	Forest based industries	28
9.	Knitting and embroidery garments	9
10.	Tailoring and garments	35
11.	Iron and Other basic metal industry	7
12.	Iron and Steel fabrication industry	15
13.	Vehicle repair and servicing	33
14.	Tyre rethreading and servicing	10
15.	Type writers and servicing	8
16.	Scooter and bikes repairing and servicing	8
17.	Hood and seat for motor vehicles	9
18.	Tanneries and slaughter houses	4
19.	Handicrafts	5
20.	Others	12
TOTAL :-		321.

Source :- State Board for prevention and control of water pollution. (1984)



certain period etc :- Requisite infrastructural development should be provided. Public sector or joint sector ventures need to be undertaken to initiate development.

(ii) Proximity of road link should be taken into account for transportation of goods, preferably close to National Highways.

(iii) Industrial units based on local resources should receive top priority for development.

(iv) Since the climate of Shillong is suitable for the setting up of electronic industries, government should take initiative to develop these industries.

(v) There should be a research and development cell to solve the problems of industrial development and study future potential of various industries.

6.10.

**Administration :** The central areas of Shillong i.e. the areas around I.G.P., Barik, Lower Lachumier etc :- better known as the Secretariat Complex is considered as the most important administrative centre not only for the city but the region as a whole. Here in are located the important State level offices, District level offices and regional level offices like the North Eastern Council, the office of the North Eastern Hills University, the Accountant General's office, the Meghalaya Secretariat and the Additional Secretariat, General post office, the Deputy Commissioner's office and numerous other state and district level offices. This area in fact is the Administrative hub of the entire region. Besides various other state level, district level and regional level offices are scattered throughout the Shillong city.

6.11.

**Problems :** It has been observed that high rate of administrative activities are taking place in the city. Various State and Central Government offices, autonomous bodies, banks and business establishments have extended their functions within the core area of the city. The above organisations have been expanding in the last few years and there has been no attempt to effectively decentralise them away from the core areas, and since most of the offices are occupying residential houses on rent there is a steady increase in the rent structure, besides creating shortage in residential houses.

6.12.

**Proposal :** It is presumed that administrative activities is most likely to increase at the rate of state population, employment is also likely to increase with the increase in Government functions.

After considering the existing level of development and the demand for land likely to be required for Administrative use, an area of 30 hectares has been earmarked towards the north eastern side of the Master Plan Area.

It is also proposed that all Government land under administrative use should be reorganised and planned in a proper manner so that an integrated administrative structure is attained.

Besides, it is proposed that all District level offices, new administrative units be set up in the proposed administrative area.



CHAPTER SEVEN



**Traffic and Transportation :** During the last two decades, Shillong has witnessed remarkable progress in all fronts but the road network has practically remained stagnant over the years. Limited road link between different activities and urban settlement, non uniform road way width, poor geometries of road intersection and absence of adequate pedestrain facilities, present a dismal picture of the traffic system. Lack of efficient mass transport system has led to the increased use of intermediate public transport and other modes of transport. The traffic has become extremely heterogenous giving rise to tremendous conflict on roads.

Continuing growth of population and resultant urban expansion could not keep pace with the increased demands. In addition to this, the physio-geographical features of the area has restricted the growth of transport network within the town and in the absence of rail or river, communication, the transport system is wholly road based.

With each passing day traffic conditions in Shillong are becoming increasingly hazardous. This also given rise to certain vexing problems like increased journey time due to increased traffic density coupled with inadequate road capacity and traffic bottlenecks at various market junctions. The problem is further aggravated due to the mixing up of local and long distance traffic mainly on NH 40 which connects Shillong to Guwahati and NH 44. In the absence of an arterial by-pass the G.S. Road is functioning as a major link for Tripura, Mizoram and Manipur and large volume of passenger and goods movement is taking place through Shillong city. (Drawing - 9).

**Traffic Problem :** Restricted road width and adequate parking places are the most acute problems facing the city today. The problem has become acute because of the fact that the city with its infrastructural facilities were initially laid with a view of sustaining a few thousand population but Shillong today has grown to over two lakh population.

Characterised by a high rate of vehicle ownership, narrow roads, concentration of activities and unavailability of additional vacant land, parking too has become a serious problem especially in the central, commercial and administrative areas and also along the major corridors of the city. Unavailability of organised parking space has led to unwanted on street parking creating innumerable allied problems of traffic congestion, traffic jams, delay in journeys and accidents. Some of the problems leading to Traffic Congestion are :-

- (i) Lack of parking places, specially near the commercial centres;
- (ii) Absence of adequate pedestrain facilities specially on the major roads;
- (iii) Mushroom growth of commercial activities specially along the road side;
- (iv) Narrow roads and lack of parallel corridors within the city;
- (v) Mixing up of local and through traffic on National Highway 40 & 44.



- (vi) Lack of proper terminal facilities for mini/city buses and goods vehicles.
- (vii) Lack of proper traffic control and management measure.
- (viii) Poor geometries of road intersections etc.,

The areas which suffer most are the older parts of the city which are comparatively heavily built up, have no scope for any further development and are catering to vehicular volumes much beyond their capacities, thus resulting in congestion and confusion.

With each passing day, traffic congestion in Shillong is becoming increasingly hazardous giving rise to certain vexing problems like increased journey time due to increased traffic bottlenecks especially near the commercial areas.

7.2.

**Traffic Generating Nodes :** Major traffic nodes (passenger) in an Urban settlement are normally the work centres, commercial centres, recreational centres and traffic terminals. The work and commercial centres generate a fairly large amount of regular traffic while the traffic generated by recreational centres are periodic. Table 7.1. shows the major traffic generating nodes in the town.

TABLE 7.1.

## MAJOR TRAFFIC GENERATING NODES

Sl. No.	Location	Type of Nodes	Description	Remarks
1.	Iewduh (Barabazar)	(a) Commercial Centre	The main Retail and wholesale area of town and covers areas like Motphran, Garikhana, Mawlonghat, etc.	Suitably located undesirable for development. Efforts should be made to shift the wholesale activities from this area to other suitable locations.
		(b) Traffic Terminal	Location of city bus terminus, Jeep terminus, Regional bus stand and Truck parking.	The transportation functions are undesirable and alternative sites should be identified.
2.	Police Bazar Bazar	(i) Commercial Centre	The main retail area of the town.	Suitable located but needs redevelopment.
		(ii) Traffic Terminal	Location of Regional Bus stand, taxi stand etc.	Unsuitably located alternative site should be identified.
3.	Laitumkhrak.	Educational cum Commercial centre.	The main educational area of the town with fair amount of commercial activities.	Suitably located.
4.	Secretariat Complex.	Major work centre.	The main administrative centre of the State.	Suitably located.



On an examination of the traffic generating nodes, it has been found that lewduh (Barabazar) and its neighbouring areas, and Police Bazar areas which functions as the major commercial centre as well as a traffic terminus generates the maximum amount of traffic. There is an urgent need therefore to shift the traffic terminal functions from these areas as these areas are highly congested and there is an acute shortage of parking spaces. Most of the regional bus stand, city bus stand and taxi stand are operating from these areas where space is inadequate and parking occurs mainly along roadside.

7.3.

**Modes of Transportation :** Traffic carrying capacities on Urban roads are intimately related to the modes of traffic in use along these roads. Intermixing of different modes, depending on their proportion reduces the traffic carrying capacities on the road. The main modes of traffic observed in Shillong today are bus, taxi, Jeep, scooter/motor cycles, trucks and private cars. Table 7.2. shows the growth of motorised vehicles in Shillong.

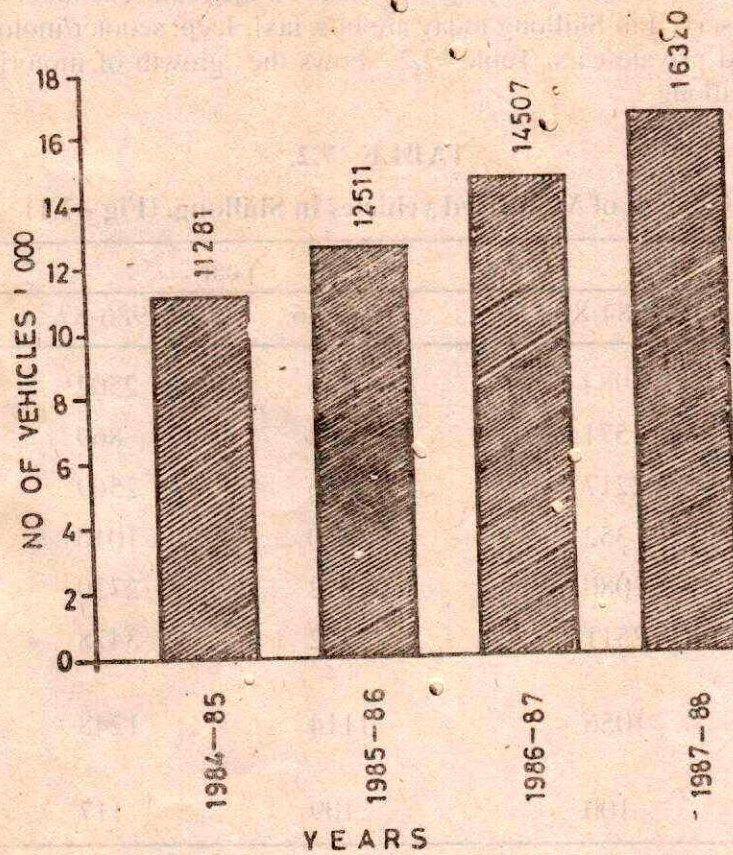
**TABLE 7.2.**  
**Growth of Motorised vehicles in Shillong. (Fig - 7.1)**

Vehicle Type	Year			
	1984-85	1985-86	1986-87	1987-88
Truck	1984	2226	2502	2788
Bus	571	632	869	952
Car	2217	2396	2569	2930
Taxi	352	870	1010	1077
Jeep	2080	2342	2720	3100
Scoter and Motor Cycle.	2511	2792	3478	4013
Tractor and Trailers.	1056	1114	1248	1336
Others.	100	109	117	124
<b>TOTAL :</b>	<b>10871</b>	<b>12481</b>	<b>14513</b>	<b>16320</b>

**Source :** National Transportation Planning & Research Centre. The above table reveals that all Types of Vehicles has continued to grow and this trend is likely to continue with the increase in population.

Hence, creation of Truck Terminus, Bus Terminus, Regional Bus stands, Taxi stands and organised parking spaces shall be required all over the town. Shillong however is previlaged by the absence of slow moving vehicles except a few pony carts.





GROWTH OF MOTORISED VEHICLES IN SHILLONG



7.4. **Traffic Volume :** Data collected through traffic volume survey reveals that Police Bazar intersection carries the highest volume (2890 pcu's) followed by Kutchery point, Butcher lane and Sweeper lane intersection. The traffic volume at important intersections (in terms of passenger car units) is as per table 7.3.

It has been observed that most of the stretches especially falling on G. S. Road, Barik-Don-Bosco square are catering to vehicular volumes much beyond their capacities, thus resulting in congestion and utter chaos. The capacities on various stretches have been observed to be considerably reduced due to encroachment, absence of footpaths for pedestrians, absence of bypass for through traffic and presence of unauthorised roadside structures.

**TABLE - 7.3**

**Peak hours traffic volume observed at important intersections.**

Sl No.	Name of the intersection	Peak hour volume (in pcus)	
		Morning	Evening
1.	Band Stand	666	581
2.	Jieng Kieng	1176	977
3.	Nongthymmai	1174	946
4.	Jylli Shop	1171	913
5.	Fire Bridge	1540	1213
6.	Laitumkhrah Police beat House	870	810
7.	Dhankheti I	2037	1687
8.	Dhankheti II	1848	1827
9.	Barik	2039	1985
10.	Laitumkhrah Police Point	1220	1193
11.	Don Bosco	1458	1320
12.	I.G.P. I	1925	1846
13.	I.G.P. II	2306	2061
14.	Kutchery Point	2665	2538
15.	Raj Bhavan intersection	1947	2018
16.	NEC	1271	1139
17.	Civil Hospital I	2033	1796
18.	Civil Hospital II	1804	1719
19.	NEFA Secretariat	1431	1401
20.	Military Hospital	1290	1239
21.	District Council	1841	2036
22.	Bara Bazar	1732	1666
23.	Mawlonghat	1066	1114
24.	Police Bazar	2890	2710
25.	Butcher Lane	2625	2323
26.	Sweeper Lane	2281	2187
27.	Oakland	662	765
28.	Polo Bazar	1011	1039
29.	Malki	1843	1838
30.	Fire Brigade I	969	841
31.	Fire Brigade II	1220	1139



7.5.

**Parking :-** A survey conducted to assess the parking need in the city has shown that the problems exists at two levels. The areas have been indentified taking into account the present demand for parking space and also the demand for parking spaces that is likely to be generated in the years to come. The areas identified are as follows :-

(i) At the Central Commercial and Administrative area level covering Barabazar, Police Bazar, Garikhana and D. C. Court area, it was observed that there was only one, two tier organised public parking lot for taxis and private vehicles in the S.C.E.R.T. Premises at Motphran. Parking of private vehicles is in the form of on-street parking along all the major roads which has considerably reduced the effective width of all the existing busy roads. A part from the above, there are only two stands for local and tourist taxis, a city bus terminus besides two State Transport Stations. From the point of view of the existing demand, the above areas are found to be inadequate and from the functional consideration, resetting the same is necessary in order to ensure a smooth and efficient flow of traffic.

(ii) Outside the Central Area Level covering Laitumkhrah, Dhankheti, Polo Bazar, Nongthymmai, Mawlai areas, these have recently started developing as sub-centres with the coming up of commercial and other activities which have resulted in increasing movement and increasing demand for parking spaces. Most of the above areas do not have any organised parking areas and taxi stands. In the recent past, some new establishment have come up in these areas without any regard to parking requirements.

7.6.

**Goods Operators Survey :** It has been found that both intra-State and inter-State movement of goods is wholly road based, Shillong is the major town which provides linkages in all directions (towards Guwahati on one direction and Tripura, Manipur, Mizoram and the Cachar district of Assam in the other direction) and as such movement of goods traffic through the city leads to severe capacity constrains for the street network.

Only a few operators ply their vehicles within Shillong Urban Area. A large number of operators usually operate on intra-State and inter-State-routes. Generally the vehicles ply between Shillong and the neighbouring States like Assam, Mizoram, Tripura, Manipur and Nagaland.

7.7.

**City Goods Movement :** City goods traffic play a significant role in the transportation scenerio of Shillong. It has been estimated through the goods operators survey by the National Transportation Planning and Research Centre, that 3739 goods vehicles trips are generated daily on Shillong roads. The commodities are generally carried by trucks, jeep trollies and to a limited extent by pony carts. It is also estimated that out of the total internal goods vehicle trips, nearly 73 percent of the trips are attracted to Bara Bazar, Police Bazar, Mawlai, Garikhana, Nongthymmai, Umpling, Happy Valley, Laitumkhrah, Laban etc.

7.8.

**Public Transport System :** There are predominantly one mode of public transport systems operating within Shillong Urban area. This is the :-



intra city, mini and city buses.

The intra city, mini and city buses have been found to be catering to a large proportion of intra city traffic.

7.9.

**Mini And City Bus Operation :** Mini and city buses are catering to a large proportion of intra city traffic. There are 67 buses operating on 7 different routes. Majority of these buses are plying on routes like Barabazar, Umpling, Barabazar-Nongthymmai, Barabazar-Mawlai etc. Besides the Meghalaya Transport Corporation (MTC) operates a limited city bus services but they are catering to a meagre percentage of over all travel demand in the city. The major percentage being satisfied by the private city and mini bus services.

At present there is only one city bus terminal located at Mawlonghat. Traffic in and around their point has been growing at a fast rate chocking up the channels of movement. The terminal located here is not able to meet the present day requirement mainly due to inadequate circulation area and consequently there is a great deal of chaos all around.

Since bus services form an important mode of transport in and around Shillong, the terminal area requirement is likely to become substantial in the near future. Since the present terminal area will be far too inadequate to meet the future demand it is being necessary to have more bus/mini bus terminal areas in and around the planning area.

7.10.

**Traffic and Transportation : Broad Proposals :** A workable circulation pattern backed by an efficient transport system is the main stay of economic and socio-cultural life in a town. The development of all activities in a town is very much dependent on the circulation pattern and transportation network. The road development should be planned in such a manner that the existing road corridors which have space constraints due to the existance of heavy built up areas and encroachment on them should be relieved of a significant portion of the future traffic by a system of alternate routes wherever feasible.

The future transport system should also ensure that there is a progressively increasing utilisation of the mass transport system. This is imperative because the total number of passengers can be increased manifold when more passengers travel by the mass transport system. This will also ensure better utilisation of available road space within city and also reduce the private modes usage.

7.11.

**Planning Proposals :** In order to tackle the problem of traffic and transportation within the Master Plan area the Planning strategies should be as follows :-

7.11.1.

**Improvement of Road Junctions and Intersections :** Road junctions and intersections have been recognised as a major source creating traffic problems. After taking due cognisance of land and other physical constraints, steps should immediately be taken to improve the road junctions and intersections.



7.11.2.

**Widening of Existing Roads :** The scope of roads widening does not seem to be an appropriate solution on major arterial roads, subject to availability of land, widening schemes should be undertaken to achieve the desired space standards. However, it is proposed that the following roads need immediate widening.

- (i) Widening of Butcher road and Keating road.
- (ii) Widening of Sweeper lane between city bus stand intersection and G. S. Road.
- (iii) Lukier road between Cherra road and G. S. Road near District Council intersection.
- (iv) Existing road link between Jowai road and passing through Laitkor and Shillong Peak needs to be widened for through traffic. This can act as a bypass for Jowai-Cherra traffic.
- (v) The road from Polo Bazar towards Lalchand Basti and Nongmynsong.
- (vi) The road from Polo Bazar to Mawlai through Golf-Course-short round road, long round road needs to be widened for bypassing the traffic from Mawlai to Polo Bazar and surrounding areas.
- (vii) The NH. 40 from District Council point at Garikhana upto Mawlai needs immediate widening. This is necessary even when the bypass is provided.
- (viii) The widening of Umshyrpi bridge on the Shillong-Cherra road needs to be taken up urgently.

7.11.3.

**Construction of New Roads :** In addition to the existing network, few additional road links are to be provided to ensure that some of the bottleneck locations in different areas of the city are avoided. In a hilly town like Shillong, the scope of widening of roads especially in the central area being extremely limited, new corridors have to be created, because absence of any parallel arterial streets is forcing the traffic to use the already congested streets. The following are the new roads identified within the Master Plan Area. (Drawing - 10 ).

- (i) Link between Oakland road and Bihar road : The provision of this link will provide a direct and shortened access to Polo Bazar and the surrounding areas and will help greatly in reducing the load on the roads in and around Kutehery.
- (ii) Link between Butcher road and Mawlonghat : For creating a parallel corridor to G. S. Road a new link between Butcher road and Mawlonghat needs to be taken up. This will reduce some of the load on the G. S. Road.
- (iii) Construction of NH. bypass connecting NH. 40 on G. S. Road and NH. 44 on Jowai Road.

The problem of traffic congestion in Shillong is further aggravated due to the mixing of local and long distance traffic on NH. 40 which connects Shillong with Guwahati and NH. 44 connecting Shillong with



Jowai. In the absence of any arterial bypass link the G. S. Road is functioning as the major link for Mizoram, Tripura, Manipur, Silchar (Assam) and large volume of passengers and goods movement takes place through the heart of Shillong city causing con-fusion congestion, pollution and accidents. With the construction of the National Highway Bypass the problem of traffic congestion within the town will ease considerably.

(iv) Besides, an area of 200.75 hectares has been earmarked for construction of new roads. Most of the roads will be developed towards the N. E. side of the master plan area keeping in view the proposed development that will be taking place. Few other new roads has been proposed towards the south western side of the master plan area.

11.4. **Construction Of Parking Places :** Parking has been considered as an integral part of overall traffic requirements. Growth on commercial activities and increase in vehicle ownership have resulted in increased parking demand especially in the central area of Shillong. The peak parking demand at several places being far excess of the parking capacity, adequate steps need to be taken to provide parking facilities. (Drawing - 11).

Since land available for accomodating the increasing demand for parking spaces may not be sufficient, attempts must be made to utilise most optimally the small panels of land already available for this purpose. At the central area level, since land is more scarce the problem can be better tackled by going for multi-level parking lots and outside the central area level it will be sufficient to for single or double level parking lots. Some of the parking lots that can be immediately taken up priority basis are :-

- (i) Two tier parking lot opposite Apex Bank.
- (ii) Two tier parking lot at Butchery road.
- (iii) Two tier parking lot at opposite Anjalee Cinema Hall.
- (iv) Two tier parking lot at the junction of Lukier Road and G. S. Road opposite District Council.
- (v) Three tier parking lot at Police Bazar (old Civil Hospital).
- (vi) Parking lot at Dhankheti (Stoney land).

In the new area to be developed all shopping and administrative centres, residential areas will have provisions for parking spaces.

11.5. **Site for Goods Terminal/Truck Terminus :** Like the typical characteristics of all the hill towns, Shillong also has narrow roads, parking areas are not adequate and there are no organised terminal area to keep pace with the ever increasing demand. Presently truck parking is taking place at Iewduh, Garikhana and surrounding areas. But its location within the city area, where space is highly inadequate leads to chaotic conditions in the traffic circulation in this area. It is therefore urgently felt to locate the truck terminus outside the city limits. The site should be chosen in such a manner that it should not only



have adequate space for providing the required facilities but should also be nearer to the main city. However, it is proposed that three goods terminal will have to be located at different locations within the Master Plan Area having facilities for truck parking also. They are :-

- (i) At Upper Shillong.
- (ii) At a suitable site near Mawdiang diang (near the proposed National highway by pass).
- (iii) At Mawiong.

7.11.6.

**Mini Bus/city Bus Terminal :** At present, there is only one city bus terminal located at Mawlonghat. It is to be noted that traffic in and around this point has been growing at a fast rate chocking up the channels of movement. The traffic congestion in and around Barabazar is mainly due to the following reasons :

- (a) Lack of parking spaces.
- (b) Narrow roads.
- (c) Haphazard growth of shopping activities.

The terminal located at Mawlonghat is not able to meet the present day requirements mainly due to inadequate circulation area and consequently there is a great deal of chaos all around.

Since bus Services form an important mode of transport in and around Shillong, the terminal area requirement is likely to become substantial in the near future. The present terminal area will be far too inadequate to meet the total requirements, it is being felt necessary to have more bus/mini bus terminal areas in places like Mawlai, Nongmynsong, Happy Valley, Umpling, Madanriting and Upper Shillong. The present bus terminal at Barabazar needs to be removed to ensure a smooth flow of traffic in that area. Besides, the new areas to be developed will have a different mini/city bus network with terminal facilities.

7.11.7.

### **Traffic Management.**

7.11.7.1.

**Curb Side Parking :** Curb side parking control should be enforced on the major arterials. The entire area from Garikhana to Police Bazar intersection should be converted into parking free zone. This will provide additional space for movement of vehicles. Since land available for accomodating the increasing demand for parking spaces may not be sufficient attempts must be made to use most optimally the small panels of land already available for this purpose.

7.11.7.2.

**Traffic Regulation Measures :** Since road widening may not be possible in all city roads the only option under the existing circumstances is to go for traffic regulation measures in the form of one way system where ever alternate corridors are available or can be created. This will ensure smooth traffic flow conditions.

7.11.7.3.

**Public Transport System :** Due to lack of official control over public transport i.e. city and mini buses, it is observed that bus operators are plying their buses at their will and at their own



surfaced timings. Even though fixed stops have been earmarked yet it is not followed as a result, such buses stop at their own convenience for embarking and disembarking of passengers and this is hazardous, specially near the intersections, it is therefore recommended that stops should be fixed for these services and strict enforcement measures should be adopted.

7.4. **Slow Moving Vehicles :** Although slow moving vehicles i.e. pony carts form a small share of the total number of vehicles, efforts should be made to restrict their movements along the congested corridors. Adequate parking spaces need to be allocated for these vehicles at suitable locations.

7.5. **Re-routing Of Mini/city Buses :** The mass transportation in Shillong is primarily road based. The mini/city bus services is provided mainly by the private sector operating on selected corridors.

It can be anticipated that the future mass transport system i.e. mini/city buses will capture large share of traffic. Keeping this in view, a proposed re-routing pattern has to be planned so that all work centres are connected to the residential areas.

Presently the city buses ply mostly on the Barabazar-Police Bazar-Laitumkhrach-Nongthymmai route. Even the buses going to Happy Valley follow the same route though shorter route from Bara-bazar via Arunachal Pradesh Secretariat - Civil Hospital - St. Edmund's College is available. This will enable some of the traffic load to be diverted from the narrow roads of Laitumkhrach through the National Highway thereby easing congestion on Don Bosco Laitumkhrach stretch.

Further the buses should not start and terminate at Mawlonghat, but should come for a short term to pick up/drop passengers. In this context immediate steps should be taken to create new mini/city bus terminals at locations mentioned above to ease the traffic pressure on Mawlonghat.

7.6. **Underground Pedestrian Subways :** Construction of underground pedestrian subways may be considered for four junctions viz., Police Bazar, Motphran, Dhankheti, and Laitumkhrach. Subways are more economical and space saving in comparison to fly overs. Pedestrian subways will help in the separation of pedestrian movement from vehicular movement thereby easing congestion to some extent. However the possibility to go for underground pedestrian subway may be examined further by the concerned department.

**Width of Proposed Roads :** All the proposed primary, secondary and tertiary roads will have a width of 40 meters, 30 meters and 20 meters respectively, all service lanes will have a minimum width of 8 to 10 meters.



CHAPTER EIGHT



## 8. URBAN ADMINISTRATION AND MANAGEMENT

8.1. **Urban Administration:-** Unlike other cities in the country, Shillong has a unique administrative structure, and the Municipal Board is only one of the unit, the others being the District Council, Syiemship and the Dorbar Shnong.

The District Council have been constituted under the Sixth Schedule of the Constitution of India. The District Council has wide powers for administration of internal affairs of the tribes. It also acts as the executive and legislative authority in respect of specific matters provided in the Sixth Schedule of the Constitution.

**Some of the powers of the District Council are:-**

- (a) the allotment, occupation or use of the setting apart, of land, other than reserved forest, for the purpose of agriculture and residential or any other purpose likely to promote the interest of the inhabitants of the village or town.
- (b) Management of forest not being a reserved forest.
- (c) establishment of town committee
- (d) powers to assess and collect land revenue and impose taxes
- (e) Matters relating to village or town administration, public health and sanitation, etc.

The District Council appoints Syiem who is the head of a Khasi State. Usually the Syiem is elected by an electoral Durbar consisting of Mantris representing various clans. The Syiem governs his State with the help of the Durbar executive council consisting of Mantris. A Khasi State is a limited monarchy, the Syiem's powers are being much circumscribed and the real powers rests with the Mantris who are again elected.

Both the District Council and Syiem take up schemes within their respective jurisdiction relating to civic infrastructure. The Syiem of Myllem is managing the highest whole sale and retail trade centre in the State and the District Council have been constructing footpaths, drains, etc. In areas outside Shillong Municipal Board.

The Rangbah Shnong is the grass root traditional institution which are involved in the civic affairs of the city. These are elected bodies where members are directly elected by the male-members from and amongst the tribal. It functions till such time it has confidence of the people and the office bearers can be removed if so desired by the people. Of late the Durbar Shnong even within the Municipal areas has been functioning more or less like Ward Commissioner and articulating the felt needs of people.

8.2. **Shillong Municipal Board:-** The Shillong Municipal Board was constituted in 1910 under the Bengal Municipal Act, 1884. After independence the functions and the powers of the Municipality were regulated by the Assam Municipal Act, 1956 which was subsequently adopted by the Meghalaya and known as the Meghalaya Municipal, Act, 1973.

8.3. **Management of Shillong Municipal Board:-** Shillong Municipal Board is at present without an elected Board and is managed by the nominated Board. Besides the Chairman and the Chief Executive Officer there are 10 more member representing various Municipal Wards. The total numbers of Municipal Ward is 27. There has been no elected Municipal Board since 1973 and the last election of the Shillong Municipal was held in 1966.

8.4. **Shillong Municipal Area:** The total area within the Municipal Limit is 10.36 Sq. Km. which has remained unchanged. However the operation area of Municipal Board has increased considerably as all the vacant land within the Municipal area has been built up.

8.5. **Functions of Shillong Municipal Board:** The main function of Shillong Municipal Board uptill now has been to provide civic amenities like roads, footpaths, drains, street lighting, conservancy services, distribution and management of wa-



supply, etc. It does not provide education, health facilities and other services as offered by major Municipal Board/Corporations in the country. Even the above services are not provided to the desired level for want of fund and trained man power.

**Revenue of the Shillong Municipal Board :-** The sources of revenue of Shillong Municipal Board are limited to holding tax, water tax, lighting tax, sanitation tax, Fees, Rent and Toll tax. The State Government sanctions grants in aid to the Shillong Municipality to carry out work related to public work, water works, conservancy and health establishment, etc.

There is also a need for setting up a civic body having jurisdiction over the entire Master Plan Area of 174 Sq. Km. The present Municipal Board's boundary is limited to only 10.36 Sq. km. Even at present due to the absence of Municipal Board and the Town Committees in other units of Urban Agglomeration, the level of civic services are not satisfactory, in spite of the fact that Government Department have extended such facilities and also maintaining them with nominal contribution from the localities. The cost of maintenance of water supply has been increasing and the time has come when the Government Departments can not carry on with maintenance works. There is thus need for a civic body which can take on such functions and maintain the services through generation of internal revenue.

Since in the State the District Council, the Syiems, Rangbah Shnong are involved in the civic affairs, there is duplication and overlapping of functions. The proposed civic Body (Municipal Corporation) must have representative from the above institutions to make it more effective. Otherwise, there will not be any co-ordination and level of civic services may not improve.

- 8.7. **Management:** There are many agencies and local institutions who are responsible for providing civic amenities or are involved in this process directly or indirectly. In addition, there are Government Department and agencies like Public Works, the Public Health Engineering, the Urban Affairs, the Meghalaya Urban Development Authority, the Meghalaya Urban Development agency which implement various schemes and programmes of the State Government.

Meghalaya Urban Development Authority is mainly responsible for enforcement and implementation of Master Plan. Meghalaya Urban Development Agency has been set up to implement the poverty alleviation schemes through the local Municipal Boards, Public Works Department executes all the schemes pertaining to roads and buildings. Public Health Engineering Department's task is to implement water supply and sewerage schemes. The Urban Affairs Department has been implementing environmental improvement of Urban Slums Schemes and providing civic infrastructure including construction of parking lots. Meghalaya State Electricity Board has implemented street lighting schemes with funds released by Urban Affairs Department and Municipal Board. Shillong Municipal Board also construct footpaths, drain and maintains them within their jurisdiction.

It is apparent from above, that within the same city at least seven agencies of the Government are operating and implementing various development programmes. Most of them do not know the programmes of other agency. The result is un-coordinated development of infrastructure facilities. There is therefore a need to co-ordinate the activities of the various agencies in the field and also assign functions clearly to each of them. The question is who can co-ordinate. The Meghalaya Urban Development Authority is an umbrella body and expected to take on these functions as all schemes have to be implemented within the framework of Master Plans and Zonal Plans. If that be so, the above department and agencies have to be represented in the Authority. At present there is no representative of the Agencies except the Municipal Board and the Cantonment. It may be necessary to make amendments in the Meghalaya Town and Country Planning Act, 1973 so that the Government agencies including Syiemship and District Council are represented and contribute in the development process of the city.



CHAPTER NINE



9. **Plan Implementation and Enforcement** :- The preparation of the Master Plan will not improve the city life in any way unless sustained efforts are made to enforce and implement the plan. In building a city or a town, the major role is often played by the citizens, individually or collectively by undertaking construction and development of land for various uses.

Meghalaya Urban Development Authority is mainly responsible for enforcement and implementation of the Master Plan as per the Meghalaya Town and Country Planning Act of 1973. The Urban Affairs Department will provide necessary guidance by rendering technical advice and ensuring strict and proper scrutiny so as to ensure that the proposed plan will conform to the proposals contained in the approved Master Plan.

As mentioned above the Meghalaya Urban Development Authority will enforce and implement the plan but the Government Department like Corporation, Health Engineering, Public Works Department, Health Department, Urban Affairs Department, Municipal Board, etc:- will also undertake construction within their respective field of activity. Since Housing Department/Housing Board is engaged in constructions of houses it is hoped that it will undertake schemes for the same. This will add to the process of the implementation of the Master Plan.

- 9.1. **Phasing of the Plan**:- The proposals contained in the Master Plan are both long terms and short term. It is proposed to be implemented in four phases during the plan period from 1992-2011. The first phase will be taken up during the plan period 1992-1996 and the remaining three phases will taken up during the plan period 1997-2001, 2002- 2006 and 2007-2011 respectively.

- 9.1.1. **First Phase Implementation**:- (1992-1996) During the First Phase of Development emphasis will be laid down on housing, development of infrastructure like construction and improvement of roads, commerce, power, water supply, etc.:-

(a) **Development of land**:- In the first phase, an area of 536 hectares is proposed to be developed towards the North Eastern side of the Master Plan area where a new township is proposed to be developed as well as towards Mawiong on the North and Mawshbuit on the east.

**Implementing Agency**:- The Meghalaya Urban Development Authority will initiate action.

(b) **Housing**:- (1) In the first phase 11,000 housing units are proposed to be developed in the new township. 465 hectares of land will be required for this purpose.

(2) Housing improvement and up-gradation is to be initiated in the slum area.

**Implementing Agency**:- Housing Department, Housing Board.

(c) **Transportation**: (1) Road connecting Lalehandbasti and the proposed by pass near the Regional Institute of Medical Sciences.

- (i) 8.8 Kms. length from near the residence of Chief Secretary to the junction of Nongmynsong road and from the junction of new road and short round road to Mawpat road is to be widened.
- (ii) 5.5 Kms. length of new road to be constructed.
- (iii) Link between Butcher road and Mawlonghat.
- (iv) Widening and metalling of the existing, roads in the new township.
- (v) Widening and metalling of existing Kutcha roads, in the south-west part of the Master Plan Area.
- (vi) Widening of existing road within the town wherever possible.
- (vii) Improvement of some of the roads junctions and inter-sections.



(viii) Construction of two tier parking lot opposite Apex Bank.

(ix) Construction of city bus terminus at Mawlai and Nongmynsong.

**Implementing Agency :-** Public Work Department and Urban Affairs.

(d) **Commercial:-** (1) Wholesale market at Mawiong to be established.

(2) Development of Retail shopping centre near the Regional Institute of Medical Sciences.

(3) Acquisition of land for a wholesale market at Mawdiang diang.

(4) Acquisition of land for wholesale market at Upper Shillong.

**Implementing Agency :** Meghalaya Urban Development Authority.

(e) **Industry:** (1) Acquisition of 30 hectares of land at Mawshbuit.

**Implementing agency :-** Industry Department/Meghalaya Industrial Development Corporation.

(f) **Power Supply :-** (1) Augmentation of power supply within the existing town.

(2) Main grid to be extended towards the new township within the Master Plan Area.

**Implementing Agency :-** Meghalaya State Electricity Board.

(g) **Water Supply:-** (1) Augmentation of water supply within the existing town.

(2) Detailed feasibility study for water Supply System in the new township.

**Implementing Agency:-** Public Health Engineering Department.

(h) **Administration :-** Acquisition and development of 10 hectares of land for administrative use towards the southern side of the new township.

**Implementing Agency:-** General Administrative Department.

9.1.2. **Second phase Implementation (1997-2001).** Besides taking up continuous works, initiated in the first phase following development works are proposed to be carried out in the second phase.

(a) **Development of land :-** In the second phase an area of 610 hectares is proposed to be developed out of which 580 hectares is proposed to be developed in the new township.

**Implementing Agency :-** Meghalaya Urban Development Authority will initiate action.

(b) **Housing** (1) In the second phase 11,000 housing units are proposed to be developed in the new township. An area of 465 hectares will be required for this purpose.

(2) Housing improvement and up-gradation is to be continued in the second phase.

**Implementing Agency :-** Housing Department/Housing Board.

(c) **Transportation :-** (1) Construction of 7.28 Kms. road, 20 meters wide in the south of the new town.

(2) Improvement of some of the road junctions and inter-sections.

(3) Construction of parking lot at Police Bazar, Dhankheti and Butcher road.

(4) Acquisition of land for truck terminus at Upper Shillong.



(5) Construction of city bus terminus at Happy Valley and Umpling.

**Commercial :-** (1) Construction of wholesale market at Mawdiarig diang. operation

(2) Construction of wholesale market at Upper Shillong.

(3) Development of remaining retail shopping centres in the new township. 991

**Implementing Agency :-** Meghalaya Urban Development Authority.

(e) **Industry** (1) Development of an industrial estate at Mawshbuit. on, 1981

(2) Acquisition of 20 hectares of land at Mawpat.

**Implementing Agency :-** Industry Department/Meghalaya Industrial Corporation. 1981

(f) **Power Supply :-** (1) Extension of power supply to all the developed area of the new township.

(2) Augmentation of power supply to all the rural areas within the master Plan.

**Implementing Agency :-** Meghalaya State Electricity Board.

(g) **Water Supply :** (1) Provide water supply system to all the developed area of the township.

(2) Detailed feasibility report to explore new sources for water supply.

**Implementing Agency :** P.H.E. Department.

(h) **Administration :** Acquisition and development of 10 hectares of land for administrative use towards the southern side of the new township.

**Implementing Agency :-** General Administrative Department.

(i) **Recreation :-** (1) Acquisition of land and development of a park in the south of the new township.

(2) Development of a recreational centre near the golf course.

**Implementing Agency :-** Forest Department

(j) **Drainage and Sewerage System :-** (1) Construction of drainage and underground sewerage system in the developed areas of the new township.

**Implementing Agency :-** P.H.E. Department.

13. **Third Phase Implementation (2002-2006) :-** During this phases of development, besides carrying out works initiated in the first two phase, the following works are proposed to be taken up.

(a) **Development of land :-** An area of 330 hectares is proposed to be developed in this phase.

**Implementing Agency :-** Meghalaya Urban Development Authority.

(b) **Housing :-** In the third Phase, 9,000 housing units proposed to be development in the new township. An area of 265 hectares has been earmarked for this purpose.

**Implementing Agency :-** Housing Department/ Housing Board.

(c) **Transport :-** (1) Construction of 30 meter wide road of 15 Km. length in the new township.

(2) Construction of 20 meter wide road of 7.28 Km. length in the new township.



- (3) Land acquisition for construction of transport nagar at Mawdiang-diang.
- (4) Construction of truck terminus at Upper Shillong.
- (5) Construction of underground pedestrian subways at Police Bazar and Motphran.
- (6) Construction of city bus terminus at Madanriting and Upper Shillong.

(7) Construction of Parking lot opposite Anjeee cinema.

**Implementing Agency :-** P.W.D. and Urban affairs.

(d) **Industry :-** Development of an industrial estate at Mawpat.

**Implementing agency :-** Industry Department/M.I.D.C.

(e) **Power Supply :-** Extension of power supply to all developed areas of the new township.

**Implementing Agency :-** Me S.E.B.

(f) **Water Supply :** (1) Provide water supply system to all the development areas of the new township.

(2) Improve the water supply system in the existing town.

**Implementing agency :-** P.H.E. Department.

(g) **Administration :** Acquisition and development of 10 hectares of land for the administrative use towards the northern side of the new township.

**Implementing Agency :-** General Administrative Department.

(h) **Recreational :-** Development of a park in the northern side of the new township.

**Implementing Agency :** Forest Department

(i) **Community facilities :** (1) Construction of a Hospital towards the southern side of the new township

(2) Construction of a college towards the southern side of the new township.

**Implementing Agency:-** Health Department and Education Department.

(f) **Drainage and Sewerage :-** Construction of drainage and underground sewerage system in the developed areas.

**Implementing Agency :-** P.H.E. Department.

9.1.4. **Fourth Phase Implementation:-** (2007-2011) Besides taking up continuous schemes initiated in the previous phases the following works are proposed to be carried out in the fourth phase.

(a) **Development of land :-** In the last phase of development 200 hectares is proposed to be brought under development.

**Implementing Agency :-** M.U.D.A.

(b) **Housing :-** In the last phase of development 9,000 housing units are proposed to be set up in the new township.

**Implementing Agency :-** Housing Departments/Housing Board

(c) **Transportation :-** (1) Construction of parking lot at the junction of Lukier road and G.S. Road near District Council Office.

(2) Construction of underground pedestrian at Dhanketi and Laitumkhran.



(3) Construction of mini/city bus terminus at the new township.

(4) Construction of 14.56 Km road, 20 meters wide in the new township.

**Implementing Agency :-** P.W.D. and Urban Affairs.

(d) **Power Supply :-** Extension of power supply to the remaining areas of the new township.

**Implementing Agency :-** Me. S.E.B.

(e) **Water Supply :-** Extension of water supply system to the remaining areas of the new township.

**Implementing Agency :-** PHE. Department.

(f) **Recreation:** (1) Construction of a stadium in the new township with facilities for indoor as well as outdoor games.

(2) Development of a lake by construction of dykes in the existing stream in the new township.

**Implementing Agency :-** Sport and Youth welfare Department/Forest Department.

(g) **Community facilities :-** Construction of a Hospital towards the northern side of the new township.

**Implementing Agency :-** Health Department.

(h) **Drainage and Sewerage :-** (1) Under ground sewerage system in the remaining area of the new township.

(2) Drainage system in all the remaining areas of the new township.

**Implementing Agency :-** P.H.E., Department.

9.2.

**Conclusion :-** Since planning is a continuous process and as it is necessary to incorporate the ever changing factors controlling the dynamic growth it is suggested that the Master Plan be reviewed every five years.

The zoning regulations will be as per the regulations adopted by the Meghalaya Urban Development Authority.

Regarding the implementation of the Master Plan the Meghalaya Urban Development Authority will co-ordinate the different departments responsible to carry out the proposals, contained in the Master Plan.



## BIBLIOGRAPHY:

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- (2) Report of State Board for Prevention and Control of Water Pollution.
- (3) Report on Geo-Environmental Appraisal of Shillong Urban Community, by S.C. Pathak, Geologist, G.S.I.
- (4) Project Report on Renovation and Augmentation of power Supply in Shillong by S.P.D.C. prepared for Me.S.E.B., Shillong.
- (5) Project profile on Greater Shillong Sewerage Scheme prepared by Meghalaya State Pollution Control Board, Shillong.
- (6) Shillong Master Plan 1971-91 prepared by Directorate of Urban Affairs, Meghalaya, Shillong.
- (7) Revised Project report of Greater Shillong water Supply Scheme. P.H.E. Meghalaya, Shillong.
- (8) Design of Distribution Network for Greater Shillong Water Supply Scheme prepared by WAPCOS for P.H.E. Department, Shillong.
- (9) Census of India, 1971, 1981, 1991 (Prvisional).







DUM/103




# SHILLONG MASTER PLAN

1991 - 2011

DIRECTORATE OF URBAN AFFAIRS  
MEGHALAYA SHILLONG

## SCHEDULE OF BOUNDARY

### LEGEND

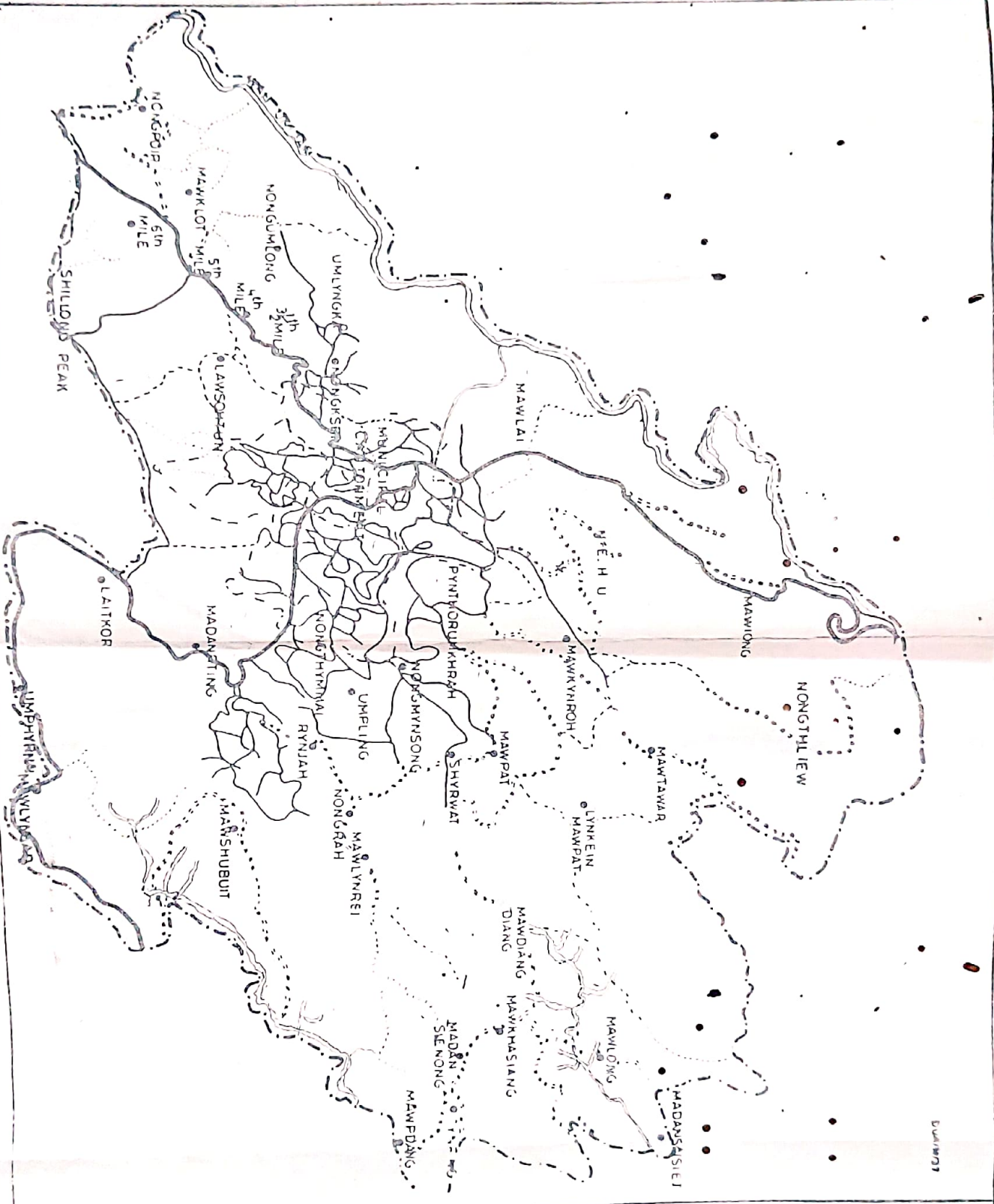
-  MASTER PLAN
-  MUNICIPAL
-  CANTONMENT

SCALE 0 1 2 KM

TRACED BY: DRAWN BY: 2

(S. R. JAYAW) (Z. H. NONGSARI)  
TRACER CARTOGRAPHER

(M. K. MAZHARI)  
DIRECTOR  
DIRECTORATE OF URBAN AFFAIRS  
NEO-BAIAYA SHILLONG















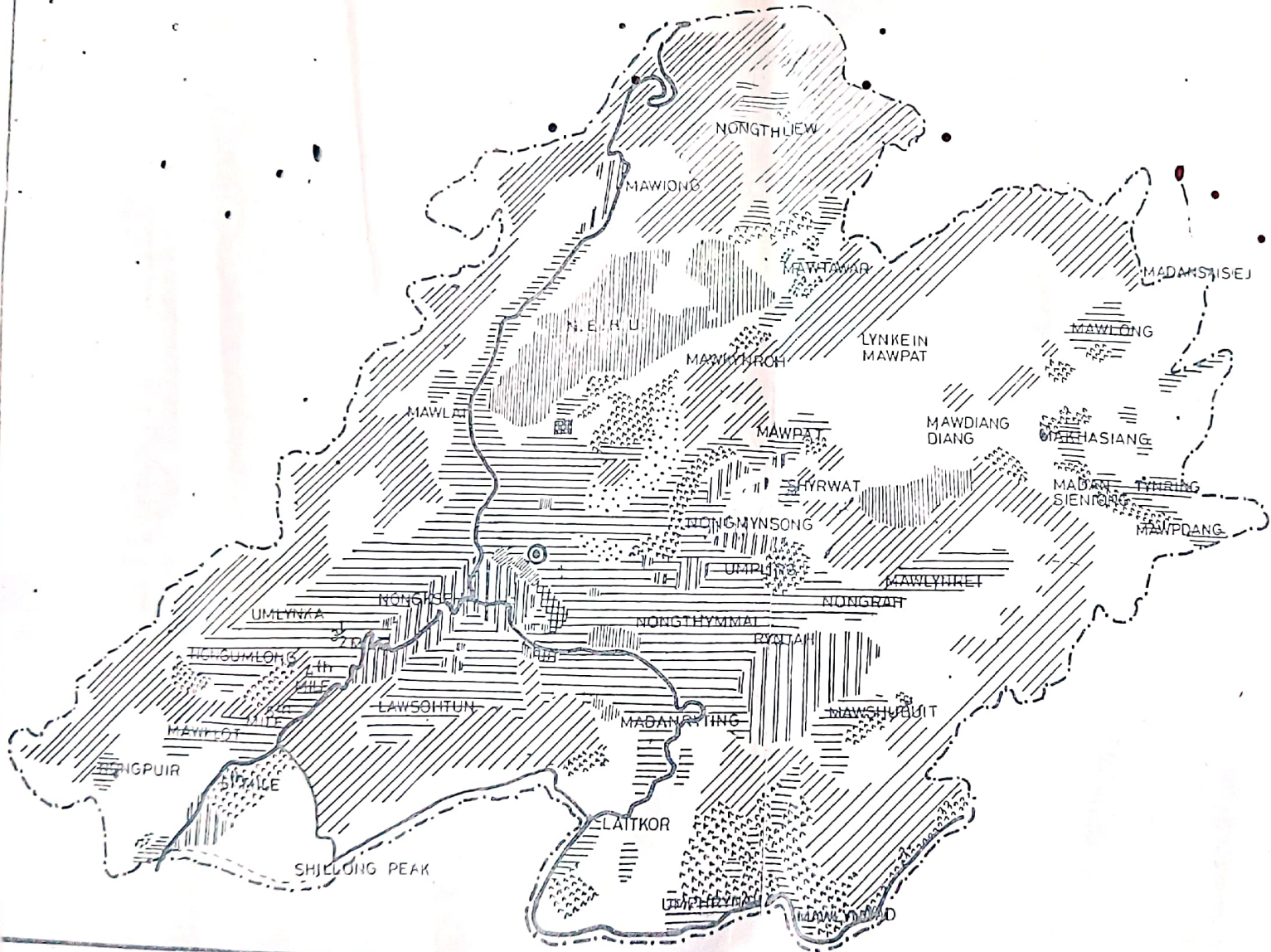
# SHILLONG MASTER PLAN 1991-2011

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## EXISTING LAND USE

### LEGEND

-  FORESTS
-  RESIDENTIAL
-  URBAN AGRICULTURE
-  ADMINISTRATIVE
-  SECURITY
-  INDUSTRIAL
-  INSTITUTIONAL
-  VACANT
-  OPEN SPACE
-  COMMERCIAL



DIRECTORATE OF URBAN AFFAIRS  
MEGHALAYA :: SHILLONG

SCALE



DRG. NO. 3.



DRAWN BY

(A. R. MARAK)  
TRACER.

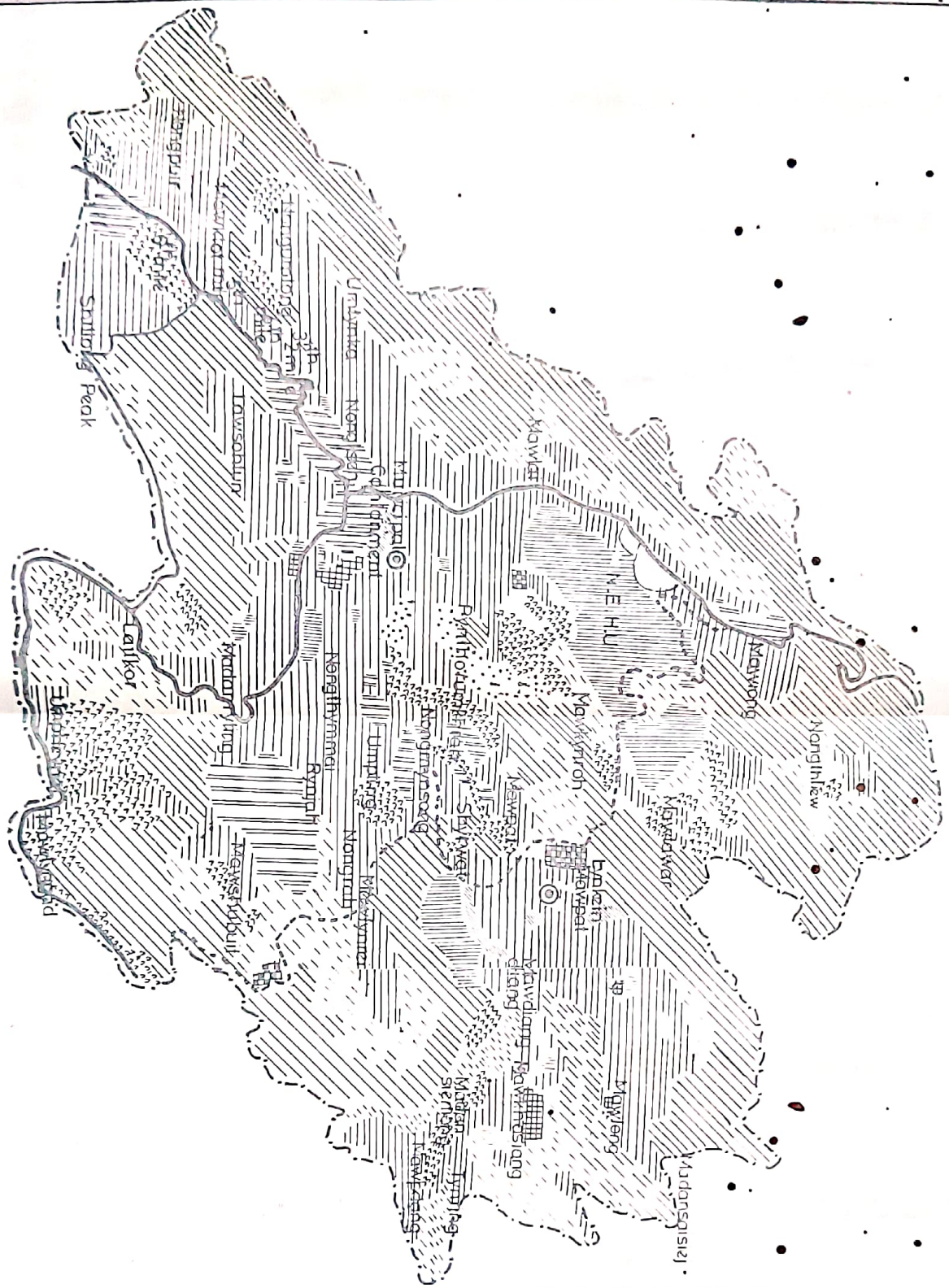
APPROVED BY—

DEALT BY

(Z. H. NONGBRI)  
CARTOGRAPHER












(H. K. MAZHARI)  
DIRECTOR,  
DIRECTORATE OF URBAN AFFAIRS  
MEGHALAYA SHILLONG.





SHILLONG MASTER PLAN 1991-2011  
 PROPOSED LAND USE

LEGEND

-  FORESTS
-  RESIDENTIAL
-  URBAN AGRICULTURE
-  ADMINISTRATIVE
-  SECURITY
-  INDUSTRIAL
-  INSTITUTIONAL
-  TRANSPORT
-  OPEN SPACE
-  CONSERVATION
-  COMMERCIAL

DIRECTORATE OF URBAN AFFAIRS  
 MEGHALAYA : SHILLONG

SCALE  
 1 2 3 KM  
 DRG. NO. 4



DRAWN BY— (A. R. NARAK) TRACER  
 DEALT BY— (Z. H. NONGBRI) CARTOGRAHER

APPROVED BY— (H. K. MAZHARI)  
 DIRECTOR,  
 DIRECTORATE OF URBAN AFFAIRS  
 MEGHALAYA : SHILLONG


















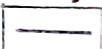
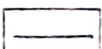
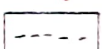


# SHILLONG MASTER PLAN 1991 - 2011

DIRECTORATE OF URBAN AFFAIRS  
MEGHALAYA SHILLONG

## EXISTING TRAFFIC NETWORK

### LEGEND

	NATIONAL HIGHWAY
	PRIMARY ROAD
	SECONDARY ROAD
	KATCHA ROAD

SCALE 1 : 50,000 2KM DRNG NO: 9

TRACED BY (S. R. JYRWA) TRACER  
DRAWN BY (Z. H. NONGBRI) CARTOGRAPHER

(H. K. MAZHARI)  
DIRECTOR  
DIRECTORATE OF URBAN AFFAIRS  
MEGHALAYA SHILLONG

